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ROADSIDE GRADING GUIDANCE - PHASE II

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16. Abstract (Limit: 200 words)

Phase I of this project relied on assumptions surrounding crash data from the state of Ohio in 2000. The number of fatal and severe crashes in that year was significantly lower than average. As a result, the conclusions were indefinite. Phase II was carried out using crash data from the state of Ohio over seven years. The increased pool of data removed the need for many of the underlying assumptions used in Phase I and provided a solid foundation of conclusions and recommendations.

The number of fatal and severe crashes that occurred on each slope and height for each functional class was calibrated with the Roadside Safety Analysis Program (RSAP), an encroachment-based probability tool, to modify default severity indices for each foreslope and embankment height. The results of the simulations using RSAP were then studied until equations were developed to relate the severity index to the foreslope rate, embankment height, and functional class.

Using the impact frequencies determined by RSAP and the modeled severity indices from the equations developed from RSAP, the deterministic program, *Benefit-Cost Analysis of Foreslopes Program* (BCAFP), as developed in Phase I, was updated to match the results of the crash data taken between 2000 and 2006. This program allows its user to enter installation costs of various design alternatives, as well as roadway configuration parameters, to quickly and effectively conduct a benefit-cost analysis for use in selecting the most cost-effective roadside geometry. Using the BCAFP program, and based on an existing 1V:2H foreslope, sample guidelines for roadside grading were generated as a function of ADT, road functional class, desired B/C ratio, installation length, slope offset and height, and soil borrow costs.

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1 INTRODUCTION

1.1 Problem Statement

To update severity indices, the predicted number of severe injury and fatal (A+K) crashes in the Roadside Safety Analysis Program (RSAP) was calibrated with crash data. As traffic volume increases, and while keeping all other parameters equal, the number of (A+K) crashes should generally increase. However, the traffic volume should not actually affect the severity index. Additionally, traffic volumes change dramatically for different functional classes, which, based on design speeds and traffic volumes, also have different minimum clear zones. For larger functional classes, i.e. larger traffic volumes, the potentially larger lateral offsets to the hinge point of the slope may affect (i.e., even reduce) the number of (A+K) crashes per mile, which was observed in the crash data from the year 2000.

One of the first steps in Phase I was to filter the crash data to only include single-vehicle ran-off-road (SVROR) crashes in which no fixed objects were struck and the vehicle encroached on an embankment. This filtering reduced the number of crashes from approximately 18,000 to approximately 1,300. But when the mileage of each slope-height combination was estimated using random 1-mile segments and Global Mapper, certain fixed objects were not considered in the overall length of a slope-height combination. For example, W-beam guardrail may have been protecting the slope at that random location, but the length of that slope was still included in the estimate. This ultimately led to an estimation of the number of (A+K) crashes on unprotected slopes per mile of slope, regardless of the protection condition, and the number of (A+K) crashes per mile on steep, tall embankments was significantly lower than on short- and medium-height embankments of the same steepness.

The year used in Phase I had only 55 (A+K) crashes. The average between 2000 and 2006 was 121, which was 2.2 times greater than the year that was used. The maximum number

of crashes was 187 (in 2005). The standard deviation in these years was nearly 57. This wide variability indicated that the 55 crashes in 2000 were insufficient to conclusively determine the number of (A+K) crashes per year. In fact, because 55 was the minimum, the number of crashes per year on each slope-height combination will most likely rise significantly.

Finally, posted speed limits ranged from 25 to 65 mph (40.2 to 104.6 km/h), but RSAP can only function up to 55 mph (88.5 km/h), based on the data used in the program. Therefore, the crash severities needed to be adjusted based on the posted speed limit on the highway.

1.2 Objective

The objectives of this follow-on research study were as follows: (1) estimate severity indices of foreslopes using real-world crash data over a larger time period; (2) develop a relationship between the crash cost and traffic volume for several roadside configurations; (3) update a deterministic program using Microsoft Excel to predict the crash costs and benefit-cost ratios associated with various design alternatives; and (4) use the BCAFP program to generate sample guidelines for treating existing 1V:2H foreslopes in terms of roadside grading based on ADT, road functional class, desired B/C ratio, installation length, slope offset and height, and soil borrow costs.

1.3 Scope

To accomplish these retrofit objectives, new severity indices (SIs) were established for foreslopes based on crash data collected in the state of Ohio between 2000 and 2006. With updated SIs, the RSAP simulation matrix developed in Phase I was rerun. Using the results from these simulations, the equations presented in Phase I were updated, and the data used by the deterministic *Benefit-Cost Analysis of Foreslopes Program* (BCAFP) was also updated. Sample guidelines were then generated for treating existing roadside foreslopes. However, the results from this study only pertain to single-vehicle, run-off-road crashes where only an embankment

was involved. The percentage of crashes covered by this research is approximated graphically in Figure 1.

Finally, all conclusions and recommendations contained within this report pertain exclusively to retrofit roadside grading projects and not to new road construction projects. For retrofit projects, the road and roadside conditions already exist, and a benefit-cost analysis is used to evaluate various safety treatment options to the existing condition. For new construction projects, any benefit-to-cost analysis would require information pertaining to a baseline configuration, but these baseline site conditions were neither known nor estimated; thus, the study findings only pertain to retrofitting existing roadside slopes.

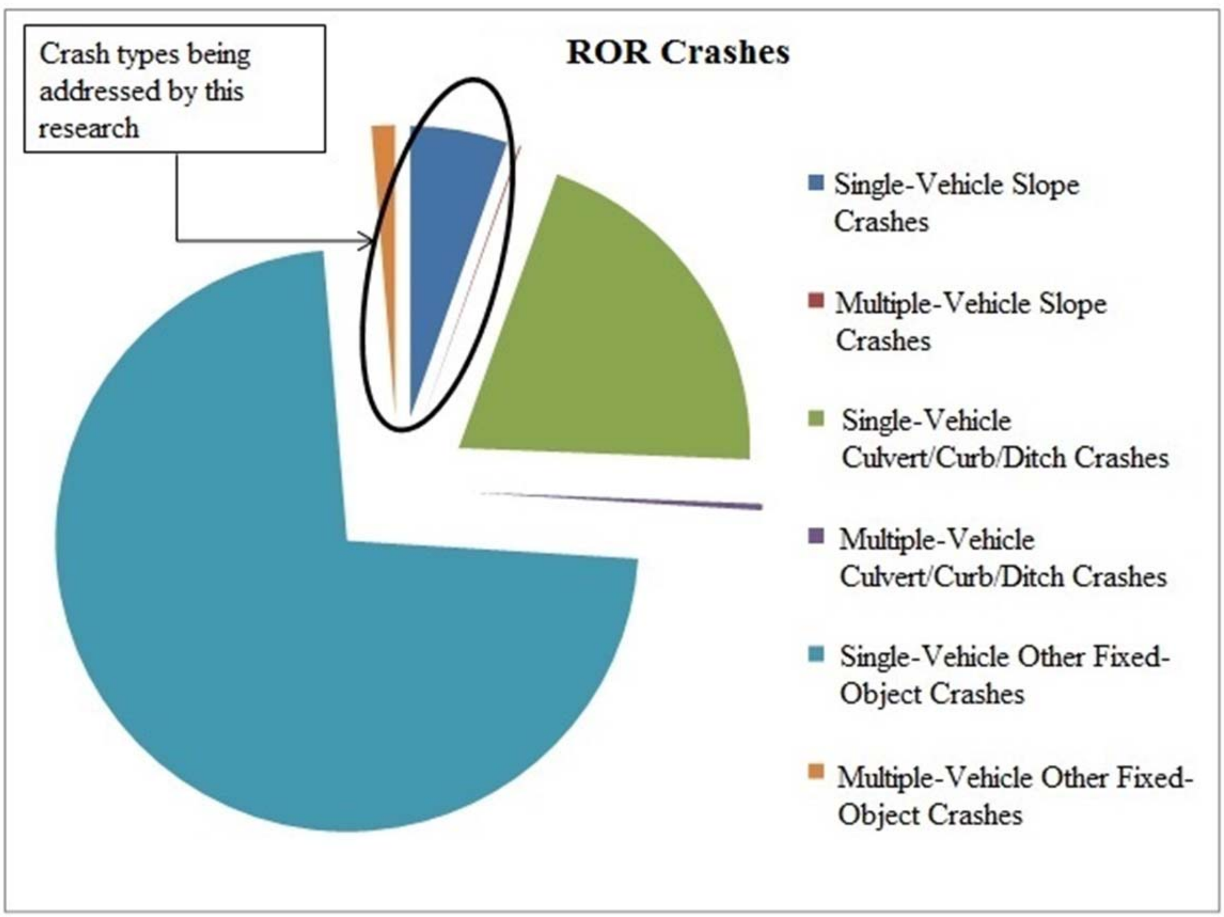


Figure 1. Run-Off-Road Crash Types [1].

2 REVIEW OF PHASE I

2.1 Determining Severity Indices

Ohio crash data from the year 2000 was used in the first phase of this study. In that year, 17,948 crashes occurred. Of those, only 1,294 involved a single vehicle that ran off the road. Finally, those crashes were filtered to include (A+K) crashes. There were 55 (A+K) crashes in Ohio in 2000.

The location of each crash was recorded in the Highway Safety Information System (HSIS). At these locations, light detection and ranging (LiDAR) files were read and analyzed using Global Mapper. The steepness and height of the slope were recorded.

Next, the slopes were categorized into one of three categories. Critical slopes were steeper than 1V:2.5H. Non-recoverable slopes fell between 1V:2.5H and 1V:3.5H. Recoverable slopes were flatter than 1V:3.5H. These ranges were created with assistance from the American Association of State Highway and Transportation Officials (AASHTO) *Roadside Design Guide* (RDG) [2]. The mileage of each category had to be estimated. To do so, 150 random samples of 1-mile (1.6-km) segments were analyzed by Global Mapper. Measurements were taken every 100 ft (30.5 m) along each segment. These points were assumed to represent the 50 ft (15.2 m) before and after each point. The length of the segment was added to the corresponding slope category. Once all of the segments were measured, the mileage of each category was given as a percentage of the total length of the segments. This percentage was applied to the total mileage of the highway network in Ohio, which was 11,393 miles (18,335 km) after urban areas were filtered out.

Similarly, the percentage of miles for each height category was estimated from the 150 1-mile (1.6-km) segments. These percentages were applied to estimate the lengths of the slope categories. Three general height categories were defined. Short slopes were less than 4 ft (1.2 m).

Medium slopes were between 4 ft (1.2 m) and 10 ft (3.0 m). Tall slopes were greater than 10 ft (3.0 m). However, only slopes of 1V:3H and 1V:2H utilized all three height categories, as determined by available features in RSAP. The 1V:4H slope used the short and anything greater than or equal to the medium height. The 1V:6H slope combined all height categories into one group.

The number of (A+K) crashes per mile or kilometer could then be estimated using the crash data and the estimated total mileage of each slope-height combination. Note that only single-vehicle ran-off-road crashes that did not strike a fixed object were included in the study. The results are shown in Tables 1 and 2.

Table 1. Phase I Data - Number of (A+K) Crashes per Mile for Each Slope-Height Combination

Height	Slope											
	1V:6H			1V:4H			1V:3H			1V:2H		
	Length (miles)	#of K+A	#K+A/ mile	Length (miles)	#of K+A	#K+A/ mile	Length (miles)	#of K+A	#K+A/ mile	Length (miles)	#of K+A	#K+A/ mile
Short	5688	18	0.0032	2521	2	0.0008	260.1	0	0.0000	235.5	6	0.0255
Medium				1055	7	0.0066	606.9	2	0.0033	175.5	6	0.0342
Tall							229.5	5	0.0218	404.4	7	0.0173

Table 2. Phase I Data - Number of (A+K) Crashes per Kilometer for Each Slope-Height Combination

Height	Slope											
	1V:6H			1V:4H			1V:3H			1V:2H		
	Length (km)	#of K+A	#K+A/ km	Length (km)	#of K+A	#K+A/ km	Length (km)	#of K+A	#K+A/ km	Length (km)	#of K+A	#K+A/ km
Short	9154	18	0.0020	4057	2	0.0005	418.6	0	0.0000	379	6	0.0158
Medium				1698	7	0.0041	976.8	2	0.0020	282.5	6	0.0212
Tall							369.4	5	0.0135	650.8	7	0.0108

These results were unreliable in predicting severity. It was believed that this problem was due to the small sample size (55 crashes). The average number of (A+K) crashes between 2000

and 2006 was 121 per year, more than double from the year used for Phase I of this study. As a result, a means of approximating the number of (A+K) crashes was developed. This approximation was necessary, as only the number of (A+K) crashes was used to calibrate RSAP and determine the severity index. For a 1V:2H slope, the number of (A+K) crashes was lower for the tall height than for the medium height. However, due to the increased probability of a rollover, the tall height should be more severe than the medium height. In addition, recoverable slopes were shown to have more crashes than non-recoverable slopes, which would increase the severity of the recoverable slopes above that of the non-recoverable slopes. To circumvent this problem, the crash rate was plotted against slope steepness (V/H), and a monotonically increasing logarithmic function was passed through the plotted points. At this stage, the tall height was omitted from the study due to its relatively limited exposure. The corresponding slope steepness for each slope category was used within the logarithmic equations to determine a linear relationship between the number of (A+K) crashes and the height of the slope. These equations are shown graphically in Figure 2.

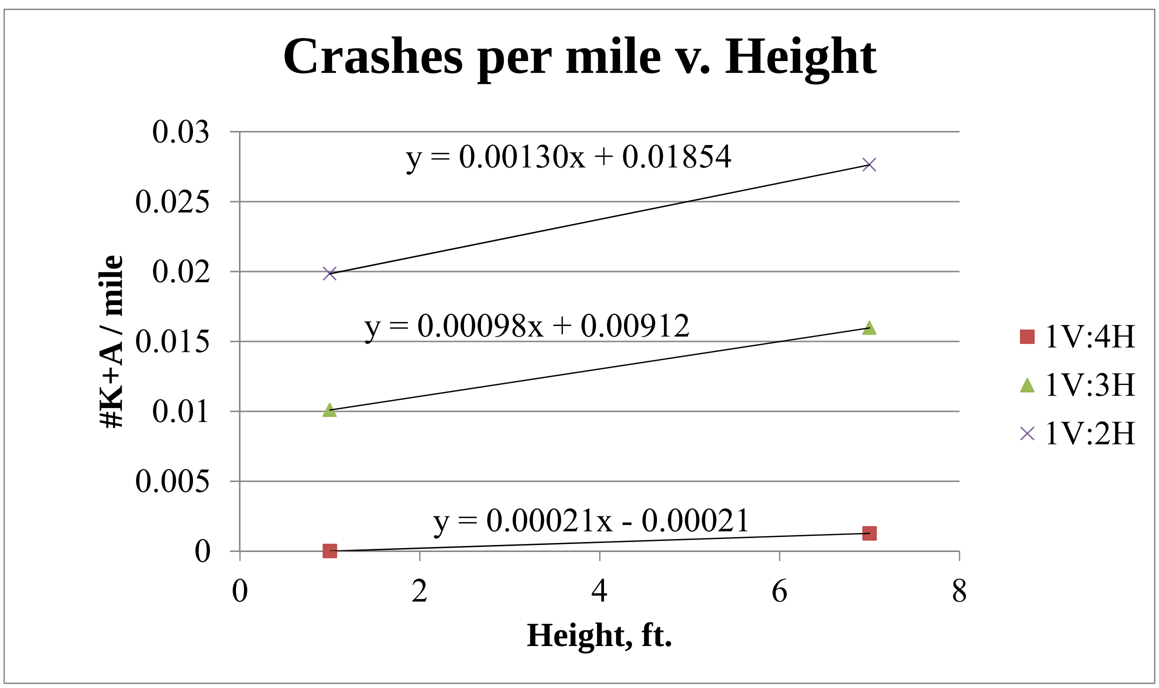


Figure 2. Crash Rates for Foreslopes

By entering a representative height for each height category, the number of (A+K) crashes per mile per slope-height category was determined. With this information, RSAP was calibrated by adjusting the severity index modification factor in the data files of the program until the simulated number of (A+K) crashes matched the adjusted crash data. Once this was completed, the simulated severity index was recorded. The results of this calibration are shown in Table 3.

Table 3. Phase I Data - SI Values and Modification Factors with #(A+K) Results

Slope	Height (ft)	Default RSAP SI	Default RSAP #K+A per mile	SI Modification Factor	New RSAP SI	DATA #K+A per mile	New RSAP #K+A per mile
1V:6H	Any	1.65	0.00469	0.60	0.98	0.0000	0.0000
1V:4H	1	2.18	0.01597	0.46	1.00	0.0000	0.0000
	7 & 13	2.47	0.02548	0.53	1.31	0.0013	0.0013
1V:3H	1	2.64	0.03458	0.75	1.97	0.0101	0.0102
	7	3.34	0.08077	0.65	2.17	0.0160	0.0157
	13	3.45	0.08987	0.69	2.37	0.0219	0.0218
1V:2H	1	3.24	0.07234	0.71	2.30	0.0198	0.0197
	7	4.48	0.17235	0.56	2.51	0.0276	0.0268
	13	4.84	0.19787	0.55	2.66	0.0354	0.0355

2.2 Sensitivity Analysis

Using default settings in RSAP, a study was conducted to investigate the importance of each of RSAP's input parameters that could influence crash costs. A baseline model was created, and then, one-by-one, each parameter was modified above and below the baseline value. Based on the percent difference in crash costs, the parameters that produced a total range of variation above 20 percent when the underlying variable was changed from 12.5 and 250 percent of the nominal value were selected for inclusion in the detailed study. These parameters were degree of curvature, length of the feature, ADT, grade, height, and offset.

3 RESEARCH APPROACH

The approach taken in Phase I [3] provided the general structure for Phase II of the study. One major difference, however, was in the crash data collection and analysis. From Phase I, budgetary limitations allowed analysis of only one year, 2000. Phase II expanded the study to incorporate crash data from six additional years, 2001 to 2006. As a result, the importance of yearly fluctuation in the number of (A+K) crashes was minimized by including 14 times as much data than was included in the original study (recall that there were far fewer than average (A+K) crashes in 2000). The estimated mileage from the 1-mile (1.6-km) segments was used to estimate the mileage of each slope-height combination for each functional class, assuming the ratios of the lengths were approximately equal for each highway type. Next, the combined crash data of both phases was normalized for 10,000 vpd. Finally, an adjustment factor was applied to the number of (A+K) crashes according to the average posted speed limits at the crash locations. A baseline posted speed limit of 55 mph (88.5 km/h) was chosen for this analysis. This process provided an adjustment factor that estimated the ratio between the number of (A+K) crashes per year per mile per average traffic volume and the number of (A+K) crashes from a 55-mph (88.5-km/h) posted speed limit.

Next, RSAP was calibrated for each functional class to match the real-world crash data. This effort was completed by adjusting the severity index modification factor. Once the calibration was complete, the new severity index was recorded, and the new data file was used in the detailed simulation matrix by RSAP.

Finally, crash costs for each scenario were used to develop a linear relationship between crash cost and traffic volume. It was assumed that a traffic volume of 0 vpd would cost $0 per year. Therefore, only the slope of the linear equation was given. The slopes for each scenario were inserted into the updated version of the *Benefit-Cost Analysis for Foreslopes Program*

(BCAFP), which conducts a benefit-cost analysis using user-supplied data for installation costs. This program was originally developed in Phase I of this study.

4 RSAP MODIFICATION

4.1 Discrepancy in RSAP

The original analyses concluded that nearly every scenario required treatment of some form, regardless of the traffic volume, lateral offset, or any other geometric or traffic characteristic. This finding was contrary to logic, which holds that as traffic volume tends toward 0, the crash costs would also begin to approach zero, especially for scenarios with lower risk, such as for large lateral offsets to hazards or small hazards. After verifying that all roadway parameters were correctly entered through the RSAP user interface, a deeper investigation was carried out.

The user interface was added to RSAP after the initial program was released. This interface conveniently creates the data files needed to run the RSAP executable program. The first step in the evaluation of RSAP involved bypassing the interface. This process included a detailed, line-by-line, inspection of the data files produced by the user interface. This inspection revealed that the functional class codes were incorrect, and highway functional classes of two-way rural local road were errantly coded with the speed and angle distribution from freeways. The much higher velocities associated with freeway crashes produced excessive crash severity predictions by RSAP.

4.2 Required Changes to RSAP

The original analyses used a freeway classification to model rural local highways due to a newly-discovered error in the computer code of the RSAP user interface [4]. This user interface conveniently generates all of the data files that are necessary to run RSAP. One of these files is called “road.dat,” which contains parameters to model the roadway, such as functional class, number of lanes, lane width, speed limit, segment length, and curve and grade information. The

functional class was identified by a two-digit number, which was used by the computer program to determine the distributions of speed and angle of vehicle encroachments. The speed and angle distributions for the freeway and rural local highway classifications are given in Table 4.

The values in Table 4 represented probabilities of a crash involving a vehicle encroachment at the given speed and angle combination. For example, for a freeway, the probability was 0.0169 at 71.5 mph (115 km/h) and 32.5 degrees. In contrast, the probability was only 0.0035 for a rural local highway. The difference between these two probabilities is an order of magnitude. The original analyses errantly included the higher speed distributions from the freeway classification to model rural local highways, which, from Table 4, should be significantly lower.

This problem can only be corrected by manually adjusting the functional class code in the "road.dat" file. For completeness, the old codes that were generated by the user interface are given in Table 5, column 2 for five common functional class/land usage combinations. The new or correct codes are given in column 3. It is recommended that for any future RSAP projects using version 2003.04.01 (or any version that may utilize the user interface), the functional class codes should be checked and adjusted according to the information presented in Table 5.

Table 4. Speed-Angle Distributions Used by RSAP – (a) Freeway and (b) Rural Local

	Freeway		Speed (km/h)						
			8	24	40	56	72	88	115
(a)	Angle (Degrees)	2.5	0.0002	0.0049	0.0151	0.0215	0.0205	0.0152	0.02
		7.5	0.0005	0.0119	0.0364	0.0519	0.0494	0.0367	0.0484
		12.5	0.0005	0.0118	0.0359	0.0513	0.0488	0.0362	0.0478
		17.5	0.0003	0.0088	0.0268	0.0382	0.0364	0.027	0.0356
		22.5	0.0002	0.0057	0.0174	0.0248	0.0236	0.0176	0.0231
		27.5	0.0001	0.0034	0.0104	0.0149	0.0142	0.0105	0.0139
		32.5	0.0002	0.0042	0.0127	0.0181	0.0173	0.0128	0.0169

	Rural Local		Speed (km/h)						
			8	24	40	56	72	88	115
(b)	Angle (Degrees)	2.5	0.007	0.0364	0.0446	0.0315	0.0169	0.0077	0.005
		7.5	0.0109	0.0568	0.0696	0.0493	0.0265	0.0121	0.0078
		12.5	0.0094	0.049	0.0601	0.0425	0.0228	0.0104	0.0067
		17.5	0.0069	0.036	0.0441	0.0312	0.0168	0.0077	0.0049
		22.5	0.0047	0.0245	0.03	0.0212	0.0114	0.0052	0.0034
		27.5	0.003	0.0159	0.0195	0.0138	0.0074	0.0034	0.0022
		32.5	0.0049	0.0253	0.031	0.0219	0.0118	0.0054	0.0035

Table 5. Functional Class Codes for "road.dat"

Functional Class	Old Code	New Code
Freeway	22	21
Urban Arterial	25	12
Urban Local	24	15
Rural Arterial	22	22
Rural Local	21	25

5 ESTIMATING SLOPE MILEAGE

5.1 Slope-Height Distribution

Using 150 randomly selected, 1-mile (1.6-km) segments, the mileage of each slope and height combination was estimated in the Phase I study. This mileage distribution was unchanged for the Phase II effort. However, it was assumed that this mileage distribution could be applied to each functional class. Based on the results obtained using Global Mapper, the mileage distribution for each slope and height combination was determined and is shown in Table 6.

Table 6. Estimated Mileage Distribution for Each Slope-Height Combination

Slope	Height (ft)		
	1	7	13
1V:2H	1.3%	1.0%	2.3%
1V:3H	1.9%	4.4%	1.7%
1V:4H	24.3%	10.2%	
1V:6H	54.8%		

In 2005, the mileage of specific highway classes was recorded in the HSIS [5]. This data is given in Table 7. Some of those categories were combined to form the definitions of the functional classes used in this study. A freeway was made up of the following categories: Urban freeways; Urban freeways < 4 Lanes (i.e., 3 lanes total, 2 in one direction and 1 in the other direction), Rural freeways, and Rural freeways < 4 Lanes. Divided rural arterials included the category Rural multilane divided non-freeways. Undivided rural arterials were made up of the following categories: Rural multilane undivided non-freeways and Rural two-lane highways (minus the estimated portion for rural local highways). Divided urban arterials were made up of the category Urban multilane divided non-freeways. Undivided urban arterials were made up of the following categories: Urban multilane divided non-freeways and Urban two-lane highways (minus the estimated portion for urban local highways).

Table 7. HSIS Roadway Mileage by Roadway Category (2005 data) [5].

Roadway Category	Mileage
Urban freeways	***1,262.87***
Urban freeways < 4 Lanes	***24.03***
Urban multilane divided non-freeways	***445.06***
Urban multilane undivided non-freeways	***947.76***
Urban 2-In highways	***2,259.90***
Rural freeways	***722.54***
Rural freeways < 4 Ins	***0.43***
Rural multilane divided non-freeways	***944.92***
Rural multilane undivided non-freeways	***137.91***
Rural 2-In highways	***12,775.60***
Other	***1.28***
Total	***19,522.30***

Local highway mileage was estimated by using the crash data from the state of Ohio between 2000 and 2006. The overall mileage estimate in Table 7 does not specifically include local highways. Instead, the mileage of local highways is contained in the "2 Ln highways" categories for both rural and urban roads. Crash data included numerical codes for the functional class, and therefore, at each crash location, the functional class could be identified. On rural two-lane highways, 70.2 percent of the locations were found on local highways, according to Ohio's local highway description. Therefore, the estimated mileage for rural local roads was determined by multiplying 12,775.6 by 0.702, arriving at 8,972.01 miles (14,439.1 km). The same procedure was used to estimate the mileage for urban local highways. The mileage used for each functional class is given in Table 8. These values were used in combination with Table 6 to approximate the number of (A+K) crashes per mile for calibration in RSAP.

Table 8. Mileage Used for each Functional Class

Total Length (miles)	
Freeway	2009.87
Divided Rural Arterial	944.92
Undivided Rural Arterial	3941.5
Divided Urban Arterial	445.06
Undivided Urban Arterial	2642.69
Rural Local Highway	8972.01
Urban Local Highway	564.98

5.2 Protected versus Unprotected Slopes

Longitudinal barriers are often placed alongside the highway to shield the motorist from various hazards, including steep slopes. When a guardrail is placed in front of a slope, it becomes nearly impossible for motorists to encounter the slope without first being involved in a fixed-object crash involving the guardrail. Recall that the crash data utilized in this study was limited to single-vehicle, ran-off-road crashes that did not involve a fixed object impact. Hence, traffic is not really exposed to the risk of encountering a slope shielded by a guardrail.

The RDG recommends using a longitudinal barrier at locations with slopes steeper than 1V:3H. Embankment height was used as an additional recommending parameter. Slopes steeper than 1V:3H may not warrant use of a longitudinal barrier if their embankment height is reduced far enough. Based on the comparative risk warrants for embankments published in the RDG and shown in Figure 3, no warrants are made for the use of barriers at a height of approximately 2 ft (0.61 m) [1].

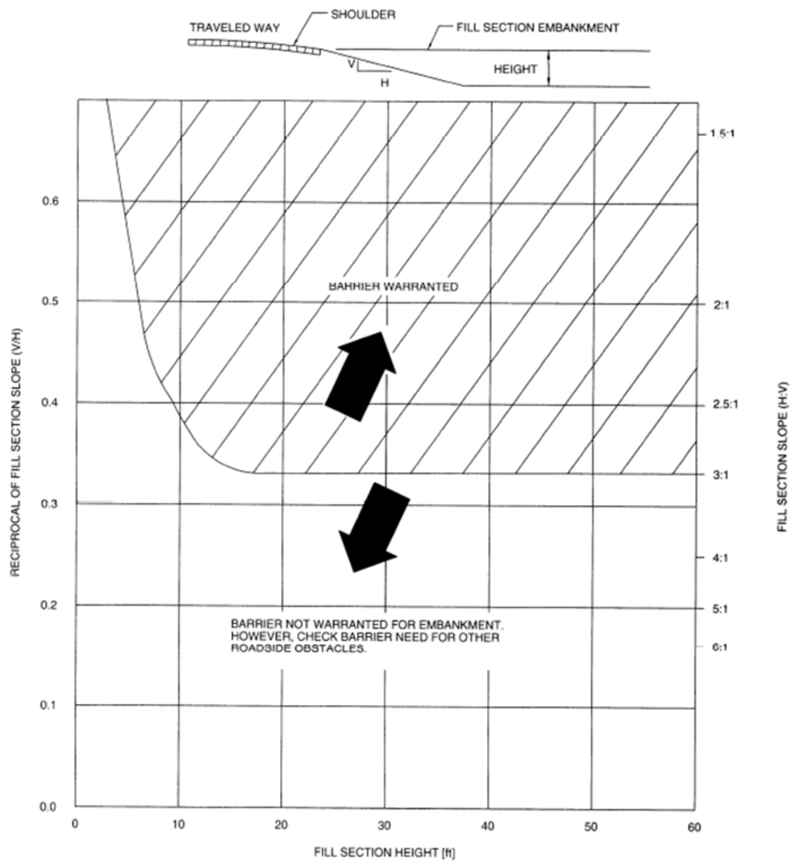


Figure 3. Comparative Risk Warrants for Embankments [1].

To estimate the mileage of unprotected slopes, the random 1-mile (1.6-km) segments were used once more. Since slopes flatter than 1V:3H are not given barrier warrants, it was assumed that the unprotected mileage of these slopes was the same as the mileage determined by combining Tables 6 and 8. Local highway mileage was estimated by using the crash data from the state of Ohio between 2000 and 2006. The overall mileage estimate in Table 7 does not specifically include local highways. Instead, the mileage of local highways is contained in the "2-Ln highways" categories for both rural and urban roads. Crash data included numerical codes for the functional class, and therefore, at each crash location, the functional class could be identified. On rural, two-lane highways, 70.2 percent of the locations were found on local highways. Therefore, the estimated mileage for rural local roads was determined by multiplying 12,775.6 by 0.702, arriving at 8,972.01 miles (14,439.1 km). The same procedure was used to

estimate the mileage for urban local highways. The mileage used for each functional class is given in Table 8. These values were used in combination with Table 6 to approximate the number of (A+K) crashes per mile for calibration in RSAP. This assumption was made on the premise that longitudinal barriers found on these slopes were not placed there because of the slope. Under this assumption, there would be no discernible pattern in which the length of unprotected slopes could be predicted. In addition, the length of slopes far exceeds the length of any fixed object that would be protected. As a result, it was determined that the miles of protected slopes with steepness less than 1V:3H were negligible.

Steep slopes do have a correlation between slope steepness, slope height, and the presence of longitudinal barriers. This correlation was shown by selecting locations within those 150 segments where the slope was steeper than 1V:3.5H, finding that location on Google Maps, and visually inspecting the location to determine if there was a barrier alongside the highway. Only single locations were used as opposed to full segment lengths. The height of the embankment was measured using Global Mapper at each location. Then, the slope was categorized as short (less than 4 ft or 1.2 m), medium (between 4 and 10 ft or 1.2 and 3.0 m), or tall (greater than 10 ft or 3.0 m). Each category was studied to determine what the ratio of unprotected locations to the total number of locations was for slopes steeper than 1V:2.5H (representing 1V:2H slopes) and for slopes between 1V:2.5H and 1V:3.5H (representing 1V:3H slopes). This ratio was applied to the estimated mileage of each slope-height combination for each functional class to determine the miles of unprotected slope for use in calibrating RSAP. The percentages of unprotected slopes for the 1V:2H and 1V:3H slopes are given in Table 9. In general, about one-third of the slopes with 1V:2H foreslopes were unprotected, while about two-thirds of the slopes on 1V:3H slopes were unprotected.

Table 9. Percentage of Unprotected Slopes.

Slope	Unprotected Slopes (%)		
	Short	Medium	Tall
1V:2H	71.43	37.50	26.76
1V:3H	66.67	64.10	64.62

5.3 Parametric Study on 1-ft Tall Slopes

The trend illustrated by Figure 3 would suggest that all slopes at 1 ft (0.3 m) high are unprotected. To determine if this parameter would significantly influence the crash cost on these slopes, two scenarios were simulated. One scenario assumed that all slopes were unprotected. The other assumed that 85 percent of the slopes were unprotected. These values were used to adjust the number of (A+K) crashes per mile and then calibrate RSAP to match the crash frequency. RSAP was then run on a rural local highway with a foreslope of 1V:2H. The crash costs for 100 percent and 85 percent unprotected slopes were $92,213.14 and $78,742.58, respectively, resulting in a 14.6 percent difference. This finding was determined to be very significant (nearly a 1-to-1 ratio in percent differences). As a result, the percentage of unprotected slopes at 1 ft (0.3 m) high had to be determined from satellite images.

6 GENERIC FUNCTIONAL CLASSIFICATION

In the preceding chapters, traditional functional class nomenclature has been used to describe the crash data in Ohio and the RSAP speed and angle distributions. In this chapter, a new, objective approach to classifying highways is presented, and all functional class representations for the remainder of the document are based on this chapter.

6.1 Background

Standard functional class descriptions, such as “Freeway” or “Rural Arterial Highway,” can vary from state to state, and often the classifications in a given region determine the level of funding available to that region for maintenance. Owing to inconsistencies and biases in the classification process, a new approach was developed specifically for conducting benefit-cost analyses on roadside slopes pursuant to the research contained herein. Generic, numbered classes were developed to divorce conventional descriptions from those used in this study. There were a total of 7 functional classes, and they were labeled as FC1 through FC7, where “FC” stands for functional class. Each class has its own range of parameters for average daily traffic (ADT), posted speed limit (PSL), lane width, shoulder width, percent grade, and horizontal curvature.

6.2 Parameter Determination

Provided the parameters listed above are known, the functional classification can be determined by the process of elimination, starting with ADT and progressing through the listed parameters, which are shown in Table 10 with their low and high values. For example, FC3 had an ADT range of 10,000 to 1,000,000 vpd for this study. In reality, the traffic volume would never approach the upper limit, but it was set this way to allow for exceptionally high volumes, such as in densely traveled areas of Milwaukee. Crash data from the state of Ohio, described in the following chapter, included descriptions of ADT, PSL, lane width, and shoulder width at each location. The minimum and maximum of each of these parameters was used to select the

ranges shown in Table 10. Percent grade and horizontal curvature were taken from NCHRP Report No. 638 [6]. For each parameter, future studies may be required to precisely determine these ranges.

Table 10. Definitions of Parameters used to Classify Highways

Functional Class Category	Median*	ADT, vpd*		PSL, mph**		Lane Width, ft**		Shoulder Width, ft**		% Grade***		Curvature, Deg***	
		Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
FC1	Undivided	0†	5,000	0†	55	8	18	1	10	0	10	0	8
FC2	Undivided	1,000	30,000	35	65	9	24	0	12	0	6	0	6
FC3	Both	10,000	1,000,000†	40	100†	12	16	1.5	50†	0	5	0	3
FC4	Divided	1,000	30,000	50	65	11	12	0	30†	0	6	0	6
FC5	Undivided	5,000	30,000	25	50	9	19	0	10	0	9	0	10
FC6	Undivided	0†	5,000	0†	55	9	18	2	5	0	12	0	37.5
FC7	Divided	5,000	30,000	45	55	12	14	6	16	0	9	0	10

*Taken from RSAP simulations and crash data in Ohio from 2000 to 2006.
**Taken from crash data in Ohio from 2000 to 2006.
***Taken from NCHRP Report No. 638 [6].
† Represent extreme high or low values to capture as many scenarios as possible.

6.3 Classification Process

The process of elimination begins with the most pertinent parameter to characterize roadways from a safety performance perspective and then descends in order of relative importance. These parameters must have an effect on the safety performance (e.g., crash frequency or severity is influenced) in order to be included in the elimination process. It is recommended that these parameters include, in order, (1) traffic volume, (2) posted speed limit, (3) lane width, (4) shoulder width, (5) percent grade, and (6) horizontal curvature. If there is a median, then the final classification will incorporate this characteristic, if needed. The process is described step by step below.

1. If the highway has a median, it is considered "Divided," and FC1, FC2, FC5 and FC6 should be eliminated. Otherwise, it is considered "Undivided," and FC4 and FC7 should be eliminated. It should be noted that FC3 is not eliminated at this

step for either condition, because in RSAP, the correlating speed and angle distribution is the same for both cases.

2. Eliminate functional classes where the known ADT is outside the ranges for each functional class. These eliminated functional classes will no longer be considered, even if they could apply to other classification parameters.
3. Repeat step 1 for PSL.
4. Repeat step 1 for lane width.
5. Repeat step 1 for shoulder width.
6. Repeat step 1 for percent grade.
7. Repeat step 1 for horizontal curvature.

Notes:

1. Upper bounds for ADT and PSL of FC3 were not set, allowing for ultra-high volumes and speeds.
2. Lower bounds for ADT and PSL of FC1 and FC6 were not set, allowing for ultra-low volumes and speeds.
3. If more than one functional class remains after the 6 elimination steps, the class with the lowest number (representing the most-severe remaining functional class and, by extension, the most conservative selection) is chosen.
4. In some cases, the narrow window of availability for a classification parameter may eliminate all remaining functional classes. If this happens, that classification parameter is neglected, and the pool of remaining functional classes returns to what it was for the previous classification parameter.

6.4 Example 1

An example of this process is given for the following known parameters:

- ADT = 25,000 vpd
- PSL = 65 mph
- Lane Width = 12 ft
- Shoulder Width = 8 ft
- Percent Grade = 0 percent
- Horizontal Curvature = 0 degrees
- Divided

Each step is graphically depicted in Figure 4. In step 1, FC1, FC2, FC5, and FC6 were eliminated because the highway is "Divided." In step 2, based on ADT, no further eliminations were made. In step 3, based on PSL, FC7 was eliminated and was no longer considered. Steps 4 through 7 did not eliminate any other functional classes. The remaining functional classes included FC3 and FC4. Pursuant to Note 3, the functional class with the smallest number was chosen. Therefore, in this example, the highway classification was "FC3."

Parameter	FC1	FC2	FC3	FC4	FC5	FC6	FC7
Median (Divided)	X	X			X	X	
ADT (25,000 vpd)	X	X			X	X	
PSL (65 mph)	X	X			X	X	X
Lane Width (12 ft)	X	X			X	X	X
Shoulder Width (8 ft)	X	X			X	X	X
% Grade 0%	X	X			X	X	X
Curvature (0 Degrees)	X	X			X	X	X
Classification	X	X	FC3	X	X	X	X

Figure 4. Example (1) of Elimination Process for Highway Classification

6.5 Example 2

An example of this process is given for the following known parameters:

- ADT = 12,000 vpd
- PSL = 50 mph
- Lane Width = 11 ft
- Shoulder Width = 6 ft
- Percent Grade = 4 percent
- Horizontal Curvature = 0 degrees
- Undivided

Each step is graphically depicted in Figure 5. In step 1, FC4 and FC7 were eliminated because the highway was “Undivided.” In step 2, based on ADT, FC1 and FC6 were eliminated

and were not considered for subsequent classification parameters. In steps 3 and 4, no further eliminations were made. In step 5, FC3 was eliminated due to shoulder width constraints. Steps 6 and 7 did not eliminate any other functional classes. The remaining functional classes included FC2 and FC5. Pursuant to Note 3, the functional class with the smallest number was chosen, leaving FC2.

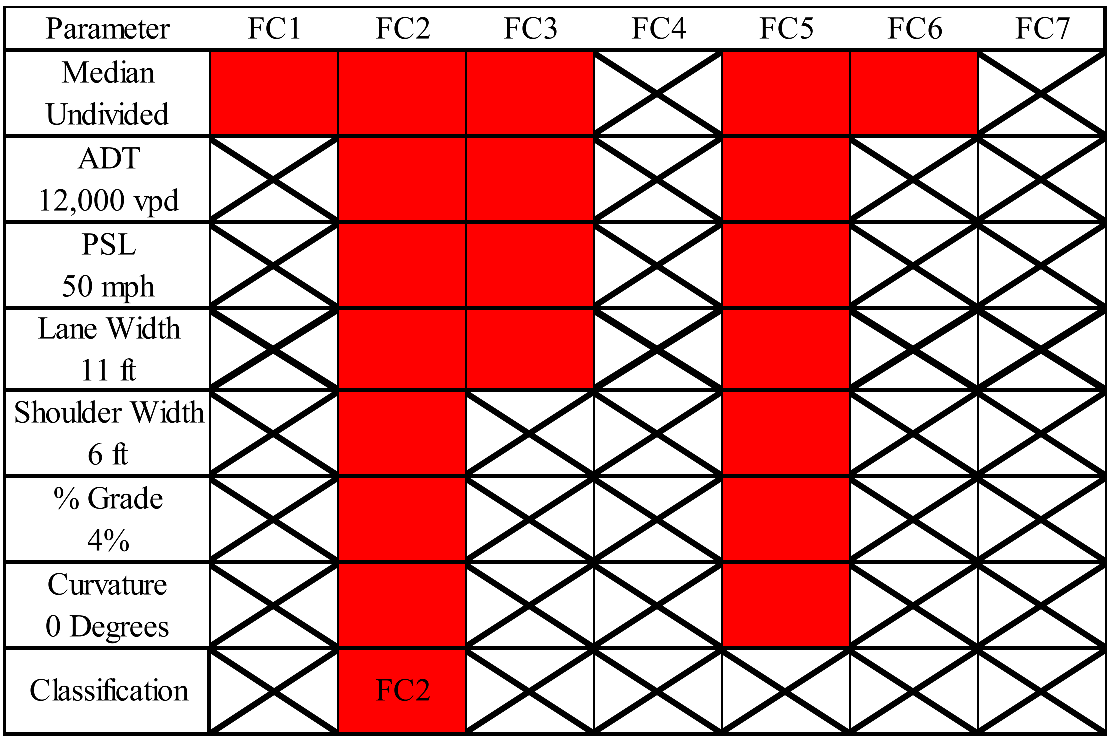


Figure 5. Example (2) of Elimination Process for Highway Classification

6.6 Example 3

An example of this process is given for the following known parameters:

- ADT = 45,000 vpd
- PSL = 70 mph
- Lane Width = 12 ft
- Shoulder Width = 10 ft
- Percent Grade = 0 percent

- Horizontal Curvature = 4 degrees
- Undivided

Each step is graphically depicted in Figure 6. In step 1, FC4 and FC7 were eliminated because the highway was "Undivided." In step 2, based on ADT, FC1, FC2, FC5, and FC6 were eliminated and were not considered for subsequent classification parameters. Steps 2 through 6 did not eliminate any other functional classes. In step 7, the given horizontal curvature was outside the range for the only remaining functional class. Therefore, since all classes were eliminated, and pursuant to Note 4, the horizontal curvature classification parameter was neglected, and the pool of available classes was returned to what it was in step 6. As a result, the corresponding functional classification was "FC3."

Parameter	FC1	FC2	FC3	FC4	FC5	FC6	FC7
Median Undivided							
ADT 45,000 vpd							
PSL 70 mph							
Lane Width 12 ft							
Shoulder Width 10 ft							
% Grade 0%							
Curvature 4 Degrees							
Classification			FC3				

Figure 6. Example (3) of Elimination Process for Highway Classification

7 CRASH DATA FOR RSAP

7.1 Data Description

7.1.1 Data Source

3 data from the state of Ohio was taken from the years 2000 to 2006. The crash report for each crash was tabulated by the state. In that table, the severity of the crash was given on a scale of 1 to 5, with 1 being fatal and 5 being property damage only [5]. This scale mimics the KABCO scale used in RSAP.

Only crashes resulting in fatalities or severe crashes were considered in the calibration of severity indices. These crash types were valued at $3,292,057 and $227,911 for fatal crashes and severe injury crashes, respectively. The combined cost of one crash of each type would be $3,519,968. As a result, fatal and severe-injury crashes control the severity of an object. For example, 1 fatal crash is approximately equivalent to 1,300 PDO crashes. Therefore, only (K) and (A) crashes were used. From the seven years of data, a total of 816 crashes were analyzed.

7.1.2 Data Collection

At each of the 816 crash locations, measurements of the slope steepness and embankment height were recorded. With these measurements, each crash could be categorized according to its height and slope. A total of nine possible categories exist for this research and are summarized in Table 11. In addition, each crash was classified according to its functional class. Four main categories emerged from the data: (1) Freeways, (2) Rural Arterials, (3) Urban Arterials, and (4) Local Highways. Within each functional class, the number of (A+K) crashes was determined for each of the nine slope-height combinations.

Table 11. Slope-Height Combinations

Slope \ Height, ft (m)	h < 4 (1.2)	4 (1.2) ≤ h < 10 (3.0)	h ≥ 10 (3.0)
1V:2H	I	II	III
1V:3H	IV	V	VI
1V:4H	VII	VIII	
1V:6H	IX		

In the present discussion, these functional classes were ascertained from the crash data, as coded by the law enforcement officer who collected the data. The highways included in the database were classified by the state of Ohio. Freeway classifications are typically high-volume (up to 100,000 vpd or more) divided highways with at least two lanes of traffic in each direction. Rural Arterials can be divided or undivided and have lower volumes (up to 30,000 vpd) than freeways. Divided highways have at least two lanes in each direction, but undivided highways can have only one in each direction.

Rural is a description of the land usage, such that the highway must be located outside of an incorporated city or town. Urban arterials are identical to rural counterparts, except for the land usage, urban, where the highway is located within city or town limits.

Finally, local highways by definition act as capillaries to the larger functional classes, providing accessibility in exchange for mobility [7]. They are typically low-volume roads (around 5,000 vpd or less) and primarily serve residential areas or very rural areas, such as unpaved roads servicing farms and ranches.

One highway not explicitly modeled in the present work is a collector, which acts as a transition from large functional classes, like freeways, to a small functional class, like local highways. They can be fairly large or small in volume, and their classification for consideration in the present work should be determined by this volume (that is, should it be considered an arterial or a local highway?). All traffic volumes used in this paragraph represent typical values,

not comprehensive ranges. Consultation with the unit of government responsible for roadway classification and with the AASHTO publication *A Policy on Geometric Design of Highways and Streets* [8] is recommended.

The Ohio classifications were used to create generic functional classes, which were used to calibrate RSAP and provide a means to objectively determine the functional class. The correlation between Ohio's classifications and those used herein is shown in Table 12. The functional-class codes were created to reflect the rank of the highway in terms of severity. For example, the most severe case was a rural local highway, which had 0.3358 A+K crashes per mile per average traffic volume per year for a 55 mph (88.5 km/h) PSL. Therefore, it was ranked number 1, and coded as FC1. As mentioned previously, only four distinct functional classes could be identified in the data, mainly due to insufficient quantities of data for some of them, such as urban local highways. Therefore, the seven categories used in RSAP were described by four categories from the crash data. Those four corresponding categories were (1) FC3, (2) FC2/FC4, (3) FC5/FC7, and (4) FC1/FC6. For future reference, the "/" indicates that the two categories were combined to calibrate the severity indexes in RSAP. Then, unique speed and angle distributions for each of the seven classes were used to distinguish between them.

Table 12. Functional Classification Nomenclature and Ranking

Ohio Classification	#A+K/mile/avg ADT/55 mph/year	New Code
Freeway	0.0706	FC3
Divided Rural Arterial	0.0159	FC4
Divided Urban Arterial	0.0071	FC7
Undivided Rural Arterial	0.0706	FC2
Undivided Urban Arterial	0.0152	FC5
Rural Local	0.3358	FC1
Urban Local	0.0073	FC6

For each slope-height combination and each functional class, the number of (A+K) crashes was determined, as presented in Table 13. With 412 total crashes, local highways had 50.5 percent of the total number of crashes. Recall from Table 8 that local highways made up a total of approximately 49 percent of the Ohio highway network, in terms of length. Therefore, from the data, there is a close connection between the number of (A+K) crashes and the total mileage for each functional class. However, mileage alone did not control the frequency of crashes. This was also controlled by the traffic volume. Freeways had a total of 158 crashes (19 percent) but made up just 10 percent of the total mileage in the state. As a result, the increased speeds and traffic volumes on these highways also increased the effective number of (A+K) crashes.

7.2 RSAP Calibration

In order for the results from Table 13 to be of use in RSAP, the data had to be converted into units of (A+K) crashes per mile per 10,000 vpd per 55-mph (88.5-km/h) posted speed limit. This conversion would allow for RSAP to simulate the number of (A+K) crashes for a given scenario, where the segment was 1 mile (1.6 km) long and had 10,000 vpd with a speed limit of 55 mph (88.5-km/h). As a result, the crash data had to be normalized to fit these three parameters.

7.2.1 Normalizing Crash Data

The nature of RSAP requires that the user specify values for length, traffic volume, and posted speed limit. In order to keep these values constant while determining the new severity indices, the crash data was normalized by set values. Additionally, all predicted outcomes are in an annual format. As a result, the total number of crashes was divided by 7 to provide an average number of (A+K) crashes per year.

The mileage calculated in Chapter 4 for each slope-height combination within each functional class was used to determine the number of (A+K) crashes per mile. Most roadside slopes will not have the same steepness for an entire mile. It should be noted that this value was chosen for the purpose of calibration in RSAP and is not to be confused with any specific design.

Table 13. Total Number of (A+K) Crashes per Functional Class (2000 to 2006)

FC3				
Slope	Fill Height (ft)			Total
	1	7	13	
1V:2H	4	2	15	21
1V:3H	0	5	5	10
1V:4H	3	42		45
1V:6H	82			82
Total				158

FC2 and FC4				
Slope	Fill Height (ft)			Total
	1	7	13	
1V:2H	1	7	4	12
1V:3H	10	12	9	31
1V:4H	28	24		52
1V:6H	99			99
Total				194

FC5 and FC7				
Slope	Fill Height (ft)			Total
	1	7	13	
1V:2H	1	2	3	6
1V:3H	2	1	0	3
1V:4H	5	4		9
1V:6H	34			34
Total				52

FC1 and FC6				
Slope	Fill Height (ft)			Total
	1	7	13	
1V:2H	13	24	11	48
1V:3H	20	17	4	41
1V:4H	40	23		63
1V:6H	260			260
Total				412

Similarly, traffic volume must be controlled in the user interface. Therefore, the average traffic volumes from the crash data for each individual functional class were used. The crash data came complete with an estimated ADT for each location based on traffic counters either on that highway or on highways of similar type and size in similar areas [5]. Each functional class had widely varying volumes. As a result, they were treated separately. Eight bins were created based on the maximum traffic volume from the crash data. Then, the number of crashes for the nine slope-height categories was sorted according to these eight volume bins. Finally, the number of crashes for each slope-height combination in a given bin was multiplied by the average ADT and

divided by the median value of that bin. The ranges of ADT and the median values used for each functional class are shown in Table 14.

Table 14. Ranges and Averages of ADT for Each Functional Class

Functional Class	Minimum ADT (vpd)	Maximum ADT (vpd)	Average ADT (vpd)
FC1	110	12,520	2,196
FC2	530	21,220	5,211
FC3	10,070	167,600	50,007
FC4	5,900	25,620	14,250
FC5	2,080	38,380	10,513
FC6	1,600	7,930	5,471
FC7	8,780	32,912	16,203

The average ADT for FC3, FC2/FC4/FC5/FC7, and FC1/FC6 were 50,000, 10,000, and 5,000, respectively. One of the ADT median values of the bins was 30,000. Also, on 1V:4H slopes with heights greater than or equal to 7 ft (2.1 m), the number of (A+K) crashes was 22. To normalize this value about the average ADT (50,000 vpd), the number of (A+K) crashes was multiplied by (50,000/30,000) to arrive at 36.7 crashes per 50,000 vpd. For each slope-height combination, the number of normalized crashes in each traffic volume bin was averaged to give an overall representation of the crash frequency independent of ADT.

Finally, the posted speed limit played a minor role in the severity of the crash in the database. Higher posted speed limits are related to higher severities. The speed limit was set to a constant 55 mph (88.5 km/h) in RSAP, but the posted speed limits at the crash locations were not always this standard value. Speeds ranged from as low as 25 mph (40.2 km/h) on FC1/FC6 highways to 65 mph (104.6 km/h) on FC3 highways. Locations with posted speed limits higher than 55 mph (88.5 km/h) should have more (A+K) crashes. As a result, a scaling factor was determined for each functional class based on the posted speed limits in the crash database. Nine

bins were created to represent the full range of speeds in 5-mph (8.0-km/h) increments. The total number of crashes in each bin was multiplied by the posted speed limit of that bin and then divided by 55. This process gave an adjusted number of crashes for each of the speed bins. Then, the actual number of crashes for that functional class was divided by the adjusted sum of crashes from the speed normalization. The result was a factor that was applied to the number of (A+K) crashes. A summary of those factors is given in Table 15.

Table 15. Posted Speed Limit Normalization

Functional Class	Average PSL (mph)	PSL Adjustment Ratio
FC1	53.379	0.971
FC2	54.024	0.982
FC3	63.323	1.151
FC4	61.000	1.109
FC5	47.159	0.857
FC6	49.545	0.901
FC7	50.625	0.920

7.2.2 Example Calculation

The steps to calculate each of these values is demonstrated below with an example. The FC1 highway with a fill height of 7 ft (2.1 m) and a slope of 1V:2H is used. First, the bins for this functional class, based on the crash data, are shown in Table 16. The ranges were determined by splitting the difference in the "ADT Medians." For example, the first range is 0 to 988 (row 2 in Table 16), which is the average of 100 and 1,875 (column 1, rows 2 and 3 in Table 16). Second, the number of (A+K) crashes for a rural land usage (in this case, a rural local road according to the state of Ohio [5]) was 24 for a 7-ft (2.1-m) 1V:2H slope. These crashes were then sorted into the proper ADT bin, as shown in the column labeled "Crashes." Then, the number of crashes in each bin was normalized around the average ADT, which for FC1 was 5,000 vpd. Next, the normalized result was divided by 7 for the number of years in the crash

database, providing an annual estimate of crash frequency. Therefore, in the first bin, the normalized result was 28.571 crashes per year. Then, the average for all bins was 4.315 crashes per year.

$$4\ crashes \times \frac{5{,}000\ vpd}{100\ vpd} \times \frac{1}{7\ years} = 28.571\ crashes/year$$

Table 16. Bins for ADT for FC1.

ADT Medians	ADT Bin Ranges		Crashes	Normalized
100	0	988	4	28.571
1,875	988	2,763	12	4.571
3,650	2,763	4,538	5	0.978
5,425	4,538	6,313	3	0.395
7,200	6,313	8,088	0	0
8,975	8,088	9,863	0	0
10,750	9,863	11,638	0	0
12,525	11,638	13,413	0	0

Next, the posted speed limit accompanying the crash database was used to adjust the severity of the functional class. In other words, if the average posted speed limit was lower than 55 mph (88.5 km/h), then the severity would be lower than the simulated severity when the posted speed limit in RSAP was set at a constant 55 mph (88.5 km/h). PSLs were reported in increments for 5 mph (8.0 km/h), starting at 25 mph (40.2 km/h) and increasing to 65 mph (104.6 km/h). The number of crashes for each increment was multiplied by the PSL for that increment. These products were then summed for all PSL increments. Finally, the summed products were divided by the total number of crashes for that functional class to arrive at a weighted average, which would tend to favor the most populated PSL increment in the functional class database. This average was then divided by 55 to normalize the severity around the speed limit used in RSAP. These steps are summarized in Table 17.

Table 17. Calculation of PSL Adjustment Factor for FC1

PSL (mph)	No. of Crashes	(PSL*Crashes)
25	1	25
30	0	0
35	14	490
40	6	240
45	22	990
50	6	300
55	352	19,360
60	0	0
65	0	0
Total	401	21,405
Average (mph)	53.379	
PSL Factor	0.971	

Finally, the average number of crashes per year for each slope-height combination was multiplied by this PSL adjustment factor. In the example presented herein, the average number of crashes per year for a 7-ft (2.1-m) 1V:2H slope was 4.315 crashes per year. Multiplying by the PSL adjustment factor, the new expected crash frequency was 4.187 crashes per year. Now, this crash frequency was adjusted for the exposure mileage of that slope-height combination. The total mileage for this functional class in the state of Ohio was 8,972 miles (14,439 km). Only about 1.0 percent (Table 6) of this was described as a 7-ft (2.1-m) 1V:2H slope, and only 37.5 percent (Table 9) was unprotected slope. Therefore, the total mileage for a 7-ft (2.1-m) 1V:2H unprotected slope was 33.1 miles (53.3 km). To determine the expected frequency of (A+K) crashes in the calibration of RSAP, 4.187 crashes per year was divided by 33.1, resulting in 0.1267 crashes/5,000 vpd/mile/year, as shown in Table 18.

Table 18. Number of (A+K) / mile / Average ADT / 55 mph (88.5 km/h) / year

FC3			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.0091	0.0059	0.0365
1V:3H	0.0000	0.0040	0.0063
1V:4H	0.0002	0.0067	
1V:6H	0.0020		

FC2 and FC4			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.0012	0.0245	0.0180
1V:3H	0.0101	0.0068	0.0180
1V:4H	0.0020	0.0035	
1V:6H	0.0025		

FC5 and FC7			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.0031	0.0043	0.0117
1V:3H	0.0013	0.0003	0.0000
1V:4H	0.0003	0.0007	
1V:6H	0.0007		

FC1 and FC6			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.0402	0.1267	0.0535
1V:3H	0.0224	0.0127	0.0645
1V:4H	0.0037	0.0066	
1V:6H	0.0128		

7.2.3 Discussion of Results

Once all the slope-height combinations for each functional class were normalized, they were summarized into four categories. Divided and undivided arterials were combined into one category, primarily because the data to support divided arterials was not extensive. This was incorporated in the headings in Table 18, where "FC2 and FC4" were one combined category. Similarly, urban local roads (FC6) did not substantiate themselves through a large sample population. This simplification may lead to uncertainties in divided arterials and urban local highways because their severity indices will be largely influenced by undivided arterials and rural local highways, respectively.

One assumption that was made in Phase I pertained to an increased sample size. The trend of fewer crashes on 7-ft (2.1-m) slopes than on 1-ft (0.3-m) slopes would be corrected. In that phase, it was expected that crash frequency would increase as height increased. After analyzing crash data from 2000 to 2006, it can be seen that this expectation was not always met.

However, when investigating the overall trends, the crash frequency increased from 1 ft (0.3 m) to 13 ft (4.0 m) in all but one case (FC5/FC7, 1V:3H slopes). Additionally, the results in Table 18 indicate that FC1/FC6 highways were more prone to (A+K) crashes. At first, this finding may seem counter-intuitive because FC3 highways have greater speeds and traffic volumes. However, low-volume highways will rarely have the same level of roadway and roadside design and safety measures as typically found in high-volume highways. Also, in part due to the larger traffic volumes, FC3 highways will make use of longitudinal barriers and crash cushions in the vicinity of fixed objects, such as bridge piers. It may not be considered economically feasible in many scenarios to provide the same protection on low-volume roads.

7.2.4 Calibration

RSAP version 2003.04.01 was calibrated by modifying the "si1.dat" file, which is required to simulate foreslopes. The second column in this file represents the user modifier to the severity index slope. A value of 1.0 was the default. The severity index was adjusted as this modifier was adjusted. For example, a modifier of 0.65 represents 65 percent of the default value. As a result, the new severity index will be 65 percent of the original severity index. The modifier was adjusted by trial and error until the simulated number of (A+K) crashes closely matched the crash data shown in Table 18. For FC3, FC2/FC4, and FC5/FC7 highways, the severity was decreased, and in some cases, this decrease reached 23 percent of the default. This outcome indicates that previously estimated severity indices were significantly overestimated. However, FC1/FC6 highways, in general, were underestimated. For this functional class, the default was increased by as much as 56 percent. One possible explanation for this conflicting trend is that on high-volume roads, a significant measure of safety has been taken to prevent serious crashes and fatalities. Those safety measures, however, are not as common on low-volume highways. This result may leave the motorist exposed to severe slopes and other dangers,

thus increasing the severity of these highways relative to the other functional classes. The SI modification factors are given in Table 19, and the resulting severity indices at 55 mph (88.5 km/h) are shown in Table 20.

Table 19. SI Modification Factors

FC3			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.38	0.26	0.33
1V:3H	0.37	0.33	0.34
1V:4H	0.46	0.47	
1V:6H	0.64		

FC2 and FC4			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.4	0.55	0.48
1V:3H	0.75	0.53	0.67
1V:4H	0.66	0.64	
1V:6H	0.92		

FC5 and FC7			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	0.53	0.41	0.47
1V:3H	0.54	0.51	0.23
1V:4H	0.53	0.53	
1V:6H	0.79		

FC1 and FC6			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.11	1.28	0.82
1V:3H	1.13	0.77	1.24
1V:4H	0.88	0.88	
1V:6H	1.56		

Table 20. SI Measured at 55 mph (88.5 km/h)

FC3			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.5	1.5	2.0
1V:3H	1.2	1.4	1.5
1V:4H	1.3	1.5	
1V:6H	1.3		

FC2 and FC4			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.3	2.5	2.3
1V:3H	2.0	1.8	2.3
1V:4H	1.4	1.6	
1V:6H	1.5		

FC5 and FC7			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.5	1.6	2.0
1V:3H	1.2	1.5	0.7
1V:4H	1.0	1.1	
1V:6H	1.1		

FC1 and FC6			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	2.6	3.7	2.8
1V:3H	2.3	2.0	2.9
1V:4H	1.5	1.7	
1V:6H	2.0		

For a comparison, the default SI at 60 mph (96.6 km/h) in RSAP for guardrail is 4.93, according to the User's manual [9]. Since this parameter is linear with respect to speed and 0 for a speed of 0 mph (0 km/h), the SI at 55 mph (88.5 km/h) can be calculated as 4.52. A study was done to examine the performance of in-service longitudinal barriers in the state of Kansas [10]. In particular, a benefit-cost analysis was conducted using RSAP to provide guidance in the replacement of maintenance of these systems. One common deficiency observed in field surveys was low mounting heights. So, in RSAP, the containment index of the barriers was modified according to the system height. This then allowed vehicles to pass through the barrier more readily for lower heights, and for trucks, the propensity for rollover was increased. Although changes in severity index were not reported, the effective SI could be considered higher than the default parameter.

The SI at 55 mph (88.5 km/h) for a 7-ft (2.1-m) 1V:2H slope, regardless of functional class, would be 4.28. Even for the most severe functional class (FC1), this default value was overly conservative. The SI of each functional class may depend significantly on treatment methods used therein. Similarly, this effect may be more prevalent as the slope steepness increases. Therefore, the SIs presented in Table 20 were plotted for a graphical comparison in Figure 7. In general, the combination of FC1 and FC6 (noted as "FC1/FC6") was most severe for almost all slope-height combinations. The only exception was for 1V:2H slopes and 1-ft (0.3-m) fill heights, which may suffer from a lack of available data. FC2/FC4 followed in order of severity. Finally, FC3 and FC5/FC7 were very similar, with the exception of the 1V:3H, 13-ft (4.0-m) height, which was also a sparsely populated slope-height combination. Severity indexes were plotted against slope-height combinations of approximately descending severity. For example, the 1V:2H slopes were plotted in the order of 13, 7, and 1 ft (4.0, 2.1, and 0.3 m). By

doing so, the trend of the SI with respect to slope-height combinations for each functional class was more obvious.

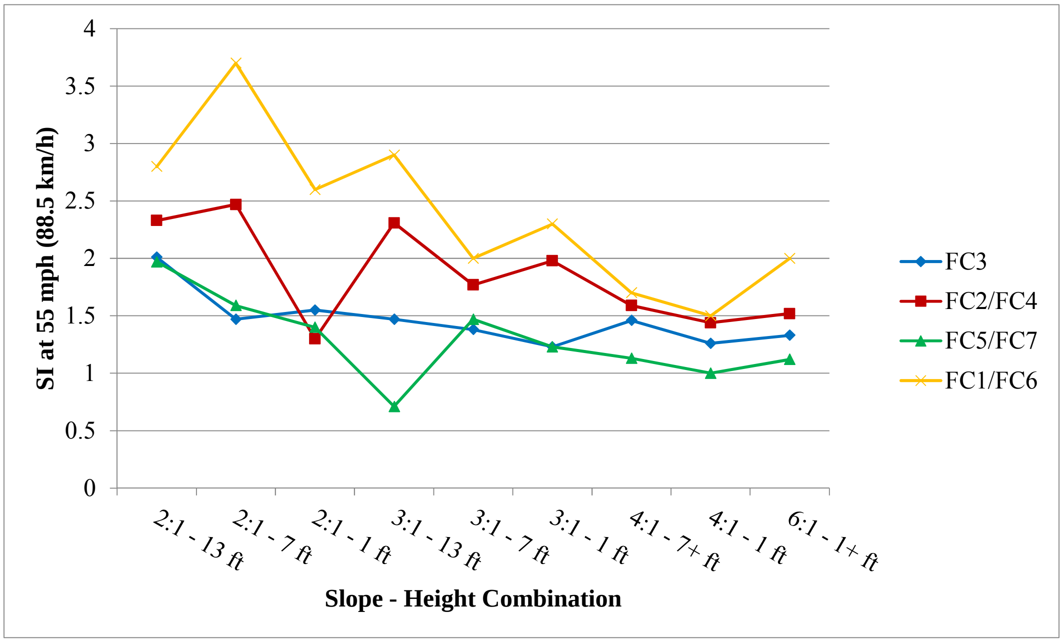


Figure 7. Comparison of SI by Functional Class, Slope, and Height

8 SEVERITY INDEX MODELS

8.1 Expected Trends

In general, the risk to the motorist increases as the roadside slope becomes steeper. Likewise, as the embankment height increases, the vehicle must traverse a larger surface area, providing more opportunities for the vehicle to become unstable. Therefore, as the slope becomes steeper or taller, the severity index should increase.

8.2 Actual Trends

According to the results shown in Table 20, the expected trend does not hold true in some cases. For example, the severity index on a FC2/FC4 highway with a 1V:2H slope at a height of 1 ft (0.3 m) was only 1.3, but the severity index was 2.0 on a 1V:3H slope. Additionally, at 7 ft (2.1 m), the severity index was reduced from 2.5 to 1.8 for the same change in slopes on FC2/FC4 highways.

For some of the scenarios, there was insufficient data to be indicative of the actual severity. The 1V:2H slope on the FC2/FC4, for example, had only one crash in 7 years on 1-ft (0.3-m) high embankments. In contrast, the 1V:6H slope had 99 crashes. Therefore, a series of equations was created to approximate the severity indices of all slopes and heights, based especially on the categories that were well populated from the crash data.

8.3 Equations for Modeling SI

Linear trend lines were created for each functional class at each embankment height that estimated the severity index as a function of the slope steepness. These trend lines were generated using Microsoft Excel and are shown below. The severity index was calculated using the slope rate as a decimal. The vertical component (or 1) was divided by the horizontal component (2, 3, 4, or 6). For example, V/H for a 1V:2H slope was 0.5. Finally, the expression would be multiplied by the PSL and divided by 55 (English units only). This would provide an

estimated severity index for any given combination of functional class, slope height, slope steepness, and posted speed limit as studied in this project.

8.3.1 FC3

1 ft: $$SI = \left[0.5829\left(\frac{V}{H}\right) + 1.1429\right] \times \frac{PSL}{55} \quad (1)$$

7 ft: $$SI = \left[0.4457\left(\frac{V}{H}\right) + 1.2857\right] \times \frac{PSL}{55} \quad (2)$$

13 ft: $$SI = \left[2.0229\left(\frac{V}{H}\right) + 0.9429\right] \times \frac{PSL}{55} \quad (3)$$

8.3.2 FC2 and FC4

1 ft: $$SI = \left[0.000\left(\frac{V}{H}\right) + 1.5500\right] \times \frac{PSL}{55} \quad (4)$$

7 ft: $$SI = \left[3.0857\left(\frac{V}{H}\right) + 0.8857\right] \times \frac{PSL}{55} \quad (5)$$

13 ft: $$SI = \left[2.6400\left(\frac{V}{H}\right) + 1.1000\right] \times \frac{PSL}{55} \quad (6)$$

8.3.3 FC5 and FC7

1 ft: $$SI = \left[1.3714\left(\frac{V}{H}\right) + 0.7714\right] \times \frac{PSL}{55} \quad (7)$$

7 ft: $$SI = \left[1.6800\left(\frac{V}{H}\right) + 0.8000\right] \times \frac{PSL}{55} \quad (8)$$

13 ft: $$SI = \left[2.6400\left(\frac{V}{H}\right) + 0.4000\right] \times \frac{PSL}{55} \quad (9)$$

8.3.4 FC1 and FC6

1 ft: $$SI = \left[2.4686\left(\frac{V}{H}\right) + 1.3286\right] \times \frac{PSL}{55} \quad (10)$$

7 ft: $$SI = \left[5.5543\left(\frac{V}{H}\right) + 0.6143\right] \times \frac{PSL}{55} \quad (11)$$

13 ft: $$SI = \left[3.0857\left(\frac{V}{H}\right) + 1.3857\right] \times \frac{PSL}{55} \quad (12)$$

8.4 Model Verification with RSAP

Using Equations 1 through 12, new severity indices were developed based on crash data from the state of Ohio. The modeling equations significantly reduced the unexpected trends mentioned in Section 8.2 and shown in Table 20. The new severity indices, for use in this report, are shown in Table 21. The only remaining irregularity is in the local highway, where 7-ft (2.1-m) embankments were more severe than 13-ft (4.0-m) embankments. However, the differences between the intermediate and maximum heights were not as large as the results in Table 20. Also, due to small exposure levels on FC1/FC6 highways, the differences in severity indices were not significant enough to influence the resulting crash costs and, ultimately, the resulting BC ratios. Therefore, it was determined that the results shown below were indicative of the crash data from the state of Ohio between 2000 and 2006.

Table 21. Severity Indices Based on Modeling Equations at 55 mph (88.5 km/h).

FC3			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.4	1.5	2.0
1V:3H	1.3	1.4	1.6
1V:4H	1.3	1.4	
1V:6H	1.2		

FC2 and FC4			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.6	2.4	2.4
1V:3H	1.6	1.9	2.0
1V:4H	1.6	1.7	
1V:6H	1.6		

FC5 and FC7			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	1.5	1.6	1.7
1V:3H	1.2	1.4	1.3
1V:4H	1.1	1.2	
1V:6H	1.0		

FC1 and FC6			
Slope	Fill Height (ft)		
	1	7	13
1V:2H	2.6	3.4	2.9
1V:3H	2.2	2.5	2.4
1V:4H	1.9	2.0	
1V:6H	1.7		

8.5 Comparison with Previous SI Models

Wolford and Sicking examined 13,810 crashes on embankments in the state of Michigan and 5,224 in the state of Utah between 1985 and 1992 [11]. However, to determine the severity of slopes in Nebraska, the sponsoring state of the project, only rural roads in Michigan were used since they were considered to be approximately similar to the roads in Nebraska. This left only 630 (A+K) crashes. To determine the severity index, they included an estimate for unreported crashes for injury levels B, C, and O. This increased the number of crashes, and therefore increased the severity index, which the authors recognized and promoted such that ensuing benefit-cost analyses would be conservative. They established representative foreslopes for rural interstates, rural arterials, and rural collectors, which had foreslopes of 1V:4H, 1V:3.5H, and 1V:2.5H, respectively. In addition, the average depth of these foreslopes was 6.6 ft (2.0 m). Using the percentage of each crash type on the KABCO scale, an average severity was calculated for each foreslope. From the results, additional severity relationships were extrapolated from the three known slope severities for depths of 6.6 ft (2.0 m). The results of the Wolford and Sicking study were compared with results from the default version of RSAP and the modified version for a rural arterial at 7 ft (2.1 m), used in this study, as shown in Figure 8.

The most obvious difference between the predicted crash severities is that the current research indicates a need to reduce estimated slope severities from the RSAP program by as much as 50 percent for the steeper embankments. Further, the trend diminished as embankment slope diminished, with only a 10 to 15 percent reduction associated with the 1V:6H slope conditions.

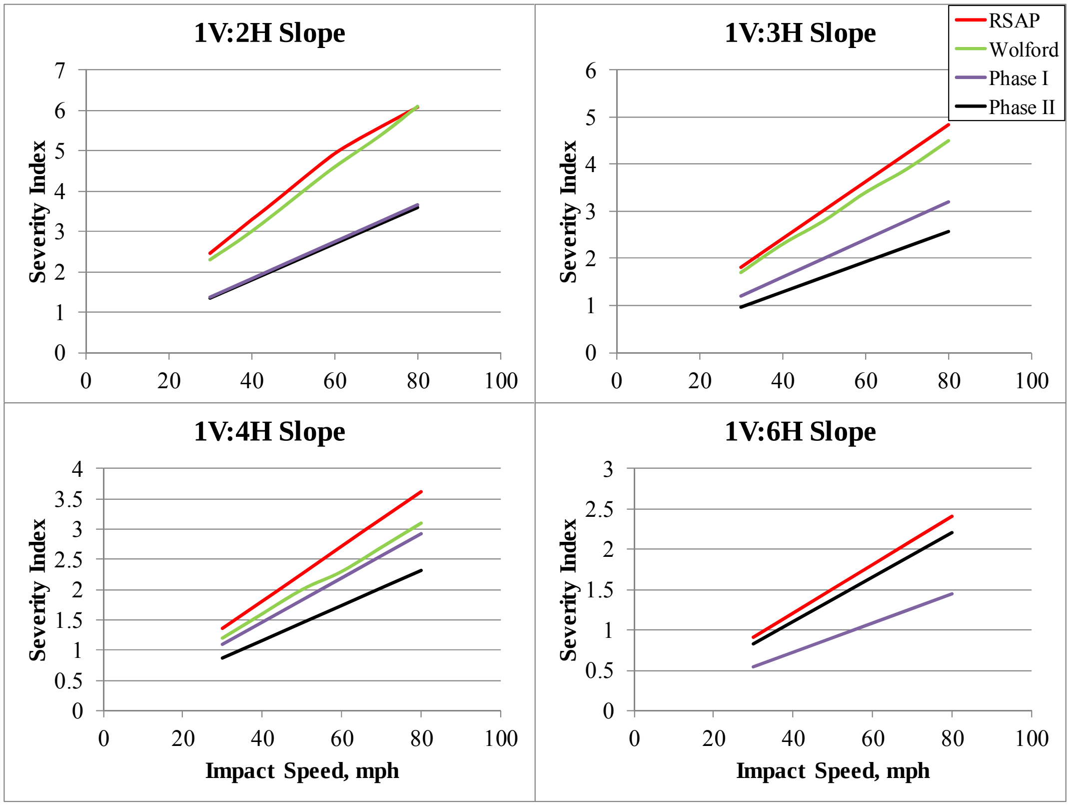


Figure 8. Severity Index Comparisons – 7-ft Height and FC2/FC4.

9 RSAP ALTERNATIVES

Design alternatives considered herein were exclusively representative of retrofit conditions. For new-construction projects, a separate analysis should be conducted. Three safety treatments were considered for this study. They were: (1) do nothing, (2) slope flattening, and (3) guardrail installation. All of these treatments were modeled using RSAP and are described in the following sections.

9.1 "Do Nothing" Condition

Alternatives are compared to a baseline condition known as the "do nothing" condition. The "do nothing" option consists of applying no safety treatment to the existing roadside slope. This option was selected if the direct costs of flattening the slope were too expensive or if the severity of striking a guardrail outweighed the severity of striking the existing slope. For all highways, a minimum slope of 1V:2H was used. However, NCHRP Report No. 638 recommends a minimum slope of 1V:3H on all functional classes except the rural local class [6]. This report used 1V:2H slopes on all functional classes in the event that an existing design incorporated that cross section, or other issues (e.g. erosion, or other activities) have steepened the existing slope.

9.2 Slope Flattening

Soil must be transported to the site and compacted in place. The slope of the roadside is defined by a rise-over-run designation, with the rise always equal to 1 unit. For example, a slope with a rise of 1 unit and a run of 2 units would be designated as 1V:2H. The cost of soil transportation would depend on the distance between the source of the soil and its destination. In some cases, there may be an excavation project nearby, and the cost of fill material would be almost nothing. In contrast, if soil must be transported over a great distance, the cost would have a large negative effect on this alternative's viability. The contractor must compact the soil to

meet the specifications set forth by the engineer. This means that the volume of fill to be transported must be larger than the volume of fill required. This volume difference must be accounted for when determining the cost of the material.

In addition to the cost of the fill, the cost to purchase the land immediately adjacent to the roadway must be ascertained. Once again, this cost may fluctuate significantly. Perhaps the state already owns the land, and the cost of the right-of-way (ROW) would be zero; maybe the adjacent area includes buildings, cultural importance, or environment concerns, which could make it a costly or impossible purchase. If the time required to obtain the ROW is the main concern, a cost associated with that time could be added to the total direct costs for use in a benefit-cost analysis. Because of the high uncertainty of the costs of this alternative, BC ratios could not be estimated. Instead, only the numerator of the BC ratio could be determined. What is certain is that as the slope gets flatter, its safety performance increases.

As a vehicle goes over an embankment, its center of gravity acts through a point outside of the geometric center of the vehicle. Steeper slopes can cause the center of gravity to move farther out relative to the vehicle than on flatter slopes. Therefore, as the slope gets steeper, the likelihood of a rollover increases because the lateral component of the weight of the vehicle is larger. For an illustration of this concept, Figure 9 is given. In this figure, a 1V:2H slope and 1V:6H slope are compared. Visually, the lateral component of the weight of the 1V:2H slope is significantly larger than the 1V:6H counterpart. Flatter slopes reduce the severity of each crash, because the frequency of a rollover is reduced. As a result, the cost per crash decreases. However, rollover propensity on slopes was not used by RSAP. Instead, severity indices were adjusted for slopes when RSAP was created, to account for the possibility of a rollover [12]. For this study, only the slopes that have been pre-programmed into RSAP were used. Those slopes were 1V:2H, 1V:3H, 1V:4H, and 1V:6H.

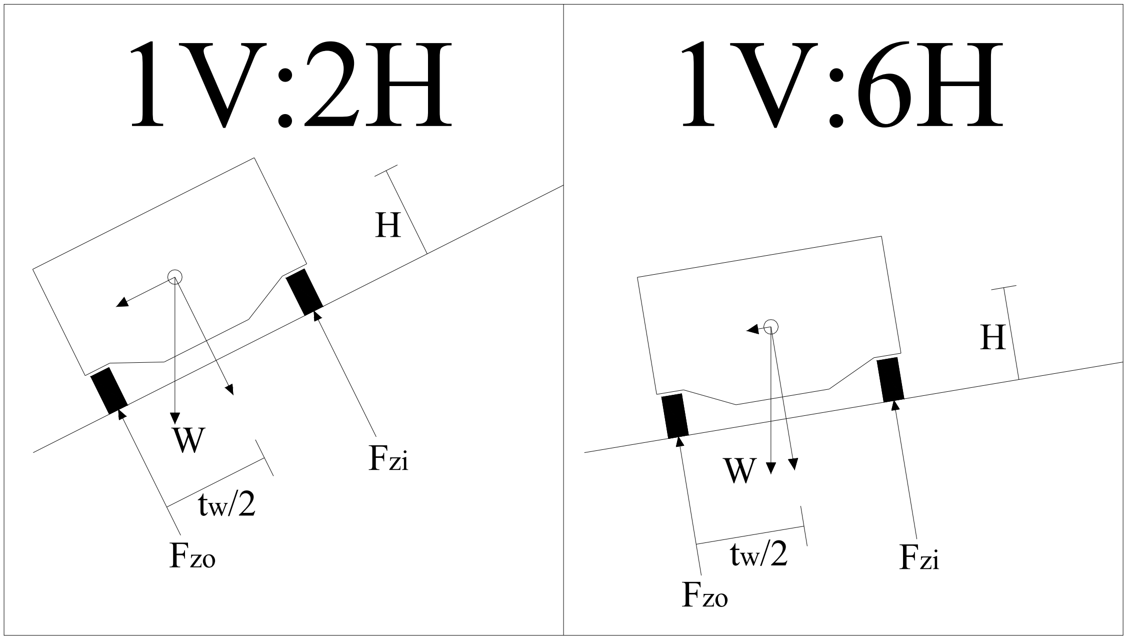


Figure 9. Effect of Slope on Lateral Component of Weight Vector

9.3 Guardrails and Terminals

If slope flattening is not a feasible or an economical option, the next design alternative to consider is to shield the existing slope with a guardrail system. This selection is considered a secondary option because impacts with the guardrail may be more dangerous than simply leaving the slope unprotected. As a vehicle strikes the guardrail, there is a propensity for vehicular instability, which could cause the vehicle to rollover. The vehicle may also vault over the guardrail and traverse the steep slope anyway. The vehicle could also be redirected into traffic or snag on rigid posts. Occupant risk may increase in the form of occupant ridedown accelerations or occupant impact velocities. These systems are located closer to the roadway than the edge of the slope and are typically longer than the slope itself, thus increasing exposure and the likelihood of being struck. Previous research demonstrated that guardrails could be adequately implemented on slopes as steep as 1V:2H [13]. Despite the ability to place the guardrail system

immediately adjacent to the slope, the face of the guardrail is still closer to the roadway. Being closer, the impact probability would increase, as would crash costs.

The 2006 RDG method for determining the length-of-need was chosen for this research for two reasons. First, it results in conservatively long lengths of guardrail. Second, it is most likely the more common of the two methods. All guardrails and terminals were designed to NCHRP Report No. 350 Test Level 3 (TL-3) specifications, in order to safely redirect vehicles at speeds greater than 45 mph (72.4 km/h). The amount of guardrail required to shield the foreslope was determined based on the length of the slope adjacent to the roadway and the offset of this slope from the edge of the roadway. A more detailed description of how the length-of-need was calculated is presented in Section 11.3.

End terminals are required on the ends of most guardrail applications, especially on the end facing the primary direction of travel. In situations where a guardrail is used on the roadside of a divided highway, a crashworthy end terminal may not be required on the downstream end (facing opposing traffic). However, a crashworthy end terminal was included as part of the conservative design for this study. These terminals were entered as TL-3 and were assumed to be 37.5 ft (11.4 m) long by 1.5 ft (0.5 m) wide, based on suggestions in the 2006 RDG [1].

If a different methodology were used to determine the length-of-need of a guardrail, an independent benefit-cost analysis for that alternative would need to be conducted.

9.4 Decision Tree

Usually, striking any obstacle is more hazardous than missing it. Therefore, if flattening a slope is warranted, it should be used. However, if flattening a slope is too expensive to implement, then the use of a longitudinal barrier should be examined. This decision tree is illustrated in Figure 10.

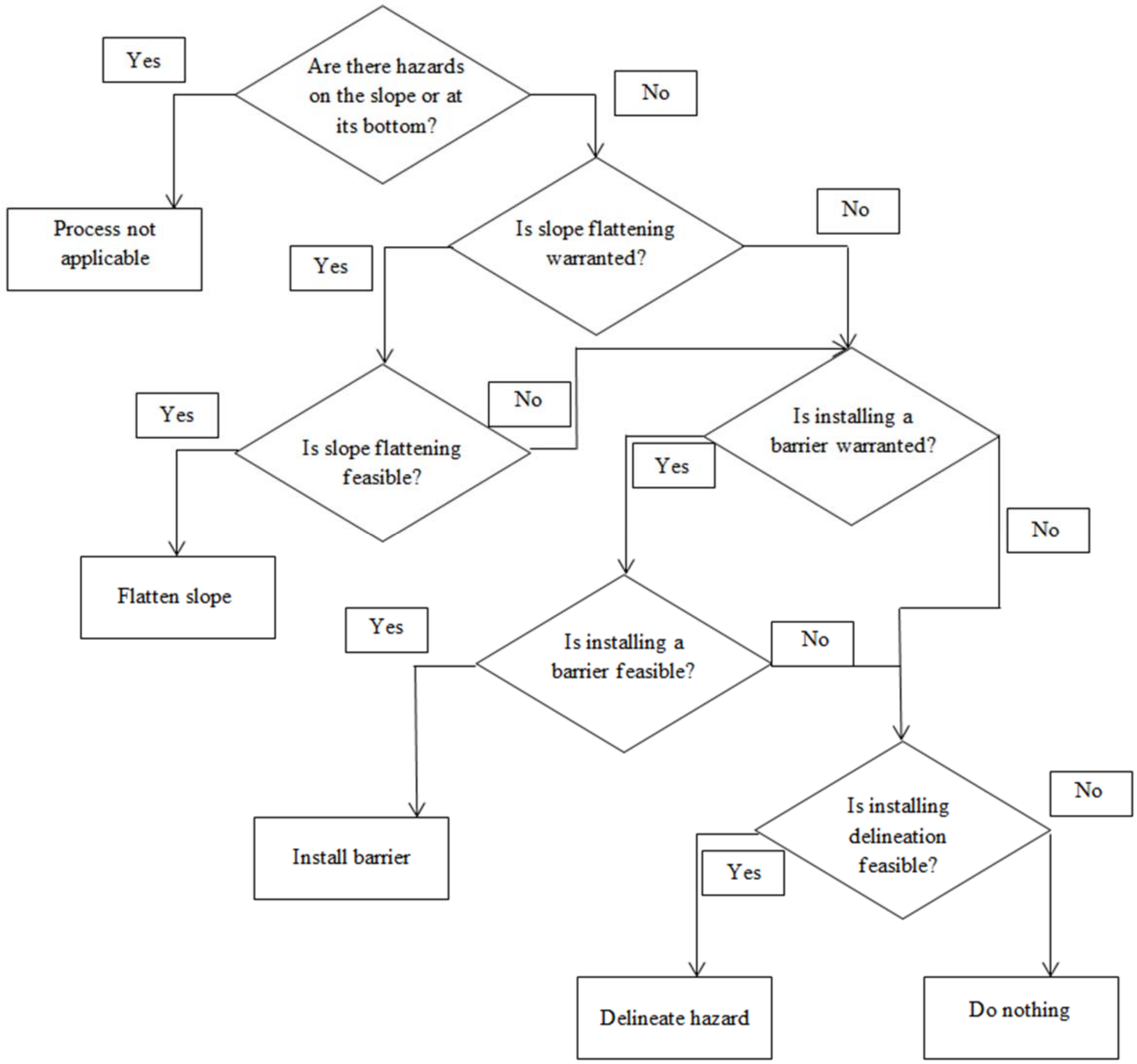


Figure 10. Alternative Decision Tree

9.5 Warranted Versus Feasible

The decision tree shown in Figure 10 utilizes two terms that can be misconstrued or substituted for one another by mistake. The following definitions are employed throughout this document:

Warranted:

Treatment option is justified, as prevailing roadside conditions may cause harm to motorists and/or increase the probability of a fatality. For example, a steep slope (steeper than 1V:3H) may be warranted, per RDG recommendations [2].

Feasible:

The economic or other constraints of a treatment option do not prohibit its implementation. This is considered only for warranted treatment options. For example, flattening a 1V:3H slope to a 1V:6H slope may be warranted based on the reduced probability of severe crashes. However, the cost to complete that retrofit may be too high, rendering this option infeasible, at which point the engineer would consider another warranted treatment option. Additional factors may also render slope flattening infeasible, including historic preservation, environmental concerns, and drainage to name a few. In the event that a treatment option is warranted but infeasible, the engineer should take precaution and obtain clear and definitive documentation that supports the conclusion that treatment of the location with a warranted design is infeasible.

This document pertains to the feasibility of treatment options, particularly to the feasibility of slope flattening. As such, it does not limit the treatment of slopes to roadside grading. Instead, it aids in determining the feasibility of roadside grading. If other treatment options are warranted, they should be studied for feasibility and compared to the feasibility of slope flattening to ascertain the most cost-beneficial installation.

10 RSAP INPUT VALUES

10.1 Land Usage

In the Ohio crash database, functional classes are defined differently depending on the land usage (urban or rural) of the highway of interest. Urban areas are located within city limits where the population exceeds 5,000 people [8]. These limits or boundaries are determined by the state or by local officials. Rural areas are locations found outside of urban boundaries.

10.2 Functional Class

This research study utilized the following three general functional classes: (1) Freeways, (2) Principal Arterials, and (3) Local Highways. Note that freeways (FC3) are arterials with full control access. Typically, they support efficient flow of traffic and high traffic volumes (up to 100,000 vpd in this research). Freeways were considered as rural highways with volumes greater than 30,000 vpd, but the speed and angle distribution used by RSAP is identical for rural and urban settings. As a result, the research findings, conclusions, and recommendations for FC3 apply to both urban and rural land usages until more research can be used to adjust the speed and angle distributions for the two separate land uses.

Arterials (FC2, FC4, FC5, and FC7) provide high-speed travel between major points, such as cities. Many different types of highways, including freeways, can be included in this class. For this research, freeways were considered separately. For notational purposes, principal arterial highways were designated as arterial highways. Volumes on arterials up to 30,000 vpd were used. Principal and minor arterials are also assigned the same speed and angle distributions. Therefore, conclusions and recommendations for arterials (FC2, FC4, FC5, and FC7) apply to both principal and minor arterial highways. However, the urban arterials and rural arterials utilize differing speed and angle distributions and were considered separately.

Local highways (FC1/FC6) include all roads that are not considered to be freeways, arterials, or collector highways. They support traffic over relatively short distances and serve land adjacent to collector networks. In RSAP, the speed and angle distributions differ for rural and urban local highways. As a result, they were initially considered separately. However, after data collection was complete, there was an insufficient sample size for urban local highways, so the two land uses were combined. Also, local highways tend to have small traffic volumes. For this research, local highways had volumes up to 5,000 vpd. There were some traffic volumes in the database that exceeded this upper limit; however, more than 95 percent of the crashes were on roads with 5,000 vpd or fewer. With the exception of FC6 and FC7, all simulated traffic volumes contained 95 percent or more of the crashes in the database. In addition, the two functional classes that didn't meet this threshold also suffered from a lack of data, which, in part, led to them being combined with other functional classes.

Collector highways fall between arterials and local highways. Their modeling parameters, such as ADT, are not as clear as those of the other functional classes. As a result, the engineer is encouraged to classify the collector highway as an arterial or a local highway, based on the objective procedure described in Chapter 6.

For a more detailed description of these functional classes and land usages, including volume descriptions, the reader should consult with the AASHTO publication *A Policy on Geometric Design of Highways and Streets* [8].

10.3 Roadway Geometry Parameters

Parameters characterized by a low sensitivity were assigned a constant value throughout all analyses. The area type was grouped with the functional class (e.g., "Rural Freeway" in RSAP) and was treated with the moderately sensitive parameters. Four lanes were used on FC3, FC4, and FC7, but two lanes were used on the rest. A shoulder width of 8 ft (2.4 m) was also

used on all highway types except the FC3 highway. This width was chosen to give law enforcement enough room to pull over to the side of the road, to give maintenance workers enough space, and to provide enough room for motorists to avoid crashes [14]. The shoulder width on an FC3 highway was increased to 12 ft (3.7 m) to account for the increased traffic volume [15]. The location of the slope or guardrail system under examination was assumed to be on the right side of the roadway. Default values of 25 years and 4 percent were used for the design life and discount rate, respectively. The traffic growth rate was estimated to be 2 percent between the years 2010 and 2020 in the state of Wisconsin, and the percent of trucks was set at a constant 16 percent [16].

Offset values were chosen to represent a range of values capable of modeling actual offsets. Similarly, the height of the embankment and the length of the feature were chosen to represent a range of practical values. The grades, degrees of curvature, and slopes were chosen from NCHRP Report No. 638, and they varied depending on the functional class of the highway [6]. This report gave minimum design standards for horizontal curvature and the percent grade.

Representative values were chosen that would adequately describe the parameter while reducing the number of required RSAP runs. Three values were chosen for horizontal curvature and percent grade. Those three values were modified per functional class to describe the range shown in Table 22. When possible, the increments between each value were kept equal. For example, the degrees of curvature for a rural local highway were 0, 4, and 8 degrees to the left (L), with the last representing the absolute maximum value given in NCHRP Report No. 638. Left curves and downgrades were selected over their counterparts, because they represented the worst case for those parameters. By using only the worst case, the results were conservative, and the number of RSAP runs was reduced. The horizontal curvatures and percent grades are summarized in Table 22.

The final three parameters described in Table 22 were constant for each functional class and design alternative. Again, three values were used to provide enough data to interpolate at any value while limiting the number of RSAP simulations that were required. Each of the parameters had equal increments between their values. In general, and when extreme values are avoided, the values of these parameters are arbitrary, because the results will be used in linear interpolation to determine crash costs at any length, height, or offset. As the length of the feature increased, the crash frequency would increase linearly as well. As a result, the actual values used in RSAP were only significant in the interpolation of the results of the study. The height selection was discussed in the parametric study, and the same values were used in the detailed study. Recall that the 7-ft (2.1-m) height was close to an inflection point in the SI-height plot. The lower height was representative of a high-slope portion of that plot, while the upper height was representative of the low-slope portion of that plot. For the final parameter, offset, values were chosen at relatively close proximity to the roadway. As the offset increases, the crash frequency decreases. In order to capture the effect of a more turbulent region of encroachments, offsets of diminished magnitude were selected.

Table 22. RSAP Input Values

	FC1	FC6	FC2/FC4	FC5/FC7	FC3
Degree of Curvature (°)	0, 4, 8L	0, 3, 6L	0, 3, 6L	0, 4, 8L	0, 2, 3L
Grade (%)	0, -4, -8	0, -6, -12	0, -3, -6	0, -3, -6	0, -2, -3
Length of Feature, ft (m)	200 (61.0) 800 (243.8) 1400 (426.7)				
Height, ft (m)	1 (0.3) 7 (2.1) 13 (4.0)				
Offset, ft (m)	2 (0.6) 7 (2.1) 12 (3.7)				

Backslopes were not considered in this study. Intuitively speaking, at low foreslope heights and high backslope heights, the effect of the backslope may be more pronounced. In this scenario, separate consideration should be given to the dangers associated with the backslope. For reference, the RDG gives preferred cross sections in a V-ditch. This reference has been available since the 1970s, but very little is known about the safety performance of V-ditches via crash testing. The RDG suggests using slopes on either side of the V-ditch that are flatter than 1V:3H at all times. In fact, if one of the two slopes is a 1V:3H slope, the other must be flat. As an illustration, a V-ditch with equal slopes of 1V:4H would not be preferred. Research on possible cost-effective treatment methods for V-ditches is ongoing in NCHRP Project No. 16-05 [17].

11 DIRECT COSTS

11.1 Background

A benefit-cost analysis provides a measure of the cost-effectiveness of design alternatives by comparing the reduction in crash cost with the increased cost to implement the new design. This latter contribution is known as the direct costs, and for this study, they pertain only to retrofitted designs. The direct costs of new-construction projects could be considerably less, considering that mobilization of construction equipment would already be included in the construction project, making competing slope designs very similar in terms of direct costs. However, without knowing the baseline conditions of a new-construction project, it is not possible to apply the procedure contained herein to the construction project.

11.2 Required Fill Material for Slope Flattening

Contractors bid on fill material obligations by unit of volume, usually cubic yards. The volume of fill material required to flatten a slope can be determined for each alternative. The total required volume can be estimated using a cross section similar to the one shown in Figure 11, assuming the existing slope is a 1V:2H.

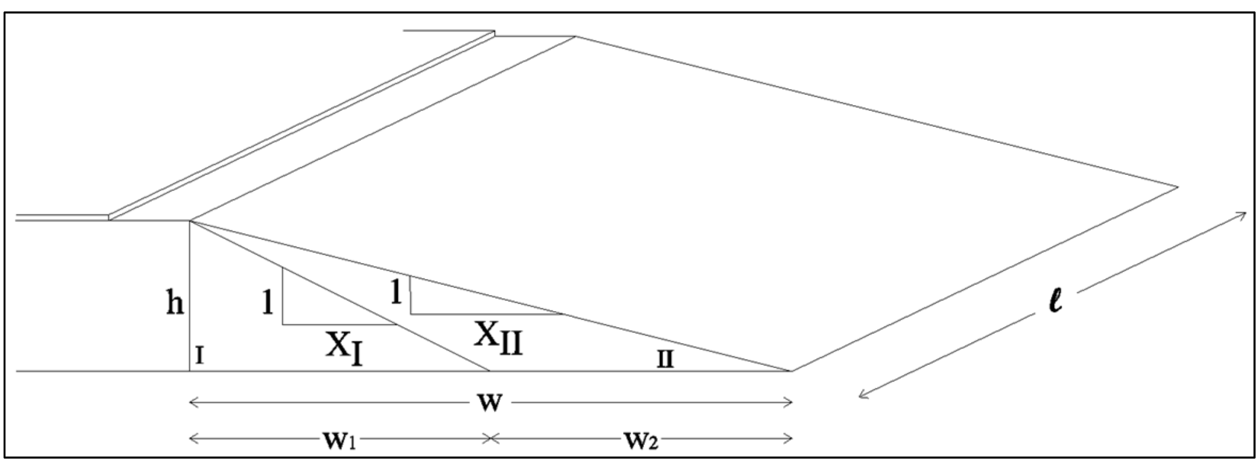


Figure 11. Cross-Sectional Area Required to Flatten Slope on Rural Local Highway

First, the cross-sectional area of the new slope can be determined, assuming a right triangle was made, and the face of the slope acted as the hypotenuse, as shown in Figure 11. The area of the triangle labeled with a Roman Numeral I can be determined, assuming a constant slope of 1V:2H for rural local highways and 1V:3H for all other highway types. This area, A_I, was subtracted from the total area, A_x, thus determining the required cross-sectional area, A_{II}, which can be used to determine the volume needed to flatten a slope. The volume was derived by Equations 13 through 24.

$$A_X = \frac{1}{2} w_2 h \tag{13}$$

$$w_2 = hX_{II} \tag{14}$$

Where

A_X = Total Area

w_2 = Width of Fill Material

h = Height of Embankment

X_{II} = Horizontal Component of the Slope of the Fill Material

By substituting Equation 14 into Equation 13, the total cross-sectional area of the flattened slope could be determined. This result is shown as Equation 15.

$$A_X = \frac{1}{2} X_{II} h^2 \tag{15}$$

Next, the cross-sectional area of the original slope was calculated. In terms of height and width, this area was given by Equation 16.

$$A_I = \frac{1}{2} w_1 h \tag{16}$$

$$w_1 = hX_I \tag{17}$$

Where

A_I = Area of the Existing Slope

$w_1 = \text{Width of the Existing Slope}$

$X_I = \text{Horizontal Component of the Existing Slope}$

By substituting Equation 17 into Equation 16, the cross-sectional area of the original slope could be determined in terms of the height of the slope. This cross-sectional area of the original slope is shown in Equation 18.

$$A_I = \frac{1}{2} X_I h^2 \tag{18}$$

Next, the cross-sectional area of the fill material needed to create the desired slope was determined in terms of the height and the flattened slope (1V:XH). This general equation is shown in Equation 19.

$$A_{II} = A_X - A_I \tag{19}$$

Where

$A_{II} = \text{Area of the Fill Material}$

By substituting Equations 15 and 18 into Equation 19, the final required cross-sectional area, in terms of the height and the difference of the two slopes, is shown in Equation 20.

$$A_{II} = \frac{1}{2} h^2 (X_{II} - X_I) \tag{20}$$

The volume required to flatten the original slope to the desired slope is calculated by multiplying the length of the slope parallel to the roadway by the area calculated from Equation 20. This fill volume calculation is shown in Equation 21 in terms of the cross-sectional area and in Equation 22 in terms of the height and slope differences of the two slopes.

$$V_{fill} = A_{II} \times l \tag{21}$$

$$V_{fill} = \frac{1}{2} h^2 l (X_{II} - X_I) \tag{22}$$

Where

$V_{fill} = \text{Total Required Volume of Fill Material}$

$l =$ Longitudinal Length of the Slope

The volume may need to be adjusted for bulking or shrinking. The shrinkage factor ($\Delta V/V_f$) of soil is a function of the unit weight of the fill material and the cut material.

$$\frac{\Delta V}{V_f} = \left[\frac{(\bar{\gamma}_d)_f}{(\bar{\gamma}_d)_c} - 1\right] \tag{23}$$

Where

$\frac{\Delta V}{V_f} =$ Shrinkage Factor

$(\bar{\gamma}_d)_f =$ Average Dry Unit Weight of the Fill Material

$(\bar{\gamma}_d)_c =$ Average Dry Unit Weight of the Borrow Material

The volume of borrow required to satisfy the V_{fill} demand is always at least as much as the V_{fill} and is often more. The equation to calculate the total volume required from a borrow site is shown in Equation 24.

$$V_{borrow} = V_{fill}\left(1 + \frac{\Delta V}{V_f}\right) \tag{24}$$

Where

$V_{borrow} =$ Total Volume Needed to Flatten the Embankment

In addition to the cost of fill materials, the cost of the right-of-way, erosion control, and drainage features may need to be included. In some areas, this may be extremely expensive and force the engineer to abandon the idea of a flatter slope.

Similarly, using mixed slopes in a single cross section may be advantageous where the roadway elevation is increased, and the adjoining slope is also increased until it intersects with the original slope, as illustrated in Figure 12. This condition was not explicitly modeled and is therefore discussed in Section 14.4 for future work.

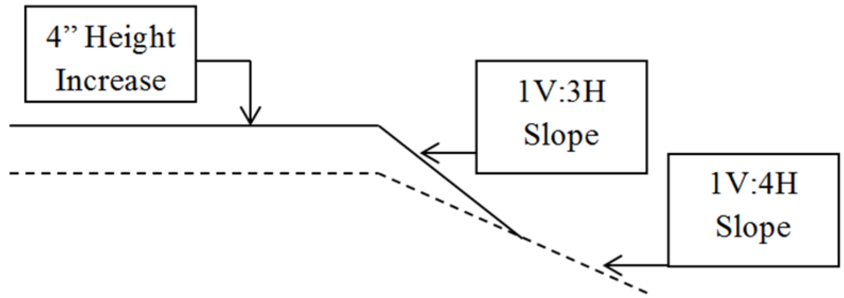


Figure 12. Mixed-Slope Cross Section

11.3 Required Material for a Guardrail System

The variables required to determine the guardrail length-of-need are shown in Figure 13. The tangent length of the barrier immediately upstream from the slope (L_1) was assumed to be 25 ft (7.6 m). This assumption was based on sample designs found in the 2006 RDG [1]. The shy line was defined as the point from the edge of the travel way at which the motorist would not be inclined to reduce the speed or direction of the vehicle. For 55 mph (88.5 km/h), the shy line is located 7.2 ft (2.2 m) from the edge of the travel way [1]. Flared guardrail was used to limit the reaction of a motorist to the guardrail by starting it farther away from the road than the straight segment of guardrail. In addition, the use of flared guardrail sections reduces the total length-of-need for the guardrail installation. For scenarios with a guardrail offset of 2 and 7 ft (0.6 and 2.1 m) along the straight segment (inside the shy line), a flare rate of 24:1 was used. Outside the shy line, a flare rate of 16:1 was used. These flare rate recommendations were given in the 2006 RDG [1]. This section was represented in Figure 13 as the section of guardrail not parallel to the roadway. To determine the total length of guardrail to be used in RSAP when the length of the terminal is 37.5 ft (11.4 m), which was assumed for all scenarios despite the fact that end terminals vary in length, and to determine the annual cost of installation, the following equations were used:

$$L = 2 \cdot (x - L_1 - 37.5) + l \quad (25)$$

$$x = \frac{(h \cdot S) + (L_1 \cdot F)}{F + \left(\frac{h \cdot S + L_2}{L_R}\right)} \quad (26)$$

Where

h = Height (ft) of the Foreslope

S = Slope (H/V)

F = Flare Rate = b/a

L_1 = 25 ft

L_2 = Offset (ft)

L_R = Runout Length

L = Total Length of Guardrail Required (ft)

l = Length of the Foreslope (ft)

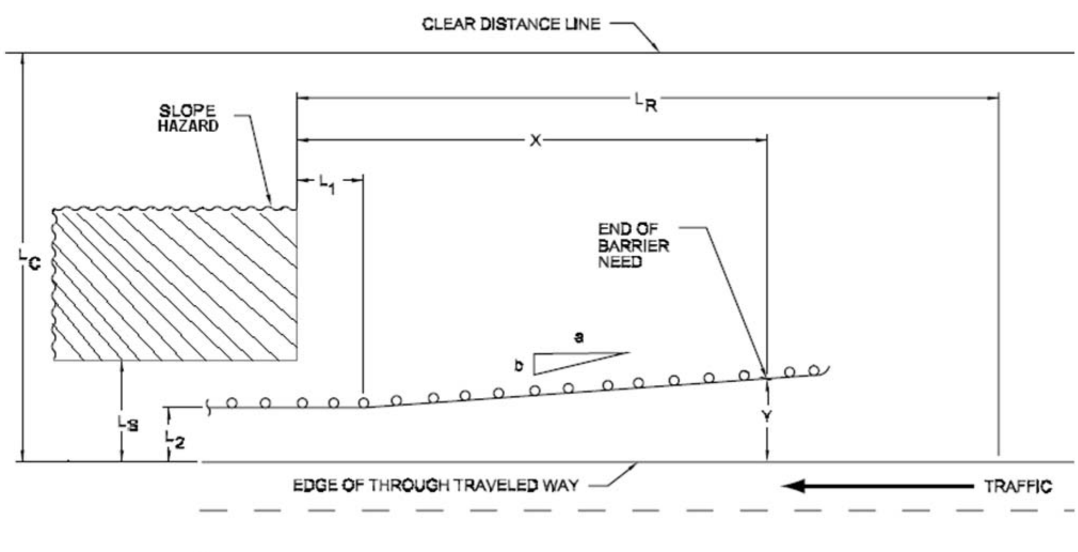


Figure 13. Guardrail Layout Variables [11]

The runout length, L_R, is the distance for a vehicle to come to a stop once it has left the roadway. From the 2006 RDG, it was determined to be 280 ft (85.3 m) for traffic volumes lower

than 800 vpd, 315 ft (96.0 m) for traffic volumes between 800 and 2,000 vpd, 345 ft (105.2 m) for traffic volumes between 2,000 and 6,000 vpd, and 360 ft (109.7 m) for traffic volumes greater than 6,000 vpd [1]. The run-out length was correlated to the traffic volume, because the Hutchinson and Kennedy encroachment data was used to simulate encroachment events, and, in that study, the encroachment frequency was dependent on the traffic volume [18]. Based on the height and slope of the foreslope, the base width of the slope was calculated. Given these parameters, basic geometry derived from the plan view was used to determine the lateral offset from the edge of the travel way of each point of interest along the system. This configuration included the beginning of the terminal, the beginning of the guardrail, the end of the first flared section of guardrail, the end of the straight segment of guardrail, and the beginning of the second terminal. These lateral offsets were entered into RSAP.

Terminals were placed at both ends of the guardrail. For a TL-3 condition, many terminals are 37.5 ft (11.4 m) long and 1.5 ft (0.5 m) wide, as suggested by the 2006 RDG [1].

11.4 Annualized Direct Costs

The cost to flatten an existing embankment, or to install a guardrail system, needs to be annualized for each alternative. The total cost per year takes into account the design life of the system, as well as an interest rate. Equation 27 was used to determine the direct cost of each alternative, which can be used to determine the denominator of the BC ratio.

$$DC = P \cdot \left[\frac{i(1+i)^n}{(1+i)^n - 1}\right] \tag{27}$$

Where

$DC =$ Annualized Direct Cost to Install the System

$P =$ Total Cost of Material, Labor, and Right-of-Way

$i =$ Interest Rate as a Decimal

$n =$ Design Life (Years)

12 CRASH COSTS

The second component of a benefit-cost analysis is the reduction in crash cost as the result of implementing a design alternative. In this report, these crash cost reductions are only applicable to retrofit improvements to existing road systems and not for determining roadside improvements on new construction projects.

12.1 Societal Costs

Once the severity of a crash has been determined, the cost of that crash can be calculated. A RSAP simulation run determines the probability of a crash resulting in a certain injury level, such as death or severe injury. For each level of injury, there is an associated cost.

Crash cost figures can be found from multiple sources including the RDG and the Federal Highway Administration (FHWA) [19]. FHWA gives a data set that includes a person's willingness to pay to avoid injury or fatality. Therefore, it is strongly recommended that FHWA's comprehensive crash cost values be used. However, their values are based on the value of the U.S. dollar in 1994. Those costs were then increased using the Gross Domestic Product (GDP) implicit price deflator for the year 2010. Therefore, those values were adjusted for the year 2010 using Equation 28. These values are given in Table 23.

$$AccCost = P\left[\frac{GDP_{2010}}{GDP_{1994}}\right] \tag{28}$$

Where

$AccCost$ = Crash Cost in 2010

P = Societal Cost Given by FHWA in 1994

GDP_i = GDP Implicit Price Deflator for the Given Year

The GDP implicit price deflator at the end of 1994 and 2011 were 74.457 and 101.936, respectively [20]. To determine the crash costs in years other than 2010, the GDP_{2010} would be replaced by the deflator value for the desired year.

Table 23. FHWA Comprehensive Crash Costs

Crash Type	Crash Cost ($) for 1994	Crash Costs ($) for 2010
Fatal	$2,600,000	$3,292,057
Severe Injury	$180,000	$227,911
Moderate Injury	$36,000	$45,582
Minor Injury	$19,000	$24,058
Property Damage Only	$2,000	$2,532

The crash types and associated costs given in Table 23 needed to be converted to an SI range from 0 to 10, with 10 being an absolutely fatal event. This effort was completed by using the injury level percentages shown in Table 24 and the costs given in Table 23. A weighted-average method was used. For demonstration, the cost of a severity index 5 is calculated below. The results of this method for all SIs are given in Table 25. For severities between whole numbers, the crash cost can be linearly interpolated from the table.

$$AccCost_{SI=5} = (0.0 \times 2{,}532) + (0.15 \times 2{,}532) + (0.22 \times 24{,}058) +$$

$$(0.45 \times 45{,}582) + (0.10 \times 227{,}911) + (0.08 \times 3{,}292{,}057) = \$312{,}340$$

So far, only the unadjusted crash cost has been determined for any SI. The actual crash cost was determined using adjustment factors for the encroachment speed and angle, vehicle orientation and type, and lane departure/encroachment direction. The adjusted crash cost was then multiplied by the probability of the vehicle encroaching through a given lateral offset. Finally, this analysis was repeated until the resulting average encroachment crash cost converged to within 1 percent.

Table 24. Injury Level Percentages for Each Severity Index [1]

Severity Index (SI)	Injury Level (%)						
	None	PDO1	PDO2	Minor Injury - C	Moderate Injury - B	Severe Injury - A	Fatal - K
0	100.0	-	-	-	-	-	-
0.5	-	100.0	-	-	-	-	-
1	-	66.7	23.7	7.3	2.3	-	-
2	-	-	71.0	22.0	7.0	-	-
3	-	-	43.0	34.0	21.0	1.0	1.0
4	-	-	30.0	30.0	32.0	5.0	3.0
5	-	-	15.0	22.0	45.0	10.0	8.0
6	-	-	7.0	16.0	39.0	20.0	18.0
7	-	-	2.0	10.0	28.0	30.0	30.0
8	-	-	-	4.0	19.0	27.0	50.0
9	-	-	-	-	7.0	18.0	75.0
10	-	-	-	-	-	-	100.0

Table 25. Cost of each SI for the Year 2010

Severity Index (SI)	Crash Cost
0	$0
0.5	$2,532
1	$5,094
2	$10,281
3	$54,040
4	$132,720
5	$312,340
6	$659,956
7	$1,071,210
8	$1,717,187
9	$2,513,257
10	$3,292,057

12.2 Crash Cost Equations

For each considered scenario, several traffic volumes were considered within the simulation matrix to understand the effect of traffic volume on crash cost. The relationship was found to be approximately linear. However, because the crash cost is a function of the current

year's GDP, the impact frequency was used in combination with the severity index to determine the crash cost. For each functional class, a linear regression was conducted, in which the regression line was forced through the origin (zero traffic equals zero impact frequency). As a result, a simple (y = mx + b) equation could be generated for all scenarios, where y is the impact frequency, m is the slope of the regression line, b is the y-axis intercept, and x is the traffic volume (ADT). The slope and intercept are given with each scenario in the Appendices. The simulated severity index for each scenario was then used to determine the cost of a single crash on that roadway configuration. This effort was completed using a fourth-degree polynomial that accurately reflects the relationship between severity index and crash cost, as shown in Equation 29. The coefficients of this polynomial were determined using Microsoft Excel and Equation 30. Finally, the cost of a single crash was multiplied by impact frequency to determine the crash cost, as shown in Equation 31.

$$SI_{cost} = \begin{cases} c_1(SI)^4 + c_2(SI)^3 + c_3(SI)^2 + c_4(SI) & for\ SI > 2 \\ SI\left(\frac{\$SI_2}{2}\right) = 5{,}604.89(SI) & for\ SI \leq 2 \end{cases} \tag{29}$$

$$c_i = INDEX(LINEST(known_y\text{'s},[known_x\text{'s}]\text{^}\{1,2,3,4\},0),1,i), \quad for\ i = \overline{1,4} \tag{30}$$

$$AccCost = [m(ADT) + b](SI_{cost}) \tag{31}$$

$$m = \frac{\sum ADT_i y_i}{\sum ADT_i^2}\ , \quad for\ i = \overline{1,6} \tag{32}$$

Where

SI_{cost} = Cost per Severity Index

$\$SI_2$ = Cost of a SI = 2.0

c_i = Coefficients of Equation 29

$known_y$ = Cost of Each SI from Table 21

$known_x$ = Associated SI from Table 21

$AccCost$ = Crash Cost as a Function of ADT

ADT_i = Simulated ADTs

y_i = Impact Frequency Simulated for a Given ADT

m = Slope Used by BCAFP and Given in Appendices

b = Intercept Used by BCAFP and Given in Appendices

For a demonstration of this equation's validity, a plot of the crash cost versus ADT for a 1V:2H foreslope, rural local highway, straight, four percent grade, 1,400-ft (426.7-m) long, 1-ft (0.6-m) high highway with an offset of 7 ft (2.1 m) was created. The slope was calculated by dividing 11,220,313 ($\sum xy$) by 1,330,625 ($\sum x^2$), resulting in a quotient of 8.432.

The linear expression used in Equation 31 was an approximation of the RSAP simulation results. The R^2 value was used as a tool to examine the closeness of fit for the equation relative to the simulation results. For a vast majority of simulations, the R^2 value was above 0.90, indicating a close fit. However, some values dipped as low as 0.6096, as was the case with FC5 and FC7 (one is divided, the other is undivided, so the R^2 value was studied for the two classes combined, as was FC2 and FC4). The low values for FC5/FC7 were explained by the drop in encroachment frequency in Cooper's data around 10,000 vpd. For these functional classes in particular, and to an extent, FC2/FC4, traffic volumes below and above the undulation in Cooper's data were simulated, but upper limits for ADT were small enough such that the drop in crash frequency was a significant influential parameter. However, the average R^2 value was still above 0.93 for all functional classes. For completeness, the minimum R^2 value for each functional class and roadside slope, along with the overall average R^2 value for each functional class, is shown in Table 26.

Table 26. R^2 Values for SI Equations Compared to RSAP Output

Functional Class	Minimum R^2 Value					Average R^2 Value
	1V:2H	1V:3H	1V:4H	1V:6H	GR	
FC1	0.9940	0.9953	0.9960	0.9947	0.9853	0.9988
FC2 & FC4	0.9403	0.9242	0.9532	0.9418	0.8453	0.9892
FC3	0.9242	0.9478	0.9281	0.9479	0.9184	0.9678
FC5 & FC7	0.7636	0.8145	0.8178	0.8260	0.6096	0.9393
FC6	0.9950	0.9938	0.9952	0.9953	0.9829	0.9987

Using the GDP implicit price deflator for 2010 (111.141), the costs of each severity index were the same as were presented in Table 25. Using Equation 30, the coefficients of Equation 29 were determined in Microsoft Excel. Those coefficients are given in Table 27. For example, the simulated severity index for a given scenario was 3.49. Therefore, using Equation 29 and the coefficients in Table 27, the cost of a single crash was $81,552.32.

Table 27. Coefficients of Equation 29 for the Year 2010

c1	-521.7632
c2	13592.5118
c3	-54255.1800
c4	66245.0959

12.3 Using the Benefit-Cost Analysis of Foreslopes Program (BCAFP)

12.3.1 Background

Looking up values in the Appendices of this report can be cumbersome and may lead to errors. In addition, the interpolation between crash costs, when needed, can exponentially complicate the determination of the crash cost. If none of the parameters (degree of curvature, grade, length, height, and offset) match the values used in the study, 32 different crash costs would be required in order to completely interpolate between all of the known values and calculate one overall crash cost. In addition, the crash costs change each year as the GDP fluctuates. Clearly, the need exists for a computer program that is capable of looking up the values presented in this report and using them to calculate a crash cost, and using interpolation where needed. In response to this need, Microsoft Excel was used to create the *Benefit-Cost Analysis of Foreslopes Program (BCAFP)*, which contains a series of spreadsheets that allow the user to input the known values of the previously described parameters, as well as a traffic volume and direct cost. Other sheets containing the calculations required for each functional class were included. One sheet contains the results for every scenario involving each functional class and design alternative, which are presented in Appendices A through II.

12.3.2 Development of BCAFP

The first spreadsheet in the Microsoft Excel workbook (“1. BC Analysis”) is reserved for user input and contains the design recommendation based on crash and direct costs. A screen shot of this image is shown in Figure 14.

Benefit-Cost Analysis of Foreslopes Program (version 3)

Input Values

		Total Direct Cost		
Baseline Alternative	1V:3H	$ -	GDP Implicit Price Deflator	111.141
Other Alternatives	1V:4H	$ 2,034.00	ADT (vpd)	65,000
	1V:6H	$ 6,101.00	Interest Rate	0.04
	Guardrail	$ 12,250.00	Design Life (yrs)	25
	None	$ -	Minimum BC Ratio	4.0
Functional Class	FC3			
Degree of Curvature	0			
Grade (%)	0			
Length of Feature, *l* (ft)	200			
Height, *h* (ft)	13			
Offset, *o* (ft)	7			

Functional Class Input	
ADT, vpd	65,000
PSL, mph	55
Lane Width, ft	12
Shoulder Width, ft	8
% Grade	0
Curvature, deg	0
Divisions (1=Div, 0=Und)	1

Figure 14. Screen Shot of BCAFP Input Screen

This sheet contains drop-down menus to select the design alternatives. The functional class is determined by an algorithm that uses the input shown in the inset image in Figure 14. The user is allowed to specify the degree of curvature and percent grade, as well as length, height, and offset of the roadside feature. The curvature of the roadway was always modeled to the left, as this would provide a higher crash rate. For undivided roadways, the designation of left or right curves was trivial, since the curve is to the right for one direction, while the curve is to the left in the opposite direction. However, the designation is important on divided highways. To simplify the input data and to err on the side of safety, only left-hand curves were considered. As a result, the only input consideration for the degree of curvature is the magnitude of the degree itself. If a negative value is entered, the program will extrapolate to the negative value, and the

results will not be accurate. Similarly, only downgrades were considered in the RSAP analyses. Downgrades are considerably more unstable than upward grades. RSAP actually treats upward grades as flat ground, meaning the traffic adjustment factor that is used in the encroachment module is set to one for all upward grades. Therefore, if a downgrade is present, the user should enter the magnitude of the downgrade as a percent, noting that a negative value would require extrapolation and would be incorrect. If an upward grade is present, the percent grade should be set to zero. When determining the offset, the defined value in RSAP was the distance from the edge of the travel way to the hinge point of the slope. The edge of the travel way includes the shoulder, and the hinge point is simply the intersection of the flat ground (or nearly flat) and the slope.

In addition, the user must input an ADT, in vehicles per day. This ADT would be representative of a point in time and would not be affected by the traffic growth factor. Therefore, the engineer must determine the ADT if some future value were to be used. This future estimate can be determined by adjusting the known current ADT by the traffic growth factor for that highway. The analyses using RSAP utilized a traffic growth factor of 2 percent over a design life of 25 years [16]. If the actual traffic growth factor for a given highway is unknown, 2 percent may be used. If the future ADT is expected to be lower than the current ADT, the BCAFP analysis would be unaffected as long as the ADT of interest were used. The engineer should use judgment in determining if the current ADT, the ADT at the end of the design life, or some other ADT should be used. It is recommended that the ADT at the mid-life of the design be used to yield average annual crash costs that would be indicative of all years in the design life.

In addition, the user must specify the GDP implicit price deflator for the current year, the discount rate (4 percent is relatively constant), the design life, and the minimum BC ratio. In

addition, the total direct cost of each alternative must be entered by the engineer. This cost would include material costs, labor, and ROW considerations. The GDP implicit price deflator for the current year is determined by FHWA and is sent out to all field offices. When conducting a project using BCAFP for the first time in a given year, the local FHWA field office should be contacted to ascertain the GDP implicit price deflator. The analyst or engineer is also reminded to use a traversable run-out area beyond the toe of 1V:3H slopes. It also warns the user when extrapolation is used to estimate crash cost, prompting the user to use engineering judgment as to whether or not to use the crash cost.

The second sheet ("2. Accident Cost") displays the crash costs for each design alternative, as determined in the Functional Class sheets. The third sheet ("3. BC Matrix") assembles a BC ratio matrix by using Equation 36. This sheet also interprets the matrix and determines the best overall design alternative, according to the BC ratios.

The fourth sheet ("4. Coefficients") contains a combination of the results shown in Appendices A through II. Each scenario was assigned an index number, which was later used to lookup values based on the input parameters. In total, 8,505 index values covered all seven functional classes. Each of those functional classes contain four slopes (1V:2H, 1V:3H, 1V:4H, and 1V:6H) and one guardrail system.

The next seven sheets ("5. FC1" through "11. FC7") were created for calculation purposes, each one containing calculations pertinent to one of the seven functional classes. Each sheet imports data entered in the "1. BC Analysis" tab. Using these input parameters, the program determines two standard values surrounding the user's input value. These standard values were those chosen for the RSAP simulation and were designated as "LOW" and "HIGH," relative to the input value. For example, if the user specifies a height of 4 ft (1.2 m), the low value programmed into RSAP was 1 ft (0.3 m), and the high value was 7 ft (2.1 m). Once low

and high values were determined for each input parameter, the pertinent coefficients for those low and high values were looked up from the "4. Coefficients" tab. Once the coefficients were determined, the program interpolated between the two values to determine the proper coefficient for the user's input value. This interpolation process could become very complex. It was accomplished by first interpolating between offset values. Next, the process continued by interpolating between heights, lengths, grades, and, finally, degrees of curvature. The interpolation tree has been illustrated in Figure 15. This tree only shows half of the interpolation process. The top entry represents the low value of the degree of curvature. The other half of the tree would show the high value. The final coefficient was determined by interpolating between these two halves, using the input value for the degree of curvature.

The twelfth sheet ("12. Direct Costs") orders the design alternatives by ascending direct costs for use in the matrix interpretation. The thirteenth and final sheet ("13. Societal Costs") calculates the cost of a single crash at the simulated severity index. This process was completed by reading in the current year's GDP implicit price deflator, adjusting the cost of each SI, and determining the coefficients of Equation 22 using Equation 23. Then, these coefficients are used in the "4. Coefficients" tab to calculate the crash cost for every scenario (each of the 8,505), based on the user-defined traffic volume and simulated impact frequency.

Finally, interpolation cannot be used when a parameter's value falls outside the range of used values. Instead, extrapolation beyond the last known point must be used. This calculation was accomplished by using the slope between the two closest known parameters and applying this slope to the difference between the values of the out-of-range and in-range parameters.

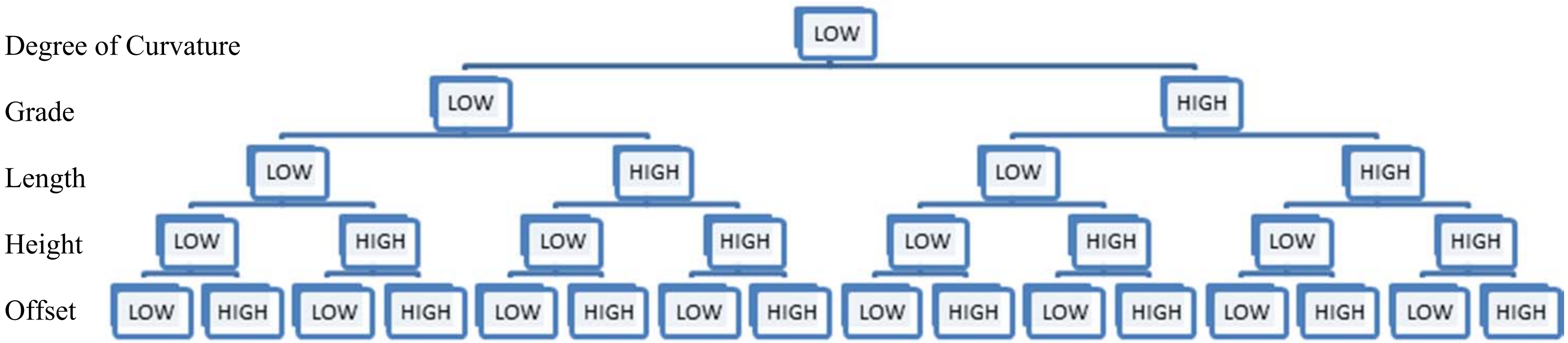


Figure 15. Interpolation Tree used in BCAFP

12.3.3 Using BCAFP

All “blue” cells must be filled in. By doing so, the program will automatically apply the functional class identification procedure. The user must then select a design alternative. The options include foreslopes of 1V:2H, 1V:3H, 1V:4H, and 1V:6H, in addition to a Guardrail option. Intermediate slopes, such as 1V:3.4H, should be classified as one of the provided slopes. This selection was made by rounding up or down as needed. For example, the 1V:3.4H slope would round down to 1V:3H. If the engineer needs a more precise estimate for a crash cost (but not necessarily more accurate), linear interpolation may be used between adjacent slopes. In the example, a 1V:3H and a 1V:4H slope would be used in combination with the given slope. The Guardrail option is only included as a rough guideline. If a longitudinal barrier is required, some other means of analysis should be used to determine the best barrier for any given situation.

The remaining parameters are not selected from drop-down menus. Instead, the user is allowed to specify any input value, within limits that will be discussed in the next section, to any degree of precision. If the input value exceeds the upper value used in the analysis or is less than the lowest value, the program will display a warning message that says, “Extrapolation Used.” The warning is intended to prompt the engineer to use judgment in determining if the crash cost is reasonable for the scenario.

Once the input parameters are entered, BCAFP determines the values that are used for interpolation or extrapolation. The equations given in Section 12.2 are used to calculate the crash cost. Finally, using the user-defined direct costs, a BC ratio is determined for each compared alternative, resulting in a BC ratio matrix. BCAFP interprets this matrix to recommend the most cost-effective design.

12.3.4 Limitations of BCAFP

BCAFP was created to aid in a feasibility analysis of slope flattening under generic roadside conditions. If some anomaly exists, such as exceptionally high crash rates, then an additional, site-specific analysis will be required. It also assumes that the slope is free and clear of any fixed roadside objects, such as overhead sign supports or trees. If these objects are on the slope and within the clear zone, they will present a far more severe impact and will dominate the treatment design options, for which BCAFP is not designed to deal with.

This program is not an authoritative representation. Even though slope flattening may not be feasible in some cases, according to BCAFP, it may still provide the best treatment option when other parameters are considered, such as the relative consequence of a collision resulting from traversing the slope. For example, if a gas main is struck and explodes, the damage to the surrounding motorists and general public would significantly increase the societal costs. This type of consequence was not modeled but could be considered for future work or future versions of RSAP. These other parameters would be identified and analyzed on a case-by-case basis. One such example may include a steep slope that alters the trajectory of the vehicle. Perhaps it is infeasible to flatten the entire length of a slope due to cost considerations, but it may prevent errant vehicles from increasing their encroachment angle if a portion of the slope is flattened. Imagine if a fixed object lay at the base of the slope and just outside of the clear zone. With the steeper slope, an errant vehicle could strike this fixed object with a greater impact angle, causing more damage to the motorist. If the slope were flattened upstream of the fixed object, the vehicle's trajectory may allow the vehicle to avoid an impact with the fixed object, or at the very least, reduce the impact angle.

The coefficients used by BCAFP were determined as outlined in this report. That is, they were based on results from RSAP. RSAP itself has limitations ranging from the data it uses for

encroachment frequency to programming errors. These limitations are highlighted in Chapter 15 and are detailed more explicitly in the draft interim report for NCHRP Project no. 22-27 [21].

The known values of the coefficients fall within a specified range of known input parameters. For example, the range of the length of the feature was 200 to 1,400 ft (61.0 to 426.7 m). As a result, if the crash cost was required for a scenario that falls outside this range, extrapolation was required. However, this was less certain than interpolation results between known values. The engineer is encouraged to use judgment to determine if the crash costs determined by extrapolation are representative of the scenario.

12.4 Determining a Crash Cost

12.4.1 Example 1 – FC1 Highway

Given:

- 1V:2H slope
- 55 mph (88.5 km/h) PSL
- ADT = 400 vpd
- Degree of Curvature = 0 degrees
- Grade = 4 percent
- Length of Feature = 200 ft (61.0 m)
- Height of Feature = 7 ft (2.1 m)
- Offset of Feature from the Edge of the Traveled Way = 7 ft (2.1 m)

From Appendix H (1V:2H Slope, FC1), m = 1.30x10-5, b = 1.32x10-4 and the SI was 3.7. Using the coefficients given in Table 27, the cost per crash could be described by Equation 29. The crash cost, AccCost, was given by Equation 31:

$$SI_{cost} = -521.76(3.7)^4 + 13{,}592.51(3.7)^3 - 54{,}255.18(3.7)^2 + 66{,}245.10(3.7)$$

$$= \$91{,}900.63$$

$$AccCost = \left((1.31 * 10^{-5}) * 400 + 1.32 * 10^{-4}\right)(\$91{,}900.63) = \$489.85$$

12.4.2 Example 2 – FC3 Highway

Given:

- 1V:4H slope
- 65 mph (104.6 km/h) PSL
- ADT = 63,000 vpd
- Degree of Curvature = 2 degrees
- Grade = 2 percent
- Length of Feature = 400 ft (121.9 m)
- Height of Feature = 6 ft (1.8 m)
- Offset of Feature from the Edge of the Traveled Way = 12 ft (3.7 m)

The height and length of the feature cannot be directly read from the table. Therefore, linear interpolation between 1 and 7 ft (0.3 and 2.1 m) was required for the height, and between 200 and 800 ft (61.0 and 243.8 m) for the length. To do this, Appendix X was used. First, the crash cost for a 200-ft (61.0-m) feature at 1-ft (0.3-m) and 7-ft (2.1-m) heights was determined. For a 200-ft (61.0-m) long, 1-ft (0.3-m) high feature, m and b were 1.07×10^{-6} and 0.00, respectively, and the SI was 1.30. Using Equations 29 and 31, the crash cost was \$490.78 per year. For a 200-ft (61.0-m) long, 7-ft (2.1-m) high feature, m and b were 1.68×10^{-6} and 0.00, respectively, and the SI was 1.39. Using Equations 29 and 31, the crash cost was \$824.80 per year. Interpolating at 6 ft (1.8 m) was done as follows:

$$AccCost = \left[\left(\frac{6ft - 1ft}{7ft - 1ft}\right)(\$824.80 - \$490.78)\right] + \$490.78 = \$769$$

Next, the process was repeated for an 800-ft (243.8-m) long feature at 1-ft (0.3-m) and 7-ft (2.1-m) heights. The corresponding m values were 6.73x10^{-6} and 9.34x10^{-6}, respectively. The b values were 0.00 for each height. In addition, the respective SI values were 1.30 and 1.39. Using Equations 29 and 31, the crash costs were \$3,085.70 and \$4,585.25, respectively. Interpolating at 6 ft (1.8 m) was done as follows:

$$AccCost = \left[\left(\frac{6ft - 1ft}{7ft - 1ft}\right)(\$4{,}585.25 - \$3{,}085.70)\right] + \$3{,}085.70 = \$4{,}335$$

Finally, the crash cost was determined by interpolating between the two preceding crash costs at a length of 400 ft (121.9 m). The calculation was done as follows:

$$AccCost = \left[\left(\frac{400ft - 200ft}{800ft - 200ft}\right)(\$4{,}335.33 - \$769.13)\right] + \$769.13 = \$1{,}958$$

12.4.3 Example 3 – FC4 Highway

Given:

- Divided
- 1V:3H slope
- 55 mph (88.5 km/h) PSL
- ADT = 12,000 vpd
- Degree of Curvature = 0 degrees
- Grade = 6 percent
- Length of Feature = 800 ft (243.8 m)
- Height of Feature = 7 ft (2.1 m)
- Offset of Feature from the Edge of the Traveled Way = 2 ft (0.6 m)

The crash cost was determined from Appendix R. From that Appendix, m and b were 3.23×10^{-5} and 0.038, respectively, and the SI was 1.90. No interpolation was required in this example. From Equations 29 and 31, the crash cost was $4,539.

12.4.4 Example 4 – FC6 Highway

Given:

- 1V:3H slope
- 30 mph (48.3 km/h) PSL
- ADT = 300 vpd
- Degree of Curvature = 3 degrees
- Grade = 0 percent
- Length of Feature = 1400 ft (426.7 m)
- Height of Feature = 13 ft (4.0 m)
- Offset of Feature from the Edge of the Traveled Way = 2 ft (0.6 m)

The m and b values were taken from Appendix T. No interpolation was required in this example. Therefore, m and b were 1.30×10^{-4} and 0.0016, respectively, and the SI was 2.9. From Equations 29 and 31, the crash cost was $2,304.

12.4.5 Example 5 – FC2 Highway

Given:

- Undivided
- Guardrail System
- 55 mph (88.5 km/h) PSL
- ADT = 12,000 vpd
- Degree of Curvature = 0 degrees

- Grade = 3 percent
- Length of Feature = 800 ft (243.8 m)
- Height of Feature = 7 ft (2.1 m)
- Offset of Feature from the Edge of the Traveled Way = 7 ft (2.1 m)

The crash cost was determined from Appendix KK. No interpolation was required in this example. Therefore, m and b were 1.47×10^{-4} and 2.03, respectively, and the SI was 1.8. Using Equations 29 and 31, the crash cost was $37,230.

13 BENEFIT-COST RATIOS

13.1 BC Ratios Defined

The incremental analysis of BC ratios is used to compare one alternative to another. Theoretically, a BC ratio of 1 means that the cost to install a new design is approximately the same as the crash cost associated with the original design. It is usually recommended that a BC ratio of at least 1.5 be used, but most state departments prefer nothing less than 2.0. Therefore, a minimum BC ratio equal to 2.0 is often used to suggest a beneficial design. With today's concerns with available project funds, some have suggested that design improvements utilize a minimum BC ratio equal to 4.0. The BC ratio is obtained from the direct costs and crash costs of each alternative (see Chapters 10 and 11). It is calculated using Equation 33 [12].

$$B/C_{2-1} = \frac{(AC_1 - AC_2)}{(DC_2 - DC_1)} \qquad (33)$$

Where

B/C_{2-1} = Incremental BC Ratio of Alternative 2 Compared to Alternative 1

AC_1 = Annualized Crash Cost of Alternative 1

AC_2 = Annualized Crash Cost of Alternative 2

DC_1 = Annualized Direct Cost of Alternative 1

DC_2 = Annualized Direct Cost of Alternative 2

A BC matrix compares the cost-effectiveness of each alternative under review to the other alternatives, including the baseline alternative. A sample BC matrix is given in Figure 16. In general, the alternatives were ordered from left to right and top to bottom based on the direct costs, with the least expensive ("do nothing") on the left and at the top. The last term in the top row, Guardrail, represented the alternative requiring a TL-3 guardrail system be installed in front of the existing slope. To interpret the results, the engineer can start reading the table in the lower

right corner. If this value was greater than 2.0, then Guardrail was better than 1V:6H. If the next value from the bottom in the last column was greater than 2.0, Guardrail was better than 1V:4H. This process was continued until either it was determined that Guardrail was better than all alternatives or it was determined that Guardrail was not as beneficial as another alternative. In the sample included in Figure 16, the BC ratio comparing Guardrail to 1V:6H was 0.000, meaning that 1V:6H was better than Guardrail. From this point forward, the Guardrail option was no longer considered. Then, 1V:6H was compared to 1V:4H, thus resulting in a BC ratio of -2.162. It should be noted that negative BC ratios indicate that the alternative design actually increases the crash cost. The modification of the existing slope to 1V:6H slope was not considered any further. Next, 1V:4H was compared to 1V:3H, and the ratio was 25.084 which was larger than 2.0. As a result, the slope 1V:3H was eliminated from further consideration. Finally, 1V:4H was compared to 1V:2H, the “do nothing” condition. The ratio was 16.920. For the condition given in the figure, the most cost-beneficial option was to install a 1V:4H slope. This method allows the engineer to compare different design alternatives directly to one another rather than indirectly by comparing each alternative to the baseline alternative only.

	1V:2H	1V:3H	1V:4H	1V:6H
1V:2H	0	14.471	16.92	10.241
1V:3H		0	25.084	6.012
1V:4H			0	-2.162
1V:6H				0

Figure 16. Example BC Ratio Matrix

Although the 1V:3H, 1V:4H, and 1V:6H slope alternatives are all beneficial relative to the baseline slope of 1V:2H, the best option is the 1V:4H, as determined by interpreting the full matrix. Whenever possible, as many alternatives as are feasible should be investigated and compared using the results of this research and contractor bids on materials and labor for the

construction of the alternatives. This process will ensure that the selected alternative provides the best balance between safety performance and cost.

13.2 Example Calculation

Determine the most cost-beneficial design alternative from slope-flattening options and a guardrail option for a FC3 highway with an existing slope of 1V:3H.

Given:

- Divided highway retrofit project.
- Design Speed = 55 mph (88.5 km/h)
- Existing slope is a 1V:3H
- ADT = 65,000 vpd
- Degree of Curvature = 0 degrees
- Grade = 0 percent
- Length of Feature = 200 ft (61.0 m)
- Height of Feature = 13 ft (4.0 m)
- Offset of Feature from the Edge of the Traveled Way = 7 ft (2.1 m)
- Assume no additional clear zone is needed for ROW
- Minimum BC Ratio = 4.0

Solution:

Determine the direct costs, as per guidance in Chapter 10. Assume the cost per cubic yard of fill is $30. To conduct an accurate BC analysis, these values would need to be determined for every scenario as the costs of fill and ROW vary across a wide range. Assume the shrinkage factor for the volume of borrow soil is zero. Using Equation 22, the required volumes for slopes of 1V:4H and 1V:6H were estimated.

$$V_{1V:4H} = \frac{1}{2}h^2 l(X_{II} - X_I) = \frac{1}{2}(13ft)^2(200ft)(4-3)\left(\frac{1\ CY}{27\ ft^3}\right) = 626\ CY$$

$$V_{1V:6H} = \frac{1}{2}h^2 l(X_{II} - X_I) = \frac{1}{2}(13ft)^2(200ft)(6-3)\left(\frac{1\ CY}{27\ ft^3}\right) = 1{,}878\ CY$$

The ROW area was determined using the width of the baseline foreslope and the alternative foreslope, which was a function of the slope and the height. The width was the height multiplied by the slope, where the slope was defined by the horizontal component. For example, the slope of a 1V:4H foreslope is 4. In this example, the height was 13 ft (4.0 m). Therefore, the widths of the two alternatives were 52 and 78 ft (15.8 and 23.8 m). The width of the baseline alternative was 39 ft (11.9 m). The net width of the required ROW was the difference between the width of the alternative slope and the baseline slope. The area was then determined by multiplying the net width by the length of the foreslope, or in this case, 200 ft (61.0 m).

The direct cost of each alternative was calculated using Equation 27. The resulting volumes, square footages of ROW, and associated costs are given in Table 28. It should be noted that the direct cost of the baseline slope was \$0.00.

$$DC_{1V:4H} = P \cdot \left[\frac{i(1+i)^n}{(1+i)^n - 1}\right] = 31{,}777.78 \cdot \left[\frac{0.04(1+0.04)^{25}}{(1+0.04)^{25} - 1}\right] = \$2{,}034$$

$$DC_{1V:6H} = P \cdot \left[\frac{i(1+i)^n}{(1+i)^n - 1}\right] = 95{,}333.33 \cdot \left[\frac{0.04(1+0.04)^{25}}{(1+0.04)^{25} - 1}\right] = \$6{,}101$$

Table 28. Direct Cost Calculations

Slope (1V:XH)	Volume ($yard^3$)	Fill Cost (\$)	ROW area (ft^2)	ROW Cost (\$)	Total Cost (\$)	Direct Cost (\$)
1V:4H	626	18778	2600	13000	31,778	2,034
1V:6H	1878	56333	7800	39000	95,333	6,101

Next, the crash costs associated with the given scenario for all three slopes were determined. For the 1V:3H slope, BCAFP calculated the crash cost to be $2,451.19. For the 1V:4H slope, BCAFP calculated the crash cost to be $2,244.93. For the 1V:6H slope, BCAFP calculated the crash cost to be $1,970.97. The BC ratios were calculated using Equation 33.

$$B/C_{4-3} = \frac{(2{,}451.19 - 2{,}244.93)}{(2033.78 - 0)} = 1.58$$

$$B/C_{6-3} = \frac{(2{,}451.19 - 1{,}970.97)}{(6101.33 - 0)} = 1.23$$

$$B/C_{6-4} = \frac{(2{,}244.93 - 1{,}970.97)}{(6101.33 - 2033.78)} = 1.05$$

Next, the crash cost and direct cost of the Guardrail option were determined. The total length of material of the guardrail was estimated using the 2006 RDG and Section 11.3 of this report. The total length would be approximately 550 feet (168.0 m) with two end terminals. The value was calculated using Equations 25 and 26, where L_1 was assumed to be 25 ft (7.6 m) and provided a buffer region between the end of the tangent section of guardrail and the beginning of the foreslope. The length, *l*, was 200 ft (61.0 m), or the length of the foreslope. The height of the foreslope (H) was 13 ft (4.0 m). The slope of the foreslope (S) was 3. The flare rate, F, was the flare rate of the ends of the guardrail and the terminal. This value was chosen from the RDG to be 24H:1V, because the shy line was 7.2 ft (2.2 m) for a 55-mph (88.5-km/h) design speed. This meant that the barrier would be located within the shy line. For use in Equation 26, F was converted to a decimal and was 0.04167 (1/24). The offset distance to the face of the guardrail, L_2, was 7 ft (2.1 m). Finally, the runout length, L_R, was determined by Table 5.8 in the 2006 RDG [1]. This value was 360 ft (109.7 m) for a posted speed limit of 55 mph (88.5 km/h). It should be noted that the slope is protected from both directions equally, providing a conservative length-of-need.

$$x = \frac{(13 * 3) + (25 * 0.04167)}{0.04167 + \left(\frac{13 * 3 + 7}{360}\right)} = 236.31\, ft$$

$$L = 2 * (236.31 - 25 - 37.5) + 200 = 547.61\, ft = 550\, ft$$

The cost per foot of guardrail was \$15, while the cost per terminal was \$2,000 [6]. The total installation cost was \$12,250 but the direct cost (assuming 4 percent interest and 25-year design life) was \$784.15 per year. This value included the length-of-need of 550 ft (167.6 m) for the 200-ft (61.0-m) feature length. From BCAFP, the crash cost was \$127,042.41 per year. The BC ratio of the Guardrail option to the baseline alternative was found to be -155.30.

$$B/C_{GR-3} = \frac{(2{,}451.19 - 127{,}042.21)}{(784.15 - 0)} = -158.89$$

Because the crash cost of the guardrail alternative was greater than the baseline crash cost, the BC ratio was negative. In addition, the 1V:4H and 1V:6H slopes in this example had large BC ratios compared to the Guardrail option, making the slope-flattening options more cost-effective than the Guardrail option. However, none of the slope-flattening options had BC ratios above 1. Therefore, the engineer would not have been justified in recommending that the existing slope be flattened or shielded by a guardrail system. This recommendation was illustrated by the tabulated BC ratios shown in Figures 17 through 19. This figure was taken directly from BCAFP, in which a fifth alternative, “None,” was a placeholder in the event that a fifth alternative was used. Because the 1V:6H to 1V:4H ratio was 0.26, the 1V:6H slope was dropped from further consideration. Finally, because the 1V:4H to 1V:3H (baseline) ratio was negative, the 1V:3H slope was recommended for this case, meaning no retrofit design provided a cost-effective alternative to this existing slope.

Benefit-Cost Analysis of Foreslopes Program (version 3)

Input Values

		Total Direct Cost		
Baseline Alternative	1V:3H	$ -	GDP Implicit Price Deflator	111.141
Other Alternatives	1V:4H	$ 2,034.00	ADT (vpd)	65,000
	1V:6H	$ 6,101.00	Interest Rate	0.04
	Guardrail	$ 12,250.00	Design Life (yrs)	25
	None	$ -	Minimum BC Ratio	4.0
Functional Class	FC3			
Degree of Curvature	0			
Grade (%)	0			
Length of Feature, *l* (ft)	200			
Height, *h* (ft)	13			
Offset, *o* (ft)	7			

Summary			
Design Alternative	Direct Cost	Accident Cost	Severity Index
1V:3H	$ -	$ 1,047.91	1.5
1V:4H	$ 130.20	$ 1,566.27	1.2
1V:6H	$ 390.54	$ 1,026.49	1.0
Guardrail	$ 784.15	$ 18,751.80	0.7
None	$ -	$ -	NA

B/C Ratio Matrix					
	1V:3H	1V:4H	1V:6H	Guardrail	None
1V:3H	0	-3.98	0.05	-22.58	-1000000.00
1V:4H		0	2.07	-26.28	-1000000.00
1V:6H			0	-45.03	-1000000.00
Guardrail				0	-1000000.00
None					0

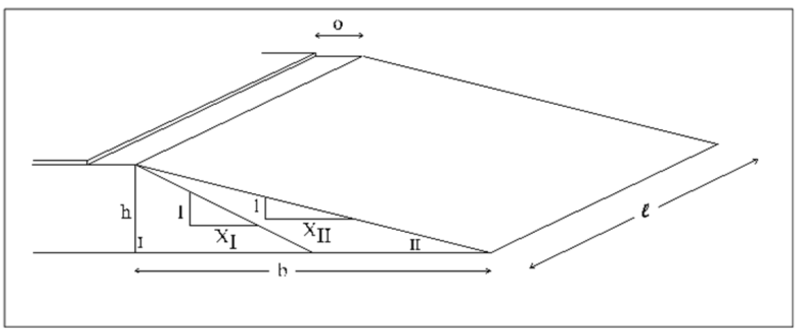
Slope Recommendation: 1V:3H

Other roadside design issues may influence the slope selection

Figure 17. BCAFP "1. BC Analysis" Sheet – Location Details

Functional Class Input	
ADT, vpd	65,000
PSL, mph	55
Lane Width, ft	12
Shoulder Width, ft	8
% Grade	0
Curvature, deg	0
Divisions (1=Div, 0=Und)	1

Figure 18. Functional Classification Input



Warnings	
Design	
Degree of Curvature	
Grade	
Length of Feature	
Height	
Offset	
ADT	

Classification
FC3
Additional Messages

Figure 19. Cross Section Illustration, Input Warnings, and Classification Messages

14 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

14.1 Summary

Based on crash data collected between 2000 and 2006 from the state of Ohio, the severity indices on selected foreslopes were estimated by associating the number of (A+K) crashes with the total mileage for each slope-height combination. In each combination, the severity index was reduced, relative to Wolford and Sicking's results and the default results in RSAP (version 2003.04.01). This comparison was shown graphically for an embankment height of 7 ft (2.1 m) on a FC2/FC4 highway in Figure 8. This reduction was expected, based on comments made in the RSAP Engineer's Manual that stated severity indices were likely biased towards higher-speed impacts [12].

Once the new severity indices for foreslopes were determined, they were implemented in RSAP and used in the simulation of an extensive matrix roadway and traffic characteristics. Each scenario in the test matrix was repeated for several traffic volumes. For each scenario and traffic volume, RSAP was used to estimate average crash costs. From these crash costs, equations were developed to determine linear relationships between traffic volume and the crash cost. These equations were described by a series of slopes and y-intercepts. Results of this analysis are tabulated in the attached Appendices. With the coefficients of the best-fit line, shown in the Appendices, and the site-specific traffic volume, a designer can estimate the crash cost for any of the scenarios studied. In addition, a Microsoft Excel program known as BCAFP was developed to automatically look up the appropriate parameters and interpolate or extrapolate when needed. This program greatly reduced the time and effort needed to determine the crash costs and BC ratios, and it removed the possibility of human error in both looking up values and in making calculation mistakes during interpolation or extrapolation. In addition, it applied an objective

scheme to determine the functional class of the highway based on the attributes that have a specific effect on the safety performance of the highway.

The benefit-cost application of these crash costs was described. The difference in crash costs between two competing alternatives represents the numerator of the BC ratio, which can be used to justify the use of one design alternative over another. In order to successfully carry out the benefit-cost analysis, the engineer must ascertain the material costs of each alternative under consideration in order to construct the denominator of the BC ratio. An example of this process was given in Section 13.2.

Additionally, in order to correctly model highway types, the RSAP data files had to be adjusted. As referenced in Chapter 4, the user interface incorrectly codes most roadway functional classes. As a result, the "road.dat" file was modified so that the correct numerical codes were used.

Finally, as mentioned in reference to BCAFP, an objective classification process was proposed, wherein the highway type was determined by a series of elimination steps. The product of this process provided a functional class from the simulation matrix that most closely resembles the one being analyzed for the given benefit-cost analysis.

14.2 Conclusions

Most of the severity indices used in the default version of RSAP were overestimated. This research has presented new severity indices based on real-world crash data and used them to determined crash costs on an array of different foreslopes. Once the results of the RSAP analysis were available, trends appeared in each of the parameters and for each of the functional classes. Flattening the slope and increasing the offset decreased the crash costs for all functional classes. Likewise, increasing the traffic volume and length of the feature increased the crash costs for all functional classes. The degree of curvature and the percent grade caused initial decreases in

crash costs (however slight they were), but then increased crash costs as those parameters continued to increase.

As the height of the feature increased, the crash cost tended to increase as well. However, this increase was not as significant as the increase caused by the traffic volume and the length of the feature.

Finally, and of most importance, slope flattening reduced crash costs in most cases. Occasionally, the crash cost increased between adjacent slopes such as 1V:3H and 1V:4H slopes. The magnitude of this reduction (or increase) varied widely between functional classes. The largest decreases occurred on FC1/FC6 highways when 1V:2H slopes were flattened to 1V:4H slopes. FC3 highways, however, did not have decreases of more than 20 percent between any slopes. Therefore, slope flattening would not be a common recommendation on FC3 highways unless the cost of implementing flatter slopes was exceptionally low.

Increases in crash costs were observed in only two scenarios. Slopes flattened from 1V:3H to 1V:4H on FC3 highways experienced an increase, as did the 1V:4H to 1V:6H condition on FC1 highways. This increase was typically less than 10 percent, which was not considered significant.

Finally, as illustrated in the decision tree in Figure 10, guardrail systems should only be considered after all possible slope-flattening alternatives have been explored. The analyses indicated an increase in crash cost for the guardrail system relative to the foreslopes. However, slope flattening may not be possible due to acquisition costs for ROW or urban settings where there isn't enough room to flatten the slope. In these cases, guardrail systems may represent the safest alternative.

14.3 Recommendations for Application

As mentioned throughout this document, all results, conclusions, and recommendations apply only to retrofit projects. When considering new-construction projects, a separate analysis is required.

In RSAP, the severity index is directly proportional to the impact speed. As a result, the severity indices were determined for several impact speeds, such that a linear equation could be developed from the results. For each functional class, a linear equation was developed for each height. Those equations are recorded as Equations 1 through 12, and the slopes and intercepts are summarized in Equation 34 and Table 29. To determine the severity index as a function of speed, the resulting value from the Equations simply needs to be divided by 55 (or 88.51392 for metric units), which will give the SI per mph (or km/h). These severity index equations should be used when estimating crash costs of crashes involving clear foreslopes.

$$SI = m\left(\frac{V}{H}\right) + b \tag{34}$$

Where V is the vertical component of the foreslope, or 1, and H is the horizontal component of the foreslope. The slope of the equation and the intercept are summarized below for each functional class and embankment height.

Table 29. Slope-Intercept Values for SI Calculations

Functional Class	Height = 1 ft (0.3 m)		Height = 7 ft (2.1 m)		Height = 13 ft (4.0 m)	
	m	b	m	b	m	b
FC3	0.5829	1.1429	0.4457	1.2857	2.0229	0.9429
FC2/FC4	0.0000	1.5500	3.0857	0.8857	2.6400	1.1000
FC5/FC7	1.3714	0.7714	1.6800	0.8000	2.6400	0.4000
FC1/FC6	2.4686	1.3286	5.5543	0.6143	3.0857	1.3857

14.3.1 Trend Charts

A series of charts were developed for each functional class and land usage modeled in BCAFP. The length of the feature, lateral offset to the slope break point, and the height were varied from one chart to the next. Within each chart, three costs were used for fill material ($2/CY, $5/CY, and $15/CY). For each scenario, and for each fill cost, ten increments of traffic volume were chosen to represent the functional class. For example, FC3 highways ranged from 10,000 vpd to 100,000 vpd in the RSAP simulations and comprised approximately 95 percent of the crashes from the Ohio database. Then, for each ADT increment, the most cost-effective slope was recorded and color-coded. Red was reserved for 1V:2H, green for 1V:3H, yellow for 1V:4H, and blue for 1V:6H. In general, flattening trends (i.e., recommendations were graded from 1V:2H to 1V:6H) as traffic volume increased, as lateral offset decreased, as length increased, and as height increased. Similarly, as the cost of the fill material increased, steeper slopes became more cost-effective. Trends for BC ratios of 2 and 4 were also included in each chart. The same trends were observed for both ratios, in general terms, but as the BC threshold was increased to 4, most recommendations shifted towards steeper slopes. An example chart, demonstrating a full range of slopes (all four), is shown in Figure 20. All charts are given in Appendices A through G.

FC3 7-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:4H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:2H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:4H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:4H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:4H	100,000	1V:4H	1V:3H	100,000	1V:3H	1V:2H

Figure 20. Recommendation Trend Example

14.3.2 Future RSAP Analyses

Because the user interface incorrectly codes most roadway functional classes, it is recommended that the analyst examine the "road.dat" file, which is generated by the user interface, before conducting an RSAP analysis. If the modeled functional class is anything other than a rural arterial highway, the numerical code in this data file should be modified according to the values presented in this report. Those values are reprinted in Table 30 to stress the importance of this step in all future uses of RSAP version 2003.04.01.

Table 30. Functional Class Codes for "road.dat"

Functional Class	Old Code	New Code
Freeway	22	21
Urban Arterial	25	12
Urban Local	24	15
Rural Arterial	22	22
Rural Local	21	25

14.4 Recommendations for Future Work

The current version of RSAP assumes a straight-line encroachment path. As a result, the driver's behavior is not considered. Drivers are more likely to attempt a corrective maneuver when the vehicle is encroaching on a foreslope than they are to continue in a straight line. This corrective maneuver would increase the propensity for rollover; however, RSAP v2003 does not incorporate rollover into the calculation of the average severity index of a foreslope. It was assumed that the effect of rollover on the average crash cost was offset by increasing the SI, but this increase was not based on any data pertaining to crash costs of rollovers, but rather engineering judgment [12]. RSAP is currently being updated under NCHRP Project No. 22-27 and will include curvilinear encroachment paths [21] and could provide further insight into the correlation between driver behavior, slope steepness, and the number of (A+K) crashes.

Additionally, a new process for functional classification was proposed herein using crash data to establish ranges for parameters that were used to eliminate candidate highway types until only one remained. This process needs to be tested thoroughly to ensure confidence in the process. This will provide long-term, nation-wide agreement on an issue that has been so subjective that even FHWA has said that it is "not an exact science" [26].

Finally, only foreslopes with constant steepness were analyzed in this study. However, some states have prevalent design practices that incorporate mixed slopes in lieu of more costly constant slopes. Additionally, a vehicle can encroach on flat ground and abruptly transition to a slope. This intersecting slope concept is not fully developed in RSAP. Finally, backslopes were not considered, but they are a common feature and are often used in conjunction with foreslopes. For each of these unusual cross sections, and many more that were not explicitly described, more work should be done either in the form of a research project (where a bulk of time and effort would be spent on determining the most pertinent cross sections) or case-by-case studies.

15 LIMITATIONS

15.1 Retrofit versus New Construction

This project applies only to retrofit design projects. There are primarily two reasons why the results of this study do not apply to new construction: (l) direct costs can be significantly lower for new-construction projects because mobilization costs are not included, and (2) the baseline conditions of the roadway for new-construction projects are not known, but are required to conduct accurate benefit-cost analyses.

15.2 Severity Index Updates

Results of this analysis were highly dependent on the severity index used to estimate the crash cost of each scenario. Therefore, part of this study focused on developing more accurate severity indices on foreslopes. This part provided the major limitations to this study.

One limitation to this work was the small sample size used to develop the new severity indices. Only 816 crashes were analyzed, which was small compared to the work by Wolford and Sicking, which included nearly 20,000 embankment crashes. In addition, only seven years were used in the data collection. Therefore, statistical significance may be a limiting factor in the results. However, of the nearly 20,000 crashes, many were excluded as non-representative of the roadway conditions in the sponsoring state, and of the ones used, only 630 were (A+K). Therefore, while this study could benefit from the addition of more data, it is still on a slightly larger scale than previous studies with similar objectives.

Impact speed also played a pivotal role in the determination of the SI value for a given roadside feature. However, the crash data set could not include exact impact speeds. Only estimations were given and were most likely based on human judgment. The average impact speed from the crash data was 53.9 mph (86.7 km/h). Based on research done at the Midwest Roadside Safety Facility, the average impact speed on a U.S. and State Route is approximately

39 mph (62.8 km/h) [22]. As a result, the impact velocities given in the crash data were too high and unusable. If actual impact speeds were known, the relationship between the impact speed and the SI could have been checked. Initially, this relationship was assumed to be linear. However, there may be reason to suspect that this relationship is more parabolic, considering the relationship between kinetic energy and velocity, which is commonly used to describe severities of impacts with barriers.

15.3 RSAP Programming For the Current Version (2003.04.01)

15.3.1 Conceptual Limitations

Encroachment paths are assumed to be linear in RSAP version 2003.04.01, which disallows the possibility of overcorrection as the motorist reacts to the unexpected encroachment. An overcorrection could substantially increase the rate of rollover on foreslopes, which in turn would increase severity indices. A new version of RSAP has been developed that uses set vehicular encroachment paths, which include curved paths, as opposed to straight-line paths whose angles are determined by Monte Carlo simulation [21]. However, this version still needs more data for foreslopes and more validation testing in order to provide reliable BC results. Once this new version becomes robust for foreslope modeling, accuracy in rollover prediction on foreslopes may increase. RSAP currently employs a rollover prediction algorithm that is applied to fixed objects only. However, as much as 86 percent of all rollovers occur on roadside features that do not include fixed objects [23]. Instead, RSAP attempts to account for these rollovers by increasing severity indices for the associated feature, such as a foreslope [12].

RSAP uses speed distributions for various functional classes that were based on a study completed before the national speed limit was lifted [24]. In order to predict encroachment speeds indicative of today's traffic, a new study should be undertaken following the same

procedures used by Mak, Sicking, and Ross [24] to determine speed distributions without the influence of the national speed limit.

Finally, access density was not considered in RSAP. These access points would include on and off ramps on interstates. These locations experience the greatest crash frequency. This increased frequency is in part due to the changes in driver interactions, as vehicles are added to or removed from the roadway (recall that only one vehicle is simulated).

15.3.2 Cooper Data

Cooper used a statistical design that was dependent on the outcome. In other words, bias was introduced into the data set. This had the tendency to inflate extreme events (e.g., high and low encroachment rates were made higher and lower). However, the extent of this bias was, and remains, unknown.

The results of Cooper's data showed a similar relationship between ADT and encroachment frequency as Hutchinson and Kennedy's data showed. However, the latter study's encroachment rate was shown to be influenced by seasonal effects more than the traffic volume [25]. The reanalysis of this classic study had not been performed on the Cooper data yet but needs to be done to determine if traffic volume alone can be used to describe the encroachment frequency.

The data was collected in the late 1970s. Technological and mathematical breakthroughs had not yet been achieved that would have allowed the author to collect and analyze the data in a better way. With a wider network of traffic cameras, perhaps more encroachment data could have been taken. At the time of the report, Cooper's statistical approach was based on the relatively new concept of clustering. It was this approach that ultimately led to the bias previously mentioned. Today's clustering approach is used in studies like the U.S. Census, in which statistical tools have been developed that can handle clustered data.

No distinction was made in the data set between controlled and uncontrolled encroachments. This distinction could not be made because the intent of the driver was impossible to determine. Controlled encroachments could include pulling over to switch drivers, among many other possibilities. Attempts have been made to estimate the number of controlled versus uncontrolled encroachments for various roadside features, but application of this ratio to the Cooper data, as RSAP does, needs further investigation. Unfortunately, due to the enormous cost that would be associated with a study to ascertain the intent behind each encroachment, the current practice utilized by RSAP had to be sufficient.

Finally, the small sample size of the Cooper data was a concern. The intent of that study was to increase the sample size by creating smaller segments of the highway. However, this also reduced the number of encroachments per segment, which statistically did nothing to improve the results of the analysis. Only after additional segments are studied, and/or the time included in the data collection is extended, will the sample size be increased, which can only lend stability to the statistical results.

15.3.3 Discrepancies, Bugs, and Errors

Since the completion of the RSAP code, several problems have been discovered. Because the code is very large, it remains possible that more problems exist. Currently known problems include discrepancies between what is coded and what is mentioned in the Engineer's Manual, bugs, and errors. Bugs are caused by programming errors relative to the language used. Errors are mistakes in the code that lead to incorrect results. All three of these problems have been found in the current code. In an ongoing project intended to update RSAP, Dr. Malcolm Ray and his research team have discovered many of these errors. They are outlined in the draft report of that project (NCHRP Project No. 22-27) [21]. The problems are only listed here. For a more detailed description of the problems, see the draft report of NCHRP Project No. 22-27.

15.3.3.1 Discrepancies

- Base encroachment rates for two-lane undivided and multi-lane divided highways do not have the same adjustment factor in the code as are presented in the Engineer's Manual.
- Lane encroachment rates are equal for all lanes despite unequal traffic volume distributions, which should indicate differing encroachment rates as demonstrated by the Cooper data.
- The probability of the lateral extent of encroachment uses a cubic function instead of the correct exponential function. As a result, the probability may be negative for extents greater than 72 ft (22.0 m). These negative probabilities are then forced to zero; however, the exponential function would indicate a positive probability.
- The traffic growth factor in the code increases the ADT each year and adjusts the encroachment frequency accordingly. The Engineer's Manual says it increases in only one increment, at the time of the design life. In this discrepancy alone, the code appears to be more accurate than the Engineer's Manual.

15.3.3.2 Bugs or Errors

- Base encroachment rates are not reduced to 60 percent for the effect of unreported crashes on two-lane undivided and one-way highways.
- The traffic growth factor is divided by 100 to get a decimal form of the percentage. It is then divided by 100 again by mistake when determining the encroachment frequency.

- Highway types are distinguished between undivided, divided, and one-way highways; however, RSAP appears to change how these categories are referenced. It is possible that the highway type is incorrectly chosen.
- Curvature adjustments in the vehicle swath equations convert the degrees to a radius in units of 100-ft (30.5-m) stations; however, that radius is used as if it were in units of 328-ft (100-m) stations. This problem is only applicable to the user interface. If the radius of curvature is specified in the data files, the conversion from radius to degree is correct. The original code was in U.S. units but was converted to SI units. Due to the large size of the code, it is possible that more unit conversion errors exist.
- Lane encroachment rates are approximately half of what they should be for two-lane undivided highways.

16 EQUATION NOTATION

*All notations are given in alphabetical order.

A_X = Total area of the cross section of the new slope
AC_1 = Annualized crash cost of the baseline alternative
AC_2 = Annualized crash cost of the new design
AccCost = Crash cost
ADT_i = Traffic volume in vehicles per day (vpd)
A_I = Area of the cross section of the minimum slope
A_{II} = Area of the cross section of the new slope minus the original slope
b = y-intercept of the equation to determine impact frequency
$BC_{2\text{-}1}$ = Incremental benefit/cost ratio of alternative 2 compared to alternative 1
c_i = Coefficients used to determine the cost of a crash with a given SI
DC = Annualized direct cost
DC_1 = Annualized direct cost of the baseline alternative
DC_2 = Annualized direct cost of the new design
F = Flare rate of the guardrail
GDP_{2010} = Gross domestic product in 2010
GDP_{1994} = Gross domestic product in 1994
h = Height of the foreslope
H = Horizontal component of the foreslope
i = Interest rate
$known_x$ = Set of known ADTs used to calculate c_i
$known_y$ = Set of simulated impact frequencies used to calculate c_i
l = Length of the foreslope
L = Total length of guardrail required
L_1 = Buffer length of guardrail = 25 ft (7.6 m)
L_2 = Offset of the guardrail
L_R = Runout length
m = slope of the equation to determine impact frequency
n = Design life in years
P = Principal investment required for construction
S = Horizontal component of the foreslope designation (S = X in the form 1V:XH)
SI = Severity index
SI_{cost} = Cost of a crash with a given SI
$\$SI_2$ = Cost of a crash with a SI = 2.0
V = Vertical component of the foreslope
V_{borrow} = Volume of borrowed soil required to meet V_{fill} demand
V_{fill} = Volume of fill required to flatten the slope
w_1 = Base of the cross-sectional area of the minimum slope

w_2 = Base of the cross-sectional area of the new slope
x = Length of guardrail required beyond the 25-ft (7.6-m) buffer
X_I = Slope of the baseline foreslope (1V:X_IH)
X_{II} = Slope of the flattened foreslope (1V:X_{II}H)
$(\bar{\gamma}_d)_c$ = Average dry unit weight of borrow soil
$(\bar{\gamma}_d)_f$ = Average dry unit weight of fill soil
$\Delta V / V_f$ = Shrinkage factor applied to borrow soil

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18 APPENDICES

Appendix A. FC1 Design Charts

FC1 2-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:4H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:3H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:4H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:2H	1V:2H

FC1 2-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:4H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 7-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 12-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 2-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:4H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 7-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 12-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:3H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC1 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC1 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:3H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:3H	1V:3H

FC1
2-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC1
7-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC1
12-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:3H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H	1,600	1V:3H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:3H	1V:3H

FC1
2-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC1
7-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC1
12-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:3H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H	1,600	1V:3H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:3H	1V:3H

FC1 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:4H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:2H	1V:2H

FC1 7-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:4H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC1 12-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC1 2-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:4H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC1 7-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC1 12-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

FC1
2-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:4H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC1
7-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC1
12-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

Appendix B. FC2 Design Charts

FC2 2-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:4H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H

FC2 7-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H

FC2 12-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC2 2-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC2 7-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H

FC2 12-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:4H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:4H	1V:4H

FC2
2-ft Offset
1400-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H

FC2
7-ft Offset
1400-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H

FC2
12-ft Offset
1400-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H

FC2 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:3H	1V:3H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:3H	1V:3H

FC2 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:3H	1V:3H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:3H	1V:3H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:3H	1V:3H

FC2 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:3H	1V:2H

FC2
2-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:3H	1V:3H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:3H	1V:3H

FC2
7-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:3H	1V:3H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:3H	1V:3H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:3H	1V:3H

FC2
12-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:3H	1V:2H

FC2
2-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:3H	1V:3H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:3H	1V:3H

FC2
7-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:3H	1V:3H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:3H	1V:3H

FC2
12-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC2 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC2 7-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC2 12-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC2 2-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC2 7-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC2 12-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC2 2-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC2 7-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC2 12-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

Appendix C. FC3 Design Charts

FC3 2-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:3H	1V:3H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:3H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:3H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 7-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:3H	1V:3H
20,000	1V:3H	1V:3H	20,000	1V:3H	1V:3H	20,000	1V:3H	1V:3H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:3H	40,000	1V:3H	1V:3H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:3H	1V:3H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H

FC3 12-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:3H	10,000	1V:3H	1V:3H
20,000	1V:3H	1V:3H	20,000	1V:3H	1V:3H	20,000	1V:3H	1V:3H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:3H	40,000	1V:3H	1V:3H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:3H	1V:3H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H

FC3 2-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 7-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 12-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 2-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 7-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 12-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:3H	1V:3H
20,000	1V:4H	1V:4H	20,000	1V:4H	1V:4H	20,000	1V:4H	1V:3H
30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H	30,000	1V:4H	1V:4H
40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H	40,000	1V:4H	1V:4H
50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H	50,000	1V:4H	1V:4H
60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H	60,000	1V:4H	1V:4H
70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H	70,000	1V:4H	1V:4H
80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H	80,000	1V:4H	1V:4H
90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H	90,000	1V:4H	1V:4H
100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H	100,000	1V:4H	1V:4H

FC3 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:2H	1V:2H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:2H	1V:2H

FC3 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:2H

FC3 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:2H

FC3 2-ft Offset 800-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:2H

FC3 7-ft Offset 800-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:2H	1V:2H
100,000	1V:6H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:2H	1V:2H

FC3 12-ft Offset 800-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:2H	1V:2H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:2H	1V:2H

FC3
2-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:6H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:2H

FC3
7-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:2H	1V:2H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:2H	1V:2H

FC3
12-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H	60,000	1V:2H	1V:2H
70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H	70,000	1V:2H	1V:2H
80,000	1V:3H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:2H	1V:2H
90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:2H	1V:2H
100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:2H	1V:2H

FC3 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:3H	10,000	1V:2H	1V:3H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:3H	1V:3H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H
40,000	1V:4H	1V:3H	40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H
50,000	1V:6H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H
60,000	1V:6H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H
70,000	1V:6H	1V:4H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:4H	80,000	1V:4H	1V:3H	80,000	1V:3H	1V:3H
90,000	1V:6H	1V:6H	90,000	1V:4H	1V:3H	90,000	1V:3H	1V:3H
100,000	1V:6H	1V:6H	100,000	1V:4H	1V:3H	100,000	1V:3H	1V:3H

FC3 7-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:3H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H
100,000	1V:6H	1V:4H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H

FC3 12-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:3H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:3H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:4H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:3H
100,000	1V:6H	1V:4H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:3H

FC3
2-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:4H	1V:3H	40,000	1V:3H	1V:3H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:3H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:3H	1V:2H
70,000	1V:6H	1V:4H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:4H	80,000	1V:4H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:4H	90,000	1V:4H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:4H	100,000	1V:4H	1V:3H	100,000	1V:3H	1V:3H

FC3
7-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:4H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:2H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:4H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:4H	90,000	1V:4H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:4H	100,000	1V:4H	1V:3H	100,000	1V:3H	1V:2H

FC3
12-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:3H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:2H	1V:2H
60,000	1V:3H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:4H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:3H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:3H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:2H

FC3
2-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:4H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:4H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:2H	1V:2H
60,000	1V:6H	1V:4H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:6H	1V:4H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:4H	80,000	1V:4H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:4H	90,000	1V:4H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:4H	100,000	1V:4H	1V:3H	100,000	1V:3H	1V:2H

FC3
7-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:2H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:4H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:2H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:6H	1V:4H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:6H	1V:4H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:6H	1V:4H	100,000	1V:4H	1V:3H	100,000	1V:3H	1V:2H

FC3
12-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
20,000	1V:3H	1V:3H	20,000	1V:2H	1V:2H	20,000	1V:2H	1V:2H
30,000	1V:3H	1V:3H	30,000	1V:3H	1V:2H	30,000	1V:2H	1V:2H
40,000	1V:3H	1V:3H	40,000	1V:3H	1V:2H	40,000	1V:2H	1V:2H
50,000	1V:4H	1V:3H	50,000	1V:3H	1V:3H	50,000	1V:2H	1V:2H
60,000	1V:4H	1V:3H	60,000	1V:3H	1V:3H	60,000	1V:2H	1V:2H
70,000	1V:4H	1V:3H	70,000	1V:3H	1V:3H	70,000	1V:3H	1V:2H
80,000	1V:4H	1V:3H	80,000	1V:3H	1V:3H	80,000	1V:3H	1V:2H
90,000	1V:4H	1V:4H	90,000	1V:3H	1V:3H	90,000	1V:3H	1V:2H
100,000	1V:4H	1V:4H	100,000	1V:3H	1V:3H	100,000	1V:3H	1V:2H

Appendix D. FC4 Design Charts

FC4
2-ft Offset
200-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4
7-ft Offset
200-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4
12-ft Offset
200-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:4H	1V:4H

FC4 2-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4 7-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4 12-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:6H	1,000	1V:4H	1V:2H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:4H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:4H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:4H	1V:4H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:4H	1V:4H

FC4 2-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:4H	1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4 7-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4 12-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC4 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H
16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:6H	1V:6H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC4 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:3H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC4 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:3H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:3H	1V:3H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC4
2-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H
10,000	1V:6H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H
16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:6H	1V:6H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC4
7-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:6H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:3H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:6H	25,000	1V:4H	1V:4H	25,000	1V:3H	1V:3H
28,000	1V:6H	1V:6H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC4
12-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H	13,000	1V:3H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:3H	1V:3H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:3H	1V:3H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:3H	1V:3H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:3H	1V:3H

FC4
2-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:3H	4,000	1V:3H	1V:3H
7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H
10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:6H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H	16,000	1V:4H	1V:3H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H

FC4
7-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:6H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H
10,000	1V:6H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H
16,000	1V:6H	1V:6H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H
19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H

FC4
12-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:3H	7,000	1V:3H	1V:3H
10,000	1V:6H	1V:4H	10,000	1V:4H	1V:3H	10,000	1V:3H	1V:3H
13,000	1V:6H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:3H	1V:3H
16,000	1V:6H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:3H	1V:3H
19,000	1V:6H	1V:6H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:6H	1V:6H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:4H	28,000	1V:4H	1V:3H

FC4
2-ft Offset
200-ft Length
13-ft Height

$2/CY			$5/CY			$15/CY		
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H

FC4
7-ft Offset
200-ft Length
13-ft Height

$2/CY			$5/CY			$15/CY		
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H

FC4
12-ft Offset
200-ft Length
13-ft Height

$2/CY			$5/CY			$15/CY		
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H

FC4
2-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:3H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H

FC4
7-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H

FC4
12-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H

FC4
2-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:4H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H

FC4
7-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:3H	1V:2H

FC4
12-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H

Appendix E. FC5 Design Charts

FC5 2-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC5 7-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC5 12-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:3H	1V:3H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:3H	1V:3H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC5 2-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC5 7-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC5 12-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:3H	1V:3H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:3H	1V:3H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC5 2-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC5 7-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H

FC5 12-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:3H	1V:3H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:3H	1V:3H
7,000	1V:4H	1V:4H	7,000	1V:4H	1V:4H	7,000	1V:3H	1V:3H
10,000	1V:4H	1V:4H	10,000	1V:4H	1V:4H	10,000	1V:4H	1V:3H
13,000	1V:4H	1V:4H	13,000	1V:4H	1V:4H	13,000	1V:4H	1V:3H
16,000	1V:4H	1V:4H	16,000	1V:4H	1V:4H	16,000	1V:4H	1V:3H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:4H	19,000	1V:4H	1V:3H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:4H	22,000	1V:4H	1V:3H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:4H	25,000	1V:4H	1V:3H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:4H	28,000	1V:4H	1V:3H

FC5 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:4H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC5 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5 2-ft Offset 800-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:4H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC5 7-ft Offset 800-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5 12-ft Offset 800-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5 2-ft Offset 1400-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:4H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:4H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:4H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:4H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:4H	1V:2H	28,000	1V:2H	1V:2H

FC5 7-ft Offset 1400-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:4H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:4H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:4H	1V:4H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5 12-ft Offset 1400-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:2H	1V:2H

FC5 7-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC5 12-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC5
2-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC5
7-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC5
12-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

FC5
2-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:3H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:3H	4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC5
7-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC5
12-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:3H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:2H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:2H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:2H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:2H	1V:2H	28,000	1V:2H	1V:2H

Appendix F. FC6 Design Charts

FC6 2-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:4H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6 7-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6 12-ft Offset 200-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6
2-ft Offset
800-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:4H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6
7-ft Offset
800-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6
12-ft Offset
800-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6 2-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:4H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6 7-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6 12-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:4H	1V:4H	100	1V:4H	1V:4H	100	1V:4H	1V:2H
600	1V:4H	1V:4H	600	1V:4H	1V:4H	600	1V:4H	1V:4H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H	1,100	1V:4H	1V:4H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H	1,600	1V:4H	1V:4H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H

FC6 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:3H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC6 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC6 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:3H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H	1,600	1V:3H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:3H	1V:3H

FC6
2-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC6
7-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC6
12-ft Offset
800-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:3H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H	1,600	1V:3H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:3H	1V:3H

FC6
2-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:3H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:4H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:4H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC6
7-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:3H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:4H	1V:3H	600	1V:3H	1V:3H	600	1V:2H	1V:2H
1,100	1V:4H	1V:4H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:4H	1V:3H	1,600	1V:3H	1V:3H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:4H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:4H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:4H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:4H	1V:3H

FC6
12-ft Offset
1400-ft Length
7-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:3H	1V:3H	600	1V:3H	1V:2H	600	1V:2H	1V:2H
1,100	1V:4H	1V:3H	1,100	1V:3H	1V:3H	1,100	1V:3H	1V:2H
1,600	1V:4H	1V:4H	1,600	1V:3H	1V:3H	1,600	1V:3H	1V:2H
2,100	1V:4H	1V:4H	2,100	1V:4H	1V:3H	2,100	1V:3H	1V:3H
2,600	1V:4H	1V:4H	2,600	1V:4H	1V:3H	2,600	1V:3H	1V:3H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:3H	3,100	1V:3H	1V:3H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:3H	3,600	1V:3H	1V:3H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:4H	4,100	1V:3H	1V:3H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:4H	4,600	1V:3H	1V:3H

FC6 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:4H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC6 7-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

FC6 12-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

FC6 2-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC6 7-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC6 12-ft Offset 800-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

FC6 2-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:4H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:4H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:4H	3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H

FC6 7-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:4H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:4H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:4H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:4H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

FC6 12-ft Offset 1400-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
100	1V:2H	1V:2H	100	1V:2H	1V:2H	100	1V:2H	1V:2H
600	1V:2H	1V:2H	600	1V:2H	1V:2H	600	1V:2H	1V:2H
1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H	1,100	1V:2H	1V:2H
1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H	1,600	1V:2H	1V:2H
2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H	2,100	1V:2H	1V:2H
2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H	2,600	1V:2H	1V:2H
3,100	1V:4H	1V:2H	3,100	1V:2H	1V:2H	3,100	1V:2H	1V:2H
3,600	1V:4H	1V:2H	3,600	1V:2H	1V:2H	3,600	1V:2H	1V:2H
4,100	1V:4H	1V:2H	4,100	1V:2H	1V:2H	4,100	1V:2H	1V:2H
4,600	1V:4H	1V:2H	4,600	1V:2H	1V:2H	4,600	1V:2H	1V:2H

Appendix G. FC7 Design Charts

FC7
2-ft Offset
200-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:3H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7
7-ft Offset
200-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:3H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:2H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7
12-ft Offset
200-ft Length
1-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:4H	1V:2H
4,000	1V:4H	1V:4H	4,000	1V:4H	1V:4H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:4H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:4H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 2-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:4H	1,000	1V:4H	1V:3H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 7-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:4H	1,000	1V:3H	1V:2H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 12-ft Offset 800-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:3H	1V:2H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:4H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 2-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:6H	1,000	1V:6H	1V:3H	1,000	1V:3H	1V:3H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:6H	4,000	1V:6H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 7-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:6H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:3H	1V:3H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:6H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 12-ft Offset 1400-ft Length 1-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:4H	1V:4H	1,000	1V:4H	1V:4H	1,000	1V:3H	1V:2H
4,000	1V:6H	1V:6H	4,000	1V:6H	1V:4H	4,000	1V:4H	1V:3H
7,000	1V:6H	1V:6H	7,000	1V:6H	1V:6H	7,000	1V:4H	1V:4H
10,000	1V:6H	1V:6H	10,000	1V:6H	1V:6H	10,000	1V:6H	1V:4H
13,000	1V:6H	1V:6H	13,000	1V:6H	1V:6H	13,000	1V:6H	1V:4H
16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H	16,000	1V:6H	1V:6H
19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H	19,000	1V:6H	1V:6H
22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H	22,000	1V:6H	1V:6H
25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H	25,000	1V:6H	1V:6H
28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H	28,000	1V:6H	1V:6H

FC7 2-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:6H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:4H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:6H	25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:6H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC7 7-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:4H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:4H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC7 12-ft Offset 200-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:2H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:3H	16,000	1V:2H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC7
2-ft Offset
800-ft Length
7-ft Height

$2/CY			$5/CY			$15/CY		
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:4H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:6H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:4H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:6H	25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:6H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC7
7-ft Offset
800-ft Length
7-ft Height

$2/CY			$5/CY			$15/CY		
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:4H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC7
12-ft Offset
800-ft Length
7-ft Height

$2/CY			$5/CY			$15/CY		
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:3H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC7 2-ft Offset 1400-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:6H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:4H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:4H	19,000	1V:4H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:4H	22,000	1V:4H	1V:3H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:6H	25,000	1V:4H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:6H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC7 7-ft Offset 1400-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:4H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:6H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:4H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:4H	25,000	1V:4H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:4H	1V:3H	28,000	1V:2H	1V:2H

FC7 12-ft Offset 1400-ft Length 7-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:4H	1V:3H	13,000	1V:2H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:4H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:6H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:6H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:6H	1V:4H	25,000	1V:3H	1V:2H	25,000	1V:2H	1V:2H
28,000	1V:6H	1V:4H	28,000	1V:3H	1V:2H	28,000	1V:2H	1V:2H

FC7 2-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:3H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:3H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7 7-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7 12-ft Offset 200-ft Length 13-ft Height								
	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7
2-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:3H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7
7-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7
12-ft Offset
800-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:2H	1V:2H

FC7
2-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:3H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7
7-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:3H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:3H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:3H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:3H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:3H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:3H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:3H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:3H	1V:2H

FC7
12-ft Offset
1400-ft Length
13-ft Height

	$2/CY			$5/CY			$15/CY	
ADT	BC=2	BC=4	ADT	BC=2	BC=4	ADT	BC=2	BC=4
1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H	1,000	1V:2H	1V:2H
4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H	4,000	1V:2H	1V:2H
7,000	1V:3H	1V:2H	7,000	1V:2H	1V:2H	7,000	1V:2H	1V:2H
10,000	1V:3H	1V:3H	10,000	1V:2H	1V:2H	10,000	1V:2H	1V:2H
13,000	1V:3H	1V:3H	13,000	1V:3H	1V:2H	13,000	1V:2H	1V:2H
16,000	1V:3H	1V:3H	16,000	1V:3H	1V:2H	16,000	1V:2H	1V:2H
19,000	1V:3H	1V:3H	19,000	1V:3H	1V:2H	19,000	1V:2H	1V:2H
22,000	1V:3H	1V:3H	22,000	1V:3H	1V:2H	22,000	1V:2H	1V:2H
25,000	1V:3H	1V:3H	25,000	1V:3H	1V:3H	25,000	1V:2H	1V:2H
28,000	1V:3H	1V:3H	28,000	1V:3H	1V:3H	28,000	1V:2H	1V:2H

Appendix H. 1V:2H FC1

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.42E-05	2.38E-04
				7	1.69E-05	2.78E-04
				12	1.16E-05	1.76E-04
			7	2	1.49E-05	1.82E-04
				7	1.04E-05	1.01E-04
				12	7.44E-06	6.21E-05
			13	2	2.50E-05	2.61E-04
				7	1.73E-05	2.60E-04
				12	1.25E-05	1.96E-04
		800	1	2	8.48E-05	1.29E-03
				7	6.18E-05	1.01E-03
				12	4.59E-05	3.03E-04
			7	2	4.80E-05	5.72E-04
				7	3.55E-05	2.88E-04
				12	2.52E-05	2.54E-04
			13	2	7.93E-05	9.45E-04
				7	5.68E-05	7.26E-04
				12	4.10E-05	5.15E-04
		1400	1	2	1.50E-04	1.74E-03
				7	1.09E-04	1.17E-03
				12	7.74E-05	1.05E-03
			7	2	8.14E-05	1.19E-03
				7	5.97E-05	7.55E-04
				12	4.26E-05	6.05E-04
			13	2	1.36E-04	1.44E-03
				7	9.59E-05	1.37E-03
				12	7.07E-05	6.75E-04
	4	200	1	2	2.85E-05	6.14E-04
				7	2.07E-05	2.94E-04
				12	1.48E-05	1.82E-04
			7	2	1.83E-05	2.12E-04
				7	1.30E-05	1.32E-04
				12	9.23E-06	1.57E-04
			13	2	3.08E-05	4.36E-04
				7	2.23E-05	2.61E-04
				12	1.64E-05	3.41E-06
		800	1	2	1.09E-04	1.39E-03
				7	7.73E-05	1.39E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	4	800	1	12	5.66E-05	6.31E-04
			7	2	5.90E-05	9.84E-04
				7	4.41E-05	5.64E-04
				12	3.09E-05	4.28E-04
			13	2	1.01E-04	9.57E-04
				7	7.15E-05	1.07E-03
				12	5.14E-05	5.48E-04
		1400	1	2	1.86E-04	2.08E-03
				7	1.36E-04	1.54E-03
				12	9.77E-05	1.09E-03
			7	2	1.03E-04	1.30E-03
				7	7.40E-05	9.44E-04
				12	5.25E-05	8.47E-04
			13	2	1.65E-04	2.51E-03
				7	1.23E-04	1.31E-03
				12	8.66E-05	1.07E-03
	8	200	1	2	3.45E-05	7.54E-04
				7	2.47E-05	3.26E-04
				12	1.69E-05	3.61E-04
			7	2	2.21E-05	2.01E-04
				7	1.57E-05	1.74E-04
				12	1.12E-05	6.62E-05
			13	2	3.75E-05	4.68E-04
				7	2.58E-05	3.02E-04
				12	1.87E-05	2.05E-04
		800	1	2	1.26E-04	2.00E-03
				7	9.28E-05	1.46E-03
				12	6.54E-05	1.09E-03
			7	2	7.18E-05	9.95E-04
				7	5.31E-05	6.30E-04
				12	3.74E-05	5.11E-04
			13	2	1.20E-04	1.46E-03
				7	8.60E-05	1.11E-03
				12	6.05E-05	8.97E-04
		1400	1	2	2.26E-04	2.62E-03
				7	1.61E-04	2.40E-03
				12	1.18E-04	1.22E-03
			7	2	1.22E-04	1.87E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	8	1400	7	7	8.93E-05	1.26E-03
				12	6.33E-05	9.19E-04
			13	2	2.03E-04	1.83E-03
				7	1.46E-04	1.67E-03
				12	1.07E-04	9.15E-04
4	0	200	1	2	4.10E-05	1.09E-03
				7	3.14E-05	1.28E-04
				12	2.04E-05	2.84E-04
			7	2	2.53E-05	2.41E-04
				7	1.69E-05	2.03E-04
				12	1.16E-05	1.13E-04
			13	2	4.14E-05	3.80E-04
				7	2.68E-05	4.03E-04
				12	1.84E-05	3.04E-04
		800	1	2	1.70E-04	2.68E-03
				7	1.23E-04	1.65E-03
				12	8.73E-05	1.02E-03
			7	2	9.20E-05	1.32E-03
				7	6.69E-05	1.07E-03
				12	4.70E-05	7.33E-04
			13	2	1.52E-04	1.87E-03
				7	1.10E-04	1.14E-03
				12	7.63E-05	1.28E-03
		1400	1	2	3.06E-04	1.04E-03
				7	2.14E-04	2.60E-03
				12	1.52E-04	1.88E-03
			7	2	1.57E-04	2.45E-03
				7	1.15E-04	1.53E-03
				12	8.08E-05	1.13E-03
			13	2	2.58E-04	3.98E-03
				7	1.83E-04	2.76E-03
				12	1.31E-04	1.48E-03
	4	200	1	2	5.29E-05	7.40E-04
				7	3.84E-05	4.71E-04
				12	2.51E-05	3.52E-04
			7	2	3.06E-05	2.54E-04
				7	2.17E-05	2.26E-04
				12	1.43E-05	1.15E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	4	200	13	2	4.73E-05	8.67E-04
				7	3.41E-05	5.03E-04
				12	2.33E-05	1.65E-04
		800	1	2	2.12E-04	2.97E-03
				7	1.59E-04	1.21E-03
				12	1.10E-04	1.23E-03
			7	2	1.16E-04	1.72E-03
				7	8.63E-05	6.56E-04
				12	5.95E-05	8.16E-04
			13	2	1.97E-04	1.43E-03
				7	1.35E-04	1.86E-03
				12	9.87E-05	1.02E-03
		1400	1	2	3.70E-04	3.94E-03
				7	2.72E-04	1.97E-03
				12	1.90E-04	2.80E-03
			7	2	2.00E-04	2.43E-03
				7	1.45E-04	1.85E-03
				12	1.02E-04	1.17E-03
			13	2	3.21E-04	4.69E-03
				7	2.34E-04	2.88E-03
				12	1.66E-04	2.13E-03
	8	200	1	2	7.02E-05	-1.87E-04
				7	4.47E-05	7.75E-04
				12	2.80E-05	7.70E-04
			7	2	3.64E-05	5.89E-04
				7	2.53E-05	2.44E-04
				12	1.67E-05	2.37E-04
			13	2	5.80E-05	1.00E-03
				7	4.24E-05	2.88E-04
				12	2.79E-05	3.74E-04
		800	1	2	2.59E-04	2.97E-03
				7	1.87E-04	2.27E-03
				12	1.31E-04	1.50E-03
			7	2	1.40E-04	1.59E-03
				7	1.01E-04	1.35E-03
				12	7.11E-05	9.61E-04
			13	2	2.22E-04	3.89E-03
				7	1.68E-04	1.31E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	8	800	13	12	1.17E-04	1.11E-03
		1400	1	2	4.49E-04	4.30E-03
				7	3.24E-04	3.27E-03
				12	2.21E-04	3.39E-03
			7	2	2.41E-04	3.11E-03
				7	1.75E-04	2.03E-03
				12	1.23E-04	1.37E-03
			13	2	3.86E-04	5.10E-03
				7	2.83E-04	4.40E-03
				12	1.98E-04	2.46E-03
8	0	200	1	2	6.72E-05	9.01E-05
				7	4.13E-05	5.89E-04
				12	2.73E-05	1.23E-04
			7	2	3.36E-05	6.46E-04
				7	2.39E-05	1.25E-04
				12	1.51E-05	1.93E-04
			13	2	5.69E-05	7.46E-04
				7	3.80E-05	4.60E-04
				12	2.39E-05	3.54E-04
		800	1	2	2.30E-04	2.97E-03
				7	1.62E-04	2.69E-03
				12	1.13E-04	2.05E-03
			7	2	1.25E-04	1.63E-03
				7	9.08E-05	1.13E-03
				12	6.28E-05	8.54E-04
			13	2	2.05E-04	2.32E-03
				7	1.48E-04	1.45E-03
				12	1.06E-04	1.08E-03
		1400	1	2	3.73E-04	5.17E-03
				7	2.70E-04	3.34E-03
				12	1.90E-04	2.53E-03
			7	2	2.03E-04	2.66E-03
				7	1.47E-04	1.89E-03
				12	1.03E-04	1.47E-03
			13	2	3.27E-04	4.75E-03
				7	2.37E-04	3.11E-03
				12	1.69E-04	1.72E-03
	4	200	1	2	7.91E-05	7.50E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	4	200	1	7	5.17E-05	8.71E-04
				12	3.40E-05	5.30E-04
			7	2	4.26E-05	4.99E-04
				7	2.87E-05	5.30E-04
				12	1.89E-05	1.93E-04
			13	2	7.30E-05	8.27E-04
				7	4.56E-05	6.47E-04
				12	2.94E-05	6.75E-04
		800	1	2	3.01E-04	1.84E-03
				7	2.04E-04	2.76E-03
				12	1.47E-04	1.78E-03
			7	2	1.55E-04	2.13E-03
				7	1.13E-04	1.42E-03
				12	7.94E-05	1.09E-03
			13	2	2.50E-04	3.49E-03
				7	1.88E-04	1.49E-03
				12	1.30E-04	1.52E-03
		1400	1	2	4.66E-04	5.18E-03
				7	3.51E-04	2.77E-03
				12	2.38E-04	3.65E-03
			7	2	2.53E-04	3.47E-03
				7	1.83E-04	2.62E-03
				12	1.30E-04	1.25E-03
			13	2	4.10E-04	4.84E-03
				7	2.98E-04	3.12E-03
				12	2.04E-04	3.68E-03
	8	200	1	2	7.67E-05	1.38E-03
				7	5.37E-05	7.49E-04
				12	3.34E-05	4.53E-04
			7	2	4.27E-05	7.23E-04
				7	2.87E-05	3.49E-04
				12	1.79E-05	3.11E-04
			13	2	7.05E-05	9.38E-04
				7	4.83E-05	5.48E-04
				12	3.09E-05	3.94E-04
		800	1	2	2.97E-04	1.86E-03
				7	2.07E-04	3.10E-03
				12	1.48E-04	1.52E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	8	800	7	2	1.55E-04	2.12E-03
				7	1.13E-04	1.54E-03
				12	7.88E-05	1.15E-03
			13	2	2.53E-04	2.64E-03
				7	1.89E-04	1.49E-03
				12	1.28E-04	1.87E-03
		1400	1	2	4.83E-04	4.31E-03
				7	3.40E-04	3.44E-03
				12	2.42E-04	2.72E-03
			7	2	2.54E-04	2.93E-03
				7	1.85E-04	2.05E-03
				12	1.31E-04	1.66E-03
			13	2	4.10E-04	5.03E-03
				7	2.96E-04	3.97E-03
				12	2.06E-04	3.37E-03

Appendix I. 1V:2H FC2

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	9.14E-07	1.31E-02
				7	6.70E-07	8.42E-03
				12	4.44E-07	6.38E-03
			7	2	3.12E-06	4.11E-02
				7	2.11E-06	2.99E-02
				12	1.51E-06	2.14E-02
			13	2	3.04E-06	4.24E-02
				7	2.14E-06	2.94E-02
				12	1.46E-06	2.05E-02
		800	1	2	3.47E-06	4.95E-02
				7	2.53E-06	3.48E-02
				12	1.78E-06	2.51E-02
			7	2	1.04E-05	1.45E-01
				7	7.84E-06	1.02E-01
				12	5.34E-06	7.41E-02
			13	2	9.76E-06	1.37E-01
				7	6.92E-06	9.96E-02
				12	5.06E-06	6.68E-02
		1400	1	2	6.27E-06	8.27E-02
				7	4.46E-06	6.05E-02
				12	3.18E-06	4.41E-02
			7	2	1.79E-05	2.53E-01
				7	1.32E-05	1.76E-01
				12	9.55E-06	1.27E-01
			13	2	1.70E-05	2.28E-01
				7	1.22E-05	1.68E-01
				12	8.87E-06	1.16E-01
	3	200	1	2	1.07E-06	1.46E-02
				7	7.67E-07	9.63E-03
				12	5.13E-07	6.81E-03
			7	2	3.50E-06	4.60E-02
				7	2.27E-06	3.40E-02
				12	1.72E-06	2.39E-02
			13	2	3.38E-06	4.53E-02
				7	2.22E-06	3.42E-02
				12	1.65E-06	2.24E-02
		800	1	2	4.04E-06	5.44E-02
				7	2.79E-06	3.96E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	2.04E-06	2.78E-02
			7	2	1.19E-05	1.64E-01
				7	8.46E-06	1.18E-01
				12	5.79E-06	8.76E-02
			13	2	1.18E-05	1.50E-01
				7	7.60E-06	1.15E-01
				12	5.79E-06	7.74E-02
		1400	1	2	6.89E-06	9.44E-02
				7	5.23E-06	6.68E-02
				12	3.56E-06	4.87E-02
			7	2	2.00E-05	2.81E-01
				7	1.52E-05	1.98E-01
				12	1.09E-05	1.41E-01
			13	2	1.98E-05	2.47E-01
				7	1.42E-05	1.81E-01
				12	9.89E-06	1.32E-01
	6	200	1	2	1.38E-06	1.98E-02
				7	9.65E-07	1.28E-02
				12	6.97E-07	9.53E-03
			7	2	4.81E-06	6.28E-02
				7	3.19E-06	4.54E-02
				12	2.20E-06	3.19E-02
			13	2	4.62E-06	6.06E-02
				7	3.11E-06	4.17E-02
				12	2.29E-06	2.95E-02
		800	1	2	5.30E-06	7.26E-02
				7	3.77E-06	5.38E-02
				12	2.72E-06	3.75E-02
			7	2	1.52E-05	2.24E-01
				7	1.13E-05	1.59E-01
				12	8.11E-06	1.08E-01
			13	2	1.54E-05	1.97E-01
				7	1.04E-05	1.48E-01
				12	7.76E-06	1.03E-01
		1400	1	2	9.34E-06	1.25E-01
				7	6.76E-06	9.16E-02
				12	4.72E-06	6.60E-02
			7	2	2.75E-05	3.67E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	1.95E-05	2.76E-01
				12	1.40E-05	1.92E-01
			13	2	2.52E-05	3.38E-01
				7	1.89E-05	2.48E-01
				12	1.36E-05	1.70E-01
3	0	200	1	2	7.67E-07	1.15E-02
				7	4.96E-07	6.22E-03
				12	3.16E-07	3.96E-03
			7	2	2.27E-06	3.26E-02
				7	1.39E-06	1.88E-02
				12	8.67E-07	1.24E-02
			13	2	2.03E-06	2.92E-02
				7	1.32E-06	1.73E-02
				12	8.42E-07	1.02E-02
		800	1	2	3.28E-06	4.35E-02
				7	2.45E-06	3.00E-02
				12	1.60E-06	2.07E-02
			7	2	9.21E-06	1.29E-01
				7	6.55E-06	9.10E-02
				12	4.37E-06	6.34E-02
			13	2	8.45E-06	1.21E-01
				7	6.09E-06	8.08E-02
				12	4.28E-06	5.56E-02
		1400	1	2	5.45E-06	7.34E-02
				7	3.99E-06	5.27E-02
				12	2.69E-06	3.76E-02
			7	2	1.56E-05	2.15E-01
				7	1.16E-05	1.50E-01
				12	7.76E-06	1.08E-01
			13	2	1.42E-05	1.94E-01
				7	1.03E-05	1.38E-01
				12	7.05E-06	9.92E-02
	3	200	1	2	8.66E-07	1.25E-02
				7	4.98E-07	7.89E-03
				12	3.51E-07	4.53E-03
			7	2	2.57E-06	3.48E-02
				7	1.51E-06	2.12E-02
				12	9.68E-07	1.41E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	2.20E-06	3.61E-02
				7	1.43E-06	2.04E-02
				12	9.25E-07	1.27E-02
		800	1	2	3.53E-06	5.07E-02
				7	2.60E-06	3.46E-02
				12	1.81E-06	2.41E-02
			7	2	1.06E-05	1.42E-01
				7	7.62E-06	9.81E-02
				12	5.06E-06	6.92E-02
			13	2	1.03E-05	1.23E-01
				7	7.15E-06	9.06E-02
				12	4.81E-06	6.29E-02
		1400	1	2	6.28E-06	8.19E-02
				7	4.34E-06	6.03E-02
				12	3.06E-06	4.26E-02
			7	2	1.81E-05	2.35E-01
				7	1.22E-05	1.79E-01
				12	9.23E-06	1.19E-01
			13	2	1.64E-05	2.18E-01
				7	1.20E-05	1.55E-01
				12	8.17E-06	1.11E-01
	6	200	1	2	1.26E-06	1.64E-02
				7	6.77E-07	1.01E-02
				12	4.45E-07	6.23E-03
			7	2	3.63E-06	4.70E-02
				7	1.99E-06	2.98E-02
				12	1.36E-06	1.83E-02
			13	2	3.22E-06	4.35E-02
				7	1.91E-06	2.64E-02
				12	1.11E-06	1.84E-02
		800	1	2	4.79E-06	6.66E-02
				7	3.37E-06	4.65E-02
				12	2.43E-06	3.10E-02
			7	2	1.37E-05	1.89E-01
				7	9.48E-06	1.41E-01
				12	6.68E-06	9.46E-02
			13	2	1.25E-05	1.77E-01
				7	9.21E-06	1.23E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	6.29E-06	8.60E-02
		1400	1	2	8.41E-06	1.08E-01
				7	5.96E-06	7.98E-02
				12	4.14E-06	5.54E-02
			7	2	2.42E-05	3.07E-01
				7	1.69E-05	2.30E-01
				12	1.17E-05	1.60E-01
			13	2	2.22E-05	2.84E-01
				7	1.56E-05	2.11E-01
				12	1.09E-05	1.51E-01
6	0	200	1	2	2.33E-06	3.35E-02
				7	1.50E-06	2.25E-02
				12	1.01E-06	1.37E-02
			7	2	7.08E-06	8.84E-02
				7	4.53E-06	6.24E-02
				12	2.92E-06	3.84E-02
			13	2	6.28E-06	8.82E-02
				7	4.07E-06	5.71E-02
				12	2.62E-06	3.65E-02
		800	1	2	9.80E-06	1.27E-01
				7	6.80E-06	9.15E-02
				12	4.80E-06	6.53E-02
			7	2	2.64E-05	3.84E-01
				7	1.99E-05	2.65E-01
				12	1.41E-05	1.87E-01
			13	2	2.58E-05	3.38E-01
				7	1.80E-05	2.42E-01
				12	1.25E-05	1.73E-01
		1400	1	2	1.56E-05	2.12E-01
				7	1.13E-05	1.49E-01
				12	8.18E-06	1.04E-01
			7	2	4.50E-05	6.00E-01
				7	3.21E-05	4.40E-01
				12	2.26E-05	3.05E-01
			13	2	4.20E-05	5.54E-01
				7	3.00E-05	3.97E-01
				12	2.17E-05	2.72E-01
	3	200	1	2	2.71E-06	3.54E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	1.77E-06	2.30E-02
				12	1.14E-06	1.52E-02
			7	2	8.05E-06	1.02E-01
				7	4.56E-06	7.80E-02
				12	3.22E-06	4.53E-02
			13	2	7.16E-06	9.80E-02
				7	4.59E-06	6.39E-02
				12	2.85E-06	4.34E-02
		800	1	2	1.09E-05	1.42E-01
				7	7.37E-06	1.07E-01
				12	5.36E-06	7.35E-02
			7	2	3.14E-05	4.10E-01
				7	2.22E-05	3.05E-01
				12	1.57E-05	2.09E-01
			13	2	2.89E-05	3.84E-01
				7	1.98E-05	2.87E-01
				12	1.45E-05	1.87E-01
		1400	1	2	1.76E-05	2.37E-01
				7	1.29E-05	1.67E-01
				12	8.77E-06	1.19E-01
			7	2	5.05E-05	6.76E-01
				7	3.69E-05	4.78E-01
				12	2.64E-05	3.27E-01
			13	2	4.74E-05	6.12E-01
				7	3.33E-05	4.51E-01
				12	2.44E-05	3.08E-01
	6	200	1	2	3.59E-06	4.54E-02
				7	2.20E-06	3.28E-02
				12	1.32E-06	2.24E-02
			7	2	1.11E-05	1.21E-01
				7	6.63E-06	9.94E-02
				12	4.07E-06	6.22E-02
			13	2	9.88E-06	1.22E-01
				7	6.41E-06	8.39E-02
				12	3.82E-06	5.86E-02
		800	1	2	1.44E-05	1.97E-01
				7	9.87E-06	1.39E-01
				12	6.87E-06	9.88E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	3.95E-05	5.68E-01
				7	3.13E-05	3.90E-01
				12	2.12E-05	2.79E-01
			13	2	3.79E-05	5.17E-01
				7	2.82E-05	3.52E-01
				12	1.82E-05	2.60E-01
		1400	1	2	2.37E-05	3.15E-01
				7	1.65E-05	2.28E-01
				12	1.15E-05	1.63E-01
			7	2	6.76E-05	9.11E-01
				7	4.74E-05	6.56E-01
				12	3.38E-05	4.64E-01
			13	2	6.08E-05	8.59E-01
				7	4.47E-05	6.05E-01
				12	3.16E-05	4.28E-01

Appendix J. 1V:2H FC3

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	4.30E-06	0.00
				7	3.30E-06	0.00
				12	2.55E-06	0.00
			7	2	4.68E-06	0.00
				7	3.35E-06	0.00
				12	2.88E-06	0.00
			13	2	7.78E-06	0.00
				7	5.31E-06	0.00
				12	5.31E-06	0.00
		800	1	2	1.79E-05	0.00
				7	1.42E-05	0.00
				12	1.16E-05	0.00
			7	2	1.72E-05	0.00
				7	1.37E-05	0.00
				12	1.11E-05	0.00
			13	2	2.41E-05	0.00
				7	1.90E-05	0.00
				12	1.67E-05	0.00
		1400	1	2	3.21E-05	0.00
				7	2.55E-05	0.00
				12	2.07E-05	0.00
			7	2	3.01E-05	0.00
				7	2.36E-05	0.00
				12	1.95E-05	0.00
			13	2	3.76E-05	0.00
				7	2.98E-05	0.00
				12	2.90E-05	0.00
	2	200	1	2	4.52E-06	0.00
				7	3.29E-06	0.00
				12	2.56E-06	0.00
			7	2	4.71E-06	0.00
				7	3.44E-06	0.00
				12	2.75E-06	0.00
			13	2	6.89E-06	0.00
				7	4.82E-06	0.00
				12	4.74E-06	0.00
		800	1	2	1.81E-05	0.00
				7	1.41E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	2	800	1	12	1.14E-05	0.00
			7	2	1.74E-05	0.00
				7	1.37E-05	0.00
				12	1.12E-05	0.00
			13	2	2.15E-05	0.00
				7	1.83E-05	0.00
				12	1.40E-05	0.00
		1400	1	2	3.17E-05	0.00
				7	2.52E-05	0.00
				12	2.05E-05	0.00
			7	2	2.99E-05	0.00
				7	2.36E-05	0.00
				12	1.94E-05	0.00
			13	2	3.75E-05	0.00
				7	3.24E-05	0.00
				12	2.42E-05	0.00
	3	200	1	2	5.01E-06	0.00
				7	3.67E-06	0.00
				12	2.87E-06	0.00
			7	2	5.09E-06	0.00
				7	3.83E-06	0.00
				12	3.13E-06	0.00
			13	2	7.38E-06	0.00
				7	6.59E-06	0.00
				12	5.81E-06	0.00
		800	1	2	2.02E-05	0.00
				7	1.60E-05	0.00
				12	1.28E-05	0.00
			7	2	1.93E-05	0.00
				7	1.52E-05	0.00
				12	1.25E-05	0.00
			13	2	2.73E-05	0.00
				7	2.00E-05	0.00
				12	1.56E-05	0.00
		1400	1	2	3.61E-05	0.00
				7	2.81E-05	0.00
				12	2.33E-05	0.00
			7	2	3.36E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	1400	7	7	2.69E-05	0.00
				12	2.17E-05	0.00
			13	2	4.19E-05	0.00
				7	3.96E-05	0.00
				12	2.70E-05	0.00
2	0	200	1	2	3.59E-06	0.00
				7	2.39E-06	0.00
				12	1.57E-06	0.00
			7	2	3.26E-06	0.00
				7	2.23E-06	0.00
				12	1.52E-06	0.00
			13	2	4.88E-06	0.00
				7	3.70E-06	0.00
				12	2.49E-06	0.00
		800	1	2	1.65E-05	0.00
				7	1.27E-05	0.00
				12	9.87E-06	0.00
			7	2	1.51E-05	0.00
				7	1.14E-05	0.00
				12	9.20E-06	0.00
			13	2	2.52E-05	0.00
				7	1.63E-05	0.00
				12	1.39E-05	0.00
		1400	1	2	2.81E-05	0.00
				7	2.21E-05	0.00
				12	1.76E-05	0.00
			7	2	2.65E-05	0.00
				7	2.03E-05	0.00
				12	1.67E-05	0.00
			13	2	3.58E-05	0.00
				7	2.58E-05	0.00
				12	2.16E-05	0.00
	2	200	1	2	3.56E-06	0.00
				7	2.27E-06	0.00
				12	1.67E-06	0.00
			7	2	3.40E-06	0.00
				7	2.32E-06	0.00
				12	1.60E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	2	200	13	2	4.74E-06	0.00
				7	3.50E-06	0.00
				12	2.46E-06	0.00
		800	1	2	1.65E-05	0.00
				7	1.25E-05	0.00
				12	9.77E-06	0.00
			7	2	1.48E-05	0.00
				7	1.16E-05	0.00
				12	9.37E-06	0.00
			13	2	1.95E-05	0.00
				7	1.43E-05	0.00
				12	1.18E-05	0.00
		1400	1	2	2.82E-05	0.00
				7	2.19E-05	0.00
				12	1.81E-05	0.00
			7	2	2.61E-05	0.00
				7	2.04E-05	0.00
				12	1.66E-05	0.00
			13	2	3.21E-05	0.00
				7	2.51E-05	0.00
				12	2.01E-05	0.00
	3	200	1	2	4.02E-06	0.00
				7	2.60E-06	0.00
				12	1.88E-06	0.00
			7	2	3.74E-06	0.00
				7	2.44E-06	0.00
				12	1.79E-06	0.00
			13	2	4.95E-06	0.00
				7	4.05E-06	0.00
				12	2.39E-06	0.00
		800	1	2	1.83E-05	0.00
				7	1.42E-05	0.00
				12	1.09E-05	0.00
			7	2	1.70E-05	0.00
				7	1.28E-05	0.00
				12	1.04E-05	0.00
			13	2	2.07E-05	0.00
				7	1.68E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	3	800	13	12	1.38E-05	0.00
		1400	1	2	3.21E-05	0.00
				7	2.51E-05	0.00
				12	2.02E-05	0.00
			7	2	2.97E-05	0.00
				7	2.30E-05	0.00
				12	1.85E-05	0.00
			13	2	3.63E-05	0.00
				7	2.81E-05	0.00
				12	2.31E-05	0.00
3	0	200	1	2	4.09E-06	0.00
				7	2.44E-06	0.00
				12	1.75E-06	0.00
			7	2	3.85E-06	0.00
				7	2.41E-06	0.00
				12	1.69E-06	0.00
			13	2	5.06E-06	0.00
				7	3.02E-06	0.00
				12	2.23E-06	0.00
		800	1	2	1.74E-05	0.00
				7	1.32E-05	0.00
				12	1.04E-05	0.00
			7	2	1.60E-05	0.00
				7	1.24E-05	0.00
				12	9.80E-06	0.00
			13	2	1.98E-05	0.00
				7	1.62E-05	0.00
				12	1.25E-05	0.00
		1400	1	2	3.01E-05	0.00
				7	2.29E-05	0.00
				12	1.86E-05	0.00
			7	2	2.74E-05	0.00
				7	2.13E-05	0.00
				12	1.71E-05	0.00
			13	2	4.07E-05	0.00
				7	2.70E-05	0.00
				12	2.13E-05	0.00
	2	200	1	2	4.02E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	2	200	1	7	2.38E-06	0.00
3	2	200	1	12	1.84E-06	0.00
3	2	200	7	2	3.73E-06	0.00
3	2	200	7	7	2.37E-06	0.00
3	2	200	7	12	1.71E-06	0.00
3	2	200	13	2	5.70E-06	0.00
3	2	200	13	7	3.85E-06	0.00
3	2	200	13	12	2.21E-06	0.00
3	2	800	1	2	1.75E-05	0.00
3	2	800	1	7	1.32E-05	0.00
3	2	800	1	12	1.04E-05	0.00
3	2	800	7	2	1.61E-05	0.00
3	2	800	7	7	1.22E-05	0.00
3	2	800	7	12	9.60E-06	0.00
3	2	800	13	2	1.96E-05	0.00
3	2	800	13	7	1.58E-05	0.00
3	2	800	13	12	1.43E-05	0.00
3	2	1400	1	2	3.00E-05	0.00
3	2	1400	1	7	2.29E-05	0.00
3	2	1400	1	12	1.84E-05	0.00
3	2	1400	7	2	2.74E-05	0.00
3	2	1400	7	7	2.11E-05	0.00
3	2	1400	7	12	1.72E-05	0.00
3	2	1400	13	2	3.39E-05	0.00
3	2	1400	13	7	2.60E-05	0.00
3	2	1400	13	12	2.17E-05	0.00
3	3	200	1	2	4.54E-06	0.00
3	3	200	1	7	2.86E-06	0.00
3	3	200	1	12	2.12E-06	0.00
3	3	200	7	2	4.22E-06	0.00
3	3	200	7	7	2.68E-06	0.00
3	3	200	7	12	1.89E-06	0.00
3	3	200	13	2	5.68E-06	0.00
3	3	200	13	7	3.39E-06	0.00
3	3	200	13	12	2.56E-06	0.00
3	3	800	1	2	1.91E-05	0.00
3	3	800	1	7	1.52E-05	0.00
3	3	800	1	12	1.17E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	800	7	2	1.80E-05	0.00
				7	1.37E-05	0.00
				12	1.08E-05	0.00
			13	2	2.47E-05	0.00
				7	1.73E-05	0.00
				12	1.59E-05	0.00
		1400	1	2	3.33E-05	0.00
				7	2.62E-05	0.00
				12	2.10E-05	0.00
			7	2	3.06E-05	0.00
				7	2.40E-05	0.00
				12	1.94E-05	0.00
			13	2	3.77E-05	0.00
				7	2.92E-05	0.00
				12	2.40E-05	0.00

Appendix K. 1V:2H FC4

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.93E-06	3.61E-03
				7	2.19E-06	2.89E-03
				12	1.79E-06	2.51E-03
			7	2	1.04E-05	9.29E-03
				7	7.12E-06	1.49E-02
				12	6.19E-06	9.90E-03
			13	2	9.90E-06	1.25E-02
				7	8.11E-06	9.91E-03
				12	7.27E-06	6.63E-03
		800	1	2	1.14E-05	1.42E-02
				7	8.97E-06	1.05E-02
				12	7.22E-06	8.98E-03
			7	2	3.38E-05	4.11E-02
				7	2.70E-05	3.14E-02
				12	2.17E-05	3.07E-02
			13	2	3.27E-05	4.16E-02
				7	2.58E-05	3.32E-02
				12	2.10E-05	2.64E-02
		1400	1	2	1.94E-05	2.78E-02
				7	1.56E-05	2.08E-02
				12	1.31E-05	1.44E-02
			7	2	5.87E-05	6.12E-02
				7	4.69E-05	6.23E-02
				12	3.77E-05	5.11E-02
			13	2	5.47E-05	7.11E-02
				7	4.48E-05	4.82E-02
				12	3.60E-05	4.57E-02
	3	200	1	2	3.28E-06	4.69E-03
				7	2.36E-06	4.53E-03
				12	2.01E-06	2.30E-03
			7	2	1.09E-05	1.72E-02
				7	8.77E-06	1.14E-02
				12	7.05E-06	6.40E-03
			13	2	1.16E-05	1.24E-02
				7	9.27E-06	8.85E-03
				12	7.32E-06	1.12E-02
		800	1	2	1.29E-05	1.28E-02
				7	1.00E-05	1.34E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	8.23E-06	1.08E-02
			7	2	3.85E-05	4.64E-02
				7	3.13E-05	2.96E-02
				12	2.47E-05	3.52E-02
			13	2	3.55E-05	4.95E-02
				7	2.89E-05	3.71E-02
				12	2.39E-05	2.80E-02
		1400	1	2	2.30E-05	2.39E-02
				7	1.79E-05	2.18E-02
				12	1.45E-05	1.74E-02
			7	2	6.50E-05	9.51E-02
				7	5.14E-05	8.05E-02
				12	4.29E-05	5.33E-02
			13	2	6.22E-05	7.03E-02
				7	4.94E-05	5.99E-02
				12	4.07E-05	4.74E-02
	6	200	1	2	4.37E-06	4.43E-03
				7	3.25E-06	4.08E-03
				12	2.57E-06	4.31E-03
			7	2	1.60E-05	6.68E-03
				7	1.18E-05	9.07E-03
				12	1.01E-05	7.57E-03
			13	2	1.59E-05	1.75E-02
				7	1.20E-05	1.55E-02
				12	9.82E-06	1.74E-02
		800	1	2	1.72E-05	1.55E-02
				7	1.30E-05	1.87E-02
				12	1.09E-05	1.42E-02
			7	2	5.24E-05	6.10E-02
				7	4.00E-05	5.50E-02
				12	3.24E-05	4.64E-02
			13	2	5.03E-05	5.74E-02
				7	3.97E-05	4.07E-02
				12	3.19E-05	3.77E-02
		1400	1	2	3.04E-05	3.60E-02
				7	2.38E-05	2.92E-02
				12	1.92E-05	2.54E-02
			7	2	8.75E-05	1.10E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	7.10E-05	8.45E-02
				12	5.73E-05	6.85E-02
			13	2	8.54E-05	8.38E-02
				7	6.67E-05	7.54E-02
				12	5.38E-05	7.12E-02
3	0	200	1	2	2.39E-06	3.18E-03
				7	1.54E-06	1.67E-03
				12	1.11E-06	1.26E-03
			7	2	6.90E-06	6.53E-03
				7	4.65E-06	1.74E-03
				12	3.01E-06	5.37E-03
			13	2	6.67E-06	3.60E-03
				7	4.22E-06	4.15E-03
				12	3.08E-06	1.90E-03
		800	1	2	1.00E-05	1.32E-02
				7	7.76E-06	8.97E-03
				12	5.96E-06	8.78E-03
			7	2	2.95E-05	3.06E-02
				7	2.23E-05	3.12E-02
				12	1.73E-05	2.30E-02
			13	2	2.61E-05	3.60E-02
				7	2.19E-05	1.20E-02
				12	1.64E-05	1.76E-02
		1400	1	2	1.76E-05	1.80E-02
				7	1.35E-05	1.46E-02
				12	1.10E-05	1.17E-02
			7	2	5.00E-05	4.73E-02
				7	3.66E-05	6.30E-02
				12	3.09E-05	3.61E-02
			13	2	4.57E-05	4.48E-02
				7	3.50E-05	4.81E-02
				12	2.89E-05	3.04E-02
	3	200	1	2	2.64E-06	4.41E-03
				7	1.76E-06	1.42E-03
				12	1.24E-06	1.72E-03
			7	2	8.26E-06	6.35E-03
				7	5.03E-06	2.89E-03
				12	3.38E-06	5.84E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	7.86E-06	3.09E-03
				7	4.20E-06	8.87E-03
				12	3.54E-06	1.78E-03
		800	1	2	1.12E-05	1.44E-02
				7	8.90E-06	8.81E-03
				12	6.89E-06	8.92E-03
			7	2	3.21E-05	4.47E-02
				7	2.54E-05	2.79E-02
				12	2.03E-05	1.73E-02
			13	2	3.04E-05	3.37E-02
				7	2.34E-05	2.71E-02
				12	1.78E-05	2.52E-02
		1400	1	2	1.92E-05	2.32E-02
				7	1.49E-05	2.05E-02
				12	1.22E-05	1.41E-02
			7	2	5.47E-05	7.29E-02
				7	4.29E-05	4.57E-02
				12	3.47E-05	4.42E-02
			13	2	4.87E-05	8.00E-02
				7	3.97E-05	4.75E-02
				12	3.22E-05	3.58E-02
	6	200	1	2	3.91E-06	2.85E-03
				7	2.19E-06	3.45E-03
				12	1.59E-06	2.25E-03
			7	2	1.09E-05	9.37E-03
				7	6.20E-06	9.27E-03
				12	4.76E-06	7.42E-03
			13	2	8.46E-06	2.20E-02
				7	5.74E-06	1.07E-02
				12	4.25E-06	6.20E-03
		800	1	2	1.48E-05	2.06E-02
				7	1.14E-05	1.50E-02
				12	9.26E-06	9.28E-03
			7	2	4.35E-05	5.06E-02
				7	3.39E-05	4.03E-02
				12	2.61E-05	3.60E-02
			13	2	3.93E-05	5.50E-02
				7	3.05E-05	4.00E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	2.37E-05	3.73E-02
		1400	1	2	2.54E-05	3.46E-02
				7	2.02E-05	2.28E-02
				12	1.59E-05	2.23E-02
			7	2	7.37E-05	8.30E-02
				7	5.75E-05	7.37E-02
				12	4.66E-05	5.41E-02
			13	2	6.76E-05	9.37E-02
				7	5.43E-05	5.11E-02
				12	4.24E-05	5.23E-02
6	0	200	1	2	6.95E-06	1.02E-02
				7	4.75E-06	7.59E-03
				12	3.68E-06	4.54E-03
			7	2	1.98E-05	2.91E-02
				7	1.41E-05	1.76E-02
				12	1.01E-05	7.76E-03
			13	2	1.91E-05	1.94E-02
				7	1.44E-05	3.13E-03
				12	8.90E-06	1.86E-02
		800	1	2	2.98E-05	3.74E-02
				7	2.28E-05	3.04E-02
				12	1.84E-05	2.03E-02
			7	2	8.51E-05	9.23E-02
				7	6.58E-05	1.02E-01
				12	5.27E-05	5.18E-02
			13	2	7.94E-05	7.17E-02
				7	6.06E-05	7.00E-02
				12	4.88E-05	5.30E-02
		1400	1	2	4.85E-05	5.66E-02
				7	3.82E-05	4.18E-02
				12	2.96E-05	4.02E-02
			7	2	1.42E-04	1.44E-01
				7	1.09E-04	1.21E-01
				12	8.57E-05	1.12E-01
			13	2	1.31E-04	1.25E-01
				7	9.97E-05	1.10E-01
				12	8.07E-05	9.18E-02
	3	200	1	2	7.87E-06	1.37E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	5.57E-06	7.23E-03
				12	3.77E-06	4.74E-03
			7	2	2.16E-05	4.59E-02
				7	1.43E-05	3.76E-02
				12	1.14E-05	1.44E-02
			13	2	2.08E-05	2.65E-02
				7	1.57E-05	3.82E-03
				12	1.04E-05	1.11E-02
		800	1	2	3.20E-05	5.31E-02
				7	2.60E-05	2.92E-02
				12	2.04E-05	2.60E-02
			7	2	9.41E-05	1.37E-01
				7	7.36E-05	1.06E-01
				12	5.92E-05	7.48E-02
			13	2	9.07E-05	8.29E-02
				7	7.14E-05	5.75E-02
				12	5.26E-05	7.85E-02
		1400	1	2	5.49E-05	5.91E-02
				7	4.33E-05	4.60E-02
				12	3.39E-05	5.05E-02
			7	2	1.54E-04	2.27E-01
				7	1.20E-04	1.79E-01
				12	9.78E-05	1.22E-01
			13	2	1.41E-04	1.98E-01
				7	1.07E-04	1.89E-01
				12	8.92E-05	1.25E-01
	6	200	1	2	1.11E-05	6.90E-03
				7	7.40E-06	8.73E-03
				12	5.02E-06	1.06E-02
			7	2	3.00E-05	5.55E-02
				7	2.01E-05	3.81E-02
				12	1.55E-05	1.37E-02
			13	2	2.80E-05	3.06E-02
				7	2.11E-05	1.14E-02
				12	1.26E-05	3.07E-02
		800	1	2	4.45E-05	5.12E-02
				7	3.45E-05	3.88E-02
				12	2.66E-05	4.10E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	1.25E-04	1.83E-01
				7	9.68E-05	1.30E-01
				12	7.72E-05	1.16E-01
			13	2	1.17E-04	1.31E-01
				7	9.09E-05	1.12E-01
				12	7.28E-05	8.12E-02
		1400	1	2	7.13E-05	8.79E-02
				7	5.79E-05	5.32E-02
				12	4.55E-05	6.28E-02
			7	2	2.07E-04	2.92E-01
				7	1.62E-04	2.14E-01
				12	1.30E-04	1.73E-01
			13	2	1.87E-04	2.52E-01
				7	1.48E-04	1.97E-01
				12	1.19E-04	1.67E-01

Appendix L. 1V:2H FC5

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	8.95E-07	2.24E-02
0	0	200	1	7	6.70E-07	1.42E-02
0	0	200	1	12	4.15E-07	1.05E-02
0	0	200	7	2	1.23E-06	2.83E-02
0	0	200	7	7	8.55E-07	1.90E-02
0	0	200	7	12	5.37E-07	1.45E-02
0	0	200	13	2	1.99E-06	4.88E-02
0	0	200	13	7	1.41E-06	3.17E-02
0	0	200	13	12	9.02E-07	2.30E-02
0	0	800	1	2	3.50E-06	8.55E-02
0	0	800	1	7	2.55E-06	6.20E-02
0	0	800	1	12	1.80E-06	4.27E-02
0	0	800	7	2	4.24E-06	1.04E-01
0	0	800	7	7	3.17E-06	7.35E-02
0	0	800	7	12	2.30E-06	5.01E-02
0	0	800	13	2	6.83E-06	1.68E-01
0	0	800	13	7	4.84E-06	1.22E-01
0	0	800	13	12	3.35E-06	8.58E-02
0	0	1400	1	2	6.03E-06	1.50E-01
0	0	1400	1	7	4.37E-06	1.09E-01
0	0	1400	1	12	3.31E-06	7.47E-02
0	0	1400	7	2	7.32E-06	1.78E-01
0	0	1400	7	7	5.19E-06	1.30E-01
0	0	1400	7	12	3.67E-06	9.36E-02
0	0	1400	13	2	1.16E-05	2.86E-01
0	0	1400	13	7	8.95E-06	2.03E-01
0	0	1400	13	12	5.89E-06	1.50E-01
0	3	200	1	2	1.01E-06	2.51E-02
0	3	200	1	7	7.00E-07	1.67E-02
0	3	200	1	12	4.54E-07	1.17E-02
0	3	200	7	2	1.30E-06	3.25E-02
0	3	200	7	7	8.54E-07	2.29E-02
0	3	200	7	12	6.61E-07	1.49E-02
0	3	200	13	2	2.18E-06	5.47E-02
0	3	200	13	7	1.46E-06	3.80E-02
0	3	200	13	12	1.09E-06	2.55E-02
0	3	800	1	2	3.98E-06	9.51E-02
0	3	800	1	7	2.95E-06	6.75E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	1.95E-06	4.96E-02
0	3	800	7	2	4.67E-06	1.15E-01
0	3	800	7	7	3.47E-06	8.26E-02
0	3	800	7	12	2.38E-06	5.98E-02
0	3	800	13	2	7.60E-06	1.89E-01
0	3	800	13	7	5.54E-06	1.33E-01
0	3	800	13	12	3.81E-06	9.60E-02
0	3	1400	1	2	6.93E-06	1.71E-01
0	3	1400	1	7	4.93E-06	1.24E-01
0	3	1400	1	12	3.46E-06	8.82E-02
0	3	1400	7	2	8.24E-06	2.00E-01
0	3	1400	7	7	5.75E-06	1.48E-01
0	3	1400	7	12	4.32E-06	1.01E-01
0	3	1400	13	2	1.34E-05	3.21E-01
0	3	1400	13	7	9.91E-06	2.29E-01
0	3	1400	13	12	6.90E-06	1.63E-01
0	6	200	1	2	1.35E-06	3.33E-02
0	6	200	1	7	9.52E-07	2.23E-02
0	6	200	1	12	5.88E-07	1.66E-02
0	6	200	7	2	1.74E-06	4.44E-02
0	6	200	7	7	1.15E-06	3.02E-02
0	6	200	7	12	8.60E-07	2.07E-02
0	6	200	13	2	2.94E-06	7.08E-02
0	6	200	13	7	2.05E-06	4.96E-02
0	6	200	13	12	1.34E-06	3.50E-02
0	6	800	1	2	5.26E-06	1.28E-01
0	6	800	1	7	3.74E-06	9.33E-02
0	6	800	1	12	2.56E-06	6.59E-02
0	6	800	7	2	6.27E-06	1.54E-01
0	6	800	7	7	4.55E-06	1.13E-01
0	6	800	7	12	3.22E-06	7.96E-02
0	6	800	13	2	1.03E-05	2.50E-01
0	6	800	13	7	7.12E-06	1.82E-01
0	6	800	13	12	5.08E-06	1.27E-01
0	6	1400	1	2	9.08E-06	2.25E-01
0	6	1400	1	7	6.76E-06	1.60E-01
0	6	1400	1	12	4.75E-06	1.15E-01
0	6	1400	7	2	1.11E-05	2.66E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	7.83E-06	1.95E-01
				12	5.69E-06	1.37E-01
			13	2	1.79E-05	4.22E-01
				7	1.27E-05	3.12E-01
				12	9.23E-06	2.21E-01
4	0	200	1	2	1.89E-06	3.68E-02
				7	1.02E-06	2.93E-02
				12	6.86E-07	1.76E-02
			7	2	2.03E-06	4.68E-02
				7	1.25E-06	3.30E-02
				12	8.32E-07	2.17E-02
			13	2	3.27E-06	7.69E-02
				7	2.08E-06	5.21E-02
				12	1.47E-06	2.85E-02
		800	1	2	6.76E-06	1.71E-01
				7	4.88E-06	1.19E-01
				12	3.47E-06	8.24E-02
			7	2	8.32E-06	1.95E-01
				7	5.66E-06	1.46E-01
				12	4.19E-06	9.84E-02
			13	2	1.27E-05	3.17E-01
				7	9.52E-06	2.19E-01
				12	6.06E-06	1.66E-01
		1400	1	2	1.19E-05	2.91E-01
				7	8.47E-06	2.08E-01
				12	6.06E-06	1.47E-01
			7	2	1.36E-05	3.47E-01
				7	1.01E-05	2.47E-01
				12	7.12E-06	1.71E-01
			13	2	2.21E-05	5.49E-01
				7	1.62E-05	3.89E-01
				12	1.15E-05	2.73E-01
	3	200	1	2	1.90E-06	4.66E-02
				7	1.36E-06	2.78E-02
				12	7.78E-07	1.95E-02
			7	2	2.24E-06	5.31E-02
				7	1.41E-06	3.71E-02
				12	8.24E-07	2.49E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	3.75E-06	8.36E-02
				7	2.38E-06	5.86E-02
				12	1.43E-06	3.94E-02
		800	1	2	7.78E-06	1.93E-01
				7	5.93E-06	1.31E-01
				12	3.98E-06	9.52E-02
			7	2	8.76E-06	2.30E-01
				7	6.47E-06	1.61E-01
				12	4.42E-06	1.13E-01
			13	2	1.44E-05	3.56E-01
				7	1.09E-05	2.47E-01
				12	7.31E-06	1.80E-01
		1400	1	2	1.32E-05	3.31E-01
				7	9.63E-06	2.36E-01
				12	6.76E-06	1.66E-01
			7	2	1.59E-05	3.84E-01
				7	1.12E-05	2.79E-01
				12	7.94E-06	1.96E-01
			13	2	2.49E-05	6.20E-01
				7	1.78E-05	4.44E-01
				12	1.22E-05	3.14E-01
	6	200	1	2	2.54E-06	5.99E-02
				7	1.76E-06	3.87E-02
				12	1.01E-06	2.70E-02
			7	2	3.15E-06	7.04E-02
				7	1.87E-06	4.83E-02
				12	1.26E-06	3.15E-02
			13	2	5.09E-06	1.12E-01
				7	3.21E-06	7.30E-02
				12	1.99E-06	5.20E-02
		800	1	2	1.03E-05	2.55E-01
				7	7.33E-06	1.84E-01
				12	5.36E-06	1.27E-01
			7	2	1.20E-05	3.02E-01
				7	8.34E-06	2.18E-01
				12	6.10E-06	1.46E-01
			13	2	1.96E-05	4.74E-01
				7	1.36E-05	3.42E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	9.60E-06	2.40E-01
		1400	1	2	1.78E-05	4.41E-01
				7	1.30E-05	3.11E-01
				12	9.16E-06	2.23E-01
			7	2	2.03E-05	5.26E-01
				7	1.51E-05	3.70E-01
				12	1.05E-05	2.59E-01
			13	2	3.40E-05	8.06E-01
				7	2.37E-05	5.90E-01
				12	1.75E-05	4.05E-01
8	0	200	1	2	2.46E-06	5.80E-02
				7	1.64E-06	3.73E-02
				12	9.05E-07	2.32E-02
			7	2	2.70E-06	7.26E-02
				7	1.82E-06	4.44E-02
				12	1.18E-06	2.62E-02
			13	2	4.52E-06	1.11E-01
				7	2.80E-06	7.37E-02
				12	1.75E-06	4.15E-02
		800	1	2	8.82E-06	2.26E-01
				7	6.38E-06	1.57E-01
				12	4.45E-06	1.09E-01
			7	2	1.04E-05	2.68E-01
				7	7.81E-06	1.84E-01
				12	5.31E-06	1.30E-01
			13	2	1.65E-05	4.23E-01
				7	1.25E-05	2.92E-01
				12	8.67E-06	2.05E-01
		1400	1	2	1.38E-05	3.59E-01
				7	1.05E-05	2.54E-01
				12	7.23E-06	1.75E-01
			7	2	1.64E-05	4.20E-01
				7	1.22E-05	2.97E-01
				12	8.28E-06	2.12E-01
			13	2	2.61E-05	6.73E-01
				7	1.97E-05	4.61E-01
				12	1.38E-05	3.29E-01
	3	200	1	2	2.71E-06	6.56E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	1.58E-06	4.26E-02
				12	1.02E-06	2.70E-02
			7	2	3.22E-06	7.60E-02
				7	1.84E-06	5.43E-02
				12	1.29E-06	2.92E-02
			13	2	5.05E-06	1.17E-01
				7	3.18E-06	7.80E-02
				12	1.77E-06	5.17E-02
		800	1	2	9.97E-06	2.54E-01
				7	6.95E-06	1.83E-01
				12	5.24E-06	1.23E-01
			7	2	1.21E-05	2.91E-01
				7	9.22E-06	2.00E-01
				12	5.96E-06	1.48E-01
			13	2	1.93E-05	4.64E-01
				7	1.40E-05	3.24E-01
				12	9.62E-06	2.30E-01
		1400	1	2	1.66E-05	3.95E-01
				7	1.14E-05	2.86E-01
				12	8.19E-06	1.99E-01
			7	2	1.90E-05	4.64E-01
				7	1.28E-05	3.44E-01
				12	9.45E-06	2.36E-01
			13	2	3.01E-05	7.54E-01
				7	2.11E-05	5.44E-01
				12	1.51E-05	3.75E-01
	6	200	1	2	3.07E-06	9.32E-02
				7	2.24E-06	5.66E-02
				12	1.49E-06	3.29E-02
			7	2	4.39E-06	1.08E-01
				7	2.53E-06	7.01E-02
				12	1.54E-06	4.25E-02
			13	2	6.75E-06	1.68E-01
				7	4.09E-06	1.08E-01
				12	2.83E-06	6.23E-02
		800	1	2	1.35E-05	3.40E-01
				7	9.46E-06	2.44E-01
				12	6.83E-06	1.66E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	1.63E-05	3.87E-01
				7	1.07E-05	2.89E-01
				12	7.95E-06	1.95E-01
			13	2	2.47E-05	6.39E-01
				7	1.77E-05	4.59E-01
				12	1.25E-05	3.14E-01
		1400	1	2	2.23E-05	5.20E-01
				7	1.55E-05	3.85E-01
				12	1.14E-05	2.58E-01
			7	2	2.50E-05	6.31E-01
				7	1.91E-05	4.39E-01
				12	1.26E-05	3.13E-01
			13	2	3.97E-05	9.99E-01
				7	3.00E-05	6.90E-01
				12	1.99E-05	5.00E-01

Appendix M. 1V:2H FC6

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.46E-05	4.60E-04
				7	1.73E-05	1.17E-04
				12	1.23E-05	5.17E-05
			7	2	1.41E-05	1.92E-04
				7	9.70E-06	1.42E-04
				12	6.60E-06	1.16E-04
			13	2	2.41E-05	1.71E-04
				7	1.59E-05	2.59E-04
				12	1.12E-05	1.39E-04
		800	1	2	9.49E-05	1.15E-03
				7	7.24E-05	4.50E-04
				12	4.85E-05	6.48E-04
			7	2	4.97E-05	6.53E-04
				7	3.67E-05	4.13E-04
				12	2.60E-05	2.96E-04
			13	2	8.37E-05	5.91E-04
				7	6.22E-05	5.58E-05
				12	4.14E-05	4.93E-04
		1400	1	2	1.62E-04	2.41E-03
				7	1.19E-04	1.48E-03
				12	8.48E-05	1.11E-03
			7	2	8.58E-05	1.12E-03
				7	6.38E-05	6.15E-04
				12	4.56E-05	3.46E-04
			13	2	1.43E-04	1.29E-03
				7	1.02E-04	1.26E-03
				12	7.19E-05	8.99E-04
	6	200	1	2	3.71E-05	4.81E-04
				7	2.60E-05	5.26E-04
				12	1.83E-05	2.09E-04
			7	2	2.15E-05	1.87E-04
				7	1.45E-05	2.21E-04
				12	1.03E-05	9.92E-05
			13	2	3.52E-05	4.04E-04
				7	2.42E-05	4.15E-04
				12	1.64E-05	3.48E-04
		800	1	2	1.39E-04	2.58E-03
				7	1.03E-04	1.39E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	800	1	12	7.42E-05	6.25E-04
			7	2	7.22E-05	1.56E-03
				7	5.46E-05	6.84E-04
				12	3.87E-05	4.04E-04
			13	2	1.27E-04	9.88E-04
				7	9.08E-05	6.97E-04
				12	6.28E-05	9.44E-04
		1400	1	2	2.46E-04	3.46E-03
				7	1.78E-04	2.67E-03
				12	1.28E-04	1.71E-03
			7	2	1.30E-04	1.30E-03
				7	9.44E-05	1.12E-03
				12	6.55E-05	1.03E-03
			13	2	2.10E-04	2.12E-03
				7	1.49E-04	2.38E-03
				12	1.09E-04	1.59E-03
	12	200	1	2	3.71E-05	5.15E-04
				7	2.67E-05	2.36E-04
				12	1.79E-05	2.21E-04
			7	2	2.14E-05	2.34E-04
				7	1.39E-05	2.59E-04
				12	1.04E-05	7.35E-05
			13	2	3.46E-05	6.16E-04
				7	2.45E-05	2.84E-04
				12	1.64E-05	2.80E-04
		800	1	2	1.41E-04	2.02E-03
				7	9.91E-05	2.08E-03
				12	7.44E-05	7.39E-04
			7	2	7.55E-05	8.85E-04
				7	5.52E-05	5.42E-04
				12	3.82E-05	5.25E-04
			13	2	1.20E-04	1.53E-03
				7	8.72E-05	1.49E-03
				12	6.27E-05	8.08E-04
		1400	1	2	2.49E-04	1.69E-03
				7	1.80E-04	2.44E-03
				12	1.26E-04	1.86E-03
			7	2	1.32E-04	8.13E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	12	1400	7	7	9.43E-05	1.01E-03
				12	6.81E-05	7.74E-04
			13	2	2.07E-04	2.99E-03
				7	1.53E-04	1.93E-03
				12	1.09E-04	1.49E-03
3	0	200	1	2	2.62E-05	3.05E-04
				7	1.71E-05	4.23E-05
				12	1.09E-05	1.91E-04
			7	2	1.44E-05	1.18E-04
				7	9.36E-06	3.99E-05
				12	6.10E-06	3.64E-05
			13	2	2.26E-05	2.70E-04
				7	1.45E-05	2.21E-04
				12	9.85E-06	8.94E-05
		800	1	2	9.91E-05	1.28E-03
				7	7.13E-05	8.55E-04
				12	4.86E-05	8.98E-04
			7	2	5.22E-05	6.61E-04
				7	3.71E-05	5.02E-04
				12	2.63E-05	2.57E-04
			13	2	8.18E-05	1.64E-03
				7	6.18E-05	6.76E-04
				12	4.46E-05	3.80E-04
		1400	1	2	1.67E-04	2.75E-03
				7	1.22E-04	1.48E-03
				12	8.94E-05	3.90E-04
			7	2	8.67E-05	1.28E-03
				7	6.41E-05	7.78E-04
				12	4.44E-05	6.88E-04
			13	2	1.40E-04	2.07E-03
				7	1.04E-04	1.42E-03
				12	7.47E-05	8.24E-04
	6	200	1	2	3.73E-05	7.62E-04
				7	2.34E-05	4.55E-04
				12	1.70E-05	9.71E-05
			7	2	2.02E-05	3.20E-04
				7	1.33E-05	1.99E-04
				12	9.26E-06	1.10E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	200	13	2	3.34E-05	6.37E-04
				7	2.19E-05	2.40E-04
				12	1.40E-05	3.47E-04
		800	1	2	1.50E-04	1.68E-03
				7	1.09E-04	8.29E-04
				12	7.49E-05	1.33E-03
			7	2	7.89E-05	7.10E-04
				7	5.72E-05	5.33E-04
				12	3.87E-05	5.96E-04
			13	2	1.23E-04	2.16E-03
				7	9.26E-05	9.91E-04
				12	6.26E-05	1.02E-03
		1400	1	2	2.51E-04	2.98E-03
				7	1.84E-04	2.34E-03
				12	1.30E-04	1.73E-03
			7	2	1.30E-04	1.86E-03
				7	9.52E-05	1.35E-03
				12	6.71E-05	1.07E-03
			13	2	2.13E-04	2.61E-03
				7	1.54E-04	2.02E-03
				12	1.08E-04	1.47E-03
	12	200	1	2	3.97E-05	4.44E-04
				7	2.49E-05	3.29E-04
				12	1.63E-05	4.42E-04
			7	2	2.12E-05	2.11E-04
				7	1.31E-05	2.17E-04
				12	8.98E-06	7.40E-05
			13	2	3.53E-05	1.68E-04
				7	2.17E-05	3.46E-04
				12	1.47E-05	2.58E-04
		800	1	2	1.56E-04	8.75E-04
				7	1.04E-04	1.77E-03
				12	7.23E-05	1.20E-03
			7	2	7.92E-05	7.67E-04
				7	5.58E-05	7.84E-04
				12	3.89E-05	5.61E-04
			13	2	1.28E-04	1.09E-03
				7	9.21E-05	7.72E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	12	800	13	12	6.31E-05	7.57E-04
		1400	1	2	2.51E-04	3.90E-03
				7	1.86E-04	2.02E-03
				12	1.27E-04	2.15E-03
			7	2	1.31E-04	1.76E-03
				7	9.66E-05	1.13E-03
				12	6.82E-05	7.39E-04
			13	2	2.11E-04	2.90E-03
				7	1.58E-04	1.68E-03
				12	1.09E-04	1.46E-03
6	0	200	1	2	7.64E-05	9.99E-04
				7	5.32E-05	1.96E-04
				12	3.38E-05	4.84E-04
			7	2	4.30E-05	1.16E-04
				7	2.86E-05	3.39E-04
				12	1.84E-05	2.71E-04
			13	2	6.62E-05	7.98E-04
				7	4.56E-05	5.41E-04
				12	3.12E-05	2.20E-04
		800	1	2	3.06E-04	2.04E-03
				7	2.27E-04	1.38E-03
				12	1.59E-04	2.95E-05
			7	2	1.54E-04	2.30E-03
				7	1.16E-04	5.13E-04
				12	7.84E-05	1.22E-03
			13	2	2.52E-04	4.00E-03
				7	1.77E-04	2.71E-03
				12	1.30E-04	1.24E-03
		1400	1	2	4.96E-04	4.35E-03
				7	3.45E-04	5.75E-03
				12	2.43E-04	3.90E-03
			7	2	2.59E-04	2.30E-03
				7	1.83E-04	2.82E-03
				12	1.31E-04	1.86E-03
			13	2	4.15E-04	6.36E-03
				7	2.96E-04	4.13E-03
				12	2.15E-04	1.54E-03
	6	200	1	2	1.31E-04	-3.23E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	200	1	7	7.76E-05	1.48E-03
				12	5.56E-05	1.99E-04
			7	2	6.15E-05	1.33E-03
				7	4.19E-05	6.72E-04
				12	2.79E-05	3.30E-04
			13	2	9.70E-05	1.84E-03
				7	7.16E-05	1.98E-04
				12	4.77E-05	2.94E-04
		800	1	2	4.53E-04	4.21E-03
				7	3.27E-04	3.46E-03
				12	2.22E-04	3.53E-03
			7	2	2.33E-04	2.96E-03
				7	1.73E-04	2.10E-03
				12	1.20E-04	1.67E-03
			13	2	3.81E-04	4.57E-03
				7	2.70E-04	5.14E-03
				12	1.94E-04	1.95E-03
		1400	1	2	7.52E-04	6.54E-03
				7	5.39E-04	5.68E-03
				12	3.75E-04	4.99E-03
			7	2	3.74E-04	5.56E-03
				7	2.75E-04	3.64E-03
				12	1.93E-04	2.79E-03
			13	2	6.16E-04	6.98E-03
				7	4.46E-04	5.97E-03
				12	3.15E-04	4.20E-03
	12	200	1	2	1.23E-04	2.61E-05
				7	7.89E-05	7.42E-04
				12	5.10E-05	6.39E-04
			7	2	6.14E-05	8.92E-04
				7	4.20E-05	6.41E-04
				12	2.66E-05	5.59E-04
			13	2	1.02E-04	1.32E-03
				7	7.09E-05	5.27E-04
				12	4.52E-05	6.89E-04
		800	1	2	4.44E-04	5.92E-03
				7	3.11E-04	6.06E-03
				12	2.26E-04	2.64E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	12	800	7	2	2.32E-04	3.67E-03
				7	1.69E-04	1.90E-03
				12	1.22E-04	1.11E-03
			13	2	3.66E-04	7.21E-03
				7	2.72E-04	3.47E-03
				12	1.96E-04	1.68E-03
		1400	1	2	7.38E-04	6.81E-03
				7	5.42E-04	5.87E-03
				12	3.65E-04	6.09E-03
			7	2	3.83E-04	4.42E-03
				7	2.81E-04	3.18E-03
				12	1.93E-04	2.82E-03
			13	2	6.27E-04	7.13E-03
				7	4.38E-04	7.49E-03
				12	3.11E-04	4.80E-03

Appendix N. 1V:2H FC7

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.48E-06	6.61E-03
				7	2.77E-06	7.82E-04
				12	2.08E-06	2.68E-03
			7	2	4.80E-06	6.46E-03
				7	3.73E-06	3.04E-03
				12	2.93E-06	3.74E-03
			13	2	8.78E-06	4.43E-03
				7	6.36E-06	8.36E-03
				12	5.53E-06	5.02E-03
		800	1	2	1.41E-05	2.03E-02
				7	1.15E-05	1.02E-02
				12	9.07E-06	1.03E-02
			7	2	1.78E-05	1.72E-02
				7	1.38E-05	1.69E-02
				12	1.12E-05	1.55E-02
			13	2	2.90E-05	2.61E-02
				7	2.32E-05	2.45E-02
				12	1.84E-05	2.37E-02
		1400	1	2	2.51E-05	3.23E-02
				7	2.05E-05	1.87E-02
				12	1.66E-05	1.68E-02
			7	2	3.07E-05	2.88E-02
				7	2.38E-05	2.88E-02
				12	1.96E-05	2.37E-02
			13	2	5.01E-05	4.57E-02
				7	3.93E-05	4.33E-02
				12	3.26E-05	2.63E-02
	3	200	1	2	3.90E-06	6.53E-03
				7	2.99E-06	3.56E-03
				12	2.43E-06	1.80E-03
			7	2	5.50E-06	4.20E-03
				7	4.13E-06	5.38E-03
				12	3.29E-06	3.91E-03
			13	2	9.20E-06	1.55E-02
				7	7.26E-06	9.22E-03
				12	5.96E-06	7.99E-03
		800	1	2	1.63E-05	1.61E-02
				7	1.28E-05	1.48E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	1.06E-05	7.39E-03
			7	2	2.03E-05	1.61E-02
				7	1.59E-05	1.39E-02
				12	1.26E-05	1.69E-02
			13	2	3.33E-05	2.15E-02
				7	2.58E-05	2.86E-02
				12	2.03E-05	2.88E-02
		1400	1	2	2.89E-05	2.88E-02
				7	2.28E-05	2.34E-02
				12	1.84E-05	2.25E-02
			7	2	3.43E-05	3.57E-02
				7	2.75E-05	2.47E-02
				12	2.26E-05	2.16E-02
			13	2	5.55E-05	5.72E-02
				7	4.33E-05	5.56E-02
				12	3.57E-05	4.21E-02
	6	200	1	2	5.41E-06	6.28E-03
				7	4.05E-06	3.33E-03
				12	3.11E-06	3.87E-03
			7	2	7.01E-06	9.82E-03
				7	5.50E-06	6.28E-03
				12	4.48E-06	4.24E-03
			13	2	1.25E-05	1.55E-02
				7	9.43E-06	1.39E-02
				12	8.27E-06	4.44E-03
		800	1	2	2.20E-05	1.97E-02
				7	1.69E-05	2.31E-02
				12	1.43E-05	9.37E-03
			7	2	2.65E-05	3.07E-02
				7	2.11E-05	2.18E-02
				12	1.69E-05	1.76E-02
			13	2	4.28E-05	4.42E-02
				7	3.49E-05	3.06E-02
				12	2.80E-05	3.16E-02
		1400	1	2	3.79E-05	4.41E-02
				7	3.08E-05	2.93E-02
				12	2.49E-05	2.65E-02
			7	2	4.56E-05	5.11E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	3.62E-05	4.63E-02
				12	2.98E-05	3.05E-02
			13	2	7.30E-05	8.63E-02
				7	6.02E-05	4.25E-02
				12	4.81E-05	4.84E-02
4	0	200	1	2	6.43E-06	8.69E-03
				7	4.75E-06	5.17E-03
				12	3.40E-06	3.55E-03
			7	2	7.69E-06	8.96E-03
				7	5.61E-06	5.01E-03
				12	4.09E-06	2.56E-03
			13	2	1.22E-05	1.10E-02
				7	8.98E-06	6.04E-03
				12	6.51E-06	6.69E-03
		800	1	2	2.83E-05	2.38E-02
				7	2.13E-05	2.65E-02
				12	1.73E-05	2.07E-02
			7	2	3.25E-05	3.56E-02
				7	2.48E-05	3.48E-02
				12	2.05E-05	2.23E-02
			13	2	5.18E-05	6.66E-02
				7	4.15E-05	3.49E-02
				12	3.34E-05	3.09E-02
		1400	1	2	4.89E-05	4.62E-02
				7	3.86E-05	3.45E-02
				12	3.11E-05	2.79E-02
			7	2	5.76E-05	4.62E-02
				7	4.47E-05	4.89E-02
				12	3.58E-05	4.23E-02
			13	2	9.22E-05	7.17E-02
				7	7.26E-05	5.19E-02
				12	5.79E-05	5.35E-02
	3	200	1	2	7.06E-06	1.31E-02
				7	5.28E-06	5.76E-03
				12	3.90E-06	2.56E-03
			7	2	8.51E-06	9.52E-03
				7	6.17E-06	7.18E-03
				12	4.53E-06	4.73E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	1.43E-05	3.77E-03
				7	1.00E-05	6.43E-03
				12	7.22E-06	6.78E-03
		800	1	2	3.01E-05	4.70E-02
				7	2.45E-05	2.61E-02
				12	1.94E-05	2.70E-02
			7	2	3.67E-05	4.40E-02
				7	2.95E-05	2.40E-02
				12	2.32E-05	2.26E-02
			13	2	5.95E-05	5.82E-02
				7	4.56E-05	5.74E-02
				12	3.71E-05	3.60E-02
		1400	1	2	5.41E-05	6.14E-02
				7	4.24E-05	5.39E-02
				12	3.53E-05	2.88E-02
			7	2	6.49E-05	6.12E-02
				7	5.10E-05	4.25E-02
				12	4.05E-05	4.64E-02
			13	2	1.02E-04	1.02E-01
				7	7.93E-05	1.01E-01
				12	6.44E-05	6.71E-02
	6	200	1	2	9.89E-06	7.98E-03
				7	6.77E-06	9.06E-03
				12	5.14E-06	3.53E-03
			7	2	1.10E-05	1.58E-02
				7	8.39E-06	4.61E-03
				12	6.19E-06	9.23E-04
			13	2	1.96E-05	6.65E-03
				7	1.35E-05	9.40E-03
				12	9.81E-06	8.23E-03
		800	1	2	4.07E-05	5.74E-02
				7	3.29E-05	2.91E-02
				12	2.65E-05	2.36E-02
			7	2	4.85E-05	6.72E-02
				7	3.81E-05	4.45E-02
				12	3.05E-05	4.28E-02
			13	2	7.74E-05	9.07E-02
				7	6.05E-05	6.44E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	4.87E-05	5.11E-02
		1400	1	2	7.27E-05	7.34E-02
				7	5.79E-05	5.54E-02
				12	4.51E-05	5.89E-02
			7	2	8.56E-05	8.78E-02
				7	6.67E-05	8.11E-02
				12	5.36E-05	5.81E-02
			13	2	1.34E-04	1.72E-01
				7	1.10E-04	8.57E-02
				12	8.41E-05	1.05E-01
8	0	200	1	2	8.91E-06	1.78E-02
				7	6.66E-06	4.52E-03
				12	4.41E-06	3.90E-03
			7	2	1.16E-05	6.73E-03
				7	6.90E-06	1.36E-02
				12	5.04E-06	7.08E-03
			13	2	1.87E-05	7.71E-03
				7	1.20E-05	1.55E-02
				12	7.94E-06	1.19E-02
		800	1	2	3.62E-05	3.92E-02
				7	2.77E-05	3.89E-02
				12	2.27E-05	2.67E-02
			7	2	4.33E-05	3.74E-02
				7	3.26E-05	4.47E-02
				12	2.54E-05	4.36E-02
			13	2	6.93E-05	4.84E-02
				7	5.18E-05	6.21E-02
				12	4.18E-05	5.63E-02
		1400	1	2	5.58E-05	8.70E-02
				7	4.47E-05	4.98E-02
				12	3.59E-05	4.57E-02
			7	2	6.71E-05	7.91E-02
				7	5.44E-05	3.87E-02
				12	4.31E-05	3.64E-02
			13	2	1.10E-04	8.98E-02
				7	8.49E-05	7.39E-02
				12	6.77E-05	6.46E-02
	3	200	1	2	1.10E-05	6.03E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	7.23E-06	8.34E-03
				12	4.59E-06	8.82E-03
			7	2	1.26E-05	9.25E-03
				7	8.76E-06	6.45E-03
				12	5.88E-06	4.86E-03
			13	2	2.06E-05	1.25E-02
				7	1.37E-05	1.05E-02
				12	9.57E-06	7.99E-03
		800	1	2	4.22E-05	3.16E-02
				7	3.16E-05	3.24E-02
				12	2.50E-05	3.01E-02
			7	2	4.89E-05	4.36E-02
				7	3.73E-05	3.89E-02
				12	2.94E-05	3.86E-02
			13	2	7.50E-05	9.38E-02
				7	5.80E-05	7.04E-02
				12	4.79E-05	4.82E-02
		1400	1	2	6.65E-05	4.78E-02
				7	5.15E-05	4.20E-02
				12	4.10E-05	4.10E-02
			7	2	7.65E-05	6.78E-02
				7	6.14E-05	4.09E-02
				12	4.85E-05	4.19E-02
			13	2	1.20E-04	1.52E-01
				7	9.51E-05	9.76E-02
				12	7.56E-05	9.10E-02
	6	200	1	2	1.45E-05	1.32E-02
				7	9.65E-06	1.17E-02
				12	6.64E-06	3.16E-03
			7	2	1.59E-05	2.49E-02
				7	1.17E-05	4.07E-03
				12	7.84E-06	6.60E-03
			13	2	2.76E-05	1.85E-02
				7	1.74E-05	2.81E-02
				12	1.13E-05	1.82E-02
		800	1	2	5.35E-05	7.57E-02
				7	4.28E-05	4.53E-02
				12	3.40E-05	3.38E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	6.52E-05	5.13E-02
				7	4.99E-05	4.75E-02
				12	3.99E-05	4.04E-02
			13	2	1.01E-04	1.16E-01
				7	8.02E-05	6.96E-02
				12	6.62E-05	3.03E-02
		1400	1	2	8.67E-05	8.53E-02
				7	6.81E-05	6.83E-02
				12	5.31E-05	7.10E-02
			7	2	1.00E-04	1.14E-01
				7	7.86E-05	8.81E-02
				12	6.57E-05	3.56E-02
			13	2	1.58E-04	1.77E-01
				7	1.27E-04	1.31E-01
				12	9.91E-05	1.25E-01

Appendix O. 1V:3H FC1

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.11E-05	1.91E-04
				7	2.17E-05	1.60E-04
				12	1.47E-05	2.30E-04
			7	2	3.60E-05	2.51E-04
				7	2.46E-05	3.17E-04
				12	1.69E-05	2.44E-04
			13	2	2.34E-05	2.02E-04
				7	1.58E-05	2.25E-04
				12	1.12E-05	1.11E-04
		800	1	2	1.08E-04	1.47E-03
				7	7.90E-05	8.28E-04
				12	5.43E-05	9.14E-04
			7	2	1.12E-04	1.24E-03
				7	7.93E-05	1.28E-03
				12	5.71E-05	7.06E-04
			13	2	7.35E-05	4.49E-04
				7	5.25E-05	6.03E-04
				12	3.60E-05	6.05E-04
		1400	1	2	1.86E-04	2.27E-03
				7	1.34E-04	1.99E-03
				12	9.66E-05	1.24E-03
			7	2	1.88E-04	2.46E-03
				7	1.36E-04	1.95E-03
				12	9.79E-05	1.14E-03
			13	2	1.19E-04	1.52E-03
				7	8.83E-05	9.94E-04
				12	6.27E-05	6.25E-04
	4	200	1	2	3.74E-05	4.97E-04
				7	2.73E-05	1.64E-04
				12	1.91E-05	1.52E-04
			7	2	4.45E-05	3.33E-04
				7	3.05E-05	4.39E-04
				12	2.16E-05	2.47E-04
			13	2	2.79E-05	4.79E-04
				7	2.03E-05	1.38E-04
				12	1.36E-05	2.57E-04
		800	1	2	1.35E-04	2.22E-03
				7	9.52E-05	1.95E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	4	800	1	12	7.11E-05	5.89E-04
			7	2	1.41E-04	1.42E-03
				7	1.01E-04	1.30E-03
				12	7.35E-05	5.68E-04
			13	2	8.97E-05	9.51E-04
				7	6.44E-05	7.70E-04
				12	4.64E-05	4.08E-04
		1400	1	2	2.34E-04	2.79E-03
				7	1.69E-04	2.56E-03
				12	1.22E-04	1.52E-03
			7	2	2.36E-04	2.68E-03
				7	1.71E-04	2.22E-03
				12	1.21E-04	1.61E-03
			13	2	1.50E-04	1.88E-03
				7	1.09E-04	1.36E-03
				12	7.73E-05	1.14E-03
	8	200	1	2	4.55E-05	5.79E-04
				7	3.09E-05	4.65E-04
				12	2.24E-05	3.40E-04
			7	2	5.26E-05	6.19E-04
				7	3.70E-05	3.75E-04
				12	2.59E-05	3.05E-04
			13	2	3.37E-05	4.70E-04
				7	2.34E-05	4.02E-04
				12	1.65E-05	3.23E-04
		800	1	2	1.62E-04	2.61E-03
				7	1.18E-04	1.55E-03
				12	8.30E-05	1.15E-03
			7	2	1.67E-04	1.96E-03
				7	1.23E-04	1.18E-03
				12	8.59E-05	1.10E-03
			13	2	1.06E-04	1.40E-03
				7	7.76E-05	9.76E-04
				12	5.43E-05	7.29E-04
		1400	1	2	2.82E-04	3.32E-03
				7	2.05E-04	2.59E-03
				12	1.46E-04	1.70E-03
			7	2	2.83E-04	3.11E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	8	1400	7	7	2.08E-04	2.22E-03
				12	1.44E-04	2.16E-03
			13	2	1.76E-04	2.63E-03
				7	1.32E-04	1.61E-03
				12	9.41E-05	9.99E-04
4	0	200	1	2	5.85E-05	2.23E-04
				7	3.95E-05	3.88E-04
				12	2.52E-05	3.44E-04
			7	2	5.61E-05	6.75E-04
				7	3.93E-05	4.03E-04
				12	2.60E-05	3.04E-04
			13	2	3.52E-05	5.40E-04
				7	2.43E-05	4.27E-04
				12	1.66E-05	1.58E-04
		800	1	2	2.18E-04	2.51E-03
				7	1.56E-04	1.54E-03
				12	1.10E-04	1.32E-03
			7	2	2.14E-04	2.68E-03
				7	1.53E-04	2.19E-03
				12	1.08E-04	1.61E-03
			13	2	1.39E-04	1.24E-03
				7	9.92E-05	1.05E-03
				12	6.59E-05	1.30E-03
		1400	1	2	3.65E-04	5.19E-03
				7	2.68E-04	3.10E-03
				12	1.88E-04	2.07E-03
			7	2	3.66E-04	4.65E-03
				7	2.61E-04	3.80E-03
				12	1.89E-04	1.94E-03
			13	2	2.30E-04	2.68E-03
				7	1.68E-04	1.82E-03
				12	1.18E-04	1.45E-03
	4	200	1	2	6.84E-05	6.15E-04
				7	4.83E-05	4.69E-04
				12	3.24E-05	3.08E-04
			7	2	6.92E-05	1.07E-03
				7	4.88E-05	6.12E-04
				12	3.25E-05	2.15E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	4	200	13	2	4.77E-05	8.26E-06
4	4	200	13	7	2.99E-05	5.35E-04
4	4	200	13	12	2.10E-05	2.07E-04
4	4	800	1	2	2.66E-04	4.19E-03
4	4	800	1	7	1.94E-04	2.77E-03
4	4	800	1	12	1.36E-04	1.96E-03
4	4	800	7	2	2.63E-04	3.91E-03
4	4	800	7	7	1.91E-04	3.00E-03
4	4	800	7	12	1.36E-04	1.72E-03
4	4	800	13	2	1.67E-04	1.92E-03
4	4	800	13	7	1.21E-04	1.46E-03
4	4	800	13	12	8.83E-05	7.19E-04
4	4	1400	1	2	4.67E-04	4.41E-03
4	4	1400	1	7	3.36E-04	4.86E-03
4	4	1400	1	12	2.35E-04	2.67E-03
4	4	1400	7	2	4.54E-04	5.91E-03
4	4	1400	7	7	3.30E-04	4.12E-03
4	4	1400	7	12	2.35E-04	2.82E-03
4	4	1400	13	2	2.79E-04	5.30E-03
4	4	1400	13	7	2.12E-04	2.71E-03
4	4	1400	13	12	1.47E-04	2.09E-03
4	8	200	1	2	6.62E-05	1.45E-03
4	8	200	1	7	4.50E-05	8.49E-04
4	8	200	1	12	3.11E-05	5.91E-04
4	8	200	7	2	7.11E-05	8.91E-04
4	8	200	7	7	4.73E-05	7.85E-04
4	8	200	7	12	3.20E-05	4.98E-04
4	8	200	13	2	4.49E-05	5.18E-04
4	8	200	13	7	3.02E-05	4.74E-04
4	8	200	13	12	2.11E-05	1.86E-04
4	8	800	1	2	2.70E-04	3.64E-03
4	8	800	1	7	1.92E-04	2.73E-03
4	8	800	1	12	1.38E-04	1.13E-03
4	8	800	7	2	2.65E-04	3.76E-03
4	8	800	7	7	1.88E-04	3.32E-03
4	8	800	7	12	1.37E-04	1.35E-03
4	8	800	13	2	1.68E-04	2.32E-03
4	8	800	13	7	1.23E-04	1.25E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	8	800	13	12	8.72E-05	1.06E-03
		1400	1	2	4.66E-04	4.19E-03
				7	3.37E-04	3.60E-03
				12	2.34E-04	3.02E-03
			7	2	4.58E-04	4.79E-03
				7	3.32E-04	3.74E-03
				12	2.35E-04	2.99E-03
			13	2	2.87E-04	3.84E-03
				7	2.06E-04	3.01E-03
				12	1.47E-04	1.89E-03
8	0	200	1	2	7.68E-05	1.58E-03
				7	5.53E-05	-1.25E-04
				12	3.38E-05	4.88E-04
			7	2	8.10E-05	9.16E-04
				7	5.41E-05	3.66E-04
				12	3.30E-05	6.40E-04
			13	2	5.25E-05	7.34E-04
				7	3.31E-05	6.77E-04
				12	2.24E-05	1.94E-04
		800	1	2	2.92E-04	3.18E-03
				7	1.99E-04	4.54E-03
				12	1.45E-04	2.07E-03
			7	2	2.86E-04	3.74E-03
				7	2.02E-04	2.89E-03
				12	1.45E-04	1.69E-03
			13	2	1.82E-04	2.14E-03
				7	1.30E-04	2.03E-03
				12	9.07E-05	1.45E-03
		1400	1	2	4.67E-04	5.78E-03
				7	3.35E-04	4.70E-03
				12	2.40E-04	2.64E-03
			7	2	4.61E-04	5.61E-03
				7	3.38E-04	3.75E-03
				12	2.36E-04	2.46E-03
			13	2	2.94E-04	3.20E-03
				7	2.13E-04	2.64E-03
				12	1.53E-04	1.07E-03
	4	200	1	2	8.12E-05	7.93E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	4	200	1	7	5.18E-05	7.94E-04
				12	3.53E-05	1.15E-04
			7	2	8.18E-05	8.60E-04
				7	5.54E-05	1.64E-04
				12	3.39E-05	6.03E-04
			13	2	5.09E-05	6.41E-04
				7	3.50E-05	2.13E-04
				12	2.14E-05	4.04E-04
		800	1	2	2.93E-04	3.04E-03
				7	2.11E-04	2.23E-03
				12	1.50E-04	1.37E-03
			7	2	2.89E-04	3.16E-03
				7	2.05E-04	2.87E-03
				12	1.47E-04	1.52E-03
			13	2	1.85E-04	1.49E-03
				7	1.31E-04	1.66E-03
				12	9.19E-05	1.20E-03
		1400	1	2	4.74E-04	5.05E-03
				7	3.36E-04	4.90E-03
				12	2.45E-04	2.26E-03
			7	2	4.60E-04	6.26E-03
				7	3.37E-04	3.72E-03
				12	2.36E-04	3.07E-03
			13	2	2.93E-04	3.34E-03
				7	2.15E-04	2.19E-03
				12	1.49E-04	1.84E-03
	8	200	1	2	1.28E-04	-3.32E-04
				7	8.03E-05	8.42E-04
				12	5.15E-05	3.01E-04
			7	2	1.19E-04	1.62E-03
				7	8.15E-05	7.53E-04
				12	4.95E-05	8.92E-04
			13	2	7.88E-05	4.97E-04
				7	5.31E-05	3.82E-04
				12	3.37E-05	1.85E-04
		800	1	2	4.31E-04	5.85E-03
				7	3.10E-04	4.54E-03
				12	2.16E-04	3.57E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	8	800	7	2	4.32E-04	4.86E-03
				7	3.13E-04	3.98E-03
				12	2.20E-04	2.47E-03
			13	2	2.63E-04	4.81E-03
				7	1.96E-04	2.43E-03
				12	1.38E-04	1.82E-03
		1400	1	2	6.97E-04	9.88E-03
				7	5.15E-04	4.46E-03
				12	3.60E-04	3.73E-03
			7	2	6.98E-04	8.60E-03
				7	5.06E-04	5.23E-03
				12	3.58E-04	4.13E-03
			13	2	4.40E-04	5.17E-03
				7	3.19E-04	3.34E-03
				12	2.24E-04	2.60E-03

Appendix P. 1V:3H FC2

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.22E-06	2.46E-02
0	0	200	1	7	1.34E-06	2.03E-02
0	0	200	1	12	9.89E-07	1.23E-02
0	0	200	7	2	1.87E-06	2.80E-02
0	0	200	7	7	1.35E-06	1.85E-02
0	0	200	7	12	1.02E-06	1.23E-02
0	0	200	13	2	3.10E-06	3.97E-02
0	0	200	13	7	2.14E-06	2.81E-02
0	0	200	13	12	1.51E-06	1.95E-02
0	0	800	1	2	7.53E-06	1.05E-01
0	0	800	1	7	5.47E-06	7.61E-02
0	0	800	1	12	3.21E-06	5.58E-02
0	0	800	7	2	7.08E-06	8.49E-02
0	0	800	7	7	4.87E-06	6.38E-02
0	0	800	7	12	3.47E-06	4.45E-02
0	0	800	13	2	9.77E-06	1.36E-01
0	0	800	13	7	7.07E-06	9.47E-02
0	0	800	13	12	4.88E-06	6.89E-02
0	0	1400	1	2	1.33E-05	1.81E-01
0	0	1400	1	7	9.47E-06	1.31E-01
0	0	1400	1	12	6.96E-06	9.24E-02
0	0	1400	7	2	1.13E-05	1.50E-01
0	0	1400	7	7	8.08E-06	1.12E-01
0	0	1400	7	12	6.05E-06	7.57E-02
0	0	1400	13	2	1.67E-05	2.24E-01
0	0	1400	13	7	1.21E-05	1.63E-01
0	0	1400	13	12	8.56E-06	1.17E-01
0	3	200	1	2	2.46E-06	2.72E-02
0	3	200	1	7	1.54E-06	2.16E-02
0	3	200	1	12	8.34E-07	1.73E-02
0	3	200	7	2	2.17E-06	3.06E-02
0	3	200	7	7	1.58E-06	2.05E-02
0	3	200	7	12	1.09E-06	1.52E-02
0	3	200	13	2	3.24E-06	4.85E-02
0	3	200	13	7	2.27E-06	3.48E-02
0	3	200	13	12	1.62E-06	2.33E-02
0	3	800	1	2	8.63E-06	1.16E-01
0	3	800	1	7	6.12E-06	8.39E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	4.44E-06	5.74E-02
			7	2	7.28E-06	1.02E-01
				7	5.23E-06	7.35E-02
				12	3.88E-06	5.14E-02
			13	2	1.09E-05	1.51E-01
				7	7.86E-06	1.10E-01
				12	5.59E-06	7.55E-02
		1400	1	2	1.48E-05	2.03E-01
				7	1.08E-05	1.50E-01
				12	7.72E-06	1.05E-01
			7	2	1.30E-05	1.70E-01
				7	9.12E-06	1.26E-01
				12	6.47E-06	8.98E-02
			13	2	1.95E-05	2.49E-01
				7	1.36E-05	1.85E-01
				12	9.55E-06	1.29E-01
	6	200	1	2	3.28E-06	3.26E-02
				7	2.23E-06	2.79E-02
				12	1.47E-06	2.00E-02
			7	2	3.11E-06	4.03E-02
				7	2.10E-06	2.87E-02
				12	1.39E-06	2.04E-02
			13	2	4.52E-06	6.35E-02
				7	3.33E-06	4.11E-02
				12	2.15E-06	3.26E-02
		800	1	2	1.11E-05	1.58E-01
				7	7.92E-06	1.16E-01
				12	5.72E-06	8.19E-02
			7	2	9.85E-06	1.38E-01
				7	7.19E-06	9.85E-02
				12	5.10E-06	6.84E-02
			13	2	1.46E-05	2.00E-01
				7	1.05E-05	1.43E-01
				12	7.70E-06	1.01E-01
		1400	1	2	1.98E-05	2.72E-01
				7	1.45E-05	1.94E-01
				12	1.05E-05	1.36E-01
			7	2	1.67E-05	2.33E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	1.18E-05	1.72E-01
				12	8.80E-06	1.18E-01
			13	2	2.51E-05	3.33E-01
				7	1.81E-05	2.42E-01
				12	1.30E-05	1.69E-01
3	0	200	1	2	1.78E-06	2.38E-02
				7	1.21E-06	1.09E-02
				12	4.61E-07	9.71E-03
			7	2	1.61E-06	1.80E-02
				7	8.82E-07	1.19E-02
				12	5.62E-07	7.61E-03
			13	2	2.28E-06	2.65E-02
				7	1.22E-06	1.73E-02
				12	8.75E-07	1.09E-02
		800	1	2	7.38E-06	7.85E-02
				7	4.85E-06	6.83E-02
				12	3.41E-06	4.45E-02
			7	2	5.84E-06	7.62E-02
				7	4.25E-06	5.28E-02
				12	2.73E-06	3.91E-02
			13	2	8.46E-06	1.10E-01
				7	5.95E-06	7.97E-02
				12	4.13E-06	5.70E-02
		1400	1	2	1.18E-05	1.54E-01
				7	8.39E-06	1.13E-01
				12	6.08E-06	7.82E-02
			7	2	9.93E-06	1.27E-01
				7	6.94E-06	9.40E-02
				12	5.06E-06	6.29E-02
			13	2	1.43E-05	1.88E-01
				7	9.95E-06	1.39E-01
				12	7.12E-06	9.57E-02
	3	200	1	2	2.10E-06	2.05E-02
				7	1.08E-06	1.62E-02
				12	7.87E-07	8.36E-03
			7	2	1.59E-06	2.18E-02
				7	9.66E-07	1.32E-02
				12	7.01E-07	7.92E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	2.45E-06	3.06E-02
				7	1.26E-06	2.12E-02
				12	9.12E-07	1.29E-02
		800	1	2	7.84E-06	1.06E-01
				7	5.42E-06	7.41E-02
				12	3.76E-06	5.06E-02
			7	2	6.45E-06	8.99E-02
				7	4.87E-06	5.94E-02
				12	3.14E-06	4.34E-02
			13	2	9.22E-06	1.30E-01
				7	6.80E-06	9.05E-02
				12	4.71E-06	6.25E-02
		1400	1	2	1.31E-05	1.77E-01
				7	9.07E-06	1.30E-01
				12	6.69E-06	8.69E-02
			7	2	1.10E-05	1.47E-01
				7	7.68E-06	1.07E-01
				12	5.53E-06	7.43E-02
			13	2	1.61E-05	2.12E-01
				7	1.16E-05	1.50E-01
				12	8.11E-06	1.10E-01
	6	200	1	2	2.43E-06	2.55E-02
				7	1.64E-06	1.70E-02
				12	1.16E-06	9.98E-03
			7	2	2.14E-06	3.08E-02
				7	1.26E-06	1.81E-02
				12	9.07E-07	1.03E-02
			13	2	3.39E-06	4.19E-02
				7	2.02E-06	2.45E-02
				12	1.22E-06	1.68E-02
		800	1	2	1.03E-05	1.41E-01
				7	6.15E-06	1.06E-01
				12	4.91E-06	7.02E-02
			7	2	8.73E-06	1.17E-01
				7	6.03E-06	8.29E-02
				12	4.39E-06	5.57E-02
			13	2	1.27E-05	1.69E-01
				7	8.73E-06	1.25E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	6.33E-06	7.99E-02
		1400	1	2	1.74E-05	2.37E-01
				7	1.24E-05	1.73E-01
				12	8.99E-06	1.18E-01
			7	2	1.48E-05	1.92E-01
				7	1.05E-05	1.42E-01
				12	7.43E-06	9.58E-02
			13	2	2.11E-05	2.91E-01
				7	1.49E-05	2.09E-01
				12	1.06E-05	1.45E-01
6	0	200	1	2	4.49E-06	6.17E-02
				7	3.67E-06	3.71E-02
				12	2.49E-06	1.76E-02
			7	2	4.27E-06	5.32E-02
				7	2.71E-06	3.78E-02
				12	1.71E-06	2.38E-02
			13	2	6.08E-06	8.83E-02
				7	4.19E-06	5.56E-02
				12	2.53E-06	3.60E-02
		800	1	2	1.96E-05	2.62E-01
				7	1.19E-05	2.11E-01
				12	1.01E-05	1.38E-01
			7	2	1.75E-05	2.21E-01
				7	1.18E-05	1.67E-01
				12	8.71E-06	1.10E-01
			13	2	2.53E-05	3.29E-01
				7	1.73E-05	2.44E-01
				12	1.21E-05	1.68E-01
		1400	1	2	3.26E-05	4.59E-01
				7	2.36E-05	3.27E-01
				12	1.68E-05	2.24E-01
			7	2	2.79E-05	3.72E-01
				7	1.99E-05	2.71E-01
				12	1.39E-05	1.90E-01
			13	2	4.08E-05	5.42E-01
				7	2.98E-05	3.86E-01
				12	2.03E-05	2.77E-01
	3	200	1	2	5.62E-06	7.62E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	3.14E-06	4.93E-02
				12	2.31E-06	3.23E-02
			7	2	4.61E-06	6.92E-02
				7	3.09E-06	4.18E-02
				12	2.18E-06	2.48E-02
			13	2	7.52E-06	9.37E-02
				7	4.61E-06	6.29E-02
				12	3.02E-06	3.77E-02
		800	1	2	2.32E-05	3.08E-01
				7	1.63E-05	2.21E-01
				12	1.12E-05	1.56E-01
			7	2	1.94E-05	2.61E-01
				7	1.28E-05	1.94E-01
				12	9.84E-06	1.28E-01
			13	2	2.86E-05	3.74E-01
				7	2.04E-05	2.67E-01
				12	1.34E-05	1.92E-01
		1400	1	2	3.73E-05	5.06E-01
				7	2.67E-05	3.66E-01
				12	1.93E-05	2.50E-01
			7	2	3.17E-05	4.19E-01
				7	2.21E-05	3.04E-01
				12	1.55E-05	2.10E-01
			13	2	4.41E-05	6.29E-01
				7	3.26E-05	4.51E-01
				12	2.26E-05	3.11E-01
	6	200	1	2	7.45E-06	1.07E-01
				7	5.01E-06	6.75E-02
				12	2.58E-06	4.66E-02
			7	2	6.43E-06	8.61E-02
				7	4.01E-06	5.96E-02
				12	2.78E-06	3.44E-02
			13	2	9.35E-06	1.29E-01
				7	6.47E-06	7.67E-02
				12	3.94E-06	5.44E-02
		800	1	2	3.35E-05	3.49E-01
				7	2.25E-05	2.91E-01
				12	1.49E-05	2.08E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	2.50E-05	3.59E-01
				7	1.86E-05	2.43E-01
				12	1.32E-05	1.68E-01
			13	2	3.75E-05	5.03E-01
				7	2.68E-05	3.64E-01
				12	1.84E-05	2.46E-01
		1400	1	2	5.02E-05	6.72E-01
				7	3.57E-05	4.80E-01
				12	2.49E-05	3.46E-01
			7	2	4.21E-05	5.48E-01
				7	2.95E-05	4.05E-01
				12	2.13E-05	2.79E-01
			13	2	6.06E-05	8.15E-01
				7	4.40E-05	5.93E-01
				12	3.08E-05	4.10E-01

Appendix Q. 1V:3H FC3

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.09E-06	0.00
0	0	200	1	7	2.21E-06	0.00
0	0	200	1	12	1.73E-06	0.00
0	0	200	7	2	4.50E-06	0.00
0	0	200	7	7	3.36E-06	0.00
0	0	200	7	12	2.45E-06	0.00
0	0	200	13	2	5.60E-06	0.00
0	0	200	13	7	4.18E-06	0.00
0	0	200	13	12	3.43E-06	0.00
0	0	800	1	2	1.26E-05	0.00
0	0	800	1	7	9.76E-06	0.00
0	0	800	1	12	7.90E-06	0.00
0	0	800	7	2	1.57E-05	0.00
0	0	800	7	7	1.25E-05	0.00
0	0	800	7	12	9.74E-06	0.00
0	0	800	13	2	1.82E-05	0.00
0	0	800	13	7	1.46E-05	0.00
0	0	800	13	12	1.15E-05	0.00
0	0	1400	1	2	2.20E-05	0.00
0	0	1400	1	7	1.73E-05	0.00
0	0	1400	1	12	1.40E-05	0.00
0	0	1400	7	2	2.72E-05	0.00
0	0	1400	7	7	2.15E-05	0.00
0	0	1400	7	12	1.74E-05	0.00
0	0	1400	13	2	3.12E-05	0.00
0	0	1400	13	7	2.45E-05	0.00
0	0	1400	13	12	2.01E-05	0.00
0	2	200	1	2	3.01E-06	0.00
0	2	200	1	7	2.35E-06	0.00
0	2	200	1	12	1.84E-06	0.00
0	2	200	7	2	4.40E-06	0.00
0	2	200	7	7	3.46E-06	0.00
0	2	200	7	12	2.46E-06	0.00
0	2	200	13	2	5.56E-06	0.00
0	2	200	13	7	4.28E-06	0.00
0	2	200	13	12	3.42E-06	0.00
0	2	800	1	2	1.24E-05	0.00
0	2	800	1	7	9.80E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	2	800	1	12	7.91E-06	0.00
			7	2	1.58E-05	0.00
				7	1.25E-05	0.00
				12	9.93E-06	0.00
			13	2	1.84E-05	0.00
				7	1.43E-05	0.00
				12	1.17E-05	0.00
		1400	1	2	2.22E-05	0.00
				7	1.72E-05	0.00
				12	1.41E-05	0.00
			7	2	2.77E-05	0.00
				7	2.18E-05	0.00
				12	1.77E-05	0.00
			13	2	3.11E-05	0.00
				7	2.47E-05	0.00
				12	2.02E-05	0.00
	3	200	1	2	3.50E-06	0.00
				7	2.57E-06	0.00
				12	2.05E-06	0.00
			7	2	4.89E-06	0.00
				7	3.93E-06	0.00
				12	2.82E-06	0.00
			13	2	6.06E-06	0.00
				7	4.89E-06	0.00
				12	3.96E-06	0.00
		800	1	2	1.40E-05	0.00
				7	1.08E-05	0.00
				12	8.75E-06	0.00
			7	2	1.78E-05	0.00
				7	1.38E-05	0.00
				12	1.11E-05	0.00
			13	2	2.05E-05	0.00
				7	1.61E-05	0.00
				12	1.33E-05	0.00
		1400	1	2	2.47E-05	0.00
				7	1.92E-05	0.00
				12	1.55E-05	0.00
			7	2	3.08E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	1400	7	7	2.44E-05	0.00
				12	1.97E-05	0.00
			13	2	3.49E-05	0.00
				7	2.73E-05	0.00
				12	2.26E-05	0.00
2	0	200	1	2	2.49E-06	0.00
				7	1.67E-06	0.00
				12	1.17E-06	0.00
			7	2	3.01E-06	0.00
				7	2.05E-06	0.00
				12	1.44E-06	0.00
			13	2	3.66E-06	0.00
				7	2.67E-06	0.00
				12	1.85E-06	0.00
		800	1	2	1.11E-05	0.00
				7	8.56E-06	0.00
				12	6.69E-06	0.00
			7	2	1.36E-05	0.00
				7	1.06E-05	0.00
				12	8.37E-06	0.00
			13	2	1.55E-05	0.00
				7	1.17E-05	0.00
				12	9.43E-06	0.00
		1400	1	2	1.96E-05	0.00
				7	1.50E-05	0.00
				12	1.22E-05	0.00
			7	2	2.36E-05	0.00
				7	1.88E-05	0.00
				12	1.48E-05	0.00
			13	2	2.67E-05	0.00
				7	2.08E-05	0.00
				12	1.67E-05	0.00
	2	200	1	2	2.39E-06	0.00
				7	1.67E-06	0.00
				12	1.09E-06	0.00
			7	2	2.98E-06	0.00
				7	2.09E-06	0.00
				12	1.44E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	2	200	13	2	3.59E-06	0.00
				7	2.63E-06	0.00
				12	1.90E-06	0.00
		800	1	2	1.12E-05	0.00
				7	8.65E-06	0.00
				12	6.71E-06	0.00
			7	2	1.37E-05	0.00
				7	1.05E-05	0.00
				12	8.36E-06	0.00
			13	2	1.52E-05	0.00
				7	1.22E-05	0.00
				12	9.50E-06	0.00
		1400	1	2	1.95E-05	0.00
				7	1.52E-05	0.00
				12	1.23E-05	0.00
			7	2	2.38E-05	0.00
				7	1.85E-05	0.00
				12	1.50E-05	0.00
			13	2	2.67E-05	0.00
				7	2.08E-05	0.00
				12	1.69E-05	0.00
	3	200	1	2	2.87E-06	0.00
				7	1.78E-06	0.00
				12	1.25E-06	0.00
			7	2	3.53E-06	0.00
				7	2.37E-06	0.00
				12	1.53E-06	0.00
			13	2	4.03E-06	0.00
				7	2.96E-06	0.00
				12	2.13E-06	0.00
		800	1	2	1.24E-05	0.00
				7	9.55E-06	0.00
				12	7.49E-06	0.00
			7	2	1.55E-05	0.00
				7	1.18E-05	0.00
				12	9.30E-06	0.00
			13	2	1.75E-05	0.00
				7	1.35E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	3	800	13	12	1.08E-05	0.00
		1400	1	2	2.19E-05	0.00
				7	1.72E-05	0.00
				12	1.36E-05	0.00
			7	2	2.66E-05	0.00
				7	2.09E-05	0.00
				12	1.66E-05	0.00
			13	2	3.03E-05	0.00
				7	2.36E-05	0.00
				12	1.92E-05	0.00
3	0	200	1	2	2.72E-06	0.00
				7	1.77E-06	0.00
				12	1.27E-06	0.00
			7	2	3.15E-06	0.00
				7	2.15E-06	0.00
				12	1.50E-06	0.00
			13	2	3.87E-06	0.00
				7	2.57E-06	0.00
				12	1.80E-06	0.00
		800	1	2	1.21E-05	0.00
				7	9.06E-06	0.00
				12	7.10E-06	0.00
			7	2	1.45E-05	0.00
				7	1.11E-05	0.00
				12	8.83E-06	0.00
			13	2	1.61E-05	0.00
				7	1.26E-05	0.00
				12	9.94E-06	0.00
		1400	1	2	2.05E-05	0.00
				7	1.56E-05	0.00
				12	1.26E-05	0.00
			7	2	2.46E-05	0.00
				7	1.93E-05	0.00
				12	1.55E-05	0.00
			13	2	2.74E-05	0.00
				7	2.16E-05	0.00
				12	1.73E-05	0.00
	2	200	1	2	2.76E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	2	200	1	7	1.76E-06	0.00
				12	1.25E-06	0.00
			7	2	3.45E-06	0.00
				7	2.05E-06	0.00
				12	1.59E-06	0.00
			13	2	3.84E-06	0.00
				7	2.50E-06	0.00
				12	1.85E-06	0.00
		800	1	2	1.19E-05	0.00
				7	9.08E-06	0.00
				12	7.13E-06	0.00
			7	2	1.45E-05	0.00
				7	1.11E-05	0.00
				12	8.60E-06	0.00
			13	2	1.65E-05	0.00
				7	1.25E-05	0.00
				12	9.88E-06	0.00
		1400	1	2	2.03E-05	0.00
				7	1.58E-05	0.00
				12	1.27E-05	0.00
			7	2	2.46E-05	0.00
				7	1.93E-05	0.00
				12	1.53E-05	0.00
			13	2	2.78E-05	0.00
				7	2.13E-05	0.00
				12	1.74E-05	0.00
	3	200	1	2	3.09E-06	0.00
				7	1.94E-06	0.00
				12	1.42E-06	0.00
			7	2	3.92E-06	0.00
				7	2.35E-06	0.00
				12	1.72E-06	0.00
			13	2	4.39E-06	0.00
				7	2.76E-06	0.00
				12	2.19E-06	0.00
		800	1	2	1.34E-05	0.00
				7	1.03E-05	0.00
				12	8.07E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	800	7	2	1.63E-05	0.00
				7	1.25E-05	0.00
				12	9.86E-06	0.00
			13	2	1.84E-05	0.00
				7	1.40E-05	0.00
				12	1.11E-05	0.00
		1400	1	2	2.28E-05	0.00
				7	1.78E-05	0.00
				12	1.42E-05	0.00
			7	2	2.79E-05	0.00
				7	2.18E-05	0.00
				12	1.75E-05	0.00
			13	2	3.08E-05	0.00
				7	2.43E-05	0.00
				12	1.97E-05	0.00

Appendix R. 1V:3H FC4

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	5.72E-06	4.36E-03
				7	3.20E-06	1.70E-02
				12	4.02E-06	3.32E-03
			7	2	6.36E-06	1.01E-02
				7	5.04E-06	7.86E-03
				12	4.33E-06	5.98E-03
			13	2	1.04E-05	1.81E-02
				7	8.48E-06	1.31E-02
				12	8.78E-06	1.08E-02
		800	1	2	2.50E-05	2.22E-02
				7	1.74E-05	3.16E-02
				12	1.56E-05	1.95E-02
			7	2	2.20E-05	2.05E-02
				7	1.70E-05	2.32E-02
				12	1.38E-05	2.02E-02
			13	2	3.27E-05	4.15E-02
				7	2.67E-05	2.31E-02
				12	2.12E-05	2.39E-02
		1400	1	2	4.26E-05	5.20E-02
				7	3.31E-05	4.87E-02
				12	2.75E-05	3.22E-02
			7	2	3.67E-05	4.41E-02
				7	2.94E-05	3.40E-02
				12	2.37E-05	2.98E-02
			13	2	5.42E-05	7.31E-02
				7	4.41E-05	5.17E-02
				12	4.46E-05	4.31E-02
	3	200	1	2	7.25E-06	4.43E-03
				7	5.45E-06	4.72E-03
				12	4.36E-06	4.06E-03
			7	2	7.26E-06	9.47E-03
				7	5.64E-06	7.76E-03
				12	4.74E-06	6.43E-03
			13	2	1.21E-05	1.59E-02
				7	9.47E-06	1.41E-02
				12	8.05E-06	9.41E-03
		800	1	2	2.77E-05	3.04E-02
				7	2.17E-05	2.22E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	1.67E-05	3.00E-02
			7	2	2.41E-05	3.19E-02
				7	1.90E-05	2.80E-02
				12	1.54E-05	2.03E-02
			13	2	3.72E-05	4.06E-02
				7	2.86E-05	4.51E-02
				12	2.28E-05	4.08E-02
		1400	1	2	4.73E-05	5.79E-02
				7	3.77E-05	5.04E-02
				12	3.09E-05	4.12E-02
			7	2	4.00E-05	5.96E-02
				7	3.24E-05	4.51E-02
				12	2.69E-05	3.31E-02
			13	2	6.14E-05	7.24E-02
				7	4.86E-05	6.18E-02
				12	4.06E-05	4.63E-02
	6	200	1	2	1.02E-05	4.65E-03
				7	6.97E-06	1.21E-02
				12	5.54E-06	1.10E-02
			7	2	1.00E-05	1.14E-02
				7	8.02E-06	5.40E-03
				12	6.47E-06	6.75E-03
			13	2	1.63E-05	2.62E-02
				7	1.25E-05	2.04E-02
				12	1.07E-05	1.49E-02
		800	1	2	3.58E-05	4.70E-02
				7	2.88E-05	3.46E-02
				12	2.32E-05	2.83E-02
			7	2	3.23E-05	3.85E-02
				7	2.56E-05	3.15E-02
				12	2.10E-05	2.09E-02
			13	2	4.87E-05	6.24E-02
				7	3.82E-05	5.69E-02
				12	3.09E-05	4.58E-02
		1400	1	2	6.23E-05	9.70E-02
				7	5.06E-05	6.49E-02
				12	4.07E-05	5.75E-02
			7	2	5.44E-05	7.23E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	4.42E-05	5.44E-02
				12	3.55E-05	4.72E-02
			13	2	8.19E-05	9.97E-02
				7	6.46E-05	9.06E-02
				12	5.44E-05	6.25E-02
3	0	200	1	2	5.21E-06	5.33E-03
				7	3.32E-06	4.07E-03
				12	2.31E-06	-3.99E-04
			7	2	4.54E-06	5.73E-03
				7	2.86E-06	2.49E-03
				12	1.90E-06	3.46E-03
			13	2	6.25E-06	9.52E-03
				7	4.09E-06	4.87E-03
				12	3.09E-06	3.27E-03
		800	1	2	2.15E-05	2.53E-02
				7	1.65E-05	1.74E-02
				12	1.34E-05	1.23E-02
			7	2	2.14E-05	2.89E-02
				7	1.70E-05	2.01E-02
				12	1.39E-05	1.54E-02
			13	2	3.25E-05	4.56E-02
				7	2.69E-05	2.40E-02
				12	2.17E-05	2.01E-02
		1400	1	2	3.58E-05	4.95E-02
				7	2.89E-05	3.01E-02
				12	2.34E-05	2.39E-02
			7	2	3.07E-05	3.24E-02
				7	2.35E-05	3.18E-02
				12	1.95E-05	2.05E-02
			13	2	4.38E-05	5.97E-02
				7	3.47E-05	3.80E-02
				12	2.83E-05	3.32E-02
	3	200	1	2	5.56E-06	6.51E-03
				7	3.48E-06	6.07E-03
				12	2.46E-06	3.66E-03
			7	2	4.38E-06	1.21E-02
				7	3.21E-06	2.88E-03
				12	2.08E-06	3.92E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	7.03E-06	1.10E-02
				7	4.79E-06	4.19E-03
				12	3.36E-06	3.92E-03
		800	1	2	2.44E-05	3.11E-02
				7	1.94E-05	4.45E-03
				12	1.43E-05	2.21E-02
			7	2	1.96E-05	3.10E-02
				7	1.55E-05	2.33E-02
				12	1.21E-05	1.56E-02
			13	2	2.94E-05	4.18E-02
				7	2.35E-05	1.86E-02
				12	1.77E-05	2.38E-02
		1400	1	2	4.01E-05	5.25E-02
				7	3.17E-05	3.96E-02
				12	2.61E-05	2.78E-02
			7	2	3.44E-05	3.84E-02
				7	2.66E-05	3.28E-02
				12	2.19E-05	2.30E-02
			13	2	4.90E-05	7.34E-02
				7	3.84E-05	5.08E-02
				12	3.11E-05	4.38E-02
	6	200	1	2	7.98E-06	1.16E-03
				7	5.07E-06	4.72E-04
				12	3.43E-06	4.53E-03
			7	2	6.27E-06	8.57E-03
				7	4.11E-06	5.05E-03
				12	3.04E-06	2.45E-03
			13	2	9.89E-06	7.85E-03
				7	6.58E-06	5.96E-03
				12	4.46E-06	6.60E-03
		800	1	2	3.20E-05	4.17E-02
				7	2.62E-05	6.16E-03
				12	1.92E-05	1.17E-02
			7	2	2.77E-05	2.50E-02
				7	2.07E-05	2.48E-02
				12	1.63E-05	2.10E-02
			13	2	3.88E-05	5.19E-02
				7	3.04E-05	3.31E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	2.45E-05	2.48E-02
		1400	1	2	5.45E-05	6.24E-02
				7	4.31E-05	5.52E-02
				12	3.38E-05	4.83E-02
			7	2	4.55E-05	5.31E-02
				7	3.64E-05	3.26E-02
				12	2.83E-05	4.14E-02
			13	2	6.71E-05	7.16E-02
				7	5.21E-05	6.84E-02
				12	4.29E-05	4.84E-02
6	0	200	1	2	1.42E-05	2.05E-02
				7	1.09E-05	2.06E-03
				12	7.77E-06	8.95E-03
			7	2	1.16E-05	2.91E-02
				7	8.73E-06	1.14E-02
				12	6.82E-06	3.46E-03
			13	2	1.83E-05	2.51E-02
				7	1.28E-05	2.12E-02
				12	8.77E-06	1.85E-02
		800	1	2	6.27E-05	7.57E-02
				7	4.84E-05	6.41E-02
				12	3.86E-05	6.01E-02
			7	2	5.40E-05	4.97E-02
				7	4.20E-05	3.72E-02
				12	3.21E-05	4.40E-02
			13	2	7.61E-05	8.82E-02
				7	5.92E-05	6.94E-02
				12	4.83E-05	6.24E-02
		1400	1	2	1.02E-04	1.33E-01
				7	8.18E-05	9.40E-02
				12	6.49E-05	7.65E-02
			7	2	8.45E-05	1.14E-01
				7	6.77E-05	6.69E-02
				12	5.40E-05	6.72E-02
			13	2	1.27E-04	1.41E-01
				7	9.69E-05	1.24E-01
				12	7.71E-05	1.17E-01
	3	200	1	2	1.46E-05	3.64E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	1.10E-05	1.42E-02
6	3	200	1	12	8.83E-06	7.01E-03
6	3	200	7	2	1.45E-05	1.31E-02
6	3	200	7	7	1.06E-05	5.25E-03
6	3	200	7	12	6.97E-06	9.95E-03
6	3	200	13	2	2.04E-05	2.58E-02
6	3	200	13	7	1.60E-05	2.07E-03
6	3	200	13	12	1.03E-05	1.91E-02
6	3	800	1	2	7.13E-05	2.81E-02
6	3	800	1	7	5.35E-05	8.14E-02
6	3	800	1	12	4.33E-05	5.75E-02
6	3	800	7	2	5.93E-05	6.28E-02
6	3	800	7	7	4.61E-05	5.40E-02
6	3	800	7	12	3.56E-05	5.36E-02
6	3	800	13	2	8.54E-05	1.15E-01
6	3	800	13	7	6.51E-05	9.69E-02
6	3	800	13	12	5.40E-05	6.54E-02
6	3	1400	1	2	1.14E-04	1.46E-01
6	3	1400	1	7	9.11E-05	9.65E-02
6	3	1400	1	12	7.40E-05	7.32E-02
6	3	1400	7	2	9.65E-05	1.14E-01
6	3	1400	7	7	7.68E-05	7.60E-02
6	3	1400	7	12	5.95E-05	8.32E-02
6	3	1400	13	2	1.39E-04	1.72E-01
6	3	1400	13	7	1.09E-04	1.40E-01
6	3	1400	13	12	8.89E-05	9.60E-02
6	6	200	1	2	2.26E-05	2.60E-02
6	6	200	1	7	1.47E-05	1.77E-02
6	6	200	1	12	1.12E-05	5.63E-03
6	6	200	7	2	1.88E-05	2.37E-02
6	6	200	7	7	1.32E-05	1.24E-02
6	6	200	7	12	9.73E-06	8.90E-03
6	6	200	13	2	2.76E-05	3.48E-02
6	6	200	13	7	1.81E-05	3.46E-02
6	6	200	13	12	1.46E-05	1.43E-02
6	6	800	1	2	9.45E-05	1.21E-01
6	6	800	1	7	7.27E-05	9.88E-02
6	6	800	1	12	5.71E-05	8.61E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	7.70E-05	1.07E-01
				7	6.11E-05	7.55E-02
				12	4.78E-05	6.65E-02
			13	2	1.13E-04	1.44E-01
				7	8.81E-05	1.17E-01
				12	7.07E-05	9.59E-02
		1400	1	2	1.52E-04	2.02E-01
				7	1.20E-04	1.57E-01
				12	9.67E-05	1.16E-01
			7	2	1.27E-04	1.52E-01
				7	9.81E-05	1.56E-01
				12	7.91E-05	1.21E-01
			13	2	1.85E-04	2.39E-01
				7	1.49E-04	1.68E-01
				12	1.15E-04	1.87E-01

Appendix S. 1V:3H FC5

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	7.05E-07	1.69E-02
				7	4.98E-07	1.13E-02
				12	3.24E-07	8.11E-03
			7	2	9.86E-07	2.52E-02
				7	6.73E-07	1.73E-02
				12	4.88E-07	1.19E-02
			13	2	5.34E-07	1.28E-02
				7	3.81E-07	8.89E-03
				12	2.56E-07	6.28E-03
		800	1	2	2.67E-06	6.58E-02
				7	1.94E-06	4.64E-02
				12	1.32E-06	3.37E-02
			7	2	3.48E-06	8.76E-02
				7	2.56E-06	6.21E-02
				12	1.78E-06	4.46E-02
			13	2	1.92E-06	4.35E-02
				7	1.37E-06	3.15E-02
				12	8.94E-07	2.33E-02
		1400	1	2	4.65E-06	1.15E-01
				7	3.44E-06	8.07E-02
				12	2.44E-06	5.78E-02
			7	2	6.08E-06	1.48E-01
				7	4.35E-06	1.08E-01
				12	3.04E-06	7.84E-02
			13	2	3.13E-06	7.70E-02
				7	2.29E-06	5.59E-02
				12	1.65E-06	3.93E-02
	3	200	1	2	7.03E-07	2.08E-02
				7	5.29E-07	1.34E-02
				12	3.56E-07	9.01E-03
			7	2	1.09E-06	2.84E-02
				7	8.20E-07	1.85E-02
				12	5.34E-07	1.35E-02
			13	2	5.51E-07	1.59E-02
				7	3.94E-07	1.07E-02
				12	2.87E-07	6.94E-03
		800	1	2	3.00E-06	7.29E-02
				7	2.27E-06	5.03E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	1.48E-06	3.75E-02
			7	2	3.96E-06	9.58E-02
				7	2.84E-06	7.07E-02
				12	1.96E-06	5.02E-02
			13	2	2.08E-06	5.06E-02
				7	1.48E-06	3.65E-02
				12	1.06E-06	2.50E-02
		1400	1	2	5.18E-06	1.28E-01
				7	3.89E-06	9.05E-02
				12	2.72E-06	6.52E-02
			7	2	6.80E-06	1.67E-01
				7	4.84E-06	1.22E-01
				12	3.51E-06	8.64E-02
			13	2	3.48E-06	8.79E-02
				7	2.52E-06	6.21E-02
				12	1.79E-06	4.47E-02
	6	200	1	2	1.01E-06	2.52E-02
				7	7.22E-07	1.73E-02
				12	4.81E-07	1.22E-02
			7	2	1.39E-06	3.89E-02
				7	1.11E-06	2.44E-02
				12	7.28E-07	1.75E-02
			13	2	7.57E-07	2.02E-02
				7	5.27E-07	1.37E-02
				12	4.23E-07	8.66E-03
		800	1	2	4.07E-06	9.60E-02
				7	2.93E-06	6.90E-02
				12	1.98E-06	5.02E-02
			7	2	5.32E-06	1.30E-01
				7	3.89E-06	9.32E-02
				12	2.83E-06	6.43E-02
			13	2	2.57E-06	7.05E-02
				7	2.11E-06	4.69E-02
				12	1.45E-06	3.36E-02
		1400	1	2	6.83E-06	1.72E-01
				7	5.10E-06	1.23E-01
				12	3.67E-06	8.66E-02
			7	2	9.31E-06	2.19E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	6.57E-06	1.63E-01
				12	4.53E-06	1.18E-01
			13	2	4.47E-06	1.18E-01
				7	3.56E-06	8.10E-02
				12	2.44E-06	5.93E-02
4	0	200	1	2	1.23E-06	3.05E-02
				7	8.74E-07	2.00E-02
				12	5.47E-07	1.28E-02
			7	2	1.68E-06	4.00E-02
				7	1.02E-06	2.87E-02
				12	6.84E-07	1.82E-02
			13	2	9.05E-07	1.98E-02
				7	5.67E-07	1.36E-02
				12	3.86E-07	8.38E-03
		800	1	2	5.18E-06	1.26E-01
				7	3.91E-06	8.88E-02
				12	2.36E-06	6.72E-02
			7	2	6.71E-06	1.64E-01
				7	5.03E-06	1.14E-01
				12	3.14E-06	8.84E-02
			13	2	3.22E-06	8.89E-02
				7	2.40E-06	6.23E-02
				12	1.60E-06	4.48E-02
		1400	1	2	8.91E-06	2.23E-01
				7	6.53E-06	1.57E-01
				12	4.70E-06	1.09E-01
			7	2	1.18E-05	2.84E-01
				7	8.22E-06	2.04E-01
				12	6.04E-06	1.43E-01
			13	2	5.90E-06	1.48E-01
				7	4.27E-06	1.05E-01
				12	2.95E-06	7.42E-02
	3	200	1	2	1.46E-06	3.32E-02
				7	9.45E-07	2.24E-02
				12	6.59E-07	1.37E-02
			7	2	1.89E-06	4.35E-02
				7	1.21E-06	3.00E-02
				12	8.13E-07	1.90E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	9.32E-07	2.38E-02
				7	6.05E-07	1.57E-02
				12	4.15E-07	9.73E-03
		800	1	2	6.21E-06	1.38E-01
				7	4.10E-06	1.05E-01
				12	2.99E-06	7.19E-02
			7	2	7.39E-06	1.88E-01
				7	5.27E-06	1.35E-01
				12	3.82E-06	9.47E-02
			13	2	4.05E-06	9.39E-02
				7	2.77E-06	6.81E-02
				12	2.05E-06	4.54E-02
		1400	1	2	9.99E-06	2.49E-01
				7	7.44E-06	1.75E-01
				12	4.88E-06	1.29E-01
			7	2	1.31E-05	3.20E-01
				7	9.17E-06	2.33E-01
				12	6.64E-06	1.61E-01
			13	2	6.77E-06	1.63E-01
				7	4.51E-06	1.21E-01
				12	3.28E-06	8.49E-02
	6	200	1	2	1.87E-06	4.60E-02
				7	1.36E-06	2.93E-02
				12	7.92E-07	2.00E-02
			7	2	2.40E-06	6.04E-02
				7	1.56E-06	4.26E-02
				12	9.86E-07	2.66E-02
			13	2	1.27E-06	3.06E-02
				7	8.73E-07	2.01E-02
				12	5.00E-07	1.44E-02
		800	1	2	7.78E-06	1.94E-01
				7	5.66E-06	1.36E-01
				12	4.03E-06	9.58E-02
			7	2	9.76E-06	2.52E-01
				7	7.39E-06	1.72E-01
				12	5.28E-06	1.20E-01
			13	2	5.40E-06	1.23E-01
				7	3.81E-06	8.99E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	2.34E-06	6.70E-02
		1400	1	2	1.37E-05	3.30E-01
				7	9.43E-06	2.40E-01
				12	6.82E-06	1.68E-01
			7	2	1.83E-05	4.16E-01
				7	1.26E-05	3.03E-01
				12	8.52E-06	2.22E-01
			13	2	8.60E-06	2.24E-01
				7	6.67E-06	1.55E-01
				12	4.51E-06	1.13E-01
8	0	200	1	2	1.77E-06	4.62E-02
				7	1.24E-06	2.71E-02
				12	7.04E-07	1.78E-02
			7	2	2.23E-06	5.94E-02
				7	1.43E-06	3.80E-02
				12	9.53E-07	2.22E-02
			13	2	1.07E-06	3.20E-02
				7	8.36E-07	1.84E-02
				12	4.91E-07	1.13E-02
		800	1	2	6.62E-06	1.71E-01
				7	4.87E-06	1.19E-01
				12	3.56E-06	8.29E-02
			7	2	8.64E-06	2.19E-01
				7	6.20E-06	1.58E-01
				12	4.52E-06	1.05E-01
			13	2	4.46E-06	1.14E-01
				7	3.35E-06	7.84E-02
				12	2.38E-06	5.40E-02
		1400	1	2	1.05E-05	2.73E-01
				7	7.67E-06	1.94E-01
				12	5.54E-06	1.33E-01
			7	2	1.35E-05	3.52E-01
				7	9.97E-06	2.48E-01
				12	7.26E-06	1.70E-01
			13	2	7.33E-06	1.76E-01
				7	5.15E-06	1.27E-01
				12	3.66E-06	8.89E-02
	3	200	1	2	2.10E-06	4.83E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	1.31E-06	3.29E-02
				12	8.36E-07	1.89E-02
			7	2	2.52E-06	6.64E-02
				7	1.69E-06	4.21E-02
				12	1.07E-06	2.44E-02
			13	2	1.33E-06	3.47E-02
				7	1.06E-06	1.91E-02
				12	4.71E-07	1.42E-02
		800	1	2	7.72E-06	1.88E-01
				7	5.69E-06	1.35E-01
				12	3.80E-06	9.42E-02
			7	2	9.81E-06	2.47E-01
				7	7.26E-06	1.74E-01
				12	5.02E-06	1.18E-01
			13	2	4.80E-06	1.29E-01
				7	3.92E-06	8.65E-02
				12	2.53E-06	6.27E-02
		1400	1	2	1.24E-05	2.96E-01
				7	8.60E-06	2.16E-01
				12	6.07E-06	1.53E-01
			7	2	1.55E-05	3.98E-01
				7	1.17E-05	2.73E-01
				12	7.86E-06	1.95E-01
			13	2	7.88E-06	2.03E-01
				7	5.76E-06	1.43E-01
				12	4.12E-06	9.88E-02
	6	200	1	2	2.73E-06	6.82E-02
				7	1.75E-06	4.22E-02
				12	1.11E-06	2.46E-02
			7	2	3.41E-06	8.75E-02
				7	2.51E-06	5.25E-02
				12	1.17E-06	3.61E-02
			13	2	1.71E-06	4.66E-02
				7	1.24E-06	2.71E-02
				12	7.51E-07	1.63E-02
		800	1	2	1.04E-05	2.48E-01
				7	7.56E-06	1.78E-01
				12	5.16E-06	1.26E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	1.35E-05	3.24E-01
				7	9.29E-06	2.36E-01
				12	6.41E-06	1.64E-01
			13	2	6.53E-06	1.73E-01
				7	4.71E-06	1.20E-01
				12	3.46E-06	8.18E-02
		1400	1	2	1.59E-05	4.07E-01
				7	1.16E-05	2.89E-01
				12	8.16E-06	2.03E-01
			7	2	2.15E-05	5.13E-01
				7	1.42E-05	3.83E-01
				12	1.07E-05	2.56E-01
			13	2	1.05E-05	2.74E-01
				7	7.31E-06	1.95E-01
				12	5.54E-06	1.30E-01

Appendix T. 1V:3H FC6

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.44E-05	2.12E-04
				7	2.29E-05	3.17E-04
				12	1.63E-05	1.04E-04
			7	2	4.35E-05	5.20E-04
				7	3.08E-05	2.98E-04
				12	2.03E-05	3.51E-04
			13	2	2.22E-05	1.44E-04
				7	1.49E-05	2.25E-04
				12	1.09E-05	1.01E-04
		800	1	2	1.26E-04	1.34E-03
				7	9.24E-05	1.01E-03
				12	6.50E-05	7.29E-04
			7	2	1.52E-04	1.84E-03
				7	1.09E-04	1.52E-03
				12	7.80E-05	7.52E-04
			13	2	7.56E-05	1.10E-03
				7	5.46E-05	6.33E-04
				12	3.83E-05	5.30E-04
		1400	1	2	2.22E-04	2.12E-03
				7	1.60E-04	1.38E-03
				12	1.13E-04	1.39E-03
			7	2	2.60E-04	2.73E-03
				7	1.90E-04	1.81E-03
				12	1.37E-04	1.00E-03
			13	2	1.29E-04	1.59E-03
				7	9.34E-05	1.21E-03
				12	6.58E-05	1.14E-03
	6	200	1	2	4.96E-05	8.38E-04
				7	3.28E-05	7.51E-04
				12	2.58E-05	1.49E-04
			7	2	6.57E-05	6.57E-04
				7	4.46E-05	4.77E-04
				12	3.17E-05	3.14E-04
			13	2	3.35E-05	3.22E-04
				7	2.36E-05	2.22E-04
				12	1.56E-05	2.60E-04
		800	1	2	1.85E-04	2.82E-03
				7	1.41E-04	1.13E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	800	1	12	9.86E-05	9.40E-04
			7	2	2.25E-04	3.04E-03
				7	1.63E-04	2.34E-03
				12	1.13E-04	1.87E-03
			13	2	1.13E-04	1.25E-03
				7	8.12E-05	9.75E-04
				12	5.79E-05	7.88E-04
		1400	1	2	3.32E-04	4.22E-03
				7	2.37E-04	3.59E-03
				12	1.73E-04	1.53E-03
			7	2	3.84E-04	5.29E-03
				7	2.89E-04	2.37E-03
				12	2.01E-04	2.47E-03
			13	2	1.93E-04	2.15E-03
				7	1.43E-04	1.35E-03
				12	1.03E-04	9.90E-04
	12	200	1	2	4.89E-05	1.09E-03
				7	3.44E-05	6.63E-04
				12	2.45E-05	2.42E-04
			7	2	6.41E-05	9.75E-04
				7	4.40E-05	9.09E-04
				12	3.12E-05	3.75E-04
			13	2	3.21E-05	5.94E-04
				7	2.21E-05	3.84E-04
				12	1.59E-05	1.26E-04
		800	1	2	1.88E-04	2.21E-03
				7	1.43E-04	9.88E-04
				12	9.57E-05	1.14E-03
			7	2	2.30E-04	2.58E-03
				7	1.67E-04	1.57E-03
				12	1.14E-04	1.78E-03
			13	2	1.12E-04	1.42E-03
				7	8.05E-05	1.29E-03
				12	5.81E-05	7.76E-04
		1400	1	2	3.28E-04	4.00E-03
				7	2.38E-04	2.91E-03
				12	1.69E-04	1.93E-03
			7	2	3.90E-04	4.78E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	12	1400	7	7	2.79E-04	4.09E-03
				12	2.04E-04	1.92E-03
			13	2	1.89E-04	3.22E-03
				7	1.41E-04	1.59E-03
				12	9.86E-05	1.36E-03
3	0	200	1	2	3.34E-05	5.31E-04
				7	2.21E-05	3.24E-04
				12	1.41E-05	2.79E-04
			7	2	4.19E-05	5.56E-04
				7	2.74E-05	2.89E-04
				12	1.92E-05	5.79E-05
			13	2	2.16E-05	1.46E-04
				7	1.33E-05	2.09E-04
				12	9.31E-06	8.56E-05
		800	1	2	1.33E-04	1.82E-03
				7	9.24E-05	1.47E-03
				12	6.86E-05	6.04E-04
			7	2	1.56E-04	1.69E-03
				7	1.12E-04	1.54E-03
				12	7.55E-05	1.31E-03
			13	2	7.64E-05	9.37E-04
				7	5.65E-05	5.44E-04
				12	3.89E-05	5.54E-04
		1400	1	2	2.24E-04	3.11E-03
				7	1.60E-04	2.77E-03
				12	1.16E-04	1.54E-03
			7	2	2.67E-04	3.34E-03
				7	1.93E-04	2.35E-03
				12	1.35E-04	1.76E-03
			13	2	1.30E-04	1.56E-03
				7	9.50E-05	1.26E-03
				12	6.74E-05	6.50E-04
	6	200	1	2	5.26E-05	4.27E-04
				7	3.42E-05	3.42E-04
				12	2.24E-05	2.84E-04
			7	2	6.21E-05	1.09E-03
				7	4.00E-05	4.09E-04
				12	2.79E-05	1.63E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	200	13	2	3.16E-05	2.13E-04
				7	2.07E-05	1.20E-04
				12	1.34E-05	1.51E-04
		800	1	2	2.04E-04	1.80E-03
				7	1.35E-04	3.10E-03
				12	1.00E-04	1.10E-03
			7	2	2.37E-04	2.33E-03
				7	1.64E-04	2.83E-03
				12	1.16E-04	1.54E-03
			13	2	1.16E-04	1.35E-03
				7	8.41E-05	1.38E-03
				12	5.91E-05	6.55E-04
		1400	1	2	3.38E-04	4.05E-03
				7	2.42E-04	3.66E-03
				12	1.74E-04	2.18E-03
			7	2	3.96E-04	4.68E-03
				7	2.91E-04	2.87E-03
				12	2.04E-04	2.19E-03
			13	2	2.00E-04	1.82E-03
				7	1.41E-04	1.82E-03
				12	1.00E-04	1.33E-03
	12	200	1	2	5.36E-05	4.23E-04
				7	3.27E-05	5.71E-04
				12	2.10E-05	5.83E-04
			7	2	6.24E-05	8.28E-04
				7	3.91E-05	7.11E-04
				12	2.67E-05	4.44E-04
			13	2	3.24E-05	1.14E-04
				7	2.05E-05	1.73E-04
				12	1.38E-05	1.26E-04
		800	1	2	1.93E-04	2.79E-03
				7	1.37E-04	2.68E-03
				12	1.02E-04	1.16E-03
			7	2	2.34E-04	3.21E-03
				7	1.67E-04	2.27E-03
				12	1.14E-04	1.69E-03
			13	2	1.17E-04	1.42E-03
				7	8.23E-05	1.30E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	12	800	13	12	5.79E-05	9.41E-04
		1400	1	2	3.46E-04	1.94E-03
				7	2.43E-04	4.16E-03
				12	1.72E-04	2.74E-03
			7	2	3.91E-04	5.17E-03
				7	2.89E-04	3.26E-03
				12	1.98E-04	3.19E-03
			13	2	1.95E-04	2.30E-03
				7	1.44E-04	1.72E-03
				12	1.02E-04	8.72E-04
6	0	200	1	2	1.10E-04	7.21E-06
				7	7.45E-05	5.94E-04
				12	4.26E-05	1.19E-03
			7	2	1.24E-04	1.35E-03
				7	8.26E-05	1.75E-03
				12	5.46E-05	5.38E-04
			13	2	6.38E-05	3.26E-04
				7	4.28E-05	6.26E-04
				12	2.71E-05	5.74E-04
		800	1	2	3.99E-04	5.47E-03
				7	2.96E-04	2.13E-03
				12	2.01E-04	2.45E-03
			7	2	4.55E-04	7.13E-03
				7	3.37E-04	4.84E-03
				12	2.42E-04	2.28E-03
			13	2	2.26E-04	3.81E-03
				7	1.70E-04	2.61E-03
				12	1.18E-04	1.40E-03
		1400	1	2	6.51E-04	8.73E-03
				7	4.76E-04	4.65E-03
				12	3.32E-04	4.28E-03
			7	2	7.61E-04	1.03E-02
				7	5.46E-04	7.91E-03
				12	3.96E-04	3.27E-03
			13	2	3.89E-04	3.32E-03
				7	2.72E-04	4.01E-03
				12	1.94E-04	2.22E-03
	6	200	1	2	1.55E-04	2.27E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	200	1	7	1.07E-04	1.27E-03
				12	6.59E-05	1.21E-03
			7	2	1.92E-04	1.44E-03
				7	1.24E-04	1.97E-03
				12	8.61E-05	2.92E-04
			13	2	9.45E-05	1.66E-03
				7	6.85E-05	1.14E-04
				12	4.37E-05	2.39E-04
		800	1	2	6.17E-04	4.89E-03
				7	4.29E-04	5.67E-03
				12	2.95E-04	6.03E-03
			7	2	7.31E-04	3.29E-03
				7	5.36E-04	1.46E-03
				12	3.57E-04	3.74E-03
			13	2	3.43E-04	5.65E-03
				7	2.56E-04	2.89E-03
				12	1.74E-04	2.72E-03
		1400	1	2	9.65E-04	1.51E-02
				7	6.77E-04	1.30E-02
				12	5.16E-04	4.14E-03
			7	2	1.15E-03	1.30E-02
				7	8.16E-04	1.20E-02
				12	5.88E-04	5.55E-03
			13	2	5.67E-04	6.80E-03
				7	4.12E-04	5.62E-03
				12	2.89E-04	4.51E-03
	12	200	1	2	1.59E-04	2.09E-03
				7	1.13E-04	2.75E-04
				12	6.82E-05	1.15E-03
			7	2	1.92E-04	1.54E-03
				7	1.29E-04	1.08E-03
				12	8.31E-05	1.46E-03
			13	2	8.66E-05	1.79E-03
				7	6.54E-05	4.71E-04
				12	4.12E-05	6.01E-04
		800	1	2	6.22E-04	4.45E-03
				7	4.32E-04	4.99E-03
				12	3.08E-04	3.72E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	12	800	7	2	7.06E-04	7.03E-03
				7	4.97E-04	8.41E-03
				12	3.64E-04	2.86E-03
			13	2	3.43E-04	6.00E-03
				7	2.55E-04	3.03E-03
				12	1.79E-04	1.69E-03
		1400	1	2	9.67E-04	1.37E-02
				7	7.16E-04	7.06E-03
				12	4.98E-04	6.29E-03
			7	2	1.14E-03	1.50E-02
				7	8.39E-04	7.77E-03
				12	5.69E-04	1.07E-02
			13	2	5.79E-04	7.41E-03
				7	4.16E-04	4.39E-03
				12	2.88E-04	3.23E-03

Appendix U. 1V:3H FC7

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.79E-06	2.57E-03
				7	2.09E-06	1.32E-03
				12	1.59E-06	1.99E-03
			7	2	4.33E-06	3.02E-03
				7	3.22E-06	4.67E-03
				12	2.66E-06	3.35E-03
			13	2	2.55E-06	1.14E-03
				7	1.90E-06	2.28E-03
				12	1.60E-06	1.94E-03
		800	1	2	1.07E-05	1.53E-02
				7	8.56E-06	1.06E-02
				12	6.97E-06	7.98E-03
			7	2	1.51E-05	1.28E-02
				7	1.20E-05	8.34E-03
				12	9.86E-06	6.45E-03
			13	2	7.96E-06	7.74E-03
				7	6.36E-06	6.92E-03
				12	9.57E-06	1.01E-02
		1400	1	2	1.97E-05	1.58E-02
				7	1.55E-05	1.58E-02
				12	1.24E-05	1.47E-02
			7	2	2.56E-05	2.73E-02
				7	2.04E-05	2.13E-02
				12	1.65E-05	1.93E-02
			13	2	1.34E-05	1.24E-02
				7	1.09E-05	9.22E-03
				12	1.67E-05	1.62E-02
	3	200	1	2	3.21E-06	2.64E-03
				7	2.28E-06	3.16E-03
				12	1.85E-06	1.51E-03
			7	2	4.75E-06	5.56E-03
				7	3.75E-06	3.33E-03
				12	3.05E-06	2.48E-03
			13	2	2.71E-06	3.85E-03
				7	2.17E-06	2.25E-03
				12	3.07E-06	2.19E-03
		800	1	2	1.22E-05	1.49E-02
				7	9.80E-06	9.79E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	7.92E-06	7.94E-03
			7	2	1.70E-05	1.44E-02
				7	1.33E-05	1.26E-02
				12	1.09E-05	1.04E-02
			13	2	8.84E-06	1.11E-02
				7	7.19E-06	5.95E-03
				12	1.07E-05	1.24E-02
		1400	1	2	2.17E-05	2.62E-02
				7	1.74E-05	1.72E-02
				12	1.40E-05	1.56E-02
			7	2	2.90E-05	2.67E-02
				7	2.30E-05	2.50E-02
				12	1.91E-05	1.46E-02
			13	2	1.54E-05	1.05E-02
				7	1.18E-05	1.52E-02
				12	1.87E-05	1.99E-02
	6	200	1	2	4.21E-06	3.76E-03
				7	3.01E-06	3.92E-03
				12	2.41E-06	2.78E-03
			7	2	6.60E-06	5.16E-03
				7	4.95E-06	5.43E-03
				12	3.98E-06	5.10E-03
			13	2	3.64E-06	4.07E-03
				7	2.96E-06	2.57E-03
				12	4.13E-06	2.44E-03
		800	1	2	1.66E-05	1.68E-02
				7	1.35E-05	6.78E-03
				12	1.06E-05	9.85E-03
			7	2	2.24E-05	2.40E-02
				7	1.76E-05	2.42E-02
				12	1.47E-05	1.20E-02
			13	2	1.21E-05	9.59E-03
				7	9.35E-06	1.05E-02
				12	1.46E-05	1.33E-02
		1400	1	2	2.89E-05	2.96E-02
				7	2.29E-05	2.42E-02
				12	1.90E-05	1.72E-02
			7	2	3.98E-05	2.42E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	3.04E-05	3.23E-02
				12	2.47E-05	2.92E-02
			13	2	1.99E-05	2.34E-02
				7	1.60E-05	1.43E-02
				12	2.48E-05	2.99E-02
4	0	200	1	2	4.93E-06	4.22E-03
				7	3.47E-06	3.09E-03
				12	2.40E-06	4.65E-03
			7	2	6.33E-06	4.68E-03
				7	4.91E-06	3.98E-04
				12	3.57E-06	3.75E-04
			13	2	3.30E-06	4.29E-03
				7	2.35E-06	1.94E-03
				12	1.62E-06	3.74E-03
		800	1	2	2.09E-05	2.43E-02
				7	1.62E-05	2.23E-02
				12	1.30E-05	1.63E-02
			7	2	2.79E-05	1.43E-02
				7	2.10E-05	2.49E-02
				12	1.71E-05	1.42E-02
			13	2	1.41E-05	1.22E-02
				7	1.07E-05	1.28E-02
				12	1.72E-05	1.54E-02
		1400	1	2	3.66E-05	3.89E-02
				7	2.85E-05	3.35E-02
				12	2.36E-05	1.95E-02
			7	2	4.86E-05	3.23E-02
				7	3.76E-05	3.01E-02
				12	2.92E-05	3.95E-02
			13	2	2.41E-05	2.77E-02
				7	1.88E-05	2.32E-02
				12	3.01E-05	3.09E-02
	3	200	1	2	5.66E-06	6.65E-03
				7	4.07E-06	3.14E-03
				12	2.81E-06	2.72E-03
			7	2	6.67E-06	1.24E-02
				7	5.37E-06	7.60E-04
				12	3.39E-06	7.56E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	3.82E-06	4.00E-03
				7	2.59E-06	3.73E-03
				12	3.78E-06	3.36E-03
		800	1	2	2.39E-05	2.12E-02
				7	1.83E-05	2.19E-02
				12	1.48E-05	1.56E-02
			7	2	3.07E-05	2.79E-02
				7	2.37E-05	2.70E-02
				12	1.94E-05	1.56E-02
			13	2	1.60E-05	1.40E-02
				7	1.28E-05	8.53E-03
				12	1.92E-05	1.64E-02
		1400	1	2	4.10E-05	4.44E-02
				7	3.32E-05	2.61E-02
				12	2.57E-05	3.40E-02
			7	2	5.39E-05	4.91E-02
				7	4.14E-05	5.09E-02
				12	3.36E-05	4.15E-02
			13	2	2.79E-05	2.36E-02
				7	2.14E-05	2.43E-02
				12	3.40E-05	3.26E-02
	6	200	1	2	7.55E-06	7.12E-03
				7	5.34E-06	5.50E-03
				12	3.90E-06	3.97E-03
			7	2	9.06E-06	1.42E-02
				7	6.63E-06	7.14E-03
				12	4.81E-06	7.81E-03
			13	2	4.65E-06	8.49E-03
				7	3.74E-06	2.28E-03
				12	4.98E-06	5.38E-03
		800	1	2	3.04E-05	4.63E-02
				7	2.40E-05	3.56E-02
				12	1.98E-05	2.43E-02
			7	2	4.05E-05	4.50E-02
				7	3.21E-05	3.26E-02
				12	2.58E-05	2.49E-02
			13	2	2.06E-05	2.77E-02
				7	1.61E-05	2.05E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	2.47E-05	3.64E-02
		1400	1	2	5.50E-05	6.25E-02
				7	4.37E-05	4.10E-02
				12	3.49E-05	3.84E-02
			7	2	7.05E-05	7.44E-02
				7	5.65E-05	5.76E-02
				12	4.53E-05	4.23E-02
			13	2	3.71E-05	3.29E-02
				7	2.80E-05	4.71E-02
				12	4.49E-05	5.31E-02
8	0	200	1	2	7.12E-06	7.65E-03
				7	4.97E-06	1.48E-03
				12	3.40E-06	2.46E-03
			7	2	9.72E-06	1.57E-03
				7	6.80E-06	3.79E-03
				12	4.20E-06	6.20E-03
			13	2	4.60E-06	5.51E-03
				7	3.26E-06	1.97E-03
				12	2.19E-06	2.38E-03
		800	1	2	2.81E-05	2.31E-02
				7	2.17E-05	1.97E-02
				12	1.76E-05	1.24E-02
			7	2	3.51E-05	3.75E-02
				7	2.81E-05	2.03E-02
				12	2.19E-05	2.26E-02
			13	2	1.87E-05	1.33E-02
				7	1.39E-05	1.53E-02
				12	2.19E-05	2.63E-02
		1400	1	2	4.39E-05	4.35E-02
				7	3.41E-05	3.52E-02
				12	2.76E-05	2.58E-02
			7	2	5.58E-05	6.07E-02
				7	4.37E-05	4.94E-02
				12	3.52E-05	3.32E-02
			13	2	2.90E-05	2.68E-02
				7	2.27E-05	2.19E-02
				12	3.47E-05	4.51E-02
	3	200	1	2	8.40E-06	6.58E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	5.33E-06	8.14E-03
				12	3.99E-06	1.36E-04
			7	2	1.04E-05	8.24E-03
				7	7.23E-06	4.28E-03
				12	4.98E-06	2.23E-03
			13	2	5.23E-06	7.00E-03
				7	3.55E-06	4.11E-03
				12	4.95E-06	3.39E-03
		800	1	2	3.12E-05	2.55E-02
				7	2.45E-05	2.03E-02
				12	1.95E-05	1.79E-02
			7	2	4.00E-05	4.14E-02
				7	3.16E-05	2.80E-02
				12	2.44E-05	2.85E-02
			13	2	2.11E-05	1.33E-02
				7	1.67E-05	6.86E-03
				12	2.50E-05	2.26E-02
		1400	1	2	4.93E-05	5.32E-02
				7	3.87E-05	3.55E-02
				12	3.12E-05	2.60E-02
			7	2	6.40E-05	5.02E-02
				7	5.10E-05	2.95E-02
				12	3.94E-05	4.76E-02
			13	2	3.21E-05	3.27E-02
				7	2.52E-05	2.91E-02
				12	3.96E-05	4.02E-02
	6	200	1	2	1.03E-05	1.45E-02
				7	6.88E-06	1.17E-02
				12	4.87E-06	6.75E-03
			7	2	1.39E-05	1.39E-02
				7	9.12E-06	1.39E-02
				12	6.39E-06	7.71E-03
			13	2	7.06E-06	9.08E-03
				7	5.03E-06	3.24E-03
				12	6.34E-06	9.11E-03
		800	1	2	4.21E-05	3.42E-02
				7	3.28E-05	2.51E-02
				12	2.59E-05	2.36E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	5.20E-05	6.34E-02
				7	4.19E-05	3.58E-02
				12	3.34E-05	2.69E-02
			13	2	2.68E-05	3.24E-02
				7	2.15E-05	2.00E-02
				12	3.30E-05	4.05E-02
		1400	1	2	6.50E-05	6.77E-02
				7	5.09E-05	5.31E-02
				12	4.11E-05	3.91E-02
			7	2	8.43E-05	9.06E-02
				7	6.55E-05	6.51E-02
				12	5.38E-05	4.47E-02
			13	2	4.35E-05	3.75E-02
				7	3.33E-05	4.18E-02
				12	2.74E-05	2.62E-02

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Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.21E-05	5.55E-05
				7	1.47E-05	1.65E-04
				12	1.03E-05	1.37E-04
			7	2	2.54E-05	3.26E-04
				7	1.74E-05	3.25E-04
				12	1.26E-05	1.53E-04
			13	2	2.59E-05	3.59E-04
				7	1.84E-05	2.00E-04
				12	1.28E-05	1.18E-04
		800	1	2	7.42E-05	8.09E-04
				7	5.33E-05	6.23E-04
				12	3.82E-05	4.42E-04
			7	2	8.15E-05	7.95E-04
				7	5.81E-05	6.78E-04
				12	4.14E-05	5.58E-04
			13	2	8.20E-05	7.38E-04
				7	5.89E-05	7.35E-04
				12	4.17E-05	4.69E-04
		1400	1	2	1.25E-04	1.88E-03
				7	9.29E-05	9.97E-04
				12	6.57E-05	8.22E-04
			7	2	1.36E-04	1.58E-03
				7	1.00E-04	9.88E-04
				12	7.09E-05	7.67E-04
			13	2	1.36E-04	1.62E-03
				7	9.93E-05	1.11E-03
				12	7.10E-05	8.14E-04
	4	200	1	2	2.57E-05	4.00E-04
				7	1.82E-05	2.43E-04
				12	1.31E-05	1.33E-04
			7	2	3.17E-05	4.62E-04
				7	2.23E-05	2.92E-04
				12	1.60E-05	1.94E-04
			13	2	3.27E-05	3.76E-04
				7	2.26E-05	2.84E-04
				12	1.59E-05	2.15E-04
		800	1	2	9.29E-05	9.46E-04
				7	6.67E-05	8.74E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	4	800	1	12	4.74E-05	5.56E-04
			7	2	1.02E-04	9.68E-04
				7	7.21E-05	1.15E-03
				12	5.20E-05	5.93E-04
			13	2	1.01E-04	1.29E-03
				7	7.27E-05	8.56E-04
				12	5.16E-05	6.05E-04
		1400	1	2	1.60E-04	1.68E-03
				7	1.17E-04	1.13E-03
				12	8.18E-05	1.07E-03
			7	2	1.67E-04	2.39E-03
				7	1.24E-04	1.49E-03
				12	8.80E-05	1.05E-03
			13	2	1.68E-04	2.47E-03
				7	1.26E-04	1.28E-03
				12	8.85E-05	1.01E-03
	8	200	1	2	3.05E-05	5.66E-04
				7	2.19E-05	2.82E-04
				12	1.55E-05	2.07E-04
			7	2	3.84E-05	4.52E-04
				7	2.60E-05	3.95E-04
				12	1.91E-05	1.73E-04
			13	2	3.83E-05	5.49E-04
				7	2.75E-05	2.92E-04
				12	1.93E-05	2.60E-04
		800	1	2	1.12E-04	1.08E-03
				7	8.08E-05	9.07E-04
				12	5.72E-05	5.72E-04
			7	2	1.20E-04	1.54E-03
				7	8.92E-05	7.45E-04
				12	6.28E-05	6.71E-04
			13	2	1.21E-04	1.44E-03
				7	8.73E-05	1.26E-03
				12	6.22E-05	9.02E-04
		1400	1	2	1.90E-04	2.29E-03
				7	1.39E-04	1.66E-03
				12	9.96E-05	1.14E-03
			7	2	2.03E-04	2.64E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	8	1400	7	7	1.49E-04	1.61E-03
				12	1.04E-04	1.69E-03
			13	2	2.04E-04	2.44E-03
				7	1.48E-04	1.92E-03
				12	1.06E-04	1.25E-03
4	0	200	1	2	3.66E-05	4.46E-04
				7	2.60E-05	3.27E-04
				12	1.76E-05	2.22E-04
			7	2	4.07E-05	4.97E-04
				7	2.79E-05	2.71E-04
				12	1.87E-05	1.97E-04
			13	2	4.01E-05	4.82E-04
				7	2.79E-05	2.79E-04
				12	1.99E-05	8.69E-05
		800	1	2	1.44E-04	1.90E-03
				7	1.04E-04	1.44E-03
				12	7.42E-05	9.27E-04
			7	2	1.55E-04	2.07E-03
				7	1.11E-04	1.66E-03
				12	7.75E-05	1.08E-03
			13	2	1.51E-04	2.00E-03
				7	1.10E-04	1.45E-03
				12	7.80E-05	1.13E-03
		1400	1	2	2.50E-04	3.18E-03
				7	1.78E-04	2.67E-03
				12	1.29E-04	1.42E-03
			7	2	2.63E-04	2.93E-03
				7	1.90E-04	2.29E-03
				12	1.34E-04	1.57E-03
			13	2	2.63E-04	2.85E-03
				7	1.93E-04	1.99E-03
				12	1.33E-04	1.85E-03
	4	200	1	2	4.50E-05	7.37E-04
				7	3.28E-05	3.01E-04
				12	2.16E-05	1.84E-04
			7	2	4.98E-05	7.41E-04
				7	3.51E-05	3.63E-04
				12	2.34E-05	2.73E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	4	200	13	2	5.11E-05	5.90E-04
				7	3.49E-05	3.99E-04
				12	2.35E-05	2.89E-04
		800	1	2	1.80E-04	2.51E-03
				7	1.33E-04	1.56E-03
				12	9.29E-05	1.04E-03
			7	2	1.95E-04	1.84E-03
				7	1.41E-04	1.19E-03
				12	9.77E-05	1.40E-03
			13	2	1.92E-04	2.44E-03
				7	1.40E-04	1.59E-03
				12	9.77E-05	1.15E-03
		1400	1	2	3.13E-04	3.45E-03
				7	2.26E-04	2.91E-03
				12	1.61E-04	1.88E-03
			7	2	3.24E-04	4.59E-03
				7	2.36E-04	3.11E-03
				12	1.70E-04	1.61E-03
			13	2	3.29E-04	3.58E-03
				7	2.41E-04	2.49E-03
				12	1.68E-04	2.00E-03
	8	200	1	2	5.63E-05	6.54E-04
				7	3.83E-05	4.61E-04
				12	2.62E-05	2.42E-04
			7	2	6.14E-05	7.72E-04
				7	4.17E-05	4.57E-04
				12	2.89E-05	1.76E-04
			13	2	6.08E-05	9.49E-04
				7	4.18E-05	4.97E-04
				12	2.74E-05	4.72E-04
		800	1	2	2.18E-04	2.60E-03
				7	1.62E-04	1.11E-03
				12	1.09E-04	1.63E-03
			7	2	2.31E-04	3.05E-03
				7	1.69E-04	1.79E-03
				12	1.17E-04	1.51E-03
			13	2	2.33E-04	2.45E-03
				7	1.67E-04	1.95E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	8	800	13	12	1.18E-04	1.39E-03
		1400	1	2	3.75E-04	4.55E-03
				7	2.74E-04	3.14E-03
				12	1.92E-04	2.52E-03
			7	2	4.00E-04	3.88E-03
				7	2.86E-04	3.32E-03
				12	2.02E-04	2.57E-03
			13	2	3.89E-04	5.34E-03
				7	2.88E-04	3.26E-03
				12	2.00E-04	2.81E-03
8	0	200	1	2	5.37E-05	7.72E-04
				7	3.58E-05	5.34E-04
				12	2.26E-05	3.84E-04
			7	2	5.67E-05	8.87E-04
				7	3.79E-05	5.65E-04
				12	2.42E-05	3.74E-04
			13	2	5.58E-05	1.23E-03
				7	3.81E-05	4.24E-04
				12	2.47E-05	2.80E-04
		800	1	2	1.95E-04	2.48E-03
				7	1.43E-04	1.42E-03
				12	1.00E-04	1.13E-03
			7	2	2.07E-04	2.35E-03
				7	1.49E-04	1.79E-03
				12	1.05E-04	1.24E-03
			13	2	2.08E-04	2.33E-03
				7	1.47E-04	2.16E-03
				12	1.05E-04	1.18E-03
		1400	1	2	3.19E-04	3.65E-03
				7	2.32E-04	2.57E-03
				12	1.63E-04	1.85E-03
			7	2	3.33E-04	3.95E-03
				7	2.41E-04	3.24E-03
				12	1.70E-04	1.83E-03
			13	2	3.31E-04	4.26E-03
				7	2.40E-04	3.11E-03
				12	1.69E-04	2.24E-03
	4	200	1	2	6.79E-05	7.77E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	4	200	1	7	4.45E-05	4.82E-04
				12	2.90E-05	3.35E-04
			7	2	7.35E-05	7.00E-04
				7	4.65E-05	7.94E-04
				12	3.24E-05	1.59E-04
			13	2	7.30E-05	5.86E-04
				7	4.71E-05	9.24E-04
				12	3.22E-05	1.68E-04
		800	1	2	2.44E-04	2.99E-03
				7	1.82E-04	1.23E-03
				12	1.24E-04	1.26E-03
			7	2	2.62E-04	2.40E-03
				7	1.88E-04	1.84E-03
				12	1.31E-04	1.53E-03
			13	2	2.62E-04	2.01E-03
				7	1.82E-04	2.74E-03
				12	1.30E-04	1.70E-03
		1400	1	2	3.97E-04	4.60E-03
				7	2.85E-04	3.99E-03
				12	2.00E-04	2.87E-03
			7	2	4.16E-04	5.17E-03
				7	3.08E-04	2.76E-03
				12	2.13E-04	2.24E-03
			13	2	4.18E-04	4.42E-03
				7	3.03E-04	3.68E-03
				12	2.13E-04	2.12E-03
	8	200	1	2	8.10E-05	8.74E-04
				7	5.40E-05	5.45E-04
				12	3.46E-05	3.94E-04
			7	2	8.91E-05	6.93E-04
				7	5.96E-05	5.43E-04
				12	3.70E-05	3.46E-04
			13	2	8.42E-05	1.43E-03
				7	5.84E-05	5.90E-04
				12	3.56E-05	7.15E-04
		800	1	2	2.94E-04	3.76E-03
				7	2.12E-04	2.10E-03
				12	1.48E-04	2.12E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	8	800	7	2	3.00E-04	5.18E-03
				7	2.17E-04	3.65E-03
				12	1.55E-04	1.99E-03
			13	2	3.04E-04	4.38E-03
				7	2.24E-04	2.81E-03
				12	1.58E-04	1.64E-03
		1400	1	2	4.81E-04	5.27E-03
				7	3.45E-04	4.20E-03
				12	2.44E-04	2.75E-03
			7	2	5.03E-04	5.65E-03
				7	3.61E-04	4.18E-03
				12	2.53E-04	3.20E-03
			13	2	5.00E-04	6.74E-03
				7	3.62E-04	4.29E-03
				12	2.54E-04	3.05E-03

Appendix W. 1V:4H FC2

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	1.19E-06	1.52E-02
				7	7.62E-07	1.13E-02
				12	5.80E-07	6.98E-03
			7	2	1.58E-06	2.19E-02
				7	1.13E-06	1.54E-02
				12	7.82E-07	1.13E-02
			13	2	1.73E-06	2.17E-02
				7	1.08E-06	1.60E-02
				12	8.75E-07	9.90E-03
		800	1	2	4.30E-06	5.63E-02
				7	3.11E-06	4.06E-02
				12	2.12E-06	2.94E-02
			7	2	5.49E-06	6.96E-02
				7	3.83E-06	5.12E-02
				12	2.71E-06	3.59E-02
			13	2	5.25E-06	7.27E-02
				7	3.74E-06	5.34E-02
				12	2.64E-06	3.81E-02
		1400	1	2	7.31E-06	1.00E-01
				7	5.28E-06	7.38E-02
				12	3.89E-06	4.99E-02
			7	2	9.10E-06	1.22E-01
				7	6.47E-06	8.85E-02
				12	4.71E-06	6.23E-02
			13	2	9.35E-06	1.21E-01
				7	6.41E-06	8.94E-02
				12	4.62E-06	6.26E-02
	3	200	1	2	1.27E-06	1.85E-02
				7	9.61E-07	1.20E-02
				12	6.29E-07	8.30E-03
			7	2	1.78E-06	2.52E-02
				7	1.36E-06	1.58E-02
				12	9.35E-07	1.15E-02
			13	2	1.91E-06	2.47E-02
				7	1.27E-06	1.75E-02
				12	9.16E-07	1.18E-02
		800	1	2	4.87E-06	6.17E-02
				7	3.48E-06	4.60E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	2.45E-06	3.18E-02
			7	2	6.14E-06	7.88E-02
				7	4.26E-06	5.79E-02
				12	3.10E-06	4.02E-02
			13	2	6.14E-06	8.09E-02
				7	4.27E-06	5.97E-02
				12	3.00E-06	4.16E-02
		1400	1	2	8.29E-06	1.10E-01
				7	6.08E-06	8.03E-02
				12	4.30E-06	5.64E-02
			7	2	1.03E-05	1.37E-01
				7	7.46E-06	9.99E-02
				12	5.15E-06	7.13E-02
			13	2	1.01E-05	1.41E-01
				7	7.53E-06	9.91E-02
				12	5.09E-06	7.28E-02
	6	200	1	2	1.70E-06	2.36E-02
				7	1.25E-06	1.63E-02
				12	8.97E-07	1.11E-02
			7	2	2.40E-06	3.28E-02
				7	1.65E-06	2.31E-02
				12	1.18E-06	1.62E-02
			13	2	2.50E-06	3.40E-02
				7	1.89E-06	2.22E-02
				12	1.22E-06	1.60E-02
		800	1	2	6.11E-06	9.17E-02
				7	4.55E-06	6.25E-02
				12	3.36E-06	4.30E-02
			7	2	7.56E-06	1.12E-01
				7	5.74E-06	7.66E-02
				12	4.18E-06	5.32E-02
			13	2	8.09E-06	1.10E-01
				7	5.76E-06	7.88E-02
				12	4.06E-06	5.52E-02
		1400	1	2	1.10E-05	1.48E-01
				7	8.01E-06	1.09E-01
				12	5.64E-06	7.60E-02
			7	2	1.35E-05	1.84E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	9.86E-06	1.32E-01
				12	6.89E-06	9.50E-02
			13	2	1.40E-05	1.80E-01
				7	1.00E-05	1.32E-01
				12	6.84E-06	9.70E-02
3	0	200	1	2	9.80E-07	1.24E-02
				7	5.73E-07	7.49E-03
				12	3.80E-07	5.37E-03
			7	2	1.12E-06	1.64E-02
				7	7.19E-07	9.09E-03
				12	4.08E-07	6.44E-03
			13	2	1.27E-06	1.41E-02
				7	6.53E-07	9.75E-03
				12	4.54E-07	5.98E-03
		800	1	2	3.87E-06	5.10E-02
				7	2.66E-06	3.68E-02
				12	1.79E-06	2.55E-02
			7	2	4.44E-06	6.30E-02
				7	3.30E-06	4.31E-02
				12	2.23E-06	2.96E-02
			13	2	4.62E-06	6.09E-02
				7	3.25E-06	4.28E-02
				12	2.39E-06	2.85E-02
		1400	1	2	6.48E-06	8.72E-02
				7	4.73E-06	6.02E-02
				12	3.28E-06	4.35E-02
			7	2	7.67E-06	1.03E-01
				7	5.47E-06	7.60E-02
				12	3.86E-06	5.25E-02
			13	2	7.89E-06	1.02E-01
				7	5.53E-06	7.53E-02
				12	3.98E-06	5.17E-02
	3	200	1	2	1.07E-06	1.50E-02
				7	6.33E-07	8.88E-03
				12	4.10E-07	5.73E-03
			7	2	1.17E-06	1.82E-02
				7	7.55E-07	1.04E-02
				12	5.00E-07	6.87E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	1.27E-06	1.92E-02
				7	7.62E-07	1.03E-02
				12	5.47E-07	6.20E-03
		800	1	2	4.45E-06	5.58E-02
				7	3.10E-06	4.12E-02
				12	2.06E-06	2.84E-02
			7	2	5.12E-06	7.08E-02
				7	3.80E-06	4.73E-02
				12	2.58E-06	3.39E-02
			13	2	5.22E-06	6.98E-02
				7	3.60E-06	4.99E-02
				12	2.43E-06	3.58E-02
		1400	1	2	7.38E-06	9.64E-02
				7	5.15E-06	7.14E-02
				12	3.74E-06	4.72E-02
			7	2	8.72E-06	1.16E-01
				7	6.24E-06	8.48E-02
				12	4.28E-06	5.88E-02
			13	2	8.64E-06	1.17E-01
				7	6.22E-06	8.37E-02
				12	4.32E-06	5.94E-02
	6	200	1	2	1.52E-06	1.91E-02
				7	8.28E-07	1.20E-02
				12	5.50E-07	7.75E-03
			7	2	1.84E-06	2.23E-02
				7	1.03E-06	1.43E-02
				12	7.03E-07	8.69E-03
			13	2	1.61E-06	2.51E-02
				7	1.05E-06	1.43E-02
				12	7.12E-07	8.70E-03
		800	1	2	5.65E-06	7.81E-02
				7	4.03E-06	5.46E-02
				12	2.78E-06	3.80E-02
			7	2	7.04E-06	9.04E-02
				7	4.79E-06	6.67E-02
				12	3.61E-06	4.21E-02
			13	2	6.80E-06	9.32E-02
				7	4.96E-06	6.58E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	3.41E-06	4.49E-02
		1400	1	2	9.41E-06	1.33E-01
				7	6.92E-06	9.38E-02
				12	5.02E-06	6.59E-02
			7	2	1.16E-05	1.60E-01
				7	8.40E-06	1.11E-01
				12	5.94E-06	7.78E-02
			13	2	1.14E-05	1.57E-01
				7	8.44E-06	1.10E-01
				12	5.82E-06	7.85E-02
6	0	200	1	2	3.03E-06	3.57E-02
				7	1.72E-06	2.47E-02
				12	1.17E-06	1.55E-02
			7	2	3.40E-06	4.55E-02
				7	2.09E-06	3.36E-02
				12	1.54E-06	1.86E-02
			13	2	3.34E-06	4.49E-02
				7	2.32E-06	2.88E-02
				12	1.38E-06	1.96E-02
		800	1	2	1.11E-05	1.55E-01
				7	8.14E-06	1.09E-01
				12	5.76E-06	7.38E-02
			7	2	1.34E-05	1.83E-01
				7	1.01E-05	1.28E-01
				12	6.52E-06	9.26E-02
			13	2	1.43E-05	1.76E-01
				7	9.48E-06	1.34E-01
				12	6.75E-06	9.22E-02
		1400	1	2	1.85E-05	2.50E-01
				7	1.32E-05	1.78E-01
				12	9.38E-06	1.24E-01
			7	2	2.21E-05	3.04E-01
				7	1.57E-05	2.16E-01
				12	1.11E-05	1.51E-01
			13	2	2.15E-05	3.04E-01
				7	1.60E-05	2.12E-01
				12	1.11E-05	1.49E-01
	3	200	1	2	3.10E-06	4.36E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	2.25E-06	2.57E-02
				12	1.22E-06	1.95E-02
			7	2	3.57E-06	5.56E-02
				7	2.48E-06	3.48E-02
				12	1.73E-06	1.94E-02
			13	2	4.05E-06	4.76E-02
				7	2.70E-06	2.99E-02
				12	1.54E-06	2.24E-02
		800	1	2	1.21E-05	1.81E-01
				7	9.17E-06	1.24E-01
				12	6.22E-06	8.84E-02
			7	2	1.52E-05	2.03E-01
				7	1.04E-05	1.53E-01
				12	7.39E-06	1.05E-01
			13	2	1.54E-05	2.03E-01
				7	1.13E-05	1.47E-01
				12	7.42E-06	1.06E-01
		1400	1	2	2.03E-05	2.86E-01
				7	1.49E-05	2.00E-01
				12	1.07E-05	1.37E-01
			7	2	2.39E-05	3.41E-01
				7	1.79E-05	2.43E-01
				12	1.24E-05	1.68E-01
			13	2	2.51E-05	3.36E-01
				7	1.83E-05	2.38E-01
				12	1.31E-05	1.60E-01
	6	200	1	2	4.32E-06	5.53E-02
				7	2.71E-06	3.67E-02
				12	1.69E-06	2.40E-02
			7	2	5.13E-06	6.80E-02
				7	3.33E-06	4.45E-02
				12	2.11E-06	2.94E-02
			13	2	4.97E-06	6.98E-02
				7	3.29E-06	4.61E-02
				12	2.15E-06	2.92E-02
		800	1	2	1.64E-05	2.35E-01
				7	1.17E-05	1.68E-01
				12	8.41E-06	1.15E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	2.08E-05	2.68E-01
				7	1.43E-05	1.97E-01
				12	1.01E-05	1.39E-01
			13	2	2.09E-05	2.67E-01
				7	1.55E-05	1.85E-01
				12	9.86E-06	1.37E-01
		1400	1	2	2.80E-05	3.68E-01
				7	2.02E-05	2.64E-01
				12	1.42E-05	1.86E-01
			7	2	3.31E-05	4.44E-01
				7	2.31E-05	3.38E-01
				12	1.70E-05	2.21E-01
			13	2	3.34E-05	4.40E-01
				7	2.38E-05	3.22E-01
				12	1.68E-05	2.23E-01

Appendix X. 1V:4H FC3

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.18E-06	0.00
				7	2.34E-06	0.00
				12	1.81E-06	0.00
			7	2	5.20E-06	0.00
				7	4.09E-06	0.00
				12	3.25E-06	0.00
			13	2	5.84E-06	0.00
				7	4.43E-06	0.00
				12	3.52E-06	0.00
		800	1	2	1.24E-05	0.00
				7	9.74E-06	0.00
				12	7.87E-06	0.00
			7	2	1.79E-05	0.00
				7	1.39E-05	0.00
				12	1.15E-05	0.00
			13	2	1.83E-05	0.00
				7	1.45E-05	0.00
				12	1.20E-05	0.00
		1400	1	2	2.19E-05	0.00
				7	1.70E-05	0.00
				12	1.42E-05	0.00
			7	2	3.05E-05	0.00
				7	2.40E-05	0.00
				12	1.95E-05	0.00
			13	2	3.11E-05	0.00
				7	2.47E-05	0.00
				12	2.00E-05	0.00
	2	200	1	2	3.11E-06	0.00
				7	2.29E-06	0.00
				12	1.78E-06	0.00
			7	2	5.04E-06	0.00
				7	4.07E-06	0.00
				12	3.34E-06	0.00
			13	2	5.62E-06	0.00
				7	4.42E-06	0.00
				12	3.56E-06	0.00
		800	1	2	1.24E-05	0.00
				7	9.62E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	2	800	1	12	7.91E-06	0.00
			7	2	1.83E-05	0.00
				7	1.40E-05	0.00
				12	1.14E-05	0.00
			13	2	1.87E-05	0.00
				7	1.45E-05	0.00
				12	1.19E-05	0.00
		1400	1	2	2.19E-05	0.00
				7	1.73E-05	0.00
				12	1.43E-05	0.00
			7	2	3.08E-05	0.00
				7	2.43E-05	0.00
				12	1.98E-05	0.00
			13	2	3.11E-05	0.00
				7	2.48E-05	0.00
				12	2.03E-05	0.00
	3	200	1	2	3.43E-06	0.00
				7	2.64E-06	0.00
				12	2.07E-06	0.00
			7	2	5.64E-06	0.00
				7	4.42E-06	0.00
				12	3.71E-06	0.00
			13	2	6.46E-06	0.00
				7	4.92E-06	0.00
				12	4.03E-06	0.00
		800	1	2	1.39E-05	0.00
				7	1.09E-05	0.00
				12	8.95E-06	0.00
			7	2	2.01E-05	0.00
				7	1.57E-05	0.00
				12	1.30E-05	0.00
			13	2	2.01E-05	0.00
				7	1.63E-05	0.00
				12	1.33E-05	0.00
		1400	1	2	2.48E-05	0.00
				7	1.96E-05	0.00
				12	1.61E-05	0.00
			7	2	3.45E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	1400	7	7	2.70E-05	0.00
				12	2.23E-05	0.00
			13	2	3.45E-05	0.00
				7	2.79E-05	0.00
				12	2.29E-05	0.00
2	0	200	1	2	2.45E-06	0.00
				7	1.61E-06	0.00
				12	1.10E-06	0.00
			7	2	3.43E-06	0.00
				7	2.36E-06	0.00
				12	1.76E-06	0.00
			13	2	3.68E-06	0.00
				7	2.63E-06	0.00
				12	1.99E-06	0.00
		800	1	2	1.14E-05	0.00
				7	8.56E-06	0.00
				12	6.74E-06	0.00
			7	2	1.54E-05	0.00
				7	1.18E-05	0.00
				12	9.08E-06	0.00
			13	2	1.55E-05	0.00
				7	1.19E-05	0.00
				12	9.36E-06	0.00
		1400	1	2	1.93E-05	0.00
				7	1.52E-05	0.00
				12	1.22E-05	0.00
			7	2	2.62E-05	0.00
				7	2.08E-05	0.00
				12	1.65E-05	0.00
			13	2	2.68E-05	0.00
				7	2.07E-05	0.00
				12	1.69E-05	0.00
	2	200	1	2	2.35E-06	0.00
				7	1.60E-06	0.00
				12	1.07E-06	0.00
			7	2	3.46E-06	0.00
				7	2.31E-06	0.00
				12	1.68E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	2	200	13	2	3.79E-06	0.00
				7	2.70E-06	0.00
				12	1.91E-06	0.00
		800	1	2	1.12E-05	0.00
				7	8.59E-06	0.00
				12	6.73E-06	0.00
			7	2	1.55E-05	0.00
				7	1.16E-05	0.00
				12	9.34E-06	0.00
			13	2	1.56E-05	0.00
				7	1.20E-05	0.00
				12	9.48E-06	0.00
		1400	1	2	1.95E-05	0.00
				7	1.52E-05	0.00
				12	1.19E-05	0.00
			7	2	2.61E-05	0.00
				7	2.05E-05	0.00
				12	1.69E-05	0.00
			13	2	2.65E-05	0.00
				7	2.08E-05	0.00
				12	1.71E-05	0.00
	3	200	1	2	2.37E-06	0.00
				7	1.67E-06	0.00
				12	1.10E-06	0.00
			7	2	3.25E-06	0.00
				7	2.46E-06	0.00
				12	1.83E-06	0.00
			13	2	3.82E-06	0.00
				7	2.77E-06	0.00
				12	1.94E-06	0.00
		800	1	2	1.12E-05	0.00
				7	8.59E-06	0.00
				12	6.76E-06	0.00
			7	2	1.52E-05	0.00
				7	1.19E-05	0.00
				12	9.42E-06	0.00
			13	2	1.57E-05	0.00
				7	1.21E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	3	800	13	12	9.65E-06	0.00
		1400	1	2	1.95E-05	0.00
				7	1.51E-05	0.00
				12	1.22E-05	0.00
			7	2	2.65E-05	0.00
				7	2.04E-05	0.00
				12	1.68E-05	0.00
			13	2	2.66E-05	0.00
				7	2.09E-05	0.00
				12	1.69E-05	0.00
3	0	200	1	2	2.72E-06	0.00
				7	1.70E-06	0.00
				12	1.25E-06	0.00
			7	2	3.72E-06	0.00
				7	2.36E-06	0.00
				12	1.81E-06	0.00
			13	2	3.99E-06	0.00
				7	2.57E-06	0.00
				12	1.96E-06	0.00
		800	1	2	1.20E-05	0.00
				7	9.05E-06	0.00
				12	7.09E-06	0.00
			7	2	1.60E-05	0.00
				7	1.25E-05	0.00
				12	9.57E-06	0.00
			13	2	1.64E-05	0.00
				7	1.24E-05	0.00
				12	9.89E-06	0.00
		1400	1	2	2.02E-05	0.00
				7	1.59E-05	0.00
				12	1.27E-05	0.00
			7	2	2.74E-05	0.00
				7	2.41E-05	0.00
				12	1.74E-05	0.00
			13	2	2.75E-05	0.00
				7	2.16E-05	0.00
				12	1.73E-05	0.00
	2	200	1	2	2.78E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	2	200	1	7	1.73E-06	0.00
				12	1.30E-06	0.00
			7	2	3.84E-06	0.00
				7	2.44E-06	0.00
				12	1.74E-06	0.00
			13	2	3.91E-06	0.00
				7	2.57E-06	0.00
				12	1.88E-06	0.00
		800	1	2	1.20E-05	0.00
				7	8.96E-06	0.00
				12	7.19E-06	0.00
			7	2	1.58E-05	0.00
				7	1.23E-05	0.00
				12	9.64E-06	0.00
			13	2	1.61E-05	0.00
				7	1.25E-05	0.00
				12	9.74E-06	0.00
		1400	1	2	2.02E-05	0.00
				7	1.58E-05	0.00
				12	1.27E-05	0.00
			7	2	2.77E-05	0.00
				7	2.13E-05	0.00
				12	1.73E-05	0.00
			13	2	2.76E-05	0.00
				7	2.15E-05	0.00
				12	1.72E-05	0.00
	3	200	1	2	3.11E-06	0.00
				7	1.95E-06	0.00
				12	1.48E-06	0.00
			7	2	4.43E-06	0.00
				7	2.71E-06	0.00
				12	2.02E-06	0.00
			13	2	4.57E-06	0.00
				7	2.88E-06	0.00
				12	2.12E-06	0.00
		800	1	2	1.35E-05	0.00
				7	1.03E-05	0.00
				12	7.99E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	800	7	2	1.83E-05	0.00
				7	1.41E-05	0.00
				12	1.10E-05	0.00
			13	2	1.84E-05	0.00
				7	1.40E-05	0.00
				12	1.13E-05	0.00
		1400	1	2	2.28E-05	0.00
				7	1.79E-05	0.00
				12	1.43E-05	0.00
			7	2	3.09E-05	0.00
				7	2.38E-05	0.00
				12	1.95E-05	0.00
			13	2	3.10E-05	0.00
				7	2.40E-05	0.00
				12	1.96E-05	0.00

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Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.69E-06	3.83E-03
				7	2.73E-06	2.92E-03
				12	2.08E-06	2.96E-03
			7	2	5.60E-06	5.75E-03
				7	4.34E-06	6.40E-03
				12	3.66E-06	3.14E-03
			13	2	5.92E-06	9.83E-03
				7	4.92E-06	7.59E-03
				12	4.14E-06	3.56E-03
		800	1	2	1.38E-05	1.75E-02
				7	1.07E-05	1.46E-02
				12	8.30E-06	1.38E-02
			7	2	1.72E-05	2.49E-02
				7	1.44E-05	1.26E-02
				12	1.14E-05	1.38E-02
			13	2	1.80E-05	2.20E-02
				7	1.47E-05	1.43E-02
				12	1.17E-05	1.52E-02
		1400	1	2	2.36E-05	2.68E-02
				7	1.87E-05	2.28E-02
				12	1.55E-05	1.61E-02
			7	2	2.90E-05	3.93E-02
				7	2.29E-05	3.50E-02
				12	1.93E-05	2.27E-02
			13	2	3.00E-05	3.78E-02
				7	2.38E-05	3.12E-02
				12	1.97E-05	2.49E-02
	3	200	1	2	3.94E-06	4.98E-03
				7	3.00E-06	3.33E-03
				12	2.51E-06	2.85E-03
			7	2	6.28E-06	6.60E-03
				7	5.28E-06	2.60E-03
				12	4.09E-06	5.17E-03
			13	2	7.30E-06	5.82E-03
				7	5.46E-06	7.72E-03
				12	4.66E-06	4.17E-03
		800	1	2	1.51E-05	1.85E-02
				7	1.19E-05	1.71E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	9.65E-06	1.18E-02
			7	2	2.00E-05	2.32E-02
				7	1.61E-05	1.52E-02
				12	1.30E-05	1.21E-02
			13	2	2.04E-05	2.15E-02
				7	1.61E-05	2.14E-02
				12	1.31E-05	1.71E-02
		1400	1	2	2.64E-05	3.25E-02
				7	2.08E-05	2.67E-02
				12	1.74E-05	1.83E-02
			7	2	3.36E-05	3.76E-02
				7	2.64E-05	3.32E-02
				12	2.16E-05	2.59E-02
			13	2	3.29E-05	4.64E-02
				7	2.68E-05	3.29E-02
				12	2.23E-05	2.65E-02
	6	200	1	2	5.33E-06	6.58E-03
				7	4.00E-06	5.01E-03
				12	3.33E-06	3.65E-03
			7	2	8.03E-06	1.27E-02
				7	6.79E-06	6.85E-03
				12	5.23E-06	6.91E-03
			13	2	9.41E-06	1.23E-02
				7	7.52E-06	7.97E-03
				12	6.15E-06	7.71E-03
		800	1	2	2.02E-05	2.75E-02
				7	1.59E-05	2.19E-02
				12	1.30E-05	1.48E-02
			7	2	2.61E-05	3.26E-02
				7	2.07E-05	2.71E-02
				12	1.72E-05	2.12E-02
			13	2	2.69E-05	3.49E-02
				7	2.20E-05	2.50E-02
				12	1.79E-05	1.67E-02
		1400	1	2	3.50E-05	4.52E-02
				7	2.81E-05	3.75E-02
				12	2.24E-05	3.18E-02
			7	2	4.35E-05	5.65E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	3.44E-05	4.97E-02
				12	2.85E-05	3.91E-02
			13	2	4.47E-05	6.05E-02
				7	3.61E-05	4.63E-02
				12	2.98E-05	3.75E-02
3	0	200	1	2	2.64E-06	5.75E-03
				7	1.72E-06	2.76E-03
				12	1.27E-06	2.03E-03
			7	2	3.55E-06	3.38E-03
				7	2.15E-06	1.87E-03
				12	1.59E-06	1.66E-03
			13	2	3.57E-06	5.90E-03
				7	2.23E-06	3.24E-03
				12	1.78E-06	1.23E-03
		800	1	2	1.22E-05	1.28E-02
				7	9.11E-06	1.11E-02
				12	6.94E-06	1.17E-02
			7	2	1.40E-05	1.97E-02
				7	1.06E-05	1.91E-02
				12	8.90E-06	7.92E-03
			13	2	1.42E-05	1.78E-02
				7	1.11E-05	1.34E-02
				12	8.75E-06	1.04E-02
		1400	1	2	1.97E-05	2.96E-02
				7	1.59E-05	1.64E-02
				12	1.25E-05	1.73E-02
			7	2	2.38E-05	3.38E-02
				7	1.86E-05	2.74E-02
				12	1.51E-05	1.88E-02
			13	2	2.47E-05	2.60E-02
				7	1.88E-05	2.20E-02
				12	1.55E-05	1.77E-02
	3	200	1	2	3.24E-06	4.25E-03
				7	1.93E-06	2.59E-03
				12	1.50E-06	1.12E-03
			7	2	3.96E-06	4.04E-03
				7	2.48E-06	1.83E-03
				12	1.68E-06	2.37E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	3.96E-06	8.25E-03
				7	2.80E-06	1.08E-03
				12	1.81E-06	4.04E-03
		800	1	2	1.33E-05	1.72E-02
				7	1.02E-05	1.35E-02
				12	8.16E-06	1.01E-02
			7	2	1.65E-05	2.05E-02
				7	1.25E-05	1.32E-02
				12	9.74E-06	1.07E-02
			13	2	1.65E-05	1.59E-02
				7	1.24E-05	1.69E-02
				12	1.03E-05	1.01E-02
		1400	1	2	2.26E-05	2.87E-02
				7	1.77E-05	1.88E-02
				12	1.42E-05	1.86E-02
			7	2	2.70E-05	3.08E-02
				7	2.13E-05	2.41E-02
				12	1.68E-05	2.23E-02
			13	2	2.69E-05	3.56E-02
				7	2.17E-05	2.51E-02
				12	1.71E-05	2.34E-02
	6	200	1	2	4.52E-06	3.67E-03
				7	2.70E-06	2.76E-03
				12	2.06E-06	1.68E-03
			7	2	4.91E-06	9.22E-03
				7	3.01E-06	6.29E-03
				12	2.36E-06	3.34E-03
			13	2	5.39E-06	5.14E-03
				7	3.48E-06	5.26E-03
				12	2.65E-06	2.95E-03
		800	1	2	1.71E-05	2.72E-02
				7	1.36E-05	2.01E-02
				12	1.04E-05	1.69E-02
			7	2	2.12E-05	2.79E-02
				7	1.67E-05	1.91E-02
				12	1.34E-05	1.30E-02
			13	2	2.13E-05	3.02E-02
				7	1.68E-05	2.01E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	1.32E-05	1.51E-02
		1400	1	2	3.08E-05	3.16E-02
				7	2.39E-05	2.28E-02
				12	1.93E-05	1.95E-02
			7	2	3.58E-05	4.42E-02
				7	2.85E-05	2.92E-02
				12	2.26E-05	2.79E-02
			13	2	3.59E-05	5.13E-02
				7	2.76E-05	4.22E-02
				12	2.30E-05	3.36E-02
6	0	200	1	2	8.67E-06	9.58E-03
				7	5.57E-06	9.82E-03
				12	4.25E-06	3.98E-03
			7	2	9.59E-06	1.59E-02
				7	6.88E-06	1.00E-02
				12	5.04E-06	7.37E-03
			13	2	9.66E-06	1.47E-02
				7	6.60E-06	9.98E-03
				12	5.09E-06	5.28E-03
		800	1	2	3.49E-05	3.73E-02
				7	2.66E-05	3.33E-02
				12	2.18E-05	2.27E-02
			7	2	4.08E-05	5.62E-02
				7	3.27E-05	3.88E-02
				12	2.60E-05	3.12E-02
			13	2	4.06E-05	5.25E-02
				7	3.25E-05	4.36E-02
				12	2.54E-05	3.98E-02
		1400	1	2	5.66E-05	7.14E-02
				7	4.56E-05	4.42E-02
				12	3.50E-05	5.07E-02
			7	2	6.81E-05	7.99E-02
				7	5.19E-05	7.66E-02
				12	4.37E-05	5.15E-02
			13	2	6.60E-05	1.01E-01
				7	5.29E-05	6.73E-02
				12	4.39E-05	4.57E-02
	3	200	1	2	9.82E-06	9.24E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	6.45E-06	1.05E-02
				12	4.99E-06	2.05E-03
			7	2	1.11E-05	1.70E-02
				7	7.80E-06	1.29E-02
				12	5.63E-06	5.59E-03
			13	2	1.24E-05	3.74E-03
				7	7.76E-06	1.38E-02
				12	5.64E-06	7.89E-03
		800	1	2	4.01E-05	4.83E-02
				7	3.09E-05	3.13E-02
				12	2.44E-05	2.98E-02
			7	2	4.54E-05	7.17E-02
				7	3.58E-05	4.34E-02
				12	2.88E-05	3.69E-02
			13	2	4.63E-05	6.48E-02
				7	3.62E-05	4.27E-02
				12	2.87E-05	4.88E-02
		1400	1	2	6.40E-05	7.19E-02
				7	5.10E-05	5.62E-02
				12	4.03E-05	4.91E-02
			7	2	7.50E-05	1.06E-01
				7	5.97E-05	8.11E-02
				12	4.72E-05	7.52E-02
			13	2	7.63E-05	7.75E-02
				7	5.81E-05	8.41E-02
				12	4.89E-05	4.90E-02
	6	200	1	2	1.19E-05	1.96E-02
				7	8.49E-06	1.55E-02
				12	6.42E-06	8.16E-03
			7	2	1.44E-05	1.66E-02
				7	1.08E-05	1.03E-02
				12	7.69E-06	7.04E-03
			13	2	1.46E-05	2.00E-02
				7	1.03E-05	1.55E-02
				12	8.26E-06	3.25E-03
		800	1	2	5.15E-05	6.72E-02
				7	3.99E-05	5.13E-02
				12	3.19E-05	4.22E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	6.07E-05	9.99E-02
				7	4.99E-05	5.14E-02
				12	3.89E-05	4.00E-02
			13	2	6.21E-05	7.61E-02
				7	4.94E-05	5.47E-02
				12	3.79E-05	5.61E-02
		1400	1	2	8.69E-05	9.18E-02
				7	6.64E-05	8.81E-02
				12	5.30E-05	6.98E-02
			7	2	1.03E-04	1.13E-01
				7	7.85E-05	1.07E-01
				12	6.31E-05	9.45E-02
			13	2	1.03E-04	1.25E-01
				7	7.88E-05	1.10E-01
				12	6.35E-05	8.41E-02

Appendix Z. 1V:4H FC5

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	5.34E-07	1.34E-02
				7	3.53E-07	9.60E-03
				12	6.20E-07	1.41E-02
			7	2	7.07E-07	1.75E-02
				7	4.65E-07	1.21E-02
				12	7.02E-07	1.70E-02
			13	2	7.09E-07	1.75E-02
				7	5.30E-07	1.17E-02
				12	6.25E-07	1.88E-02
		800	1	2	2.11E-06	5.12E-02
				7	1.51E-06	3.69E-02
				12	2.18E-06	5.21E-02
			7	2	2.43E-06	6.01E-02
				7	1.73E-06	4.27E-02
				12	2.57E-06	5.78E-02
			13	2	2.30E-06	6.13E-02
				7	1.79E-06	4.26E-02
				12	2.53E-06	5.79E-02
		1400	1	2	3.54E-06	9.15E-02
				7	2.69E-06	6.41E-02
				12	3.80E-06	8.91E-02
			7	2	4.22E-06	1.01E-01
				7	3.04E-06	7.45E-02
				12	4.19E-06	1.03E-01
			13	2	3.95E-06	1.05E-01
				7	2.93E-06	7.58E-02
				12	4.04E-06	1.04E-01
	3	200	1	2	5.96E-07	1.54E-02
				7	4.00E-07	1.07E-02
				12	6.77E-07	1.57E-02
			7	2	8.12E-07	1.87E-02
				7	5.70E-07	1.29E-02
				12	7.86E-07	1.90E-02
			13	2	7.98E-07	1.94E-02
				7	5.09E-07	1.43E-02
				12	7.65E-07	2.06E-02
		800	1	2	2.49E-06	5.52E-02
				7	1.67E-06	4.14E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	2.45E-06	5.84E-02
			7	2	2.81E-06	6.57E-02
				7	1.88E-06	4.97E-02
				12	2.76E-06	6.62E-02
			13	2	2.65E-06	6.98E-02
				7	1.89E-06	5.02E-02
				12	2.64E-06	6.98E-02
		1400	1	2	4.10E-06	1.01E-01
				7	2.98E-06	7.23E-02
				12	4.10E-06	1.01E-01
			7	2	4.69E-06	1.15E-01
				7	3.38E-06	8.32E-02
				12	4.76E-06	1.13E-01
			13	2	4.64E-06	1.16E-01
				7	3.35E-06	8.42E-02
				12	4.72E-06	1.15E-01
	6	200	1	2	8.73E-07	1.93E-02
				7	5.62E-07	1.39E-02
				12	8.17E-07	2.25E-02
			7	2	1.14E-06	2.42E-02
				7	6.76E-07	1.82E-02
				12	1.03E-06	2.56E-02
			13	2	1.06E-06	2.60E-02
				7	7.42E-07	1.77E-02
				12	1.03E-06	2.75E-02
		800	1	2	3.19E-06	7.62E-02
				7	2.22E-06	5.60E-02
				12	3.22E-06	7.77E-02
			7	2	3.74E-06	8.66E-02
				7	2.57E-06	6.48E-02
				12	3.70E-06	8.71E-02
			13	2	3.83E-06	8.75E-02
				7	2.64E-06	6.43E-02
				12	3.60E-06	9.12E-02
		1400	1	2	5.54E-06	1.33E-01
				7	3.96E-06	9.71E-02
				12	5.59E-06	1.35E-01
			7	2	6.15E-06	1.55E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	4.53E-06	1.11E-01
				12	6.18E-06	1.53E-01
			13	2	6.33E-06	1.53E-01
				7	4.46E-06	1.12E-01
				12	6.44E-06	1.51E-01
4	0	200	1	2	1.09E-06	2.27E-02
				7	6.48E-07	1.58E-02
				12	9.86E-07	2.41E-02
			7	2	1.14E-06	2.81E-02
				7	7.06E-07	1.89E-02
				12	1.14E-06	2.76E-02
			13	2	1.08E-06	2.86E-02
				7	8.20E-07	1.72E-02
				12	1.04E-06	2.83E-02
		800	1	2	4.23E-06	9.83E-02
				7	2.90E-06	7.20E-02
				12	4.04E-06	1.03E-01
			7	2	4.65E-06	1.12E-01
				7	3.34E-06	7.95E-02
				12	4.57E-06	1.13E-01
			13	2	4.54E-06	1.13E-01
				7	3.35E-06	8.03E-02
				12	4.93E-06	1.08E-01
		1400	1	2	7.18E-06	1.74E-01
				7	4.94E-06	1.27E-01
				12	7.27E-06	1.72E-01
			7	2	8.07E-06	1.93E-01
				7	5.65E-06	1.40E-01
				12	7.71E-06	1.97E-01
			13	2	7.85E-06	1.96E-01
				7	5.69E-06	1.39E-01
				12	8.15E-06	1.91E-01
	3	200	1	2	1.04E-06	2.73E-02
				7	7.58E-07	1.77E-02
				12	1.23E-06	2.59E-02
			7	2	1.26E-06	3.15E-02
				7	9.00E-07	1.97E-02
				12	1.25E-06	3.23E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	1.41E-06	2.83E-02
				7	9.37E-07	1.94E-02
				12	1.39E-06	2.98E-02
		800	1	2	4.45E-06	1.16E-01
				7	3.27E-06	8.08E-02
				12	4.50E-06	1.16E-01
			7	2	5.17E-06	1.27E-01
				7	3.47E-06	9.50E-02
				12	5.12E-06	1.25E-01
			13	2	5.15E-06	1.25E-01
				7	3.72E-06	9.07E-02
				12	5.22E-06	1.27E-01
		1400	1	2	7.76E-06	1.96E-01
				7	5.63E-06	1.43E-01
				12	8.27E-06	1.95E-01
			7	2	8.73E-06	2.20E-01
				7	6.53E-06	1.55E-01
				12	9.17E-06	2.14E-01
			13	2	8.97E-06	2.19E-01
				7	6.63E-06	1.54E-01
				12	9.07E-06	2.18E-01
	6	200	1	2	1.44E-06	3.62E-02
				7	9.81E-07	2.46E-02
				12	1.38E-06	3.85E-02
			7	2	1.73E-06	4.01E-02
				7	1.11E-06	2.76E-02
				12	1.64E-06	4.19E-02
			13	2	1.61E-06	4.29E-02
				7	1.17E-06	2.66E-02
				12	1.64E-06	4.21E-02
		800	1	2	6.02E-06	1.53E-01
				7	4.47E-06	1.07E-01
				12	5.89E-06	1.58E-01
			7	2	7.09E-06	1.66E-01
				7	5.05E-06	1.20E-01
				12	6.56E-06	1.76E-01
			13	2	6.89E-06	1.69E-01
				7	5.03E-06	1.20E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	6.85E-06	1.70E-01
		1400	1	2	1.05E-05	2.62E-01
				7	7.83E-06	1.82E-01
				12	1.05E-05	2.60E-01
			7	2	1.22E-05	2.91E-01
				7	8.69E-06	2.08E-01
				12	1.18E-05	2.95E-01
			13	2	1.15E-05	2.98E-01
				7	8.67E-06	2.09E-01
				12	1.15E-05	2.96E-01
8	0	200	1	2	1.22E-06	3.75E-02
				7	9.83E-07	2.15E-02
				12	1.47E-06	3.47E-02
			7	2	1.55E-06	4.06E-02
				7	1.01E-06	2.50E-02
				12	1.28E-06	4.44E-02
			13	2	1.59E-06	3.99E-02
				7	1.13E-06	2.33E-02
				12	1.50E-06	4.20E-02
		800	1	2	5.02E-06	1.36E-01
				7	3.95E-06	9.19E-02
				12	5.26E-06	1.34E-01
			7	2	6.28E-06	1.46E-01
				7	4.39E-06	1.04E-01
				12	5.97E-06	1.48E-01
			13	2	6.14E-06	1.43E-01
				7	4.24E-06	1.08E-01
				12	6.04E-06	1.47E-01
		1400	1	2	8.86E-06	2.04E-01
				7	5.93E-06	1.55E-01
				12	8.45E-06	2.14E-01
			7	2	9.70E-06	2.32E-01
				7	6.77E-06	1.71E-01
				12	9.68E-06	2.36E-01
			13	2	9.36E-06	2.41E-01
				7	6.59E-06	1.75E-01
				12	9.71E-06	2.30E-01
	3	200	1	2	1.66E-06	3.87E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	9.69E-07	2.62E-02
				12	1.60E-06	4.03E-02
			7	2	1.76E-06	4.35E-02
				7	1.15E-06	2.88E-02
				12	1.85E-06	4.58E-02
			13	2	1.85E-06	4.37E-02
				7	1.14E-06	3.01E-02
				12	1.87E-06	4.36E-02
		800	1	2	6.16E-06	1.47E-01
				7	4.39E-06	1.04E-01
				12	6.48E-06	1.41E-01
			7	2	6.98E-06	1.65E-01
				7	5.03E-06	1.16E-01
				12	6.73E-06	1.70E-01
			13	2	6.84E-06	1.68E-01
				7	4.77E-06	1.21E-01
				12	6.76E-06	1.68E-01
		1400	1	2	9.29E-06	2.42E-01
				7	6.80E-06	1.73E-01
				12	9.78E-06	2.36E-01
			7	2	1.06E-05	2.66E-01
				7	7.63E-06	1.93E-01
				12	1.08E-05	2.65E-01
			13	2	1.07E-05	2.67E-01
				7	7.80E-06	1.89E-01
				12	1.08E-05	2.65E-01
	6	200	1	2	2.16E-06	5.28E-02
				7	1.31E-06	3.46E-02
				12	2.07E-06	5.43E-02
			7	2	2.65E-06	5.54E-02
				7	1.39E-06	4.04E-02
				12	2.40E-06	5.96E-02
			13	2	2.40E-06	6.10E-02
				7	1.69E-06	3.63E-02
				12	2.33E-06	5.86E-02
		800	1	2	8.03E-06	2.00E-01
				7	5.86E-06	1.39E-01
				12	8.17E-06	2.00E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	9.58E-06	2.14E-01
				7	6.67E-06	1.59E-01
				12	9.35E-06	2.17E-01
			13	2	9.08E-06	2.23E-01
				7	6.51E-06	1.58E-01
				12	9.50E-06	2.12E-01
		1400	1	2	1.26E-05	3.20E-01
				7	9.08E-06	2.28E-01
				12	1.24E-05	3.19E-01
			7	2	1.38E-05	3.61E-01
				7	9.94E-06	2.59E-01
				12	1.43E-05	3.57E-01
			13	2	1.43E-05	3.58E-01
				7	1.05E-05	2.48E-01
				12	1.50E-05	3.41E-01

Appendix AA. 1V:4H FC6

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.25E-05	2.57E-04
0	0	200	1	7	1.57E-05	1.83E-04
0	0	200	1	12	1.10E-05	6.93E-05
0	0	200	7	2	3.54E-05	6.07E-04
0	0	200	7	7	2.63E-05	8.65E-05
0	0	200	7	12	1.73E-05	2.10E-04
0	0	200	13	2	3.59E-05	6.33E-04
0	0	200	13	7	2.55E-05	3.04E-04
0	0	200	13	12	1.78E-05	1.57E-04
0	0	800	1	2	8.32E-05	1.04E-03
0	0	800	1	7	6.00E-05	8.04E-04
0	0	800	1	12	4.28E-05	5.19E-04
0	0	800	7	2	1.25E-04	1.80E-03
0	0	800	7	7	9.14E-05	9.30E-04
0	0	800	7	12	6.46E-05	7.64E-04
0	0	800	13	2	1.24E-04	1.65E-03
0	0	800	13	7	9.22E-05	9.60E-04
0	0	800	13	12	6.49E-05	7.08E-04
0	0	1400	1	2	1.45E-04	1.78E-03
0	0	1400	1	7	1.07E-04	1.04E-03
0	0	1400	1	12	7.57E-05	7.82E-04
0	0	1400	7	2	2.12E-04	2.79E-03
0	0	1400	7	7	1.56E-04	1.96E-03
0	0	1400	7	12	1.12E-04	1.30E-03
0	0	1400	13	2	2.13E-04	2.90E-03
0	0	1400	13	7	1.55E-04	2.19E-03
0	0	1400	13	12	1.11E-04	1.38E-03
0	6	200	1	2	3.40E-05	4.30E-04
0	6	200	1	7	2.42E-05	7.37E-04
0	6	200	1	12	1.59E-05	2.09E-04
0	6	200	7	2	5.37E-05	8.22E-04
0	6	200	7	7	3.79E-05	5.16E-04
0	6	200	7	12	2.57E-05	3.68E-04
0	6	200	13	2	5.42E-05	8.57E-04
0	6	200	13	7	3.81E-05	4.74E-04
0	6	200	13	12	2.63E-05	3.07E-04
0	6	800	1	2	1.25E-04	1.69E-03
0	6	800	1	7	9.16E-05	1.16E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	800	1	12	6.36E-05	8.62E-04
			7	2	1.86E-04	2.47E-03
				7	1.35E-04	1.81E-03
				12	9.71E-05	1.06E-03
			13	2	1.92E-04	1.80E-03
				7	1.36E-04	1.56E-03
				12	9.56E-05	1.25E-03
		1400	1	2	2.17E-04	2.69E-03
				7	1.57E-04	2.26E-03
				12	1.12E-04	1.38E-03
			7	2	3.21E-04	3.79E-03
				7	2.31E-04	2.94E-03
				12	1.66E-04	2.17E-03
			13	2	3.23E-04	3.34E-03
				7	2.35E-04	2.63E-03
				12	1.69E-04	1.76E-03
	12	200	1	2	3.33E-05	5.91E-04
				7	2.31E-05	3.63E-04
				12	1.60E-05	5.74E-04
			7	2	5.35E-05	7.31E-04
				7	3.69E-05	5.31E-04
				12	2.58E-05	3.91E-04
			13	2	5.59E-05	5.62E-04
				7	3.70E-05	6.91E-04
				12	2.65E-05	2.62E-04
		800	1	2	1.25E-04	1.75E-03
				7	9.01E-05	1.37E-03
				12	6.41E-05	7.96E-04
			7	2	1.86E-04	2.50E-03
				7	1.35E-04	1.67E-03
				12	9.54E-05	1.32E-03
			13	2	1.83E-04	3.23E-03
				7	1.39E-04	1.21E-03
				12	9.69E-05	1.21E-03
		1400	1	2	2.20E-04	2.15E-03
				7	1.55E-04	2.37E-03
				12	1.13E-04	1.37E-03
			7	2	3.21E-04	3.66E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	12	1400	7	7	2.31E-04	3.13E-03
0	12	1400	7	12	1.68E-04	1.50E-03
0	12	1400	13	2	3.23E-04	3.89E-03
0	12	1400	13	7	2.34E-04	3.04E-03
0	12	1400	13	12	1.66E-04	2.28E-03
3	0	200	1	2	2.33E-05	1.61E-04
3	0	200	1	7	1.44E-05	5.07E-04
3	0	200	1	12	9.62E-06	1.45E-04
3	0	200	7	2	3.44E-05	5.36E-04
3	0	200	7	7	2.23E-05	2.55E-04
3	0	200	7	12	1.50E-05	1.98E-04
3	0	200	13	2	3.65E-05	1.98E-04
3	0	200	13	7	2.17E-05	3.88E-04
3	0	200	13	12	1.52E-05	1.24E-04
3	0	800	1	2	8.77E-05	1.03E-03
3	0	800	1	7	6.31E-05	7.35E-04
3	0	800	1	12	4.38E-05	5.21E-04
3	0	800	7	2	1.27E-04	2.06E-03
3	0	800	7	7	9.29E-05	1.04E-03
3	0	800	7	12	6.59E-05	6.84E-04
3	0	800	13	2	1.29E-04	1.82E-03
3	0	800	13	7	9.36E-05	9.71E-04
3	0	800	13	12	6.42E-05	9.40E-04
3	0	1400	1	2	1.49E-04	1.76E-03
3	0	1400	1	7	1.07E-04	1.45E-03
3	0	1400	1	12	7.67E-05	8.94E-04
3	0	1400	7	2	2.19E-04	2.18E-03
3	0	1400	7	7	1.58E-04	1.89E-03
3	0	1400	7	12	1.12E-04	1.39E-03
3	0	1400	13	2	2.19E-04	2.58E-03
3	0	1400	13	7	1.58E-04	1.96E-03
3	0	1400	13	12	1.12E-04	1.23E-03
3	6	200	1	2	3.47E-05	3.86E-04
3	6	200	1	7	2.25E-05	1.01E-03
3	6	200	1	12	1.51E-05	1.24E-04
3	6	200	7	2	5.28E-05	5.34E-04
3	6	200	7	7	3.37E-05	4.73E-04
3	6	200	7	12	2.27E-05	3.09E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	200	13	2	5.19E-05	5.28E-04
				7	3.39E-05	3.89E-04
				12	2.26E-05	2.76E-04
		800	1	2	1.32E-04	1.62E-03
				7	9.48E-05	1.01E-03
				12	6.63E-05	8.57E-04
			7	2	1.94E-04	2.18E-03
				7	1.36E-04	2.35E-03
				12	9.94E-05	9.03E-04
			13	2	1.95E-04	2.12E-03
				7	1.41E-04	1.50E-03
				12	9.90E-05	1.05E-03
		1400	1	2	2.23E-04	2.67E-03
				7	1.61E-04	2.16E-03
				12	1.15E-04	1.39E-03
			7	2	3.19E-04	5.00E-03
				7	2.40E-04	2.67E-03
				12	1.66E-04	2.25E-03
			13	2	3.28E-04	3.62E-03
				7	2.36E-04	3.22E-03
				12	1.68E-04	2.03E-03
	12	200	1	2	3.38E-05	1.27E-03
				7	2.29E-05	1.32E-04
				12	1.45E-05	1.91E-04
			7	2	5.38E-05	4.08E-04
				7	3.42E-05	4.30E-04
				12	2.21E-05	3.72E-04
			13	2	5.18E-05	7.67E-04
				7	3.38E-05	3.75E-04
				12	2.15E-05	4.77E-04
		800	1	2	1.31E-04	1.74E-03
				7	9.35E-05	1.37E-03
				12	6.57E-05	1.00E-03
			7	2	1.95E-04	2.13E-03
				7	1.40E-04	1.62E-03
				12	9.80E-05	1.14E-03
			13	2	1.94E-04	2.41E-03
				7	1.41E-04	1.39E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	12	800	13	12	9.78E-05	1.30E-03
		1400	1	2	2.22E-04	2.84E-03
				7	1.61E-04	1.94E-03
				12	1.16E-04	1.18E-03
			7	2	3.26E-04	3.87E-03
				7	2.34E-04	3.28E-03
				12	1.69E-04	1.85E-03
			13	2	3.27E-04	3.90E-03
				7	2.33E-04	3.36E-03
				12	1.69E-04	1.86E-03
6	0	200	1	2	7.12E-05	2.18E-03
				7	4.78E-05	8.32E-04
				12	2.95E-05	9.83E-04
			7	2	1.03E-04	1.22E-03
				7	6.90E-05	9.53E-04
				12	4.67E-05	5.60E-04
			13	2	1.01E-04	2.00E-03
				7	7.07E-05	1.24E-03
				12	4.65E-05	5.75E-04
		800	1	2	2.64E-04	3.21E-03
				7	1.90E-04	2.40E-03
				12	1.33E-04	1.88E-03
			7	2	3.91E-04	3.46E-03
				7	2.78E-04	4.19E-03
				12	1.93E-04	2.87E-03
			13	2	3.82E-04	6.24E-03
				7	2.81E-04	3.16E-03
				12	1.93E-04	2.90E-03
		1400	1	2	4.24E-04	5.69E-03
				7	3.18E-04	2.97E-03
				12	2.18E-04	3.14E-03
			7	2	6.33E-04	7.51E-03
				7	4.55E-04	5.93E-03
				12	3.21E-04	4.10E-03
			13	2	6.39E-04	6.42E-03
				7	4.62E-04	4.76E-03
				12	3.18E-04	4.55E-03
	6	200	1	2	1.02E-04	2.47E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	200	1	7	7.29E-05	5.38E-04
				12	6.37E-05	-2.36E-03
			7	2	1.55E-04	2.19E-03
				7	1.02E-04	1.94E-03
				12	6.92E-05	8.31E-04
			13	2	1.59E-04	1.65E-03
				7	1.03E-04	1.70E-03
				12	6.95E-05	9.55E-04
		800	1	2	3.89E-04	6.36E-03
				7	2.83E-04	3.77E-03
				12	2.01E-04	2.55E-03
			7	2	5.80E-04	7.06E-03
				7	4.16E-04	5.54E-03
				12	2.96E-04	3.79E-03
			13	2	5.81E-04	6.92E-03
				7	4.21E-04	5.58E-03
				12	2.95E-04	3.45E-03
		1400	1	2	6.44E-04	8.57E-03
				7	4.69E-04	5.52E-03
				12	3.28E-04	4.16E-03
			7	2	9.48E-04	1.10E-02
				7	6.80E-04	1.02E-02
				12	4.78E-04	6.50E-03
			13	2	9.48E-04	1.14E-02
				7	6.86E-04	8.49E-03
				12	4.74E-04	6.63E-03
	12	200	1	2	1.05E-04	9.30E-04
				7	6.92E-05	9.38E-04
				12	4.67E-05	3.67E-04
			7	2	1.58E-04	1.26E-03
				7	1.04E-04	1.34E-03
				12	7.06E-05	6.65E-04
			13	2	1.62E-04	6.94E-04
				7	1.08E-04	1.28E-03
				12	6.90E-05	1.09E-03
		800	1	2	3.90E-04	5.46E-03
				7	2.86E-04	3.53E-03
				12	1.99E-04	2.63E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	12	800	7	2	5.83E-04	7.00E-03
				7	4.08E-04	6.58E-03
				12	2.98E-04	3.07E-03
			13	2	5.84E-04	6.83E-03
				7	4.27E-04	4.30E-03
				12	2.96E-04	4.40E-03
		1400	1	2	6.54E-04	7.07E-03
				7	4.72E-04	5.25E-03
				12	3.32E-04	3.95E-03
			7	2	9.41E-04	1.35E-02
				7	6.82E-04	9.03E-03
				12	4.78E-04	6.76E-03
			13	2	9.38E-04	1.28E-02
				7	6.92E-04	7.42E-03
				12	4.82E-04	6.75E-03

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Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.70E-06	2.32E-03
				7	1.98E-06	1.60E-03
				12	1.58E-06	9.88E-04
			7	2	3.88E-06	3.33E-03
				7	3.00E-06	2.81E-03
				12	2.42E-06	3.64E-03
			13	2	4.19E-06	6.24E-03
				7	3.46E-06	2.52E-03
				12	2.72E-06	3.23E-03
		800	1	2	1.03E-05	1.22E-02
				7	8.09E-06	9.88E-03
				12	6.62E-06	5.90E-03
			7	2	1.32E-05	1.02E-02
				7	1.04E-05	1.09E-02
				12	8.87E-06	5.31E-03
			13	2	1.34E-05	1.52E-02
				7	1.08E-05	1.12E-02
				12	8.78E-06	8.62E-03
		1400	1	2	1.80E-05	2.07E-02
				7	1.44E-05	1.37E-02
				12	1.19E-05	1.08E-02
			7	2	2.21E-05	2.66E-02
				7	1.79E-05	1.84E-02
				12	1.47E-05	1.31E-02
			13	2	2.27E-05	2.44E-02
				7	1.82E-05	1.97E-02
				12	1.49E-05	1.67E-02
	3	200	1	2	3.04E-06	8.89E-04
				7	2.10E-06	3.07E-03
				12	1.74E-06	1.92E-03
			7	2	4.49E-06	3.45E-03
				7	3.53E-06	2.27E-03
				12	2.77E-06	3.38E-03
			13	2	4.96E-06	3.73E-03
				7	3.57E-06	5.98E-03
				12	3.16E-06	2.44E-03
		800	1	2	1.19E-05	1.09E-02
				7	9.23E-06	7.72E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	7.37E-06	8.02E-03
			7	2	1.47E-05	1.66E-02
				7	1.20E-05	9.25E-03
				12	9.62E-06	9.38E-03
			13	2	1.54E-05	1.19E-02
				7	1.22E-05	1.26E-02
				12	9.83E-06	1.12E-02
		1400	1	2	2.04E-05	2.23E-02
				7	1.63E-05	1.71E-02
				12	1.36E-05	9.82E-03
			7	2	2.53E-05	2.15E-02
				7	2.01E-05	2.04E-02
				12	1.62E-05	1.99E-02
			13	2	2.60E-05	2.47E-02
				7	2.04E-05	1.85E-02
				12	1.67E-05	1.75E-02
	6	200	1	2	3.90E-06	5.22E-03
				7	2.95E-06	2.53E-03
				12	2.39E-06	2.59E-03
			7	2	5.79E-06	7.28E-03
				7	4.41E-06	6.12E-03
				12	3.76E-06	3.35E-03
			13	2	6.64E-06	5.49E-03
				7	5.17E-06	3.48E-03
				12	3.99E-06	6.01E-03
		800	1	2	1.54E-05	1.78E-02
				7	1.22E-05	1.33E-02
				12	9.80E-06	1.22E-02
			7	2	1.95E-05	2.16E-02
				7	1.54E-05	1.75E-02
				12	1.28E-05	1.37E-02
			13	2	1.99E-05	2.73E-02
				7	1.64E-05	1.51E-02
				12	1.30E-05	1.55E-02
		1400	1	2	2.71E-05	3.06E-02
				7	2.13E-05	2.94E-02
				12	1.74E-05	1.86E-02
			7	2	3.34E-05	3.59E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	2.68E-05	2.71E-02
				12	2.20E-05	2.08E-02
			13	2	3.38E-05	4.02E-02
				7	2.73E-05	2.96E-02
				12	2.20E-05	2.71E-02
4	0	200	1	2	4.36E-06	6.98E-03
				7	3.27E-06	3.98E-03
				12	2.30E-06	3.98E-03
			7	2	5.05E-06	1.26E-02
				7	3.78E-06	5.73E-03
				12	2.85E-06	3.35E-03
			13	2	5.74E-06	5.84E-03
				7	3.95E-06	3.78E-03
				12	2.96E-06	4.29E-03
		800	1	2	1.91E-05	3.14E-02
				7	1.59E-05	1.03E-02
				12	1.29E-05	7.10E-03
			7	2	2.36E-05	2.24E-02
				7	1.84E-05	2.09E-02
				12	1.47E-05	1.72E-02
			13	2	2.40E-05	2.03E-02
				7	1.83E-05	2.29E-02
				12	1.46E-05	1.77E-02
		1400	1	2	3.39E-05	3.86E-02
				7	2.74E-05	1.99E-02
				12	2.21E-05	2.15E-02
			7	2	4.07E-05	4.56E-02
				7	3.28E-05	2.69E-02
				12	2.60E-05	2.60E-02
			13	2	4.13E-05	5.20E-02
				7	3.26E-05	3.05E-02
				12	2.56E-05	3.46E-02
	3	200	1	2	5.25E-06	5.82E-03
				7	3.64E-06	3.52E-03
				12	2.62E-06	2.13E-03
			7	2	6.58E-06	1.57E-03
				7	4.27E-06	7.25E-03
				12	3.25E-06	2.46E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	6.36E-06	6.95E-03
				7	4.75E-06	3.29E-03
				12	3.34E-06	2.81E-03
		800	1	2	2.26E-05	1.69E-02
				7	1.80E-05	1.09E-02
				12	1.42E-05	1.23E-02
			7	2	2.65E-05	2.89E-02
				7	2.08E-05	2.08E-02
				12	1.66E-05	1.69E-02
			13	2	2.68E-05	2.62E-02
				7	2.07E-05	2.47E-02
				12	1.70E-05	1.23E-02
		1400	1	2	3.84E-05	3.78E-02
				7	3.01E-05	3.64E-02
				12	2.43E-05	2.84E-02
			7	2	4.64E-05	4.07E-02
				7	3.68E-05	2.95E-02
				12	2.97E-05	2.68E-02
			13	2	4.70E-05	4.07E-02
				7	3.63E-05	3.97E-02
				12	2.92E-05	3.05E-02
	6	200	1	2	6.89E-06	6.84E-03
				7	4.83E-06	5.34E-03
				12	3.99E-06	-1.17E-03
			7	2	8.19E-06	9.37E-03
				7	5.90E-06	5.55E-03
				12	4.35E-06	2.51E-03
			13	2	8.22E-06	1.15E-02
				7	5.55E-06	1.24E-02
				12	4.13E-06	7.60E-03
		800	1	2	2.89E-05	3.85E-02
				7	2.32E-05	2.44E-02
				12	1.90E-05	1.53E-02
			7	2	3.61E-05	2.32E-02
				7	2.74E-05	3.12E-02
				12	2.22E-05	2.24E-02
			13	2	3.64E-05	2.81E-02
				7	2.79E-05	2.55E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	2.21E-05	2.42E-02
		1400	1	2	5.14E-05	5.59E-02
				7	4.02E-05	4.50E-02
				12	3.24E-05	3.92E-02
			7	2	5.99E-05	7.85E-02
				7	4.89E-05	4.53E-02
				12	3.93E-05	3.90E-02
			13	2	6.17E-05	5.95E-02
				7	4.91E-05	3.97E-02
				12	3.82E-05	5.15E-02
8	0	200	1	2	6.69E-06	8.66E-03
				7	4.62E-06	3.65E-03
				12	3.06E-06	3.06E-03
			7	2	7.64E-06	1.22E-02
				7	5.47E-06	5.37E-03
				12	3.48E-06	6.08E-03
			13	2	7.48E-06	1.08E-02
				7	5.54E-06	3.57E-03
				12	3.53E-06	4.62E-03
		800	1	2	2.59E-05	2.49E-02
				7	2.02E-05	1.96E-02
				12	1.58E-05	1.82E-02
			7	2	3.13E-05	2.48E-02
				7	2.41E-05	2.05E-02
				12	1.89E-05	2.33E-02
			13	2	3.04E-05	3.29E-02
				7	2.37E-05	2.61E-02
				12	1.93E-05	1.80E-02
		1400	1	2	4.05E-05	4.85E-02
				7	3.23E-05	2.88E-02
				12	2.54E-05	2.87E-02
			7	2	4.89E-05	4.56E-02
				7	3.78E-05	4.79E-02
				12	2.99E-05	4.24E-02
			13	2	4.92E-05	4.01E-02
				7	3.74E-05	5.18E-02
				12	3.09E-05	2.70E-02
	3	200	1	2	7.69E-06	8.03E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	5.01E-06	6.90E-03
				12	3.52E-06	2.32E-03
			7	2	8.61E-06	1.31E-02
				7	6.19E-06	5.42E-03
				12	4.07E-06	5.70E-03
			13	2	8.47E-06	1.68E-02
				7	5.93E-06	8.57E-03
				12	3.93E-06	7.61E-03
		800	1	2	2.79E-05	4.16E-02
				7	2.19E-05	3.13E-02
				12	1.79E-05	2.11E-02
			7	2	3.50E-05	3.18E-02
				7	2.68E-05	3.16E-02
				12	2.17E-05	1.98E-02
			13	2	3.50E-05	2.76E-02
				7	2.69E-05	2.70E-02
				12	2.16E-05	1.77E-02
		1400	1	2	4.58E-05	4.71E-02
				7	3.68E-05	2.87E-02
				12	2.91E-05	2.45E-02
			7	2	5.38E-05	6.44E-02
				7	4.34E-05	2.91E-02
				12	3.49E-05	2.65E-02
			13	2	5.46E-05	5.68E-02
				7	4.22E-05	5.60E-02
				12	3.47E-05	3.15E-02
	6	200	1	2	1.02E-05	1.09E-02
				7	6.67E-06	8.64E-03
				12	4.56E-06	6.11E-03
			7	2	1.18E-05	1.30E-02
				7	8.03E-06	7.57E-03
				12	5.49E-06	8.45E-03
			13	2	1.21E-05	1.10E-02
				7	8.20E-06	6.16E-03
				12	5.46E-06	6.77E-03
		800	1	2	3.80E-05	4.95E-02
				7	3.05E-05	2.67E-02
				12	2.44E-05	2.16E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	4.53E-05	5.30E-02
				7	3.54E-05	4.62E-02
				12	2.88E-05	2.74E-02
			13	2	4.62E-05	5.13E-02
				7	3.64E-05	2.83E-02
				12	2.89E-05	2.41E-02
		1400	1	2	6.04E-05	7.39E-02
				7	4.73E-05	5.97E-02
				12	3.85E-05	4.09E-02
			7	2	7.37E-05	6.42E-02
				7	5.74E-05	5.92E-02
				12	4.68E-05	3.39E-02
			13	2	7.33E-05	8.09E-02
				7	5.72E-05	4.89E-02
				12	4.53E-05	5.77E-02

Appendix CC. 1V:6H FC1

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.17E-05	4.10E-04
				7	2.26E-05	2.43E-04
				12	1.58E-05	1.17E-04
			7	2	3.66E-05	4.76E-04
				7	2.49E-05	3.20E-04
				12	1.77E-05	2.40E-04
			13	2	3.61E-05	4.29E-04
				7	2.54E-05	2.75E-04
				12	1.83E-05	2.11E-04
		800	1	2	1.08E-04	1.55E-03
				7	7.88E-05	9.58E-04
				12	5.55E-05	7.24E-04
			7	2	1.12E-04	1.54E-03
				7	8.25E-05	9.26E-04
				12	5.82E-05	6.83E-04
			13	2	1.12E-04	1.64E-03
				7	8.29E-05	8.74E-04
				12	5.87E-05	5.81E-04
		1400	1	2	1.87E-04	1.80E-03
				7	1.36E-04	1.73E-03
				12	9.61E-05	1.33E-03
			7	2	1.90E-04	2.53E-03
				7	1.37E-04	1.83E-03
				12	9.83E-05	1.24E-03
			13	2	1.90E-04	2.26E-03
				7	1.40E-04	1.59E-03
				12	9.85E-05	1.31E-03
	4	200	1	2	4.04E-05	3.16E-04
				7	2.78E-05	3.32E-04
				12	1.89E-05	2.65E-04
			7	2	4.63E-05	4.71E-04
				7	3.11E-05	4.65E-04
				12	2.28E-05	1.60E-04
			13	2	4.55E-05	4.11E-04
				7	3.14E-05	3.93E-04
				12	2.19E-05	3.33E-04
		800	1	2	1.34E-04	1.75E-03
				7	9.75E-05	1.38E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	4	800	1	12	6.91E-05	1.01E-03
			7	2	1.43E-04	1.70E-03
				7	1.03E-04	1.07E-03
				12	7.21E-05	9.21E-04
			13	2	1.41E-04	1.84E-03
				7	1.02E-04	1.33E-03
				12	7.18E-05	1.06E-03
		1400	1	2	2.30E-04	3.17E-03
				7	1.69E-04	2.03E-03
				12	1.22E-04	1.49E-03
			7	2	2.38E-04	2.65E-03
				7	1.73E-04	2.39E-03
				12	1.24E-04	1.37E-03
			13	2	2.37E-04	3.03E-03
				7	1.73E-04	2.20E-03
				12	1.24E-04	1.42E-03
	8	200	1	2	4.78E-05	5.15E-04
				7	3.37E-05	3.01E-04
				12	2.34E-05	2.50E-04
			7	2	5.50E-05	4.92E-04
				7	3.69E-05	7.72E-04
				12	2.67E-05	3.19E-04
			13	2	5.41E-05	8.15E-04
				7	3.91E-05	4.75E-04
				12	2.70E-05	3.11E-04
		800	1	2	1.64E-04	1.77E-03
				7	1.19E-04	1.44E-03
				12	8.28E-05	1.21E-03
			7	2	1.68E-04	2.17E-03
				7	1.22E-04	1.69E-03
				12	8.75E-05	1.11E-03
			13	2	1.70E-04	2.21E-03
				7	1.23E-04	1.54E-03
				12	8.62E-05	1.17E-03
		1400	1	2	2.79E-04	3.44E-03
				7	2.03E-04	2.51E-03
				12	1.45E-04	1.91E-03
			7	2	2.87E-04	3.17E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	8	1400	7	7	2.06E-04	2.75E-03
				12	1.47E-04	2.11E-03
			13	2	2.85E-04	3.48E-03
				7	2.06E-04	2.88E-03
				12	1.46E-04	2.25E-03
4	0	200	1	2	5.39E-05	9.52E-04
				7	3.92E-05	3.34E-04
				12	2.59E-05	1.90E-04
			7	2	5.67E-05	7.47E-04
				7	3.78E-05	6.82E-04
				12	2.55E-05	5.32E-04
			13	2	5.74E-05	5.88E-04
				7	3.91E-05	5.01E-04
				12	2.64E-05	2.48E-04
		800	1	2	2.12E-04	2.62E-03
				7	1.54E-04	1.87E-03
				12	1.12E-04	8.53E-04
			7	2	2.14E-04	2.36E-03
				7	1.55E-04	2.03E-03
				12	1.09E-04	1.66E-03
			13	2	2.11E-04	3.35E-03
				7	1.55E-04	1.95E-03
				12	1.11E-04	1.33E-03
		1400	1	2	3.61E-04	5.25E-03
				7	2.64E-04	3.55E-03
				12	1.88E-04	1.99E-03
			7	2	3.71E-04	3.97E-03
				7	2.64E-04	3.79E-03
				12	1.89E-04	2.12E-03
			13	2	3.73E-04	3.38E-03
				7	2.67E-04	2.75E-03
				12	1.89E-04	2.05E-03
	4	200	1	2	6.96E-05	5.69E-04
				7	4.58E-05	8.65E-04
				12	3.21E-05	2.77E-04
			7	2	7.06E-05	8.11E-04
				7	4.76E-05	7.48E-04
				12	3.37E-05	1.19E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	4	200	13	2	7.07E-05	8.69E-04
				7	4.77E-05	1.02E-03
				12	3.25E-05	5.43E-04
		800	1	2	2.68E-04	3.06E-03
				7	1.95E-04	2.25E-03
				12	1.34E-04	1.89E-03
			7	2	2.68E-04	3.72E-03
				7	1.93E-04	2.76E-03
				12	1.35E-04	2.17E-03
			13	2	2.69E-04	3.37E-03
				7	1.93E-04	2.71E-03
				12	1.37E-04	1.86E-03
		1400	1	2	4.55E-04	6.05E-03
				7	3.28E-04	4.39E-03
				12	2.32E-04	2.89E-03
			7	2	4.62E-04	4.70E-03
				7	3.33E-04	3.96E-03
				12	2.33E-04	3.03E-03
			13	2	4.60E-04	5.30E-03
				7	3.28E-04	4.35E-03
				12	2.33E-04	3.00E-03
	8	200	1	2	8.09E-05	1.20E-03
				7	5.69E-05	5.39E-04
				12	3.67E-05	6.61E-04
			7	2	8.53E-05	1.02E-03
				7	5.92E-05	6.78E-04
				12	3.99E-05	3.50E-04
			13	2	8.28E-05	1.23E-03
				7	5.85E-05	8.31E-04
				12	3.98E-05	5.22E-04
		800	1	2	3.24E-04	3.22E-03
				7	2.31E-04	2.93E-03
				12	1.64E-04	1.65E-03
			7	2	3.21E-04	4.47E-03
				7	2.35E-04	2.62E-03
				12	1.66E-04	1.60E-03
			13	2	3.26E-04	3.54E-03
				7	2.36E-04	2.95E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	8	800	13	12	1.64E-04	1.86E-03
		1400	1	2	5.43E-04	7.95E-03
				7	3.96E-04	4.49E-03
				12	2.79E-04	3.69E-03
			7	2	5.59E-04	4.60E-03
				7	4.03E-04	4.00E-03
				12	2.83E-04	3.31E-03
			13	2	5.55E-04	6.52E-03
				7	3.97E-04	5.15E-03
				12	2.81E-04	3.57E-03
8	0	200	1	2	8.15E-05	4.39E-04
				7	5.17E-05	6.33E-04
				12	3.37E-05	4.62E-04
			7	2	7.97E-05	1.09E-03
				7	5.37E-05	8.28E-04
				12	3.36E-05	5.49E-04
			13	2	8.19E-05	8.06E-04
				7	5.31E-05	9.36E-04
				12	3.41E-05	4.06E-04
		800	1	2	2.83E-04	3.22E-03
				7	2.03E-04	3.13E-03
				12	1.44E-04	1.57E-03
			7	2	2.94E-04	1.94E-03
				7	2.06E-04	3.08E-03
				12	1.47E-04	1.61E-03
			13	2	2.89E-04	3.24E-03
				7	2.08E-04	2.72E-03
				12	1.45E-04	2.08E-03
		1400	1	2	4.61E-04	6.24E-03
				7	3.32E-04	4.56E-03
				12	2.36E-04	3.23E-03
			7	2	4.68E-04	5.06E-03
				7	3.37E-04	4.31E-03
				12	2.38E-04	2.81E-03
			13	2	4.64E-04	6.00E-03
				7	3.41E-04	3.50E-03
				12	2.38E-04	2.99E-03
	4	200	1	2	9.82E-05	1.58E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	4	200	1	7	6.28E-05	1.21E-03
				12	4.21E-05	5.30E-04
			7	2	1.03E-04	1.07E-03
				7	6.83E-05	7.67E-04
				12	4.45E-05	4.10E-04
			13	2	9.93E-05	1.44E-03
				7	6.67E-05	1.04E-03
				12	4.28E-05	5.07E-04
		800	1	2	3.60E-04	3.91E-03
				7	2.58E-04	3.42E-03
				12	1.83E-04	2.44E-03
			7	2	3.58E-04	4.64E-03
				7	2.60E-04	2.72E-03
				12	1.82E-04	2.24E-03
			13	2	3.59E-04	5.61E-03
				7	2.58E-04	4.21E-03
				12	1.85E-04	1.95E-03
		1400	1	2	5.76E-04	7.79E-03
				7	4.20E-04	4.93E-03
				12	2.96E-04	4.00E-03
			7	2	5.85E-04	6.73E-03
				7	4.27E-04	3.77E-03
				12	2.98E-04	3.59E-03
			13	2	5.83E-04	7.17E-03
				7	4.19E-04	5.35E-03
				12	3.00E-04	3.26E-03
	8	200	1	2	1.19E-04	1.26E-03
				7	7.74E-05	1.23E-03
				12	5.18E-05	4.91E-04
			7	2	1.23E-04	1.39E-03
				7	7.98E-05	1.42E-03
				12	5.27E-05	5.86E-04
			13	2	1.21E-04	1.59E-03
				7	8.42E-05	5.45E-04
				12	5.11E-05	4.58E-04
		800	1	2	4.26E-04	5.37E-03
				7	3.11E-04	3.42E-03
				12	2.22E-04	1.91E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	8	800	7	2	4.30E-04	5.80E-03
				7	3.14E-04	3.32E-03
				12	2.19E-04	3.04E-03
			13	2	4.35E-04	5.78E-03
				7	3.09E-04	4.87E-03
				12	2.21E-04	2.46E-03
		1400	1	2	6.87E-04	9.30E-03
				7	5.01E-04	6.16E-03
				12	3.55E-04	4.39E-03
			7	2	6.96E-04	9.28E-03
				7	5.13E-04	5.85E-03
				12	3.53E-04	5.10E-03
			13	2	6.95E-04	8.28E-03
				7	5.10E-04	6.12E-03
				12	3.56E-04	4.18E-03

Appendix DD. 1V:6H FC2

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	1.33E-06	1.74E-02
				7	9.60E-07	1.18E-02
				12	6.83E-07	8.03E-03
			7	2	1.46E-06	2.11E-02
				7	1.12E-06	1.38E-02
				12	7.02E-07	1.03E-02
			13	2	1.55E-06	1.94E-02
				7	1.08E-06	1.31E-02
				12	7.20E-07	1.02E-02
		800	1	2	4.50E-06	6.41E-02
				7	3.33E-06	4.58E-02
				12	2.32E-06	3.21E-02
			7	2	4.94E-06	6.41E-02
				7	3.46E-06	4.82E-02
				12	2.49E-06	3.30E-02
			13	2	4.89E-06	6.65E-02
				7	3.52E-06	4.75E-02
				12	2.47E-06	3.25E-02
		1400	1	2	8.02E-06	1.07E-01
				7	5.95E-06	7.89E-02
				12	4.06E-06	5.53E-02
			7	2	8.43E-06	1.10E-01
				7	6.03E-06	8.04E-02
				12	4.07E-06	5.91E-02
			13	2	7.96E-06	1.14E-01
				7	6.02E-06	7.81E-02
				12	4.31E-06	5.59E-02
	3	200	1	2	1.43E-06	1.93E-02
				7	1.02E-06	1.37E-02
				12	7.57E-07	8.95E-03
			7	2	1.76E-06	2.17E-02
				7	1.17E-06	1.56E-02
				12	8.23E-07	1.16E-02
			13	2	1.81E-06	2.14E-02
				7	1.13E-06	1.63E-02
				12	8.32E-07	1.05E-02
		800	1	2	5.10E-06	7.19E-02
				7	3.73E-06	5.27E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	2.72E-06	3.53E-02
			7	2	5.29E-06	7.68E-02
				7	3.98E-06	5.30E-02
				12	2.74E-06	3.69E-02
			13	2	5.37E-06	7.36E-02
				7	3.83E-06	5.45E-02
				12	2.84E-06	3.65E-02
		1400	1	2	8.98E-06	1.22E-01
				7	6.49E-06	8.85E-02
				12	4.54E-06	6.52E-02
			7	2	9.19E-06	1.25E-01
				7	6.69E-06	9.00E-02
				12	4.78E-06	6.46E-02
			13	2	9.31E-06	1.25E-01
				7	6.65E-06	9.11E-02
				12	4.84E-06	6.39E-02
	6	200	1	2	1.89E-06	2.64E-02
				7	1.44E-06	1.76E-02
				12	9.45E-07	1.27E-02
			7	2	2.21E-06	3.01E-02
				7	1.51E-06	2.17E-02
				12	1.05E-06	1.52E-02
			13	2	2.22E-06	3.17E-02
				7	1.53E-06	2.14E-02
				12	1.14E-06	1.42E-02
		800	1	2	7.00E-06	9.37E-02
				7	5.11E-06	6.65E-02
				12	3.49E-06	4.83E-02
			7	2	7.20E-06	9.91E-02
				7	5.35E-06	6.98E-02
				12	3.79E-06	4.94E-02
			13	2	7.20E-06	1.00E-01
				7	5.39E-06	6.82E-02
				12	3.59E-06	5.03E-02
		1400	1	2	1.23E-05	1.59E-01
				7	8.91E-06	1.17E-01
				12	6.33E-06	8.28E-02
			7	2	1.23E-05	1.65E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	9.09E-06	1.18E-01
				12	6.51E-06	8.51E-02
			13	2	1.26E-05	1.62E-01
				7	9.07E-06	1.21E-01
				12	6.16E-06	8.71E-02
3	0	200	1	2	1.03E-06	1.41E-02
				7	5.65E-07	8.74E-03
				12	3.61E-07	5.82E-03
			7	2	1.09E-06	1.34E-02
				7	6.52E-07	7.87E-03
				12	3.95E-07	5.38E-03
			13	2	1.03E-06	1.43E-02
				7	5.70E-07	9.05E-03
				12	4.00E-07	5.36E-03
		800	1	2	4.23E-06	5.44E-02
				7	2.87E-06	4.05E-02
				12	1.97E-06	2.75E-02
			7	2	4.10E-06	5.60E-02
				7	2.98E-06	3.90E-02
				12	1.99E-06	2.84E-02
			13	2	4.23E-06	5.55E-02
				7	3.12E-06	3.81E-02
				12	1.97E-06	2.83E-02
		1400	1	2	6.89E-06	9.66E-02
				7	5.01E-06	6.94E-02
				12	3.58E-06	4.67E-02
			7	2	7.02E-06	9.44E-02
				7	4.96E-06	6.82E-02
				12	3.54E-06	4.76E-02
			13	2	6.82E-06	9.57E-02
				7	5.10E-06	6.66E-02
				12	3.61E-06	4.66E-02
	3	200	1	2	1.07E-06	1.72E-02
				7	6.81E-07	9.28E-03
				12	4.53E-07	5.82E-03
			7	2	1.28E-06	1.49E-02
				7	6.87E-07	1.00E-02
				12	4.93E-07	6.01E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	1.09E-06	1.69E-02
				7	6.94E-07	9.85E-03
				12	4.17E-07	6.33E-03
		800	1	2	4.69E-06	6.36E-02
				7	3.28E-06	4.50E-02
				12	2.23E-06	3.15E-02
			7	2	4.52E-06	6.55E-02
				7	3.38E-06	4.50E-02
				12	2.32E-06	3.12E-02
			13	2	4.57E-06	6.36E-02
				7	3.21E-06	4.74E-02
				12	2.24E-06	3.14E-02
		1400	1	2	7.89E-06	1.05E-01
				7	5.64E-06	7.63E-02
				12	4.00E-06	5.32E-02
			7	2	7.83E-06	1.06E-01
				7	5.79E-06	7.50E-02
				12	3.84E-06	5.49E-02
			13	2	7.78E-06	1.07E-01
				7	5.86E-06	7.40E-02
				12	3.95E-06	5.36E-02
	6	200	1	2	1.48E-06	2.12E-02
				7	9.48E-07	1.20E-02
				12	5.96E-07	7.74E-03
			7	2	1.63E-06	2.04E-02
				7	9.20E-07	1.35E-02
				12	5.82E-07	8.70E-03
			13	2	1.57E-06	2.30E-02
				7	9.69E-07	1.29E-02
				12	6.01E-07	8.03E-03
		800	1	2	6.24E-06	8.27E-02
				7	4.58E-06	5.79E-02
				12	2.91E-06	4.26E-02
			7	2	6.44E-06	8.17E-02
				7	4.49E-06	5.84E-02
				12	3.08E-06	4.05E-02
			13	2	6.04E-06	8.63E-02
				7	4.35E-06	6.02E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	3.19E-06	4.01E-02
		1400	1	2	1.03E-05	1.42E-01
				7	7.49E-06	9.98E-02
				12	5.38E-06	7.04E-02
			7	2	1.07E-05	1.41E-01
				7	7.63E-06	1.01E-01
				12	5.24E-06	7.16E-02
			13	2	1.04E-05	1.42E-01
				7	7.44E-06	1.03E-01
				12	5.25E-06	7.19E-02
6	0	200	1	2	3.28E-06	3.96E-02
				7	2.04E-06	2.73E-02
				12	1.25E-06	1.76E-02
			7	2	3.07E-06	4.16E-02
				7	1.92E-06	2.77E-02
				12	1.35E-06	1.63E-02
			13	2	3.12E-06	4.15E-02
				7	2.06E-06	2.65E-02
				12	1.25E-06	1.77E-02
		800	1	2	1.24E-05	1.61E-01
				7	8.97E-06	1.14E-01
				12	6.28E-06	7.84E-02
			7	2	1.25E-05	1.61E-01
				7	8.87E-06	1.16E-01
				12	6.21E-06	8.39E-02
			13	2	1.19E-05	1.72E-01
				7	8.89E-06	1.15E-01
				12	6.27E-06	8.05E-02
		1400	1	2	2.01E-05	2.68E-01
				7	1.44E-05	1.91E-01
				12	1.02E-05	1.34E-01
			7	2	2.00E-05	2.76E-01
				7	1.38E-05	2.00E-01
				12	1.01E-05	1.37E-01
			13	2	2.02E-05	2.66E-01
				7	1.46E-05	1.89E-01
				12	9.64E-06	1.39E-01
	3	200	1	2	3.22E-06	4.81E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	2.32E-06	2.91E-02
				12	1.37E-06	1.97E-02
			7	2	3.77E-06	4.39E-02
				7	2.38E-06	3.04E-02
				12	1.28E-06	2.13E-02
			13	2	3.28E-06	4.77E-02
				7	2.06E-06	3.05E-02
				12	1.45E-06	1.90E-02
		800	1	2	1.39E-05	1.85E-01
				7	9.89E-06	1.30E-01
				12	6.86E-06	9.23E-02
			7	2	1.41E-05	1.79E-01
				7	9.69E-06	1.31E-01
				12	6.88E-06	9.19E-02
			13	2	1.36E-05	1.90E-01
				7	1.02E-05	1.31E-01
				12	7.07E-06	8.94E-02
		1400	1	2	2.26E-05	2.97E-01
				7	1.64E-05	2.17E-01
				12	1.15E-05	1.55E-01
			7	2	2.20E-05	3.08E-01
				7	1.63E-05	2.17E-01
				12	1.11E-05	1.55E-01
			13	2	2.21E-05	3.13E-01
				7	1.57E-05	2.24E-01
				12	1.11E-05	1.56E-01
	6	200	1	2	4.34E-06	6.46E-02
				7	2.89E-06	3.92E-02
				12	1.91E-06	2.68E-02
			7	2	4.98E-06	5.81E-02
				7	3.22E-06	3.96E-02
				12	2.14E-06	2.31E-02
			13	2	4.83E-06	5.85E-02
				7	2.93E-06	4.08E-02
				12	1.97E-06	2.63E-02
		800	1	2	1.83E-05	2.52E-01
				7	1.30E-05	1.75E-01
				12	9.09E-06	1.26E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	1.86E-05	2.43E-01
				7	1.33E-05	1.77E-01
				12	9.23E-06	1.22E-01
			13	2	1.84E-05	2.51E-01
				7	1.29E-05	1.80E-01
				12	9.39E-06	1.18E-01
		1400	1	2	2.98E-05	4.08E-01
				7	2.16E-05	2.94E-01
				12	1.56E-05	1.99E-01
			7	2	3.02E-05	4.12E-01
				7	2.10E-05	2.90E-01
				12	1.53E-05	2.01E-01
			13	2	3.03E-05	3.96E-01
				7	2.15E-05	2.90E-01
				12	1.48E-05	2.08E-01

Appendix EE. 1V:6H FC3

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	3.65E-06	0.00
				7	2.55E-06	0.00
				12	2.07E-06	0.00
			7	2	4.58E-06	0.00
				7	3.59E-06	0.00
				12	2.99E-06	0.00
			13	2	4.79E-06	0.00
				7	3.82E-06	0.00
				12	2.99E-06	0.00
		800	1	2	1.40E-05	0.00
				7	1.13E-05	0.00
				12	8.91E-06	0.00
			7	2	1.51E-05	0.00
				7	1.18E-05	0.00
				12	9.88E-06	0.00
			13	2	1.54E-05	0.00
				7	1.21E-05	0.00
				12	9.93E-06	0.00
		1400	1	2	2.47E-05	0.00
				7	1.94E-05	0.00
				12	1.59E-05	0.00
			7	2	2.56E-05	0.00
				7	2.06E-05	0.00
				12	1.68E-05	0.00
			13	2	2.58E-05	0.00
				7	2.06E-05	0.00
				12	1.70E-05	0.00
	2	200	1	2	3.47E-06	0.00
				7	2.58E-06	0.00
				12	2.08E-06	0.00
			7	2	4.63E-06	0.00
				7	3.56E-06	0.00
				12	2.95E-06	0.00
			13	2	4.81E-06	0.00
				7	3.78E-06	0.00
				12	2.96E-06	0.00
		800	1	2	1.42E-05	0.00
				7	1.10E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	2	800	1	12	9.03E-06	0.00
			7	2	1.50E-05	0.00
				7	1.21E-05	0.00
				12	9.69E-06	0.00
			13	2	1.52E-05	0.00
				7	1.20E-05	0.00
				12	1.00E-05	0.00
		1400	1	2	2.50E-05	0.00
				7	1.96E-05	0.00
				12	1.58E-05	0.00
			7	2	2.56E-05	0.00
				7	2.04E-05	0.00
				12	1.68E-05	0.00
			13	2	2.56E-05	0.00
				7	2.07E-05	0.00
				12	1.70E-05	0.00
	3	200	1	2	3.96E-06	0.00
				7	3.05E-06	0.00
				12	2.28E-06	0.00
			7	2	5.18E-06	0.00
				7	4.07E-06	0.00
				12	3.29E-06	0.00
			13	2	5.47E-06	0.00
				7	4.21E-06	0.00
				12	3.36E-06	0.00
		800	1	2	1.58E-05	0.00
				7	1.23E-05	0.00
				12	9.93E-06	0.00
			7	2	1.73E-05	0.00
				7	1.34E-05	0.00
				12	1.10E-05	0.00
			13	2	1.76E-05	0.00
				7	1.36E-05	0.00
				12	1.10E-05	0.00
		1400	1	2	2.82E-05	0.00
				7	2.21E-05	0.00
				12	1.79E-05	0.00
			7	2	2.92E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	1400	7	7	2.30E-05	0.00
				12	1.87E-05	0.00
			13	2	2.93E-05	0.00
				7	2.33E-05	0.00
				12	1.89E-05	0.00
2	0	200	1	2	2.73E-06	0.00
				7	1.79E-06	0.00
				12	1.33E-06	0.00
			7	2	3.05E-06	0.00
				7	2.10E-06	0.00
				12	1.53E-06	0.00
			13	2	3.17E-06	0.00
				7	2.25E-06	0.00
				12	1.61E-06	0.00
		800	1	2	1.25E-05	0.00
				7	9.58E-06	0.00
				12	7.56E-06	0.00
			7	2	1.29E-05	0.00
				7	1.01E-05	0.00
				12	7.92E-06	0.00
			13	2	1.30E-05	0.00
				7	1.01E-05	0.00
				12	8.00E-06	0.00
		1400	1	2	2.19E-05	0.00
				7	1.70E-05	0.00
				12	1.37E-05	0.00
			7	2	2.23E-05	0.00
				7	1.73E-05	0.00
				12	1.40E-05	0.00
			13	2	2.22E-05	0.00
				7	1.74E-05	0.00
				12	1.43E-05	0.00
	2	200	1	2	2.66E-06	0.00
				7	1.90E-06	0.00
				12	1.26E-06	0.00
			7	2	2.96E-06	0.00
				7	2.13E-06	0.00
				12	1.60E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	2	200	13	2	3.23E-06	0.00
				7	2.23E-06	0.00
				12	1.55E-06	0.00
		800	1	2	1.25E-05	0.00
				7	9.67E-06	0.00
				12	7.62E-06	0.00
			7	2	1.31E-05	0.00
				7	9.89E-06	0.00
				12	7.98E-06	0.00
			13	2	1.28E-05	0.00
				7	9.93E-06	0.00
				12	7.98E-06	0.00
		1400	1	2	2.17E-05	0.00
				7	1.72E-05	0.00
				12	1.37E-05	0.00
			7	2	2.21E-05	0.00
				7	1.72E-05	0.00
				12	1.42E-05	0.00
			13	2	2.24E-05	0.00
				7	1.74E-05	0.00
				12	1.41E-05	0.00
	3	200	1	2	3.08E-06	0.00
				7	1.98E-06	0.00
				12	1.45E-06	0.00
			7	2	3.42E-06	0.00
				7	2.38E-06	0.00
				12	1.77E-06	0.00
			13	2	3.62E-06	0.00
				7	2.52E-06	0.00
				12	1.76E-06	0.00
		800	1	2	1.39E-05	0.00
				7	1.08E-05	0.00
				12	8.54E-06	0.00
			7	2	1.43E-05	0.00
				7	1.12E-05	0.00
				12	8.99E-06	0.00
			13	2	1.46E-05	0.00
				7	1.12E-05	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	3	800	13	12	8.88E-06	0.00
		1400	1	2	2.45E-05	0.00
				7	1.92E-05	0.00
				12	1.56E-05	0.00
			7	2	2.49E-05	0.00
				7	1.95E-05	0.00
				12	1.59E-05	0.00
			13	2	2.48E-05	0.00
				7	1.92E-05	0.00
				12	1.58E-05	0.00
3	0	200	1	2	3.08E-06	0.00
				7	1.90E-06	0.00
				12	1.37E-06	0.00
			7	2	3.21E-06	0.00
				7	2.07E-06	0.00
				12	1.55E-06	0.00
			13	2	3.34E-06	0.00
				7	2.18E-06	0.00
				12	1.59E-06	0.00
		800	1	2	1.34E-05	0.00
				7	1.03E-05	0.00
				12	7.96E-06	0.00
			7	2	1.36E-05	0.00
				7	1.05E-05	0.00
				12	8.22E-06	0.00
			13	2	1.36E-05	0.00
				7	1.06E-05	0.00
				12	8.37E-06	0.00
		1400	1	2	2.30E-05	0.00
				7	1.78E-05	0.00
				12	1.44E-05	0.00
			7	2	2.27E-05	0.00
				7	1.79E-05	0.00
				12	1.45E-05	0.00
			13	2	2.33E-05	0.00
				7	1.79E-05	0.00
				12	1.44E-05	0.00
	2	200	1	2	3.04E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	2	200	1	7	1.97E-06	0.00
				12	1.45E-06	0.00
			7	2	3.25E-06	0.00
				7	2.09E-06	0.00
				12	1.55E-06	0.00
			13	2	3.32E-06	0.00
				7	2.15E-06	0.00
				12	1.64E-06	0.00
		800	1	2	1.34E-05	0.00
				7	1.03E-05	0.00
				12	8.12E-06	0.00
			7	2	1.37E-05	0.00
				7	1.04E-05	0.00
				12	8.08E-06	0.00
			13	2	1.38E-05	0.00
				7	1.05E-05	0.00
				12	8.29E-06	0.00
		1400	1	2	2.28E-05	0.00
				7	1.78E-05	0.00
				12	1.43E-05	0.00
			7	2	2.29E-05	0.00
				7	1.78E-05	0.00
				12	1.44E-05	0.00
			13	2	2.32E-05	0.00
				7	1.80E-05	0.00
				12	1.43E-05	0.00
	3	200	1	2	3.49E-06	0.00
				7	2.15E-06	0.00
				12	1.61E-06	0.00
			7	2	3.63E-06	0.00
				7	2.36E-06	0.00
				12	1.79E-06	0.00
			13	2	4.02E-06	0.00
				7	2.40E-06	0.00
				12	1.86E-06	0.00
		800	1	2	1.51E-05	0.00
				7	1.14E-05	0.00
				12	9.07E-06	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	800	7	2	1.52E-05	0.00
				7	1.16E-05	0.00
				12	9.32E-06	0.00
			13	2	1.54E-05	0.00
				7	1.18E-05	0.00
				12	9.09E-06	0.00
		1400	1	2	2.56E-05	0.00
				7	1.98E-05	0.00
				12	1.61E-05	0.00
			7	2	2.57E-05	0.00
				7	2.00E-05	0.00
				12	1.62E-05	0.00
			13	2	2.63E-05	0.00
				7	2.01E-05	0.00
				12	1.63E-05	0.00

Appendix FF. 1V:6H FC4

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	4.16E-06	3.27E-03
				7	2.87E-06	5.66E-03
				12	2.36E-06	3.50E-03
			7	2	5.60E-06	5.44E-03
				7	4.38E-06	4.66E-03
				12	3.56E-06	4.77E-03
			13	2	5.53E-06	8.75E-03
				7	4.54E-06	4.54E-03
				12	3.64E-06	4.32E-03
		800	1	2	1.50E-05	1.73E-02
				7	1.16E-05	1.51E-02
				12	9.74E-06	9.90E-03
			7	2	1.63E-05	1.97E-02
				7	1.29E-05	1.66E-02
				12	1.05E-05	1.49E-02
			13	2	1.62E-05	2.13E-02
				7	1.31E-05	1.87E-02
				12	1.05E-05	1.41E-02
		1400	1	2	2.57E-05	3.36E-02
				7	2.04E-05	2.72E-02
				12	1.69E-05	1.77E-02
			7	2	2.66E-05	3.65E-02
				7	2.12E-05	3.15E-02
				12	1.79E-05	2.33E-02
			13	2	2.71E-05	3.27E-02
				7	2.15E-05	2.93E-02
				12	1.82E-05	1.82E-02
	3	200	1	2	4.55E-06	6.11E-03
				7	3.20E-06	5.51E-03
				12	2.77E-06	3.64E-03
			7	2	6.09E-06	6.28E-03
				7	4.87E-06	5.83E-03
				12	4.15E-06	3.63E-03
			13	2	6.24E-06	8.05E-03
				7	5.05E-06	6.47E-03
				12	4.11E-06	4.36E-03
		800	1	2	1.70E-05	1.93E-02
				7	1.37E-05	1.08E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	1.06E-05	1.22E-02
			7	2	1.80E-05	2.36E-02
				7	1.44E-05	2.09E-02
				12	1.19E-05	1.62E-02
			13	2	1.86E-05	2.25E-02
				7	1.51E-05	1.37E-02
				12	1.19E-05	1.40E-02
		1400	1	2	2.84E-05	3.92E-02
				7	2.32E-05	2.54E-02
				12	1.89E-05	2.12E-02
			7	2	3.04E-05	3.51E-02
				7	2.44E-05	3.02E-02
				12	1.99E-05	2.87E-02
			13	2	3.06E-05	3.76E-02
				7	2.43E-05	3.29E-02
				12	1.98E-05	2.78E-02
	6	200	1	2	5.82E-06	8.18E-03
				7	4.50E-06	7.46E-03
				12	3.68E-06	4.91E-03
			7	2	8.31E-06	9.11E-03
				7	6.56E-06	8.50E-03
				12	5.18E-06	8.87E-03
			13	2	8.71E-06	1.07E-02
				7	6.67E-06	1.02E-02
				12	5.48E-06	7.56E-03
		800	1	2	2.22E-05	2.46E-02
				7	1.77E-05	2.08E-02
				12	1.43E-05	1.71E-02
			7	2	2.40E-05	3.48E-02
				7	1.91E-05	2.51E-02
				12	1.56E-05	1.99E-02
			13	2	2.45E-05	3.31E-02
				7	1.97E-05	2.47E-02
				12	1.59E-05	1.98E-02
		1400	1	2	3.87E-05	4.40E-02
				7	3.01E-05	4.17E-02
				12	2.46E-05	3.59E-02
			7	2	4.15E-05	4.09E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	3.23E-05	4.19E-02
				12	2.69E-05	2.80E-02
			13	2	4.06E-05	5.79E-02
				7	3.18E-05	5.21E-02
				12	2.72E-05	3.16E-02
3	0	200	1	2	3.12E-06	3.01E-03
				7	1.93E-06	1.82E-03
				12	1.38E-06	1.77E-03
			7	2	3.19E-06	5.02E-03
				7	2.11E-06	2.48E-03
				12	1.59E-06	1.09E-03
			13	2	3.35E-06	4.06E-03
				7	2.03E-06	3.40E-03
				12	1.55E-06	1.50E-03
		800	1	2	1.29E-05	1.44E-02
				7	1.04E-05	8.79E-03
				12	7.82E-06	1.01E-02
			7	2	1.27E-05	1.79E-02
				7	1.04E-05	1.10E-02
				12	7.78E-06	1.11E-02
			13	2	1.30E-05	1.87E-02
				7	9.77E-06	1.32E-02
				12	7.81E-06	1.04E-02
		1400	1	2	2.11E-05	3.18E-02
				7	1.67E-05	2.39E-02
				12	1.39E-05	1.32E-02
			7	2	2.21E-05	2.60E-02
				7	1.69E-05	2.46E-02
				12	1.40E-05	1.57E-02
			13	2	2.18E-05	2.66E-02
				7	1.72E-05	2.21E-02
				12	1.40E-05	1.56E-02
	3	200	1	2	3.69E-06	2.33E-03
				7	2.16E-06	2.80E-03
				12	1.62E-06	1.50E-03
			7	2	3.61E-06	3.30E-03
				7	2.43E-06	2.14E-03
				12	1.73E-06	1.78E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	3.78E-06	4.00E-03
				7	2.33E-06	4.06E-03
				12	1.81E-06	2.11E-03
		800	1	2	1.44E-05	1.85E-02
				7	1.11E-05	1.54E-02
				12	8.88E-06	1.13E-02
			7	2	1.42E-05	2.34E-02
				7	1.12E-05	1.38E-02
				12	8.63E-06	1.23E-02
			13	2	1.52E-05	1.58E-02
				7	1.14E-05	1.36E-02
				12	8.93E-06	1.15E-02
		1400	1	2	2.44E-05	3.05E-02
				7	1.93E-05	2.42E-02
				12	1.55E-05	1.83E-02
			7	2	2.48E-05	2.82E-02
				7	1.97E-05	2.19E-02
				12	1.55E-05	2.03E-02
			13	2	2.48E-05	2.75E-02
				7	1.92E-05	2.79E-02
				12	1.59E-05	2.14E-02
	6	200	1	2	4.66E-06	4.03E-03
				7	2.92E-06	4.34E-03
				12	2.01E-06	3.72E-03
			7	2	5.00E-06	4.06E-03
				7	2.98E-06	5.94E-03
				12	2.25E-06	3.20E-03
			13	2	5.05E-06	4.85E-03
				7	2.98E-06	6.38E-03
				12	2.25E-06	3.20E-03
		800	1	2	1.90E-05	2.64E-02
				7	1.47E-05	1.96E-02
				12	1.18E-05	1.23E-02
			7	2	1.97E-05	2.12E-02
				7	1.48E-05	2.32E-02
				12	1.19E-05	1.34E-02
			13	2	1.98E-05	2.29E-02
				7	1.53E-05	1.94E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	1.19E-05	1.45E-02
		1400	1	2	3.20E-05	5.24E-02
				7	2.56E-05	3.20E-02
				12	2.04E-05	2.57E-02
			7	2	3.36E-05	3.10E-02
				7	2.52E-05	3.66E-02
				12	2.08E-05	2.58E-02
			13	2	3.31E-05	3.99E-02
				7	2.64E-05	2.70E-02
				12	2.09E-05	2.61E-02
6	0	200	1	2	9.53E-06	8.76E-03
				7	5.79E-06	1.26E-02
				12	4.85E-06	2.67E-03
			7	2	9.34E-06	8.87E-03
				7	6.16E-06	8.32E-03
				12	4.56E-06	3.46E-03
			13	2	8.76E-06	1.52E-02
				7	6.54E-06	6.16E-03
				12	4.83E-06	4.29E-03
		800	1	2	3.69E-05	5.05E-02
				7	2.85E-05	4.30E-02
				12	2.29E-05	3.42E-02
			7	2	3.62E-05	6.30E-02
				7	2.92E-05	3.66E-02
				12	2.39E-05	2.42E-02
			13	2	3.74E-05	5.09E-02
				7	2.90E-05	3.79E-02
				12	2.38E-05	2.88E-02
		1400	1	2	6.25E-05	6.11E-02
				7	4.82E-05	5.90E-02
				12	3.95E-05	4.26E-02
			7	2	6.23E-05	7.10E-02
				7	4.81E-05	6.00E-02
				12	3.94E-05	4.46E-02
			13	2	6.31E-05	6.24E-02
				7	4.79E-05	6.50E-02
				12	3.94E-05	3.49E-02
	3	200	1	2	1.01E-05	1.31E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	7.74E-06	2.78E-03
				12	5.48E-06	1.44E-03
			7	2	1.02E-05	1.34E-02
				7	7.03E-06	9.69E-03
				12	5.03E-06	8.82E-03
			13	2	1.05E-05	9.99E-03
				7	7.84E-06	5.02E-03
				12	4.91E-06	8.63E-03
		800	1	2	4.35E-05	4.97E-02
				7	3.30E-05	4.43E-02
				12	2.63E-05	3.40E-02
			7	2	4.18E-05	6.14E-02
				7	3.21E-05	4.95E-02
				12	2.66E-05	2.70E-02
			13	2	4.25E-05	5.07E-02
				7	3.34E-05	3.31E-02
				12	2.64E-05	3.50E-02
		1400	1	2	6.91E-05	8.32E-02
				7	5.38E-05	7.26E-02
				12	4.34E-05	5.65E-02
			7	2	6.98E-05	8.35E-02
				7	5.50E-05	6.02E-02
				12	4.47E-05	4.30E-02
			13	2	6.78E-05	9.15E-02
				7	5.37E-05	5.98E-02
				12	4.19E-05	7.11E-02
	6	200	1	2	1.44E-05	1.03E-02
				7	9.98E-06	7.28E-03
				12	6.97E-06	5.79E-03
			7	2	1.39E-05	1.71E-02
				7	9.43E-06	1.23E-02
				12	6.33E-06	1.15E-02
			13	2	1.40E-05	1.56E-02
				7	9.04E-06	1.61E-02
				12	7.79E-06	2.11E-03
		800	1	2	5.65E-05	6.99E-02
				7	4.49E-05	4.27E-02
				12	3.56E-05	4.38E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	5.58E-05	7.72E-02
				7	4.48E-05	5.59E-02
				12	3.64E-05	2.92E-02
			13	2	5.68E-05	6.64E-02
				7	4.60E-05	3.48E-02
				12	3.59E-05	3.87E-02
		1400	1	2	9.19E-05	1.12E-01
				7	6.96E-05	1.05E-01
				12	5.89E-05	5.54E-02
			7	2	9.05E-05	1.27E-01
				7	7.17E-05	8.94E-02
				12	5.82E-05	5.91E-02
			13	2	9.06E-05	1.22E-01
				7	7.19E-05	9.85E-02
				12	5.84E-05	6.74E-02

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Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.54E-06	2.30E-03
				7	1.89E-06	1.38E-03
				12	1.44E-06	2.14E-03
			7	2	3.33E-06	3.32E-03
				7	2.56E-06	2.98E-03
				12	2.06E-06	2.31E-03
			13	2	3.42E-06	2.99E-03
				7	2.73E-06	1.97E-03
				12	2.12E-06	2.37E-03
		800	1	2	9.81E-06	8.74E-03
				7	7.51E-06	8.68E-03
				12	6.18E-06	6.16E-03
			7	2	1.03E-05	1.22E-02
				7	8.22E-06	9.12E-03
				12	6.80E-06	6.52E-03
			13	2	1.04E-05	1.12E-02
				7	8.34E-06	1.06E-02
				12	6.77E-06	8.01E-03
		1400	1	2	1.72E-05	1.51E-02
				7	1.34E-05	1.38E-02
				12	1.08E-05	1.29E-02
			7	2	1.77E-05	1.82E-02
				7	1.40E-05	1.65E-02
				12	1.14E-05	1.47E-02
			13	2	1.78E-05	1.83E-02
				7	1.45E-05	1.17E-02
				12	1.16E-05	1.38E-02
	3	200	1	2	2.87E-06	3.01E-03
				7	2.21E-06	1.54E-03
				12	1.69E-06	1.39E-03
			7	2	3.66E-06	3.17E-03
				7	2.88E-06	2.82E-03
				12	2.41E-06	1.49E-03
			13	2	3.76E-06	5.72E-03
				7	2.98E-06	3.18E-03
				12	2.47E-06	2.10E-03
		800	1	2	1.08E-05	1.43E-02
				7	8.53E-06	1.06E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	6.97E-06	7.05E-03
			7	2	1.15E-05	1.48E-02
				7	9.19E-06	1.26E-02
				12	7.60E-06	8.81E-03
			13	2	1.17E-05	1.49E-02
				7	9.45E-06	8.53E-03
				12	7.56E-06	8.81E-03
		1400	1	2	1.90E-05	2.09E-02
				7	1.54E-05	1.18E-02
				12	1.26E-05	9.81E-03
			7	2	1.98E-05	2.36E-02
				7	1.60E-05	1.30E-02
				12	1.32E-05	1.10E-02
			13	2	2.05E-05	1.77E-02
				7	1.59E-05	1.70E-02
				12	1.31E-05	1.27E-02
	6	200	1	2	3.70E-06	4.42E-03
				7	2.85E-06	2.62E-03
				12	2.31E-06	1.58E-03
			7	2	5.00E-06	4.57E-03
				7	3.78E-06	5.17E-03
				12	3.12E-06	3.94E-03
			13	2	5.21E-06	5.40E-03
				7	4.02E-06	4.05E-03
				12	3.11E-06	4.37E-03
		800	1	2	1.49E-05	1.17E-02
				7	1.13E-05	1.55E-02
				12	9.47E-06	7.11E-03
			7	2	1.56E-05	1.82E-02
				7	1.27E-05	1.04E-02
				12	1.03E-05	1.03E-02
			13	2	1.58E-05	1.97E-02
				7	1.27E-05	1.17E-02
				12	1.05E-05	7.52E-03
		1400	1	2	2.53E-05	2.86E-02
				7	2.03E-05	1.65E-02
				12	1.62E-05	2.15E-02
			7	2	2.68E-05	2.01E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	2.15E-05	1.62E-02
				12	1.70E-05	2.12E-02
			13	2	2.75E-05	1.61E-02
				7	2.13E-05	2.08E-02
				12	1.76E-05	1.53E-02
4	0	200	1	2	4.13E-06	6.38E-03
				7	3.21E-06	1.87E-03
				12	2.11E-06	3.48E-03
			7	2	4.23E-06	7.34E-03
				7	3.09E-06	3.95E-03
				12	2.21E-06	2.45E-03
			13	2	4.37E-06	5.81E-03
				7	3.19E-06	1.96E-03
				12	2.21E-06	3.39E-03
		800	1	2	1.84E-05	1.53E-02
				7	1.42E-05	1.68E-02
				12	1.16E-05	1.04E-02
			7	2	1.86E-05	1.59E-02
				7	1.50E-05	9.81E-03
				12	1.14E-05	1.29E-02
			13	2	1.87E-05	1.75E-02
				7	1.46E-05	1.37E-02
				12	1.20E-05	9.72E-03
		1400	1	2	3.19E-05	3.95E-02
				7	2.54E-05	2.18E-02
				12	2.02E-05	2.16E-02
			7	2	3.27E-05	2.61E-02
				7	2.53E-05	2.44E-02
				12	2.01E-05	2.42E-02
			13	2	3.14E-05	4.52E-02
				7	2.55E-05	2.26E-02
				12	2.04E-05	2.20E-02
	3	200	1	2	4.91E-06	6.02E-03
				7	3.59E-06	1.50E-03
				12	2.44E-06	4.34E-03
			7	2	4.91E-06	5.78E-03
				7	3.67E-06	1.84E-03
				12	2.44E-06	3.73E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	4.93E-06	6.46E-03
				7	3.74E-06	1.87E-03
				12	2.73E-06	1.16E-03
		800	1	2	2.04E-05	2.50E-02
				7	1.63E-05	1.57E-02
				12	1.28E-05	1.26E-02
			7	2	1.99E-05	2.90E-02
				7	1.62E-05	1.74E-02
				12	1.30E-05	1.34E-02
			13	2	2.10E-05	1.93E-02
				7	1.67E-05	1.12E-02
				12	1.32E-05	1.26E-02
		1400	1	2	3.61E-05	3.41E-02
				7	2.77E-05	3.66E-02
				12	2.29E-05	2.09E-02
			7	2	3.64E-05	3.31E-02
				7	2.85E-05	2.41E-02
				12	2.29E-05	2.40E-02
			13	2	3.59E-05	4.33E-02
				7	2.87E-05	2.83E-02
				12	2.33E-05	2.07E-02
	6	200	1	2	6.87E-06	3.63E-03
				7	4.69E-06	2.19E-03
				12	3.44E-06	2.95E-03
			7	2	6.20E-06	1.25E-02
				7	4.84E-06	2.69E-03
				12	3.35E-06	3.88E-03
			13	2	7.00E-06	3.35E-03
				7	4.52E-06	7.16E-03
				12	3.49E-06	2.09E-03
		800	1	2	2.82E-05	2.13E-02
				7	2.12E-05	2.91E-02
				12	1.71E-05	1.83E-02
			7	2	2.74E-05	2.97E-02
				7	2.10E-05	3.16E-02
				12	1.70E-05	1.75E-02
			13	2	2.84E-05	2.18E-02
				7	2.15E-05	2.18E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	1.68E-05	2.49E-02
		1400	1	2	4.96E-05	2.53E-02
				7	3.78E-05	3.48E-02
				12	3.06E-05	2.98E-02
			7	2	4.79E-05	4.68E-02
				7	3.74E-05	4.34E-02
				12	3.08E-05	2.89E-02
			13	2	4.91E-05	3.59E-02
				7	3.84E-05	3.26E-02
				12	3.05E-05	3.34E-02
8	0	200	1	2	6.51E-06	2.20E-03
				7	4.20E-06	3.53E-03
				12	2.80E-06	4.31E-03
			7	2	6.17E-06	7.25E-03
				7	4.19E-06	5.20E-03
				12	2.69E-06	5.26E-03
			13	2	6.35E-06	6.15E-03
				7	4.26E-06	2.77E-03
				12	2.93E-06	2.41E-03
		800	1	2	2.37E-05	3.00E-02
				7	1.88E-05	1.83E-02
				12	1.52E-05	1.05E-02
			7	2	2.51E-05	1.28E-02
				7	1.85E-05	2.19E-02
				12	1.51E-05	1.42E-02
			13	2	2.43E-05	2.04E-02
				7	1.88E-05	1.84E-02
				12	1.44E-05	2.37E-02
		1400	1	2	3.81E-05	3.41E-02
				7	2.97E-05	3.15E-02
				12	2.38E-05	2.67E-02
			7	2	3.84E-05	3.59E-02
				7	3.01E-05	2.73E-02
				12	2.42E-05	2.14E-02
			13	2	3.85E-05	3.44E-02
				7	2.94E-05	3.42E-02
				12	2.35E-05	2.78E-02
	3	200	1	2	7.20E-06	6.16E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	5.02E-06	1.72E-03
				12	3.33E-06	2.01E-03
			7	2	7.06E-06	2.85E-03
				7	4.85E-06	4.02E-03
				12	3.14E-06	4.23E-03
			13	2	6.72E-06	8.82E-03
				7	4.74E-06	5.61E-03
				12	3.30E-06	2.87E-03
		800	1	2	2.66E-05	3.39E-02
				7	2.11E-05	2.14E-02
				12	1.68E-05	1.39E-02
			7	2	2.70E-05	2.96E-02
				7	2.03E-05	3.20E-02
				12	1.67E-05	2.03E-02
			13	2	2.70E-05	2.82E-02
				7	2.07E-05	2.51E-02
				12	1.68E-05	1.38E-02
		1400	1	2	4.23E-05	4.88E-02
				7	3.34E-05	3.26E-02
				12	2.73E-05	1.80E-02
			7	2	4.29E-05	3.80E-02
				7	3.40E-05	2.74E-02
				12	2.67E-05	3.17E-02
			13	2	4.30E-05	3.99E-02
				7	3.27E-05	4.19E-02
				12	2.70E-05	2.59E-02
	6	200	1	2	9.16E-06	1.19E-02
				7	6.33E-06	7.16E-03
				12	4.35E-06	4.75E-03
			7	2	9.79E-06	4.59E-03
				7	6.47E-06	2.60E-03
				12	4.19E-06	5.48E-03
			13	2	9.19E-06	1.26E-02
				7	6.16E-06	9.17E-03
				12	4.56E-06	1.86E-03
		800	1	2	3.66E-05	3.12E-02
				7	2.78E-05	3.14E-02
				12	2.24E-05	2.12E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	3.57E-05	3.96E-02
				7	2.74E-05	3.70E-02
				12	2.22E-05	2.55E-02
			13	2	3.65E-05	2.56E-02
				7	2.78E-05	2.96E-02
				12	2.23E-05	2.29E-02
		1400	1	2	5.81E-05	4.63E-02
				7	4.41E-05	5.79E-02
				12	3.60E-05	3.69E-02
			7	2	5.72E-05	4.95E-02
				7	4.37E-05	5.28E-02
				12	3.60E-05	3.59E-02
			13	2	5.75E-05	4.78E-02
				7	4.47E-05	4.16E-02
				12	3.53E-05	4.42E-02

Appendix HH. 1V:6H FC6

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	4.11E-05	6.07E-04
				7	2.79E-05	3.59E-04
				12	1.89E-05	3.29E-04
			7	2	4.54E-05	5.86E-04
				7	2.99E-05	5.08E-04
				12	2.17E-05	2.55E-04
			13	2	4.39E-05	7.87E-04
				7	3.09E-05	3.36E-04
				12	2.23E-05	1.31E-04
		800	1	2	1.46E-04	2.03E-03
				7	1.06E-04	1.30E-03
				12	7.61E-05	7.85E-04
			7	2	1.50E-04	1.98E-03
				7	1.08E-04	1.56E-03
				12	7.85E-05	4.51E-04
			13	2	1.52E-04	1.67E-03
				7	1.09E-04	1.52E-03
				12	7.81E-05	9.39E-04
		1400	1	2	2.58E-04	2.32E-03
				7	1.87E-04	2.29E-03
				12	1.32E-04	1.78E-03
			7	2	2.56E-04	3.83E-03
				7	1.89E-04	2.02E-03
				12	1.34E-04	1.96E-03
			13	2	2.61E-04	3.08E-03
				7	1.92E-04	1.94E-03
				12	1.35E-04	1.71E-03
	6	200	1	2	6.10E-05	5.34E-04
				7	4.24E-05	4.18E-04
				12	2.85E-05	4.12E-04
			7	2	6.35E-05	1.11E-03
				7	4.64E-05	6.24E-04
				12	3.16E-05	3.73E-04
			13	2	6.71E-05	6.88E-04
				7	4.49E-05	5.78E-04
				12	3.21E-05	3.79E-04
		800	1	2	2.24E-04	2.13E-03
				7	1.62E-04	2.05E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	800	1	12	1.10E-04	1.60E-03
			7	2	2.28E-04	2.67E-03
				7	1.62E-04	2.42E-03
				12	1.19E-04	9.31E-04
			13	2	2.25E-04	3.07E-03
				7	1.65E-04	1.98E-03
				12	1.16E-04	1.49E-03
		1400	1	2	3.84E-04	4.77E-03
				7	2.79E-04	3.14E-03
				12	1.97E-04	2.73E-03
			7	2	3.88E-04	4.68E-03
				7	2.84E-04	2.97E-03
				12	2.01E-04	2.88E-03
			13	2	3.86E-04	5.41E-03
				7	2.84E-04	2.98E-03
				12	1.99E-04	3.01E-03
	12	200	1	2	6.15E-05	7.58E-04
				7	4.36E-05	5.39E-04
				12	2.72E-05	8.67E-04
			7	2	6.87E-05	4.68E-04
				7	4.53E-05	5.93E-04
				12	3.26E-05	2.30E-04
			13	2	6.69E-05	8.39E-04
				7	4.76E-05	3.78E-04
				12	3.26E-05	2.52E-04
		800	1	2	2.22E-04	2.75E-03
				7	1.61E-04	2.21E-03
				12	1.14E-04	1.14E-03
			7	2	2.26E-04	3.20E-03
				7	1.64E-04	2.25E-03
				12	1.20E-04	8.72E-04
			13	2	2.22E-04	3.18E-03
				7	1.63E-04	2.78E-03
				12	1.18E-04	1.16E-03
		1400	1	2	3.76E-04	5.54E-03
				7	2.80E-04	3.61E-03
				12	2.02E-04	2.26E-03
			7	2	3.90E-04	4.79E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	12	1400	7	7	2.84E-04	3.30E-03
0	12	1400	7	12	2.02E-04	2.64E-03
0	12	1400	13	2	3.88E-04	4.54E-03
0	12	1400	13	7	2.82E-04	3.94E-03
0	12	1400	13	12	1.99E-04	2.85E-03
3	0	200	1	2	4.17E-05	3.85E-04
3	0	200	1	7	2.74E-05	2.09E-05
3	0	200	1	12	1.86E-05	8.22E-06
3	0	200	7	2	4.11E-05	7.79E-04
3	0	200	7	7	2.77E-05	3.14E-04
3	0	200	7	12	1.86E-05	1.20E-04
3	0	200	13	2	4.39E-05	3.54E-04
3	0	200	13	7	2.83E-05	1.15E-04
3	0	200	13	12	1.79E-05	2.26E-04
3	0	800	1	2	1.56E-04	1.37E-03
3	0	800	1	7	1.13E-04	1.05E-03
3	0	800	1	12	7.91E-05	6.65E-04
3	0	800	7	2	1.56E-04	1.93E-03
3	0	800	7	7	1.11E-04	1.60E-03
3	0	800	7	12	7.69E-05	1.27E-03
3	0	800	13	2	1.57E-04	1.81E-03
3	0	800	13	7	1.16E-04	7.99E-04
3	0	800	13	12	7.86E-05	9.93E-04
3	0	1400	1	2	2.65E-04	2.49E-03
3	0	1400	1	7	1.91E-04	2.07E-03
3	0	1400	1	12	1.36E-04	1.31E-03
3	0	1400	7	2	2.59E-04	3.75E-03
3	0	1400	7	7	1.93E-04	1.74E-03
3	0	1400	7	12	1.35E-04	1.76E-03
3	0	1400	13	2	2.65E-04	2.86E-03
3	0	1400	13	7	1.95E-04	1.64E-03
3	0	1400	13	12	1.37E-04	1.43E-03
3	6	200	1	2	6.13E-05	8.95E-04
3	6	200	1	7	3.92E-05	5.07E-04
3	6	200	1	12	2.61E-05	4.75E-04
3	6	200	7	2	6.34E-05	7.60E-04
3	6	200	7	7	3.97E-05	6.06E-04
3	6	200	7	12	2.80E-05	1.50E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	200	13	2	6.44E-05	6.69E-04
				7	4.05E-05	4.18E-04
				12	2.77E-05	3.02E-04
		800	1	2	2.33E-04	2.58E-03
				7	1.66E-04	2.32E-03
				12	1.20E-04	9.20E-04
			7	2	2.34E-04	2.77E-03
				7	1.71E-04	1.70E-03
				12	1.19E-04	1.35E-03
			13	2	2.35E-04	3.12E-03
				7	1.66E-04	1.94E-03
				12	1.18E-04	1.78E-03
		1400	1	2	3.91E-04	5.21E-03
				7	2.84E-04	3.90E-03
				12	2.04E-04	2.25E-03
			7	2	3.96E-04	4.51E-03
				7	2.85E-04	3.64E-03
				12	1.99E-04	3.00E-03
			13	2	3.98E-04	4.66E-03
				7	2.84E-04	3.61E-03
				12	2.03E-04	2.66E-03
	12	200	1	2	6.30E-05	7.21E-04
				7	3.94E-05	5.56E-04
				12	2.78E-05	2.01E-04
			7	2	6.43E-05	6.18E-04
				7	4.05E-05	5.36E-04
				12	2.70E-05	3.11E-04
			13	2	6.18E-05	9.00E-04
				7	3.88E-05	7.97E-04
				12	2.75E-05	4.01E-04
		800	1	2	2.30E-04	3.20E-03
				7	1.67E-04	1.89E-03
				12	1.19E-04	1.28E-03
			7	2	2.37E-04	2.47E-03
				7	1.66E-04	2.23E-03
				12	1.18E-04	1.40E-03
			13	2	2.31E-04	3.50E-03
				7	1.72E-04	1.83E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	12	800	13	12	1.16E-04	1.89E-03
		1400	1	2	3.92E-04	4.64E-03
				7	2.93E-04	2.39E-03
				12	2.01E-04	2.52E-03
			7	2	3.99E-04	3.99E-03
				7	2.89E-04	3.09E-03
				12	2.03E-04	1.84E-03
			13	2	3.88E-04	6.22E-03
				7	2.85E-04	3.58E-03
				12	2.03E-04	2.46E-03
6	0	200	1	2	1.21E-04	1.12E-03
				7	8.57E-05	4.78E-04
				12	5.67E-05	5.09E-04
			7	2	1.25E-04	2.34E-03
				7	8.54E-05	1.09E-03
				12	5.49E-05	1.25E-03
			13	2	1.27E-04	1.06E-03
				7	8.60E-05	1.09E-03
				12	5.63E-05	5.73E-04
		800	1	2	4.71E-04	4.36E-03
				7	3.40E-04	3.42E-03
				12	2.41E-04	1.97E-03
			7	2	4.59E-04	5.42E-03
				7	3.37E-04	4.65E-03
				12	2.37E-04	2.69E-03
			13	2	4.78E-04	3.99E-03
				7	3.33E-04	5.41E-03
				12	2.41E-04	2.45E-03
		1400	1	2	7.67E-04	9.16E-03
				7	5.49E-04	6.29E-03
				12	3.89E-04	4.86E-03
			7	2	7.87E-04	6.49E-03
				7	5.43E-04	8.19E-03
				12	3.89E-04	5.01E-03
			13	2	7.67E-04	9.65E-03
				7	5.43E-04	9.13E-03
				12	3.93E-04	4.50E-03
	6	200	1	2	1.82E-04	2.67E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	200	1	7	1.26E-04	1.15E-03
				12	8.51E-05	1.15E-03
			7	2	1.84E-04	3.52E-03
				7	1.30E-04	1.28E-03
				12	8.51E-05	4.92E-04
			13	2	1.90E-04	2.07E-03
				7	1.25E-04	2.22E-03
				12	8.51E-05	1.24E-03
		800	1	2	6.92E-04	1.05E-02
				7	5.08E-04	5.23E-03
				12	3.59E-04	3.52E-03
			7	2	6.95E-04	9.51E-03
				7	5.07E-04	5.16E-03
				12	3.62E-04	3.64E-03
			13	2	7.14E-04	4.91E-03
				7	5.08E-04	4.68E-03
				12	3.47E-04	6.82E-03
		1400	1	2	1.14E-03	1.49E-02
				7	8.35E-04	8.20E-03
				12	5.73E-04	8.62E-03
			7	2	1.15E-03	1.18E-02
				7	8.42E-04	7.98E-03
				12	5.79E-04	8.81E-03
			13	2	1.15E-03	1.18E-02
				7	8.23E-04	1.35E-02
				12	5.82E-04	6.02E-03
	12	200	1	2	1.79E-04	3.01E-03
				7	1.26E-04	1.68E-03
				12	7.85E-05	1.60E-03
			7	2	1.78E-04	3.66E-03
				7	1.29E-04	1.68E-03
				12	8.62E-05	1.30E-03
			13	2	1.87E-04	2.34E-03
				7	1.28E-04	1.46E-03
				12	8.90E-05	5.84E-04
		800	1	2	6.91E-04	1.02E-02
				7	4.94E-04	6.85E-03
				12	3.50E-04	4.94E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	12	800	7	2	6.90E-04	1.09E-02
				7	5.18E-04	5.21E-03
				12	3.54E-04	6.23E-03
			13	2	7.22E-04	5.97E-03
				7	5.06E-04	5.95E-03
				12	3.73E-04	1.96E-03
		1400	1	2	1.12E-03	1.56E-02
				7	8.23E-04	1.03E-02
				12	5.92E-04	6.57E-03
			7	2	1.14E-03	1.38E-02
				7	8.21E-04	1.05E-02
				12	5.78E-04	8.04E-03
			13	2	1.12E-03	1.68E-02
				7	8.35E-04	8.61E-03
				12	5.73E-04	9.37E-03

Appendix II. 1V:6H FC7

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	6.41E-07	1.50E-02
				7	4.29E-07	1.05E-02
				12	3.06E-07	6.92E-03
			7	2	7.28E-07	1.71E-02
				7	4.76E-07	1.23E-02
				12	3.41E-07	8.29E-03
			13	2	7.08E-07	1.72E-02
				7	4.86E-07	1.20E-02
				12	3.39E-07	8.40E-03
		800	1	2	2.36E-06	5.62E-02
				7	1.74E-06	3.94E-02
				12	1.17E-06	2.95E-02
			7	2	2.35E-06	6.06E-02
				7	1.71E-06	4.32E-02
				12	1.25E-06	2.96E-02
			13	2	2.43E-06	5.86E-02
				7	1.77E-06	4.14E-02
				12	1.20E-06	3.05E-02
		1400	1	2	4.04E-06	1.01E-01
				7	2.92E-06	7.22E-02
				12	2.12E-06	5.11E-02
			7	2	4.18E-06	1.01E-01
				7	2.97E-06	7.42E-02
				12	2.18E-06	5.14E-02
			13	2	4.11E-06	1.02E-01
				7	2.95E-06	7.44E-02
				12	2.16E-06	5.18E-02
	3	200	1	2	6.72E-07	1.76E-02
				7	4.64E-07	1.17E-02
				12	3.40E-07	7.94E-03
			7	2	7.83E-07	1.96E-02
				7	5.36E-07	1.36E-02
				12	3.60E-07	9.55E-03
			13	2	8.11E-07	1.83E-02
				7	5.25E-07	1.40E-02
				12	3.30E-07	1.00E-02
		800	1	2	2.61E-06	6.48E-02
				7	1.97E-06	4.46E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	1.40E-06	3.17E-02
0	3	800	7	2	2.64E-06	6.76E-02
0	3	800	7	7	1.93E-06	4.79E-02
0	3	800	7	12	1.44E-06	3.23E-02
0	3	800	13	2	2.77E-06	6.58E-02
0	3	800	13	7	1.98E-06	4.73E-02
0	3	800	13	12	1.35E-06	3.46E-02
0	3	1400	1	2	4.58E-06	1.11E-01
0	3	1400	1	7	3.33E-06	8.00E-02
0	3	1400	1	12	2.30E-06	5.77E-02
0	3	1400	7	2	4.75E-06	1.12E-01
0	3	1400	7	7	3.37E-06	8.32E-02
0	3	1400	7	12	2.39E-06	5.87E-02
0	3	1400	13	2	4.74E-06	1.12E-01
0	3	1400	13	7	3.43E-06	8.14E-02
0	3	1400	13	12	2.33E-06	5.97E-02
0	6	200	1	2	1.03E-06	2.10E-02
0	6	200	1	7	6.18E-07	1.63E-02
0	6	200	1	12	4.34E-07	1.10E-02
0	6	200	7	2	1.07E-06	2.57E-02
0	6	200	7	7	7.62E-07	1.74E-02
0	6	200	7	12	4.77E-07	1.22E-02
0	6	200	13	2	1.02E-06	2.61E-02
0	6	200	13	7	7.22E-07	1.79E-02
0	6	200	13	12	4.86E-07	1.28E-02
0	6	800	1	2	3.53E-06	8.50E-02
0	6	800	1	7	2.54E-06	6.08E-02
0	6	800	1	12	1.88E-06	4.15E-02
0	6	800	7	2	3.61E-06	8.83E-02
0	6	800	7	7	2.70E-06	6.17E-02
0	6	800	7	12	1.82E-06	4.51E-02
0	6	800	13	2	3.59E-06	9.02E-02
0	6	800	13	7	2.48E-06	6.50E-02
0	6	800	13	12	1.91E-06	4.35E-02
0	6	1400	1	2	5.95E-06	1.50E-01
0	6	1400	1	7	4.48E-06	1.06E-01
0	6	1400	1	12	3.16E-06	7.60E-02
0	6	1400	7	2	6.18E-06	1.52E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	4.46E-06	1.10E-01
				12	3.06E-06	7.95E-02
			13	2	6.16E-06	1.51E-01
				7	4.37E-06	1.13E-01
				12	3.19E-06	7.87E-02
4	0	200	1	2	1.05E-06	2.74E-02
				7	6.33E-07	1.94E-02
				12	4.53E-07	1.18E-02
			7	2	1.17E-06	2.69E-02
				7	7.59E-07	1.77E-02
				12	4.74E-07	1.15E-02
			13	2	1.12E-06	2.74E-02
				7	8.05E-07	1.70E-02
				12	4.81E-07	1.13E-02
		800	1	2	4.47E-06	1.13E-01
				7	3.26E-06	8.00E-02
				12	2.21E-06	5.66E-02
			7	2	4.76E-06	1.09E-01
				7	3.27E-06	8.02E-02
				12	2.32E-06	5.48E-02
			13	2	4.36E-06	1.15E-01
				7	3.24E-06	7.96E-02
				12	2.22E-06	5.64E-02
		1400	1	2	7.60E-06	1.96E-01
				7	5.50E-06	1.41E-01
				12	3.93E-06	9.77E-02
			7	2	7.91E-06	1.91E-01
				7	5.67E-06	1.36E-01
				12	3.87E-06	9.86E-02
			13	2	7.68E-06	1.94E-01
				7	5.75E-06	1.37E-01
				12	4.02E-06	9.64E-02
	3	200	1	2	1.28E-06	3.04E-02
				7	7.97E-07	2.03E-02
				12	5.18E-07	1.32E-02
			7	2	1.16E-06	3.21E-02
				7	7.38E-07	2.14E-02
				12	5.31E-07	1.31E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	1.21E-06	3.17E-02
				7	7.57E-07	2.23E-02
				12	5.28E-07	1.28E-02
		800	1	2	5.33E-06	1.22E-01
				7	3.76E-06	8.82E-02
				12	2.53E-06	6.26E-02
			7	2	5.25E-06	1.24E-01
				7	3.67E-06	8.86E-02
				12	2.62E-06	6.21E-02
			13	2	5.19E-06	1.23E-01
				7	3.58E-06	8.86E-02
				12	2.42E-06	6.44E-02
		1400	1	2	8.73E-06	2.18E-01
				7	6.44E-06	1.53E-01
				12	4.52E-06	1.09E-01
			7	2	9.15E-06	2.11E-01
				7	6.28E-06	1.58E-01
				12	4.62E-06	1.07E-01
			13	2	8.65E-06	2.21E-01
				7	6.53E-06	1.52E-01
				12	4.48E-06	1.08E-01
	6	200	1	2	1.86E-06	3.85E-02
				7	1.04E-06	2.74E-02
				12	6.76E-07	1.82E-02
			7	2	1.74E-06	4.00E-02
				7	1.11E-06	2.78E-02
				12	7.06E-07	1.77E-02
			13	2	1.66E-06	4.08E-02
				7	1.19E-06	2.57E-02
				12	6.44E-07	1.84E-02
		800	1	2	6.83E-06	1.67E-01
				7	4.68E-06	1.22E-01
				12	3.56E-06	8.09E-02
			7	2	6.99E-06	1.67E-01
				7	4.89E-06	1.20E-01
				12	3.23E-06	8.60E-02
			13	2	6.85E-06	1.68E-01
				7	4.55E-06	1.25E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	3.52E-06	8.14E-02
4	6	1400	1	2	1.17E-05	2.86E-01
4	6	1400	1	7	8.26E-06	2.11E-01
4	6	1400	1	12	5.83E-06	1.48E-01
4	6	1400	7	2	1.19E-05	2.85E-01
4	6	1400	7	7	8.54E-06	2.04E-01
4	6	1400	7	12	5.93E-06	1.45E-01
4	6	1400	13	2	1.23E-05	2.79E-01
4	6	1400	13	7	8.49E-06	2.08E-01
4	6	1400	13	12	5.90E-06	1.46E-01
8	0	200	1	2	1.57E-06	3.84E-02
8	0	200	1	7	1.03E-06	2.51E-02
8	0	200	1	12	6.64E-07	1.43E-02
8	0	200	7	2	1.62E-06	3.93E-02
8	0	200	7	7	1.05E-06	2.54E-02
8	0	200	7	12	5.95E-07	1.54E-02
8	0	200	13	2	1.57E-06	3.87E-02
8	0	200	13	7	1.13E-06	2.39E-02
8	0	200	13	12	6.43E-07	1.47E-02
8	0	800	1	2	6.11E-06	1.42E-01
8	0	800	1	7	4.17E-06	1.06E-01
8	0	800	1	12	2.88E-06	7.40E-02
8	0	800	7	2	5.95E-06	1.47E-01
8	0	800	7	7	4.35E-06	1.06E-01
8	0	800	7	12	2.87E-06	7.50E-02
8	0	800	13	2	6.36E-06	1.42E-01
8	0	800	13	7	4.28E-06	1.06E-01
8	0	800	13	12	3.04E-06	7.07E-02
8	0	1400	1	2	9.58E-06	2.34E-01
8	0	1400	1	7	6.87E-06	1.67E-01
8	0	1400	1	12	4.83E-06	1.16E-01
8	0	1400	7	2	9.40E-06	2.33E-01
8	0	1400	7	7	7.06E-06	1.64E-01
8	0	1400	7	12	4.88E-06	1.15E-01
8	0	1400	13	2	9.86E-06	2.30E-01
8	0	1400	13	7	6.71E-06	1.67E-01
8	0	1400	13	12	4.71E-06	1.18E-01
8	3	200	1	2	1.86E-06	4.25E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	9.65E-07	3.12E-02
				12	7.09E-07	1.66E-02
			7	2	1.90E-06	4.21E-02
				7	1.13E-06	2.87E-02
				12	6.92E-07	1.73E-02
			13	2	1.75E-06	4.43E-02
				7	1.04E-06	2.93E-02
				12	6.21E-07	1.86E-02
		800	1	2	6.84E-06	1.60E-01
				7	4.87E-06	1.16E-01
				12	3.32E-06	8.38E-02
			7	2	6.79E-06	1.66E-01
				7	4.77E-06	1.19E-01
				12	3.27E-06	8.33E-02
			13	2	6.82E-06	1.63E-01
				7	4.64E-06	1.20E-01
				12	3.43E-06	7.98E-02
		1400	1	2	1.09E-05	2.56E-01
				7	7.75E-06	1.87E-01
				12	5.38E-06	1.32E-01
			7	2	1.11E-05	2.58E-01
				7	7.76E-06	1.89E-01
				12	5.47E-06	1.32E-01
			13	2	1.05E-05	2.65E-01
				7	7.34E-06	1.92E-01
				12	5.36E-06	1.33E-01
	6	200	1	2	2.44E-06	5.76E-02
				7	1.67E-06	3.45E-02
				12	8.83E-07	2.42E-02
			7	2	2.40E-06	5.73E-02
				7	1.53E-06	3.62E-02
				12	9.06E-07	2.28E-02
			13	2	2.47E-06	5.78E-02
				7	1.45E-06	3.86E-02
				12	9.74E-07	2.28E-02
		800	1	2	8.51E-06	2.28E-01
				7	6.42E-06	1.55E-01
				12	4.73E-06	1.06E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	8.50E-06	2.23E-01
				7	5.95E-06	1.61E-01
				12	4.55E-06	1.09E-01
			13	2	8.69E-06	2.27E-01
				7	6.14E-06	1.60E-01
				12	4.45E-06	1.10E-01
		1400	1	2	1.46E-05	3.44E-01
				7	1.04E-05	2.48E-01
				12	6.93E-06	1.78E-01
			7	2	1.38E-05	3.57E-01
				7	1.03E-05	2.51E-01
				12	7.05E-06	1.77E-01
			13	2	1.40E-05	3.54E-01
				7	9.87E-06	2.55E-01
				12	7.02E-06	1.78E-01

Appendix JJ. Guardrail FC1

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	6.74E-05	-2.86E-04
				7	4.65E-05	1.38E-04
				12	3.38E-05	-6.90E-05
			7	2	1.78E-04	2.79E-03
				7	1.16E-04	1.75E-03
				12	7.44E-05	6.22E-04
			13	2	3.28E-05	1.04E-04
				7	2.26E-05	2.41E-04
				12	1.50E-05	2.17E-04
		800	1	2	2.02E-04	3.41E-03
				7	1.40E-04	2.75E-03
				12	1.08E-04	1.41E-03
			7	2	4.41E-04	3.76E-04
				7	3.04E-04	1.34E-03
				12	2.07E-04	3.69E-03
			13	2	8.44E-05	1.70E-03
				7	6.12E-05	9.97E-04
				12	4.51E-05	1.80E-04
		1400	1	2	3.50E-04	2.79E-03
				7	2.48E-04	1.99E-03
				12	1.74E-04	3.05E-03
			7	2	6.84E-04	5.90E-03
				7	4.93E-04	5.53E-03
				12	3.51E-04	2.42E-03
			13	2	1.43E-04	1.90E-03
				7	1.04E-04	1.36E-03
				12	7.50E-05	6.01E-04
	4	200	1	2	8.70E-05	3.81E-04
				7	5.01E-05	1.66E-03
				12	4.90E-05	-1.18E-03
			7	2	2.11E-04	1.70E-03
				7	1.28E-04	2.65E-03
				12	8.94E-05	3.13E-03
			13	2	3.85E-05	6.70E-04
				7	2.75E-05	4.11E-04
				12	1.81E-05	3.27E-04
		800	1	2	2.56E-04	3.00E-03
				7	1.80E-04	4.02E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	4	800	1	12	1.37E-04	1.32E-03
			7	2	5.22E-04	6.90E-03
				7	3.78E-04	4.96E-03
				12	2.68E-04	7.23E-04
			13	2	1.10E-04	1.26E-03
				7	7.72E-05	1.31E-03
				12	5.38E-05	1.34E-03
		1400	1	2	4.31E-04	5.93E-03
				7	3.18E-04	3.16E-03
				12	2.22E-04	3.22E-03
			7	2	8.12E-04	1.19E-02
				7	5.73E-04	1.16E-02
				12	4.41E-04	4.40E-03
			13	2	1.80E-04	2.51E-03
				7	1.27E-04	2.18E-03
				12	8.88E-05	2.07E-03
	8	200	1	2	9.53E-05	2.04E-03
				7	5.62E-05	2.31E-03
				12	5.00E-05	6.92E-04
			7	2	2.53E-04	4.10E-03
				7	1.84E-04	-3.55E-05
				12	1.07E-04	5.22E-03
			13	2	4.51E-05	5.02E-04
				7	3.30E-05	5.20E-04
				12	2.11E-05	4.10E-04
		800	1	2	3.20E-04	2.02E-03
				7	2.17E-04	4.57E-03
				12	1.63E-04	5.53E-04
			7	2	6.16E-04	1.01E-02
				7	4.24E-04	9.09E-03
				12	2.99E-04	8.65E-03
			13	2	1.34E-04	1.07E-03
				7	9.37E-05	1.11E-03
				12	6.53E-05	8.23E-04
		1400	1	2	5.32E-04	4.37E-03
				7	4.09E-04	9.93E-04
				12	2.83E-04	1.36E-03
			7	2	1.06E-03	4.37E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	8	1400	7	7	7.35E-04	9.82E-03
				12	4.96E-04	7.25E-03
			13	2	2.28E-04	-3.11E-04
				7	1.49E-04	2.58E-03
				12	1.08E-04	1.55E-03
4	0	200	1	2	1.60E-04	1.46E-03
				7	9.71E-05	2.73E-03
				12	8.26E-05	5.59E-04
			7	2	5.24E-04	2.79E-03
				7	3.05E-04	6.06E-03
				12	2.14E-04	2.01E-03
			13	2	9.96E-05	-2.31E-03
				7	5.37E-05	9.99E-04
				12	3.79E-05	4.44E-04
		800	1	2	5.11E-04	8.53E-03
				7	3.46E-04	7.35E-03
				12	2.50E-04	5.60E-03
			7	2	1.09E-03	1.64E-02
				7	7.97E-04	6.44E-03
				12	5.40E-04	9.39E-03
			13	2	1.99E-04	1.86E-03
				7	1.46E-04	9.60E-04
				12	9.44E-05	1.99E-03
		1400	1	2	8.92E-04	5.10E-03
				7	6.15E-04	6.27E-03
				12	4.25E-04	8.07E-03
			7	2	1.85E-03	1.15E-02
				7	1.28E-03	1.92E-02
				12	8.96E-04	9.68E-03
			13	2	3.22E-04	3.92E-03
				7	2.20E-04	3.51E-03
				12	1.58E-04	1.66E-03
	4	200	1	2	2.07E-04	1.49E-03
				7	1.39E-04	9.02E-04
				12	8.80E-05	3.28E-03
			7	2	6.40E-04	6.96E-03
				7	4.10E-04	2.04E-03
				12	2.63E-04	4.19E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	4	200	13	2	9.94E-05	9.85E-04
				7	7.15E-05	-2.86E-04
				12	4.54E-05	4.54E-04
		800	1	2	6.40E-04	6.23E-03
				7	4.59E-04	7.79E-03
				12	3.24E-04	4.36E-03
			7	2	1.26E-03	3.53E-02
				7	9.49E-04	1.63E-02
				12	6.80E-04	1.07E-02
			13	2	2.35E-04	5.98E-03
				7	1.77E-04	1.45E-03
				12	1.21E-04	1.99E-03
		1400	1	2	1.08E-03	8.20E-03
				7	7.53E-04	1.17E-02
				12	5.48E-04	5.74E-03
			7	2	2.28E-03	1.88E-02
				7	1.46E-03	3.90E-02
				12	1.09E-03	1.21E-02
			13	2	4.11E-04	1.04E-03
				7	2.86E-04	2.21E-03
				12	1.99E-04	2.93E-03
	8	200	1	2	2.75E-04	-5.61E-04
				7	1.51E-04	5.15E-03
				12	1.10E-04	2.03E-03
			7	2	7.24E-04	4.59E-03
				7	4.96E-04	-4.23E-05
				12	3.04E-04	9.06E-03
			13	2	1.03E-04	2.24E-03
				7	8.18E-05	1.74E-03
				12	5.42E-05	8.54E-04
		800	1	2	7.33E-04	1.58E-02
				7	6.01E-04	-9.48E-04
				12	3.98E-04	2.90E-03
			7	2	1.77E-03	5.88E-03
				7	1.21E-03	1.61E-02
				12	8.60E-04	8.28E-03
			13	2	3.01E-04	1.35E-03
				7	2.17E-04	1.26E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	8	800	13	12	1.48E-04	1.54E-03
		1400	1	2	1.32E-03	9.08E-03
				7	8.80E-04	1.97E-02
				12	6.16E-04	1.61E-02
			7	2	2.57E-03	5.74E-02
				7	1.91E-03	1.86E-02
				12	1.38E-03	3.08E-03
			13	2	4.69E-04	4.48E-03
				7	3.38E-04	4.54E-03
				12	2.38E-04	2.86E-03
8	0	200	1	2	2.99E-04	4.18E-03
				7	1.93E-04	8.43E-03
				12	1.37E-04	4.07E-03
			7	2	9.59E-04	8.01E-03
				7	5.88E-04	9.23E-03
				12	4.33E-04	-3.13E-05
			13	2	1.40E-04	2.25E-03
				7	1.02E-04	5.70E-04
				12	6.49E-05	6.71E-04
		800	1	2	9.94E-04	2.73E-03
				7	6.63E-04	8.17E-03
				12	5.07E-04	1.15E-03
			7	2	2.20E-03	1.44E-02
				7	1.55E-03	1.48E-02
				12	1.04E-03	1.45E-02
			13	2	3.17E-04	3.54E-03
				7	2.35E-04	2.61E-03
				12	1.59E-04	2.34E-03
		1400	1	2	1.54E-03	2.76E-02
				7	1.11E-03	1.87E-02
				12	8.48E-04	5.59E-03
			7	2	3.42E-03	6.06E-02
				7	2.45E-03	2.76E-02
				12	1.69E-03	3.38E-02
			13	2	4.99E-04	6.29E-03
				7	3.65E-04	2.96E-03
				12	2.38E-04	5.12E-03
	4	200	1	2	3.98E-04	4.95E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	4	200	1	7	2.68E-04	4.29E-03
				12	1.81E-04	2.80E-03
			7	2	1.19E-03	9.57E-04
				7	8.22E-04	9.21E-03
				12	4.94E-04	5.83E-03
			13	2	1.65E-04	3.56E-03
				7	1.23E-04	2.51E-03
				12	7.77E-05	1.89E-03
		800	1	2	1.23E-03	8.08E-03
				7	8.75E-04	1.65E-03
				12	5.90E-04	1.19E-02
			7	2	2.84E-03	1.08E-02
				7	1.75E-03	4.01E-02
				12	1.30E-03	2.03E-02
			13	2	4.00E-04	6.38E-03
				7	2.68E-04	6.92E-03
				12	2.19E-04	-3.40E-04
		1400	1	2	1.97E-03	2.76E-02
				7	1.31E-03	4.16E-02
				12	1.03E-03	9.13E-03
			7	2	4.39E-03	1.70E-02
				7	3.02E-03	4.67E-02
				12	2.08E-03	2.84E-02
			13	2	6.22E-04	7.71E-03
				7	4.45E-04	5.04E-03
				12	3.09E-04	4.10E-03
	8	200	1	2	4.64E-04	8.17E-03
				7	3.10E-04	5.84E-03
				12	2.16E-04	4.68E-03
			7	2	1.47E-03	2.43E-03
				7	9.65E-04	4.60E-03
				12	6.76E-04	-2.66E-03
			13	2	2.06E-04	2.75E-03
				7	1.45E-04	1.39E-03
				12	1.00E-04	1.44E-03
		800	1	2	1.61E-03	-1.99E-02
				7	1.09E-03	-3.64E-03
				12	7.21E-04	1.04E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	8	800	7	2	3.38E-03	2.10E-02
				7	2.25E-03	3.32E-02
				12	1.59E-03	1.56E-02
			13	2	4.76E-04	6.52E-03
				7	3.33E-04	6.32E-03
				12	2.41E-04	3.94E-03
		1400	1	2	2.41E-03	3.05E-02
				7	1.77E-03	5.73E-03
				12	1.22E-03	1.23E-02
			7	2	5.12E-03	6.89E-02
				7	3.57E-03	6.88E-02
				12	2.61E-03	3.86E-02
			13	2	7.48E-04	1.09E-02
				7	5.44E-04	9.74E-03
				12	3.70E-04	5.00E-03

Appendix KK. Guardrail FC2

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.96E-05	5.59E-01
				7	2.62E-05	3.09E-01
				12	1.61E-05	2.37E-01
			7	2	8.09E-05	1.08E+00
				7	4.67E-05	6.64E-01
				12	3.13E-05	5.04E-01
			13	2	3.16E-05	3.25E-01
				7	1.92E-05	2.58E-01
				12	1.12E-05	1.92E-01
		800	1	2	1.26E-04	1.55E+00
				7	7.63E-05	1.29E+00
				12	6.29E-05	8.56E-01
			7	2	2.09E-04	2.39E+00
				7	1.27E-04	1.80E+00
				12	9.25E-05	1.34E+00
			13	2	7.12E-05	9.14E-01
				7	5.77E-05	6.12E-01
				12	3.31E-05	4.59E-01
		1400	1	2	2.04E-04	2.52E+00
				7	1.48E-04	2.03E+00
				12	9.93E-05	1.36E+00
			7	2	3.10E-04	4.04E+00
				7	2.18E-04	3.20E+00
				12	1.54E-04	2.01E+00
			13	2	1.10E-04	1.47E+00
				7	7.42E-05	1.09E+00
				12	5.98E-05	7.07E-01
	3	200	1	2	3.16E-05	6.90E-01
				7	3.00E-05	3.74E-01
				12	1.91E-05	2.79E-01
			7	2	8.67E-05	1.24E+00
				7	5.00E-05	7.69E-01
				12	3.84E-05	5.45E-01
			13	2	3.13E-05	4.05E-01
				7	1.24E-05	3.74E-01
				12	1.33E-05	2.19E-01
		800	1	2	1.14E-04	1.98E+00
				7	8.81E-05	1.31E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	7.20E-05	7.94E-01
			7	2	2.10E-04	3.03E+00
				7	1.47E-04	2.03E+00
				12	1.10E-04	1.41E+00
			13	2	7.07E-05	1.11E+00
				7	5.92E-05	7.23E-01
				12	3.67E-05	5.06E-01
		1400	1	2	2.16E-04	3.07E+00
				7	1.58E-04	2.15E+00
				12	1.14E-04	1.55E+00
			7	2	3.44E-04	4.46E+00
				7	2.48E-04	3.39E+00
				12	1.76E-04	2.34E+00
			13	2	1.31E-04	1.63E+00
				7	9.86E-05	1.09E+00
				12	5.87E-05	8.98E-01
	6	200	1	2	4.43E-05	9.42E-01
				7	3.64E-05	5.15E-01
				12	2.81E-05	4.67E-01
			7	2	1.10E-04	1.63E+00
				7	7.08E-05	1.06E+00
				12	5.61E-05	6.55E-01
			13	2	4.01E-05	5.90E-01
				7	3.22E-05	3.21E-01
				12	1.98E-05	2.80E-01
		800	1	2	1.76E-04	2.41E+00
				7	1.15E-04	1.79E+00
				12	9.29E-05	1.14E+00
			7	2	2.57E-04	4.16E+00
				7	2.09E-04	2.82E+00
				12	1.38E-04	1.92E+00
			13	2	1.10E-04	1.40E+00
				7	7.96E-05	9.24E-01
				12	5.15E-05	6.74E-01
		1400	1	2	2.91E-04	3.92E+00
				7	2.13E-04	2.91E+00
				12	1.48E-04	2.04E+00
			7	2	4.99E-04	5.58E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	3.22E-04	4.33E+00
				12	2.51E-04	2.94E+00
			13	2	1.70E-04	2.18E+00
				7	1.27E-04	1.44E+00
				12	8.76E-05	1.08E+00
3	0	200	1	2	4.21E-05	4.77E-01
				7	3.19E-05	3.46E-01
				12	1.21E-05	3.15E-01
			7	2	7.89E-05	1.26E+00
				7	5.31E-05	7.14E-01
				12	3.84E-05	5.32E-01
			13	2	2.98E-05	4.21E-01
				7	1.97E-05	2.85E-01
				12	1.20E-05	1.86E-01
		800	1	2	1.34E-04	1.75E+00
				7	1.01E-04	1.14E+00
				12	5.41E-05	9.52E-01
			7	2	2.13E-04	2.97E+00
				7	1.51E-04	2.07E+00
				12	1.13E-04	1.34E+00
			13	2	7.37E-05	1.07E+00
				7	4.69E-05	8.11E-01
				12	3.79E-05	4.92E-01
		1400	1	2	2.14E-04	3.04E+00
				7	1.63E-04	1.98E+00
				12	1.11E-04	1.53E+00
			7	2	3.49E-04	4.70E+00
				7	2.41E-04	3.32E+00
				12	1.65E-04	2.40E+00
			13	2	1.13E-04	1.66E+00
				7	8.83E-05	1.19E+00
				12	6.03E-05	8.17E-01
	3	200	1	2	5.59E-05	4.54E-01
				7	3.29E-05	3.88E-01
				12	1.99E-05	3.05E-01
			7	2	9.90E-05	1.10E+00
				7	5.24E-05	9.70E-01
				12	3.93E-05	6.16E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	3.67E-05	4.29E-01
				7	2.32E-05	2.94E-01
				12	1.41E-05	2.24E-01
		800	1	2	1.48E-04	1.93E+00
				7	1.07E-04	1.31E+00
				12	7.14E-05	9.62E-01
			7	2	2.39E-04	3.38E+00
				7	1.65E-04	2.32E+00
				12	1.19E-04	1.57E+00
			13	2	8.21E-05	1.16E+00
				7	6.16E-05	7.91E-01
				12	4.37E-05	5.36E-01
		1400	1	2	2.40E-04	3.19E+00
				7	1.53E-04	2.53E+00
				12	1.41E-04	1.50E+00
			7	2	3.85E-04	5.18E+00
				7	2.76E-04	3.69E+00
				12	2.03E-04	2.51E+00
			13	2	1.32E-04	1.84E+00
				7	9.43E-05	1.23E+00
				12	6.63E-05	9.31E-01
	6	200	1	2	7.35E-05	7.59E-01
				7	3.95E-05	4.99E-01
				12	2.48E-05	3.64E-01
			7	2	1.19E-04	1.88E+00
				7	7.90E-05	1.19E+00
				12	5.77E-05	7.11E-01
			13	2	5.30E-05	5.89E-01
				7	2.79E-05	4.52E-01
				12	1.99E-05	2.84E-01
		800	1	2	1.99E-04	2.54E+00
				7	1.17E-04	1.97E+00
				12	9.67E-05	1.19E+00
			7	2	3.17E-04	4.45E+00
				7	2.20E-04	3.06E+00
				12	1.43E-04	2.26E+00
			13	2	1.13E-04	1.57E+00
				7	8.53E-05	1.02E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	5.06E-05	8.17E-01
3	6	1400	1	2	3.37E-04	4.36E+00
3	6	1400	1	7	2.32E-04	3.40E+00
3	6	1400	1	12	1.69E-04	2.05E+00
3	6	1400	7	2	5.06E-04	7.42E+00
3	6	1400	7	7	3.77E-04	4.82E+00
3	6	1400	7	12	2.58E-04	3.44E+00
3	6	1400	13	2	1.87E-04	2.41E+00
3	6	1400	13	7	1.25E-04	1.73E+00
3	6	1400	13	12	8.42E-05	1.26E+00
6	0	200	1	2	1.58E-04	2.07E+00
6	0	200	1	7	8.85E-05	1.45E+00
6	0	200	1	12	6.63E-05	8.46E-01
6	0	200	7	2	3.44E-04	4.19E+00
6	0	200	7	7	2.27E-04	2.74E+00
6	0	200	7	12	1.42E-04	1.91E+00
6	0	200	13	2	1.12E-04	1.62E+00
6	0	200	13	7	8.10E-05	1.10E+00
6	0	200	13	12	5.47E-05	6.47E-01
6	0	800	1	2	4.54E-04	6.77E+00
6	0	800	1	7	3.21E-04	4.25E+00
6	0	800	1	12	2.57E-04	3.08E+00
6	0	800	7	2	8.41E-04	1.05E+01
6	0	800	7	7	5.95E-04	6.92E+00
6	0	800	7	12	3.86E-04	5.55E+00
6	0	800	13	2	3.27E-04	3.81E+00
6	0	800	13	7	2.01E-04	2.71E+00
6	0	800	13	12	1.33E-04	1.95E+00
6	0	1400	1	2	8.87E-04	1.05E+01
6	0	1400	1	7	6.06E-04	7.53E+00
6	0	1400	1	12	4.26E-04	5.33E+00
6	0	1400	7	2	1.33E-03	1.73E+01
6	0	1400	7	7	9.19E-04	1.24E+01
6	0	1400	7	12	6.24E-04	9.07E+00
6	0	1400	13	2	4.78E-04	5.99E+00
6	0	1400	13	7	3.44E-04	3.89E+00
6	0	1400	13	12	2.16E-04	3.20E+00
6	3	200	1	2	1.50E-04	2.54E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	1.22E-04	1.44E+00
				12	7.88E-05	9.98E-01
			7	2	3.94E-04	4.71E+00
				7	2.34E-04	3.26E+00
				12	1.54E-04	1.95E+00
			13	2	1.05E-04	2.13E+00
				7	8.45E-05	1.23E+00
				12	5.64E-05	7.56E-01
		800	1	2	5.31E-04	7.16E+00
				7	3.79E-04	5.02E+00
				12	2.67E-04	3.66E+00
			7	2	8.86E-04	1.23E+01
				7	6.72E-04	8.26E+00
				12	4.37E-04	5.82E+00
			13	2	3.17E-04	4.12E+00
				7	2.12E-04	3.19E+00
				12	1.44E-04	2.20E+00
		1400	1	2	9.35E-04	1.29E+01
				7	7.44E-04	8.26E+00
				12	4.85E-04	5.93E+00
			7	2	1.43E-03	2.18E+01
				7	9.80E-04	1.50E+01
				12	7.28E-04	9.91E+00
			13	2	5.19E-04	6.56E+00
				7	3.26E-04	5.18E+00
				12	2.51E-04	3.40E+00
	6	200	1	2	1.82E-04	3.31E+00
				7	1.27E-04	2.25E+00
				12	1.16E-04	1.40E+00
			7	2	5.07E-04	6.49E+00
				7	3.84E-04	3.53E+00
				12	2.36E-04	2.83E+00
			13	2	1.98E-04	2.03E+00
				7	1.17E-04	1.42E+00
				12	7.79E-05	1.09E+00
		800	1	2	7.36E-04	9.96E+00
				7	5.24E-04	6.54E+00
				12	3.54E-04	5.08E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	1.21E-03	1.65E+01
				7	8.79E-04	1.10E+01
				12	5.63E-04	8.02E+00
			13	2	4.13E-04	5.78E+00
				7	2.69E-04	4.32E+00
				12	2.20E-04	2.67E+00
		1400	1	2	1.10E-03	1.79E+01
				7	7.68E-04	1.35E+01
				12	5.90E-04	8.26E+00
			7	2	2.02E-03	2.54E+01
				7	1.41E-03	1.89E+01
				12	9.61E-04	1.32E+01
			13	2	7.14E-04	9.47E+00
				7	4.33E-04	6.92E+00
				12	3.40E-04	4.38E+00

Appendix LL. Guardrail FC3

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.63E-04	0.00
				7	2.15E-04	0.00
				12	1.56E-04	0.00
			7	2	3.52E-04	0.00
				7	2.53E-04	0.00
				12	1.93E-04	0.00
			13	2	3.47E-04	0.00
				7	2.38E-04	0.00
				12	2.00E-04	0.00
		800	1	2	8.70E-04	0.00
				7	6.72E-04	0.00
				12	5.35E-04	0.00
			7	2	8.97E-04	0.00
				7	6.47E-04	0.00
				12	5.35E-04	0.00
			13	2	8.24E-04	0.00
				7	6.49E-04	0.00
				12	5.10E-04	0.00
		1400	1	2	1.50E-03	0.00
				7	1.15E-03	0.00
				12	9.34E-04	0.00
			7	2	1.39E-03	0.00
				7	1.14E-03	0.00
				12	8.93E-04	0.00
			13	2	1.35E-03	0.00
				7	1.03E-03	0.00
				12	8.62E-04	0.00
	2	200	1	2	2.69E-04	0.00
				7	1.88E-04	0.00
				12	1.57E-04	0.00
			7	2	3.34E-04	0.00
				7	2.40E-04	0.00
				12	1.88E-04	0.00
			13	2	3.35E-04	0.00
				7	2.32E-04	0.00
				12	1.81E-04	0.00
		800	1	2	8.87E-04	0.00
				7	6.55E-04	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	2	800	1	12	5.62E-04	0.00
			7	2	8.62E-04	0.00
				7	6.46E-04	0.00
				12	5.30E-04	0.00
			13	2	8.49E-04	0.00
				7	6.53E-04	0.00
				12	5.25E-04	0.00
		1400	1	2	1.44E-03	0.00
				7	1.15E-03	0.00
				12	9.19E-04	0.00
			7	2	1.43E-03	0.00
				7	1.10E-03	0.00
				12	8.99E-04	0.00
			13	2	1.30E-03	0.00
				7	1.03E-03	0.00
				12	8.45E-04	0.00
	3	200	1	2	3.09E-04	0.00
				7	2.26E-04	0.00
				12	1.65E-04	0.00
			7	2	3.82E-04	0.00
				7	2.66E-04	0.00
				12	2.13E-04	0.00
			13	2	4.05E-04	0.00
				7	2.75E-04	0.00
				12	2.14E-04	0.00
		800	1	2	9.56E-04	0.00
				7	7.88E-04	0.00
				12	6.02E-04	0.00
			7	2	9.83E-04	0.00
				7	7.84E-04	0.00
				12	5.95E-04	0.00
			13	2	9.71E-04	0.00
				7	6.94E-04	0.00
				12	5.63E-04	0.00
		1400	1	2	1.62E-03	0.00
				7	1.30E-03	0.00
				12	1.06E-03	0.00
			7	2	1.58E-03	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	1400	7	7	1.25E-03	0.00
				12	9.99E-04	0.00
			13	2	1.52E-03	0.00
				7	1.13E-03	0.00
				12	9.27E-04	0.00
2	0	200	1	2	2.39E-04	0.00
				7	1.93E-04	0.00
				12	1.40E-04	0.00
			7	2	3.23E-04	0.00
				7	2.30E-04	0.00
				12	1.76E-04	0.00
			13	2	3.16E-04	0.00
				7	2.37E-04	0.00
				12	1.70E-04	0.00
		800	1	2	8.05E-04	0.00
				7	6.39E-04	0.00
				12	5.11E-04	0.00
			7	2	8.09E-04	0.00
				7	6.10E-04	0.00
				12	5.12E-04	0.00
			13	2	7.89E-04	0.00
				7	6.04E-04	0.00
				12	4.82E-04	0.00
		1400	1	2	1.37E-03	0.00
				7	1.08E-03	0.00
				12	8.90E-04	0.00
			7	2	1.31E-03	0.00
				7	1.04E-03	0.00
				12	8.31E-04	0.00
			13	2	1.24E-03	0.00
				7	9.96E-04	0.00
				12	8.01E-04	0.00
	2	200	1	2	2.55E-04	0.00
				7	1.77E-04	0.00
				12	1.49E-04	0.00
			7	2	3.17E-04	0.00
				7	2.16E-04	0.00
				12	1.77E-04	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	2	200	13	2	3.28E-04	0.00
				7	2.28E-04	0.00
				12	1.82E-04	0.00
		800	1	2	8.42E-04	0.00
				7	6.14E-04	0.00
				12	5.25E-04	0.00
			7	2	8.10E-04	0.00
				7	6.08E-04	0.00
				12	5.09E-04	0.00
			13	2	7.60E-04	0.00
				7	6.00E-04	0.00
				12	4.96E-04	0.00
		1400	1	2	1.38E-03	0.00
				7	1.06E-03	0.00
				12	8.95E-04	0.00
			7	2	1.29E-03	0.00
				7	1.01E-03	0.00
				12	8.12E-04	0.00
			13	2	1.26E-03	0.00
				7	9.77E-04	0.00
				12	8.16E-04	0.00
	3	200	1	2	2.78E-04	0.00
				7	2.06E-04	0.00
				12	1.59E-04	0.00
			7	2	3.61E-04	0.00
				7	2.42E-04	0.00
				12	1.87E-04	0.00
			13	2	3.69E-04	0.00
				7	2.70E-04	0.00
				12	1.96E-04	0.00
		800	1	2	9.28E-04	0.00
				7	7.13E-04	0.00
				12	5.78E-04	0.00
			7	2	9.16E-04	0.00
				7	7.11E-04	0.00
				12	5.61E-04	0.00
			13	2	8.89E-04	0.00
				7	6.50E-04	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
2	3	800	13	12	5.43E-04	0.00
		1400	1	2	1.54E-03	0.00
				7	1.20E-03	0.00
				12	9.60E-04	0.00
			7	2	1.44E-03	0.00
				7	1.15E-03	0.00
				12	9.30E-04	0.00
			13	2	1.40E-03	0.00
				7	1.11E-03	0.00
				12	8.88E-04	0.00
3	0	200	1	2	2.97E-04	0.00
				7	2.19E-04	0.00
				12	1.57E-04	0.00
			7	2	3.72E-04	0.00
				7	2.62E-04	0.00
				12	2.00E-04	0.00
			13	2	3.80E-04	0.00
				7	2.63E-04	0.00
				12	1.94E-04	0.00
		800	1	2	8.99E-04	0.00
				7	7.45E-04	0.00
				12	5.78E-04	0.00
			7	2	9.71E-04	0.00
				7	7.27E-04	0.00
				12	5.89E-04	0.00
			13	2	9.14E-04	0.00
				7	6.98E-04	0.00
				12	5.67E-04	0.00
		1400	1	2	1.59E-03	0.00
				7	1.26E-03	0.00
				12	1.06E-03	0.00
			7	2	1.57E-03	0.00
				7	1.18E-03	0.00
				12	9.74E-04	0.00
			13	2	1.45E-03	0.00
				7	1.15E-03	0.00
				12	9.11E-04	0.00
	2	200	1	2	2.77E-04	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	2	200	1	7	2.19E-04	0.00
				12	1.77E-04	0.00
			7	2	3.71E-04	0.00
				7	2.63E-04	0.00
				12	1.99E-04	0.00
			13	2	3.87E-04	0.00
				7	2.71E-04	0.00
				12	2.07E-04	0.00
		800	1	2	9.36E-04	0.00
				7	7.22E-04	0.00
				12	6.14E-04	0.00
			7	2	9.52E-04	0.00
				7	7.34E-04	0.00
				12	5.75E-04	0.00
			13	2	9.21E-04	0.00
				7	6.87E-04	0.00
				12	5.28E-04	0.00
		1400	1	2	1.63E-03	0.00
				7	1.27E-03	0.00
				12	1.01E-03	0.00
			7	2	1.54E-03	0.00
				7	1.18E-03	0.00
				12	9.52E-04	0.00
			13	2	1.47E-03	0.00
				7	1.14E-03	0.00
				12	9.10E-04	0.00
	3	200	1	2	3.30E-04	0.00
				7	2.30E-04	0.00
				12	1.89E-04	0.00
			7	2	4.22E-04	0.00
				7	2.86E-04	0.00
				12	2.29E-04	0.00
			13	2	4.36E-04	0.00
				7	3.00E-04	0.00
				12	2.25E-04	0.00
		800	1	2	1.07E-03	0.00
				7	8.06E-04	0.00
				12	6.70E-04	0.00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	800	7	2	1.07E-03	0.00
				7	8.22E-04	0.00
				12	6.40E-04	0.00
			13	2	1.04E-03	0.00
				7	7.81E-04	0.00
				12	6.00E-04	0.00
		1400	1	2	1.79E-03	0.00
				7	1.42E-03	0.00
				12	1.13E-03	0.00
			7	2	1.73E-03	0.00
				7	1.31E-03	0.00
				12	1.08E-03	0.00
			13	2	1.66E-03	0.00
				7	1.29E-03	0.00
				12	1.02E-03	0.00

Appendix MM. Guardrail FC4

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	1.19E-04	2.07E-01
				7	7.75E-05	9.86E-02
				12	7.25E-05	5.22E-02
			7	2	2.67E-04	7.61E-02
				7	1.79E-04	5.71E-02
				12	1.31E-04	1.03E-01
			13	2	8.02E-05	2.50E-01
				7	6.28E-05	8.71E-02
				12	4.58E-05	1.10E-01
		800	1	2	3.67E-04	4.68E-01
				7	2.64E-04	5.09E-01
				12	1.92E-04	5.68E-01
			7	2	6.43E-04	4.33E-01
				7	4.77E-04	4.61E-01
				12	3.94E-04	3.14E-01
			13	2	2.31E-04	3.08E-01
				7	1.69E-04	2.05E-01
				12	1.48E-04	5.53E-02
		1400	1	2	6.26E-04	7.93E-01
				7	4.45E-04	1.04E+00
				12	4.07E-04	4.04E-01
			7	2	9.40E-04	1.85E+00
				7	7.47E-04	1.03E+00
				12	6.25E-04	7.92E-01
			13	2	3.53E-04	4.23E-01
				7	2.89E-04	2.45E-01
				12	2.06E-04	3.93E-01
	3	200	1	2	1.24E-04	1.81E-01
				7	1.04E-04	-1.62E-02
				12	8.04E-05	9.62E-02
			7	2	2.68E-04	1.83E-01
				7	1.74E-04	3.89E-01
				12	1.46E-04	2.01E-01
			13	2	9.68E-05	1.13E-01
				7	6.42E-05	1.62E-01
				12	6.43E-05	-1.26E-02
		800	1	2	4.10E-04	3.86E-01
				7	3.16E-04	4.61E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	2.64E-04	3.69E-01
0	3	800	7	2	7.06E-04	5.94E-01
0	3	800	7	7	5.28E-04	5.45E-01
0	3	800	7	12	4.53E-04	2.20E-01
0	3	800	13	2	2.34E-04	4.39E-01
0	3	800	13	7	1.98E-04	1.61E-01
0	3	800	13	12	1.63E-04	1.19E-01
0	3	1400	1	2	6.74E-04	1.14E+00
0	3	1400	1	7	5.56E-04	5.37E-01
0	3	1400	1	12	4.44E-04	7.83E-01
0	3	1400	7	2	1.07E-03	1.64E+00
0	3	1400	7	7	8.67E-04	1.12E+00
0	3	1400	7	12	6.93E-04	9.01E-01
0	3	1400	13	2	3.93E-04	4.96E-01
0	3	1400	13	7	3.08E-04	2.96E-01
0	3	1400	13	12	2.38E-04	4.81E-01
0	6	200	1	2	1.83E-04	1.07E-01
0	6	200	1	7	1.22E-04	1.06E-01
0	6	200	1	12	8.22E-05	3.17E-01
0	6	200	7	2	3.62E-04	5.42E-01
0	6	200	7	7	2.27E-04	4.54E-01
0	6	200	7	12	2.07E-04	2.67E-01
0	6	200	13	2	1.34E-04	1.09E-01
0	6	200	13	7	8.09E-05	2.54E-01
0	6	200	13	12	7.41E-05	8.93E-02
0	6	800	1	2	5.23E-04	1.17E+00
0	6	800	1	7	4.26E-04	3.09E-01
0	6	800	1	12	3.33E-04	6.85E-01
0	6	800	7	2	9.08E-04	1.08E+00
0	6	800	7	7	7.18E-04	8.12E-01
0	6	800	7	12	5.46E-04	8.49E-01
0	6	800	13	2	3.37E-04	2.84E-01
0	6	800	13	7	2.48E-04	3.72E-01
0	6	800	13	12	1.98E-04	2.42E-01
0	6	1400	1	2	9.24E-04	7.90E-01
0	6	1400	1	7	7.10E-04	1.44E+00
0	6	1400	1	12	6.04E-04	7.82E-01
0	6	1400	7	2	1.42E-03	2.13E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	1.16E-03	1.32E+00
				12	9.71E-04	1.15E+00
			13	2	5.38E-04	6.08E-01
				7	4.32E-04	3.89E-01
				12	3.39E-04	2.82E-01
3	0	200	1	2	1.41E-04	-6.04E-03
				7	8.72E-05	7.90E-02
				12	6.62E-05	1.31E-01
			7	2	2.58E-04	3.11E-01
				7	1.77E-04	3.18E-01
				12	1.34E-04	8.74E-02
			13	2	9.59E-05	9.16E-02
				7	6.55E-05	9.99E-02
				12	5.49E-05	5.45E-02
		800	1	2	4.12E-04	3.58E-01
				7	3.37E-04	2.26E-01
				12	2.47E-04	3.72E-01
			7	2	6.27E-04	1.02E+00
				7	5.17E-04	5.31E-01
				12	4.06E-04	4.72E-01
			13	2	2.41E-04	2.02E-01
				7	1.79E-04	2.49E-01
				12	1.41E-04	2.62E-01
		1400	1	2	6.88E-04	5.99E-01
				7	5.18E-04	5.70E-01
				12	4.23E-04	6.74E-01
			7	2	1.06E-03	1.35E+00
				7	8.37E-04	8.93E-01
				12	6.69E-04	8.72E-01
			13	2	3.69E-04	5.70E-01
				7	2.84E-04	2.93E-01
				12	2.42E-04	2.15E-01
	3	200	1	2	1.38E-04	2.38E-01
				7	9.64E-05	2.38E-01
				12	7.79E-05	2.28E-02
			7	2	2.84E-04	4.86E-01
				7	2.09E-04	1.59E-01
				12	1.65E-04	7.41E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	3	200	13	2	1.06E-04	9.24E-02
				7	7.87E-05	7.15E-02
				12	6.08E-05	4.16E-02
		800	1	2	4.53E-04	6.67E-01
				7	3.45E-04	4.59E-01
				12	2.84E-04	3.82E-01
			7	2	7.28E-04	1.28E+00
				7	5.65E-04	7.25E-01
				12	4.42E-04	5.98E-01
			13	2	2.81E-04	1.70E-01
				7	2.03E-04	1.94E-01
				12	1.67E-04	1.13E-01
		1400	1	2	7.75E-04	8.48E-01
				7	6.15E-04	5.01E-01
				12	4.94E-04	5.54E-01
			7	2	1.21E-03	1.31E+00
				7	9.15E-04	1.55E+00
				12	7.84E-04	5.89E-01
			13	2	4.18E-04	4.91E-01
				7	3.46E-04	1.92E-01
				12	2.68E-04	2.81E-01
	6	200	1	2	2.03E-04	7.16E-02
				7	1.27E-04	2.66E-01
				12	1.15E-04	5.67E-02
			7	2	3.96E-04	3.60E-01
				7	2.62E-04	4.18E-01
				12	2.22E-04	1.63E-01
			13	2	1.40E-04	1.77E-01
				7	1.13E-04	-3.33E-02
				12	7.77E-05	6.29E-02
		800	1	2	5.72E-04	7.85E-01
				7	4.45E-04	9.01E-01
				12	3.65E-04	4.71E-01
			7	2	1.01E-03	9.99E-01
				7	7.63E-04	9.04E-01
				12	5.89E-04	1.00E+00
			13	2	3.43E-04	3.95E-01
				7	2.67E-04	3.14E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	800	13	12	2.09E-04	3.27E-01
		1400	1	2	9.99E-04	1.06E+00
				7	7.64E-04	1.11E+00
				12	6.13E-04	1.05E+00
			7	2	1.60E-03	2.21E+00
				7	1.23E-03	1.32E+00
				12	1.04E-03	1.12E+00
			13	2	5.61E-04	5.46E-01
				7	4.28E-04	6.34E-01
				12	3.57E-04	3.84E-01
6	0	200	1	2	4.59E-04	3.47E-01
				7	3.02E-04	8.37E-01
				12	2.47E-04	1.94E-01
			7	2	8.62E-04	1.03E+00
				7	6.72E-04	3.58E-01
				12	5.19E-04	3.12E-01
			13	2	3.33E-04	4.21E-01
				7	2.48E-04	1.15E-01
				12	1.64E-04	3.48E-01
		800	1	2	1.34E-03	2.43E+00
				7	1.18E-03	6.25E-01
				12	8.59E-04	1.29E+00
			7	2	2.39E-03	3.29E+00
				7	1.93E-03	1.17E+00
				12	1.36E-03	2.38E+00
			13	2	8.92E-04	7.87E-01
				7	6.14E-04	9.99E-01
				12	4.98E-04	7.86E-01
		1400	1	2	2.42E-03	3.26E+00
				7	1.93E-03	1.47E+00
				12	1.59E-03	2.18E+00
			7	2	3.68E-03	7.33E+00
				7	3.04E-03	3.41E+00
				12	2.41E-03	2.42E+00
			13	2	1.33E-03	1.52E+00
				7	1.02E-03	1.53E+00
				12	8.09E-04	1.45E+00
	3	200	1	2	4.72E-04	8.35E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	3	200	1	7	3.93E-04	1.54E-01
				12	2.89E-04	1.81E-01
			7	2	1.06E-03	1.26E+00
				7	7.57E-04	8.02E-01
				12	5.47E-04	7.79E-01
			13	2	3.66E-04	5.31E-01
				7	2.84E-04	9.81E-02
				12	2.08E-04	2.67E-01
		800	1	2	1.61E-03	2.47E+00
				7	1.28E-03	4.60E-01
				12	8.36E-04	2.81E+00
			7	2	2.54E-03	5.05E+00
				7	2.03E-03	2.78E+00
				12	1.56E-03	2.20E+00
			13	2	9.43E-04	9.16E-01
				7	6.86E-04	1.01E+00
				12	5.67E-04	5.52E-01
		1400	1	2	2.76E-03	1.91E+00
				7	2.13E-03	2.52E+00
				12	1.84E-03	1.23E+00
			7	2	4.36E-03	4.94E+00
				7	3.28E-03	5.28E+00
				12	2.66E-03	4.24E+00
			13	2	1.61E-03	1.36E+00
				7	1.19E-03	9.84E-01
				12	9.03E-04	1.43E+00
	6	200	1	2	5.90E-04	9.76E-01
				7	4.44E-04	9.06E-01
				12	3.17E-04	8.68E-01
			7	2	1.28E-03	2.80E+00
				7	9.46E-04	1.62E+00
				12	7.01E-04	9.64E-01
			13	2	4.26E-04	1.46E+00
				7	3.64E-04	4.90E-01
				12	2.73E-04	8.38E-02
		800	1	2	2.11E-03	3.20E+00
				7	1.51E-03	3.02E+00
				12	1.44E-03	9.20E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	800	7	2	3.38E-03	5.95E+00
				7	2.65E-03	3.39E+00
				12	2.11E-03	2.54E+00
			13	2	1.21E-03	1.80E+00
				7	8.46E-04	2.03E+00
				12	7.56E-04	1.00E+00
		1400	1	2	3.72E-03	3.24E+00
				7	2.76E-03	4.11E+00
				12	2.23E-03	2.89E+00
			7	2	5.77E-03	1.01E+01
				7	4.21E-03	7.36E+00
				12	3.52E-03	5.41E+00
			13	2	1.96E-03	3.43E+00
				7	1.56E-03	1.56E+00
				12	1.31E-03	6.66E-01

Appendix NN. Guardrail FC5

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	2.36E-05	6.83E-01
0	0	200	1	7	1.56E-05	3.98E-01
0	0	200	1	12	1.58E-05	2.64E-01
0	0	200	7	2	4.30E-05	1.10E+00
0	0	200	7	7	3.32E-05	6.97E-01
0	0	200	7	12	2.54E-05	4.03E-01
0	0	200	13	2	2.12E-05	6.25E-01
0	0	200	13	7	1.57E-05	3.81E-01
0	0	200	13	12	1.25E-05	2.59E-01
0	0	800	1	2	7.98E-05	2.02E+00
0	0	800	1	7	6.30E-05	1.28E+00
0	0	800	1	12	5.09E-05	8.49E-01
0	0	800	7	2	1.10E-04	2.80E+00
0	0	800	7	7	6.32E-05	2.13E+00
0	0	800	7	12	6.01E-05	1.29E+00
0	0	800	13	2	6.32E-05	1.37E+00
0	0	800	13	7	3.99E-05	1.03E+00
0	0	800	13	12	3.11E-05	6.76E-01
0	0	1400	1	2	1.30E-04	3.38E+00
0	0	1400	1	7	1.15E-04	2.22E+00
0	0	1400	1	12	6.62E-05	1.75E+00
0	0	1400	7	2	1.81E-04	4.39E+00
0	0	1400	7	7	1.19E-04	3.29E+00
0	0	1400	7	12	8.69E-05	2.33E+00
0	0	1400	13	2	9.46E-05	2.25E+00
0	0	1400	13	7	6.49E-05	1.66E+00
0	0	1400	13	12	4.14E-05	1.27E+00
0	3	200	1	2	3.02E-05	7.47E-01
0	3	200	1	7	1.73E-05	4.98E-01
0	3	200	1	12	1.13E-05	3.46E-01
0	3	200	7	2	4.91E-05	1.29E+00
0	3	200	7	7	4.05E-05	7.42E-01
0	3	200	7	12	2.07E-05	5.78E-01
0	3	200	13	2	2.50E-05	7.07E-01
0	3	200	13	7	1.49E-05	5.00E-01
0	3	200	13	12	1.20E-05	3.08E-01
0	3	800	1	2	9.78E-05	2.20E+00
0	3	800	1	7	5.07E-05	1.75E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	4.25E-05	1.20E+00
			7	2	1.44E-04	2.90E+00
				7	9.85E-05	2.07E+00
				12	6.11E-05	1.54E+00
			13	2	6.26E-05	1.63E+00
				7	4.01E-05	1.26E+00
				12	3.36E-05	7.80E-01
		1400	1	2	1.33E-04	4.22E+00
				7	1.34E-04	2.53E+00
				12	9.34E-05	1.66E+00
			7	2	2.12E-04	4.88E+00
				7	1.54E-04	3.46E+00
				12	1.08E-04	2.49E+00
			13	2	1.05E-04	2.59E+00
				7	7.83E-05	1.76E+00
				12	5.73E-05	1.25E+00
	6	200	1	2	3.37E-05	9.49E-01
				7	2.85E-05	5.99E-01
				12	2.04E-05	3.63E-01
			7	2	7.08E-05	1.50E+00
				7	3.97E-05	1.20E+00
				12	2.89E-05	7.81E-01
			13	2	3.90E-05	8.93E-01
				7	2.74E-05	5.75E-01
				12	1.52E-05	4.14E-01
		800	1	2	1.15E-04	3.05E+00
				7	1.09E-04	1.88E+00
				12	6.85E-05	1.47E+00
			7	2	1.75E-04	4.01E+00
				7	1.21E-04	2.91E+00
				12	8.20E-05	2.13E+00
			13	2	9.74E-05	1.99E+00
				7	6.48E-05	1.46E+00
				12	4.34E-05	1.11E+00
		1400	1	2	2.17E-04	4.81E+00
				7	1.34E-04	3.97E+00
				12	1.27E-04	2.14E+00
			7	2	2.57E-04	6.92E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	1.78E-04	5.09E+00
				12	1.46E-04	3.35E+00
			13	2	1.40E-04	3.39E+00
				7	9.62E-05	2.46E+00
				12	7.17E-05	1.76E+00
4	0	200	1	2	6.19E-05	1.61E+00
				7	5.01E-05	9.29E-01
				12	2.24E-05	8.68E-01
			7	2	1.11E-04	2.85E+00
				7	7.13E-05	1.86E+00
				12	4.70E-05	1.32E+00
			13	2	6.56E-05	1.48E+00
				7	4.00E-05	1.07E+00
				12	3.06E-05	6.35E-01
		800	1	2	2.09E-04	4.77E+00
				7	1.31E-04	3.78E+00
				12	8.62E-05	2.78E+00
			7	2	3.16E-04	6.53E+00
				7	1.83E-04	5.02E+00
				12	1.25E-04	3.67E+00
			13	2	1.60E-04	3.51E+00
				7	1.02E-04	2.65E+00
				12	7.26E-05	1.80E+00
		1400	1	2	3.53E-04	8.39E+00
				7	2.27E-04	6.12E+00
				12	1.61E-04	4.64E+00
			7	2	4.79E-04	1.08E+01
				7	3.27E-04	8.07E+00
				12	2.36E-04	5.59E+00
			13	2	2.23E-04	6.07E+00
				7	1.67E-04	4.14E+00
				12	1.20E-04	2.86E+00
	3	200	1	2	7.37E-05	1.72E+00
				7	3.30E-05	1.55E+00
				12	3.09E-05	8.20E-01
			7	2	1.25E-04	3.16E+00
				7	8.26E-05	2.06E+00
				12	5.64E-05	1.41E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	6.43E-05	1.79E+00
				7	5.42E-05	1.02E+00
				12	3.03E-05	7.77E-01
		800	1	2	2.27E-04	5.74E+00
				7	1.70E-04	3.84E+00
				12	1.28E-04	2.65E+00
			7	2	3.03E-04	8.16E+00
				7	1.91E-04	6.05E+00
				12	1.53E-04	3.99E+00
			13	2	1.66E-04	4.09E+00
				7	1.14E-04	2.99E+00
				12	8.80E-05	1.95E+00
		1400	1	2	3.93E-04	9.42E+00
				7	2.71E-04	7.06E+00
				12	1.94E-04	4.81E+00
			7	2	5.22E-04	1.25E+01
				7	3.87E-04	8.69E+00
				12	2.58E-04	6.37E+00
			13	2	2.76E-04	6.54E+00
				7	1.75E-04	4.92E+00
				12	1.28E-04	3.41E+00
	6	200	1	2	8.68E-05	2.48E+00
				7	6.18E-05	1.37E+00
				12	4.96E-05	1.02E+00
			7	2	1.76E-04	4.50E+00
				7	1.11E-04	2.69E+00
				12	6.90E-05	1.90E+00
			13	2	8.46E-05	2.51E+00
				7	6.84E-05	1.41E+00
				12	4.08E-05	1.03E+00
		800	1	2	3.02E-04	7.33E+00
				7	1.83E-04	5.53E+00
				12	1.51E-04	3.60E+00
			7	2	4.37E-04	1.05E+01
				7	3.05E-04	7.47E+00
				12	2.17E-04	4.91E+00
			13	2	2.19E-04	5.74E+00
				7	1.54E-04	3.99E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	9.34E-05	2.92E+00
		1400	1	2	5.16E-04	1.28E+01
				7	3.36E-04	9.35E+00
				12	2.68E-04	6.35E+00
			7	2	7.27E-04	1.65E+01
				7	4.93E-04	1.18E+01
				12	3.39E-04	8.58E+00
			13	2	3.50E-04	8.82E+00
				7	2.31E-04	6.50E+00
				12	1.84E-04	4.29E+00
8	0	200	1	2	1.26E-04	2.57E+00
				7	7.12E-05	1.96E+00
				12	7.00E-05	9.98E-01
			7	2	2.18E-04	4.70E+00
				7	1.44E-04	3.05E+00
				12	8.38E-05	2.17E+00
			13	2	1.12E-04	2.76E+00
				7	7.43E-05	1.78E+00
				12	4.76E-05	1.19E+00
		800	1	2	3.73E-04	8.49E+00
				7	2.54E-04	6.25E+00
				12	1.92E-04	4.10E+00
			7	2	5.50E-04	1.16E+01
				7	3.70E-04	8.35E+00
				12	2.37E-04	6.00E+00
			13	2	2.55E-04	6.71E+00
				7	2.02E-04	4.25E+00
				12	1.31E-04	3.21E+00
		1400	1	2	6.66E-04	1.40E+01
				7	4.26E-04	1.03E+01
				12	2.97E-04	7.59E+00
			7	2	8.19E-04	1.97E+01
				7	5.93E-04	1.35E+01
				12	4.01E-04	9.85E+00
			13	2	4.23E-04	1.02E+01
				7	3.15E-04	7.25E+00
				12	1.98E-04	5.23E+00
	3	200	1	2	1.31E-04	2.97E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	9.13E-05	2.13E+00
				12	5.91E-05	1.36E+00
			7	2	2.46E-04	5.19E+00
				7	1.40E-04	3.72E+00
				12	1.05E-04	2.27E+00
			13	2	1.21E-04	3.18E+00
				7	9.49E-05	1.96E+00
				12	5.76E-05	1.31E+00
		800	1	2	3.37E-04	1.07E+01
				7	2.53E-04	7.47E+00
				12	1.84E-04	5.04E+00
			7	2	5.50E-04	1.40E+01
				7	3.86E-04	9.68E+00
				12	2.81E-04	6.48E+00
			13	2	2.89E-04	7.36E+00
				7	1.88E-04	5.39E+00
				12	1.47E-04	3.49E+00
		1400	1	2	7.00E-04	1.63E+01
				7	4.99E-04	1.18E+01
				12	3.45E-04	8.41E+00
			7	2	8.80E-04	2.25E+01
				7	6.36E-04	1.60E+01
				12	4.17E-04	1.15E+01
			13	2	4.68E-04	1.17E+01
				7	3.13E-04	8.77E+00
				12	2.43E-04	5.54E+00
	6	200	1	2	1.55E-04	4.45E+00
				7	1.27E-04	2.29E+00
				12	7.04E-05	1.98E+00
			7	2	3.01E-04	7.82E+00
				7	1.97E-04	4.76E+00
				12	1.45E-04	3.04E+00
			13	2	1.80E-04	3.88E+00
				7	1.16E-04	2.61E+00
				12	8.33E-05	1.63E+00
		800	1	2	5.09E-04	1.33E+01
				7	4.00E-04	9.13E+00
				12	2.33E-04	6.96E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	7.44E-04	1.87E+01
				7	4.99E-04	1.31E+01
				12	3.44E-04	9.00E+00
			13	2	4.00E-04	9.50E+00
				7	2.92E-04	6.71E+00
				12	1.97E-04	4.68E+00
		1400	1	2	9.36E-04	2.17E+01
				7	6.04E-04	1.65E+01
				12	4.58E-04	1.11E+01
			7	2	1.23E-03	2.93E+01
				7	8.53E-04	2.08E+01
				12	5.96E-04	1.49E+01
			13	2	6.02E-04	1.59E+01
				7	4.42E-04	1.12E+01
				12	3.23E-04	7.50E+00

Appendix OO. Guardrail FC6

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	6.83E-05	8.20E-05
				7	3.89E-05	1.89E-03
				12	3.19E-05	1.93E-04
			7	2	1.67E-04	2.99E-03
				7	9.04E-05	5.38E-03
				12	7.55E-05	1.81E-03
			13	2	3.29E-05	6.30E-04
				7	2.64E-05	-2.00E-04
				12	1.68E-05	1.79E-04
		800	1	2	2.12E-04	2.07E-03
				7	1.37E-04	4.58E-03
				12	1.17E-04	-1.10E-04
			7	2	4.19E-04	5.80E-03
				7	2.77E-04	7.33E-03
				12	2.14E-04	2.66E-03
			13	2	8.96E-05	1.92E-03
				7	6.77E-05	6.07E-04
				12	4.74E-05	5.84E-04
		1400	1	2	3.82E-04	9.89E-04
				7	2.59E-04	4.33E-03
				12	1.83E-04	2.80E-03
			7	2	6.94E-04	3.86E-03
				7	4.92E-04	5.88E-03
				12	3.26E-04	7.34E-03
			13	2	1.56E-04	1.70E-03
				7	1.11E-04	1.83E-03
				12	7.99E-05	7.18E-04
	6	200	1	2	9.56E-05	4.23E-03
				7	6.49E-05	1.24E-03
				12	5.44E-05	-5.83E-04
			7	2	2.37E-04	3.03E-03
				7	1.87E-04	-1.15E-04
				12	1.10E-04	9.87E-04
			13	2	5.30E-05	1.87E-04
				7	3.37E-05	2.56E-04
				12	2.20E-05	1.01E-03
		800	1	2	3.17E-04	3.90E-03
				7	2.41E-04	2.30E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	800	1	12	1.57E-04	4.07E-03
			7	2	6.50E-04	7.17E-03
				7	4.41E-04	9.44E-03
				12	3.07E-04	4.21E-03
			13	2	1.49E-04	1.88E-04
				7	1.02E-04	7.91E-04
				12	6.87E-05	1.13E-03
		1400	1	2	5.51E-04	3.64E-03
				7	3.99E-04	2.65E-03
				12	2.90E-04	2.65E-03
			7	2	9.54E-04	1.78E-02
				7	7.26E-04	8.41E-03
				12	5.38E-04	4.73E-03
			13	2	2.30E-04	3.77E-03
				7	1.74E-04	1.31E-03
				12	1.20E-04	1.05E-03
	12	200	1	2	1.01E-04	5.82E-04
				7	6.27E-05	2.15E-03
				12	4.48E-05	1.42E-03
			7	2	2.22E-04	7.09E-03
				7	1.61E-04	1.65E-03
				12	1.37E-04	-2.25E-03
			13	2	4.91E-05	8.38E-04
				7	3.41E-05	7.69E-04
				12	2.34E-05	2.75E-04
		800	1	2	3.29E-04	3.24E-03
				7	2.21E-04	3.40E-03
				12	1.51E-04	3.91E-03
			7	2	6.55E-04	8.55E-03
				7	4.34E-04	7.17E-03
				12	3.15E-04	6.53E-03
			13	2	1.34E-04	2.45E-03
				7	1.01E-04	1.05E-03
				12	7.44E-05	1.51E-04
		1400	1	2	5.35E-04	8.47E-03
				7	4.02E-04	4.25E-03
				12	2.71E-04	3.35E-03
			7	2	9.54E-04	1.69E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	12	1400	7	7	7.14E-04	1.37E-02
0	12	1400	7	12	5.25E-04	6.89E-03
0	12	1400	13	2	2.29E-04	3.59E-03
0	12	1400	13	7	1.65E-04	2.89E-03
0	12	1400	13	12	1.22E-04	1.01E-03
3	0	200	1	2	8.09E-05	-8.42E-04
3	0	200	1	7	4.70E-05	1.11E-03
3	0	200	1	12	3.28E-05	1.99E-04
3	0	200	7	2	2.27E-04	-1.25E-03
3	0	200	7	7	1.36E-04	1.56E-03
3	0	200	7	12	9.47E-05	1.14E-03
3	0	200	13	2	4.07E-05	4.01E-04
3	0	200	13	7	2.51E-05	6.49E-04
3	0	200	13	12	1.75E-05	3.57E-04
3	0	800	1	2	2.33E-04	2.84E-03
3	0	800	1	7	1.70E-04	1.21E-03
3	0	800	1	12	1.31E-04	-1.29E-03
3	0	800	7	2	5.05E-04	1.83E-03
3	0	800	7	7	3.35E-04	5.30E-03
3	0	800	7	12	2.34E-04	3.29E-03
3	0	800	13	2	9.93E-05	2.27E-03
3	0	800	13	7	7.49E-05	8.40E-04
3	0	800	13	12	4.93E-05	1.02E-03
3	0	1400	1	2	3.91E-04	6.23E-03
3	0	1400	1	7	2.75E-04	2.19E-03
3	0	1400	1	12	2.05E-04	1.19E-03
3	0	1400	7	2	7.52E-04	1.33E-02
3	0	1400	7	7	5.39E-04	1.01E-02
3	0	1400	7	12	3.95E-04	3.84E-03
3	0	1400	13	2	1.62E-04	2.59E-03
3	0	1400	13	7	1.24E-04	5.60E-04
3	0	1400	13	12	8.44E-05	1.16E-03
3	6	200	1	2	1.04E-04	2.46E-03
3	6	200	1	7	7.46E-05	2.36E-04
3	6	200	1	12	4.70E-05	1.27E-03
3	6	200	7	2	2.93E-04	5.78E-03
3	6	200	7	7	2.19E-04	-1.02E-03
3	6	200	7	12	1.48E-04	-6.02E-04

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	6	200	13	2	6.48E-05	2.21E-04
				7	3.77E-05	9.22E-04
				12	2.63E-05	3.08E-04
		800	1	2	3.38E-04	5.90E-03
				7	2.65E-04	1.51E-03
				12	1.67E-04	3.90E-03
			7	2	7.93E-04	2.12E-03
				7	5.03E-04	7.27E-03
				12	3.54E-04	2.02E-03
			13	2	1.40E-04	4.63E-03
				7	1.07E-04	1.52E-03
				12	7.60E-05	8.00E-04
		1400	1	2	6.12E-04	3.09E-03
				7	4.12E-04	3.33E-03
				12	3.17E-04	1.23E-03
			7	2	1.15E-03	1.82E-02
				7	8.00E-04	1.71E-02
				12	5.80E-04	7.83E-03
			13	2	2.36E-04	4.89E-03
				7	1.78E-04	2.11E-03
				12	1.24E-04	1.96E-03
	12	200	1	2	1.05E-04	1.10E-03
				7	7.05E-05	1.73E-03
				12	5.26E-05	1.72E-03
			7	2	3.06E-04	1.23E-03
				7	1.85E-04	4.26E-03
				12	1.31E-04	2.65E-03
			13	2	6.24E-05	2.55E-04
				7	3.92E-05	2.62E-04
				12	2.77E-05	2.66E-04
		800	1	2	3.85E-04	2.03E-03
				7	2.73E-04	-7.51E-05
				12	1.72E-04	2.60E-03
			7	2	7.12E-04	1.14E-02
				7	4.93E-04	1.05E-02
				12	3.36E-04	8.14E-03
			13	2	1.47E-04	2.62E-03
				7	1.14E-04	1.01E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
3	12	800	13	12	8.32E-05	9.35E-05
		1400	1	2	5.89E-04	6.23E-03
				7	4.01E-04	9.96E-03
				12	2.98E-04	4.46E-03
			7	2	1.22E-03	6.35E-03
				7	8.40E-04	1.06E-02
				12	5.88E-04	3.69E-03
			13	2	2.52E-04	2.51E-03
				7	1.80E-04	1.99E-03
				12	1.22E-04	1.72E-03
6	0	200	1	2	2.90E-04	4.15E-04
				7	1.88E-04	1.06E-03
				12	1.20E-04	5.86E-04
			7	2	7.77E-04	6.23E-03
				7	4.50E-04	1.23E-02
				12	3.49E-04	-1.50E-03
			13	2	1.59E-04	-1.09E-03
				7	8.52E-05	2.00E-03
				12	6.81E-05	2.22E-04
		800	1	2	8.25E-04	9.84E-03
				7	5.92E-04	3.40E-03
				12	5.10E-04	-6.50E-03
			7	2	1.59E-03	4.30E-02
				7	1.31E-03	6.68E-03
				12	8.69E-04	1.45E-02
			13	2	3.39E-04	1.03E-03
				7	2.20E-04	4.63E-03
				12	1.71E-04	2.14E-03
		1400	1	2	1.41E-03	1.06E-02
				7	1.02E-03	1.65E-03
				12	7.21E-04	4.49E-03
			7	2	2.79E-03	3.30E-02
				7	2.03E-03	1.90E-02
				12	1.37E-03	1.67E-02
			13	2	4.87E-04	1.20E-02
				7	3.63E-04	7.86E-03
				12	2.54E-04	3.89E-03
	6	200	1	2	4.21E-04	2.75E-03

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	6	200	1	7	2.87E-04	-2.26E-03
				12	1.86E-04	3.06E-03
			7	2	9.89E-04	2.89E-02
				7	8.16E-04	-3.32E-03
				12	4.60E-04	1.33E-02
			13	2	2.13E-04	1.03E-03
				7	1.27E-04	1.71E-03
				12	9.12E-05	1.22E-03
		800	1	2	1.16E-03	2.37E-02
				7	8.53E-04	1.47E-02
				12	6.05E-04	1.25E-02
			7	2	2.64E-03	3.38E-02
				7	1.89E-03	-1.68E-03
				12	1.38E-03	3.99E-03
			13	2	5.37E-04	2.20E-04
				7	3.63E-04	3.72E-03
				12	2.41E-04	2.93E-03
		1400	1	2	2.06E-03	3.68E-02
				7	1.46E-03	2.30E-02
				12	1.04E-03	1.64E-02
			7	2	4.20E-03	6.16E-02
				7	2.82E-03	7.08E-02
				12	2.09E-03	3.31E-02
			13	2	8.25E-04	4.01E-03
				7	5.83E-04	2.97E-03
				12	3.85E-04	6.37E-03
	12	200	1	2	4.24E-04	-5.55E-03
				7	3.10E-04	-4.87E-03
				12	1.91E-04	-5.80E-04
			7	2	8.58E-04	4.51E-02
				7	6.17E-04	2.81E-02
				12	5.07E-04	1.20E-03
			13	2	1.81E-04	5.12E-03
				7	1.34E-04	5.40E-03
				12	9.19E-05	3.86E-04
		800	1	2	1.25E-03	8.02E-03
				7	8.53E-04	1.72E-02
				12	5.99E-04	1.55E-02

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
6	12	800	7	2	2.77E-03	1.01E-02
				7	2.21E-03	-5.08E-02
				12	1.35E-03	-2.43E-03
			13	2	4.95E-04	6.49E-03
				7	3.61E-04	5.14E-03
				12	2.44E-04	5.21E-03
		1400	1	2	2.03E-03	3.05E-02
				7	1.58E-03	-1.25E-03
				12	1.05E-03	1.04E-02
			7	2	4.12E-03	5.99E-02
				7	2.79E-03	5.20E-02
				12	2.28E-03	8.11E-03
			13	2	7.67E-04	1.10E-02
				7	5.45E-04	9.24E-03
				12	3.98E-04	3.75E-03

Appendix PP. Guardrail FC7

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	0	200	1	2	1.15E-04	1.53E-02
				7	8.18E-05	5.02E-02
				12	6.06E-05	7.57E-02
			7	2	1.76E-04	2.10E-01
				7	1.38E-04	1.30E-01
				12	1.02E-04	1.52E-01
			13	2	8.59E-05	1.99E-01
				7	7.47E-05	3.93E-02
				12	4.83E-05	1.40E-01
		800	1	2	3.35E-04	3.30E-01
				7	2.53E-04	3.90E-01
				12	2.03E-04	4.40E-01
			7	2	4.60E-04	6.51E-01
				7	3.64E-04	3.89E-01
				12	2.80E-04	4.91E-01
			13	2	2.35E-04	2.33E-01
				7	1.80E-04	2.90E-01
				12	1.60E-04	2.09E-02
		1400	1	2	5.46E-04	6.46E-01
				7	4.38E-04	8.21E-01
				12	3.91E-04	6.40E-02
			7	2	7.50E-04	9.56E-01
				7	5.85E-04	7.86E-01
				12	4.89E-04	5.79E-01
			13	2	3.93E-04	3.77E-01
				7	3.02E-04	3.52E-01
				12	2.50E-04	2.04E-01
	3	200	1	2	1.11E-04	2.40E-01
				7	9.87E-05	-5.68E-02
				12	6.20E-05	1.66E-01
			7	2	2.02E-04	2.51E-01
				7	1.65E-04	7.90E-02
				12	1.18E-04	1.32E-01
			13	2	1.11E-04	1.40E-01
				7	7.84E-05	1.09E-01
				12	6.02E-05	8.95E-02
		800	1	2	3.69E-04	5.75E-01
				7	3.26E-04	-1.01E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	3	800	1	12	2.56E-04	3.03E-02
			7	2	5.42E-04	4.61E-01
				7	3.89E-04	6.89E-01
				12	3.25E-04	4.84E-01
			13	2	2.91E-04	7.23E-02
				7	2.19E-04	1.26E-01
				12	1.70E-04	1.79E-01
		1400	1	2	6.14E-04	1.02E+00
				7	5.08E-04	2.38E-01
				12	4.10E-04	4.07E-01
			7	2	8.12E-04	1.41E+00
				7	6.75E-04	6.77E-01
				12	5.45E-04	6.92E-01
			13	2	4.50E-04	3.61E-01
				7	3.37E-04	5.37E-01
				12	2.65E-04	4.80E-01
	6	200	1	2	1.53E-04	2.11E-01
				7	1.36E-04	-8.23E-02
				12	6.85E-05	4.24E-01
			7	2	2.52E-04	5.78E-01
				7	1.87E-04	2.98E-01
				12	1.42E-04	3.60E-01
			13	2	1.51E-04	1.29E-01
				7	1.02E-04	2.45E-01
				12	8.15E-05	1.04E-01
		800	1	2	5.13E-04	4.34E-01
				7	4.31E-04	4.45E-02
				12	2.94E-04	6.41E-01
			7	2	6.82E-04	1.04E+00
				7	5.32E-04	7.09E-01
				12	4.27E-04	7.52E-01
			13	2	3.73E-04	3.91E-01
				7	2.87E-04	2.44E-01
				12	2.23E-04	2.93E-01
		1400	1	2	8.64E-04	9.44E-01
				7	6.89E-04	6.28E-01
				12	5.67E-04	6.86E-01
			7	2	1.14E-03	1.25E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
0	6	1400	7	7	8.84E-04	1.05E+00
				12	7.16E-04	1.01E+00
			13	2	5.72E-04	6.36E-01
				7	4.62E-04	4.05E-01
				12	3.72E-04	4.25E-01
4	0	200	1	2	2.56E-04	2.89E-01
				7	1.71E-04	3.44E-01
				12	1.34E-04	2.68E-01
			7	2	4.46E-04	4.35E-01
				7	3.12E-04	2.74E-01
				12	2.25E-04	4.74E-01
			13	2	2.35E-04	3.40E-01
				7	1.72E-04	6.35E-02
				12	1.44E-04	1.57E-02
		800	1	2	7.76E-04	1.49E+00
				7	6.17E-04	8.75E-01
				12	5.59E-04	1.17E-01
			7	2	1.14E-03	1.14E+00
				7	8.75E-04	1.06E+00
				12	7.02E-04	5.25E-01
			13	2	5.89E-04	8.40E-01
				7	4.54E-04	4.88E-01
				12	3.53E-04	5.67E-01
		1400	1	2	1.36E-03	1.38E+00
				7	1.13E-03	3.71E-01
				12	8.97E-04	5.25E-01
			7	2	1.79E-03	2.25E+00
				7	1.42E-03	1.37E+00
				12	1.12E-03	1.47E+00
			13	2	9.51E-04	9.12E-01
				7	7.36E-04	6.93E-01
				12	5.81E-04	7.48E-01
	3	200	1	2	2.77E-04	4.71E-01
				7	2.05E-04	2.69E-01
				12	1.53E-04	3.35E-01
			7	2	5.18E-04	2.50E-01
				7	3.29E-04	6.05E-01
				12	2.63E-04	3.44E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	3	200	13	2	2.76E-04	2.00E-01
				7	1.83E-04	2.96E-01
				12	1.45E-04	1.77E-01
		800	1	2	8.76E-04	1.51E+00
				7	7.60E-04	2.26E-01
				12	5.97E-04	6.65E-01
			7	2	1.25E-03	1.51E+00
				7	1.01E-03	4.27E-01
				12	8.29E-04	4.93E-01
			13	2	6.74E-04	5.20E-01
				7	4.86E-04	7.14E-01
				12	3.99E-04	5.73E-01
		1400	1	2	1.60E-03	9.11E-01
				7	1.19E-03	1.37E+00
				12	9.14E-04	1.94E+00
			7	2	2.05E-03	2.52E+00
				7	1.59E-03	1.75E+00
				12	1.32E-03	9.36E-01
			13	2	1.09E-03	6.90E-01
				7	8.46E-04	6.36E-01
				12	6.86E-04	6.28E-01
	6	200	1	2	3.79E-04	3.93E-01
				7	2.90E-04	2.28E-01
				12	2.14E-04	5.61E-01
			7	2	7.00E-04	1.73E-01
				7	5.14E-04	-1.55E-01
				12	3.65E-04	4.13E-01
			13	2	3.85E-04	6.05E-02
				7	2.52E-04	3.04E-01
				12	2.00E-04	1.61E-01
		800	1	2	1.28E-03	4.78E-01
				7	1.01E-03	1.13E-01
				12	7.07E-04	1.57E+00
			7	2	1.72E-03	1.86E+00
				7	1.30E-03	1.55E+00
				12	1.09E-03	3.72E-01
			13	2	9.19E-04	4.51E-01
				7	6.99E-04	5.11E-01

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
4	6	800	13	12	5.42E-04	4.24E-01
		1400	1	2	2.02E-03	2.94E+00
				7	1.65E-03	7.68E-01
				12	1.32E-03	1.29E+00
			7	2	2.81E-03	1.70E+00
				7	2.13E-03	2.19E+00
				12	1.74E-03	2.20E+00
			13	2	1.44E-03	1.27E+00
				7	1.15E-03	4.31E-01
				12	8.90E-04	1.08E+00
8	0	200	1	2	4.24E-04	4.27E-01
				7	2.71E-04	5.68E-01
				12	2.33E-04	2.77E-01
			7	2	7.28E-04	6.37E-01
				7	4.98E-04	8.56E-01
				12	3.65E-04	7.45E-01
			13	2	3.79E-04	7.50E-01
				7	2.91E-04	1.99E-01
				12	2.27E-04	1.09E-01
		800	1	2	1.37E-03	1.72E+00
				7	1.03E-03	1.18E+00
				12	8.43E-04	1.98E-01
			7	2	1.94E-03	2.03E+00
				7	1.44E-03	1.84E+00
				12	1.16E-03	1.23E+00
			13	2	9.86E-04	7.39E-01
				7	7.84E-04	1.66E-01
				12	5.87E-04	1.00E+00
		1400	1	2	2.26E-03	3.04E+00
				7	1.83E-03	1.62E+00
				12	1.37E-03	2.76E+00
			7	2	3.08E-03	3.29E+00
				7	2.25E-03	3.42E+00
				12	1.96E-03	1.64E+00
			13	2	1.62E-03	7.14E-01
				7	1.17E-03	1.97E+00
				12	9.34E-04	1.59E+00
	3	200	1	2	4.39E-04	1.07E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	3	200	1	7	3.55E-04	9.47E-02
				12	2.72E-04	1.09E-01
			7	2	8.15E-04	9.99E-01
				7	5.72E-04	1.72E-01
				12	4.19E-04	6.98E-01
			13	2	4.48E-04	4.63E-01
				7	3.07E-04	3.65E-01
				12	2.42E-04	2.87E-02
		800	1	2	1.46E-03	2.74E+00
				7	1.21E-03	6.83E-01
				12	1.05E-03	3.96E-02
			7	2	2.17E-03	1.98E+00
				7	1.61E-03	1.69E+00
				12	1.23E-03	1.84E+00
			13	2	1.13E-03	1.13E+00
				7	8.77E-04	4.29E-01
				12	6.80E-04	7.90E-01
		1400	1	2	2.68E-03	1.11E+00
				7	1.99E-03	2.17E+00
				12	1.64E-03	1.89E+00
			7	2	3.45E-03	2.71E+00
				7	2.67E-03	3.26E+00
				12	2.22E-03	1.25E+00
			13	2	1.85E-03	6.85E-01
				7	1.34E-03	1.58E+00
				12	1.09E-03	1.16E+00
	6	200	1	2	5.88E-04	1.05E+00
				7	4.25E-04	5.89E-01
				12	3.40E-04	3.36E-01
			7	2	1.08E-03	9.45E-01
				7	7.33E-04	8.62E-01
				12	5.68E-04	7.34E-01
			13	2	6.05E-04	8.41E-01
				7	4.51E-04	-5.55E-02
				12	3.33E-04	2.41E-01
		800	1	2	1.98E-03	3.05E+00
				7	1.55E-03	1.75E+00
				12	1.21E-03	1.81E+00

Degree of Curvature	Grade (%)	Length of Feature (ft)	Height of Feature (ft)	Offset (ft)	m	b
8	6	800	7	2	2.96E-03	1.46E+00
				7	2.16E-03	2.07E+00
				12	1.70E-03	1.73E+00
			13	2	1.45E-03	1.70E+00
				7	1.13E-03	4.48E-01
				12	9.53E-04	3.11E-01
		1400	1	2	3.63E-03	1.25E+00
				7	2.80E-03	1.33E+00
				12	2.43E-03	-6.03E-01
			7	2	4.66E-03	3.41E+00
				7	3.39E-03	4.65E+00
				12	2.88E-03	2.41E+00
			13	2	2.30E-03	3.75E+00
				7	1.90E-03	4.14E-01
				12	1.49E-03	1.26E+00

Appendix QQ. Roadside Geometry Data for FC1's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2000	ASD0039R	7.9	2	3720	7	4.50	17.00	3	0
	ASD0095R	0.88	2	1860	0	0.00	3.10	4	4.6
	ASD0603R	10.25	2	952	0	0.00	1.90	2.5	2
	ATB0046R	4.41	2	1717	1.3	9.30	3.30	3	3.6
	ATB0167R	6.75	2	2055	2	5.80	15.00	4	0.3
	CAR0542R	13.49	2	920	16.4	11.49	2.11	5.8	6.8
	CLI0350R	10.89	2	1300	0.46	45.45	45.45	2.49	0.5
	COL0062R	3.53	2	12520	5.19	4.20	0.00	7.2	1.1
	DEF0015R	22.31	2	3429	2.38	4.07	0.00	2.75	0.1
	GAL0325R	12.62	2	570	0.0	0.00	1.12	0.0	0.8
	HAN0613R	14.93	2	2050	4.9	32.26	50.00	40.9	0.7
	HIG0753R	1.88	2	658	0.37	9.90	6.06	0	3.3
	HOL0520R	2.11	2	192	3.83	2.74	8.00	1.28	0.8
	MED0042R	11.58	2	8240	6.66	3.88	0.00	18.13	0.9
	MRW0529R	6.93	2	2060	1.0	8.26	16.67	2.5	1.2
	RIC0061R	12.13	2	4880	3.5	4.24	3.03	13.5	1.1
	RIC0061R	1.89	1	911	3.2	6.17	47.62	5.2	6.3
	ROS0180R	10.99	2	2770	1.2	8.20	20.41	9.5	5.9
	SEN0019R	11.81	2	890	3.0	5.68	0.00	5.4	1.1
	SEN0100R	4.12	2	1840	0.6	11.11	4.59	4.3	1.0
	SEN0162R	3.63	2	870	2.3	6.85	0.00	4.1	1.5
	TRU0087R	9.59	1	1830	0.9	6.85	45.45	4.0	0.5
	TUS0416R	1.11	2	1490	14.21	3.41	1.33	15.8	3.7
	WOO0235R	10.95	2	1660	8.59	2.01	2.36	15.47	0.2
	WOO0235R	17.9	2	1616	5.81	1.99	2.88	13.95	0.1
2001	HIG0138R	2	1	1965	1.4	6.21	6.67	8.8	0.8
	PIK0220R	0.51	1	2450	15.6	5.59	1.61	74.2	5.5
	HEN0018R	15.53	1	1320	7.1	1.92	1.83	22.7	0.1
	BEL0009R	9	1	1050	5.9	2.17	1.30	8.2	3.8
	PER0383R	1	1	630	0.9	9.62	2.97	7.3	9.2
	CAR0009R	7.01	1	980	2.6	2.99	6.54	9	3.4
	WIL0576R	14.77	2	1430	2	5.78	55.56	7.5	0.7
	RIC0061R	1.83	2	911	2.5	7.30	18.87	12.2	2.3
	JEF0150R	7.88	2	3296	7.8	6.25	43.48	22.9	0.9
	TUS0093R	7.14	2	1750	1.1	35.71	31.25	5.1	0.5
	ATB0193R	18.17	2	1821	5	3.94	6.17	11.7	0.5
	MRW0529R	6.99	2	2004	2.1	4.27	9.17	7.8	1.6
	UNI0161R	3.75	2	1620	3.5	3.03	4.74	9.4	0.4
	LOR0511R	8.55	2	2410	2.8	10.00	27.78	13.2	0.2
	LOR0303R	4.49	2	1760	5.2	5.41	18.87	11.2	0.1
	GAL0325R	11.39	2	1035	1.1	8.13	2.00	4.1	0.2
	HEN0066R	3.04	2	5230	9.6	52.63	45.45	82.4	0.6
	TRU0534R	7.92	2	4330	1.3	8.26	1.92	6	3.6
	COL0558R	8.88	2	980	0.8	24.39	9.17	7.8	7
	HOC0216R	1.5	2	770	1	6.21	0.15	3.3	0
	PIC0762R	3.54	2	1280	1.4	5.03	41.67	11.5	0.4
	ATB0167R	9.13	2	1440	1.7	4.18	13.89	11.9	0.7
	WIL0107R	4.19	2	1926	2.7	7.94	111.11	11.2	0.2
	GEA0608R	3.98	2	3882	2.1	6.37	1.76	15	7.5
	MAR0095R	0	2	2230	0.4	25.00	37.04	11.9	0.2
	MEG0689R	0.5	2	810	5.7	11.49	3.36	21.7	2.4

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2001	ATH0685R	0.83	2	1240	0.4	17.24	1.23	7.4	9.8
	HAN0037R	17.12	2	1562	1.4	9.35	76.92	7.8	0.4
	MED0094R	13.8	2	5926	1	11.90	6.49	4.4	6.8
	CLI0134R	6.5	2	2809	8.9	38.46	166.67	57.9	0.6
	MEG0143R	2.56	2	1309	1.3	6.76	2.63	4.5	1
	RIC0545R	5.25	2	2305	0.6	8.93	17.86	7.3	7.6
	WOO0065R	5.76	2	1420	0.7	7.14	2.21	4.5	0.6
	GUE0285R	10.12	2	610	2.4	11.11	11.24	13	5.2
	DEL0203R	3.12	2	2600	2.3	6.25	8.55	9.5	0.1
	COL0558R	1.85	2	2120	22.9	0.30	15.38	8	2.3
	HAS0646R	9.18	2	430	1.8	4.59	3.61	4	8.2
	HAS0009R	4.73	2	2900	1.1	8.62	3.29	7.6	10.7
	MRW0097R	2.25	2	2808	2.8	3.50	20.83	10.9	3.1
	GRE0072R	3.84	2	2470	4.9	15.87	15.87	5.6	0.5
	VIN0160R	15.15	2	1481	1.8	3.98	15.15	6.7	2.4
	RIC0430R	10.66	2	1470	5	1.72	2.10	9.5	6.5
	RIC0039R	25.62	2	2070	0.6	41.67	55.56	10.2	1.8
	HIG0138R	19.25	2	1960	1.7	4.48	4.05	7.3	6.2
	KNO0229R	0.75	2	3200	0.2	38.46	1.08	5.1	2.8
	SEN0018R	17.89	2	3192	7.9	1.01	2.88	11.7	0.8
	RIC0039R	21.13	2	5060	1.3	25.64	11.49	11.8	0.4
	MUS0666R	12.24	2	1016	18.2	4.13	2.41	22.9	3.3
	GAL0325R	15.48	2	580	3.8	3.91	18.18	11.3	0.7
	GRE0072R	13.83	2	2460	3.1	2.36	20.00	8.9	0.6
	MEG0124R	9.5	2	2690	6.6	2.16	1.04	9.1	2
	SAN0019R	14.04	2	4423	5.1	2.62	4.18	12.9	0.1
	MAD0056R	9	2	1920	2.7	4.59	11.36	10.8	0.7
	ASD0302R	1.12	2	1110	2.1	6.90	5.62	9.3	0.1
	HOC0664R	13.75	2	2920	2.5	8.06	20.83	14.7	5.6
	ASD0039R	3.5	2	2370	16.1	2.20	8.70	15.4	1.3
	ASD0097R	3.08	2	1100	4.7	2.58	0.00	5.6	0.5
	ASD0042R	13.75	2	2718	1.5	5.88	14.29	6.4	1.7
	PER0093R	6.32	2	2680	21.1	9.26	0.94	27.1	0.9
	TUS0516R	2.76	2	1800	0.6	13.33	2.62	7.9	8.8
	WOO0199R	9.23	2	3293	1.8	9.35	40.00	12.8	1.1
	PUT0015R	12.45	2	2559	2.9	6.94	5.13	29.1	0.2
	GAL0554R	7.33	2	1725	5.6	3.00	0.30	12.3	6
	PRE0732R	7.17	2	1098	0.6	10.42	90.91	7.9	10.4
	HAN0037R	16.37	2	1562	1.3	10.87	3.32	15.3	0.7
2002	SCI0139R	14.87	1	976	5.1	1.96	0.25	16.3	2.9
	LIC0310R	12.64	1	1774	1.9	5.35	10.20	8.1	1.1
	GAL0141R	9	1	680	1.5	4.76	9.26	7.9	0.2
	HAN0235R	24.8	1	1700	1.8	9.80	0.69	8.6	0.3
	WOO0199R	2.98	1	4721	1.3	14.08	33.33	15.8	0.9
	CLA0056R	4	1	1200	0.2	43.48	50.00	6.8	1.5
	ROS0207R	4.11	2	1615	2.2	3.47	15.38	10.4	2.7
	POR0088R	16.38	2	2220	1.5	32.26	23.26	28.6	2.5
	BEL0149R	26.08	2	2040	1.6	5.59	26.32	15.3	4.8
	WOO0199R	20.77	2	2434	4.3	2.26	4.69	17.1	0.4
	WAY0241R	1.16	2	2410	6.6	5.71	10.99	14.5	2.3
	GEA0608R	3.48	2	5900	1.8	6.94	3.27	7.8	3.8

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2002	WIL0576R	13.85	2	1430	10.8	3.04	22.22	30.9	2.9
	WAS0026R	5.86	2	950	3	7.87	0.76	9.7	2.7
	WAY0301R	1.99	2	1650	3.3	2.79	6.17	9	2.2
	ADA0247R	20.73	2	1005	3.7	2.66	2.25	6.9	2.9
	PER0037R	18.81	2	2500	0.6	12.82	8.55	8.2	5.4
	HOC0278R	5.75	2	870	1.2	5.56	0.28	4.4	1.2
	WAY0094R	4.88	2	1080	0	0.00	0.43	8.4	15.6
	CLE0133R	35.13	2	2040	2	4.93	7.52	10.3	1.7
	CLE0132R	20.77	2	4190	1.1	8.55	0.86	6.8	0.6
	ATB0534R	3.88	2	740	1	8.26	4.69	6.2	1.5
	HOC0664R	12.98	2	2920	20.7	13.51	14.93	27.6	0.8
	LOR0303R	18.77	2	2950	2.8	5.71	9.71	7.8	0.2
	GEA0166R	4.75	2	3180	0.8	11.76	18.18	13.6	1.5
	WAR0741R	11.17	2	4890	0.3	14.93	23.26	5.8	3.2
	NOB0147R	17.9	2	890	6.2	1.81	9.90	9.5	0.8
	WAY0539R	12.17	2	1570	0.6	16.13	22.73	10.9	1.3
	PIC0104R	15.17	2	5280	2.6	14.08	16.39	20	1.6
	PIK0220R	2.12	2	2450	11.3	3.64	3.40	61.3	0.6
	HAS0009R	2.83	2	2900	11	7.81	2.21	19.8	4.5
	GRE0072R	13.75	2	2460	3.6	6.67	7.30	10.5	0.9
	HIG0134R	0.75	2	1306	2.3	7.30	12.35	8.9	0.5
	CRA0019R	16.69	2	1320	4.7	4.78	6.41	24.2	0.2
	RIC0061R	10.88	2	4880	0.8	11.49	31.25	7.5	2
	COL0045R	0.78	2	4080	13.3	1.44	0.32	10.7	1
	PIK0124R	8.86	2	3722	6.8	3.70	0.21	12.4	2.6
2003	PIC0056R	3.34	1	1810	1.2	10.53	24.39	5.8	0.4
	GRE0072R	16.2	1	4390	2.9	19.23	76.92	13.2	0.4
	MOE0026R	30.35	1	2090	8.9	6.37	2.15	22.1	4
	PER0037R	7.62	1	3960	6.5	4.13	7.69	13.3	1.5
	MER0117R	6.86	1	822	1.6	3.75	25.64	17.6	0.1
	MUS0208R	7.62	1	1450	1.4	6.80	7.63	12.4	0.6
	WAY0302R	10.94	2	1250	0.5	16.39	14.49	11	1.1
	ERI0013R	5.26	2	3980	3.8	3.40	27.03	9.9	2.1
	COL0164R	18.73	2	3054	1.6	11.76	8.33	10.4	3.9
	COL0558R	2.35	2	1254	23.4	0.11	0.63	7.2	3.9
	CLE0050R	17.12	2	3810	2.9	3.22	7.14	12.4	0.6
	RIC0061R	10.09	2	4880	2.7	4.78	11.24	7.9	0.1
	ADA0125R	3.17	2	1440	5.4	3.48	2.72	18.9	7.3
	ASD0089R	2.27	2	1510	1.2	10.31	0.12	12.2	4.7
	ATB0046R	18.33	2	7560	1.2	62.50	71.43	21.8	0.9
	MEG0338R	10.91	2	510	23.3	1.65	2.68	18.2	0.5
	LIC0079R	33.1	2	770	13.2	21.74	58.82	10.4	1.3
	DEL0521R	12.09	2	1763	0.9	8.13	2.07	11.9	1
	ROS0041R	6.12	2	2200	3.8	4.81	0.21	24.8	4.8
	ATB0534R	4.21	2	740	1.5	4.07	4.44	6.2	0.7
	PER0668R	25.43	2	400	2.6	8.47	0.56	26.9	10
	GRE0072R	14.12	2	2460	2.7	2.95	6.58	6.5	1.2
	JAC0327R	15.89	2	841	4.7	6.90	0.90	14.7	1.3
	WOO0105R	6.83	2	1400	8	3.50	2.09	16.8	0.4
	WIL0127R	15.89	2	1510	10.5	7.14	1.36	9.9	0.1
	MAH0165R	24.76	2	4200	1.3	5.38	4.10	9.7	0.4

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2003	VIN0327R	11.75	2	760	8.5	3.60	4.90	26.1	5.6
	ASD0095R	3.29	2	1160	2.6	14.49	10.31	16.8	4.7
	RIC0545R	4.93	2	2090	0.4	12.50	6.49	9.3	5.4
	HIG0753R	9.1	2	1370	1.8	7.14	7.63	6.9	4.9
	CAR0212R	3.17	2	1680	10	1.81	0.71	8.9	3.9
	ASD0042R	13.83	2	2718	1.6	4.72	3.52	6.3	1.8
	HIG0134R	4.17	2	1306	0.9	9.80	20.83	6.4	5.3
	MOE0026R	9.23	2	652	1.3	6.37	0.19	6.8	9.4
	ATB0046R	6.86	2	1717	2.1	8.26	111.11	7.6	0.2
	ATB0167R	8.67	2	1440	1.8	4.46	3.66	11.5	0.4
	LIC0657R	6.17	2	1727	0.9	45.45	8.13	7.2	3.2
	RIC0097R	16.68	2	1162	1.9	3.38	1.93	11.1	2.5
	ROS0041R	2.17	2	1000	6.3	3.55	14.08	12.8	1
	PER0093R	2.5	2	2350	0.8	7.14	10.20	5	6.1
	WAS0555R	1.97	2	1524	1.1	6.76	1.46	6.5	6.8
	ATB0193R	22.01	2	1821	1.5	11.63	9.01	19.8	2.1
	PIK0772R	6.62	2	1022	4.1	3.11	1.01	27	1.8
	VIN0327R	12.12	2	760	1.8	3.60	3.94	6.6	1.3
	PER0204R	6.25	2	1220	1.1	11.90	2.01	6.8	4.2
	TUS0800R	32.99	2	5344	4	10.10	90.91	10.8	0.6
	PAU0637R	9.67	2	1360	4.5	6.17	3.82	20.3	0.1
	ATH0690R	1.33	2	1530	2.7	4.69	0.74	8.8	3.2
	SAN0019R	3.96	2	2090	2.8	52.63	200.00	11.5	0.3
	WAR0022R	10.9	2	5440	3	15.38	0.57	17.8	6.8
	SAN0019R	3.88	2	2090	3.5	5.81	27.03	8.3	7
	GEA0528R	21.35	2	3720	2.4	4.93	5.95	15	0.5
	GEA0166R	5.17	2	3180	1.8	4.05	7.46	6.3	1.4
	FAI0037R	27.12	2	5219	6.9	2.00	4.29	9.7	0.2
	UNI0245R	6.97	2	4350	2	7.69	0.73	11.1	0.3
	MOE0026R	13.17	2	870	8.2	4.24	21.28	19.3	3.3
	CRA0019R	27.7	2	900	2.8	4.42	25.00	18.1	1.2
	PER0093R	2.93	2	2350	0.2	17.54	0.31	3.8	3.2
	COL0558R	0.82	2	711	7.8	5.05	1.68	17.4	0.7
	RIC0096R	15.83	2	1589	1.3	2.49	9.09	3.4	1.7
	PIK0124R	14.83	2	4050	17.6	4.42	4.27	38.8	0.5
	LIC0661R	6.88	2	2410	1.1	8.62	6.76	6.2	4.7
	GUE0285R	6.11	2	1160	1.4	9.90	1.02	6	11.8
	COL0172R	12.07	2	2220	1.6	9.01	0.51	8.9	2.1
	HAS0250R	29.5	2	1536	23	12.99	11.90	238	4.2
	VIN0677R	1.75	2	970	3.6	10.53	76.92	19	2.7
	RIC0603R	10.83	2	1020	0.9	8.00	1.63	8.5	2
	DEL0745R	4.74	2	3559	1.2	10.75	41.67	10.6	1.7
	ERI0269R	10.32	2	2800	3.8	4.72	15.15	16.7	0.5
	WAY0094R	19.17	2	2355	7.9	4.15	3.76	27.7	2.8
	LAW0217R	11.67	2	400	10	1.33	2.30	18.4	0.1
	HUR0060R	4.26	2	1880	2.7	4.41	33.33	7.5	1.1
	MED0606R	2.56	2	2046	3.1	7.81	1.33	15.2	3.7
2004	KNO0314R	2.3	2	1287	2	9.26	8.00	19	0.4
	WOO0065R	3.7	1	1420	2.6	3.72	3.40	11.5	0.3
	CLI0730R	5.25	2	2786	3.3	5.43	9.43	17.4	1
	ATB0086R	2.75	2	1260	1.2	4.61	8.40	8.2	1.7

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2004	NOB0564R	1	2	1240	3	7.52	1.54	11.9	0.9
	ATB0006R	20.83	2	3350	4.5	2.43	5.46	12.4	0.3
	MED0303R	14.99	2	5310	3.6	2.60	3.94	15.9	0.8
	PUT0694R	3.49	2	1330	1.7	5.38	27.78	7.5	0.1
	ADA0247R	19.19	2	890	1.4	33.33	500.00	20.5	6.5
	HOC0595R	6.77	2	430	4.2	2.92	0.26	8.5	13.1
	COS0079R	2	2	760	3.9	7.14	15.63	12.7	3.8
	ADA0136R	10.75	2	3250	5.7	23.26	0.81	15.1	2.1
	COL0045R	2.05	2	2770	0.5	30.30	13.51	14.4	0.5
	UNI0739R	3	2	3557	1.9	3.95	5.99	15.8	0.3
	MRG0339R	0.17	2	850	6.6	3.39	0.34	9.5	3.8
	CLE0133R	32.5	2	2660	1.5	7.46	12.82	12.8	0.5
	WAY0539R	11.17	2	1806	2.7	10.75	66.67	20.6	1.1
	HOL0520R	3	2	192	53.7	12.66	5.81	712.9	3
	FAI0204R	17.77	2	1563	1.3	4.95	7.09	12.2	0.4
	CLE0222R	26.83	2	3530	0.8	27.03	0.00	13.8	1.4
	LAW0243R	6.15	2	2300	5.3	2.59	2.42	13.2	0.9
	MRW0314R	1.51	2	1350	2.9	55.56	22.73	8.6	1.6
	ADA0125R	22.5	2	823	0.8	11.49	6.80	5.7	8.7
	PIC0056R	27.29	2	3840	3.9	13.70	7.09	30.9	1.7
	SHE0066R	7.03	2	3400	3.3	5.21	4.90	16.3	5
	TUS0516R	7.37	2	3610	2.8	5.75	40.00	10.8	0.8
2005	GUE0209R	3.95	1	1120	6.7	6.06	1.70	15.6	5.7
	CAR0542R	13.4	1	920	0.8	7.46	6.99	9.3	3.9
	CLA0235R	2.59	1	12320	5.7	5.78	10.20	18.2	0
	SHE0119R	0.08	1	2890	3	20.83	17.86	1	0.6
	COS0093R	16.02	2	1490	4.1	12.05	3.37	4.8	4.9
	GUE0083R	3.33	1	1528	3.4	6.62	8.93	18.3	3.5
	LOG0540R	5.8	1	635	1.3	9.35	26.32	5.7	3.1
	UNI0038R	5.4	1	1434	2.8	5.52	7.81	7.5	0.4
	PER0668R	23.54	1	470	1.2	9.01	19.61	5.9	1.9
	FAI0664R	5.9	1	1950	1.3	7.63	2.11	3.7	7.3
	FUL0120R	8.5	1	1390	2.6	66.67	5.41	13.1	0.2
	MAH0046R	6.72	1	3170	2.2	4.65	15.63	14.8	2.6
	SEN0635R	2.23	1	2210	5.5	2.36	2.38	11.4	0.5
	LIC0079R	19.4	1	4406	1.4	22.73	4.27	17.6	0.8
	JAC0327R	1.67	2	1880	6.9	3.21	1.01	27.7	0.5
	RIC0314R	8.25	2	2410	1.9	4.24	5.78	10.2	1.1
	RIC0095R	11.26	2	2060	3.3	2.24	0.35	8.6	1.9
	LOR0301R	5.75	2	3170	2.1	5.56	45.45	9	1
	GUE0265R	11.51	2	2200	9.4	4.50	2.39	9.9	2.7
	HUR0162R	20.51	2	2710	0.7	7.14	6.06	10.3	2.8
	VIN0327R	8.5	2	790	2.6	4.95	83.33	13.2	0.5
	JAC0124R	20.83	2	1090	8.6	2.69	0.98	8.7	0.9
	MAD0040R	2.84	2	2058	3.8	5.05	11.36	31	0.5
	MAR0746R	0.17	2	700	0.7	40.00	90.91	11.9	0.5
	WOO0199R	5.67	2	4539	2.3	6.10	20.41	13.5	0.1
	ATB0006R	20.05	2	3350	1.6	3.24	7.81	10.9	3.1
	PIK0772R	19.75	2	1160	1.3	10.42	2.49	7.3	1.8
	ADA0247R	14.75	2	2926	2.2	10.99	1.98	15.8	5.7
	RIC0545R	3.17	2	3810	3.3	5.75	5.03	26.6	1.1

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2005	VIN0278R	12.33	2	656	9.4	4.95	5.35	11.6	2.5
	OTT0163R	32.5	2	8383	2.4	5.29	4.24	19.9	1.2
	ROS0041R	13.67	2	1790	0.9	10.87	13.70	5.9	1.6
	LOG0540R	7.17	2	635	0.4	9.26	166.67	3	1.7
	LOG0720R	1.25	2	430	1	10.42	27.03	6.7	0.5
	TUS0416R	1.68	2	1980	6.8	4.31	83.33	26.5	0.8
	GUE0660R	5.92	2	2060	0.5	142.86	125.00	10.4	1.2
	RIC0314R	8.12	2	2410	1.2	19.23	52.63	10.7	0.4
	RIC0545R	3.12	2	3810	3.3	3.19	4.61	11.5	0.7
	MOE0026R	29.14	2	170	43.7	6.10	5.56	29.3	3.1
	CLI0730R	1.27	2	1970	0.2	52.63	5.99	4.9	2.5
	MEG0143R	13.67	2	410	5	4.31	58.82	13.3	1.2
	TUS0093R	6	2	1763	28.5	5.59	18.18	26.1	2.7
	GRE0072R	13.88	2	2380	3.1	2.85	7.46	9.1	0.9
	MAR0739R	6.18	2	3059	6.5	29.41	40.00	24.6	1.6
	MRG0266R	8.83	2	770	2.3	5.92	1.53	10.8	0.8
	MOE0026R	10.82	2	698	9.8	1.61	0.34	12.2	7.1
	CLE0232R	1.98	2	1720	2.2	5.88	0.66	5.6	6.3
	WOO0105R	5.21	2	2220	1.3	7.09	18.18	10.3	0.3
	CLI0729R	9.67	2	1170	6	3.17	20.00	7	1.5
	HOC0664R	6.5	2	1600	8	1.63	0.28	27.3	13.2
	ADA0247R	19.19	2	890	0.1	250.00	25.00	7.6	4.2
	MRG0555R	16.86	2	110	4.1	6.67	4.26	31.2	4
	GUE0040R	13.33	2	2480	0.9	11.90	4.52	8.3	4.1
	CLA0235R	10.9	2	4823	2.1	9.80	8.62	26.3	1
	JAC0776R	11.12	2	890	6.6	7.52	10.99	13.6	0.5
	LIC0079R	1.12	2	4730	6.9	8.93	24.39	26.4	1.1
	HUR0061R	8.31	2	3360	4.3	2.22	3.05	12.6	1.2
	PER0668R	8.17	2	1028	0.9	16.67	7.69	7.5	11.2
	PER0383R	1.17	2	640	1.1	7.19	1.86	5.9	5.6
	MOE0255R	9.3	2	306	1.3	2.26	11.49	2.2	12.6
	MAD0029R	0.5	2	2360	2.5	4.93	4.69	13.7	0.7
	PIC0762R	9.88	2	3460	0.9	15.38	11.90	8.1	0.7
	JAC0788R	0.92	2	2473	0.9	12.50	0.64	6.9	1.7
	HIG0073R	10.83	2	3910	8.5	2.05	3.32	11.6	1.3
	ADA0041R	0.97	2	1900	13.7	1.86	15.63	36.1	1.3
	POR0303R	17.14	2	4850	4.3	2.29	4.15	14.2	1.4
	PRE0503R	18.61	2	3770	3.6	5.13	2.98	10	0.5
	CAR0542R	13.5	2	920	13.9	10.42	7.09	84.1	8.1
	MAH0046R	1.41	2	4902	0.6	31.25	27.78	9.7	3.3
	HAS0009R	4.33	2	2900	1.2	4.67	0.52	5.8	10
	CLE0133R	19.51	2	6141	9.7	2.49	2.80	19.6	9.1
	NOB0146R	5.18	2	1104	5.8	5.85	111.11	9.5	1.4
	GEA0088R	0.75	2	2100	1.9	5.78	10.42	10.1	2.2
	UNI0739R	12.33	2	1030	2.6	18.87	17.86	41.7	0.7
	CRA0098R	9.83	2	3030	1.8	3.56	28.57	8	1.2
	ASD0089R	7.11	2	980	2.9	6.67	0.29	12.5	1.8
	ADA0247R	22.25	2	890	0.8	12.05	6.17	6	2.4
	GUE0209R	3.25	2	1120	79.8	5.29	28.57	243.9	5.4
	PIC0104R	0.39	2	4136	1.7	2.15	8.47	13.6	0.2
	JAC0279R	3.13	2	860	33.7	3.00	166.67	47.9	3.1

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2005	JAC0327R	15.25	2	924	0	100.00	0.19	3.1	7.4
2006	ADA0136R	15.65	2	2970	3.2	8.70	16.95	14.1	4.2
	ADA0247R	9.5	2	2926	1.24	9.09	5.26	3.7	1.8
	ADA0770R	8.34	2	280	2.9	5.15	0.91	5.4	1.7
	ASD0179R	1.25	2	800	0.9	22.73	43.48	11.4	0.8
	ATB0006R	21.5	2	3350	2.2	2.58	16.95	12.2	0.1
	ATB0006R	32.5	2	1120	0.5	35.71	14.29	12.8	1
	ATB0193R	17.75	2	2204	3	3.52	17.24	10.2	0.3
	BEL0040R	11.75	2	2750	2.4	12.35	2.19	17.2	0.8
	CAR0542R	9.96	1	1250	4.4	2.70	25.64	9.1	2.6
	CHP0055R	5.68	1	1080	2	15.63	100.00	13.5	2.1
	CLE0028R	9.83	2	11380	2.5	6.99	28.57	19	0.4
	CLE0133R	17.44	2	4090	1.5	7.75	55.56	6.3	0.9
	CLE0133R	19.13	2	4090	26.9	1.01	200.00	7	2.1
	CLE0222R	11.67	2	1617	1	24.39	31.25	11.1	0.4
	CLE0232R	1.98	2	1720	4.5	2.10	1.46	11.6	7
	CLE0774R	1.51	2	800	1.8	5.56	0.92	7.9	0.6
	CLI0350R	1.72	2	2540	0.2	83.33	14.71	7.3	2.6
	COL0154R	13.14	2	2490	1.3	13.70	18.52	10.6	2.6
	COL0165R	1.17	2	4030	1.9	3.57	6.58	11.6	0.7
	COL0344R	4.02	2	2640	2.4	6.37	5.62	27.6	5.4
	COL0518R	8.88	2	900	2.4	13.89	4.42	21.9	4.1
	COS0541R	6.51	2	430	0.5	11.90	0.21	5	8.8
	COS0662R	0.42	2	110	12.7	2.02	47.62	16	1.9
	CRA0098R	0.53	2	2340	3	58.82	35.71	12.8	0.1
	DEF0002R	8.31	2	1960	1.8	11.11	12.35	8.9	0.3
	DEF0424R	9.83	2	1390	2.7	3.55	40.00	12.1	0.1
	ERI0101R	0.25	2	3230	12.7	11.36	0.00	95.9	2.3
	ERI0269R	1.02	1	3145	11.1	2.49	45.45	21.3	0.7
	FUL0066R	9.98	2	600	1.7	6.85	55.56	8.6	0.3
	FUL0066R	9.98	2	600	1.7	6.85	55.56	8.6	0.3
	GAL0141R	15.17	2	800	3.7	5.13	17.86	10.9	2.5
	GAL0141R	2.67	2	830	7.7	4.55	0.25	13.8	2.4
	GAL0775R	1.5	2	270	1.4	12.20	13.16	5.9	2.7
	GEA0166R	4.33	2	2930	1.6	4.74	4.00	6.6	1.2
	GEA0168R	1.75	2	2366	1.6	7.25	22.22	6.1	2.8
	GEA0608R	4.81	2	4074	0.6	25.64	1.26	13	9.6
	GEA0700R	1.67	2	1970	0.6	8.77	5.26	10.6	0.6
	GRE0072R	10.94	2	2380	3.2	3.50	6.37	8.6	0.7
	HAN0698R	9.12	2	590	1.1	15.87	41.67	13.8	0.4
	HAS0519R	8.72	2	590	10.2	4.81	3.65	17.4	4.6
	HEN0109R	2.6	1	1804	5.3	3.09	2.14	12.5	0.3
	HIG0134R	3.5	2	1005	3.7	6.29	4.61	9.3	4.3
	HIG0506R	2.12	2	894	2.3	8.70	4.81	9.8	4.3
	HOL0062R	3.99	2	1950	7.5	1.59	0.18	10.5	8
	HOL0206R	0.02	2	340	2.7	10.31	25.64	7.4	3.3
	HOL0754R	1.5	2	1261	0.5	20.00	0.46	8.3	4.8
	HUR0162R	13.89	2	740	1.2	7.41	5.43	13.3	0.7
	JAC0139R	10.86	2	1257	1.5	5.05	6.71	12.1	2.3
	JAC0279R	19.13	2	1720	1.1	7.52	2.74	4.6	4.9
	JAC0327R	12.83	2	924	5.7	27.78	43.48	21.8	2.4

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2006	KNO0541R	1.02	2	1390	2.1	2.58	4.93	9.8	2.2
	LAW0243R	3.15	2	3865	1.5	5.26	3.95	6.1	3.1
	LAW0522R	5.83	2	540	4.4	2.56	2.39	11.5	5.5
	LIC0079R	18.5	2	4192	2.6	5.21	2.21	8.4	4.2
	LIC0079R	0	2	4780	0.8	16.13	21.74	21.7	2.8
	LOG0235R	16.9	2	1910	2.2	10.10	17.86	10.7	0.5
	MAD0029R	0.25	2	2360	3.1	2.39	20.41	12.9	0.7
	MAD0029R	7.99	2	2900	4.2	3.38	9.01	11.9	1.3
	MAH0626R	0.77	2	4960	1.9	4.90	7.94	8.5	1.6
	MED0094R	18.45	2	6860	2.8	9.35	23.81	8.4	2.7
	MEG0681R	8.01	2	450	0.2	83.33	10.99	13.3	2.6
	MOE0026R	22	2	170	1.9	5.18	1.26	5.8	0.4
	MRG0669R	9.88	2	200	23.8	3.01	2.68	23.1	1.8
	MRW0097R	4.89	2	2710	3.2	0.78	4.65	2	2.5
	MUS0284R	9.71	2	90	2.6	20.41	19.61	34.1	3.1
	NOB0145R	2.75	2	630	10.3	23.26	125.00	29.9	0.8
	NOB0146R	1.25	2	1104	5	13.16	5.24	36.9	0.9
	NOB0285R	13.24	2	280	0.5	17.24	13.89	4.1	5.3
	NOB0313R	0.5	2	460	1.4	11.63	4.74	8.6	5
	PAU0049R	17.88	2	2220	4.6	5.32	5.10	10.2	0.1
	PAU0066R	4.87	2	843	9	2.16	3.45	14.6	0.9
	PAU0066R	13.88	2	1782	2	13.16	24.39	8.7	0.2
	PER0155R	2.23	2	1630	3	13.51	6.90	20.4	1.3
	PER0204R	0.83	2	1380	2	6.99	37.04	8.9	0.8
	PER0383R	0	2	640	2.8	14.49	0.30	21.9	6.7
	PIC0674R	10	2	4770	2.3	1.29	15.15	7.9	1
	PIK0124R	1.64	2	1650	1.6	5.65	83.33	15.2	1.9
	PIK0335R	3.25	2	1360	0.8	14.49	4.46	6.9	2.9
	POR0183R	0.65	2	3940	1.2	14.71	2.19	8.8	0.7
	RIC0039R	0.75	2	1370	1.6	10.31	20.00	20	0.6
	RIC0061R	0.91	1	1006	0.9	9.09	5.24	7	2.7
	RIC0061R	0.67	2	1006	2.3	3.32	5.99	14.1	0.5
	ROS0104R	17.82	2	9550	4.7	3.95	2.32	14	0.4
	SCI0139R	15.37	2	1020	16.2	15.63	18.87	6.4	1.1
	SCI0139R	4.69	2	4410	6	2.36	1.95	11.1	1.4
	SCI0348R	8.67	2	1759	2.7	8.70	1.80	18.8	7.4
	SEN0635R	0.83	2	1880	4	3.01	2.77	8.3	0.2
	TUS0093R	10.76	2	1230	0.5	32.26	3.07	12.9	1.5
	VIN0124R	0.5	2	990	5.4	1.92	15.38	9.2	4.7
	WAR0122R	5.13	2	7732	4.5	10.42	27.78	25.6	1.7
	WAS0026R	24.17	2	247	9.2	16.13	28.57	70.1	2
	WAS0821R	0.88	2	4730	3.2	5.21	5.10	16	0.9
	WAY0226R	0.88	2	1180	1	4.31	17.24	5.9	6.9
	WOO0199R	2.41	2	4539	1	12.99	15.38	9.7	0.4

Appendix RR. Roadside Geometry Data for FC2's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2000	BEL0800R	1.11	2	2340	38.3	3.61	5.05	6.2	0.6
	BUT0027R	7	2	6130	7.7	3.62	6.58	4.7	5.1
	COL0009R	4.68	2	4464	3.9	9.80	0.00	0	0.9
	LIC0013R	7.52	2	7710	12.7	2.52	0.00	3.9	2.5
	POR0014R	14.41	2	12020	10.2	2.66	4.24	11.4	11.7
	RIC0013R	0.6	2	4550	0.4	29.41	125.00	17.3	5.1
	RIC0013R	25.49	2	6470	2.9	5.41	5.10	10.8	2.7
2001	HIG0050R	22	1	3451	3.8	2.92	6.67	9.2	1.6
	RIC0013R	26.12	2	5180	1.6	5.56	5.26	7.2	0.9
	HUR0013R	6.37	2	2590	3.1	3.26	11.90	10.7	2.2
	ROS0035R	32.92	2	12590	2.7	15.63	6.45	25.4	0.8
	ATH0013R	13.67	2	2030	5.7	2.58	9.80	8.1	0.4
	WAS0550R	16.83	2	5114	2.5	4.13	7.46	6.7	1.7
	SEN0004R	2.15	2	1970	2.2	3.61	21.28	8.8	1.8
	DEF0127R	1.18	2	4040	5.4	3.80	15.63	13.6	1.1
	HAS0009R	11.25	2	2270	6	5.75	5.32	16.4	0.5
	MEG0007R	13.75	2	4450	8	2.75	5.52	17.7	1.5
	STA0043R	3.85	2	12140	2.2	4.03	8.13	13.4	3
	WIL0020R	17.16	2	2963	7	5.38	17.86	12	1.9
	PER0013R	21.66	2	4424	2.7	20.83	200.00	19.9	1
	UNI0004R	15.34	2	6031	5.3	3.72	21.28	13.4	2.4
	PER0022R	10.17	2	3450	4.4	3.41	1.06	15	0.7
	MAH0007R	2.09	2	6030	1.1	6.71	15.15	8.5	4.3
	GAL0007R	18.09	2	2120	8.6	8.93	111.11	12.7	0.6
	MOT0035R	1.37	2	7080	0.5	27.03	4.12	5.9	1.3
	ATH0550R	3.28	2	2354	8.3	2.90	6.41	32.1	0.3
	WAS0007R	43.66	2	4100	4.7	3.75	9.80	10.4	0.6
	MAR0095R	23.93	2	5521	1.4	10.10	37.04	6.8	0.3
	MUS0060R	2.25	2	3729	0.9	5.15	10.31	5.9	2
	KNO0013R	2.75	2	3830	1.7	6.94	10.42	8.7	0.5
	ROS0050R	8.8	2	4150	22.7	18.52	250.00	155.1	3.5
	ROS0050R	10.41	2	4150	1.8	10.64	4.37	14.1	0.3
2002	DEL0036R	3	1	5250	1.5	5.29	5.99	9.3	1.2
	HAS0151R	13	1	2960	3.5	5.62	6.25	18.7	0.2
	MAR0309R	6.67	2	3060	1.9	7.52	12.50	8	0.9
	TRU0088R	12.16	2	3340	11.6	4.76	9.52	25.4	3.5
	LAW0007R	17.27	2	2950	3.5	40.00	26.32	40.8	2
	WAS0339R	11.33	2	2960	3.6	4.52	333.33	16	0.4
	MOE0007R	0.25	2	3080	6.7	6.10	55.56	11.4	0.9
	ROS0035R	32.8	2	12590	26.4	2.82	1.67	26.2	1.4
	JEF0043R	20.12	2	2560	4.3	2.00	0.31	8.1	1.8
	MAR0004R	5.87	2	6289	3.1	4.42	6.99	10.3	0.3
	RIC0013R	24.88	2	4693	6	45.45	1.02	40.7	0.2
	POR0224R	13.52	2	3830	0.5	28.57	14.71	12.1	2.6
	GRE0068R	5.88	2	9260	5.1	2.14	13.89	16.8	1.7
	ERI0250R	9.78	2	13660	7.6	3.33	47.62	27.4	0.5
	GEA0322R	6.68	2	10360	0.2	37.04	10.87	6.3	1.4
	LIC0016R	10.81	2	10615	2.8	4.08	18.52	13.8	1.7
	MAR0309R	8.69	2	3060	6	3.77	66.67	17.5	0.5
	SAN0006R	21.35	2	4204	3.4	3.46	3.79	9.7	0.4

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2002	POR0224R	13.02	2	3830	3.4	7.14	3.44	28.4	2.9
	WOO0020R	12.86	2	14640	3.8	4.05	8.55	9.6	0.4
	NOB0078R	8.9	2	3780	15.4	5.13	58.82	16.4	1
2003	HAN0224R	10.58	1	7469	3.9	6.10	0.73	7.9	0.2
	MAR0309R	7.29	1	2230	2	6.62	8.62	8.5	0.5
	BEL0148R	21.2	1	760	8.4	2.58	0.00	14.6	3.3
	MRW0061R	23.12	1	5980	2	7.52	3.38	19.2	0.6
	HIG0073R	0.3	1	6560	8.6	2.30	0.80	18.2	0.9
	FAI0037R	8.38	1	6280	0.5	14.49	23.81	4.1	2.5
	SAN0006R	6.07	2	6620	4.3	4.18	3.01	19.3	0.3
	GEA0322R	17.75	2	4569	0.7	12.05	19.23	9.8	2.7
	SEN0053R	0.78	2	3600	1.4	8.00	5.75	7.6	1.6
	GAL0007R	5.8	2	2120	11.2	5.29	4.98	20.5	0.2
	NOB0078R	15.33	2	2560	40.6	3.21	3.76	63	7.6
	NOB0078R	3.17	2	530	8.9	7.63	0.97	18.8	9.1
	WIL0020A	2.67	2	6590	1.4	5.46	5.56	10.5	0.5
	TUS0039R	6.9	2	8360	1.3	14.08	4.37	18.7	0.9
	ERI0006R	2.08	2	6320	2.4	16.39	76.92	8.7	0.2
	HIG0050R	22.12	2	3451	4.3	3.73	3.38	23.7	2.2
	JAC0093R	6.17	2	5290	4.3	9.17	2.28	16.9	3.3
	ATH0550R	15.25	2	790	5.6	4.59	50.00	16.6	4.5
	LIC0013R	20.51	2	6250	1.8	4.55	8.40	5.4	0.3
	PER0013R	40.32	2	12130	1.9	9.43	19.23	1.1	1.2
	VIN0050R	25.83	2	2020	1.7	5.03	27.78	10.4	2.3
	CHP0036R	5.69	2	5910	2.8	4.85	43.48	12.6	0
	MEG0007R	4.25	2	7140	5.5	4.00	0.54	21.1	2.3
	ROS0050R	8.33	2	4150	3.1	3.14	6.02	8.9	0.4
	SEN0004R	1.17	2	1970	1.9	4.29	41.67	8.5	0.3
	TUS0212R	7.5	2	3280	2.4	7.69	30.30	21.7	0.3
	POR0044R	15.88	2	6570	4.3	2.16	7.30	14.5	2.4
2004	VIN0050R	14.4	1	4388	2.5	4.08	47.62	14.4	2.7
	ATB0045R	1.11	2	2980	0.7	37.04	500.00	12.1	0.5
	TUS0800R	5.25	2	3280	1.1	11.90	7.14	8.5	4.6
	LAW0093R	9.94	2	2846	1.9	4.85	0.71	6.5	1
	ROS0023R	3.75	2	17680	9	2.60	3.46	34.5	1.4
	FUL0020R	16.93	2	5030	4.1	3.52	9.80	28.1	0.2
	GEA0044R	7.18	2	6990	6.6	2.93	83.33	17.7	0.7
	ERI0004R	2.65	2	7140	2.4	4.61	83.33	6.7	0.3
	FAI0204R	5.82	2	2320	1.8	10.75	9.26	9.8	3.2
	BUT0127R	14.12	2	6890	7.5	3.64	4.20	22.5	0.5
2005	HAS0022R	13.59	1	1850	12	2.69	37.04	23.5	1.4
	HAS0151R	12.8	1	2960	6.5	3.77	34.48	20.2	0.5
	STA0183R	6.61	1	6230	5	3.68	62.50	11.5	0.2
	HUR0250R	14.59	1	8620	1	6.71	5.08	9	0.7
	SEN0004R	12.11	2	3770	2.2	4.78	50.00	9.2	2
	WAY0003R	2.01	2	1830	0.8	5.46	2.88	8.8	2.5
	ATH0550R	4.75	2	1290	1.7	3.56	1.94	10	6
	FUL0020R	15.12	2	5030	2.7	12.82	200.00	19.1	0.8
	KNO0013R	3.75	2	4010	1.6	5.46	5.56	10.9	1
	HUR0020R	20.88	2	6060	2.9	3.37	13.70	6.7	0.1
	MEG0007R	4.17	2	7140	1.7	9.90	0.24	9.2	1.2

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2005	CLI0068R	5.16	2	4376	3.5	5.21	6.67	9.7	0.1
	WAY0585R	3.13	2	9090	3.8	3.06	6.67	11.6	1.6
	WOO0420R	0	2	13650	4.4	4.12	4.98	23.2	0.4
	LIC0161R	5.04	2	21220	1.1	38.46	17.54	10.1	0.9
	MOE0007R	17.84	2	5560	7.5	10.42	38.46	26.1	0.9
	ASD0060R	3.62	2	3100	16.3	16.67	52.63	34.4	1.6
	HAR0309R	21.81	2	2050	1.8	8.47	5.49	20.5	0.2
	FAI0037R	9.63	2	7930	1.8	6.99	9.52	11.8	1.6
	VAN0224R	11.83	2	4410	10.4	2.34	5.85	43.2	0.5
	HIG0073R	2.5	2	6800	3.6	66.67	34.48	19.9	0.7
	MUS0060R	6.25	2	4549	18.3	34.48	83.33	46.2	0.8
	MOE0800R	15	2	1540	15.7	2.02	0.46	17.5	4.6
	DEL0036R	5.5	2	6620	2.4	3.69	5.92	12.6	3.1
	MAH0224R	5.09	2	4720	2.7	3.23	3.12	14.4	1.3
	WAS0339R	7.33	2	5340	18.9	8.55	5.32	19.5	0.8
	WAY0003R	25.28	2	7277	3.8	3.97	13.70	16.2	0.2
	FAI0037R	0.5	2	4660	1.5	15.63	142.86	7.1	0.4
	UNI0004R	0.63	2	3395	1.4	10.75	34.48	25.2	0.9
	FAY0022R	14.14	2	4180	1.3	13.16	76.92	11.9	0.5
	CLE0052R	18	2	2020	1.1	11.63	1.89	6.7	0.8
	ROS0050R	14.69	2	4230	2.9	6.62	15.15	13.1	1.7
	BEL0800R	24.83	2	1480	2.9	3.19	0.66	10.7	3.3
	MOE0078R	5.85	2	1220	2.2	4.85	4.15	15.3	0.5
	RIC0013R	30.17	2	3690	2	5.29	15.38	10	0.7
	WAS0550R	12.12	2	3980	18.3	0.97	0.47	21.9	2.7
	HAR0068R	6.25	2	3207	1.4	30.30	27.03	22.1	0.5
	SEN0053R	3.14	2	5810	1.7	5.35	1.41	11.9	1
	LAW0093R	5.11	2	7610	6.9	3.13	9.43	9.7	3
	PER0022R	2.51	2	3050	4.7	2.26	20.83	28.4	1.1
2006	ASD0060R	3.38	1	3100	18.7	9.26	4.10	223.2	0.6
	ATB0045R	19.75	2	9960	0.2	111.11	66.67	11.5	4.8
	ATH0550R	9.25	2	2210	15.2	4.20	0.90	336.9	2.9
	CAR0009R	27.88	2	990	16.1	2.53	4.33	13.4	3.3
	CAR0039R	26.84	2	1060	1.4	8.70	3.85	6.2	7.2
	CHP0029R	23.69	2	4820	1.9	5.99	10.87	12.9	0.3
	CHP0036R	13.29	2	5220	2.1	12.66	3.56	18.5	4.4
	CLE0052R	8.12	2	6355	6.8	2.84	37.04	18.3	1.5
	CLE0131R	11.17	2	3584	2.3	6.13	29.41	10.1	0.6
	CLE0131R	6.88	2	8561	3.5	3.66	3.44	9.3	0.7
	FAI0037R	3.06	2	7140	0.6	12.82	3.70	12	0.2
	GAL0007R	32.64	2	10980	3.9	3.23	1.98	12	0.2
	HAR0309R	4.6	2	3991	1.9	15.87	15.63	12.6	0.6
	HIG0050R	1.33	2	3760	2.7	3.25	4.81	10	0.3
	HIG0062R	18	2	6615	4.9	2.25	8.20	12.4	3.5
	HUR0004R	0.5	2	2350	1.7	5.52	28.57	12.8	0.3
	HUR0224R	19.75	2	3750	2.8	2.39	8.20	18	0.5
	JAC0093R	1.17	2	3520	6.1	5.10	10.75	15.6	0.4
	KNO0036R	31.31	1	1520	1.9	4.61	3.23	8	1.7
	KNO0036R	28.18	2	2830	1	5.99	1.01	6.5	1.6
	KNO0036R	13.71	2	7120	3.7	9.80	1.85	36.9	1
	LIC0013R	4.74	2	10380	4	6.67	43.48	15.9	2

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2006	LIC0013R	7.27	2	8280	2.4	9.35	10.31	14.4	3.8
	LOG0068R	1.4	1	8460	8.3	3.13	6.71	38.8	2.1
	LOR0058R	5.75	2	4994	2.7	4.78	3.21	12.1	0.8
	LUC0002R	33.69	2	10550	3.4	7.04	16.39	12.1	0.5
	MRG0078R	26.07	2	640	6.1	1.96	2.35	11.2	6.3
	MRW0309R	1.25	2	5430	2.2	5.78	3.97	11.3	0.3
	NOB0078R	16.5	2	1760	3.7	4.83	12.50	22.2	0.8
	NOB0078R	14.12	2	2540	3.4	5.49	9.90	14.9	0.4
	PER0013R	6.5	2	2870	6.4	5.05	3.85	19.8	6.7
	POR0014R	15.25	2	12140	4.1	2.77	6.13	20.6	2
	ROS0050R	1.33	2	2540	2	3.94	9.43	4.4	0.6
	SEN0004R	7.12	2	3410	2.8	3.58	24.39	11.1	0.6
	STA0062R	6.12	2	4530	0.8	6.41	18.52	2.8	1.3
	TRU0005R	28.55	2	2680	0.8	13.89	7.41	4.9	1.8
	UNI0031R	5.25	2	5940	3.7	40.00	14.93	5.2	0.9
	WIL0127R	0.88	2	6900	2.8	5.35	6.85	27.5	0.2
	WOO0006R	22.43	2	6220	5.6	5.88	6.29	29.6	0.5

Appendix SS. Roadside Geometry Data for FC3's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2000	AUG0075R	4.89	2	32270	6.8	6.41	14.49	7	0.4
	CLE0275R	0.41	2	95750	1	13.70	2.27	15.4	1.9
	CUY0176R	10.2	1	10070	7.61	2.72	0.00	7.2	38.4
	ERI0080K	8.15	2	37180	11.0	3.37	5.85	14.3	0.4
	FRA0161R	22.4	1	19040	0.0	0.00	2.15	0.0	0.2
	FRA0270R	26.02	1	107550	9.3	2.38	1.74	4.4	1.3
	FUL0080K	24.39	2	22250	7.4	4.35	3.23	8.1	0.2
	HAM0071R	6.65	2	123740	16.7	0.69	19.61	13.5	2.5
	HAM0275R	31.09	2	100760	31.4	2.36	7.35	30.1	3.7
	LAK0002R	4.14	1	80914	5.1	9.09	0.00	3.2	1.9
	LUC0475R	13.5	2	75621	25.04	3.55	34.48	48.9	0.9
	LUC0475R	8.87	2	84590	6.59	5.46	3.86	33.34	0.4
	MAH0680R	6.03	2	58032	5.07	9.26	5.32	46.36	3.1
	MAH0680R	6.11	2	33830	0.42	28.57	3.75	42.64	3.5
	MIA0075R	6.34	2	60950	0.0	0.00	3.31	0.0	0.3
	SUM0076R	1.35	2	48119	19.5	1.63	0.00	22.5	1.6
	SUM0076R	7.47	1	49780	0.0	0.00	2.11	0.0	0.8
	WOO0075R	4.2	2	46597	7.3	4.10	6.67	21.69	0.1
2001	JEF0007R	11	1	16290	11.1	1.42	0.60	17.1	1.1
	BEL0070R	9.49	2	25786	12.3	3.10	13.33	67.9	0.5
	BEL0070R	23.26	2	26240	2.2	4.98	8.62	12.4	0.9
	RIC0013R	12.33	2	11740	8	3.94	6.21	16.5	2.6
	SUM0021R	3.5	2	23140	4.6	6.25	4.39	38.3	1.6
	CLI0071R	5.57	2	34600	2.3	11.63	7.58	14.9	0.4
	CUY0480R	22.42	2	167600	20.3	1.10	35.71	55.1	1.1
	ERI0080K	9.89	2	37450	7.5	3.64	5.35	33.2	0.2
	CUY0480R	17.84	2	148730	19.9	4.00	11.90	51.6	3.3
	LAK0090R	2.66	2	77030	3.6	5.18	2.82	45.4	1.5
	MUS0070R	22.39	2	33960	19	2.47	2.48	27.1	2.5
	CUY0080K	0.48	2	32270	6.2	3.47	3.36	20.1	0.1
	CLA0070R	6.64	2	47866	21.5	13.70	5.00	66.2	2.3
	FAY0071R	9.59	2	33290	4.1	8.55	5.43	27.4	0.2
	SUM0271R	4.11	2	26177	19.2	2.47	9.80	11	3.2
	LAK0090R	4.65	2	64960	2	8.77	5.85	21.3	2
	LIC0070R	25.57	2	33670	11.3	1.71	13.33	26	3.2
	CLA0070R	5.3	2	67390	6.9	5.24	6.29	46.1	0.1
	LUC0080K	5.27	2	22730	4.9	3.75	9.26	23.7	0.1
	GRE0071R	3.05	2	32680	11.7	3.61	12.05	16.2	0.2
	LAK0090R	22.91	2	32910	4.8	9.52	10.31	18.9	1.3
	SUM0077R	8.73	2	85870	2.5	6.45	2.36	27.2	0.9
	GUE0070R	9.13	2	29380	19.8	2.67	2.51	94.9	1.1
	CUY0080K	2.07	2	32270	6.1	3.68	9.26	32.8	0.1
	LAK0002R	0	2	92930	1.5	125.00	27.03	48.8	0.3

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2001	MED0071R	24.02	2	45030	17.8	2.22	26.32	38.9	1.2
	SUM0224R	11.3	2	26130	2.2	2.46	3.23	28.2	4.5
	TRU0011R	3.82	2	33940	7.5	5.10	2.07	55.5	1.1
	MOT0075R	18.41	2	93770	1.7	29.41	1.45	41.9	0.3
2002	MAH0680R	10	1	36310	1.8	23.81	4.18	22.3	1
	PIC0023R	9.47	2	24740	10.9	5.43	7.41	22.8	0.4
	BEL0070R	15.49	2	29531	27.8	2.40	4.08	25	2.8
	WAR0075R	9.44	2	87480	2.5	9.26	5.32	3.2	1.7
	WIL0080K	7.76	2	19500	4.6	4.72	5.68	18.1	0.7
	FUL0080K	7.13	2	20940	8.4	4.12	4.50	30.7	0.2
	MAD0071R	1.57	2	33350	1.4	12.35	7.52	24.6	0.1
	FRA0270R	19.72	2	98470	7	7.35	8.70	42.6	0.6
	LAK0090R	2.08	2	87050	2.6	10.42	5.95	26.4	1
	CLI0071R	8.28	2	34600	3.6	6.25	8.85	20.5	0.3
	WOO0075R	26.2	2	59160	13.6	4.72	3.15	93.7	0.3
	ERI0080K	16.9	2	36790	4.1	3.37	2.81	25.1	0.3
	MAD0070R	1.41	2	45300	2.2	9.43	7.81	19.3	1.8
	CUY0480R	3.56	2	54140	1.5	16.39	4.55	25.3	0.6
	FRA0071R	28.14	2	93710	6.9	5.92	17.86	34.6	0.3
2003	SUM0077R	24.57	1	56057	3.8	7.81	10.99	22.4	0.9
	MIA0075R	13.56	1	48123	1.4	16.67	10.64	12.4	1.8
	CLI0071R	4.2	1	34600	3.2	5.75	5.78	19.9	0.7
	POR0076R	1.29	2	50420	19.2	3.58	4.26	26.2	1.9
	GRE0675R	6.55	2	65976	12	4.67	4.52	34.1	2.3
	WAR0075R	12.11	2	91260	3	9.09	3.44	34.8	1.8
	TRU0080R	8.07	2	36400	29.3	1.98	9.90	39.5	0.9
	HAM0074R	14.8	2	44500	3.2	8.77	14.49	29.1	2.3
	ERI0080K	12.4	2	38450	3.8	7.46	3.24	41.3	1
	GRE0675R	16.32	2	35360	11.2	3.85	9.62	47.9	0.6
	MOT0075R	17.91	2	93770	2	5.95	6.41	28.5	0.4
	WOO0075R	14.32	2	42930	7	4.29	4.61	28.9	0.3
	MOT0070R	3.5	2	38240	0.1	40.00	2.96	17.3	0.6
	SUM0271R	13.32	2	55210	2	21.28	6.45	19.4	0.5
	POR0080K	15.55	2	35000	12.3	3.80	3.68	47.6	1.5
	SUM0080K	0.9	2	36540	3.1	6.85	8.00	52.9	1.3
	WOO0075R	20.25	2	52198	9	6.49	4.78	75.4	0.2
	MOT0075R	3.92	2	92900	13.7	2.75	6.02	46.9	2.9
	MUS0070R	26.56	2	33960	7.2	3.77	5.52	29.6	0.4
	CLE0275R	6.36	2	78033	2.7	13.16	0.94	46	1.2
	FRA0270R	17.49	2	98470	6.5	8.85	21.28	34.4	0.5
	MED0076R	2.78	2	25300	4.3	4.59	7.19	19.5	2.7

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2004	WOO0080K	8.75	2	42440	2.8	14.93	7.58	26.1	0.1
	TUS0077R	4.56	2	16660	11.1	3.83	6.80	3.2	0.3
	LUC0075R	3.33	2	104010	6.3	6.25	5.56	21.7	0.5
	WIL0080K	13.17	2	20580	8.2	3.62	3.76	29.3	0
	MAD0071R	10.32	2	34050	5.8	5.78	4.72	56.9	0.3
	MAH0076R	2.63	2	31414	6.7	4.44	8.06	35.5	0.7
	SUM0008R	6.56	2	77830	0.6	38.46	21.28	25.2	0
	MED0271R	5.55	2	27390	38.3	22.22	200.00	81.8	2.4
	MAD0071R	3.99	2	33350	9.6	2.94	5.15	33	0.4
2005	GUE0070R	26.2	1	22900	2.4	14.93	2.26	21.7	0.3
	BEL0070R	3.57	1	26700	12.3	2.18	15.63	30.1	2.6
	TUS0077R	8.78	1	18640	3.4	7.19	9.52	23.2	0.4
	HAM0126R	10.4	1	41806	1.1	37.04	3.40	25.1	1.6
	CUY0480R	21.66	1	158025	1.4	7.75	11.24	9.3	1.5
	CUY0071R	17.91	1	95850	1.1	17.24	1.08	11.2	2.4
	CLA0070R	8.48	1	54720	3.6	5.65	8.77	28	0.7
	FRA0161R	22.1	1	21220	4.7	5.92	2.62	46.9	1
	OTT0080K	0.54	2	43620	7.5	4.55	5.08	33.8	0.1
	MUS0070R	26.9	2	35100	3.5	6.29	0.47	20.2	1.5
	LUC0475R	6.89	2	86850	7.1	5.81	7.69	26.5	0.3
	LOR0002R	9.75	2	60070	2.8	4.46	6.17	13.5	0.6
	MUS0070R	22.39	2	35100	2.3	5.41	2.36	14.8	2.6
	FUL0080K	0.29	2	22100	7.9	4.42	3.65	26.3	0.8
	FUL0080K	9.68	2	22730	10.5	4.48	2.58	23.1	0.5
	LAK0002R	7.65	2	56315	9.8	14.49	3.28	37.3	0.3
	FAI0070R	1.05	2	99830	6.9	4.67	3.98	53.2	1.9
	FRA0033R	24.87	2	56620	2.8	5.52	2.74	23.4	0.1
	POR0076R	3.66	2	43020	4.4	4.15	4.35	20.5	0.5
	ERI0002R	13.69	2	22890	10.9	3.73	1.18	29.7	2.6
	CUY0080K	13.56	2	38810	2	5.92	1.74	14.2	1.9
	CLE0032R	6.19	2	37240	0.8	10.31	8.62	17	4.9
	AUG0075R	1.33	2	36000	5.3	4.61	11.90	20.4	0.8
	MIA0075R	17.49	2	49270	15.8	8.26	6.62	34.1	2.7
	SHE0075R	12.31	2	40054	3.4	9.17	27.03	19.2	0.3
	FUL0080K	0.29	2	22100	7.9	4.90	2.76	31.3	0.7
	SUM0080K	5.73	2	37240	3.4	3.92	0.63	27.1	1.3
	DEL0071R	13.25	2	56250	7.8	6.94	15.15	25.2	0.4
	TUS0077R	28.81	2	35480	8.5	8.62	1.24	32.8	0.8
	SUM0076R	1.29	2	45580	12.5	3.06	7.81	49.9	1.2
	LOR0090R	21.74	2	59100	7.7	2.60	4.50	25.6	0.3
	STA0021R	8.98	2	20770	4.9	12.35	2.72	4	2.8
	SUM0076R	0.97	2	45580	10.7	4.39	10.10	49.3	0.5
	SUM0077R	1.55	2	72560	20.4	7.25	23.81	38.5	1.4

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2005	CLE0275R	5.91	2	69083	3.8	7.58	0.84	48.2	0.9
	CLA0070R	7.77	2	54720	13.7	3.56	12.20	31.1	1.6
	LIC0070R	27.73	2	35680	2	9.90	2.27	21.4	0.1
	ROS0023R	13.32	2	19910	4.1	11.36	6.37	21.5	0.7
	PRE0070R	5.88	2	38690	9	6.67	12.82	37.3	0.9
	GUE0070R	26.97	2	22900	1.2	27.03	3.05	21.5	3
	SUM0480R	6.98	2	43040	15.3	1.76	3.34	34.1	1.7
2006	ALL0075R	20.86	2	37502	6.7	4.07	4.15	20.8	0.3
	ATH0033R	14.1	2	19450	6.7	5.05	2.68	20.6	0.8
	BUT0075R	6.11	1	105510	7.2	5.92	10.64	32.6	0.5
	BUT0129R	23.17	2	31340	12.1	2.21	2.19	23.4	0.5
	CLA0068R	7.67	2	23740	8.9	2.33	1.09	20.2	0.7
	CLI0071R	11.94	1	36580	2.3	9.43	8.13	15	0.2
	CUY0176R	10.51	1	73540	0.5	18.87	14.29	6.9	0.7
	GRE0675R	1.68	2	72230	10.4	3.83	9.80	46.7	1.2
	GRE0675R	2.06	2	72230	6.3	7.30	2.82	33.3	2
	HAM0074R	2	1	41112	6.7	3.89	7.75	31.5	0.3
	HAN0075R	19.26	2	51030	6.8	3.60	4.15	38.3	0.3
	LAK0002R	0.31	2	79150	20.3	2.19	5.29	45.1	1.4
	LAK0002R	7.04	2	58160	7.3	4.31	3.65	37.9	0.2
	LAK0090R	15.24	2	45940	3.7	9.26	9.35	18	1.2
	LOR0080K	20.77	2	36490	9.5	3.89	3.88	28.8	0.2
	MAD0070R	3.2	2	50300	3.3	8.06	8.85	28.3	0.5
	MAH0076R	6.05	2	38630	5.6	4.29	10.10	27.4	0.8
	MIA0075R	4.53	2	65220	6.9	4.55	8.93	65.2	0.6
	MRW0071R	17.97	2	41050	5	6.94	6.45	18.6	1.9
	PIC0071R	2.64	2	37170	2	6.99	6.33	28.8	0.8
	POR0076R	19.18	1	32499	4.8	3.53	5.24	20.2	1.4
	POR0080K	8.94	2	36510	8.8	4.81	6.02	34.3	0.7
	POR0080K	18.6	2	36510	2.3	6.21	11.49	30.4	0.7
	TUS0250R	18.88	2	19714	1.6	7.81	5.35	18.9	0.3

Appendix TT. Roadside Geometry Data for FC4's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2000	GAL0035R	17.41	1	9280	12.3	3.15	3.38	3.7	1.1
	LOG0033R	14.57	2	14690	7.0	4.15	4.46	18.0	0.5
2001	TRU0011R	26.25	1	6250	3	4.95	6.02	22	1
	COL0011R	10.05	1	10970	2.8	18.52	0.51	19.1	2.3
	TRU0082R	23.12	2	15470	4.3	3.88	8.62	18.8	0.3
	PIK0032R	9.75	2	5900	15.3	2.58	10.53	55.5	1.1
	PIC0023R	5.02	2	25231	2.1	4.63	11.11	19.2	0.6
	ASD0030R	6.25	2	11090	1.3	4.72	3.98	16.5	2.3
	LOG0033R	10.97	2	11640	6.8	4.33	2.47	26.8	1.1
2002	ATH0050R	4.74	2	9810	4.1	7.30	15.15	27.7	0.6
	GEA0422R	19.28	2	12350	3.3	4.20	1.55	8.2	4
	ERI0002R	22.89	2	20720	32.5	3.77	3.40	18.3	0.3
	LOG0033R	25.21	2	17982	3.3	6.45	2.79	18	0.9
2003	LOG0033R	26.42	1	14642	4.6	5.26	4.20	26.1	0.5
	GRE0042R	0.09	2	6110	14.8	2.42	18.18	43.8	1.8
	AUG0033R	4.83	2	16410	2.4	5.81	4.98	31.7	0.7
	ASD0030R	3.17	2	11330	1.9	8.55	4.95	13.9	2.9
	CLE0052R	6.26	2	11559	5.2	4.12	7.69	20.3	0.5
2004	HOC0033R	5.9	2	20140	4.9	3.89	15.87	21.4	3
2005	ROS0035R	23.8	1	20440	14.3	3.32	100.00	35.1	0.3
	SCI0052R	35.97	1	9640	2.4	8.55	62.50	23.5	0.4
	LOG0033R	26.12	2	18605	7.8	4.52	5.95	37.7	1.6
	WYA0023R	4.35	2	15090	4.1	5.18	3.65	31	0.7
2006	AUG0033R	6.27	1	15270	4.5	5.59	22.73	24.4	0.1
	PIC0023R	11.2	2	25620	5.4	6.90	6.54	56.7	0.2

Appendix UU. Roadside Geometry Data for FC5's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2000	ATB0531R	9.56	2	7150	4.4	2.1	0.00	3.3	2.8
2001	ERI0006R	11.96	1	7816	2.1	2.88184438	2.84	12.8	0.4
	BUT0004R	0.39	1	35020	2.5	10.5263158	5.18	9.9	0.4
	GRE0725R	2.55	2	2268	4.4	38.4615385	66.67	10.4	0.6
	POR0306R	1.2	2	8380	1.2	8.19672131	66.67	8.1	0.6
	DEL0023R	0.75	2	38380	5.6	4.56621005	18.87	21.8	0.7
	BUT0127R	10.36	2	8413	1.7	5.02512563	6.99	8.4	0.1
	RIC0430R	7.87	2	8310	0.4	14.4927536	12.99	3.4	2.9
	HUR0020R	0.34	2	23120	0.5	11.3636364	12.50	8.1	4.5
2002	COL0062R	10.05	2	11340	2.8	4.1322314	1.02	14.5	0.8
2003	LOR0082R	5.56	2	9100	4.1	3.03030303	5.43	14	0.1
	GEA0306R	1.36	2	12512	1.1	7.1942446	3.06	9.3	1.9
	RIC0097R	1.67	2	3550	0.6	47.6190476	7.75	28.4	0.8
	COS0541R	22.21	2	2080	18.4	0.61957869	47.62	7.4	10.3
	TUS0039R	14.8	2	6880	2.9	3.98406375	21.74	5.1	0.2
	JAC0093R	16	2	14550	0.1	200	142.86	6.8	0.3
	STA0043R	9.67	2	12140	0.4	27.027027	2.88	4.5	4.5
	FRA0665R	11.62	2	4780	2.8	4.14937759	34.48	16	0.8
	ROS0050R	26.25	2	5630	3.8	47.6190476	45.45	57	0.8
2004	POR0014R	12.94	1	18690	3.4	10.6382979	24.39	37.7	2.2
	MOT0741R	6.44	2	25040	1.8	11.4942529	8.13	30.9	0.4
	BUT0004B	0.89	2	16910	1	83.3333333	47.62	30.8	1.4
	LIC0013R	14.43	2	8030	0.3	62.5	5.85	10.5	2.5
	MEG0007R	2.12	2	7360	3.7	6.09756098	10.42	20.1	0.7
	FRA0665R	12.45	2	6240	1.2	5.34759358	4.50	3.1	1.5
	HUR0224R	6.83	2	8960	6.3	35.7142857	62.50	47.3	0.2
2005	CLE0048R	2.5	1	6840	1.2	12.195122	34.48	8.5	3.2
	TRU0005R	6.25	2	19760	3.4	4.5045045	10.42	30.2	0.3
	GUE0022R	10.67	2	6510	3.22	3.17460317	3.33	21.6	3.1
	CLE0125R	7.83	2	18210	7.2	3.7593985	5.24	37.1	0.9
	LOR0058R	20.5	2	9610	0.5	26.3157895	200.00	26.4	0.5
	CLI0068R	16.81	2	10150	2.8	5.84795322	47.62	18	0.5
	MEG0007R	2.12	2	7360	3.1	5.78034682	16.13	17.9	0.4
	HUR0099R	3.03	2	4150	3.5	8.92857143	38.46	21.5	0.5
2006	BUT0127R	11.15	2	8373	2.5	6.99300699	6.06	23.9	0.6
	CRA0309R	5.98	2	7220	0.4	18.8679245	62.50	3.3	0.5
	FAI0188R	10.81	2	3350	2	5.29100529	5.75	6.5	2.1
	LOR0058R	19.83	2	8690	1	66.6666667	333.33	14.7	0
	MAH0170R	10.91	2	9520	0.2	47.6190476	4.83	9.9	1.9
	MAH0616R	6.98	2	5790	1.2	12.345679	17.86	7.8	0.5
	MEG0007R	0.75	2	6510	6.6	2.17864924	31.25	13.9	1.9
	OTT0053R	5.09	1	11530	16.1	2.28310502	12.20	38.1	3.1
	SCI0335R	2.05	2	2740	3.3	2.29357798	1.59	15.9	1.3
	WOO0065R	15.51	2	3610	0.5	25.6410256	28.57	8.4	0.4

Appendix VV. Roadside Geometry Data for FC6's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2001	TRU0046R	10.35	1	7030	2.8	21.74	3.34	16.1	0.2
	LOR0083R	9.75	2	6810	1.4	8.85	13.70	15.1	0.5
	GAL0160R	3.29	2	7930	4.1	4.48	1.39	12	0.7
	LOG0235R	19.89	2	5810	2	7.75	20.83	15.6	0.4
2002	LOG0235R	23.76	2	4216	1.6	5.99	3.15	9.4	1.8
2003	PIK0552R	0.12	2	2600	3.5	2.30	0.29	4.7	0.9
	TRU0046R	12.79	2	6210	1.1	19.61	8.13	11.5	0.7
2005	ATB0531R	1.13	2	2790	1.6	9.17	9.35	8.3	0.3
	MAD0056R	0.5	2	1600	2.3	6.45	12.35	13.2	0.5
	ERI0101R	4.12	2	7344	4.3	4.24	9.26	14.4	0.3
	TRU0305R	16.17	2	7840	2.6	2.92	3.09	14.1	0.3

Appendix WW. Roadside Geometry Data for FC7's

Year	County Route	Milepost	Severity	AADT	Height (ft)	Foreslope (1v: Xh)	Backslope (1v:Xh)	Offset (ft)	Grade (%)
2000	TRU0062R	7.72	1	11260	26.1	2.28	0.00	16.0	2.3
2003	RIC0309R	8.25	2	11089	3.6	4.61	3.83	24.4	0.6
2005	LIC0040R	0.83	2	12080	8.6	22.73	5.00	46.2	0.5
	FRA0161R	11.92	2	32912	0.8	6.45	6.06	4.2	2.3
	GRE0042R	7.5	2	8780	5.5	4.72	4.37	25.8	1.6
2006	FRA0023R	0.82	2	24560	7.9	27.03	26.32	25.1	0.2
	MOT0049R	10.81	2	14480	6	4.27	2.91	78.7	1.6
	RIC0309R	8.87	2	14460	2.9	6.49	5.38	15.4	1.9

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