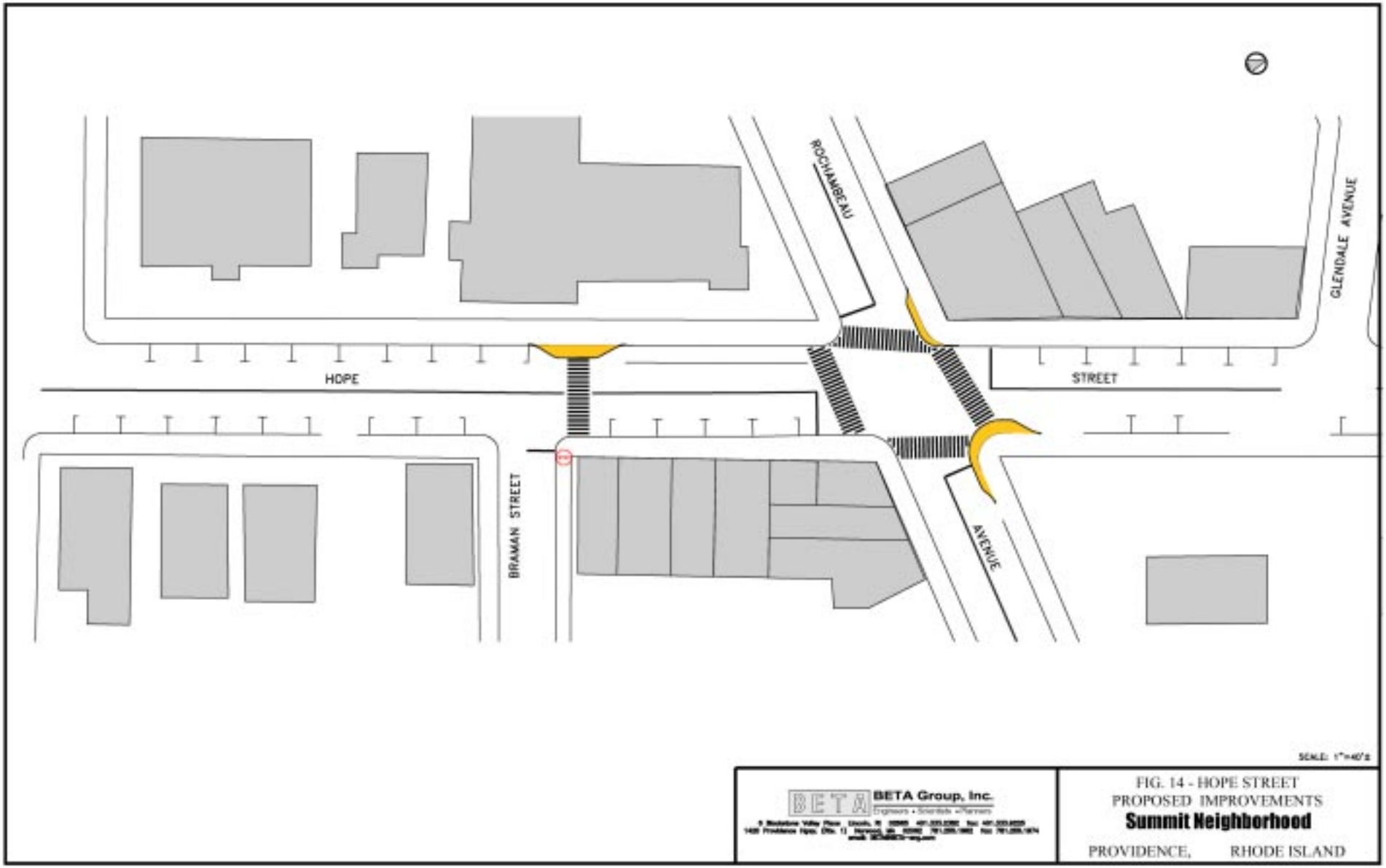

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FIG. 14 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

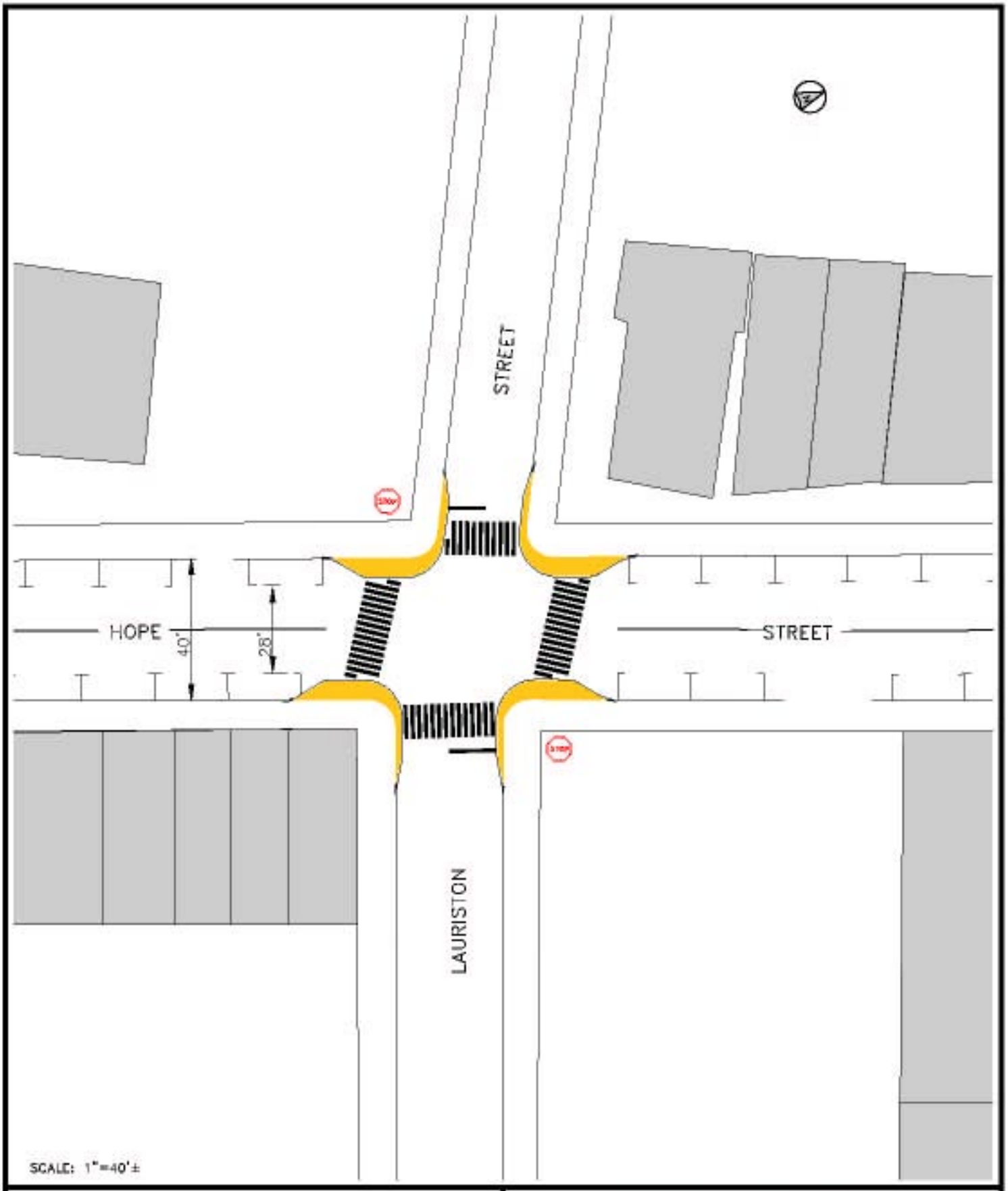

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FIG. 15 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

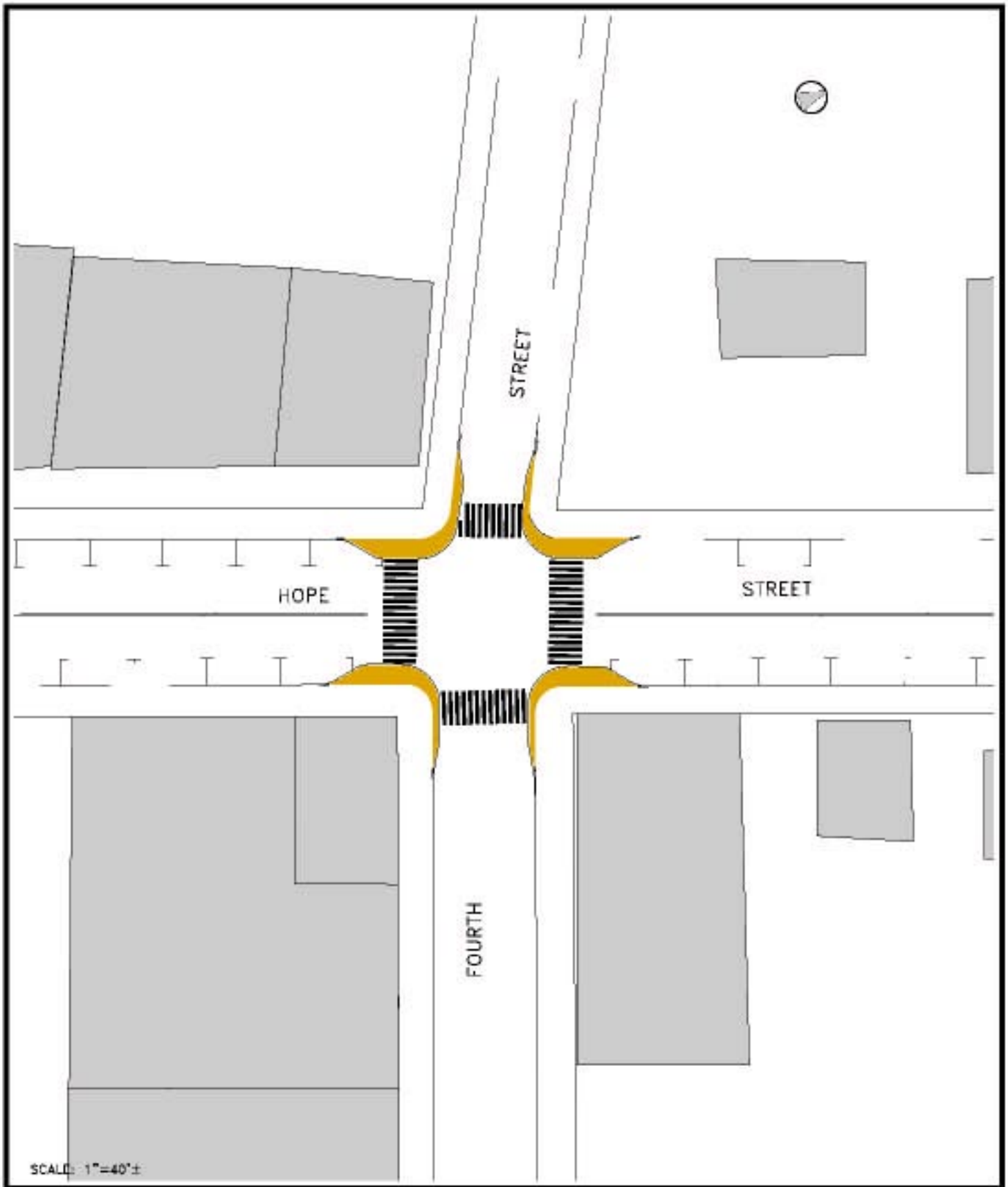

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FIG. 16 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

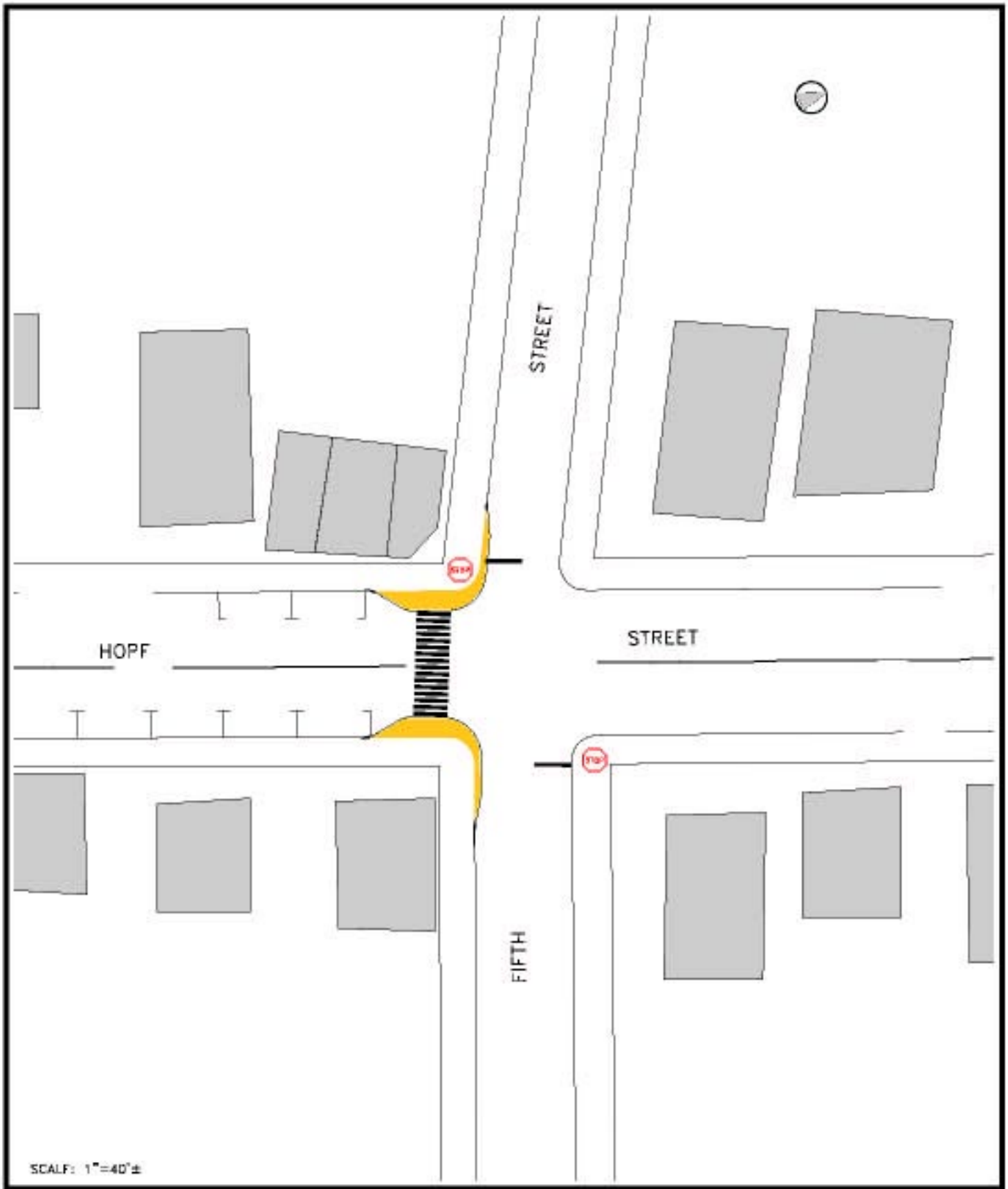

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FIG. 17 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

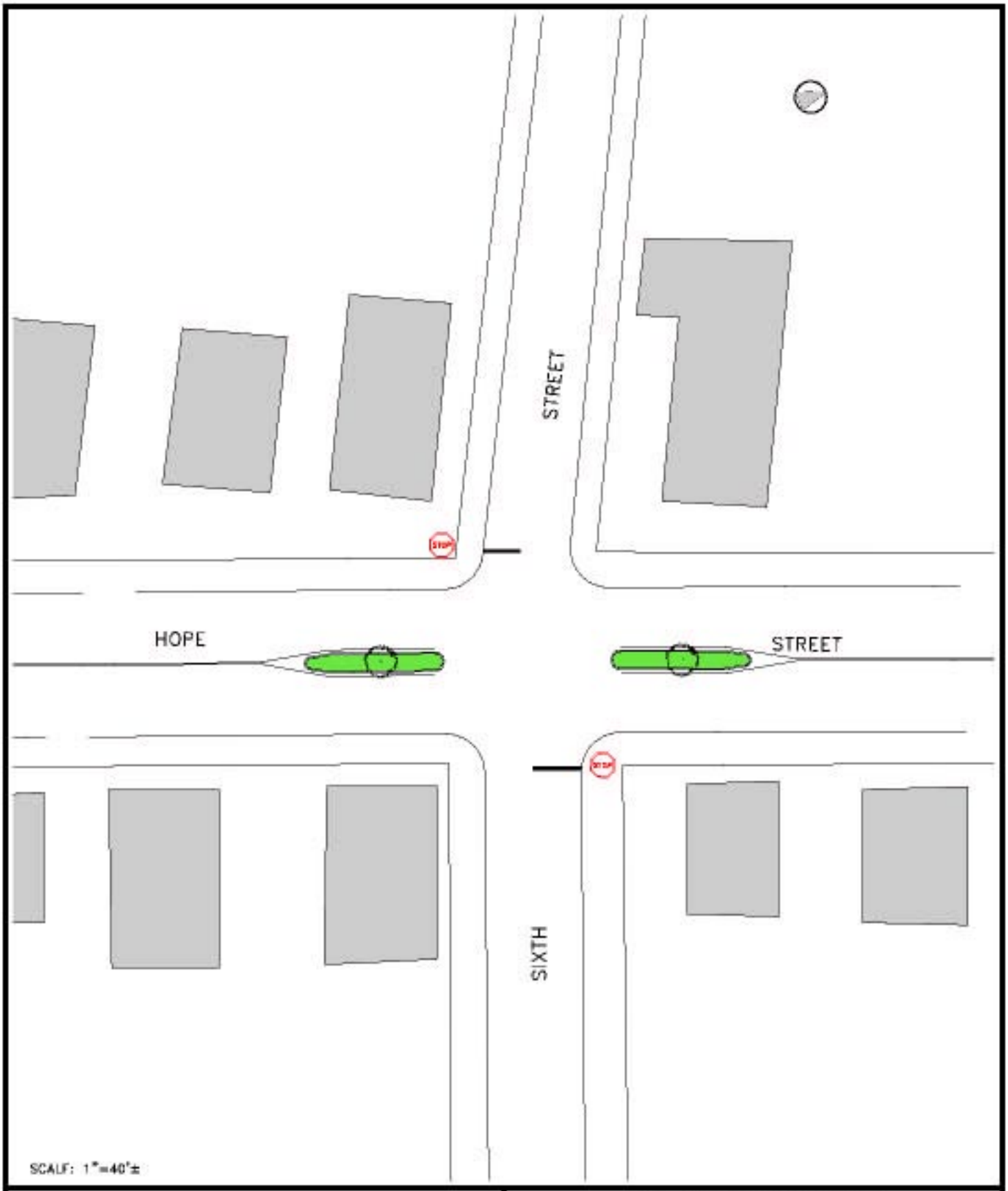

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FIG. 18 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

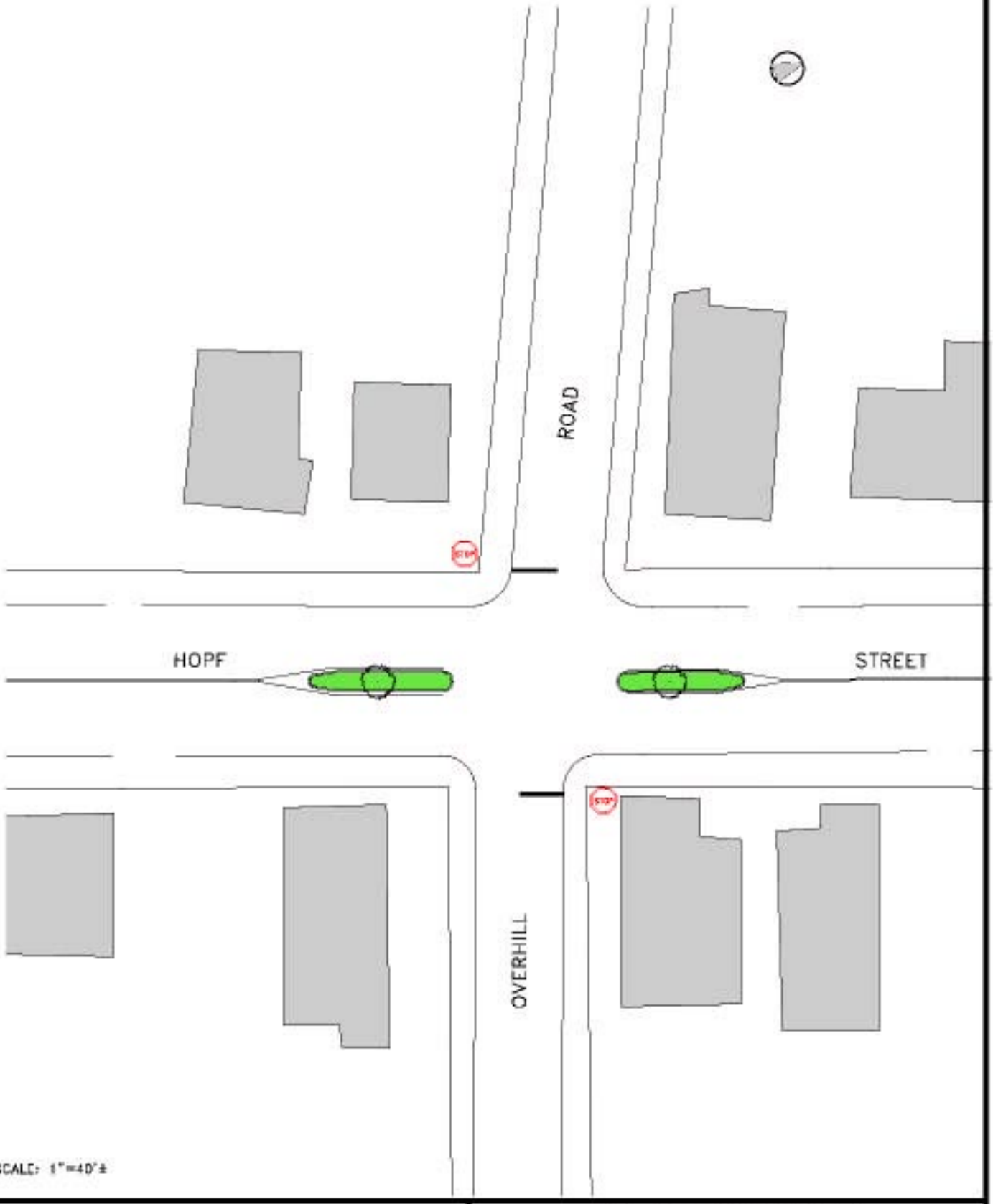

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FIG. 19 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

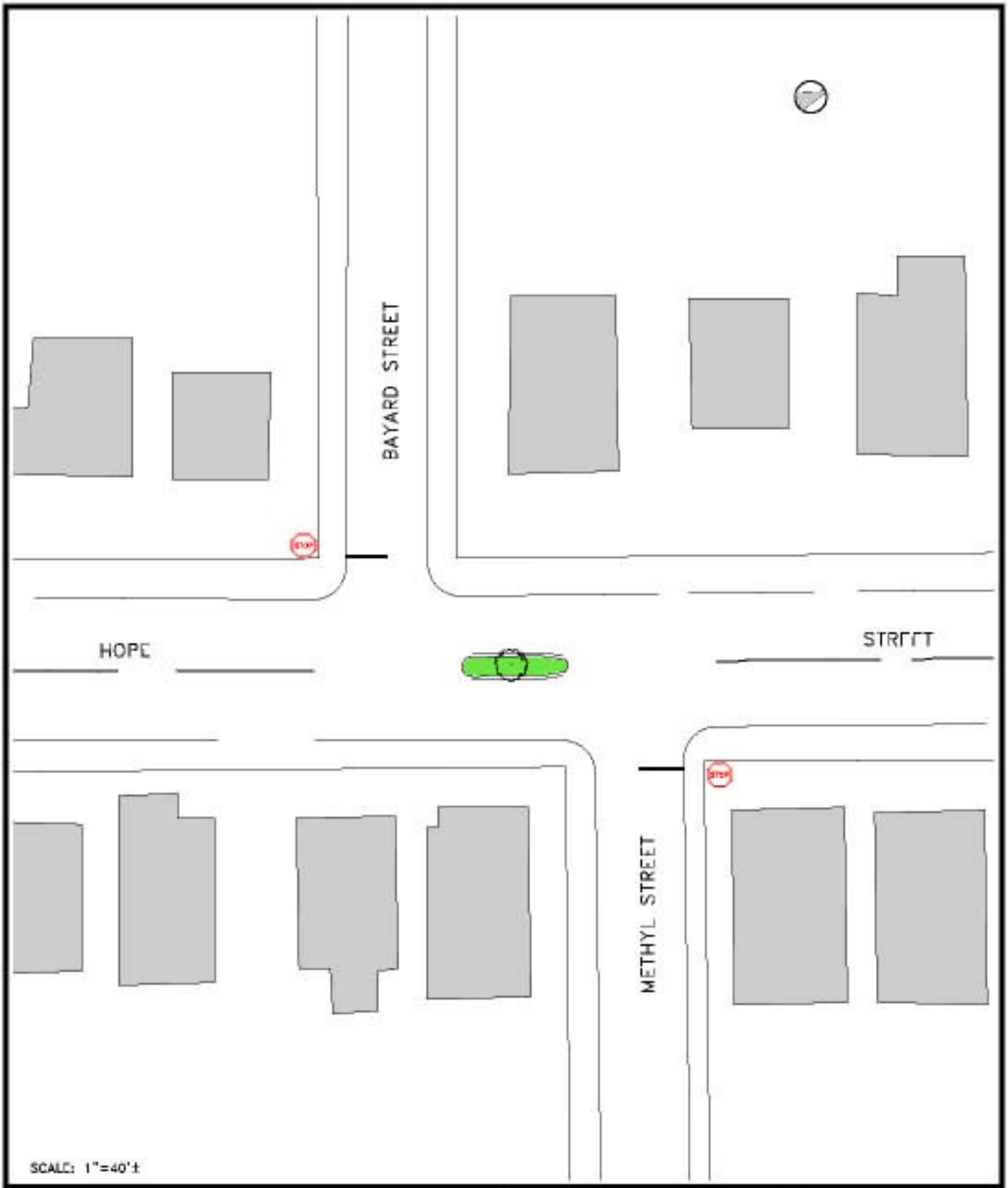

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FIG. 20 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

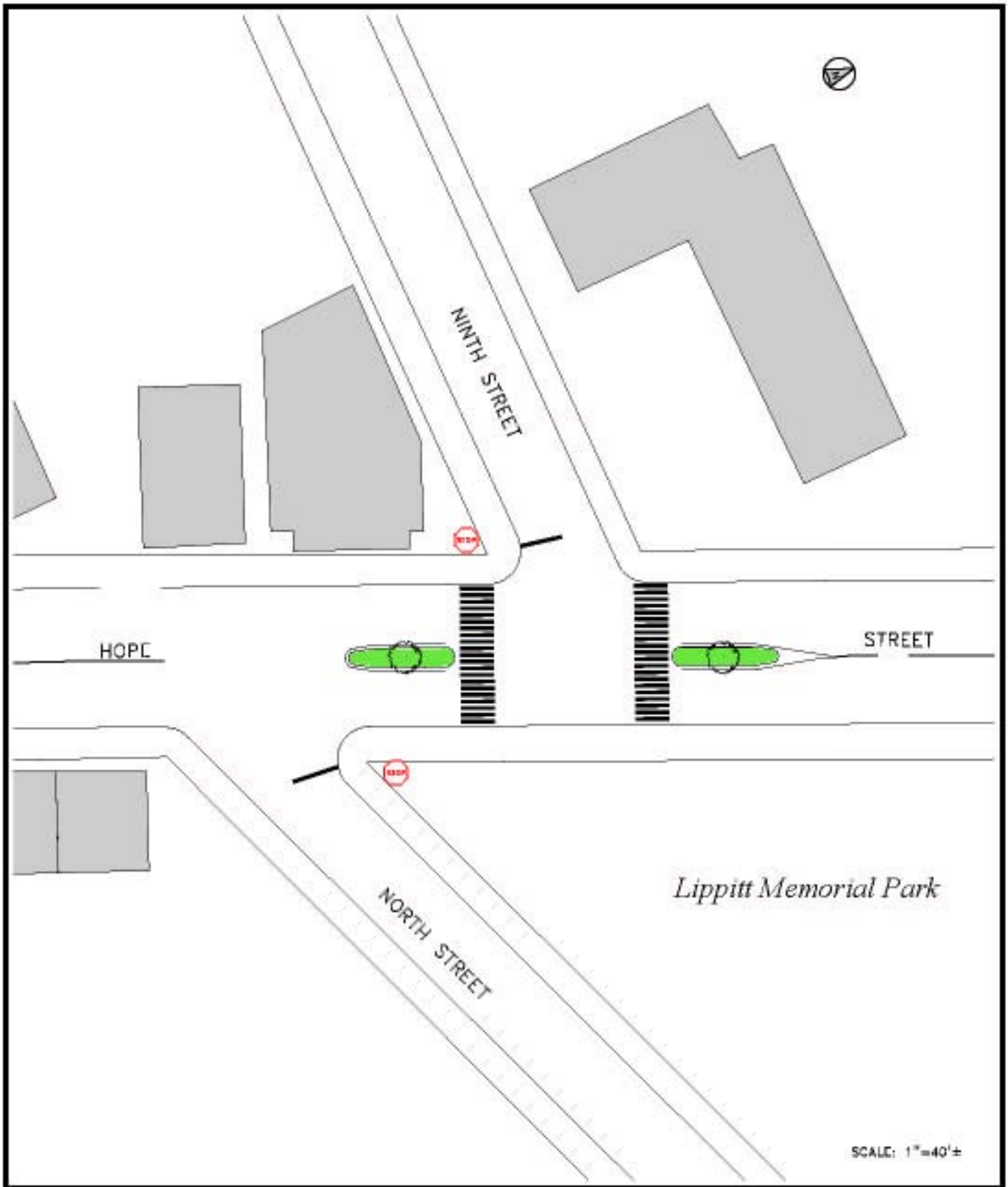

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FIG. 21 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

SCALE: 1"=40'±

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FIG. 22 - HOPE STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

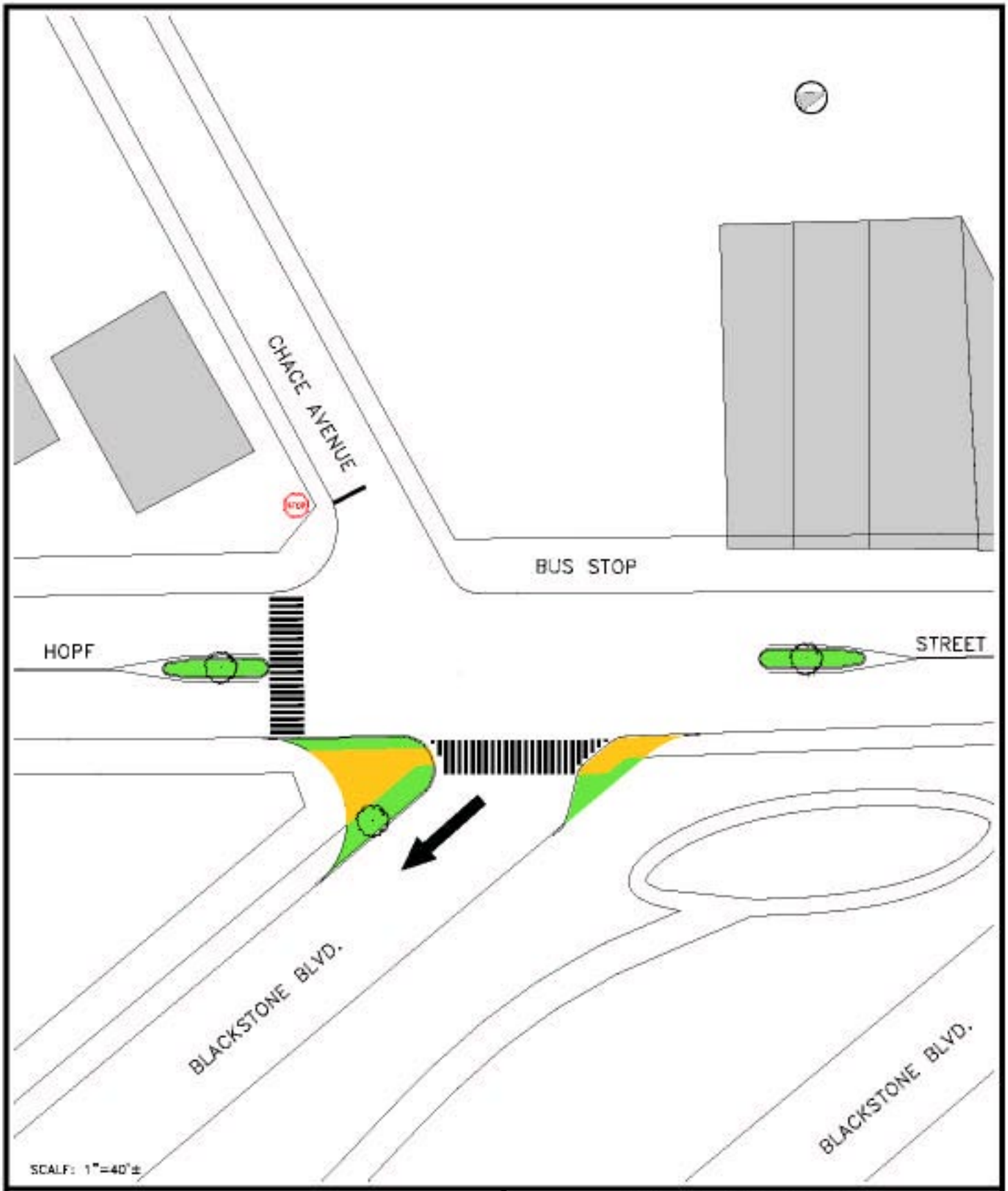

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FIG. 23 - HOPE STREET
PROPOSED IMPROVEMENTS
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Gateways to the Business District

The change from residential to business on Hope Street occurs suddenly both northbound and southbound. Sidewalk extensions are proposed at Braman Street and Fifth Street to identify the change, and slow the vehicles in the approach to the commercial properties. Entry treatments are a form of gateway, to announce to drivers that they are entering an area of different character. Crosswalks and sidewalk extensions contribute to this gateway effect. But if and when additional money is available, the selection of hardscape materials and street furniture can add to the effect as well as visually enhance the street scene.

The sidewalk extensions make the proposed crosswalks highly visible. They will also dramatically shorten the distance pedestrians need to cross, while also separating them from the parked cars, making them more visible to drivers. With this type of entrance, a clear message is given to the motorists as to how they are expected to behave. If it slows them down too much for their liking, they will find an alternate route. Hence, the importance of calming the entire network of streets.

Recent improvements to Wayland Square

In addition to the sidewalk extensions proposed at either end of the commercial area, sidewalk extensions are proposed for all four corners of the intersection at Lauriston Street. These will help define the parking lanes on Hope Street as well as increase the visibility for pedestrians crossing at these locations.

As noted previously, sidewalk extensions have been well received in the Wayland Square business area. The improvements there define the parking areas, while providing a pleasant environment for pedestrians.

The opportunities to provide sidewalk extensions at the Rochambeau intersection are limited by the configuration, as Rochambeau Avenue intersects Hope Street at a skew angle. Sidewalk extensions on the southern corners would hinder turning movements for vehicles turning right onto Hope Street (southbound) from Rochambeau, and also the right turns from Hope Street onto Rochambeau headed in the eastbound direction. In addition, extension of the curbing would impact the parking of vehicles in an area already experiencing a shortage. It is therefore recommended that sidewalk extensions be provided on the two northern corners only. This will help to define parking lanes, and improve vehicle movements through the intersection. The southerly driveway to the Cumberland Farms should be relocated approximately 10 feet to the north to accommodate the sidewalk extension, as well as to keep the vehicles farther away from the signalized intersection. The first driveway on Rochambeau to the Cumberland Farms should be closed, as it is not necessary, and may provide additional parking for vehicles in this property.

Streetscape Improvements

The sidewalks along Hope Street, for the most part, are made of concrete and are in poor condition. Numerous patches, cracks and spalling concrete make it difficult to walk or push strollers or carriages. It is recommended that those sidewalks in poor condition be replaced with new concrete sidewalks containing a brick band. Additional trees should be planted to replace those dead or dying, and to fill in those areas which currently have no trees.

Wheelchair ramps, where they exist, do not meet current ADA requirements, and should be replaced as part of any project for Hope Street.

Streetscape items such as benches, planters, bollards, and ornamental lighting would be appropriate for this section of Hope Street, and would significantly add to the visual appeal of the area, as well as serve to calm vehicular traffic.

BETA Group, Inc. and Gates, Leighton & Assocaites, Inc. recently completed a project in Wellesley, Massachusetts which had similar existing elements as Hope Street. The photographs below illustrate the area and improvements recently implemented.

Intersection prior to improvements.

Intersection after improvements.

Streetscape improvements including bollards, curb extensions, and brick banding of sidewalks in Wellesley, MA.

Parking

A comprehensive parking study of the Hope Street area would involve an inventory of the existing businesses to determine their current use and size. The number of required parking spaces to accommodate the needs would be calculated in accordance with the current zoning requirements. For instance, a restaurant requires a certain number of spaces based on either the number of seats, or the square footage of the establishment. A retail store requires parking based on the square footage of retail space, and a services-type industry on the number of employees. In addition to zoning requirements, the ITE publishes standards for parking requirements based on similar uses throughout the country. These tools can be used to determine the appropriate number of spaces required to support the current businesses on Hope Street. For the purposes of this report, a field inventory was conducted during various weekday periods. The Summit Neighborhood Association may determine that a comprehensive study needs to be undertaken to address the exact shortage of parking spaces available to the business owners.

CVS maintains its' own parking lot.

In addition to the study to determine the required number of spaces, a study could be conducted to explore potential public parking areas, whether it be a vacant parcel of land, or acquiring an existing parking lot for municipal use.

In light of that, some recommendations can be undertaken to try to increase parking as part of this study. They include the following:

- The business owners should require their deliveries be made at off-peak hours. This would free up loading zones and legal parking spaces currently used by trucks.

- Striping should be added to delineate the parking lane in the commercial area.

- Driveway openings which are currently not in use or not needed should be closed.

Although the area of Hope Street south of Braman Street to Doyle Avenue is not within the project limits as defined in the Scope, field observations revealed that this section of Hope Street, with it's residential character and sporadic on-street parking, is similar to the section north of Fifth Street, and experiences similar speeding problems. It is therefore suggested that any project for Hope Street consider similar center island treatments between Doyle Avenue and Braman Street.

Rochambeau Avenue

As noted with Hope Street, the average speed on Rochambeau Avenue is approximately the same for both directions, with westbound being slightly higher, perhaps due to a moderate grade of the roadway at this location. The 85th percentile speed of 32 mph is 7 mph higher than the posted speed limit, and 12 miles per hour higher than the noted speed of 20 mph to minimize pedestrian injuries if hit by a vehicle. The 95th percentile speed is 34 mph, which translates into approximately 325 vehicles traveling at a rate of 36 miles per hour or greater per day. While the vehicular speeds are similar to those tabulated on Hope Street, the physical constraints on Rochambeau are remarkably different. Whereas the intersecting side streets on Hope Street entered at a 90-degree angle, the approaches to Rochambeau are primarily skewed, with sight distances limited at many locations. Also, the intersecting side streets (i.e. Camp Avenue, Summit Avenue) carry higher volumes of vehicles than do those streets approaching Hope Street, making turning into and out of Rochambeau Avenue more difficult.

Rochambeau Avenue at Camp Street.

Rochambeau Traffic Data

AADT:	6,500 vehicles per day
Peak Hour:	546 vehicles per hour (8-9 am weekday)
Peak Hour:	522 vehicles per hour (5-6 pm weekday)
Average Speed:	28 mph
85th percentile speed:	32 mph
95th percentile speed:	34 mph
Maximum speed range:	46-50 mph
Trucks:	6%

Major changes are proposed for the 5-way intersection at Camp Street. Dana Street will be narrowed to 15 feet and teed into Camp Street. This will discourage the wrong-way movements associated with the one-way street. Proposed curb extensions will narrow the pavement width of Rochambeau Avenue from 32 feet to 24 feet at both approaches to the intersection, and curbline modifications on Camp Street on the southbound approach will narrow the roadway from 30 feet to 24 feet. High visibility crosswalks and new A.D.A. compliant ramps will be installed on all four corners of the new intersection. The curb extensions will increase sight distance for cars on both Camp Street and Rochambeau Avenue, reduce pedestrian crossing distances, and increase visibility of pedestrians while slowing vehicles on Rochambeau Avenue.

Fig. 24 - Proposed improvements at the unconventional 5-way intersection on Rochambeau.

New concrete sidewalks should be constructed on Dana Street in the vicinity of the intersection where they currently do not exist. The additional area will provide the opportunity for landscaping.

Further east on Rochambeau Avenue, Ivy Street and Summit Avenue intersect Rochambeau Avenue. The two sidestreets are offset from one another by approximately 50 feet, and both approaches are Stop controlled. It is recommended that curb extensions be constructed to reduce the pavement width on Rochambeau from 32 feet to 24 feet, and the intersecting side streets from 30 feet to 20 feet. This intersection is illustrated in Figure 26.

As noted previously, traffic data was collected along several streets bordering Miriam Hospital, not only to identify specific characteristics pertaining to traffic composition and speed, but also to determine the travel routes vehicles are taking through the neighborhood, as well as travel routes for major destinations. The traffic characteristics have been summarized in Table 1.

Roadway Name	AADT (vpd)	AM Peak (vph)	PM Peak (vph)	% Trucks	Ave. Speed (mph)	85th Percentile (mph)	95th Percentile (mph)	Max. Speed Range (mph)
Brewster Street	700	64	58	1.2	17	22	26	36-40
Hillside Avenue	2,450	167	218	1.7	29	33	37	46-50
Overhill Street	900	69	90	3.3	24	28	31	36-40
Seventh Street	1,450	140	119	5.2	17	26	29	41-45
Summit Avenue	2060*	159	188	1.3	25	28	33	41-45
Tenth Street	530	41	55	0.7	18	25	29	36-40

Table 1

Traffic Characteristics

* AADT for Summit Ave. between 5th and 6th Streets is 2,950 vehicles per day.

Local Neighborhood Streets

The traffic data obtained at various locations enables us to draw some conclusions relating to the streets between Hope Street and North Main Street. With the exception of Rochambeau, which is classified as a collector street, and Seventh and Overhill, also collector roadways, the primary function of the streets should be to provide access to the residential properties. Vehicles using parallel streets as a "cut thru" are usually traveling at higher rates of speed, trying to save time and delay by using the less-crowded side streets.

The results of the survey shows that the speed can be related to the width of the roadway, and the physical constraints, such as parked cars, frequent stop signs, and the ease with which the vehicle can get to their final destination. Those roads with narrow pavements (24 feet), parked cars and mature trees at the back of curb showed lower speeds, an effect of "natural traffic calming", whereas those with expansive pavements, such as Summit Avenue, with a curb-to-curb width of 30 feet, had significantly higher speeds.

While parked cars do reduce the speeds on the local streets, there are several hours during the day, including the peak commuting hours, when cars are not parked on the roads, particularly in those areas around the hospital.

It is apparent from this information that Hillside Avenue, Summit Avenue and Seventh Street carry considerably more daily traffic than the other streets in the neighborhood. Given that the Miriam Hospital and its associated parking lots can most easily be accessed via Summit Avenue and Seventh Street, it is evident that much of the traffic is generated by the hospital, and they are using Summit Avenue from Rochambeau, and Seventh Street from North Main Street.

What is most alarming is the vehicle speeds recorded on Summit Avenue and Hillside Avenue. The traffic counter was located on Summit near the intersection of Glendale Avenue. There are no Stop signs on Summit Avenue between Rochambeau and Fourth Street, although field observation revealed vehicles slowing for the curve between Creston Way and Fourth Street (refer to the overall graphic showing Summit Avenue on the following pages). This is also the case with Hillside Avenue, which contains no stop signs for the entire length between North Main Street and Hope Street. In that instance, the counter was located on the slight grade near the Pawtucket City line. While it was noted in the Public Meeting that trucks were regularly using Hillside Avenue, the survey indicated less than 2% of the vehicles were trucks, or approximately 42 trucks per day. The problem with Hillside appears to be the high incidence of cut-through traffic from North Main Street to Hope Street and Blackstone Boulevard. The street itself is currently signed restricting thru trucks, although the signs are poorly placed at both Hope Street and North Main Street, and may not be visible for all traffic turning onto Hillside Avenue.

The counter on Brewster Street was located on a section of roadway with parking allowed on both sides of the road, between Fourth and Fifth Street. It was noted during the counter setup that vehicles were perceived as traveling at a higher speed than they actually were. The 25 mph test appeared to be a very high rate of speed for the bystander, given cars parked on both sides of the roadway, and in close proximity to an intersection. As noted above, the average speed recorded at this location was 17 mph, with the 85th percentile speed at 22 mph. This clearly indicates that allowing parking on both sides naturally calms traffic, creating that visual vertical friction requiring vehicles to slow down even without stop signs.

Summit Aveune is a wide, straight residential street carrying high volumes of vehicles to the Miriam Hospital area from Rochambeau Avenue.

The recommendation for this area is to narrow the streets where practical. Sidewalk or curb extensions at the intersections are an effective method for narrowing the travel lanes, defining the legal parking areas, and making it easier for pedestrians to cross at the intersections. Those streets

where the pavement width is currently 24 feet, such as Brewster Street and Burlington Street should remain as they are. However, those with a pavement width of 30 feet, including Summit Avenue and Edgehill Street, and Hillside Street which has no Stop control throughout its length, should have the curb extensions or other choke points introduced to slow and calm the vehicles as they pass through the neighborhood.

New stop signs should be erected at those intersections lacking any control, primarily north and east of the hospital. All intersections should provide striped crosswalks, which will identify the intersection as a location where pedestrians are encountered, as well as encourage pedestrians to cross at striped crosswalks only.

Summit Avenue

The recommended improvements employ the narrowing methods of traffic calming, reducing the roadway widths from 30 feet to 20 feet at locations along Summit Avenue. The traffic volumes revealed the traffic is generated by both the neighborhood, as well as the Miriam Hospital. The volume of vehicles is appropriate for the roadway, and diversion of traffic is not desired. Therefore, the goal is to control vehicle behavior by slowing the speeds of the vehicles currently traveling on this roadway.

Curb extensions or bulb-outs are recommended on Summit Avenue at the intersections at Exeter Street and Colonial Road, Glendale Avenue and Dexterdale Road, Burlington Street and Edgehill Road, and Brewster Street and Memorial Road. The proposed curblines at Brewster Street will change the existing skew angle at Summit Avenue, to a Tee-type intersection, and the Yield sign should be replaced with a conventional Stop sign. The geometric changes will reduce the speeds of vehicles as they proceed northbound on Brewster, forcing them to make a sharp right turn. It should be noted that the curb extensions narrow the width of Summit Avenue from 30 feet to 20 feet, reducing the travel lanes by 5 feet, while allowing on-steet parking between the intersecting sidestreets. The sidestreets will maintain their current pavement widths (generally 24 feet). The additional width will be grassed areas, with concrete sidewalks and ADA-compliant handicap ramps located at the radiuses. The current right-of-way provides a 5-foot concrete sidewalk, with a five-foot wide planted strip, which will increase to 10 feet at the intersections. The opportunities exist along Summit Avenue for additional tree-planting.

Brewster Street intersects Summit Avenue at a skew angle.

The intersections at Fourth Street and Fifth Street experience a large number of pedestrians crossing during much of the day. High visibility sidewalks are proposed on all four approaches, with bulb-outs on Summit Avenue, as shown in the appropriate sketches. The west side of Summit Avenue contains a large expanse of concrete sidewalk, as it runs along the Fain Health Center and in front


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FIG. 25 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

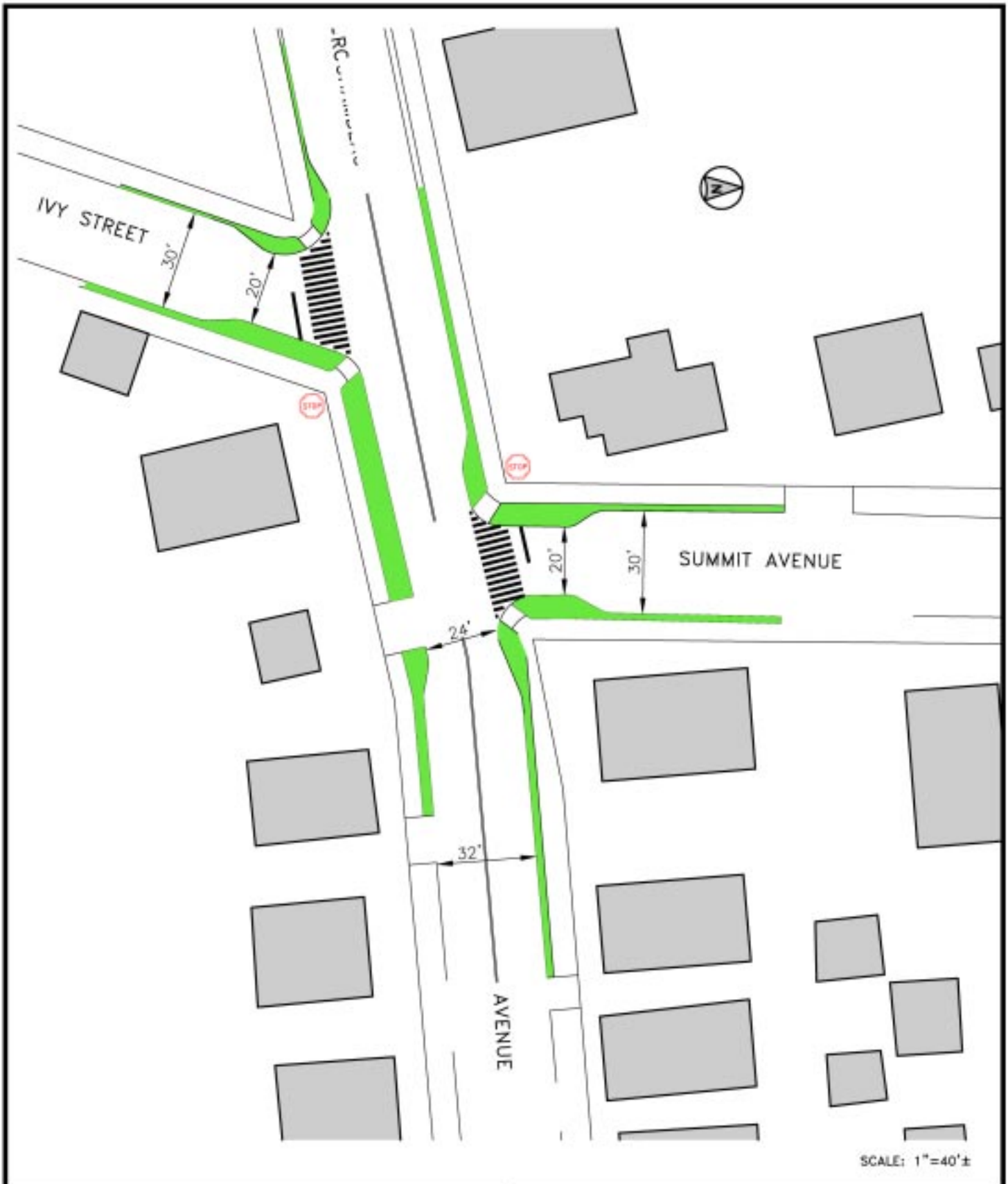

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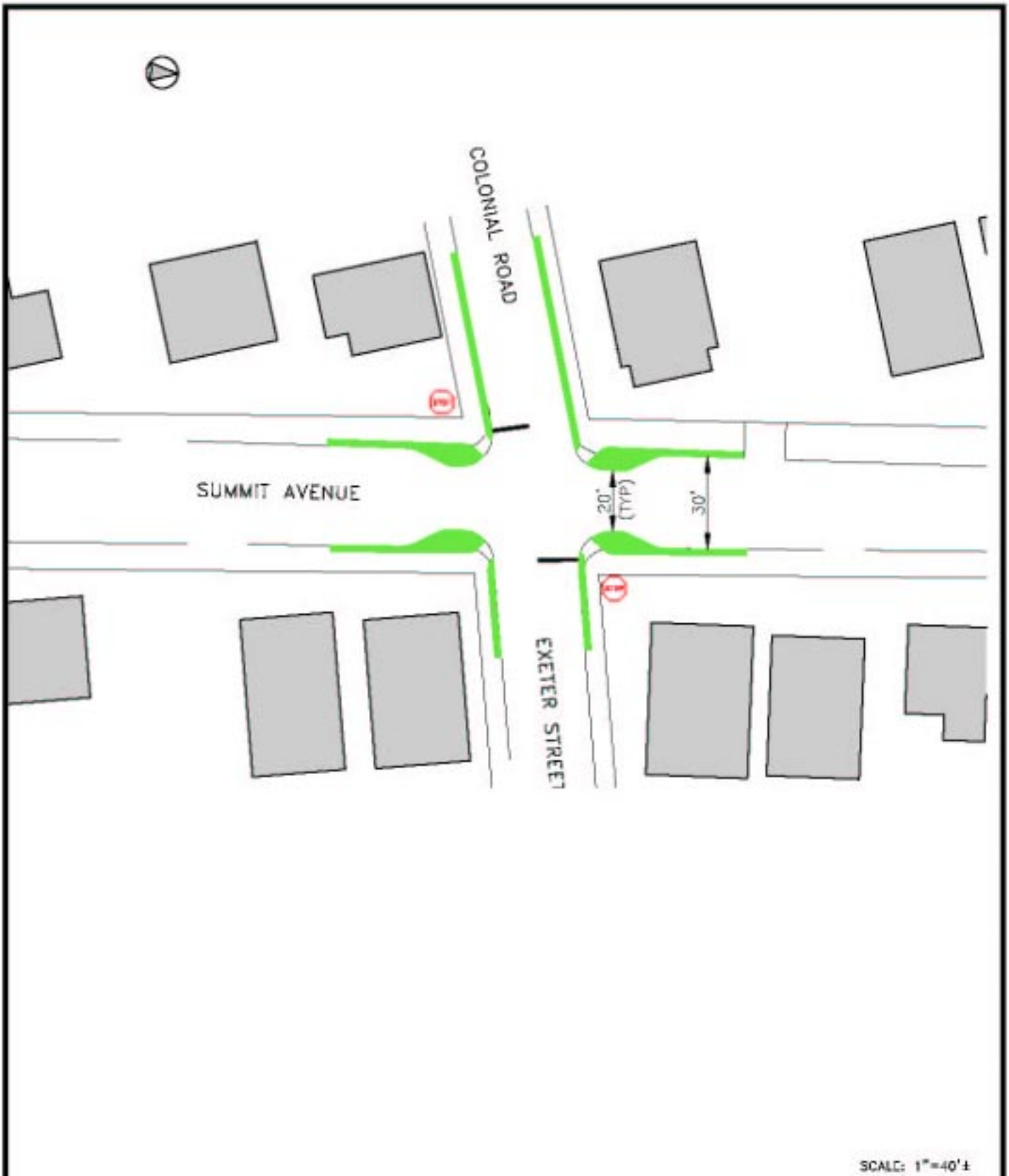
FIG. 26 - ROCHAMBEAU AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND



SCALE: 1"=40'±

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FIG. 27 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

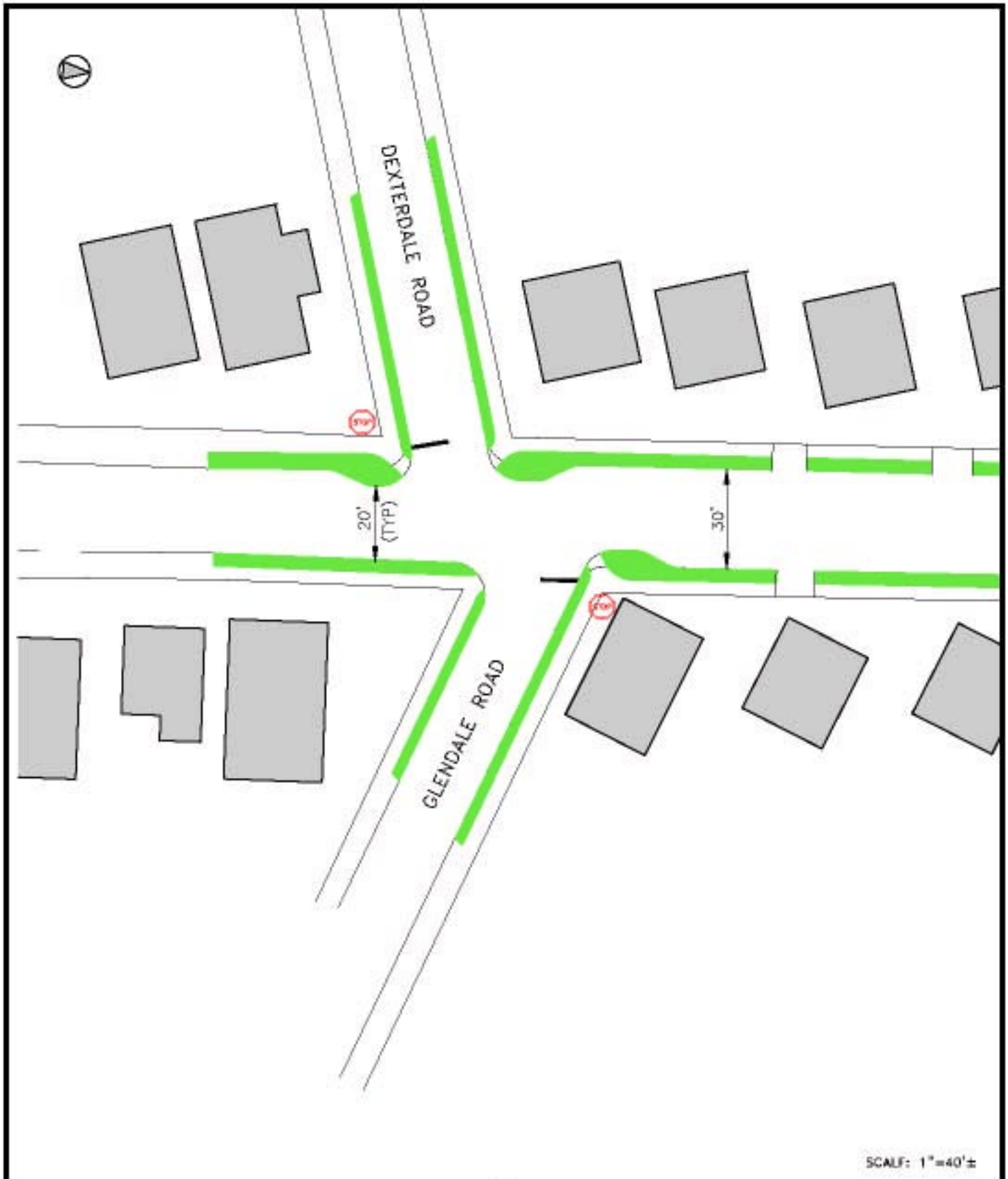

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FIG. 28 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

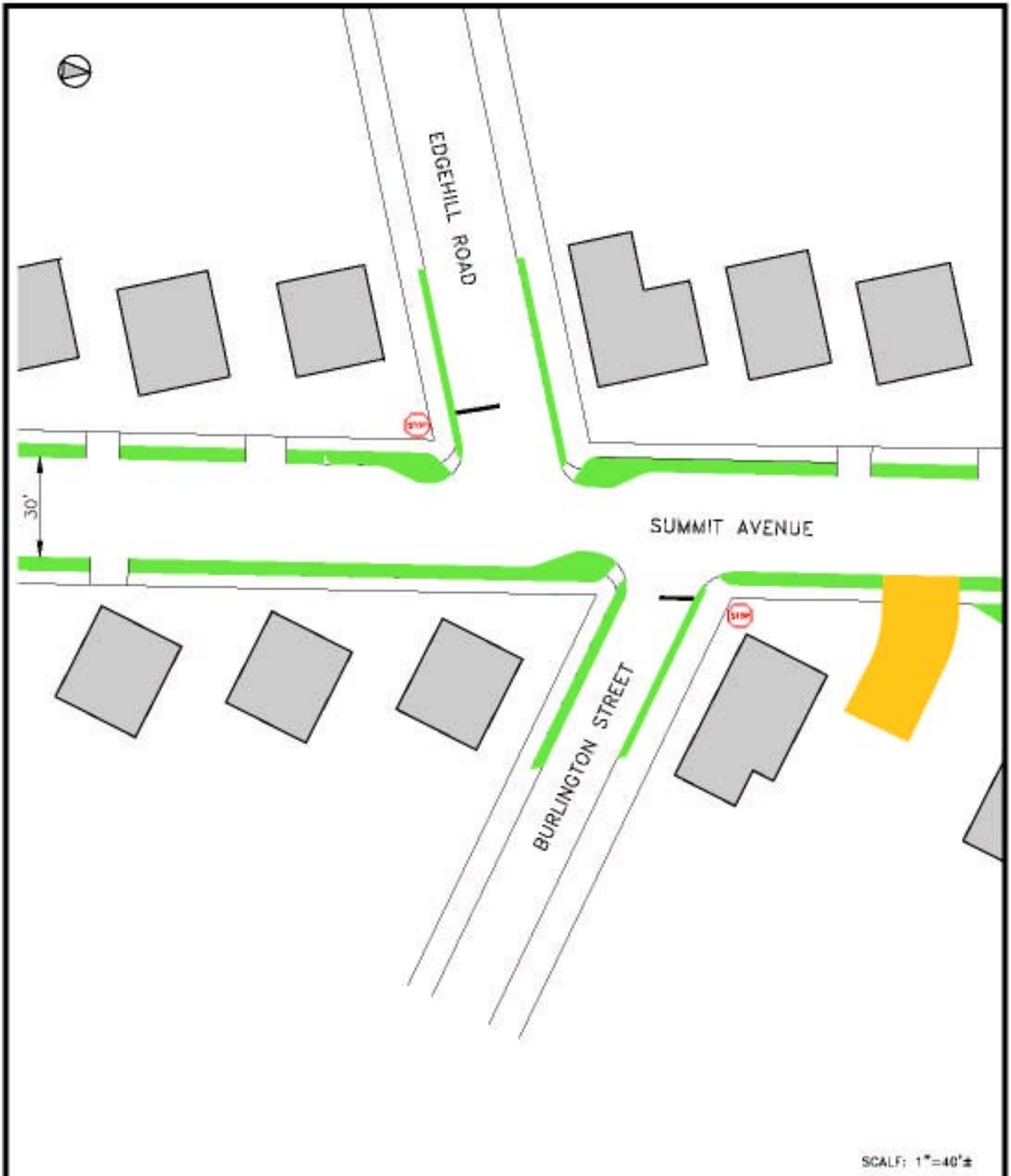

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FIG. 29 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

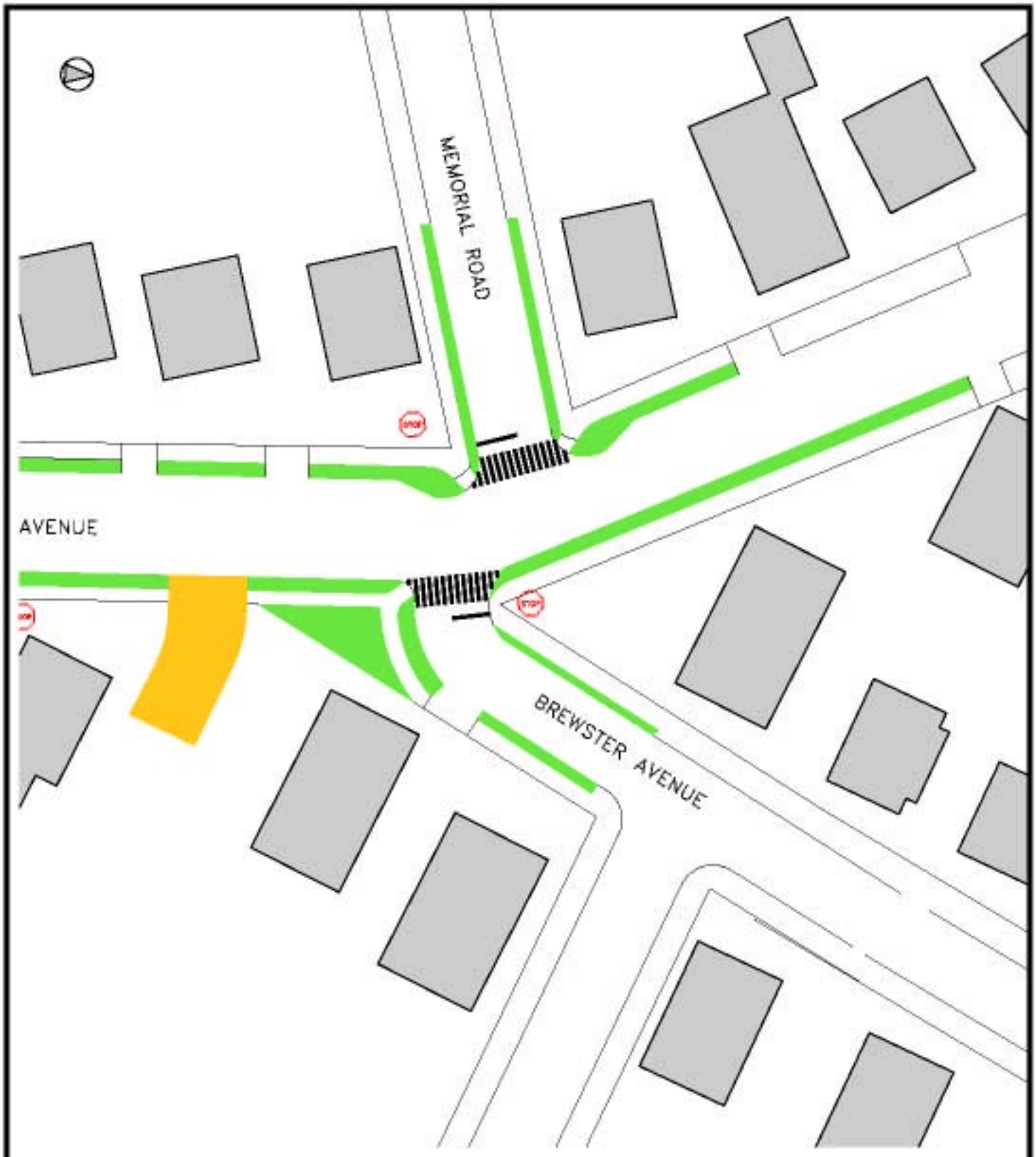

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FIG. 30 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS

Summit Neighborhood

PROVIDENCE, RHODE ISLAND

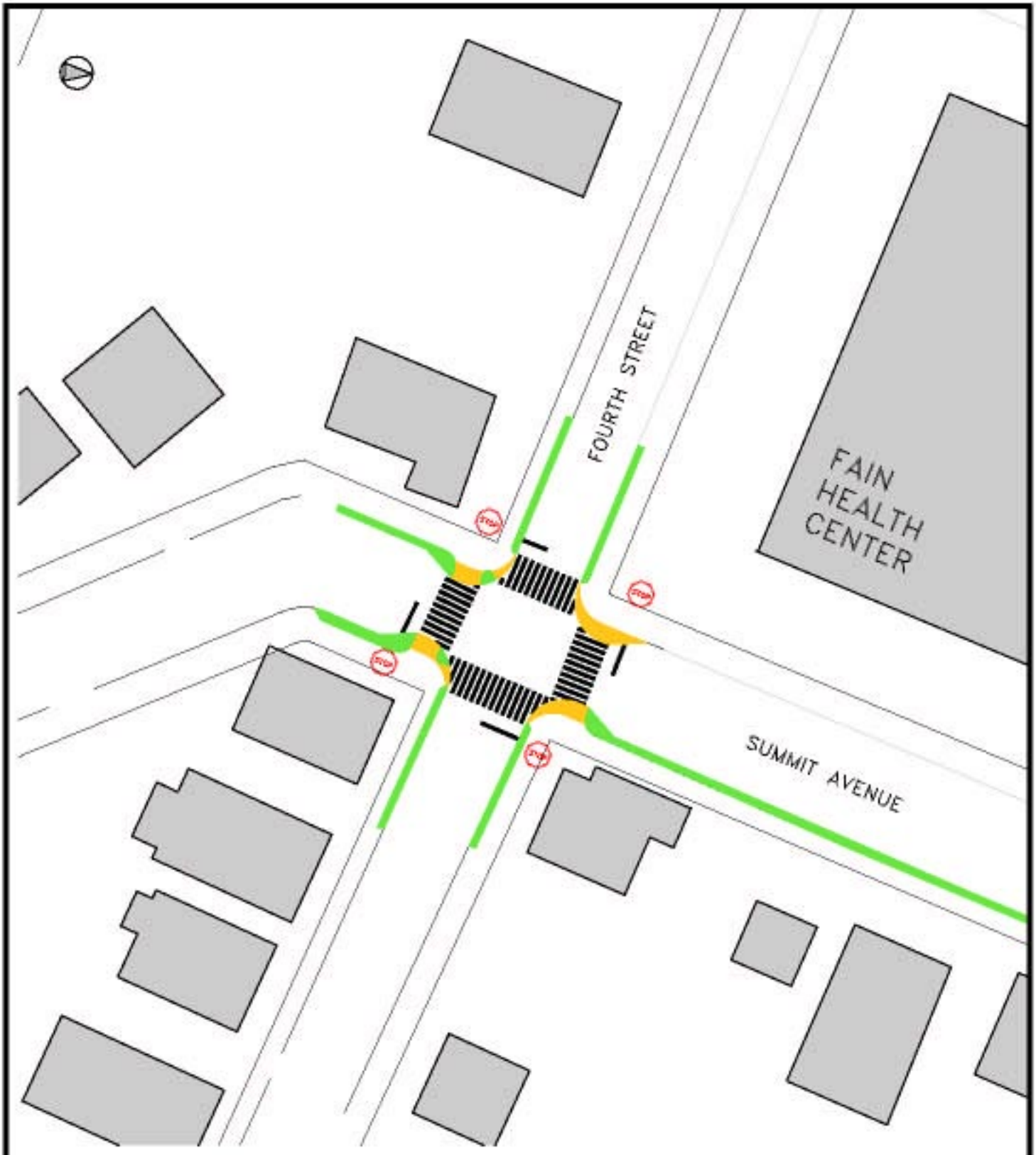

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FIG. 31 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

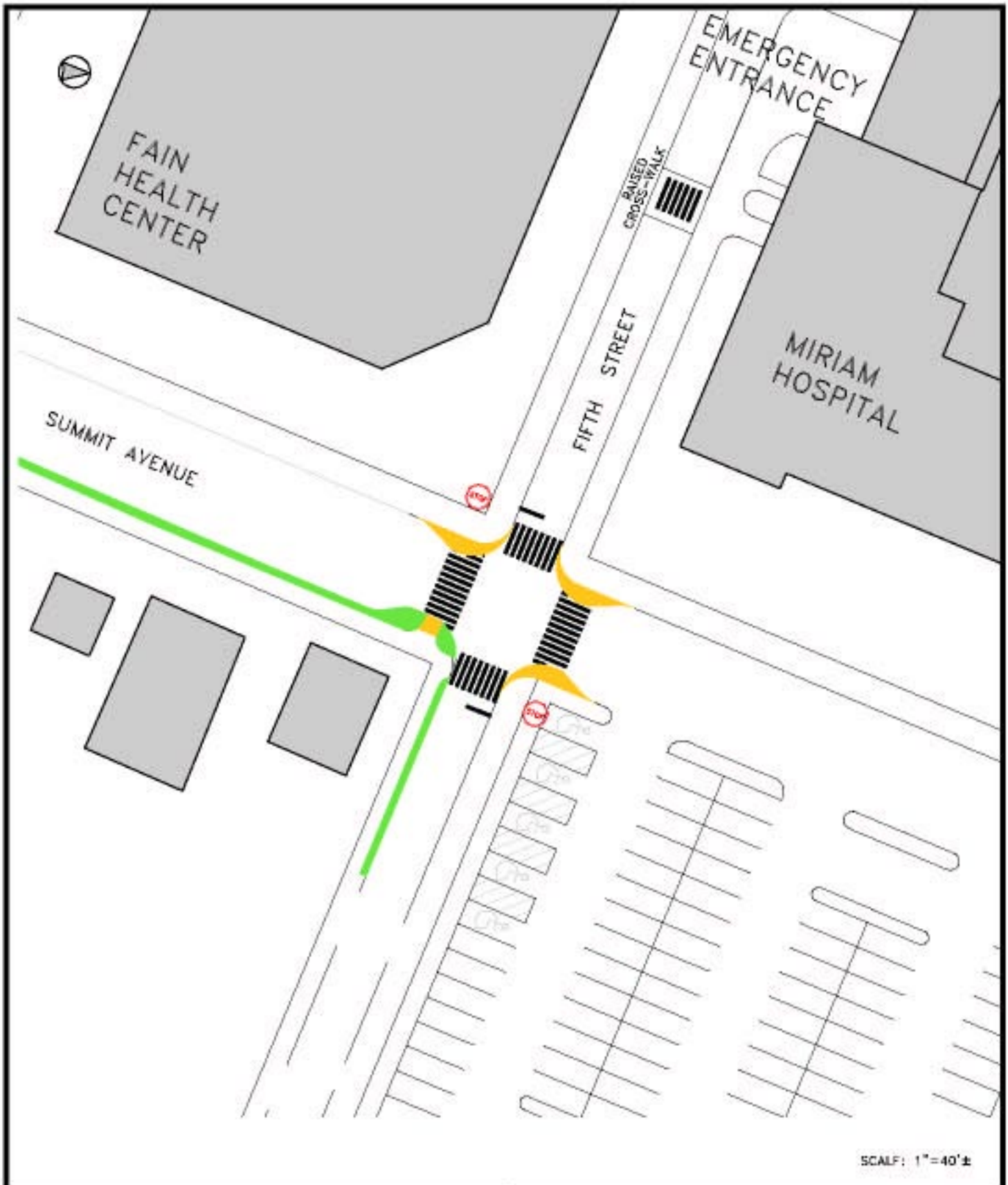

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FIG. 32 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS

Summit Neighborhood

PROVIDENCE, RHODE ISLAND

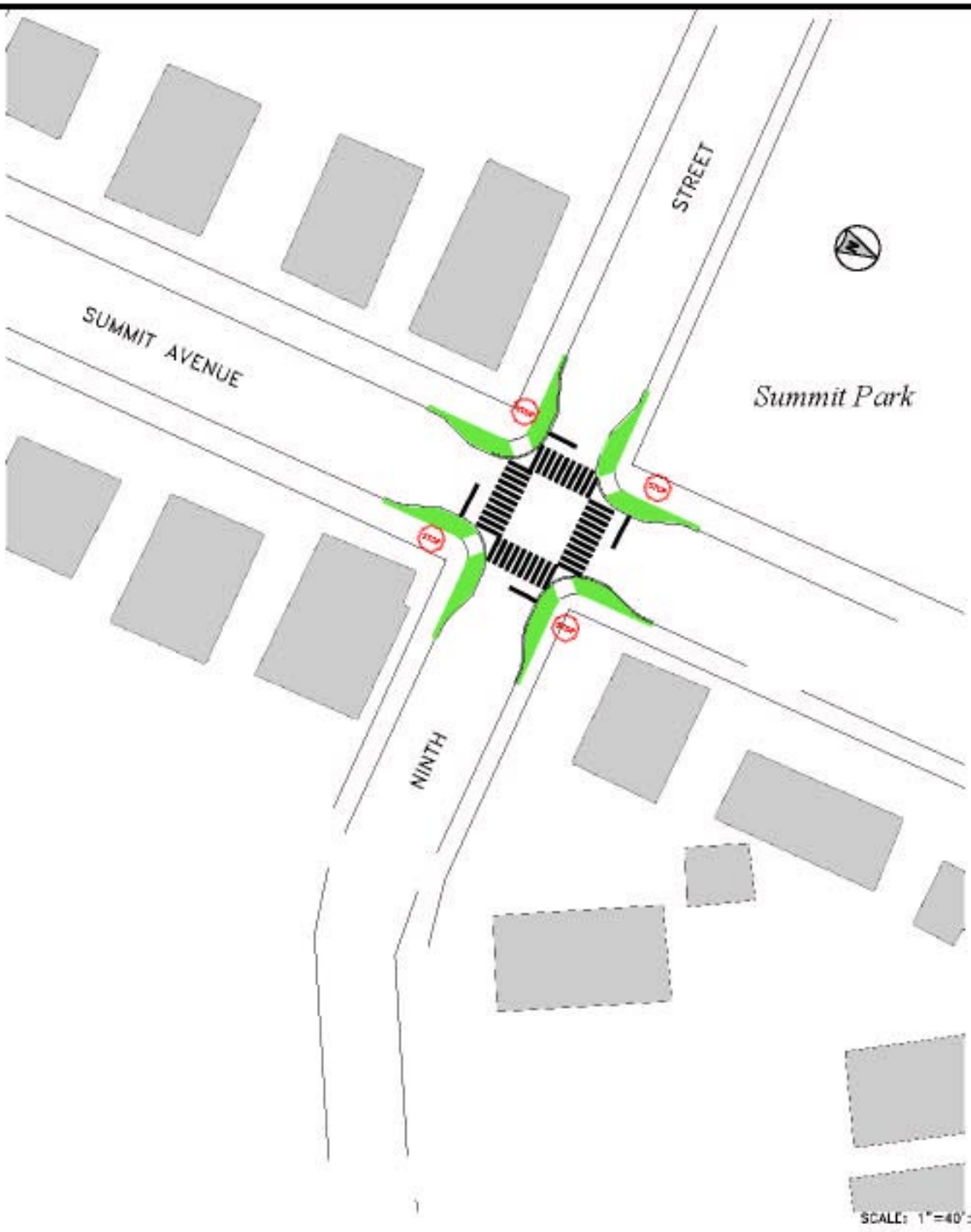

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FIG. 33 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

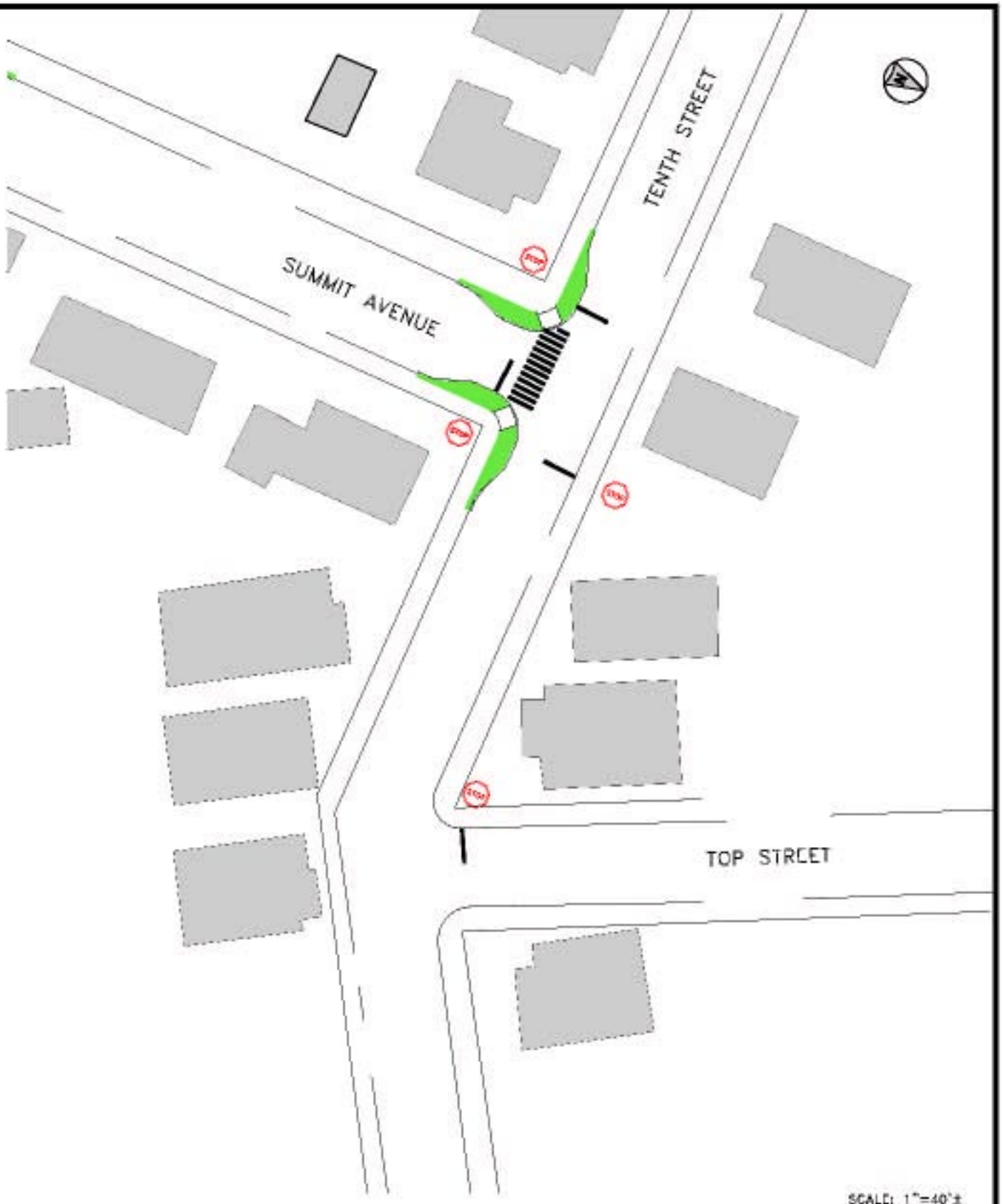

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FIG. 34 - SUMMIT AVENUE
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND

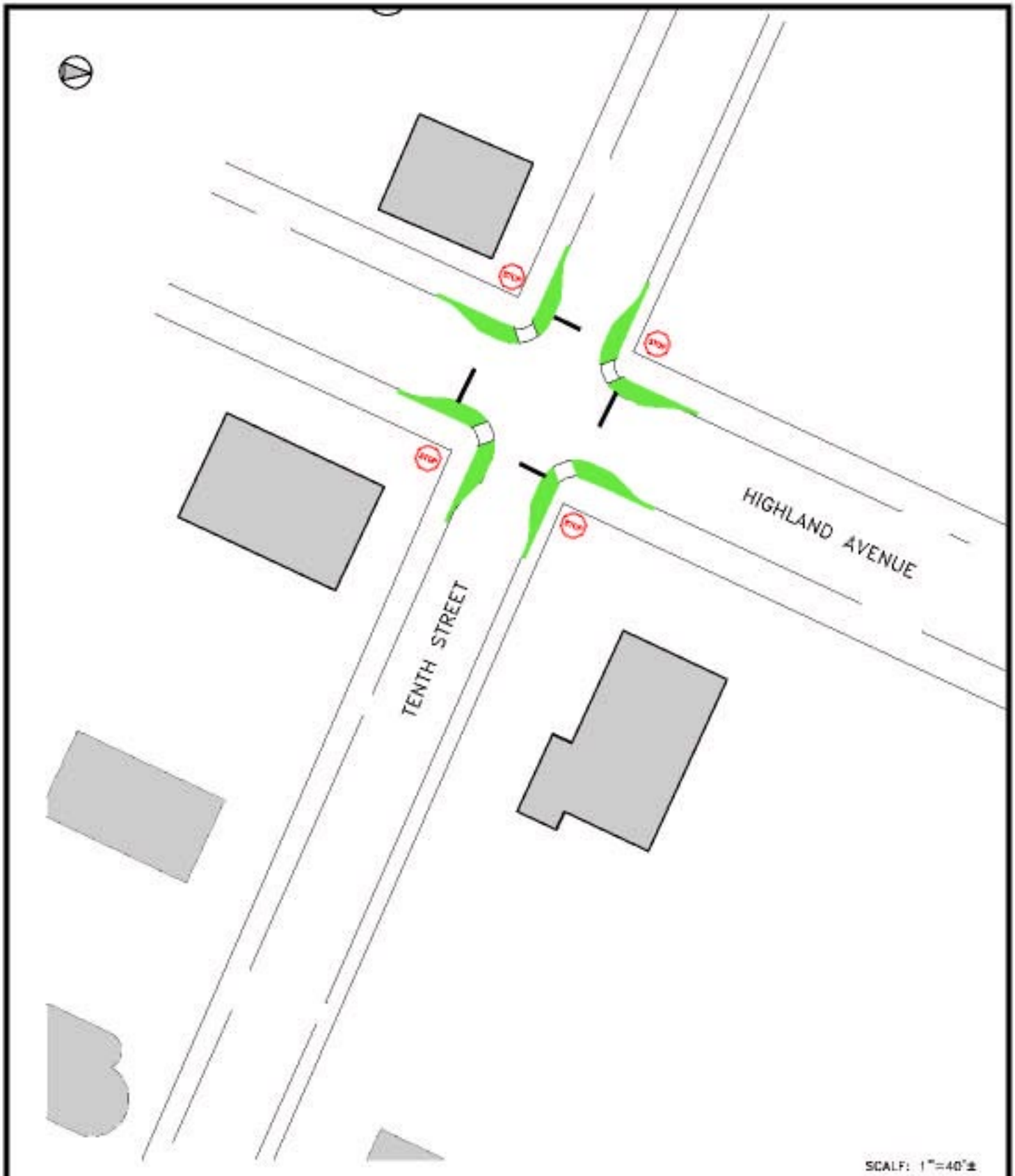

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FIG. 35 - TENTH STREET
PROPOSED IMPROVEMENTS
Summit Neighborhood
PROVIDENCE, RHODE ISLAND