

Canton Everett Forbes Neighborhood Traffic Calming Executive Report

October 2008



Town of Westwood, MA

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INTRODUCTION

Westwood Station is a proposed mixed-use, smart growth development featuring 1.35 million square feet of retail space, 1,000 residential units, and up to two hotels, which will replace an existing industrial park on University Avenue, in Westwood, MA. The project is expected to significantly benefit the Town of Westwood by creating additional tax revenue, diversifying the tax base, and creating 7,500 jobs. Recognizing the importance of addressing the potential impacts of traffic generated by the development, the Town of Westwood retained Urban Engineers, Inc. to develop a traffic calming plan that addresses cut through traffic and speeding in the neighborhood adjacent to the future site of Westwood Station.



Figure 1: Westwood Station Master Plan (Courtesy Cabot, Cabot & Forbes)

Residents have expressed concern that the new exit ramp from Interstate 95 North, which will be built to improve access to the new development, may also encourage drivers to use Canton Street as a cut through route. Some drivers currently do use Canton Street southbound as an alternative to I-95 South. The Town of Westwood, Cabot, Cabot, & Forbes (Westwood Station's developer), Urban Engineers, and neighborhood residents have worked together to develop a plan that addresses these cut through traffic concerns by slowing traffic, reducing convenience, and eliminating potential travel time saving on the Canton Street route. In addition, traffic calming improvements are also recommended on Forbes Road and Everett Street. It is expected that calming traffic on these three streets will mitigate cut through traffic on intersecting streets and benefit the entire neighborhood.

In addition to the traffic calming improvements, the construction of Westwood Station Boulevard, a new roadway connecting the development to I-95, is expected to further mitigate the neighborhood traffic. Furthermore, the planned widening of I-95 from three lanes to four lanes in both directions is expected to

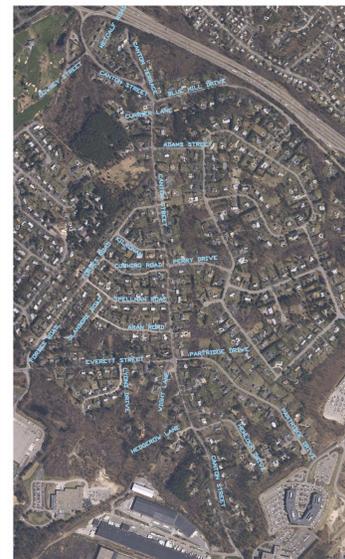


Figure 2: Project Area

alleviate the congestion on I-95 that currently leads drivers to seek travel time savings on local Westwood streets.

CONSENSUS BUILDING PROCESS

Early Efforts

In 2006, the Town of Westwood retained the firm of Vanasse Hangen Brustlin, Inc. (VHB) to develop a traffic calming plan to address potential traffic impacts of Westwood Station and the I-95 Northbound slip ramp. VHB developed a plan which included, among several alternatives considered, the closure of Canton Street through the construction of a cul-de-sac just north of Oceana Way. This plan, which was strongly embraced by the neighborhood, was ultimately rejected by the broader community due to concerns that closing Canton Street would simply relocate cut through traffic to Forbes Road and Everett Street. The plan was also rejected because it was believed that obtaining the necessary approval by the Norfolk County Commission and the Massachusetts Highway Department was unlikely.

Pre-Charrette Preparation

Following the rejection of the Canton Street cul-de-sac, the Town retained the firm of Glatting Jackson Kercher Anglin to conduct two charrettes - or public meetings - to educate residents on various traffic calming treatments, to prepare a new traffic calming plan, and to achieve consensus for the plan amongst residents. Glatting was assisted by Urban during this process.

Glatting prepared for the opening charrette by performing site visits and conducting stakeholder meetings with Westwood elected officials, public works staff, and police and fire department representatives to discuss existing traffic concerns and development plans. Traffic data including volumes, speeds, vehicle classification, and intersection turning movement counts were collected at various locations on Canton Street, Forbes Road, and Everett Street.

Opening Charrette

The opening charrette was advertised through a mass mailing, articles, as well as through the towns' website and e-mail list serve. Over 100 residents attended the January 2008 event. The presentation focused on defining traffic calming tools that can be used on both framework and non-framework streets and identifying their potential benefits. Following the presentation, residents were asked to develop a list of the traffic issues facing the neighborhood. Each resident was given seven stickers which were used to vote for the issues they considered to be the top priorities. The neighborhood issues identified as the highest priorities were:

- Keeping traffic from Westwood Station out of the neighborhood
- Pedestrian and child safety
- Cut through traffic on Canton Street, Everett Street, and Forbes Road
- Promotion of University Avenue (as opposed to Canton Street)

Residents were then divided into groups of eight to ten. Each group was given a map of the neighborhood and asked to develop a traffic calming plan using the treatments discussed in the presentation. Following the design session each group shared their plan with the other attendees and the maps were collected and reviewed by Glatting.

Closing Charrette

Using the input received during the stakeholder meetings and opening charrette, along with traffic data and information obtained during field visits, and staff expertise, Glatting developed a

preliminary traffic calming plan for the Canton-Everett-Forbes neighborhood. This plan was presented to the community during an April 17, 2008 closing charrette and is shown in Appendix A. Residents expressed a desire to see the treatments designed at a higher level of detail before accepting them for implementation. Although consensus was not achieved, the majority of residents voted to approve the general direction of the plan. Following the charrette, interested residents were asked to sign up for an advisory committee which would represent neighborhood residents, communicate with the neighborhood and provide input throughout the design process. Approximately forty residents signed up at the charrette - and shortly thereafter - to be on the committee.

Advisory Committee Meeting #1 – Traffic Data

Following the closing charrette Urban was hired by the Town as the lead consultant responsible for seeing the plan through to the implementation phase. Urban collected additional traffic data including volumes, speeds, classifications, travel time surveys, and license plate surveys measuring cut through traffic. Residents who signed up for the advisory committee were invited to participate in the data collection and several members chose to do so. The newly collected data was presented at the first advisory committee meeting, which took place on May 29, 2008.

Figure 3 summarizes daily volumes collected using automatic traffic recorders. Canton Street experiences the highest traffic volumes with approximately 9,000 vehicles per day. Forbes Road and Everett Street also experience significant traffic volumes of over 1,000 vehicles per day. The volume data reaffirms that all three of these streets service considerable amounts of traffic and they should therefore be treated holistically in order to prevent relocating traffic issues from one location to another.

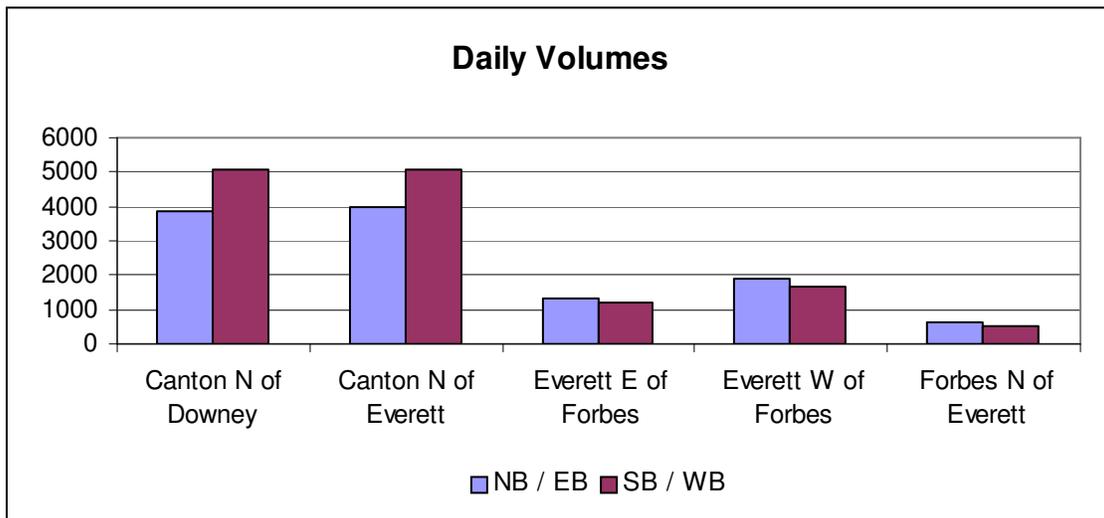


Figure 3: Daily Traffic Volumes

The composition of these traffic volumes in terms of cars versus trucks and buses is shown in **Figure 4**. Although the traffic on these streets is primarily comprised of passenger cars, 271 heavy vehicles were observed over the course of a day on a portion of Canton Street where through trucks are prohibited. Although school buses and delivery vehicles likely account for a portion of the heavy vehicles, some commercial drivers appear to be disobeying the truck exclusion. These drivers will likely be discouraged from doing so by the presence of traffic calming treatments. Updating databases to indicate the truck exclusion on Canton Street may further reduce truck traffic, as several drivers have indicated that GPS or internet mapping services directed them to the Canton Street route.

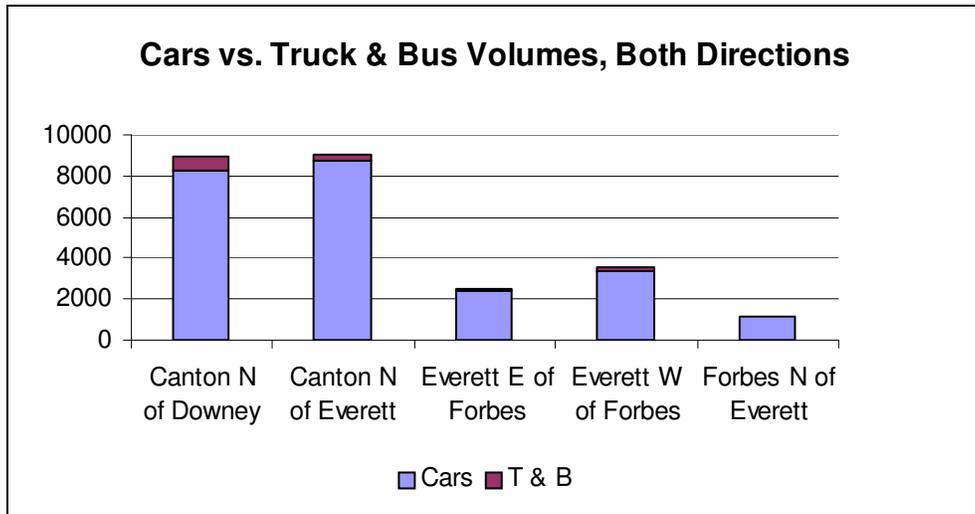


Figure 4: Vehicle Classification Summary

Figure 5 shows average daily speeds recorded on Canton Street, Everett Street, and Forbes Road. Average speeds higher than 30 mph were observed at several locations. Such speeds contribute to lower travel times which make the Canton Street corridor an attractive alternative to I-95 during peak hours.

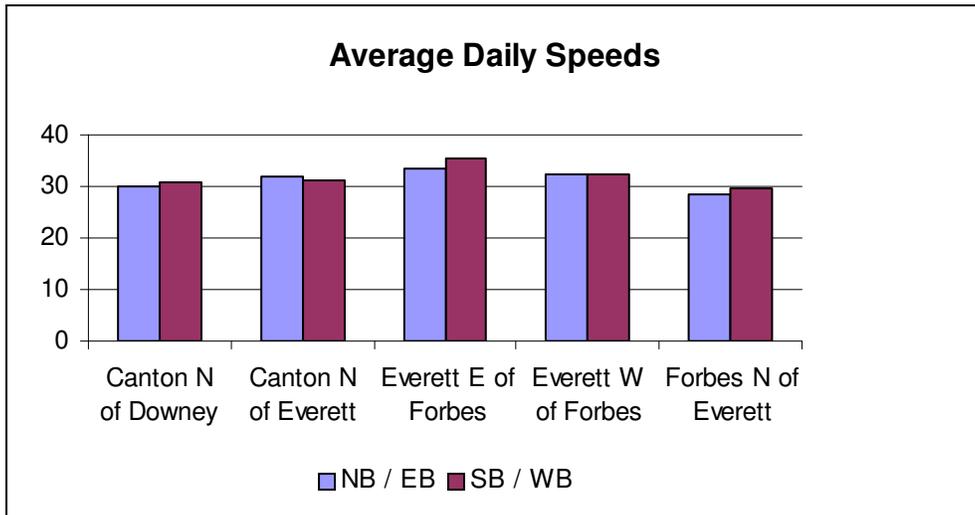


Figure 5: Average Daily Speeds (mph)

Urban measured the travel times for I-95 between the East Street rotary exit and the Dedham Street ramp and compared the results to travel times for the Canton Street corridor. Data was collected for both the northbound and southbound routes from 6:00-11:00 AM and from 2:00-7:00 PM. The travel time data is summarized in **Tables 1-4**. Travel times were collected on typical weekdays in April and May. It should be noted that construction on I-95 impacted the results collected during the May field tests, resulting in significantly longer travel times during the 7:00 and 8:00 AM hours. The delays observed during these times are likely to be significantly reduced following the completion of the I-95 add-a-lane project.

| Table 1: AM Northbound Travel Time (min) | | | | | |
|--|------|-------|------|------|-------|
| Route | 6-7 | 7-8 | 8-9 | 9-10 | 10-11 |
| Canton St | 5.03 | 7.88 | 7.67 | 5.10 | 4.97 |
| I-95 (April) | 5.12 | 6.43 | 7.32 | 4.52 | 4.72 |
| I-95 (May) | 8.05 | 17.95 | 15.4 | 7.58 | 4.15 |

| Table 2: AM Southbound Travel Time (min) | | | | | |
|--|------|------|------|------|-------|
| Route | 6-7 | 7-8 | 8-9 | 9-10 | 10-11 |
| Canton St | 4.68 | 4.58 | 5.05 | 4.83 | 4.47 |
| I-95 (May) | 3.37 | 3.42 | 3.53 | 3.38 | 3.43 |

| Table 3: PM Northbound Travel Time (min) | | | | | |
|--|------|------|------|------|------|
| Route | 2-3 | 3-4 | 4-5 | 5-6 | 6-7 |
| Canton St | 5.33 | 5.20 | 5.75 | 6.08 | 4.98 |
| I-95 (May) | 3.90 | 5.12 | 4.33 | 3.73 | 3.73 |

| Table 4: PM Southbound Travel Time (min) | | | | | |
|--|------|------|------|------|------|
| Route | 2-3 | 3-4 | 4-5 | 5-6 | 6-7 |
| Canton St | 4.92 | 5.33 | 5.85 | 5.73 | 4.73 |
| I-95 (April) | 3.53 | 3.68 | 3.97 | 3.87 | 3.60 |
| I-95 (May) | 3.95 | 5.48 | 5.13 | 6.12 | 4.15 |

The travel time data was later used to validate an existing conditions simulation model of the Canton Street corridor. It was also used to study the relationship between travel time on the two routes and cut through traffic on the Canton Street corridor. Cut through traffic was measured through a license plate survey where plates of vehicles entering I-95 via the Dedham Street ramp were matched to those exiting the East Street rotary onto Canton Street. The license plate survey was conducted while the travel time measurements were being collected. Data was collected from 2:00-7:00 PM in order to capture peak cut through traffic. Cut through traffic volumes are shown in *Figure 6*.

Comparison of Weekday Cut Through Vehicles

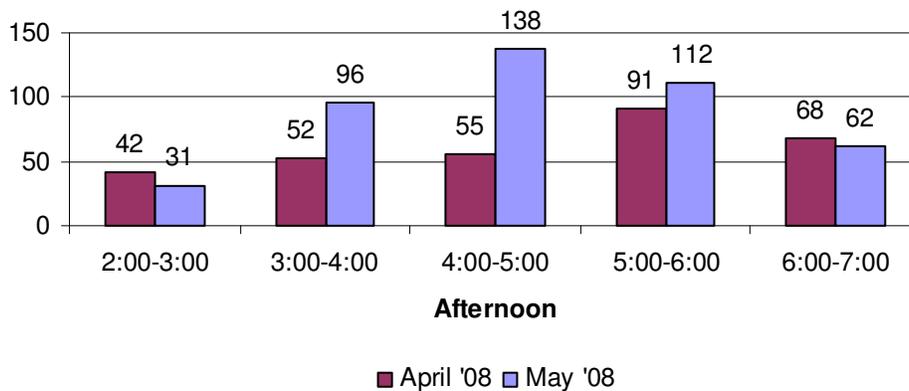


Figure 6: Comparison of Weekday Cut Through Vehicles

Although travel times were typically longer on Canton Street many drivers still used it as a route to bypass I-95. Increasing travel times on Canton Street through traffic calming improvements would create a more noticeable differential in the travel times between the routes and likely discourage some traffic from leaving I-95. The implementation of stop control at several locations along Canton Street as part of the proposed traffic calming plan would decrease convenience for cut through traffic from I-95. Furthermore, it should be noted that the highest cut

through volumes were observed during the hours when the greatest congestion occurred on I-95. The add-a-lane project on I-95 is expected to significantly reduce congestion, thereby decreasing the incentive for interstate drivers to seek an alternate route.

Advisory Committee Meeting #2 – Homework Assignment Review

Following the initial advisory committee meeting, a homework assignment was distributed to advisory committee members via email. The assignment was also made available for pick-up at Town Hall. The homework assignment included schematic drawings of each proposed treatment and described the concerns identified by the community that each treatment is intended to address. Residents were asked to rate each treatment as a high priority, low priority, or undesired. If a treatment was undesired, committee members were also asked to specify the device they would like to see it replaced with. The results of this homework assignment were summarized during a July 1, 2008 advisory committee meeting. The assignment, along with a summary of the responses is included in Appendix B.

Advisory Committee Meeting #3 – Schematic Design Review

The third advisory committee meeting was held on September 9, 2008. During this meeting detailed designs of each proposed treatment were reviewed. Urban also discussed models of the Canton Street corridor, which were prepared using Synchro and SimTraffic software. Models were created to quantify the travel time, speed, and volume impacts of the traffic calming plan at two levels of deployment. Following the presentation the advisory committee voted to approve of the plan with the amendment that an additional treatment be included at the intersection of Everett Street and Lyons Drive. Twenty-nine advisory committee members voted to approve the plan while one member voted against it. The member who voted against the plan did so because he wanted an additional treatment on Forbes Road.

Advisory Committee Meeting #4 – Mobile Design Workshop

In the coming weeks Urban will conduct a mobile design workshop in which traffic cones will be used to simulate traffic calming improvements in the field. This is intended to help residents visualize how the designs will translate from paper to the roads. Additional future work is outlined in the schedule shown in Appendix C.

TRAFFIC CALMING PLAN

The plan agreed upon by the traffic calming advisory committee is shown in *Figure 7*. A description of each proposed treatment and its intended benefits follow. Detailed schematic drawings of the proposed improvements at each intersection are included in Appendix D. These drawings are currently being developed to a higher level of detail so that they may be used for construction.

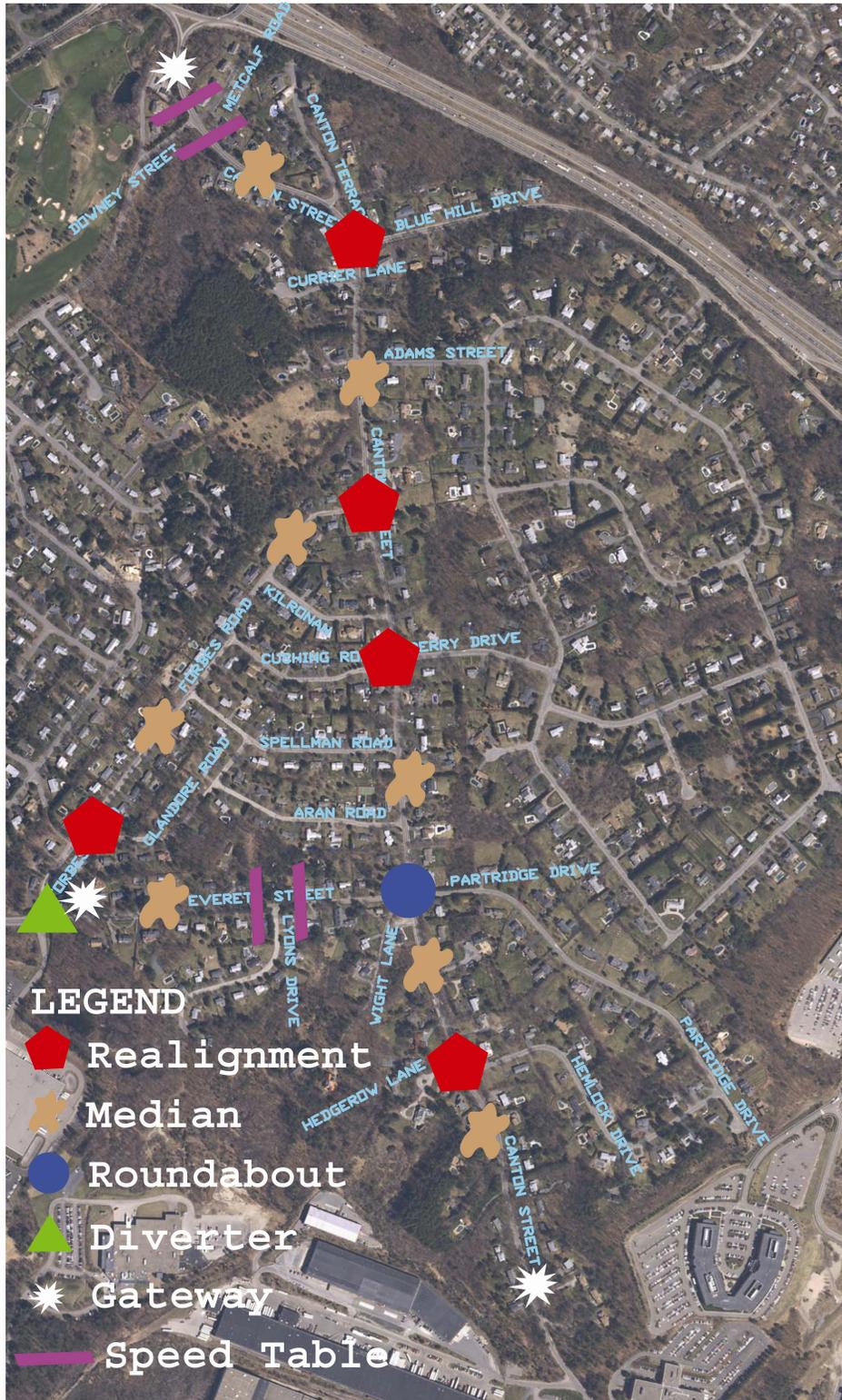


Figure 7: Traffic Calming Plan

Realigned Intersections

Streets in this area are likely old farm to market roads whose original alignments and designs did not anticipate the existing and proposed low density and automobile-oriented land uses. They also did not anticipate the performance of modern automobiles and the risky, dangerous behaviors of modern drivers. The alignments of Canton Street and Forbes Road, in particular, are straight for long lengths, which encourages speeding. The realignment of several of intersections, periodically, down these streets will reduce the gun-barrel look of the streets and result in shorter straight lengths. As the realignments will impact sight distances at the intersections, stop signs will be installed to address safety concerns. Delay created by the realignments in combination with the installation of the stop signs is expected to deter drivers from seeking travel time savings on these streets.



Image Credit: Glating Jackson

Medians

The medians serve four important functions:

- i) They are located approximately half way between the realigned T-intersections in order to further reduce the uninterrupted lengths of the street. Like realigned intersections, medians cause motorists to focus on near and middle distances as opposed to long distances, which help them slow down to safer speeds.
- ii) The medians also act as refuges for pedestrians crossing the street, allowing them to cross halfway, check for oncoming vehicles, and then cross the remainder of the road.
- iii) Medians provide horizontal deflection and a “sense of enclosure,” both of which cause drivers to slow down and improve safety.
- iv) Medians can be landscaped in order to enhance the aesthetics of the neighborhood. Trees and ground cover help motorists see treatments from greater distances and can cause drivers to decrease their speeds as far as 1000 feet away. Treatments such as pavers that compliment the stone walls in the neighborhood can be used to further enhance aesthetics and promote the rural character of the streets.



Photo Credit: Walkable Communities

Roundabouts

A roundabout is proposed at the intersection of Canton Street and Everett Street due in part to the higher volumes of cross-street traffic observed on Everett Street. The roundabout design will include a mountable apron which larger vehicles such as school buses can traverse while executing turning maneuvers. Roundabouts offer numerous benefits in terms of



Photo Credit: Walkable Communities

speed reduction and safety including the following:

- A typical 4-way intersection has 32 vehicle-to-vehicle conflicts. At a roundabout these conflicts are reduced to 8.
- Roundabouts control corridor speed. Signals tend to speed motorists up as they approach intersections, while roundabouts uniformly reduce speed to 15-20 mph at these critical locations. Vehicles traveling at these speeds are more likely to yield to pedestrians.
- The splitter island in a roundabout provides a refuge for pedestrians as they cross the street and simplifies the crossing by letting them focus on vehicles traveling in only one direction.

Diverter

Diverter consist of islands that change the geometry of an intersection and restrict certain turning movements. The diverter proposed at the intersection of Forbes Road and Everett Street consists of a triangular channelization island on Forbes Road and a longer median island on Everett Street. These improvements are designed to discourage the through movement between Forbes Road and Martignetti's and reduce traffic using the Martignetti's parking lot as a cut through to University Avenue. The median island on Everett Street will also reduce roadway width on Everett Street and thus discourage speeding. The design also calls for the eastern curb of the Martignetti's driveway to be realigned, forcing northbound traffic from Martignetti's westbound and discouraging through movements onto Forbes Road and right turns onto Everett Street.



Photo Credit: Walkable Communities

Lane Diets

Pavement markings can be used to narrow travel lanes on streets such as Canton, Forbes, and Everett. Narrow travel lanes visually impact drivers, leading them to feel less comfortable traveling at excessive speeds, even if the pavement width remains unchanged. This treatment is inexpensive, easy to implement, and has been proven to have significant impacts on travel speeds. The roadway width reclaimed by narrowing lanes can be used to provide wider shoulders which could be used by pedestrians and bicyclists. As there are no sidewalks located on Canton Street, wider shoulders may be particularly useful for residents walking along the street.



Photo Credit: Walkable Communities

Speed Tables

Speed tables are essentially flat topped speed humps having three parts: a ramp up, a flat top section, and a ramp down. These treatments force drivers to slow down by providing vertical deflection. An additional advantage is their relatively low construction and maintenance costs. Speed tables, however, are only recommended in locations where treatments providing horizontal deflection cannot be implemented due to roadway



geometry or other restricting factors, as speed tables have a greater impact on the response times of emergency responders.

Photo Credit: Urban Engineers, Inc.

Gateway



Gateway features can be used to identify a change in environment between Canton Street and the Westwood Station area. Stone features matching the stone walls lining Canton Street can allow drivers to identify the street as part of a residential neighborhood where lower speeds are more appropriate.

Photo Credit: Urban Engineers, Inc.

Implementation Schedule

The traffic calming plan is designed to minimize cut through traffic and discourage speeding while avoiding excessive inconvenience to neighborhood residents. In order to accomplish this, implementation of the proposed traffic calming improvements will take place in two phases. Under the initial phase, Level 1, all proposed realigned intersections, roundabouts, diverters, and speed tables are to be constructed. Construction is scheduled to begin in spring of 2009. The Level 1 phase deployments are expected to provide significant traffic calming benefits. If, however, it is determined that a more aggressive traffic calming approach is desired, lane diets, gateways, median islands, and additional speed tables will be constructed during a secondary implementation phase (Level 2). While the Level 2 treatments would be expected to further reduce speeds and volumes, these benefits would come at the expense of additional convenience being sacrificed by neighborhood residents.

Supplemental Measures

Several supplemental measures may be used in order to enhance the benefits of the proposed traffic calming improvements. While these measures do not impact the roadway geometry and not likely to have a noticeable impact on their own, when used in conjunction with more aggressive traffic calming treatments they are capable of reinforcing the message that the Canton-Everett-Forbes neighborhood is a residential area where speed limits and other regulations should be respected.



Photo Credit: Urban Engineers, Inc.

Reflectorized Sign Posts

Reflectorized sign posts improve the visible of signage particularly at night. Reflectorized posts will be included on all new stop signs installed during construction of the realigned intersections. Installing reflectorized markings on existing stop signs and speed limit signs in order to enhance visibility may also be beneficial. Such treatments are also relatively inexpensive and easy to attach to existing post.

Pace Car Program

Pace car programs involve residents signing pledges to drive courteously and within posted speed limits. By doing this they set an

example for all drivers and dictate speeds for drivers queued behind them. Stickers may be designed and distributed to participating residents in order to raise awareness of the program. While many Canton-Everett-Forbes residents have expressed that they make an

effort to set an example for other drivers a formalized pace car program would likely increase participation and have greater impact.

Lawn Sign Program

Lawn signs displaying messages such as “Go Slow” or “Please Respect Our Neighborhood” may be used to reinforce the message that the streets are residential in nature and reduced speeds are appropriate. Such signs are unlikely to have a noticeable impact on their own. Forbes Road residents have experimented with such signs in the past and did not achieve the desired results. However, when coupled with physical roadway improvements such as raised intersections, speed tables, and roundabouts, lawn signs may serve as a useful enhancement to the traffic calming program.



Image Courtesy of Town of Greenwich, CT



Photo Credit Traffic Logix

Radar Speed Signs

Radar speed signs measure the speeds of oncoming vehicles and display them on a LED display. Speeds can be displayed in flashing mode if the measured speed exceeds a predetermined threshold. Radar speed signs tend to be more effective than standard speed signs as they increase driver awareness. Several models are available featuring varying displays. Some are also capable of recording and speeding data.

ANALYSIS

Urban utilized Synchro/SimTraffic (V. 7) software to develop an existing conditions model of the Canton Street corridor. This model was validated using observed travel time data and used as a baseline for the development of a year 2015 model which accounted for the traffic impacts associated with the Westwood Station development as well as the I-95 Northbound slip ramp. Additional models were created to simulate the impacts of the traffic calming impacts on travel time, vehicle speed, and volume. Scenarios were developed for the deployment of high priority traffic calming treatments only and all treatments shown in the plan. The results of this analysis are summarized in the below figures. All travel times and speeds shown are for the portion of the Canton Street corridor between the East Street rotary and the future location of the Westwood Station Boulevard intersection.

Table 5: AM Northbound Analysis Results

| | <i>Without Traffic Calming</i> | <i>Level 1</i> | <i>Level 1+2</i> |
|------------------------------|--------------------------------|----------------|------------------|
| <i>Travel Time (minutes)</i> | 3.15 | 4.30 (+37%) | 4.63 (+47%) |
| <i>Average Speed (mph)</i> | 34 | 25 (-27%) | 23 (-32%) |

Table 6: PM Northbound Analysis Results

| | <i>Without Traffic Calming</i> | <i>Level 1</i> | <i>Level 1+2</i> |
|------------------------------|--------------------------------|----------------|------------------|
| <i>Travel Time (minutes)</i> | 3.10 | 4.10 (+32%) | 4.50 (+45%) |
| <i>Average Speed (mph)</i> | 35 | 26 (-24%) | 24 (-31%) |

Table 7: AM Southbound Analysis Results

| | <i>Without Traffic Calming</i> | <i>Level 1</i> | <i>Level 1+2</i> |
|------------------------------|--------------------------------|----------------|------------------|
| <i>Travel Time (minutes)</i> | 3.10 | 3.97 (+28%) | 4.37 (+41%) |
| <i>Average Speed (mph)</i> | 35 | 27 (-22%) | 25 (-29%) |

Table 8: PM Southbound Analysis Results

| | <i>Without Traffic Calming</i> | <i>Level 1</i> | <i>Level 1+2</i> |
|------------------------------|--------------------------------|----------------|------------------|
| <i>Travel Time (minutes)</i> | 3.40 | 4.42 (+30%) | 4.50 (+45%) |
| <i>Average Speed (mph)</i> | 35 | 26 (-24%) | 24 (-31%) |

In summary, the average speeds on Canton Street decrease by 22% to 32% when traffic calming treatments are incorporated into the model. Whereas speeds on the street range from 32 to 35 mph under the existing conditions, these values are expected to drop to 22 to 27 mph following the installation of traffic calming improvements. The proposed treatments also lead to a 28% to 47% increase in travel time.

Increased travel times, along with a decrease in convenience, are expected to discourage I-95 traffic from using Canton Street to bypass a portion of the interstate. An extensive review of existing research was conducted to determine the possible reduction in cut-thru trips using Canton Street. Information based on a nationwide research study provided potential volumes reductions as a result of different traffic calming devices. When combined, the proposed level 1 traffic calming devices could have the potential to reduce traffic volumes by approximately 17% (see **Table 9**). The cumulative effect of the proposed Level 1+2 traffic calming devices could be approximately 37%.

Further research revealed a study of a similar corridor in Dublin, Ohio. Tara Hill Drive is located approximately a 20 minute drive from downtown Columbus and is in close proximity to two Interstate highways. Issues with cut thru traffic and speeding led to the implementation of traffic calming treatments. The conditions before and after implementation were studied in order to determine the impacts. This study showed a reduction in volumes ranging from a low of 13% to a high of 24%. Table 5 presents potential a range of volume reductions on Canton Street following installation of traffic calming devices based on research

Table 9: Potential Volume Reduction

| | 2015 (No TC) | 13% (Ohio-low) | 17% (Level 1) | 20% (Level 2) | 24% (Ohio-Hi) | 37% (Level 1+2) |
|---------------------|---------------------|-----------------------|----------------------|----------------------|----------------------|------------------------|
| AM Peak | 910 | -118 | -155 | -182 | -218 | -337 |
| PM Peak | 1070 | -139 | -182 | -214 | -257 | -396 |
| Daily (2008) | 8126 | -1056 | -1381 | -1625 | -1950 | -3006 |

RECOMMENDATIONS

The Canton/Everett/Forbes Neighborhood Traffic calming Advisory Committee, along with Urban Engineers, recommends that the Town of Westwood implement all proposed Level 1 traffic calming improvements with construction beginning in Spring of 2009:

Realigned Intersections

- Canton Street at Blue Hill Drive
- Canton Street at Forbes Road
- Canton Street at Cushing Street and Perry Drive
- Canton Street at Hemlock Drive and Hedgerow Lane
- Forbes Road at Cushing Road
- Forbes Road and Glandore Road

Diverter

- Forbes Road and Everett Street

Speed Tables

- Canton Street at Downey Street and Metcalf Road
- Everett Street and Lyons Drive

Roundabout

- Canton Street and Everett Street

It is expected that these treatments will address existing volume and speeding concerns expressed by residents as well as mitigate potential impacts of Westwood Station and related development. Level 1 traffic calming treatments are estimated to reduce future travel times on Canton Street by 28%-37%, reduce speeds to 24-26 mph, and potentially reduce volumes by 1381 vehicles per day. Following the completion of construction, traffic should be observed and measured to determine if the intended benefits were achieved. It should be noted that while speeds are expected to decrease immediately, volumes may be reduced more gradually as drivers adjust the route selection. Should it be determined that additional speed and volume reductions are desired, Urban recommends that the Town install the following Level 2 traffic calming treatments:

Median Islands

- Canton Street – between Metcalf Road and Blue Hill Drive
- Canton Street – between Blue Hill Drive and Forbes Road
- Canton Street – between Cushing Road and Everett Street
- Canton Street – between Everett Street and Hemlock Drive
- Canton Street – between Hemlock Drive and Oceana Way
- Forbes Road – between Canton Street and Cushing Road
- Forbes Road – between Cushing Road and Glandore Road
- Everett Street – between Forbes Road and Lyons Drive

Additional Speed Tables

- Canton Street at Downey Street and Metcalf Road
- Everett Street and Lyons Drive

Lane Diets

Canton-Everett-Forbes Neighborhood Traffic Calming
Town of Westwood, MA

- Canton Street
- Forbes Road
- Everett Street

Gateways

- Canton Street – south of Downey Street
- Canton Street – north of Oceana Way
- Forbes Road at Everett Street

APPENDIX A

**PRELIMINARY DRAFT
TRAFFIC CALMING
PLAN**

Canton Forbes Everett

TRAFFIC CALMING PLAN

Traffic Calming
 The choice of traffic calming measures depends on many factors such as the type of street and the context. Streets can be divided into two types: framework streets and non-framework streets. Framework streets are generally those that are long in length and serve as major emergency routes. Non-framework streets include the rest of the streets. Canton, Forbes, and Everett Roads are framework streets.

The key to the good design of a framework street is its cross-section (e.g., the number of lanes, the width of the lanes, the material choices, the edge treatments, the on-street parking, street trees, sidewalks, lighting, etc.) Through the clever design of the cross section, the street can reflect and contribute to its context (e.g., the area's history, the topography, the climate, the land uses along the sides, the community's goals and objectives, etc.) A good cross-section can encourage desirable behaviors and feelings (e.g., desired speeds for motor vehicles, social contact and exchange for pedestrians, a feeling of safety, identity, etc.)

The design of non-framework streets can also involve various cross-section measures. However, traffic calming on non-framework streets can employ a myriad of periodic measures such as mini traffic circles, narrowings, pinch points, speed humps, tight corner radii, cushions, etc.

The smart approach to laying out traffic calming plans is to determine the appropriate measures for obvious places such as key intersections and pedestrian generators and then fill in between with measures at the correct spacing. The correct spacing is a function of the desired motor vehicle speed (i.e., the lower the speed, the shorter the spacing). Typically, 20 miles per hour is used on non-framework streets and 25 or 30 miles per hour are used for framework streets.

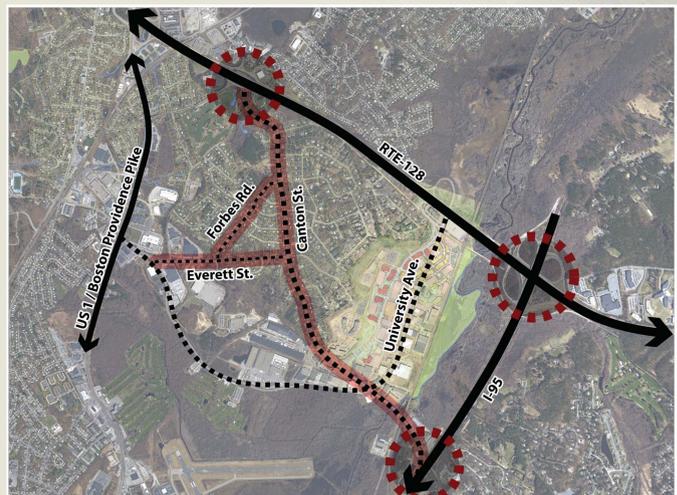
A rule of thumb is that no more than eight to twelve periodic measures be used in sequence through a traffic calmed area. This helps avoid backlash problems from drivers who might otherwise complain about having an excessive number of measures. It also provides guidance for selecting a good network of framework streets.

For the record, traffic calming measures of either type (i.e., cross-section measures or periodic measures) are different than traffic control devices and route modification measures (e.g., street closures, partial street closures, and turn prohibitions). Traffic calming measures involve changes to the physical design of the street or intersection. Route modifications or turn restrictions are not recommended as traffic calming measures. Typically, when route modifications are employed there are winners and losers. Some stakeholders benefit by the changes and some are harmed.

Despite Glattig Jackson recommendations, and those of the Town's and developer's traffic consultants, the Planning Board opted to fulfill the wishes of the neighborhood and implement turn restrictions into and out of the Westwood Station development. Glattig Jackson anticipates that the neighborhood itself will seek to have these restrictions removed at a future date.

Priorities
 All of the recommended traffic calming measures complement each other with regard to the effects on improving driver behavior and reducing speeds along Canton Street. For best results at implementing these measures it is usually recommended that all modifications be implemented as one project. Should the traffic calming measures need to be phased due to funding constraints, schedule, or implementation strategy, we recommend each of the measures to be staged based on their priority in relation to the overall traffic calming strategy.

- i) T-Intersections
- ii) Roundabouts
- iii) Medians
- iv) Street narrowings
- v) Additional street trees
- vi) Pedestrian path/trail
- vii) Bus stops



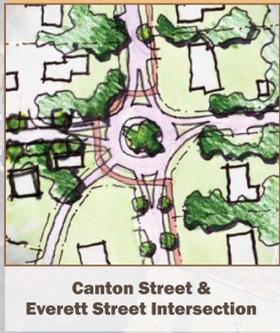
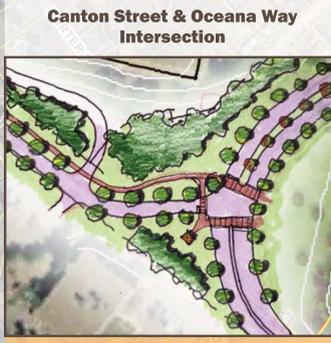
Cut-through Traffic Pressure
 The pressure for cut-through traffic in the neighborhood exists today due to the unfortunate circumstance of Canton Street being located more or less on the hypotenuse between I-95/128 and I-95. Absent a plan and under current conditions, the pressure will most likely be increased with the addition of the I-95 Northbound slip ramp. However, all of the efforts together, such as the implemented turn restrictions along Canton Street together with the proposed Westwood Station Boulevard, a reconfigured ramp at Blue Hill Drive, the completion of Mass Highway's Add-A-Lane project, the new two-lane I-95 Southbound continuation ramp, and the proposed traffic calming measures, will all contribute to reduce the pressures off of the Canton Street corridor (including potential cut-through traffic generated by the proposed Westwood Station) under typical traffic conditions.



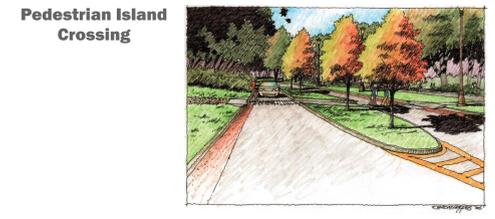
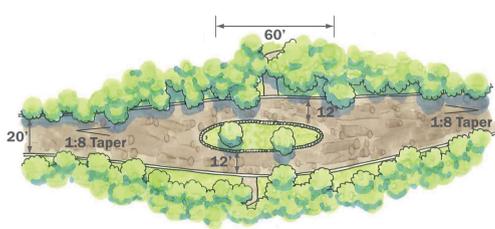
Everett Street & Forbes Road Intersection
 It's understood that the implementation of the roundabout at the intersection of Everett Street and Forbes Road will require coordination with the Town of Norwood.



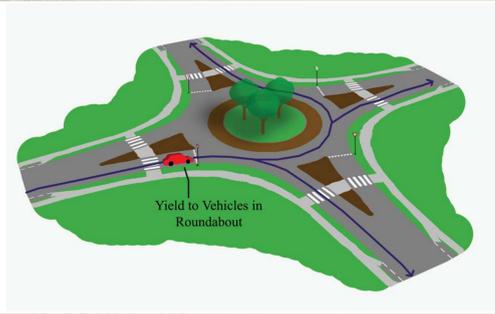
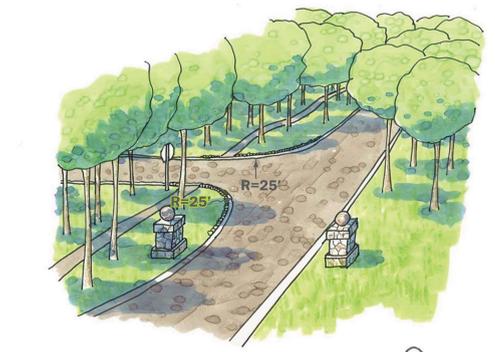
Pocket Park
 Town-owned parcels along Canton Street and within the neighborhood could become tot-lots, pocket parks or some sort of public amenity.
 The location of Pedestrian Crossings at these locations are key to allow for safe pedestrian access to these parks.



- Key**
- Roundabout
 - Realigned T-Intersections
 - Median



Pedestrian Island Crossing



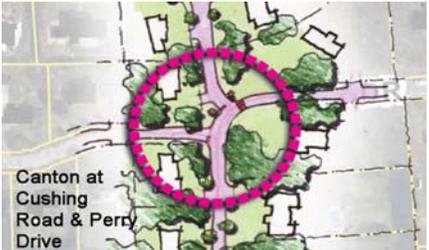
- Roundabouts**
- A typical 4-way intersection has 32 vehicle-to-vehicle conflicts. At a roundabout these conflicts are reduced to 8. Roundabouts have proven to reduce personal injury crashes 80-90% (compared with signal or stop sign controlled).
 - Roundabouts control corridor speed. Signals tend to speed motorists up as they approach intersections, while roundabouts uniformly reduce speed to 15-20 mph at these critical locations.
 - Properly designed roundabouts in urban areas are designed to bring vehicle speeds down to 15-20 mph, speeds at which motorists are much more likely to yield to pedestrians.
 - The splitter island in a roundabout provides a refuge for pedestrians as they cross the street and simplifies the crossing by letting them focus on vehicles traveling in only one direction.
 - Because roundabouts are more efficient at moving traffic it is often possible to use a one-lane roundabout instead of widening an intersection and road to four or more lanes. A 4-lane intersection might require pedestrians to cross over 50 feet. A one-lane roundabout breaks the crossing into two 12-14 foot legs.
 - Roundabouts also work well for bicyclists. Most bicyclists at roundabouts simply take the travel lane since vehicles are circulating at a comfortable bicycle speed. Less confident bicyclists can be provided a ramp on the approach to the roundabout so they can exit and walk their bicycle across at the crosswalk. (In areas with high bicycle use, sidewalk and crosswalk areas should be wide enough to avoid creating conflicts between bicyclists and pedestrians.)
 - Roundabouts can be designed for infrequent and long or wide vehicles (such as wide-load trucks or large agricultural tractors) with a mountable truck apron to allow space for wheels or equipment to pass over for turning movements.

- Medians**
 The medians serve four important functions:
- i) They were located to be approximately half way between the realigned T-intersections to further reduce the clear lengths of the streets. Like realigned intersections, medians cause motorists to focus on near and middle distances as opposed to long distances, which will help them slow down to safer speeds.
 - ii) The medians also act as refuges for pedestrians crossing the street. This is particularly suitable or where the path/trail crosses the street. The idea is that the pedestrians can look one way, cross to the refuge, look the other way, and then cross the other half of the street. Thus, crossing, the street will become simpler and safer.
 - iii) Medians provide an increased "sense of enclosure" along streets as well as cause motorists to horizontally deflect as they pass by medians. Both of these benefits increase safety along the street.
 - iv) Medians will be landscaped with trees and the curbs will be stone in order to suit the context by matching local species and materials. Trees and ground cover help motorists see treatments farther out, bringing about slowing as much as 1000 feet away. Medians add to the aesthetics and rural/village character of streets.

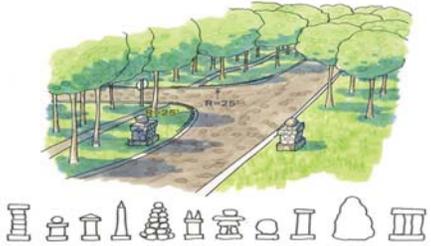
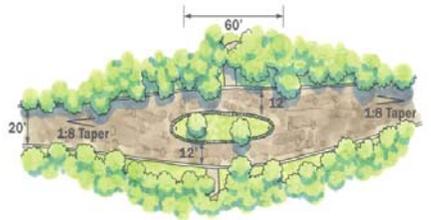
Realigned T-Intersections
 Streets in this area are likely old farm to market roads whose original alignments and designs did not anticipate the existing and proposed low density and automobile-oriented land uses. They also did not anticipate the performance of modern automobiles and the risky, dangerous behaviors of modern drivers. The alignment of Canton, Forbes, and Everett Roads, in particular, are straight for long lengths, which encourages speeding. The realignment of several of T-intersections, periodically, down the three streets will reduce the gun-barrel look of the streets and result in shorter straight lengths. These intersections should employ residentially scaled entrance features to increase the sense of territory by the residents. Inside the corner radii, a heavily textured rock liner should be provided in order to encourage motorists to stay on the street and to reduce rutting and maintenance problems.

APPENDIX B

**ADVISORY
COMMITTEE
HOMESWORK
ASSIGNMENT AND
SUMMARY**

| Proposed Measure (as shown in the Glatting Jackson plan) | Meets Desired Action | Priority | | If Undesired Replace With ¹ |
|---|-------------------------|----------------------|----------------------|---|
| | | High | Low | |
| Canton @ Blue Hill Realigned intersection  | 9 17 22 | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Canton @ Cushing & Perry Realigned intersection  | 9 22 | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Canton @ Downey & Metcalf Realigned intersection  | 9 17 22 | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Canton @ Everett Roundabout  | 19 22 | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Canton @ Hemlock Realigned intersection  | 9 17 22 | <input type="text"/> | <input type="text"/> | <input type="text"/> |

¹Please use accompanying chart to select alternate measure
Email responses to Najib by June 27, 2008
If you have any questions, call Najib at 860-246-7200

| Proposed Measure (as shown in the Glatting Jackson plan) | Meets Desired Action | Priority | | If Undesired Replace With ¹ |
|--|-------------------------|----------|-----|---|
| | | High | Low | |
| Forbes @ Cushing Realigned intersection  | 9 17 22 | | | |
| Forbes @ Glandore Realigned intersection  | 9 17 22 | | | |
| North & south end of Canton Gateways  | 8 | | | |
| Midblock between intersections Choker or chicane  | 5 | | | |
| Along all streets Lane diet  | 22 23 | | | |

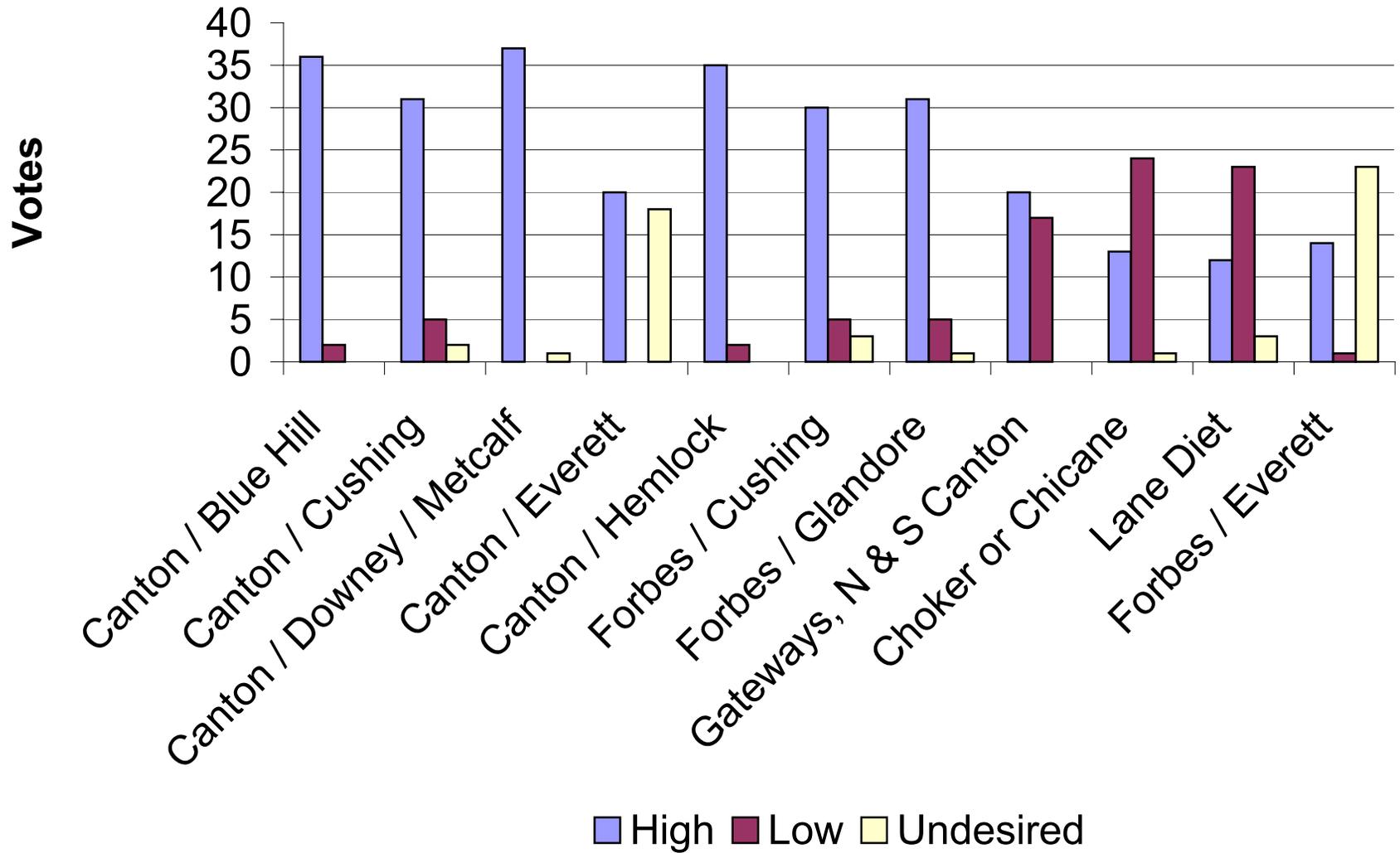
¹Please use accompanying chart to select alternate measure
Email responses to Najib by June 27, 2008
If you have any questions, call Najib at 860-246-7200

| Proposed Measure (as shown in the Glatting Jackson plan) | Meets Desired Action | Priority | | If Undesired Replace With ¹ |
|---|-------------------------|----------|-----|---|
| | | High | Low | |
| Forbes @ Everett Turn restrictions | 14 | | | |

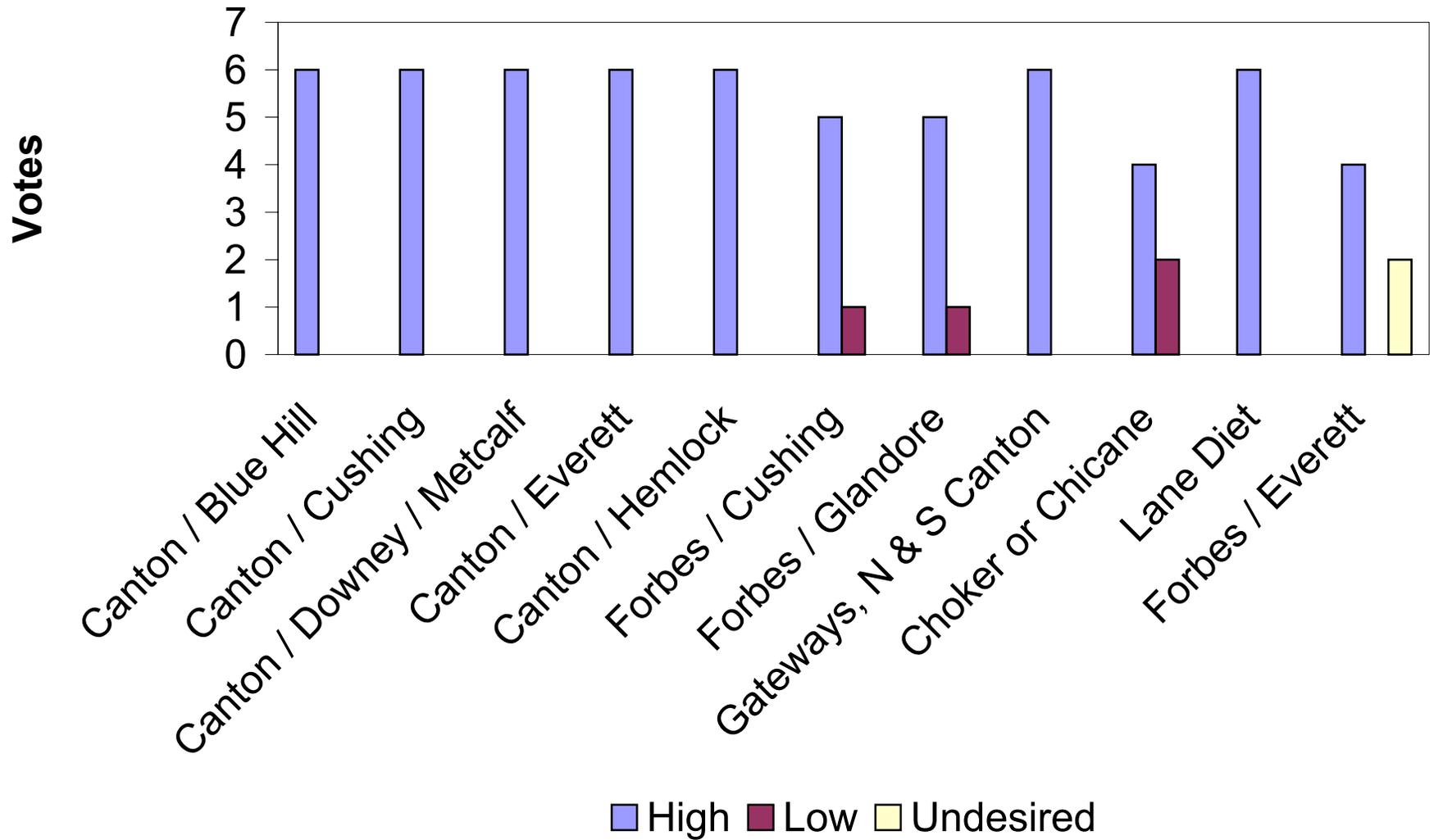


¹Please use accompanying chart to select alternate measure
 Email responses to Najib by June 27, 2008
 If you have any questions, call Najib at 860-246-7200

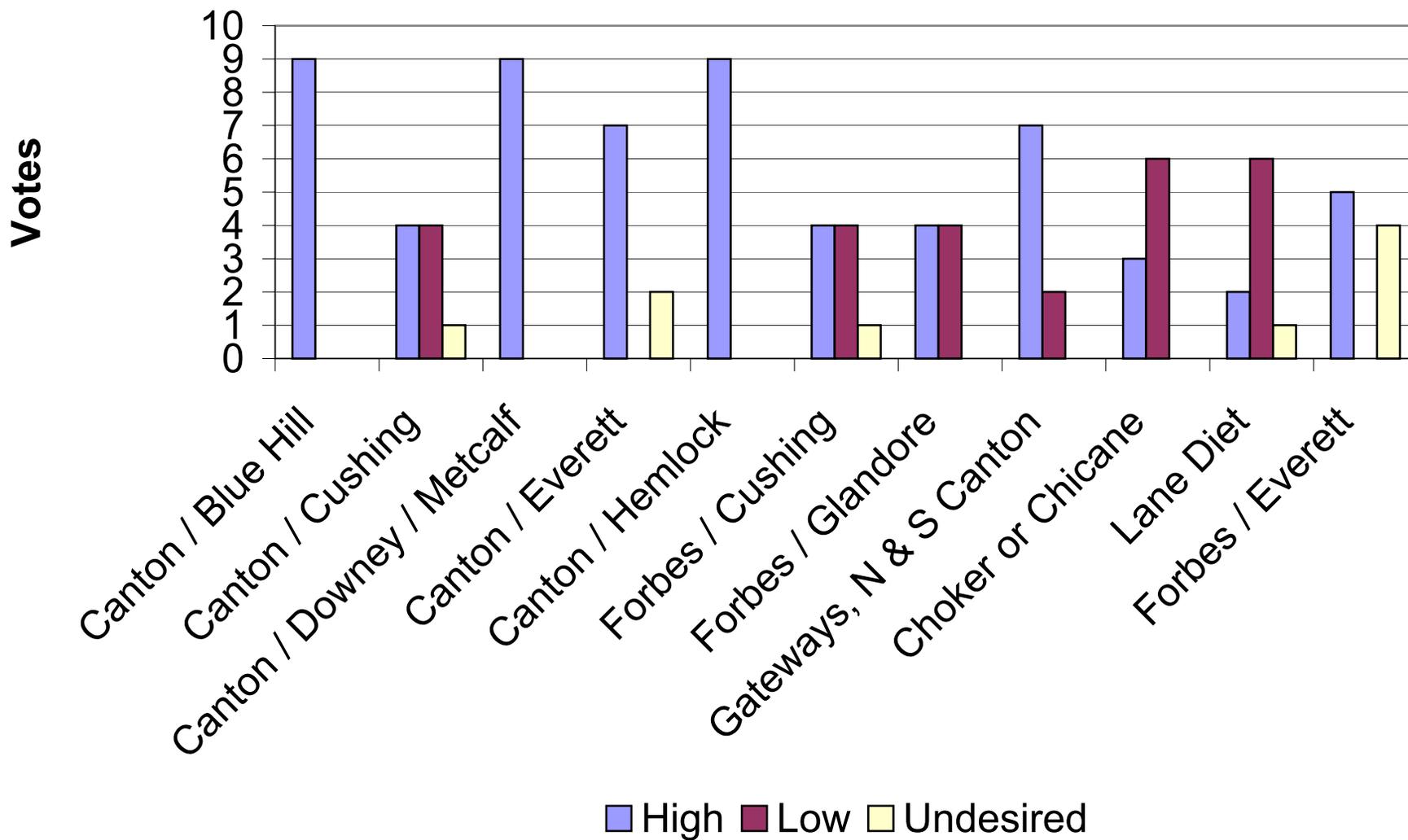
Overall Votes, by Numbers



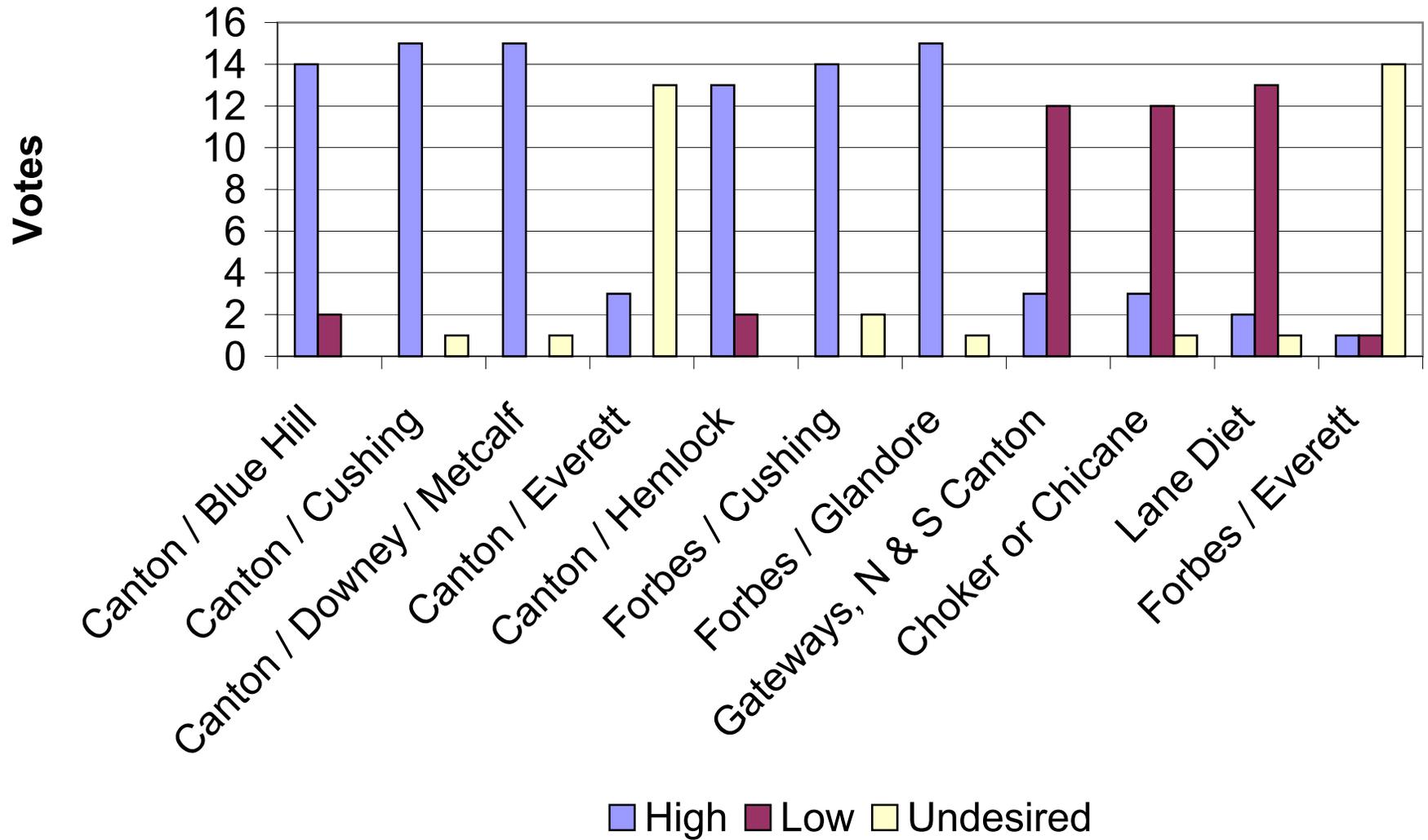
Canton Street Votes



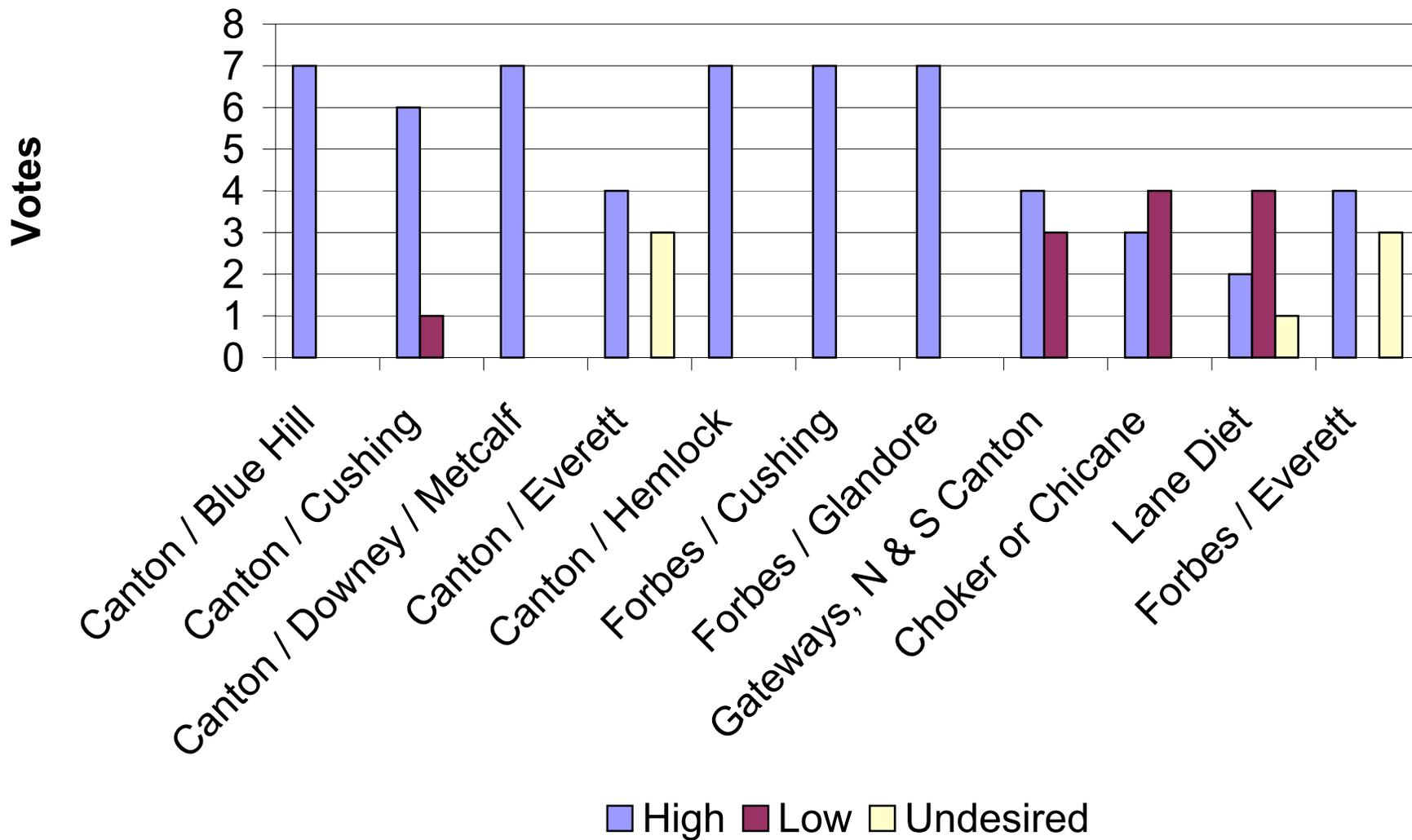
Everett Street Votes



Forbes Street Votes



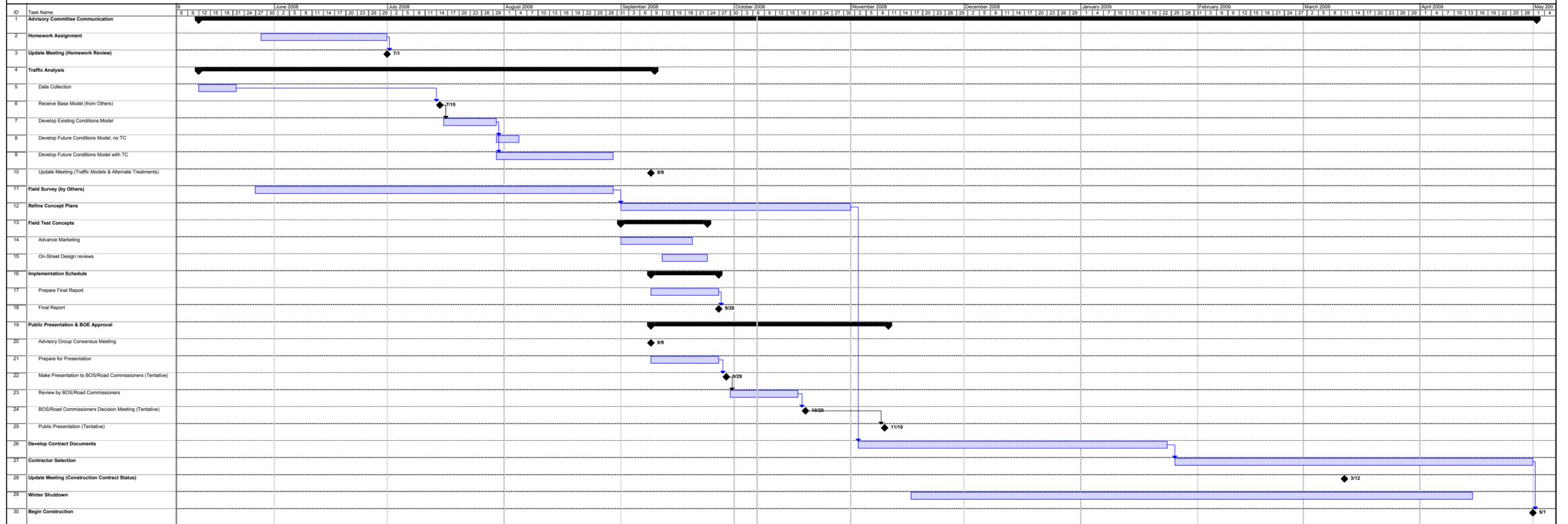
Other Streets Votes



APPENDIX C

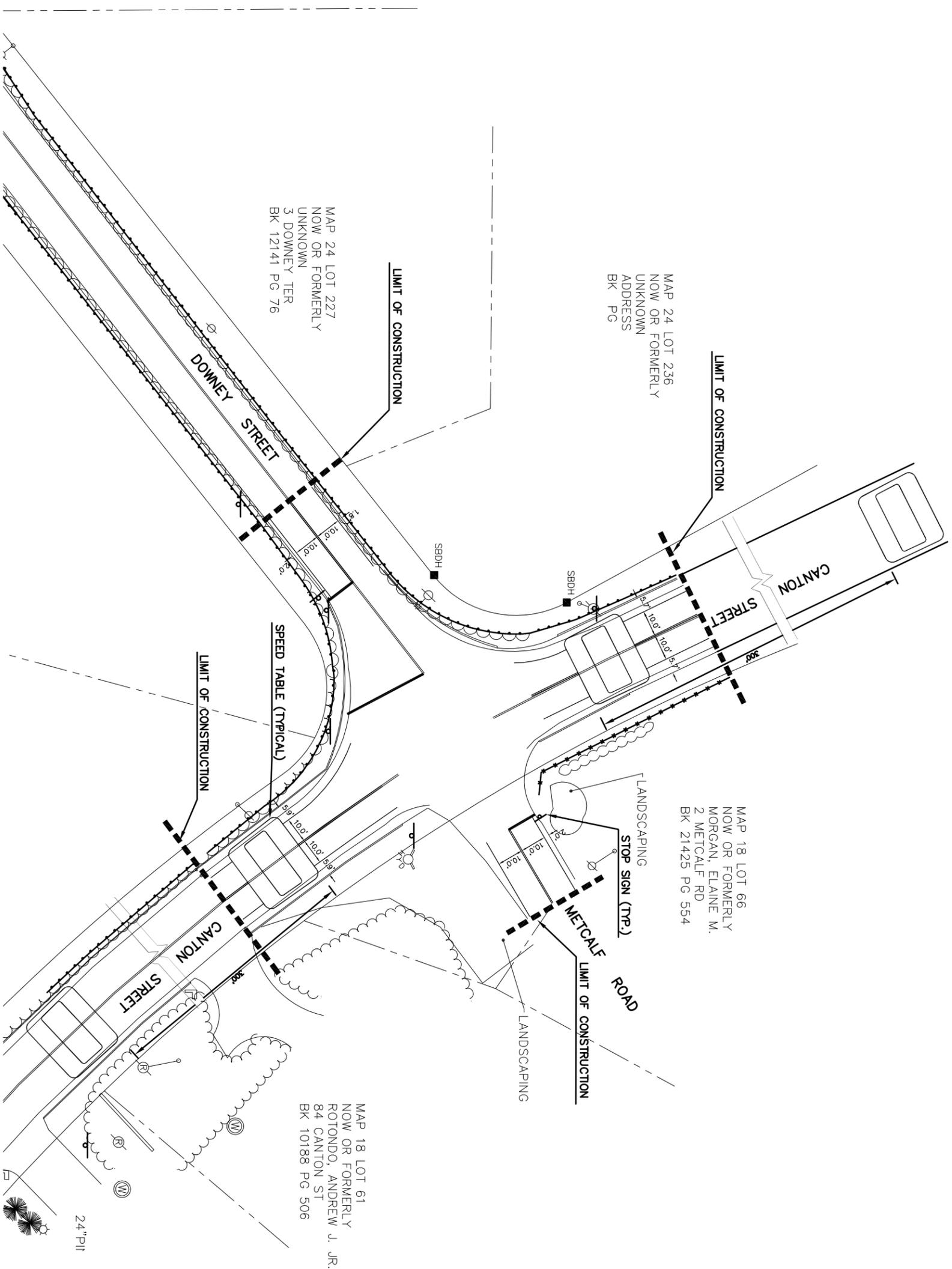
PROJECT SCHEDULE

Westwood Traffic Calming, Phase II



APPENDIX D

SCHEMATIC DRAWINGS



| TAKING AREA (SF) | GREEN AREA ADDED (SF) ¹ | PAV'T AREA ADDED (SF) ² | NET (SF) |
|------------------|------------------------------------|------------------------------------|----------|
| N/A | N/A | N/A | N/A |

Footnotes:
 1 Green Area Added is a result of alignment modifications that have reduced the roadway pavement.
 2 Pavm't Area Added is new roadway pavement made necessary by the revised alignment.

PRELIMINARY-NOT FOR CONSTRUCTION

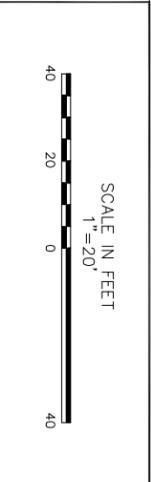


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URBAN ENGINEERS
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 75 Charter Oak Avenue
 Hartford, Connecticut, 06106
 Tel: (860)-246-7200 Fax: (860) 246-7211

Drawing No. Job No. 8057-400 Date: September 2008

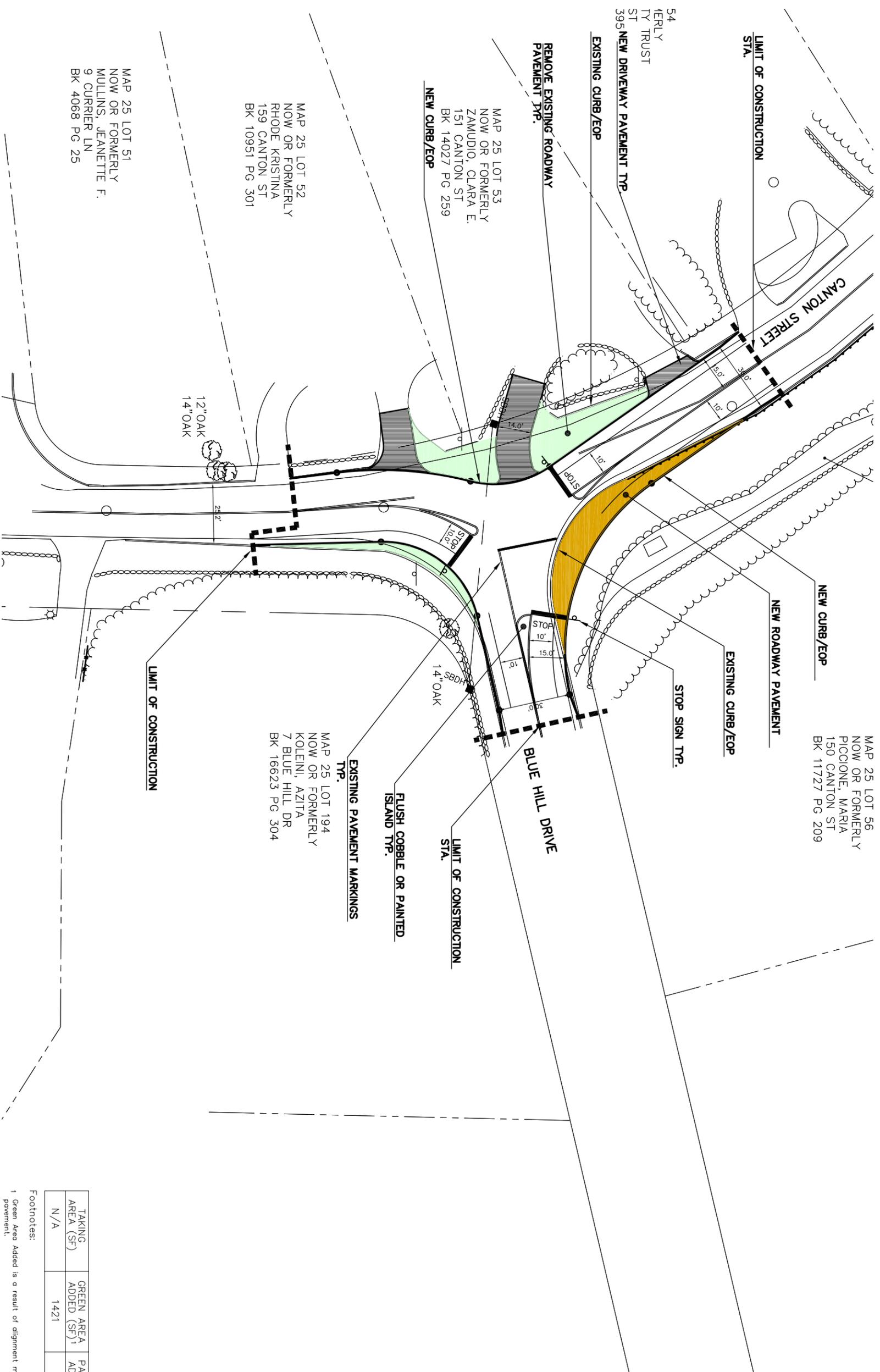


| Sign-Offs | By |
|-------------|----|
| Drawn | |
| Checked | |
| Submitted | |
| Recommended | |
| Approved | |
| Recorded | |

CANTON STREET, DOWNEY STREET, AND
 METCALF ROAD
 INTERSECTION REALIGNMENT

| Revisions | By | Sheet No. |
|-----------|----|-----------|
| | | |
| | | |

File No.



| TAKING AREA (SF) | GREEN AREA ADDED (SF) ¹ | PAV'T AREA ADDED (SF) ² | NET (SF) |
|------------------|------------------------------------|------------------------------------|----------|
| N/A | 1421 | 917 | 504 |

Footnotes:

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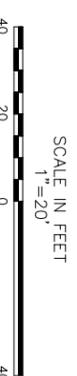
PRELIMINARY-NOT FOR CONSTRUCTION



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 75 Charter Oak Avenue
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 Drawing No. Job No. 8057-400 Date: September 2008

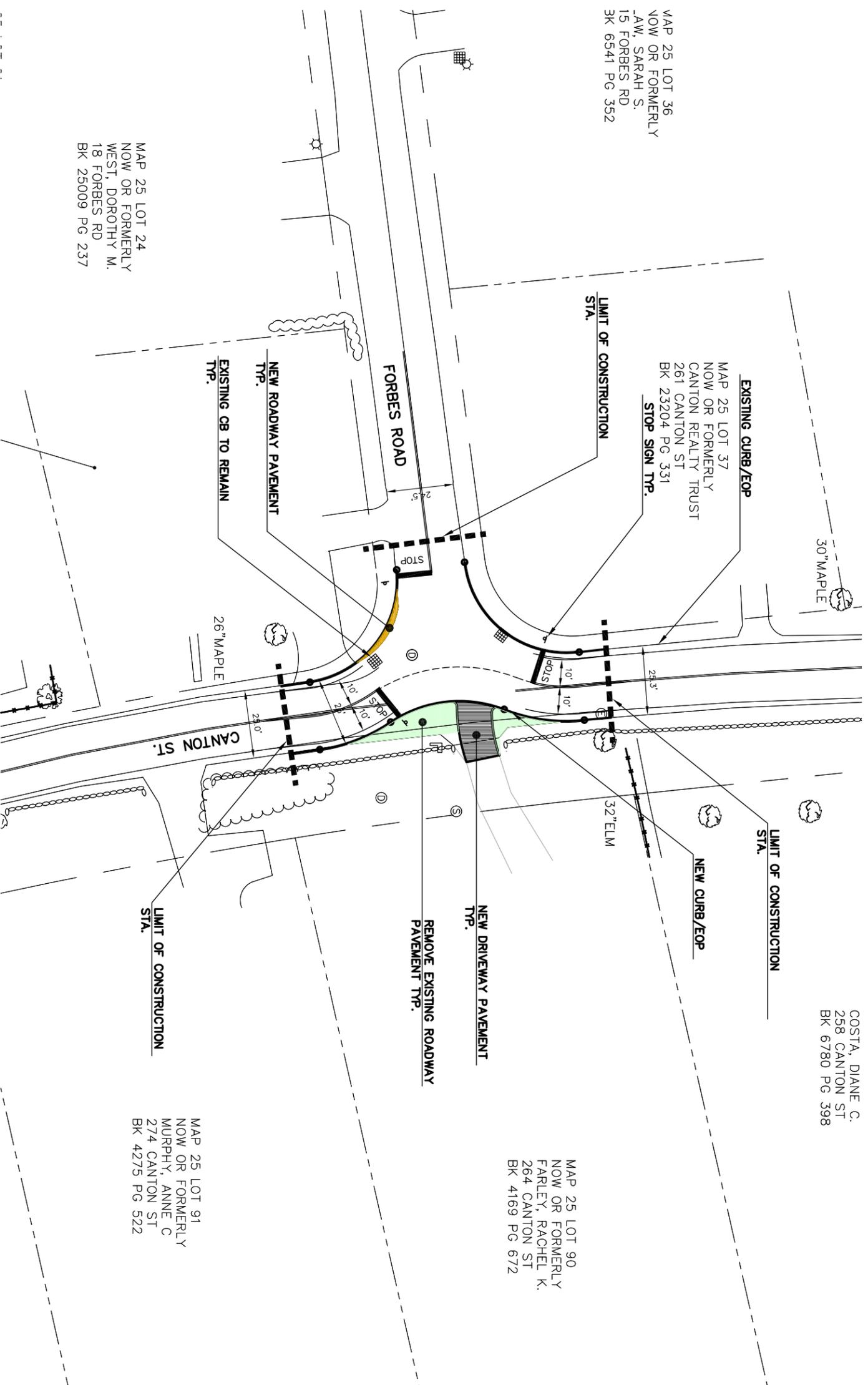


| Sign-Offs | By |
|-------------|----|
| Drawn | |
| Checked | |
| Submitted | |
| Recommended | |
| Approved | |
| Recorded | |

CANTON STREET AND BLUE HILL DRIVE
 INTERSECTION REALIGNMENT
 CONSTRUCTION PLAN

| Revisions | By | Sheet No. |
|-----------|----|-----------|
| | | |
| | | |
| | | |

File No.



| TAKING AREA (SF) | GREEN AREA ADDED (SF) ¹ | PAV'T AREA ADDED (SF) ² | NET (SF) |
|------------------|------------------------------------|------------------------------------|----------|
| N/A | 383 | 41 | 342 |

Footnotes:
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PRELIMINARY-NOT FOR CONSTRUCTION



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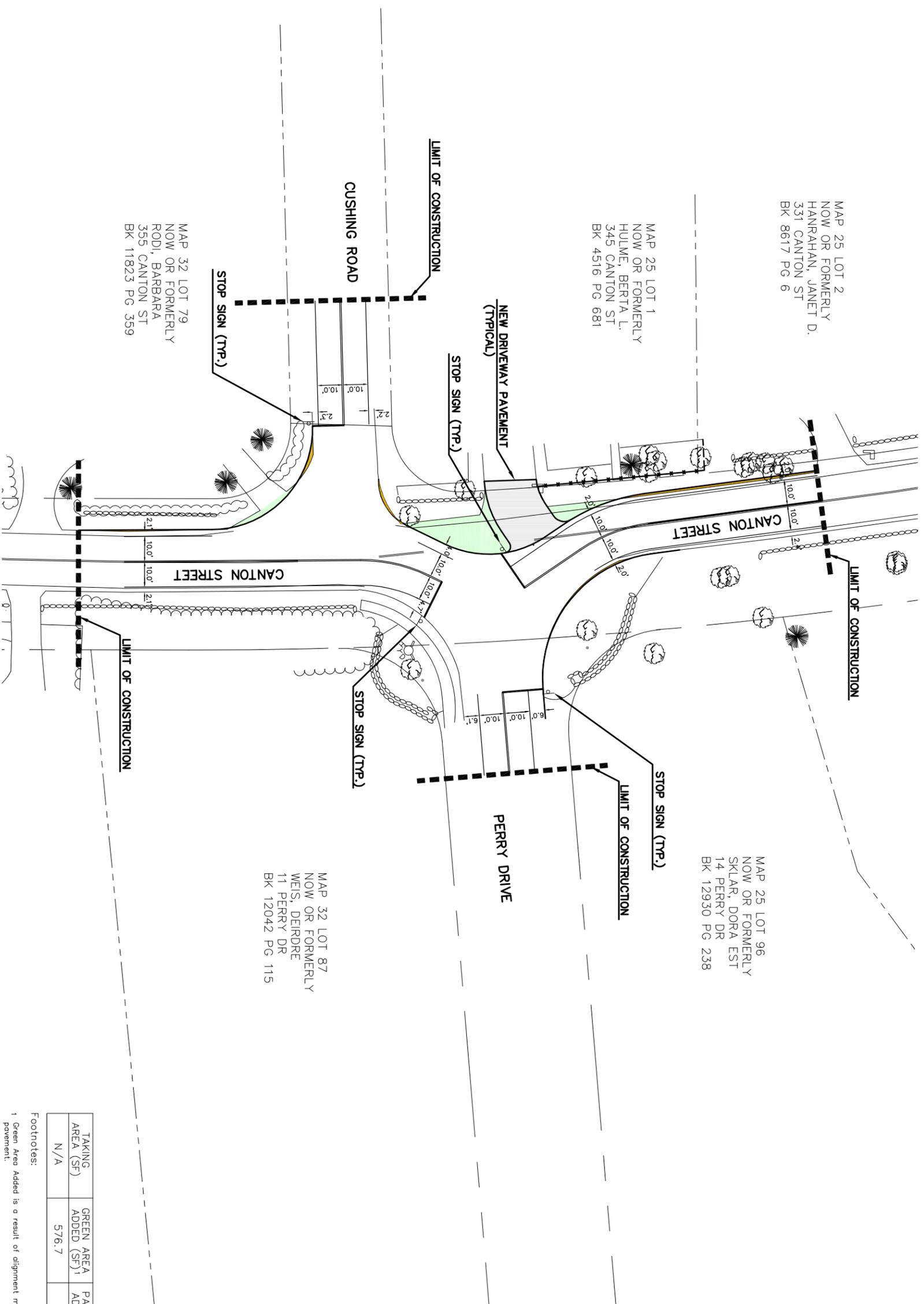


| Sign-Offs | By |
|-------------|----|
| Drawn | |
| Checked | |
| Submitted | |
| Recommended | |
| Approved | |
| Recorded | |

CANTON STREET AND FORBES ROAD
 INTERSECTION REALIGNMENT
 CONSTRUCTION PLAN

| Revisions | By | Sheet No. |
|-----------|----|-----------|
| | | |
| | | |
| | | |

File No.



| TAKING AREA (SF) | GREEN AREA ADDED (SF) ¹ | PAV'T AREA ADDED (SF) ² | NET (SF) |
|------------------|------------------------------------|------------------------------------|----------|
| N/A | 576.7 | 129.1 | 447.6 |

Footnotes:

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SCALE IN FEET
 1" = 20'

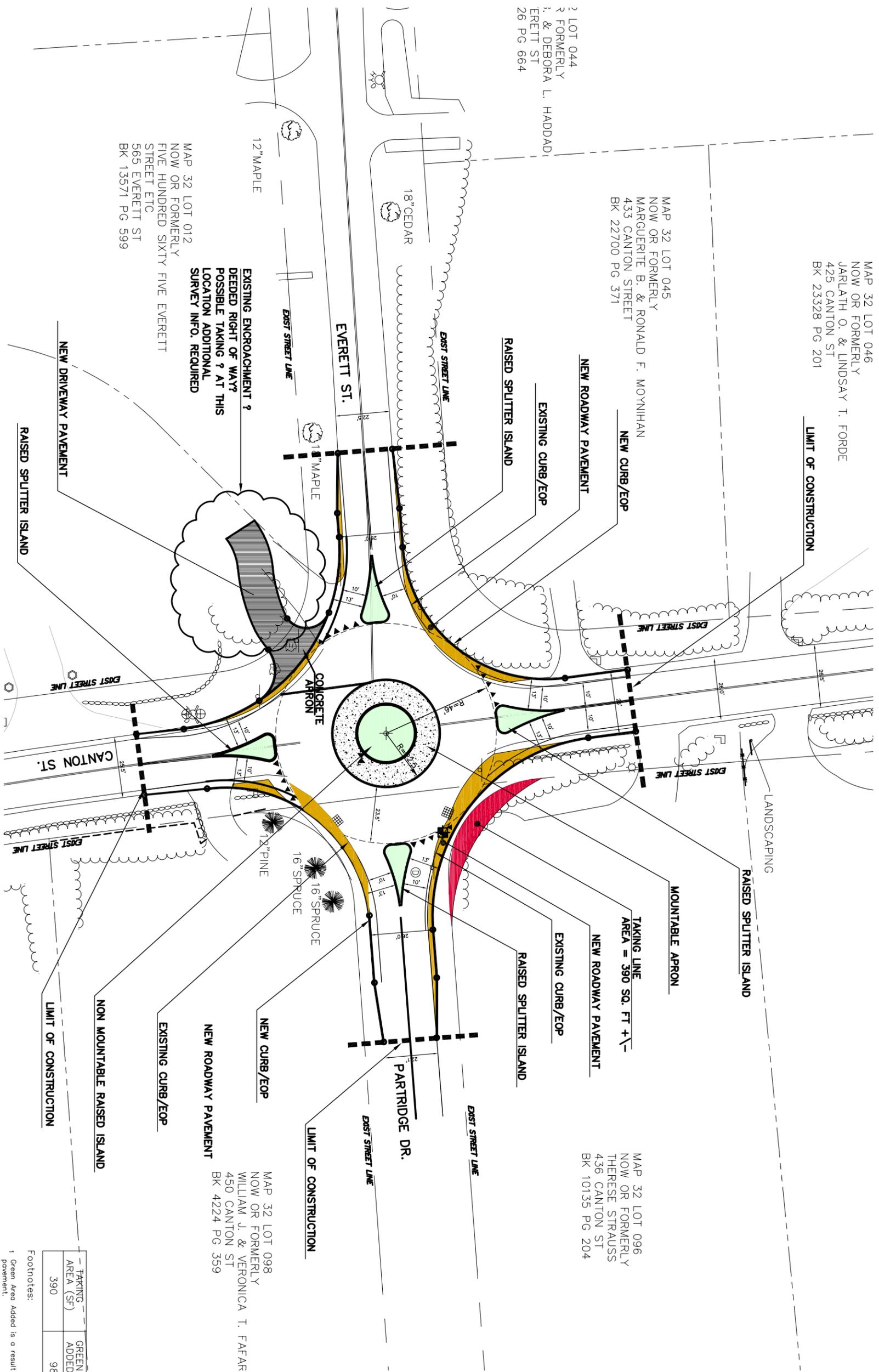
| Sign-Offs | By |
|-------------|----|
| Drawn | |
| Checked | |
| Submitted | |
| Recommended | |
| Approved | |
| Recorded | |

CANTON STREET, CUSHING ROAD, AND
 PERRY DRIVE
 INTERSECTION REALIGNMENT

| Revisions | By | Sheet No. |
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| | | |
| | | |
| | | |

File No.

Drawing No. Job No. 8057-400 Date: September 2008



| TAKING AREA (SF) | GREEN AREA ADDED (SF) ¹ | PAV'T AREA ADDED (SF) ² | NET (SF) |
|------------------|------------------------------------|------------------------------------|----------|
| 390 | 983 | 1265 | 282 |

Footnotes:
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CANTON, EVERETT, FORBES
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Drawing No. _____ Job No. 8057-400 Date: September 2008

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SCALE IN FEET
 1" = 20'

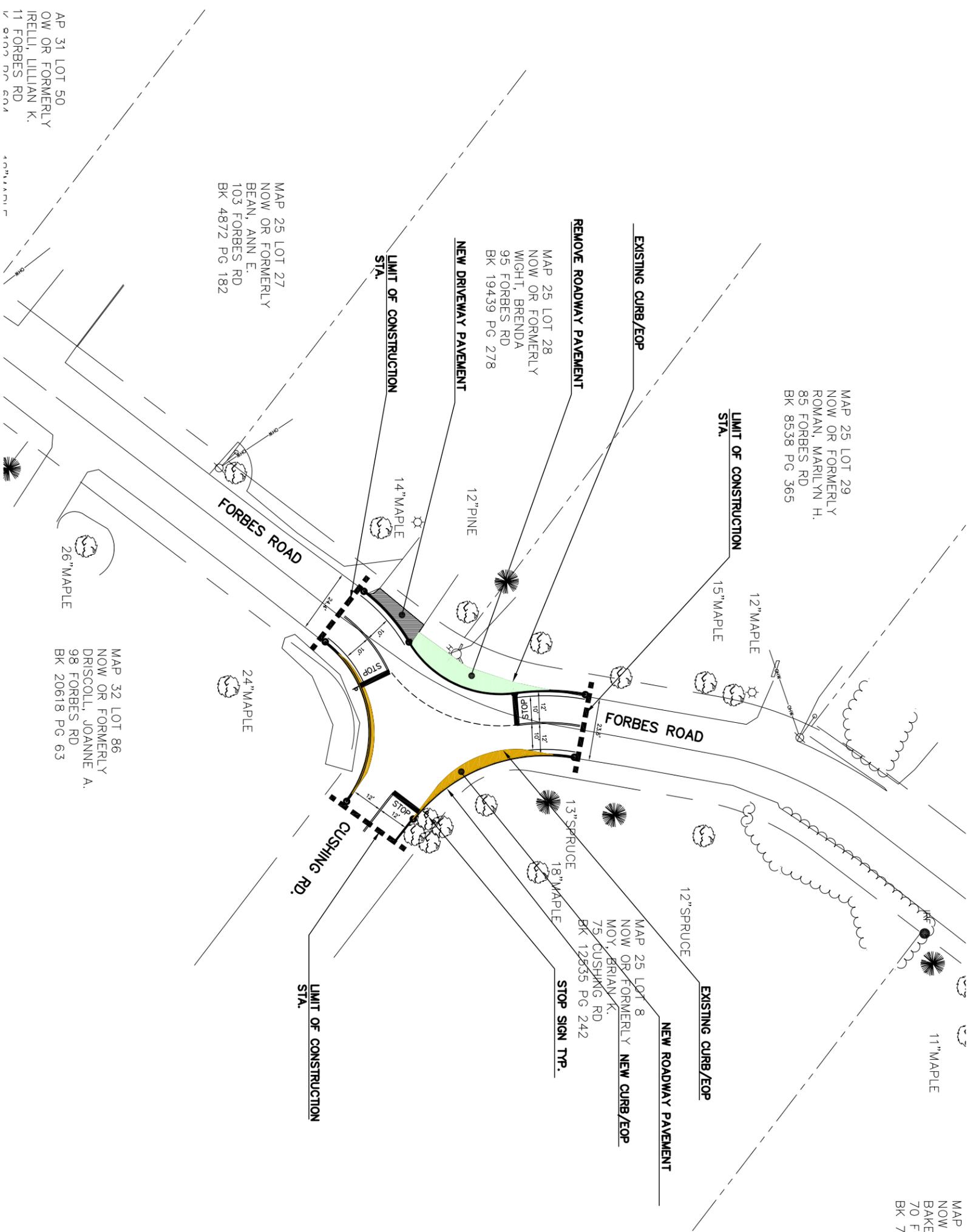


| Sign-Offs | By |
|-------------|----|
| Drawn | |
| Checked | |
| Submitted | |
| Recommended | |
| Approved | |
| Recorded | |

CANTON STREET AT EVERETT STREET
 ROUNDABOUT
 CONSTRUCTION PLAN

| Revisions | By | Sheet No. |
|-----------|----|-----------|
| | | |
| | | |

File No. _____



AP 31 LOT 50
 NOW OR FORMERLY
 IRELLI, LILLIAN K.
 11 FORBES RD
 BK 4872 PG 182

MAP 25 LOT 27
 NOW OR FORMERLY
 BEAN, ANN E.
 103 FORBES RD
 BK 4872 PG 182

MAP 25 LOT 28
 NOW OR FORMERLY
 WIGHT, BRENDA
 95 FORBES RD
 BK 19439 PG 278

MAP 25 LOT 29
 NOW OR FORMERLY
 ROMAN, MARILYN H.
 85 FORBES RD
 BK 8538 PG 365

MAP 32 LOT 86
 NOW OR FORMERLY
 DRISCOLL, JOANNE A.
 98 FORBES RD
 BK 20618 PG 63

MAP 25 LOT 8
 NOW OR FORMERLY
 MOY, BRIAN K.
 75 CUSHING RD
 BK 12535 PG 242

MAP 25 LOT 7
 NOW OR FORMERLY
 BAKER, ANNE B.
 70 FORBES RD
 BK 7398 PG 170

| TAKING AREA (SF) | GREEN AREA ADDED (SF) ¹ | PAV'T AREA ADDED (SF) ² | NET (SF) |
|------------------|------------------------------------|------------------------------------|----------|
| N/A | 311 | 221 | 90 |

Footnotes:
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Drawing No. _____

Job No. 8057-400

Date: September 2008

SCALE IN FEET

1" = 20'

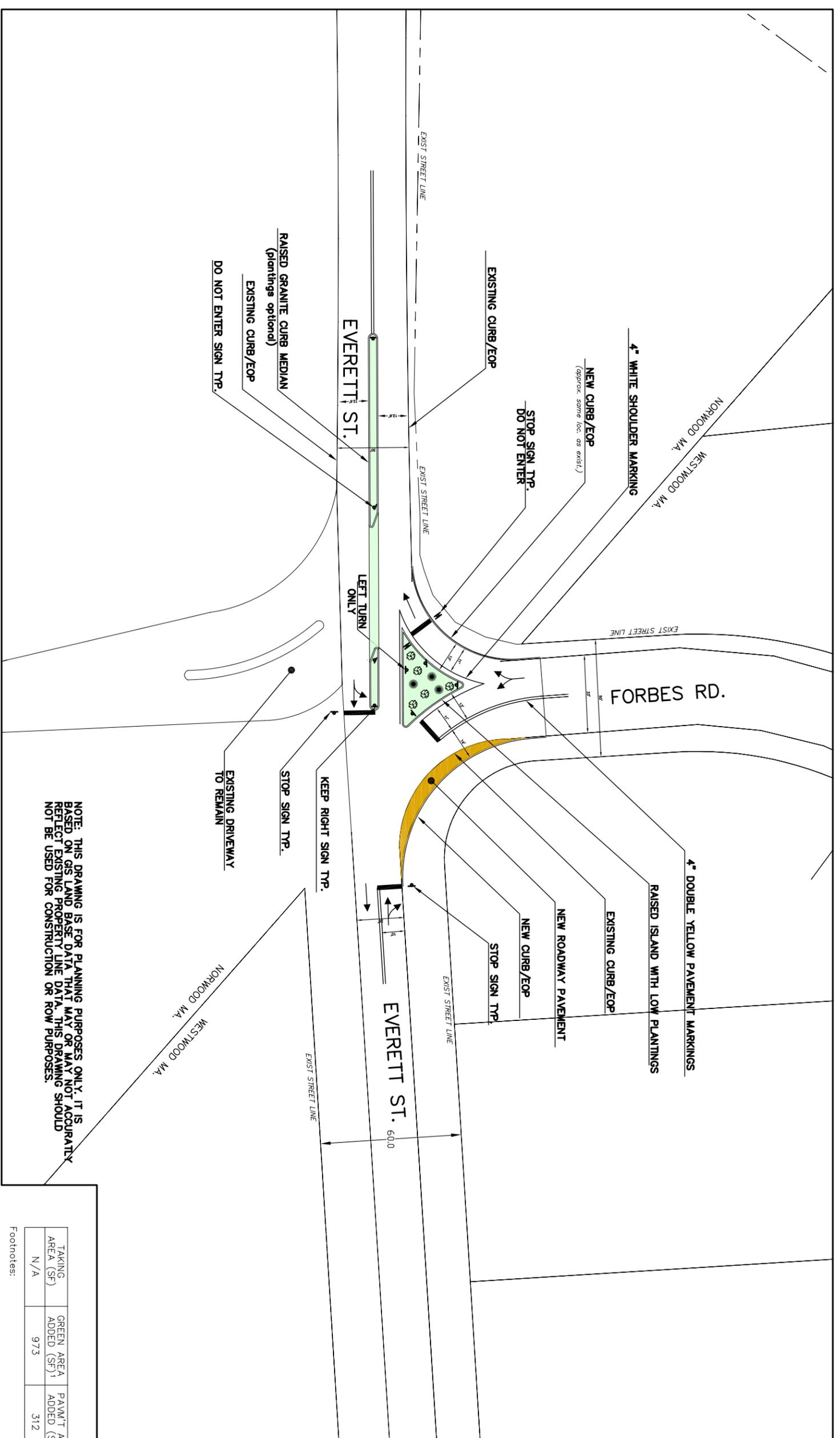


| Sign-Offs | By |
|-------------|----|
| Drawn | |
| Checked | |
| Submitted | |
| Recommended | |
| Approved | |
| Recorded | |

**FORBES ROAD AND CUSHING ROAD
 INTERSECTION REALIGNMENT
 CONSTRUCTION PLAN**

| Revisions | By | Sheet No. |
|-----------|----|-----------|
| | | |
| | | |
| | | |

File No. _____



NOTE: THIS DRAWING IS FOR PLANNING PURPOSES ONLY. IT IS BASED ON GIS LAND BASE DATA THAT MAY OR MAY NOT ACCURATELY REFLECT EXISTING PROPERTY LINE DATA. THIS DRAWING SHOULD NOT BE USED FOR CONSTRUCTION OR ROW PURPOSES.

| TAKING AREA (SF) | GREEN AREA ADDED (SF) 1 | PAV'T AREA ADDED (SF) 2 | NET (SF) |
|------------------|-------------------------|-------------------------|----------|
| N/A | 973 | 312 | 839 |

Footnotes:
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 This figure does not include driveway areas.

PRELIMINARY—NOT FOR CONSTRUCTION

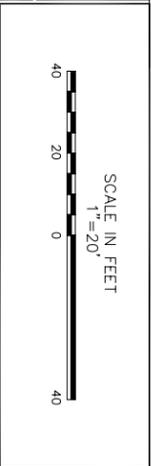


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Drawing No. _____ Job No. 8057-00 Date: September 2008



| Sign-Offs: | By |
|-------------|----|
| Drawn | |
| Checked | |
| Stabilized | |
| Recommended | |
| Approved | |
| Recorded | |

FORBES ROAD AT EVERETT STREET
 INTERSECTION DIVERTER
 CONSTRUCTION PLAN

| Revisions | By | Sheet No. | File No. |
|-----------|----|-----------|----------|
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