Final Report

SOUTH MAIN STREET PLAN LINE STUDY

South Main Street between Montague Expressway and Great Mall Parkway

South Abel Street between South Main Street and Great Mall Parkway

Prepared for
City of Milpitas

Prepared by
DKS Associates
TRANSPORTATION SOLUTIONS

In association with
The Planning Collaborative

April 2007

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Executive Summary

With the adoption of the Midtown Specific Plan in March 2002, the City of Milpitas is experiencing substantial residential development activity along the S. Main Street and S. Abel Street corridors between Great Mall Parkway and Montague Expressway. The existing industrial and commercial land use sites were rezoned to Residential and Mixed-Use Land Uses with the adoption of the Midtown Specific Plan and landowners and developers are implementing the Plan. This development activity also introduces opportunities for the City to control and enhance the corridor.

The Midtown Specific Plan identifies specific corridors appropriate for Median Island and Streetscape enhancements to address aesthetics, safety and quality of life, but S. Main Street and S. Abel Street between Great Mall Parkway and Montague Expressway are not included on that list. Because of the high development activity in that corridor, the City of Milpitas commissioned the development of this Plan Line Study to identify the appropriate median island configurations and streetscape enhancements appropriate to help identify driveway locations and access control type for proposed developments and to beautify the corridor as redevelopment continues.

Individual studies for the following were completed to help develop the Plan Line Study:

- Community Outreach
- Median Island Configuration Plan
- Street Cross Sections
- Streetscape Planting Plan
- Lighting Plan
- Pedestrian & Transit Connectivity
- Funding Plan

Community Outreach

To ensure community support for the Plan Line Study, three community meetings were held to allow the public to review and comment on the plan through its development. The first meeting was held just with the development community and the last two meetings were held with existing residential and commercial property/business owners. Mailers were sent to notify the public of the meeting and door-to-door flyers were delivered to existing businesses.

Median Island Configuration Plan

The Median Island Configuration Plan is the most important element of the project as it helps to identify the preliminary roadway geometry including vehicle lane lines, bicycle and parking lane locations, intersection geometry, and crosswalk locations. The median island layouts also identify the locations of streetscape elements such as trees & plants and streetlights. The preferred locations for public transit stops, with input from the Valley Transportation Authority, are also identified in the Median Island Configuration Plan.

Street Cross Sections

The street cross-section profiles assist in providing a scaled-visual element for the street at various locations along the corridor.

Streetscape Planting Plan

The Streetscape Planting Plan identifies the species of trees and plants proposed for use throughout the corridor. This plan was prepared with input form the City's Department of Public Works to ensure that on-going maintenance could be provided and to help in the development of planting details to ensure that the new tree species deployed in the area have a good starting base. Gateway treatments are positioned at key intersections, S. Main Street & Montague Expressway, S. Abel Street & S. Main Street, S. Abel Street and Great Mall Parkway are also proposed to help create a "sense of place" for the area. Streetscape elements recommended in the Midtown Specific Plan are used in the project to ensure design compatibility with adjacent projects such as the Abel Street Streetscape Project and N Main Street Streetscape Project and with on-going maintenance.

Lighting Plan

The effect of new street lighting impacts the driving and walking experience. The plan studies the distribution of light throughout the corridor to ensure street lights are properly spaced. Lighting fixtures were selected to be identical to the fixtures for the Abel Street Streetscape Project and N. Main Street Streetscape Project.

Pedestrian & Connectivity Plan

Walking routes to schools, public transit, and trails are included in the plan to help identify the appropriate locations of crosswalks. Within the preferred walking routes, pedestrian refuge areas are provided via benches to ensure a pleasant walking experience.

Funding Plan

The construction of the proposed project is estimated at $6.9M. Construction by the City alone may prove infeasible without substantial grant funding. Public-Private Partnerships with the development community may be more advantageous and help in deployment of the plan more quickly. To assist in developing partnerships, the plan provides a detailed Project Cost Analysis and recommendations for an In-Lieu Development Fee.

Development projects are already responsible for the construction of sidewalk improvements along their frontages to ensure compliance with ADA and City requirements. Adoption of this plan will help to ensure a consistent look and feel through the corridor.

Implementation of the median islands should be pursued through public-private partnerships with the larger development projects in the corridor since the median islands are necessary to provide controlled access to their projects. An in-lieu fee for smaller development projects of $270/Average Daily Trip (ADT) is recommended when public-private partnerships are not feasible. This fee would be collected by the city and shared with larger developers to help build-out the project. Larger developments who partner with the City to build-out the median island should not be required to pay the in-lieu fee.

Locations where no development is possible, such as along the sidewalk areas adjacent to The Pines Neighborhood would require funding by the City; grant funds should be pursued where feasible.

Existing Conditions

S. Main Street is a major boulevard which runs north-south between Montague Expressway and Great Mall Parkway. The study area is approximately 1.6-miles long between Montague Expressway and Great Mall Parkway. S. Main Street serves as a widely used alternative route for local vehicles needing access to Interstate Highways 880 and 680 in the City of Milpitas. S. Abel Street runs north-south between W. Calaveras Boulevard and S. Main Street intersecting S. Abel Street approximately 0.2-miles south of Great Mall Parkway. S. Main Street varies in width from 68-ft. to 91-ft wide and has two lanes in each direction with both one/two way left turn pockets and striped medians in the middle of the roadway. Curbside parking is available on both sides of S. Main Street. S. Abel varies in width from 70-ft to 78-ft wide, and has two lanes in each direction with both one/two way left turn pockets and striped median in the middle of roadway. Curbside parking is not allowed on S. Abel Street. Both streets provide 5 to 10-ft wide sidewalks on each side. Bike lanes are available on S. Main Street.

Street trees are planted intermittently on both streets and where trees are planted the growing space is restricted. Tree type varies as does health and condition due probably to the differences in the occurrence of irrigation. The one strong stand of street trees, Liriodendron tulipifera, occurs in the southernmost portion of South Main, in the frontage of the office property which will be replaced by the Warmington development in confined tree wells. Much of the west side and Abel Street to the north are planted with widely spaced, stunted, Geijera parviflora, which generally look in poor health (no doubt due in part to a lack of irrigation). Under the best of conditions, the Geijera are smallish trees, growing to 25 feet tall and 20 feet wide, and are ill suited to the scale of the street.

The Santa Clara Valley Transit Authority (VTA) operates an above ground Light Rail Station at the intersection of Great Mall Parkway and S. Main Street. This station serves the Alum Rock-Santa Teresa Light Rail Line between the City of Milpitas and the City of San Jose. Also near this intersection is a Park & Ride Lot. The VTA also operates the Line 66 transit line thru the study area on S. Main Street. There are six transit stops in the project areas; three in the northbound direction and three in the southbound direction. In the northbound direction the first transit stop is located between the two driveways serving the Shell Gas station that is located at the northeast corner of Montague Expressway and S. Main Street. The second northbound stop is located just north of the intersection of Cedar Way and S. Main Street. The third transit stop within the study area is located near the southeast corner of S. Main Street and S. Abel Street. In the southbound direction the first stop is located just south of the intersection of Great Mall Parkway and S. Main Street. The second stop is located just to the south of the intersection of S. Main Street and S. Abel Street. The third stop is located on the south side of the intersection of Cedar Way and S. Main Street.

There are six signalized intersections in the study area. They are located at Great Mall Parkway and S. Abel Street, S. Abel Street and West Capitol Avenue, Great Mall Parkway and S. Main Street, S. Main Street and S. Abel Street , S. Main Street and Cedar Way and S. Main Street and Montague Expressway.

Sufficient right of way exists to fit 10-ft wide sidewalks on both sides of the street for the entire length through the study area, but actual sidewalk widths vary in size between 4-feet wide and 10-feet wide.

Pearl Zanker Elementary School is located in the residential neighborhood immediately to the west of the study area, within walking distance of the signalized intersection at Cedar Way and S. Main Street.

Painted pedestrian cross walks are located at each of the signaled intersections. There are no other crosswalks in the study area.

There are local paths that traverse the nearby neighborhood, providing offstreet pedestrian paths of travel and access to the elementary school. Access to S. Main Street and S. Abel Street is restricted to the interconnecting intersections. Walls surrounding the neighborhood restrict access to the pathway system except at the interconnecting streets.

Penitencia Creek, which provides flood protection for Santa Clara County runs along the Western side of S. Abel Street adjacent to the Pines Neighborhood. It traverses beneath S. Abel Street at the intersection of W. Capitol Avenue, and S. Abel Street and continues on between the proposed developments of Centria and Matteson.

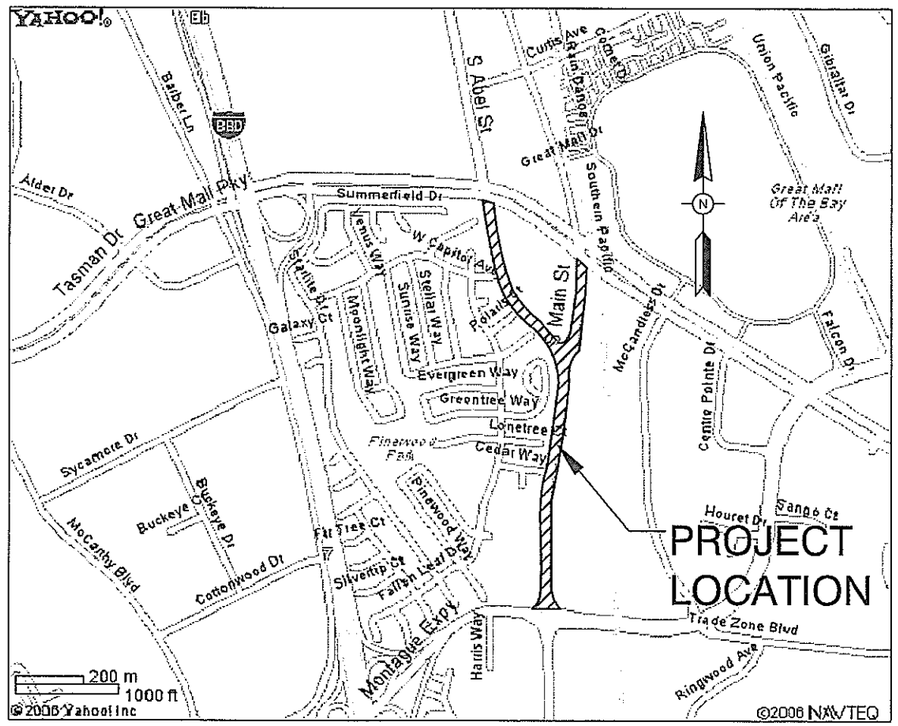
Figure 1 – Existing Sidewalk Connection to Pines Neighborhood

PROJECT PLANS FOR MILPITAS PLAN LINE STUDY

IN CITY OF MILPITAS

IN SANTA CLARA COUNTY

AT SOUTH MAIN STREET BETWEEN MONTAGUE EXPRESSWAY AND GREAT MALL PARKWAY AND AT SOUTH ABEL STREET BETWEEN SOUTH MAIN STREET AND GREAT MALL PARKWAY



LOCATION MAP

7/14/09

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The plan line was approved by Council on March 20, 2007

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STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

NO.	DESCRIPTION	DATE

CITY OF MILPITAS

COVER SHEET
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: Originally plan line J Rodriguez 3/20/07 DATE:
APPROVED FOR BIDDING BY: GREG ARMENDARIZ, CITY ENGINEER plane line DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 3

Project Area and Proposed Development

The project area is depicted graphically on the Median Island plans. The perimeter begins at the back of walk of Great Mall Parkway, extends along the back of walk of the west side of S. Abel Street and along S. Main Street to the back of walk along Montague Expressway. The boundary traverses across S. Main Street and extends along the back of walk on the easterly side of the street to the intersection with S. Abel Street. At the intersection, approximately 150-feet from the intersection, the limit shifts from the back of walk to the face of curb and extends to the corner of S. Main Street and the back of walk of Great Mall Parkway. The boundary continues along the back of walk of Great Mall Parkway to the point of the start of the perimeter where the west side of S. Abel Street right of way line meets Great Mall Parkway right of way line.

The proposed projects that abut the perimeter of the above description are:

Warmington Homes, 368 single family units, with two driveways. The northernmost driveway of this development will be located at a new signalized intersection shared with the Aspen Family project, allowing for both left and right turn entrance and exits. All other driveways will only permit right in and out movements. The Warmington Homes development is located on 11.2 acres at the north-west corner of S. Main Street and Montague Expressway.

Paragon Condominium, 147 units, two driveways within study area. The Paragon development is located on 4.7 acres at the North-East Corner of the S. Main Street and Montague Expressway intersection.

Aspen Villages, 101 single family units, two driveways within study area. One driveway will be located at a new signalized intersection shared with the Warmington Homes project. Aspen Villages is located on 2.7 acres at 1666 S. Main Street

Bay Stone Towers, 391 units with three driveways. One driveway is located at the S. Main Street and Cedar Way signalized intersection allowing for both left and right turn entrance and exits. All other driveways will only permit right in and out movements. Bay Stone Towers is located on 6.1 acres at 1649 S. Main Street.

Matteson Development, 126 units, two driveways within study area both on S. Main Street. The south most proposed driveway on S. Main Street will allow both left and right turn entrance and exits. The second driveway at the Matteson Development will be limited to left in, right in and right out only. Matteson Development is located on 2.7 acres on the northern corner of the S. Abel Street and S. Main Street intersection.

Centria, 464 units, three driveways within study area one along S. Main Street and two along S. Abel Street. A new private roadway is proposed at Centria, which will allow for both left and right in and out at the S. Abel Street and Capitol Avenue signalized intersection. The second driveway at S. Main Street will be limited to right in and out only. The Centria Development is located on 2.9 acres bordered by Great Mall Parkway, S. Main Street, and S. Abel Street.

The project consists of the preparation of several plans: The Median Island Configuration Plan, the Street Cross Section Details, the Streetscape Planting Plan, the Lighting Plan, the Street Furniture Plan, and the Transit Connectivity Plan. The descriptions for each plan are described in the following sections of the report.

Median Island Configuration Plan

This study proposes to construct a total of fifteen median islands within the study area. The medians will be located approximately along the roadway centerline providing separation and safety for opposing traffic. All medians will also include landscape planting and decorative features.

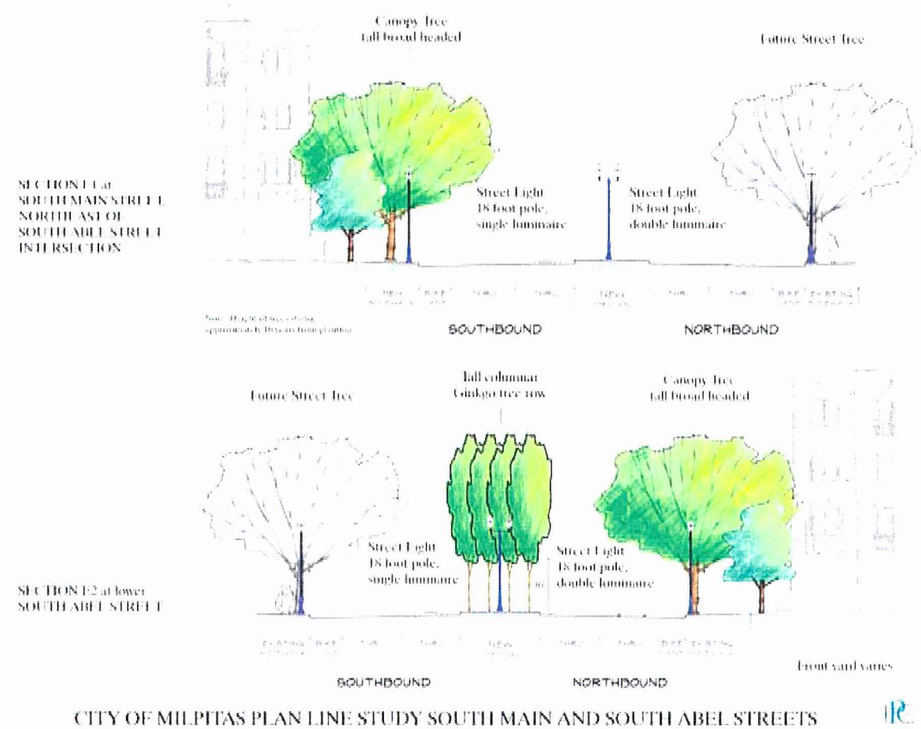
The medians will be arranged to restrict left and U-turn movements only to certain key locations. These locations were chosen based on feedback from all stakeholders, such as local business owners, residents, City staff and project developers. Each median will be raised by 6 inches and surrounded by concrete curb per city standards. Narrow portions (i.e. 4-feet or less) of the median will be capped in concrete pavement.

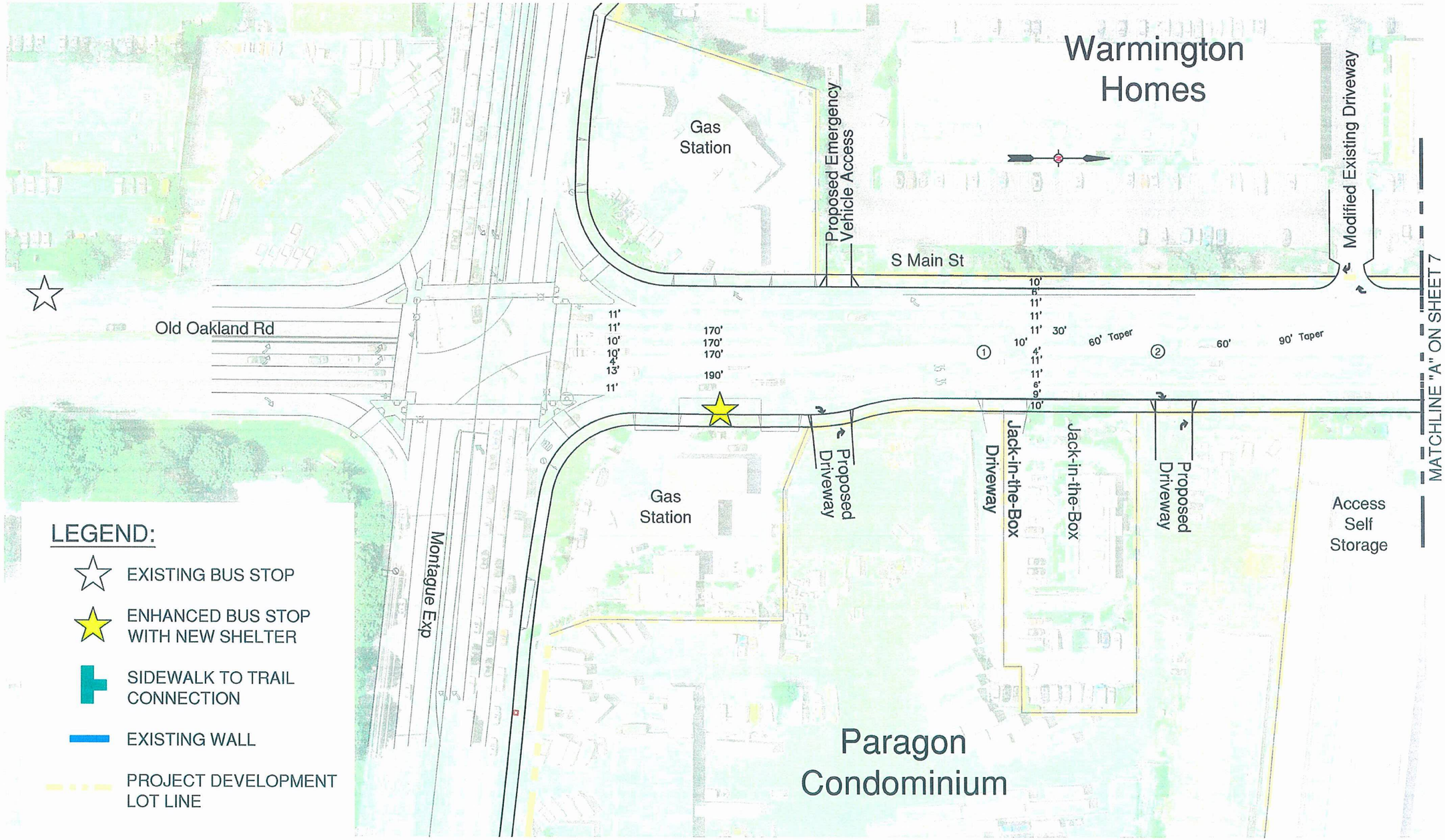
U-turn analysis was performed for the project. The analysis demonstrated that the proposed median does not severely restrict emergency vehicle access to the properties that adjoin the street. In addition the analysis tested and proved that the openings in the median are sufficient for large wheel base single unit vehicles with 40-foot wheelbase to make entrance moves from the left turn pocket. Last test performed was to determine whether there is need for restriction of permissive U-turn movement at the signalized intersections. The results of the test indicated that restriction of U-turns at signalized intersections is not needed.

Bike lanes are proposed through the study area. The new bicycle facility would provide bicycle connectivity from Montague Expressway to the Light Rail Station, Park & Ride Lot at Great Mall Parkway, and existing bike lanes north of the project area.

One new signalized intersection is located approximately 300-feet south of S. Main Street and Cedar Way to provide access to Warmington Homes and Aspen Family projects. The new signal will also provide additional paths for pedestrians to safely cross S. Main Street. The new signalized intersection increases the total number of crosswalks to seven locations within the study area. This should provide additional safe passage for students walking to and from Zanker Elementary School, and for the pedestrians approaching the Light Rail Station.

As part of the Median Island Configuration Plan, both S. Main Street and S. Abel Street will be reconfigured to provide for additional on street parking. The land use changes along the street will transition from industrial/commercial to residential/mixed-use. All of the existing commercial uses have off street parking. Between Montague Expressway and the intersection of S. Abel Street and S. Main Street, parking will be permitted on both sides of the street. A total of 76 spaces are proposed. Continuing on S. Abel Street to Great Mall Parkway, on street parking will not be permitted. From the S. Abel Street and S. Main Street intersection and running along S. Main Street to Great Mall Parkway, 12 on street parking spaces are proposed. Based upon recommendation from the City Planning Commission the on street parking duration should be limited to 4 hours. Loading areas should also be identified to support Mixed-use Development where appropriate.





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REGISTERED PROFESSIONAL ENGINEER — THOMAS J. KRAKOW — No. C48381 — Exp. 06/30/08 — CIVIL — STATE OF CALIFORNIA

Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

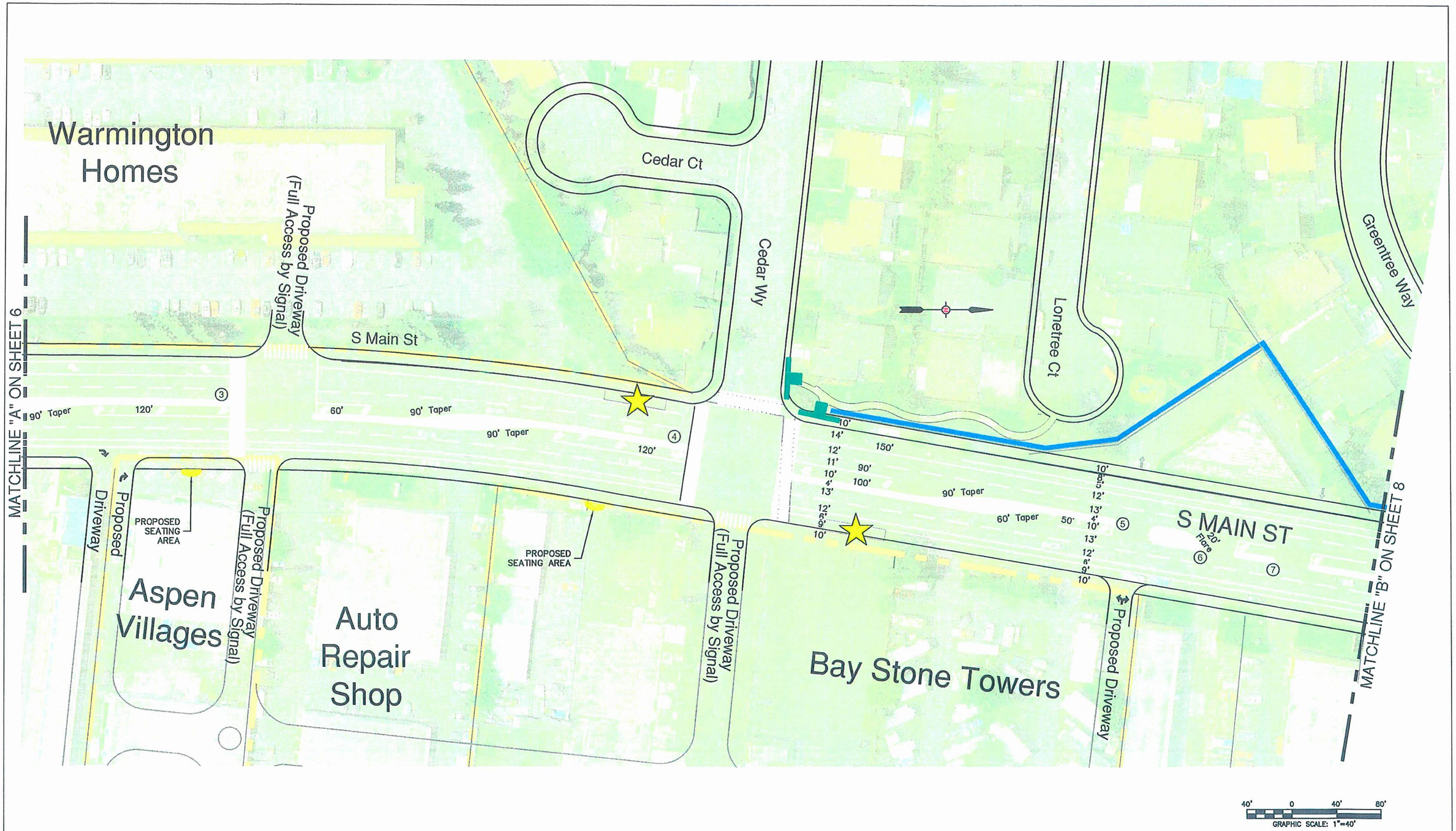
NO.	DESCRIPTION	DATE

CITY OF MILPITAS — CALIFORNIA — JANUARY 20, 1954

MEDIAN ISLAND PLAN 1
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____ GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/06

PROJECT NO.
CIP NO.
SHEET NO. 6



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CITY OF MILPITAS
CALIFORNIA
JANUARY 20, 1954

MEDIAN ISLAND PLAN 2
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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GREG ARMENDARIZ, CITY ENGINEER
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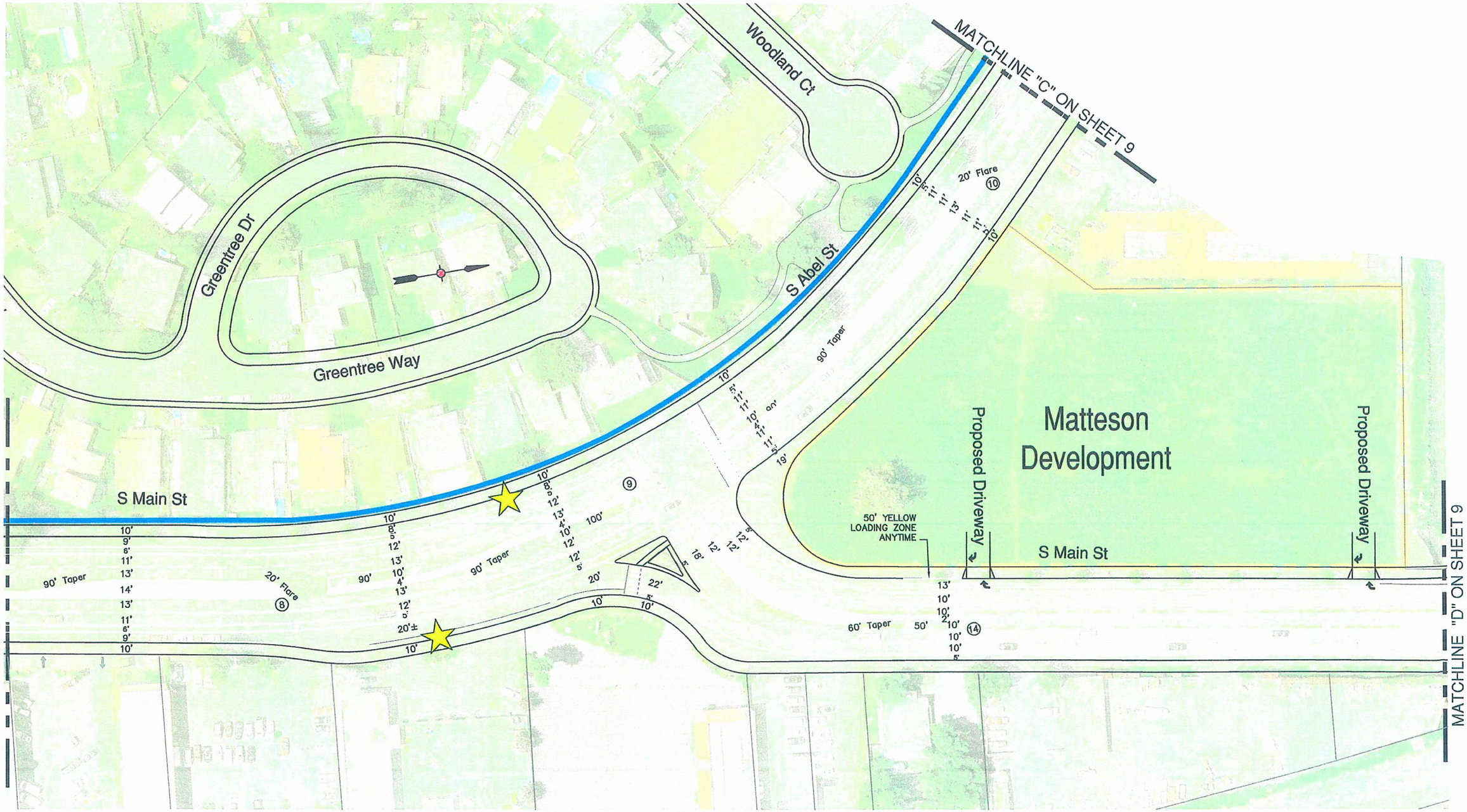
PROJECT NO.
CIP NO.
SHEET NO. 7



40' 0 40' 80'
GRAPHIC SCALE: 1"=40'

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CITY OF MILPITAS
CALIFORNIA

MEDIAN ISLAND PLAN 3
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
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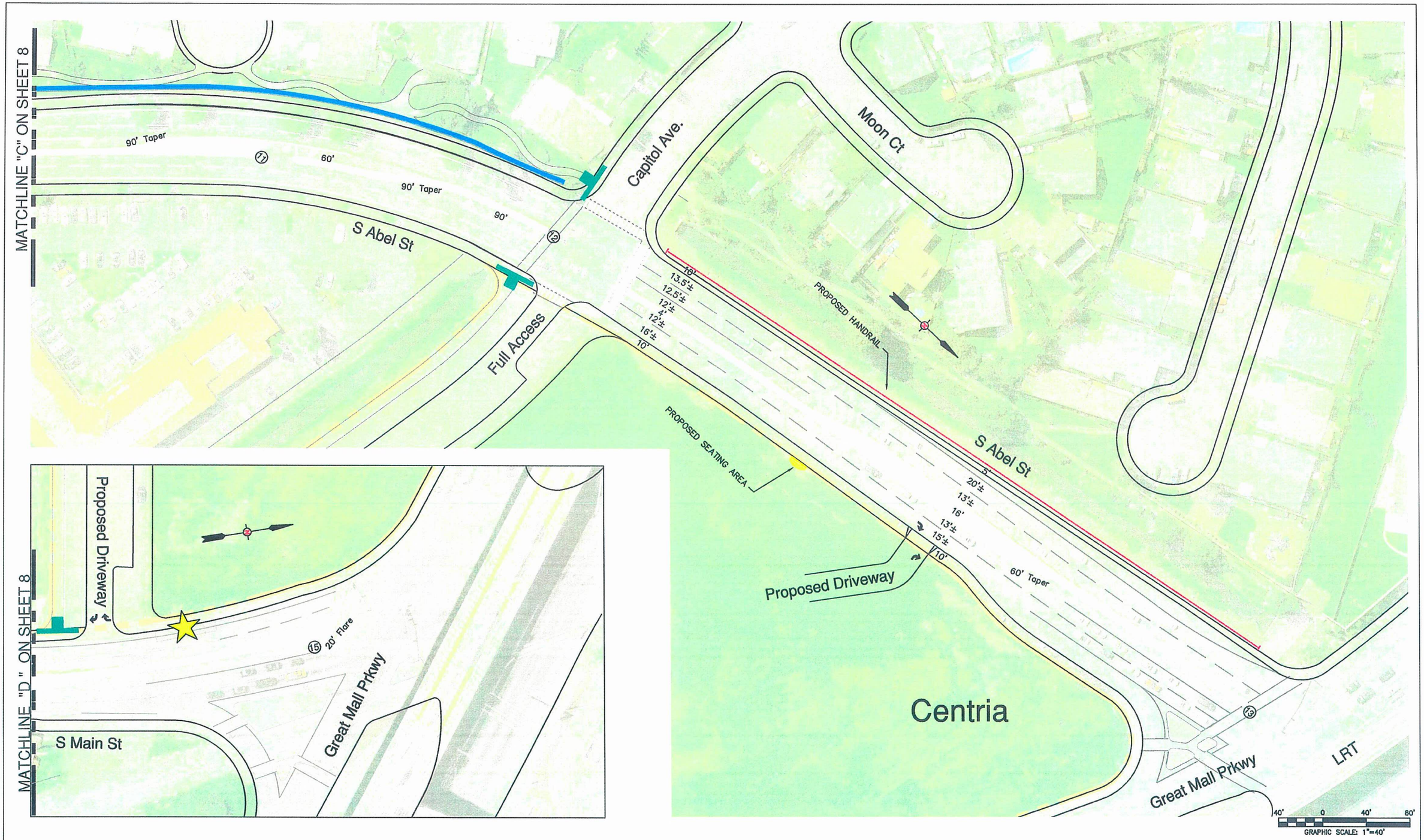
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 8



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CITY OF MILPITAS
CALIFORNIA
JANUARY 20, 1954

MEDIAN ISLAND PLAN 4
MILPITAS PLAN LINE STUDY

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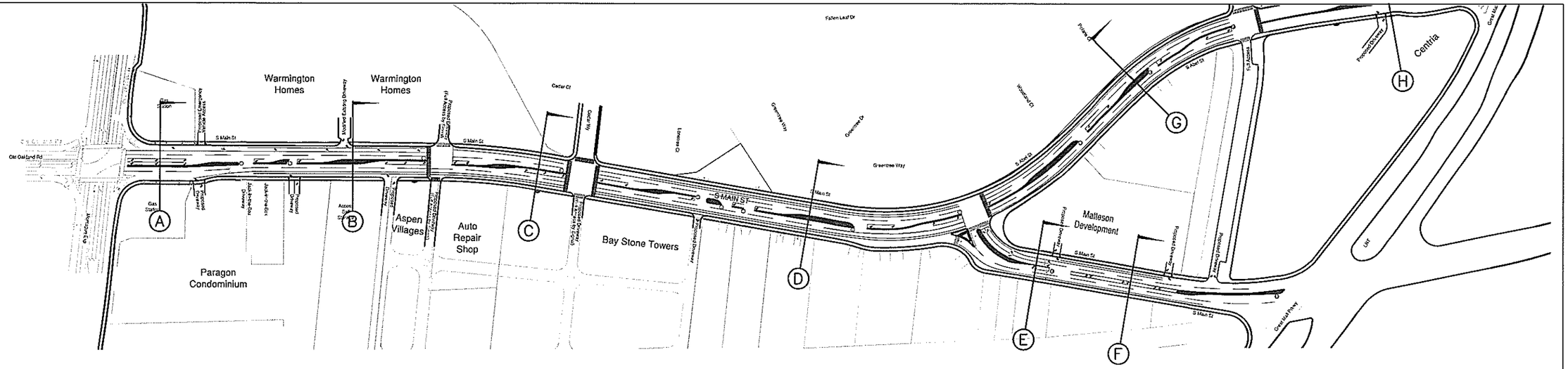

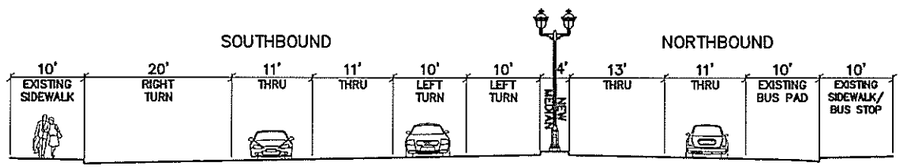

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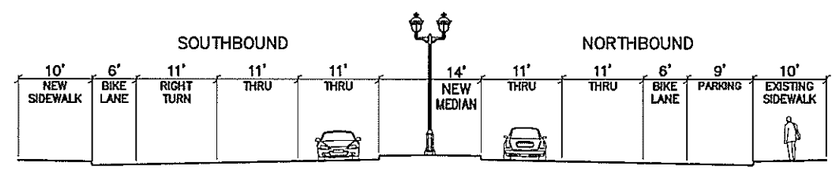

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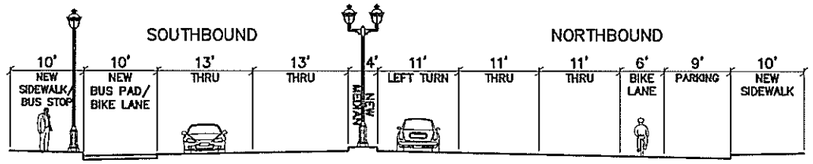

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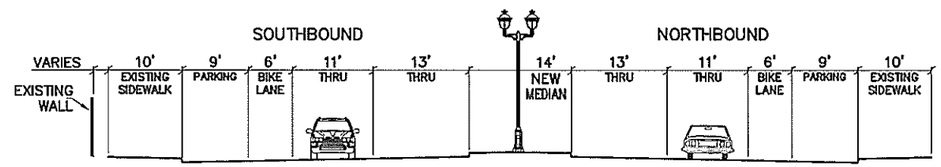

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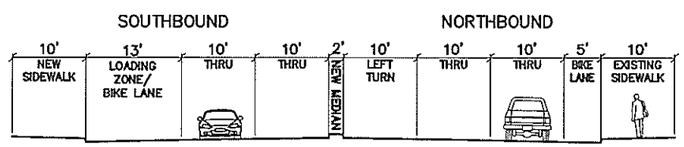

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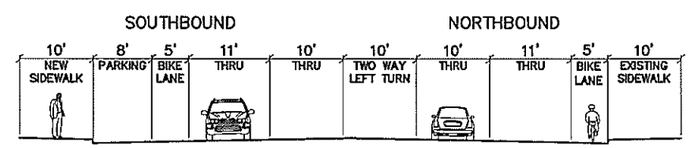

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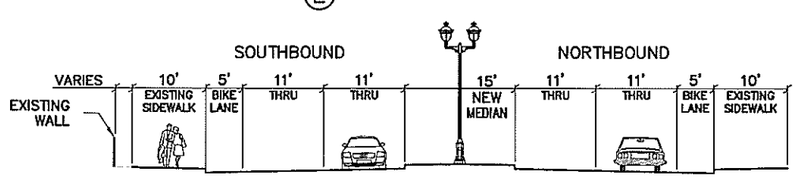

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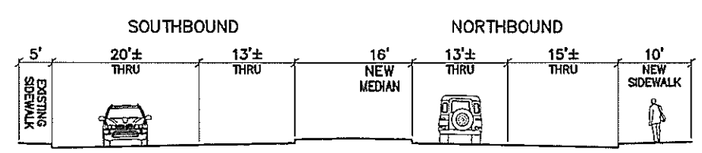

H TYPICAL SECTION

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CITY OF MILPITAS
CALIFORNIA
JANUARY 25, 1954

PLAN AND TYPICAL SECTIONS
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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Streetscape Planting Plan

The design challenge for this important downtown streetscape is apparent in the street's great size. It ranges from 90' to more than 100' in width and is one and a half miles long, including the fork at Abel Street. Today this street expanse has little character, visually dominating the intermittent street trees and existing low rise urban area and building frontages.

The Mid-town Specific Plan, current development, and this Plan Line Study will change this look. With building heights permitted by the Specific Plan of four to five stories, the present phase of new development will begin placing buildings in scale with the street. The opportunity now is not just to create a new street scheme but a "Great Street," one whose scale is complemented by big, long lived trees which will form a stately urban streetscape and cohesive urban design.

Guided by the Midtown Specific Plan, the master plan evolved from initial concepts presented to staff to final design refinement based on input from community meetings. Initial design analysis uncovered the potential to create a uniform geometry of tree and street light placement and spacing. At the first staff meeting, the team agreed to pursue a 'Big Trees theme' to reinforce the city's desire to create a grand boulevard design plan. Tree selection, a key stage in the design process, focused on trees growing in the range of 40 to 60 feet tall.

Envisioned is a street of tall, canopied trees creating a strong "street wall" along the sidewalks, complemented by tall, columnar trees to strengthen the visual impact of the medians. Tree selection focused on the best horticultural and tree form candidates available.

Streetscape Design Concepts

Creating a Green Sidewalk Street Wall

Historically, the concept of tree lined 'avenues' may be as old as city design. Derived from the French 'avenue,' the design term means 'a coming to' and as street form, is traditionally associated with a wall of tree trunks and an overarching canopy. The resulting 'street wall' creates visual uniformity, cadence, and a cohesiveness which ties together the architectural elements fronting a boulevard.

The graphic, **West Side Elevation, Lower South Main,** on page 13 illustrates the potential to create a handsome street wall along South Main which blends street trees and architecture.

Creating a Unique Median Design Scheme: a safety-based, angled geometry for trees and ground plane.

The traditional median is usually symmetrically designed: trees and shrubs in the middle, parallel to the median and sidewalk/curb geometry. Occasionally designs in some cities mound trees and plants in the center of medians, inadvertently without attention to concerns for adequate clear sight distance to facilitate safe traffic turning movements by motorists. For this project, an exciting design direction emerged through the interaction with engineering design of the median, particularly the requirements for "sight distance."

Initially, the design process tested integrating several tree types into median design. It soon became apparent that for this design, skewing the location of median trees to the angle of the traffic safety "sight distance angles" should drive the design concept. The plan settled on two tall species of Ginkgo biloba trees, the narrow, columnar Ginkgo 'Princeton Sentry' and the broader canopied columnar Ginkgo 'Fairmont'

Planted rows of 'Princeton Sentry' (at 18' on center) were placed in the narrow median portions and counterpoint to the broader Ginkgo 'Fairmont' (planted at 36' on center) in the broad median areas. These tree rows, aligned with sight lines, then set up linear patterns for ground plane plantings, forming long visual lines of asymmetrical planted bands in the medians. Where medians are not affected by turning movement sight lines, cross median banding angles are defined to maintain the design.

The intent is to create a taut contemporary geometry with clean planted bands of texture and color crossing the medians, counterpoint to the even cadence of the streetwall trees. Typical median cross sections are shown on page 15.

Gateway Design

The entry Gateways to South Main at Montague Expressway and Great Mall Parkway are challenging because they present large expanses of roadway hardscape. Absent vertical building corner elements to visually anchor these entrances, what can be accomplished at the corners and in the narrow median noses which define the left turn lanes is limited. To create visual landmarks in these locations a number of design elements were selected: tall vertical elements including banner poles 25' tall, decorative light poles 18' to 25' tall, columnar, fast growing Ginkgos growing to 50' tall. A decorative, low railing 30" long initiates the design plan and allows placement of an entry sign.

At the gateway median strips 4' wide, ground plane bands include alternating patterns of hardscape, transitioning to 4' wide strips of lawn, ground cover, hedge and shrubs; all growing no taller than 30 inches. In the wider medians elsewhere plantings would be 6' and 8' wide to create the changing design rhythms.

The cross section view of the south and north entry gateway is shown in the figures: **Gateway: South Main Street at Montague Expressway and Gateway: South Abel Street at Great Mall Parkway.**

Tree Selection

Selecting Trees to Last Decades

For the medians, in concurrence with staff, it is recommend that the tall, columnar form Ginkgo biloba 'Princeton Sentry', and the broad canopied Ginkgo biloba 'Fairmont' as the only tree forms. We believe that the design strength of these two trees, resulting from their size and spectacular fall color, will create a dramatic, unique, and singularly beautiful median treescape, especially in the fall.

The Princeton Sentry is a Ginkgo with a more columnar, erect growth to 50'and a 20' spread at the base tapering towards the top. These will be used in both the broad and narrow median areas to create design continuity. The Princeton Sentry is also integrated into the Gateway design. The Ginkgo 'Fairmont' 50'tall with a 30' spread; it has a somewhat pyramidal form and will be used in the broader medians.

These Ginkgo varieties were selected because they have been improved over older varieties with typical slow growth rates, which limited the use of Ginkgos in the past. Both species are rated to grow two feet per year with proper planting reaching a height of 50 feet.

Recommended Median Trees and Design Scheme

In careful review and concurrence with staff, the following selection recommendations were made:

1. In order to create a uniform streetscape form, tall tree height, and horticultural dependability, a uniform, street tree planting of Scarlet Oak (Quercus coccinia; 45-60 Tall) is recommended from lower South Main through South Abel to Great Mall Parkway;

2. For the eastern fork of South Main, from its intersection with S. Able to Great Mall Parkway, the somewhat smaller stature Frontier Elm (Ulmus x 'Frontier': 40 ft. tall) Is recommended to be planted in phases as land use development changes allow. For these trees where longer term plantings will occur, the city might consider contract growing all need elm tree stocks for replanting as locations become available. This could result in a more uniform streetscape ultimately.

3. All street tree plantings would be undertaken using a layout spacing of 36 ft. on center, 2.5' from the back of the curb (approximately 3' from the face of the curb) as laid out on the Plan Line Study drawings.

Median Plantings

For the medians, different treatments are proposed for trees located within the larger median areas planted with groundcovers and shrubs than proposed for the columnar trees planted within the narrow median (4'-5' interior width). In the first area the tree base is proposed to be framed in a 2' X 2' header within which bark or mulch would be placed. This would prevent disturbance of roots by plantings or lawn maintenance.

In the second installation, within the narrow medians, the use of the 10' X 10' X 2.5' deep structural soil tree pits would be utilized to provide adequate rooting area for the columnar trees. This would require excavations outside the median into the roadway for the placement of structural soil, requiring reconstruction of the road in these locations. The remainder of the planting installation would be the same as the standards used in the sidewalk areas.

Groundcovers and shrubs will be planted will be planted in 4' bands in the entry medians and would range from 6' to 8' wide in the larger medians. As discussed above the bands are angled in alignment with the site distance lines. In front of these lines in the view clear area lawn would be planted. Behind the trees low hedge no higher than 30" in height would be located followed by bands of flowering groundcovers.

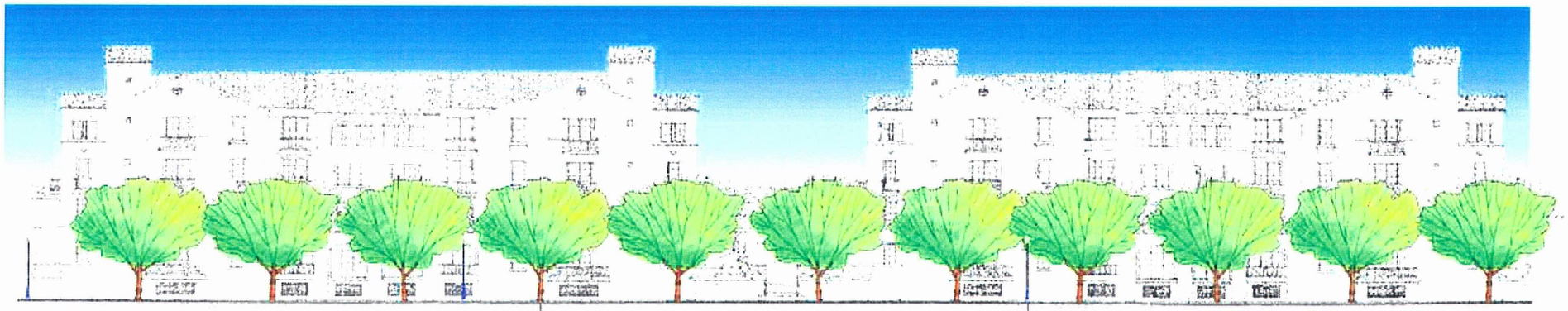
Sample plant materials are identified in the table below to illustrate the suitable height, texture, and color contrasts desirable in the medians. The list is intended to initiate the planting plan and plant materials selection process.

Hedge forms Under 30" in Height

Pittosporum tobira 'Turner's Variegated Dwarf'	
Pittosporum tobira 'Cream de Mint'	Cream de Mint Pittosporum
Plumbago scandens 'Summer Snow'	
Rhaphiolepis Indica 'Ballerina'	Dwarf Indian Hawthorn

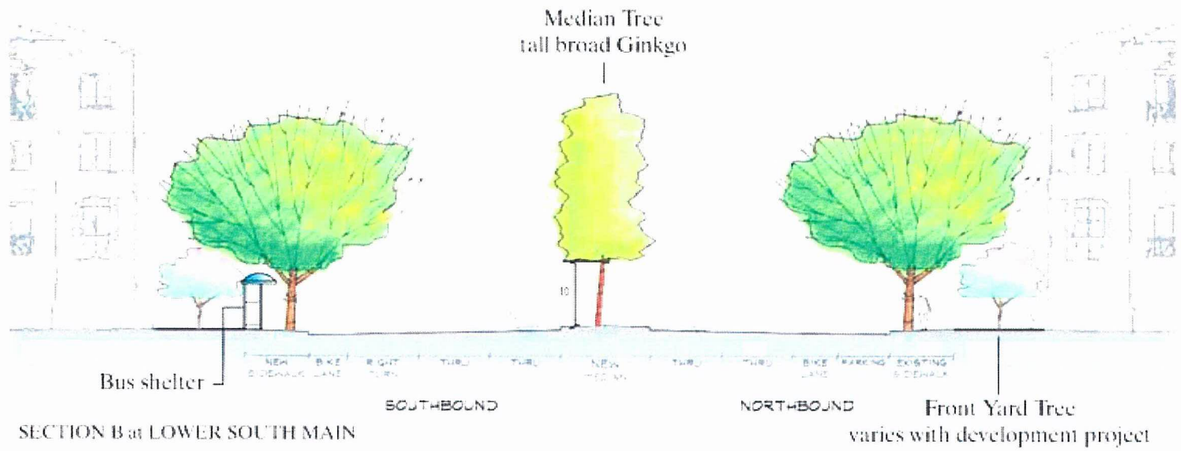
Shrub forms and Ground Covers

Viburnum davidii	Davidii Viburnum
Agapanthus africanus 'Midnight Blue'	Blue Lily of the Nile
Pennisetum setaceum 'Rubrum'	Fountain Grass
Penstemon G. 'Firebird'	Border Pestemon
Penstemon G. 'Lady Hindley'	Border Pestemon
Penstemon G. 'Sour Grapes'	Border Pestemon
Penstemon heterophylleus 'Margarita'	
Penstemon heterophylleus 'Purdy'	
Lavendula angustifolia 'Munstead'	English Lavender
Hypericum Calycinum	Creeping St. John's Wort
Trachelospermum Jasminoides	Star Jasmine
Vinca Minor	Dwarf Periwinkle
Lawn and lawn substitute	"No Mow" Fescues, sedges ie. Carex panex, etc.

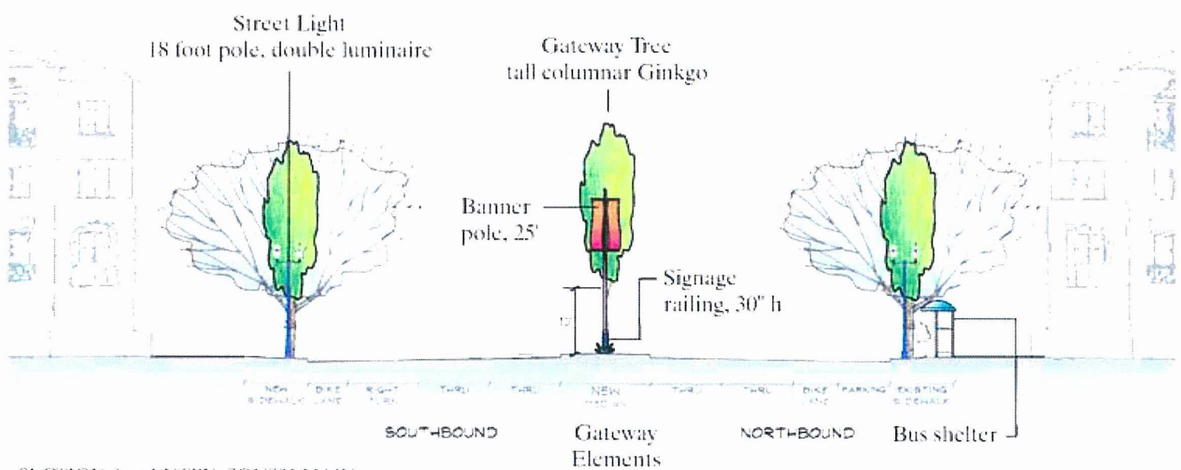


WEST SIDE ELEVATION, LOWER SOUTH MAIN

CITY OF MILPITAS PLAN LINE STUDY, SOUTH MAIN AND SOUTH ABEL STREETS



SECTION B at LOWER SOUTH MAIN



SECTION A at ENTRY, SOUTH MAIN

CITY OF MILPITAS PLAN LINE STUDY, SOUTH MAIN AND SOUTH ABEL STREETS

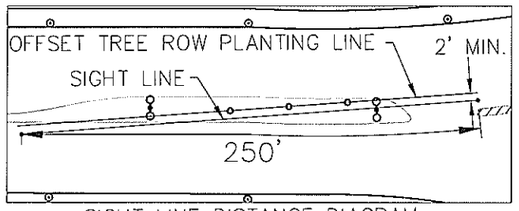
Scarlet Oak

Princeton Sentry Gingko

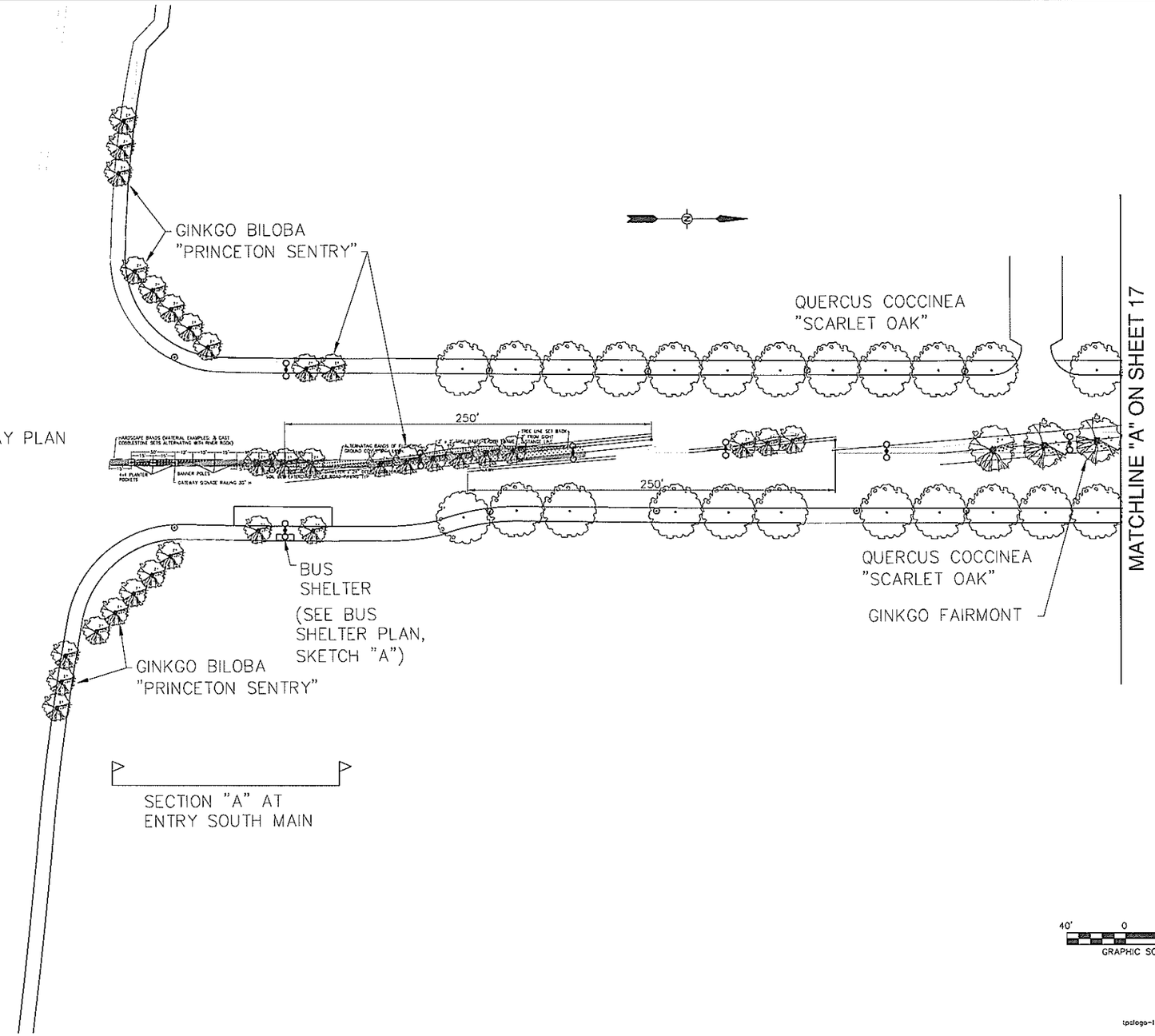
Quercus Coccinea Scarlet Oak

Ulmus Americana 'Frontier' – Frontier Elm

Gingko Biloba 'Princeton Sentry'



SIGHT LINE DISTANCE DIAGRAM
N.T.S.



LEGEND:

- SINGLE ORNAMENTAL ELECTROLIER
- TWIN ORNAMENTAL ELECTROLIER
- RELOCATED ELECTROLIER
- NEW TRAFFIC SIGNAL SAFETY LIGHTING
- RETROFITTED SAFETY LIGHTING
- RETROFITTED STREET LIGHTING
- EXISTING STREET LIGHTING
- BUS SHELTER
- SEATING AREA
- SIDEWALK STREET TREE
- MEDIAN TREE

NOTE: 35% PLAN LINE DRAWING. NOT FOR CONSTRUCTION.
01.30.2007

40' 0 40' 80'
GRAPHIC SCALE: 1"=40'

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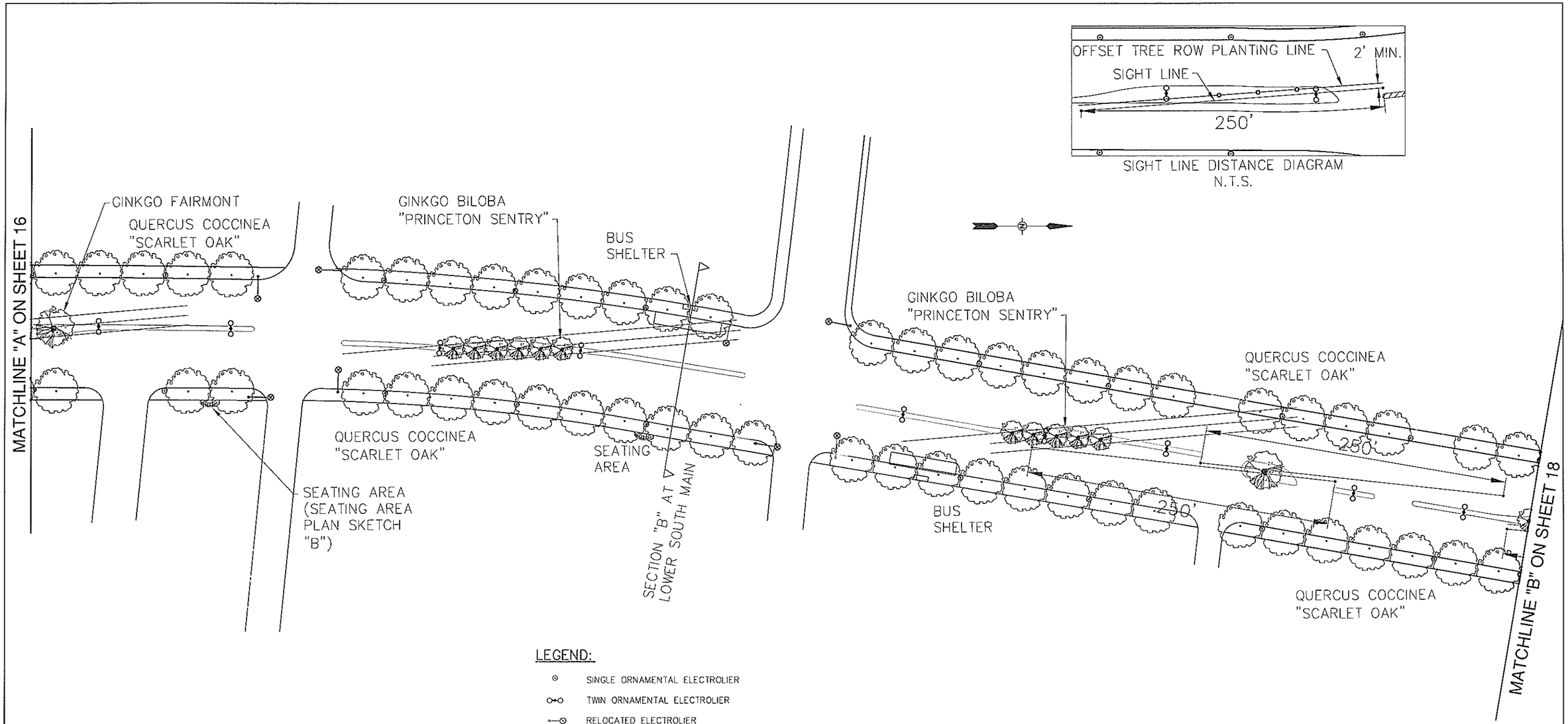
Sheet 16

Streetscape Plan

City of Milpitas Plan Line Study South Main and South Abel Streets

THE PLANNING
COLLABORATIVE
URBAN DESIGN &
LANDSCAPE ARCHITECTURE
32 Vicente Rd. Berkeley, CA 94705
ph 510.848.2729 fax 510.848.4306
Jeffrey A. Grote, AICP, ASLA
CA LIC. # 3433, Exp. 12/07



LEGEND:

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- RETROFITTED STREET LIGHTING
- EXISTING STREET LIGHTING
- BUS SHELTER
- SEATING AREA
- SIDEWALK STREET TREE
- MEDIAN TREE

NOTE: 35% PLAN LINE DRAWING. NOT FOR CONSTRUCTION.
01.30.2007

40' 0 40' 80'
GRAPHIC SCALE: 1"=40'

tpclogo-large b&w 600 dpi.tif

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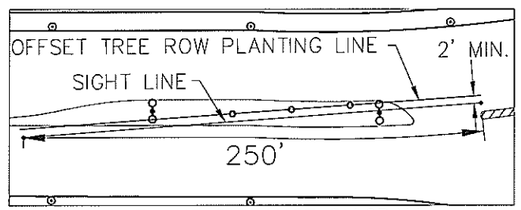

SIGHT LINE DISTANCE DIAGRAM
N.T.S.

LEGEND:

- SINGLE ORNAMENTAL ELECTROLIER
- TWIN ORNAMENTAL ELECTROLIER
- RELOCATED ELECTROLIER
- NEW TRAFFIC SIGNAL SAFETY LIGHTING
- RETROFITTED SAFETY LIGHTING
- RETROFITTED STREET LIGHTING
- EXISTING STREET LIGHTING
- BUS SHELTER
- SEATING AREA
- SIDEWALK STREET TREE
- MEDIAN TREE

MATCHLINE "C" ON SHEET 19

QUERCUS COCCINEA
"SCARLET OAK"

250'

QUERCUS COCCINEA
"SCARLET OAK"

SECTION "E2" LOWER
SOUTH ABLE STREET

GINKGO BILOBA
"PRINCETON SENTRY"

GINKGO BILOBA
"PRINCETON SENTRY"

GINKGO FAIRMONT

GINKGO BILOBA
"PRINCETON SENTRY"

QUERCUS COCCINEA
"SCARLET OAK"

BUS SHELTER

GINKGO BILOBA
"PRINCETON SENTRY"

NOTE 2:
SIDEWALK STREET TREES TO BE ULMUS X "FRONTIER"
(FRONTIER ELM) ALONG SOUTH MAIN STREET NORTH
OF INTERSECTION WITH SOUTH MAIN TO GREAT MALL
PARKWAY.

FRONTIER ELM

MATCHLINE "B" ON SHEET 17

MATCHLINE "D" ON SHEET 19

250'

BUS
SHELTER

SEE
NOTE
1

NOTE 1:
TREES THIS SIDE WALK NOT PLANTED
THIS PHASE.
SHOWN TO GUIDE FUTURE DEVELOPMENT
ONLY.

TREE PLANTING THIS
PHASE.
GINKGO BILOBA
"PRINCETON SENTRY"

SEE NOTE 1

SECTION "E1" SOUTH MAIN ST.
NORTHEAST OF SOUTH ABLE STREET
INTERSECTION

40' 0 40' 80'
GRAPHIC SCALE: 1"=40'

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NOTE: 35% PLAN LINE DRAWING. NOT FOR
CONSTRUCTION.
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Sheet 18

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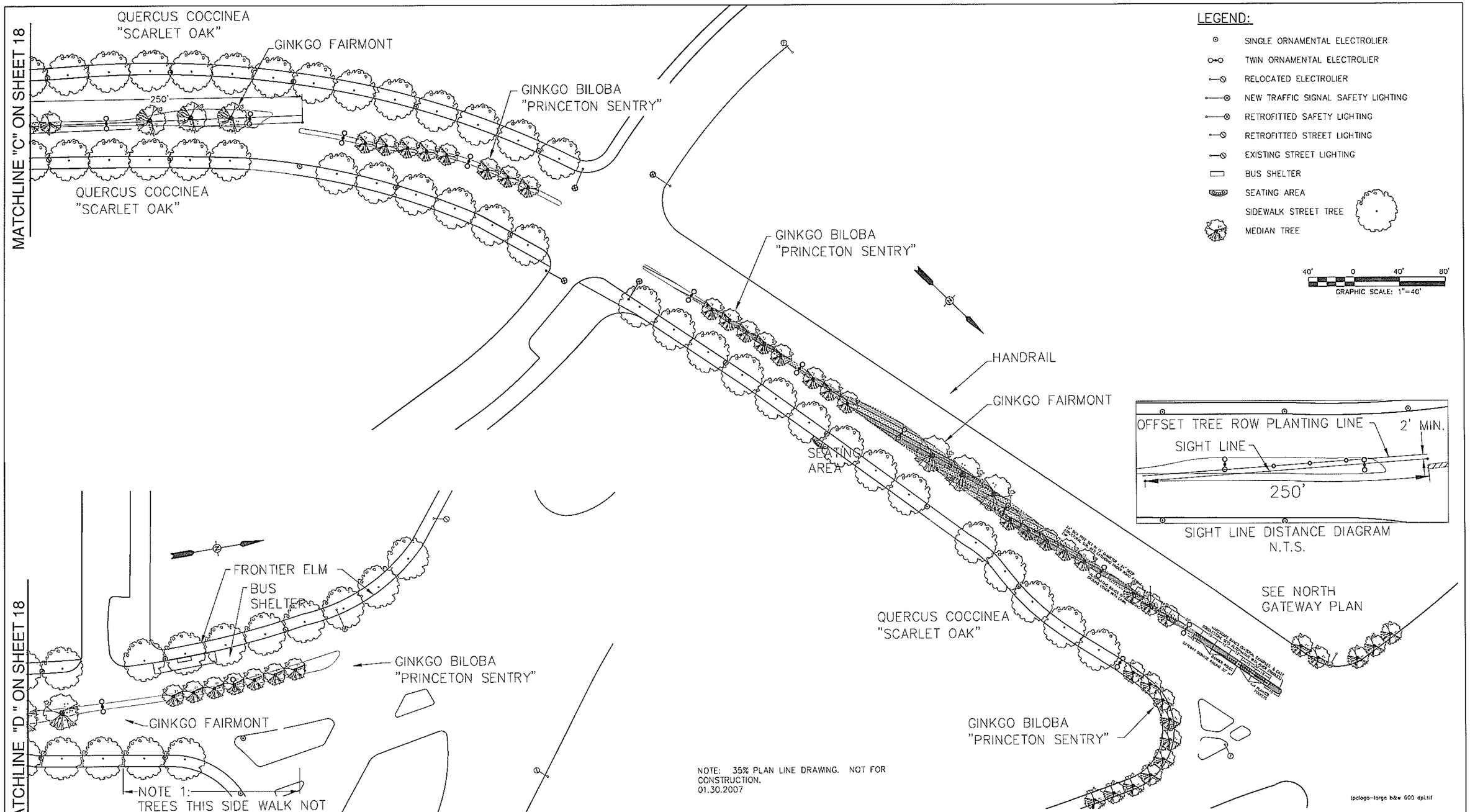

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Sheet 19

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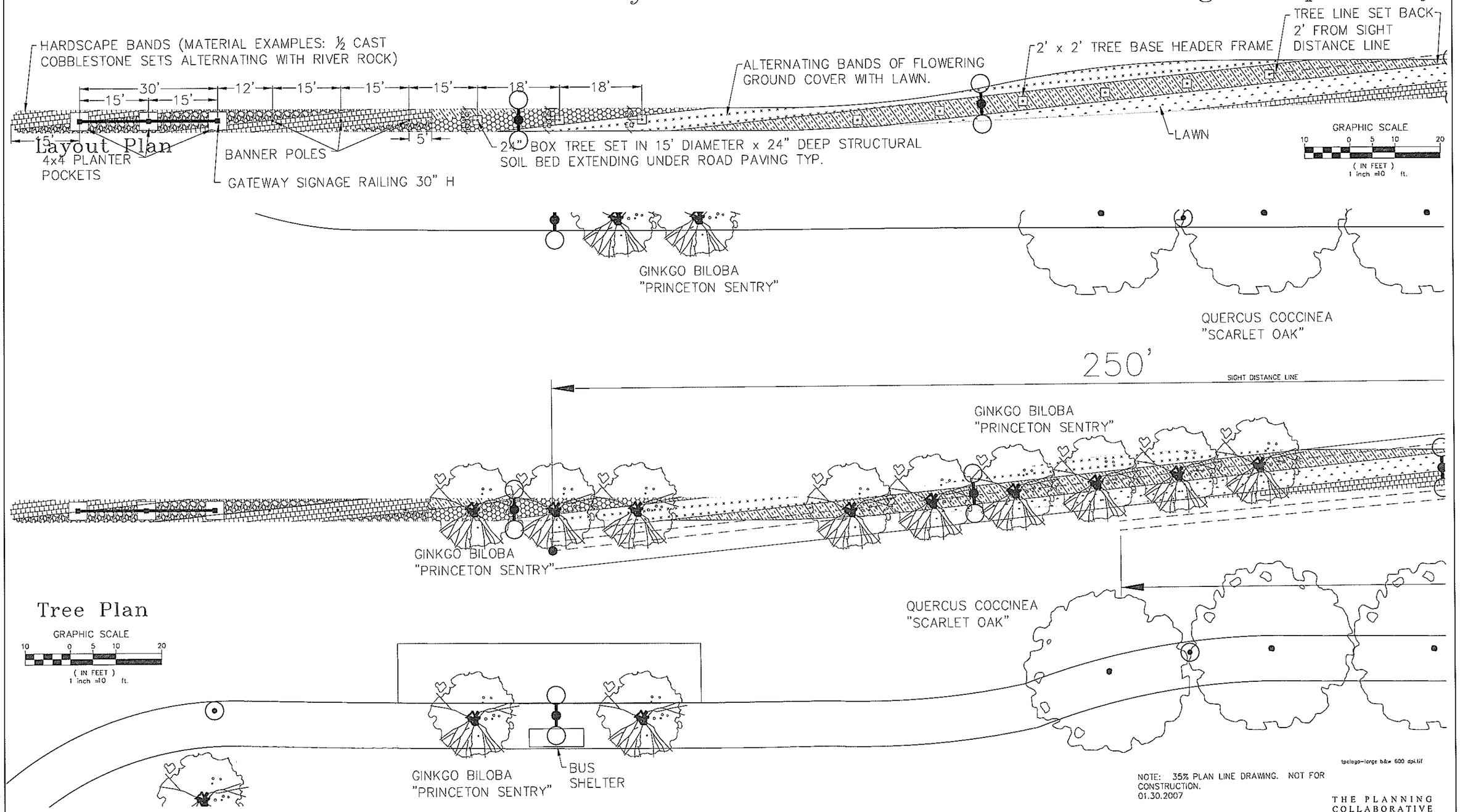
South Gateway Plan: South Main Street at Montague Expressway



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Sheet 20

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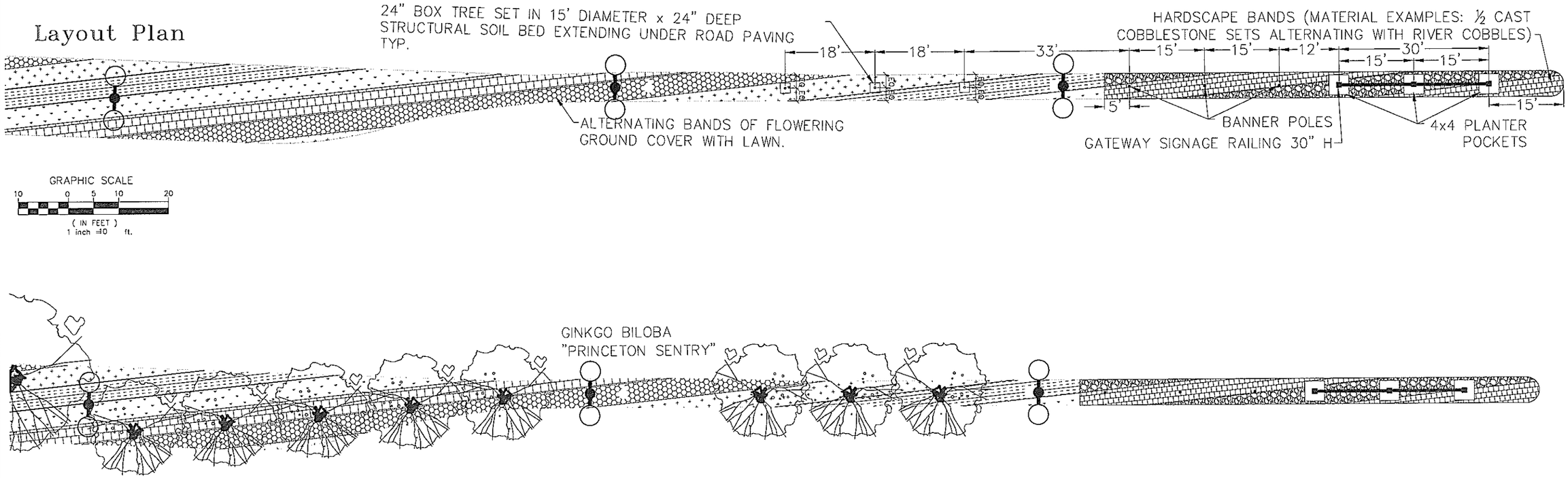
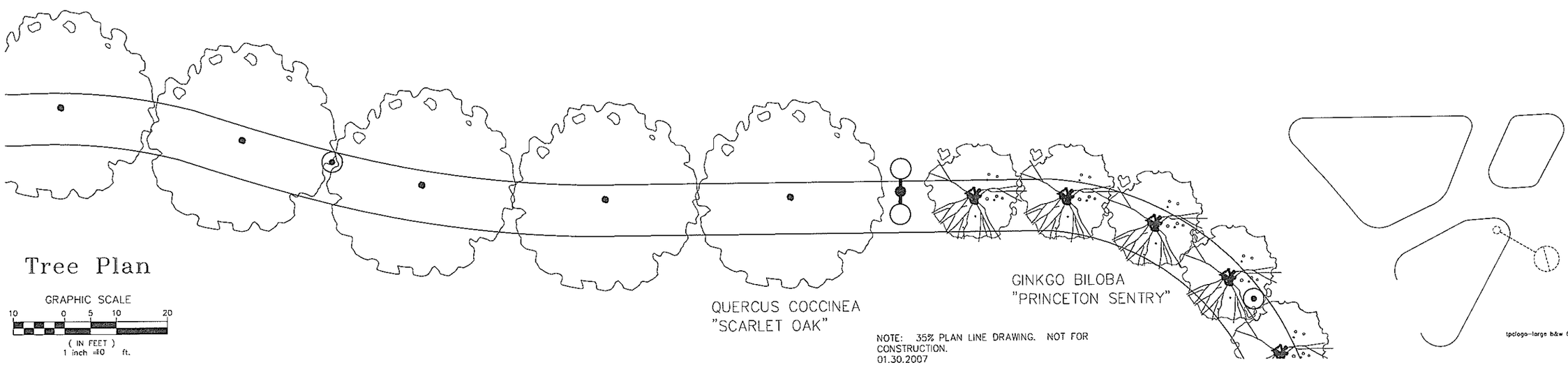
North Gateway Plan: South Abel Street at Great Mall Parkway

Layout Plan



Tree Plan



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Sheet 21

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Street Furniture Plan

Furniture Serving Transit and Pedestrian Connectivity

The S. Main Street/S. Abel Street is an important transit and pedestrian corridor. The design of bus shelters and sidewalk sitting areas enhance pedestrian comfort to facilitate and encourage pedestrian use of the corridor as high density residential development takes place. Six bus shelters and three off-sidewalk sitting areas are located throughout the corridor in relationship to routes of pedestrian connectivity. The design of each, as they relate to the street tree, sidewalk paving treatments, and street light elements of the streetscape, are illustrated in plan sketches A and B. Recommended furnishings for each of the elements discussed below are shown in The Streetscape Furnishings Table.

Bus Shelter and Furnishings. Available sidewalk width of 10' dictates the use of a narrow bus shelter. A 4 X 16' Cantilevered bus shelter design is recommended which will be set on a 6 X 14' concrete slab extending past the existing sidewalk. In many instances the bus shelter is located either in front of or near a street light.

Seating Areas and Furnishings. A concrete curved seating 6' X 16' patio is proposed adjacent to the existing sidewalk in three locations shown on the streetscape plan. These would support a 6 seat concave grouping of individual seats facing the street. Metal bollards would anchor each end of the sitting area. A single metal trash receptacle would serve the facility.

Gateway Furnishings

The custom design for the decorative railing should incorporate placement of entry signage designed to fit the low 30" height. Banner poles could either reflect poles already used in other areas of the downtown or could be unique to the South Main/South Abel boulevard. Hardscape in this area would be half-cast concrete 'cobblestone' pavers, alternating with river cobbles.

Sidewalk Plan Layouts and Treatments

The sidewalk plan recommends retaining existing sidewalks where possible through the use of a 'patch and match' approach. In other areas new sidewalks will be required. To create uniformity, scoring the old and new sidewalk with 2' X 2' grid saw cuts is recommended. For sidewalk trees, a 10' X 10' inlay of concrete or brick pavers is proposed (set in a sand base over geogrid) above structural soil installed in tree pits. The same paver is proposed to cover a utility trench connecting trees and light fixtures behind back of curb. This trench would be used for street light conduit and the irrigation main line and may also prove useful as a location for other utility vaults.

Pavers should be selected based on an assessment of colors and textures which predominate in the initial developments now under city review. In this manner a color theme to coordinate the various architectural schemes could be integrated into the sidewalk paving system now and in the future.

The basic tree layout and paving treatment is illustrated in two graphics: 1. Bus Shelter Plan Sketch A: Sidewalk Street Tree Plan with Bus Shelter and Street Light Location; and 2. Sitting Area Plan Sketch B: Sidewalk Street Tree Planter Plan with Sitting Area and Street Light Location.

Street Tree & Median Planting

The tree planting program proposes the use of 'structural soils' for trees planted both in the sidewalks and the medians where root growth will take place under sidewalk and/or roadway paving. Structural soil is intended to promote satisfactory root growth while minimizing displacement of surface hardscape. Placement of structural soil requires removal of existing sidewalk, excavation of existing soils, emplacement of structural soil in the planting pit , and replacement of the sidewalk.

In general, the amount of soil rooting area required by a healthy tree is related to its size at maturity. The larger the tree, the larger the planting area needs to be to maximize the success of the planting. Herein, project design and planning faces a difficult decision and need to strike a balance between cost and the desire to maximize the success of the 'big tree' program for the streetscape. Calculations based on the size of the proposed trees suggest that much of the sidewalk between the trees could be replaced with structural soil to reduce hardscape disturbance and promote maximum tree growth. This approach would add to the cost of the project raising consideration of a compromise solution which maintains reasonable amounts of existing sidewalk while replacing excavated sidewalk areas with new pavers.

The design plan is based on a proposed installation utilizing an excavated tree pit which is 10' X 10' X 2.5' deep. This requires removal of a 10' wide area from the curb to the back of sidewalk. The sidewalk tree planting layout scheme illustrated in this report incorporates provisions of the City of Milpitas's structural soil oriented tree planting standards.

For the Medians, tree plantings proposed in the narrow portions of the medians (4' to 5' wide) incorporate a 10'x10'x2.5' deep planting pit which extends under the curb and roadway, expanding the available rooting area. Here connecting soil trenches between the trees could be considered to enhance the growth and health of these trees.

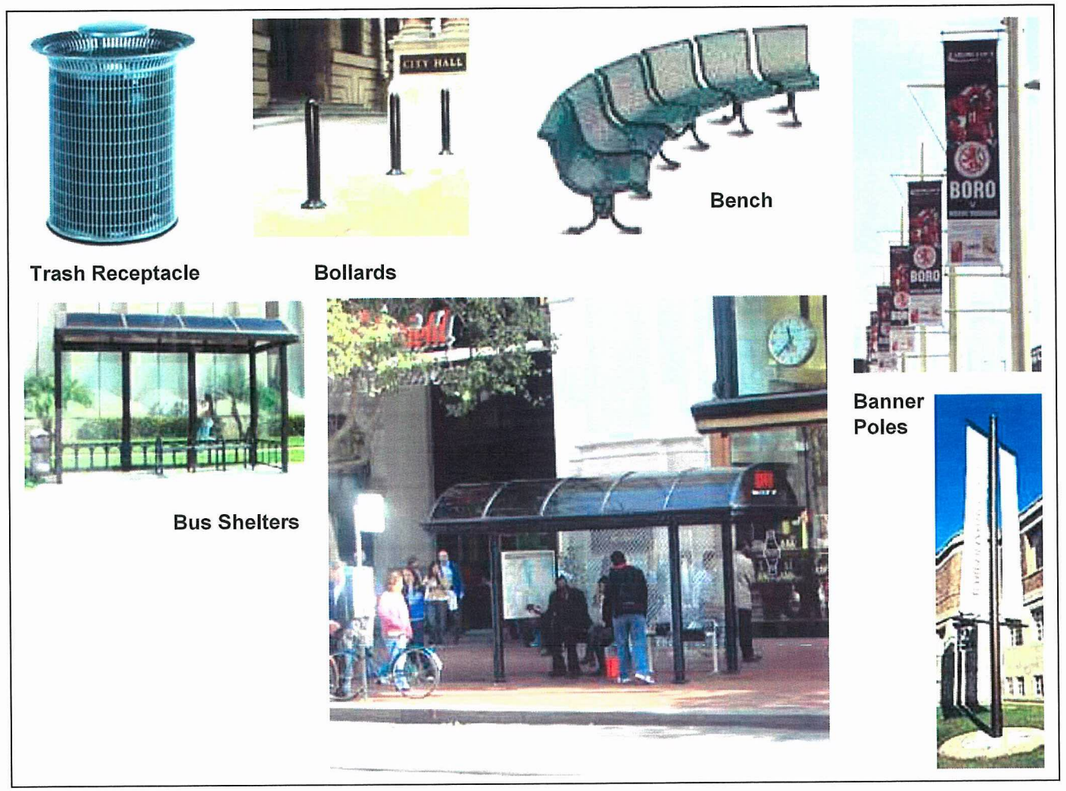
Irrigation with potable water rather than recycled water has been established within the project area. Water will be delivered through main lines proposed to run along the back of curb utility trench and through the medians allowing connection to all street trees and median plantings.

Sidewalk Tree Base Treatment. For the sidewalks street trees, two alternative treatments for the tree base immediately surrounding the tree installation are proposed. Both are intended to maximize the exposure of the tree rooting surface to air within the limits of the 10' wide sidewalk. The first proposes a 5' X 5' metal tree grate set from back of curb midway to the center of the sidewalk, leaving a 5' paved area for pedestrian travel. The tree grate would also meet ADA standards. A tree guard would be incorporated into the design. Attached to the grate, it would secure and protect the trunk of the tree but would be removed once the tree was mature enough.

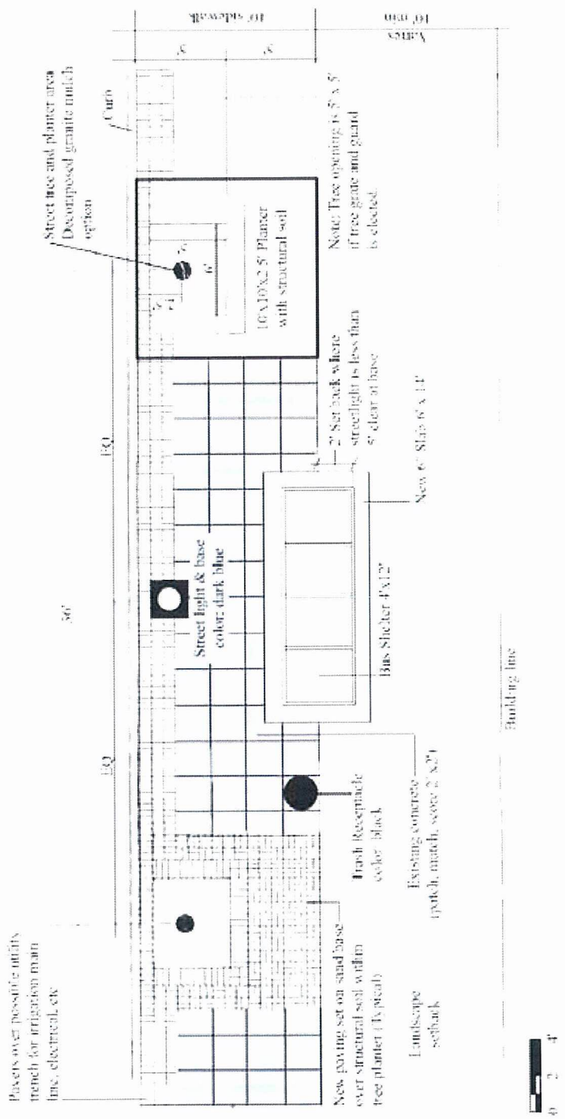
The alternative plan proposes a 5' X 6' surface, with the long dimension parallel to the curb. This would include a compacted surface mulch of decomposed granite (D.G.). This installation would be completed by two to four wooden stakes to secure the trees within approximately their first five years of growth.

Other Tree Installation Elements. Other components of tree installation are shown in the city's standard details.

Elements	Description and Color	Manufacturer
Transit and Pedestrian Facility Elements		
Bus Shelter Elements		
Barrel Roof Transit Bus Shelter - Contemporary Style	ACCO 4 X 12 Heritage Cantilevered Design with Bench (***) Color: Black	Daytech Limited
Trash Receptacle	FR400W - 32 Gallon Receptacle, Flare Top - Welded Wire with FT110N - Flat Top Lid - 14" Dia. Opening; 32 Gallon Liner; LR105N Surface Mount Post Package. Color: Black	Wabash Valley
Sitting Area Elements		
Concave Bench	CL406P - 15 Degree Concave w/back - S.M. - Perforated; A19 - 8025 Seat. Color: Cranberry	Wabash Valley
Trash Receptacle	See Above	Wabash Valley
Bollards	Columbia Cascade Timberform Model #2190-P, Timberform Metal Bollard, Pedastal Mount. Standard Powder Coat Color: Regal Blue.	Columbia Cascade Timberform
Concrete Off - Sidewalk Patio	6" Concrete Slab, with 8 X 8" Raised Concrete Curb. Color: Dark Gray; 1 X 1' Scored Surface, Wash Treatment	N/A
Entry Gateway Elements		
Gateway Signage Railing	30" High X 30' Long Decorative Railing, 3 Posted	Custom - TBD
Banner Poles	25' High Banner Pole with Spring Loaded Arms Side by Side to Support 30" x 94" Banners Structural Feasibility,and steel or estruded aluminum material TBD	Lumec
Hardscape	Half Cast Cobblestone Pavers; River Rock; Alternating Bands	Various Suppliers
Median and Sidewalk Street Tree Planting		
Structural Soil Planting Pit	See Planting Detail Description	N/A
Plant Installation Components	See Planting Detail Description	N/A
Tree Planter Base Alt. 1. Metal Grate	TG110N - 60" Square, Two-Piece Tree Grate. Color: Powder Coat Black	Wabash Valley
Tree Planter Base Alt. 1. Tree Guard	TG125N - Round Rod Tree Guard, 5' High. Color: Black.	Wabash Valley
Tree Planter Base Alt. 2.	2" Decomposed Granite (DG) Mulch; 3" Wood Stakes	Various Suppliers
Sidewalk Pavement Treatments		
Existing Sidewalk Treatment	Patch and Match Sidewalk Repair Areas; 2 X 2' Scoring with Skill Saw	N/A
Replacement Pavers Over Tree Pits and Utility Trench	Concrete Pavers 60mm Thickness; Color, Size and Pattern: TBD Based on Materials Predominantly Among Current Development Projects.	Calstone - Quarry Stone



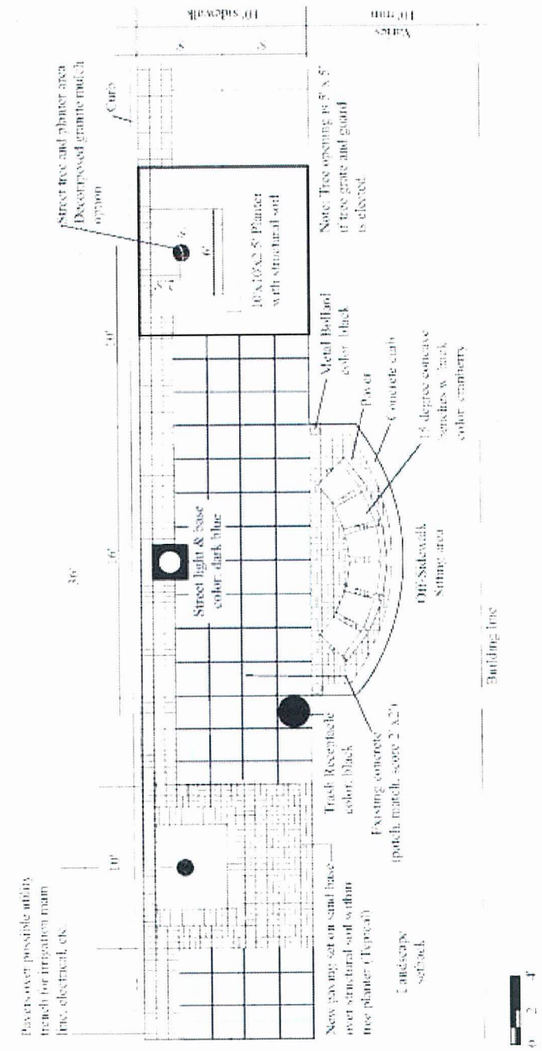
Street Furnishings



Bus Shelter Plan Sketch A

Sidewalk Street Tree Planter Plan
With Bus Shelter And Street Light Location

CITY OF MILPITAS PLAN LINE STUDY, SOUTH MAIN AND SOUTH ABEL STREETS



Seating Area Plan Sketch B

Sidewalk Street Tree Planter Plan
With Seating Area And Street Light Location

CITY OF MILPITAS PLAN LINE STUDY, SOUTH MAIN AND SOUTH ABEL STREETS

Lighting Plan

Proposed improvements include, decorative street lights which will act as aesthetic enhancements to the street. Using street lighting guidelines of the city, the median will have a twin back to back luminaire decorative street and pole light while the lights on the sidewalk will be a single pole. The lighting criteria for the street lighting are based on Caltrans – District 4, Electrical Design and Operations. The minimum initial horizontal illumination at the intersection of street centerlines is 1.26 footcandles and 0.316 footcandles at crosswalks.

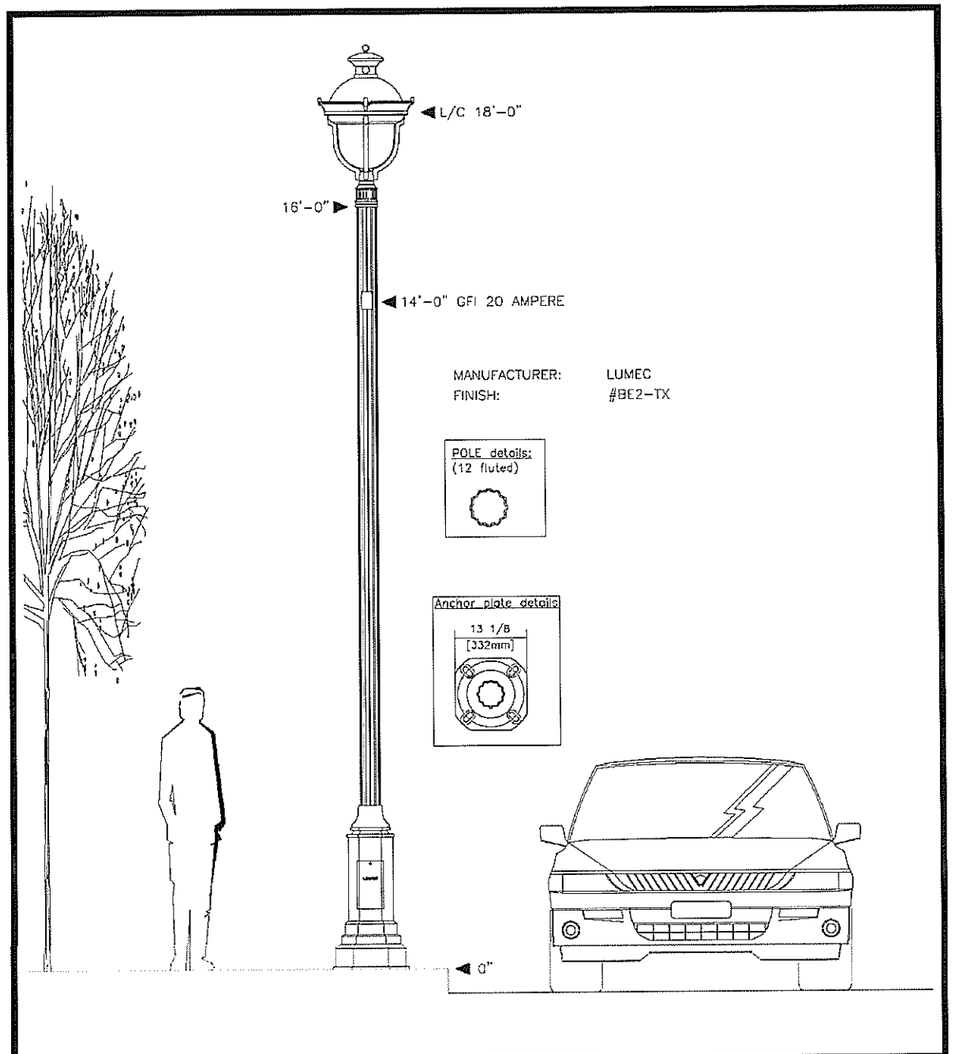
The plan calls for the existing lighting along the sidewalk to be removed, salvaged and replaced with decorative lighting fixtures. The new fixtures were selected to harmonize with the recently installed lighting improvements on N. Abel Street. The proposed fixture unit is the Ancestra model manufactured by LUMEC. The median lighting is a twin back to back luminaire with 23 inches luminaire arms, 18 feet above finished grade and mounted on a decorative fluted pole. The twin luminaire has 175W metal halide on each arm. The fixture unit for the sidewalk is also the Ancestra model and is a single luminaire with 175W metal halide, mounted on a decorative fluted pole 18 feet above finished grade . See sample. The existing safety lighting at the intersections will remain except that the existing high pressure sodium luminaire fixtures will be replaced with 250W metal halide fixtures.

The new street lighting's electrical circuit will be connected to the service point of the adjacent traffic signal installation. There are two photo electric units and two lighting circuits running east and west of each signalized intersection. The first lighting circuit running east of the signalized intersection will have a photo electric unit and the second circuit running west of the signalized intersection will also have a photo electric unit. For this project, since Montague Expressway is not a City facility, the street lights on S. Main Street will be on the electrical circuit with the future traffic signal installation at the Warmington-Aspen development. This is the only area where the street lights on the west side of S. Main Street will be on Circuit 1 and Circuit 2 will have street lights on the eastside of the street.

Lighting analysis was performed using Autolux software. The street illumination, including illumination at street intersections and crosswalk is based on Caltrans – District 4 criteria. The minimum illumination for the project is 0.5 footcandles and varies from 1.9 to 2.9 footcandles for the intersection of street centerlines.

The locations for the lighting standards were coordinated with the proposed shade tree planting plan. The placement of the lighting is no closer than 18-feet to the trunk of the proposed trees. Lighting standards were placed to respect the new driveways for the proposed developments identified in this study. Placement of the lighting would be set midway between the two curbs that form the islands. Where existing driveways conflict with the placement of the lighting along the sidewalk, the lighting standard was shifted to clear the existing driveway.

New lighting has not been proposed along the westerly side of S. Abel Street along the Santa Clara County Flood District Channel. There is insufficient space to locate new lighting standards and ADA compliant sidewalk between the existing curb line and the existing right of way line. Narrowing the street was considered and dropped from further consideration. New lighting has not been proposed along the easterly side of S. Main Street since this portion of the street falls outside of the improvement area of this project.



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1000 BROADWAY, SUITE 450
OAKLAND, CALIFORNIA 94607
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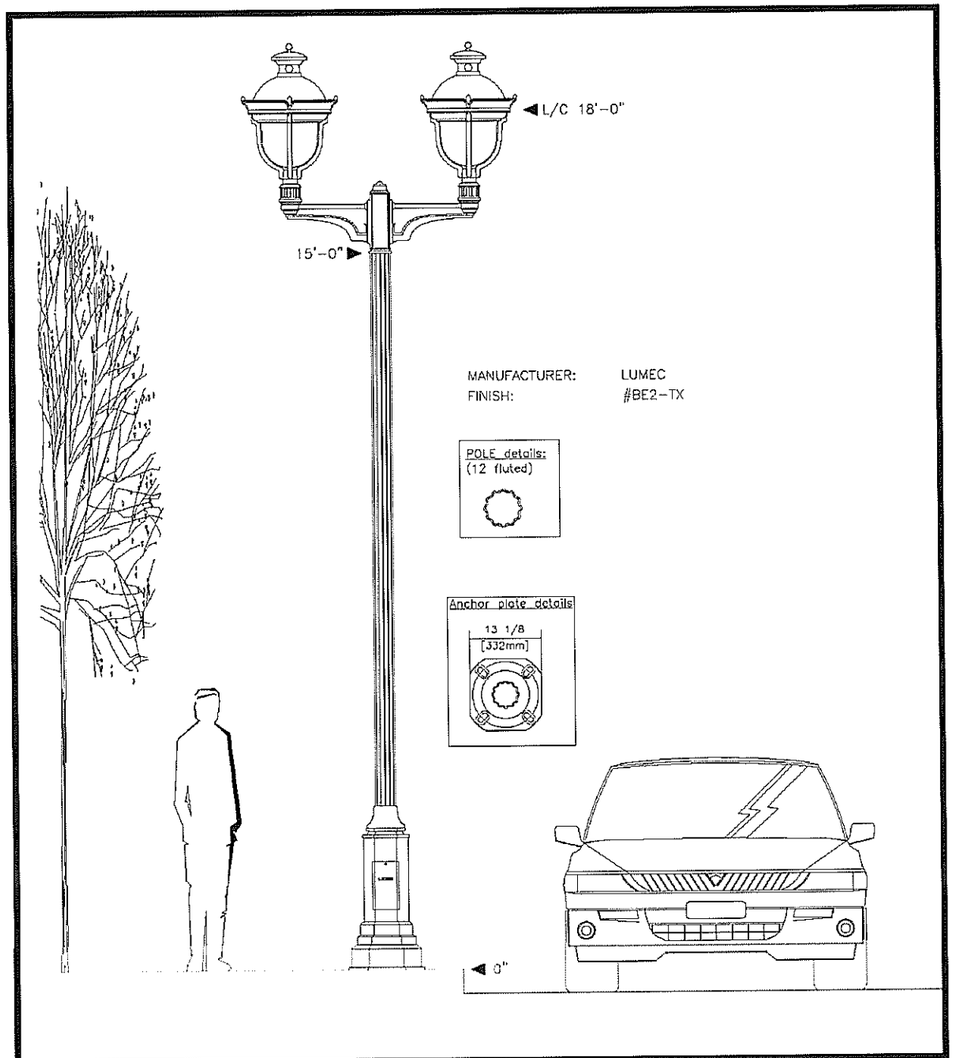
SIDEWALK FIXTURE UNIT
ANCESTRA MODEL - SINGLE LUMINAIRE
WITH 175 WATTS METAL HALIDE
NOT TO SCALE



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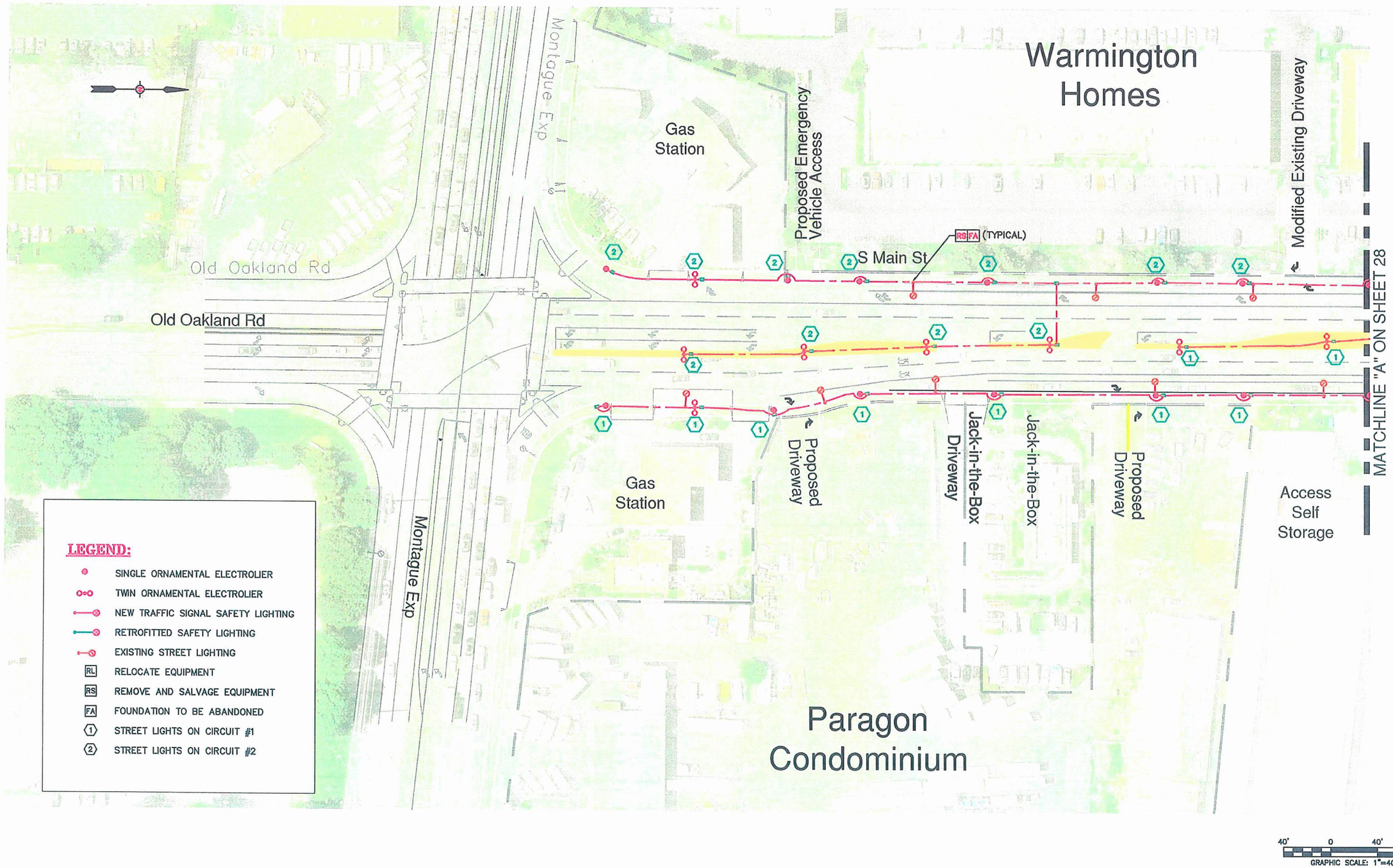
MEDIAN FIXTURE UNIT
ANCESTRA MODEL - TWIN LUMINAIRE
WITH 175 WATTS METAL HALIDE EACH ARM
NOT TO SCALE



Apr 17, 2007 – 6:41pm
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REGISTERED PROFESSIONAL ENGINEER
THOMAS J. KRAKOW
No. C48381
Exp. 06/30/08
CIVIL
STATE OF CALIFORNIA

Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

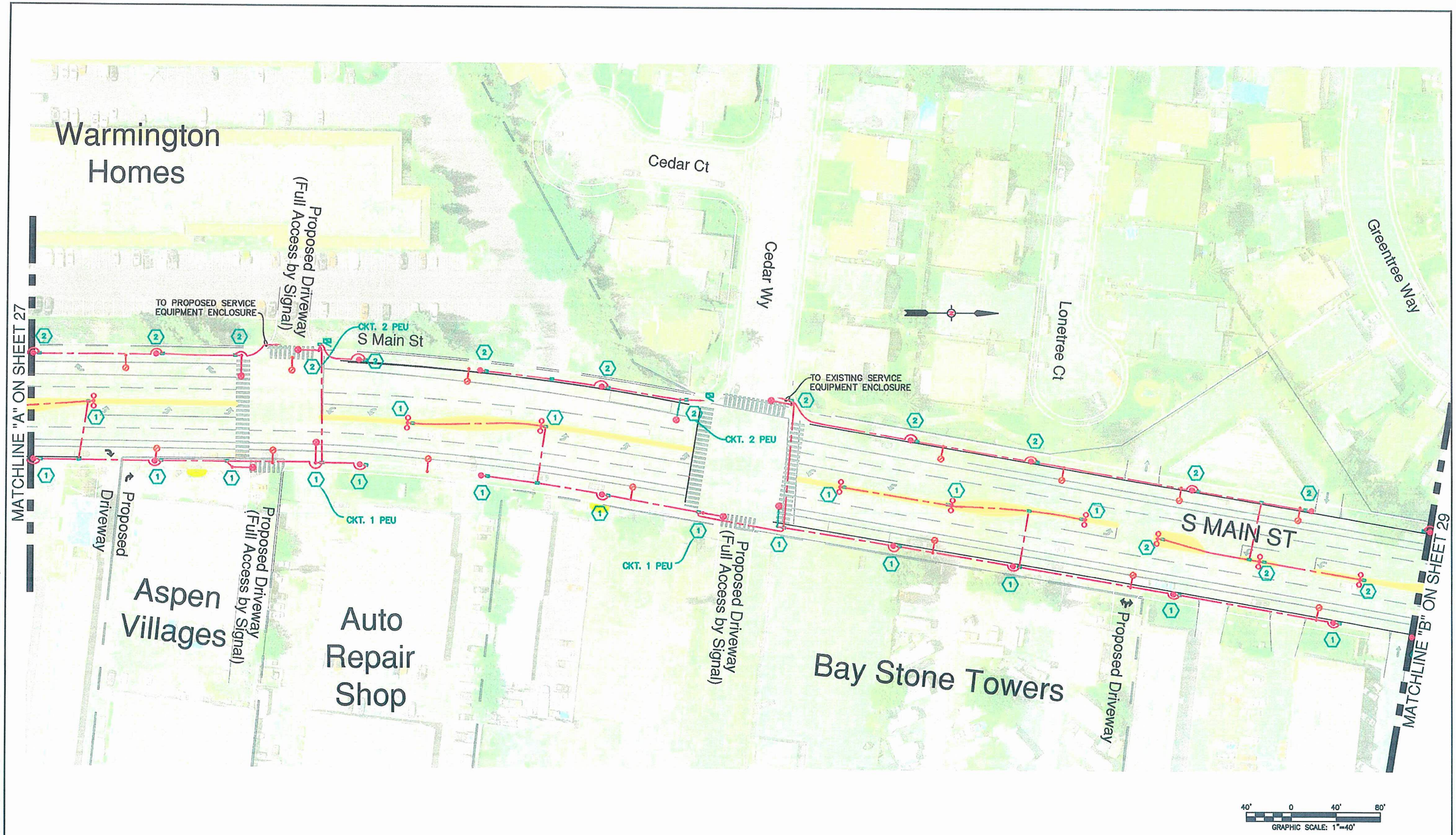
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA
AUTHENTICATED 1954

LIGHTING PLAN 1
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: [signature] for
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 27



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REGISTERED PROFESSIONAL ENGINEER
THOMAS J. KRAKOW
No. C48381
Exp. 06/30/08
CIVIL
STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
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Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

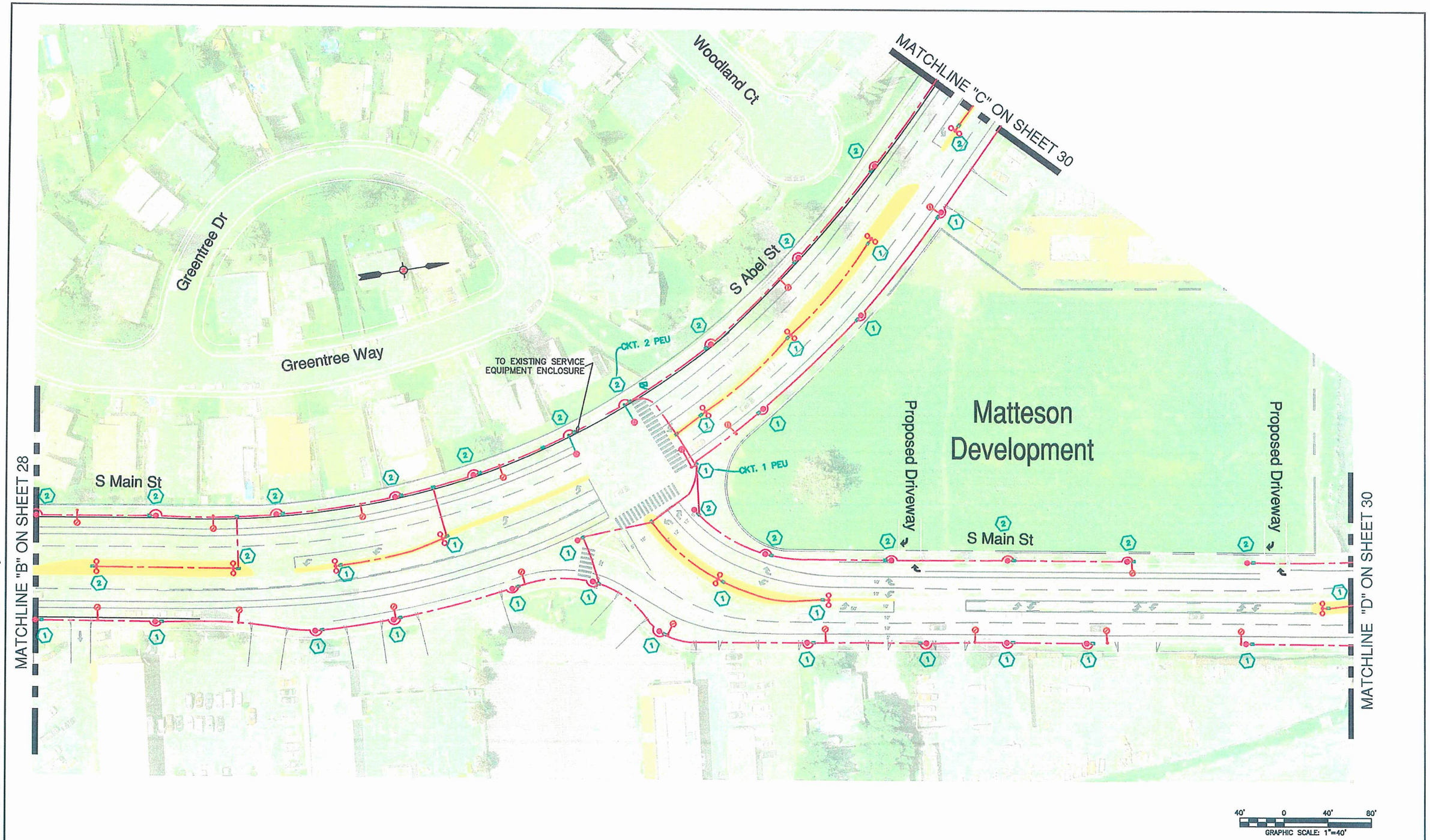
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA
JANUARY 20, 1954

LIGHTING PLAN 2
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/06

PROJECT NO.
CIP NO.
SHEET NO. 28



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THOMAS J. KRAKOW
No. C48381
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CIVIL
STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

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DRAWN BY: FXC/DDM Date: 9-20-06
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DESIGNED BY: WLM Date: 9-20-06

Revisions

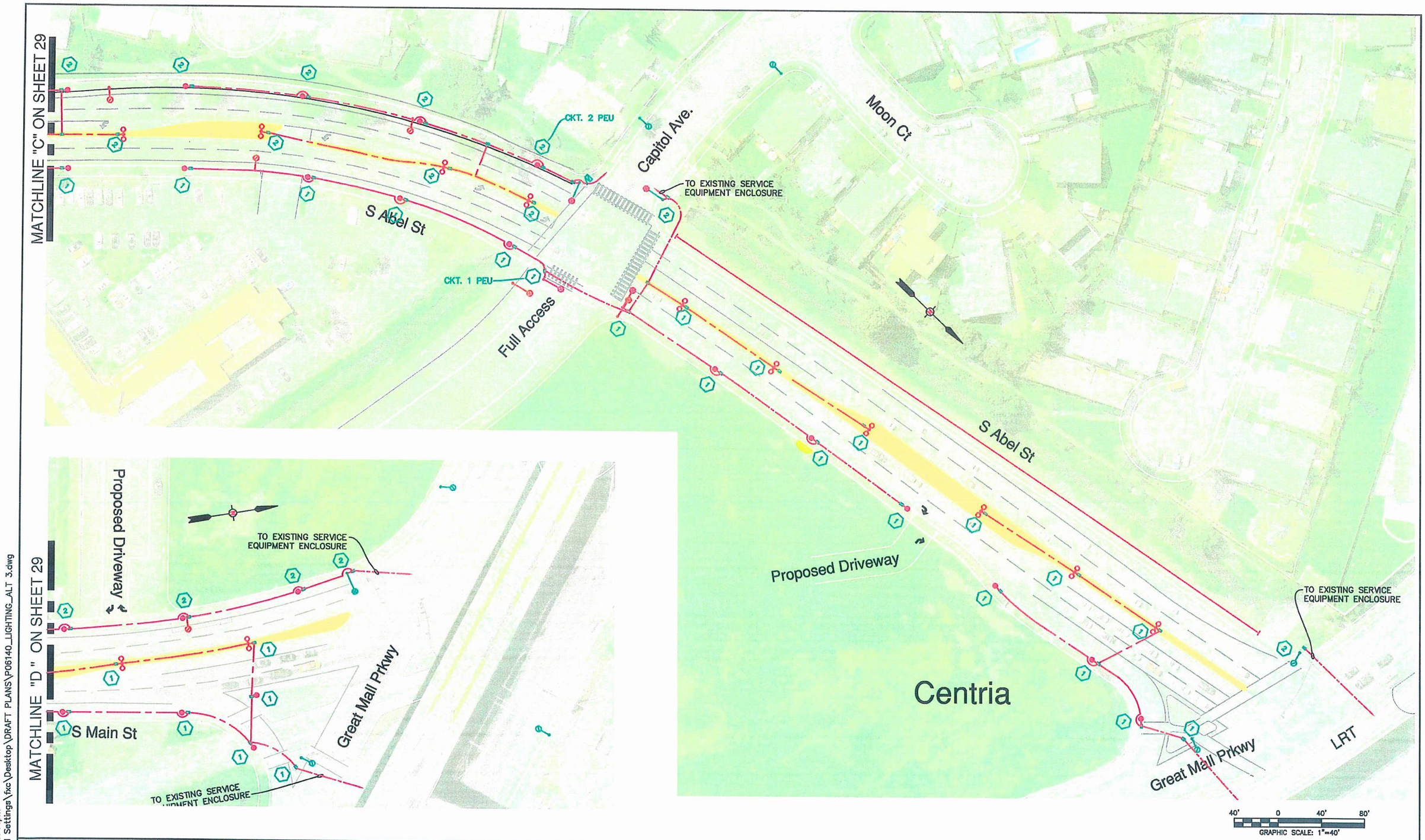
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA

LIGHTING PLAN 3
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: [signature]
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 29



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THOMAS J. KRAKOW
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Exp. 06/30/08
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Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
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DESIGNED BY: WLM Date: 9-20-06

Revisions

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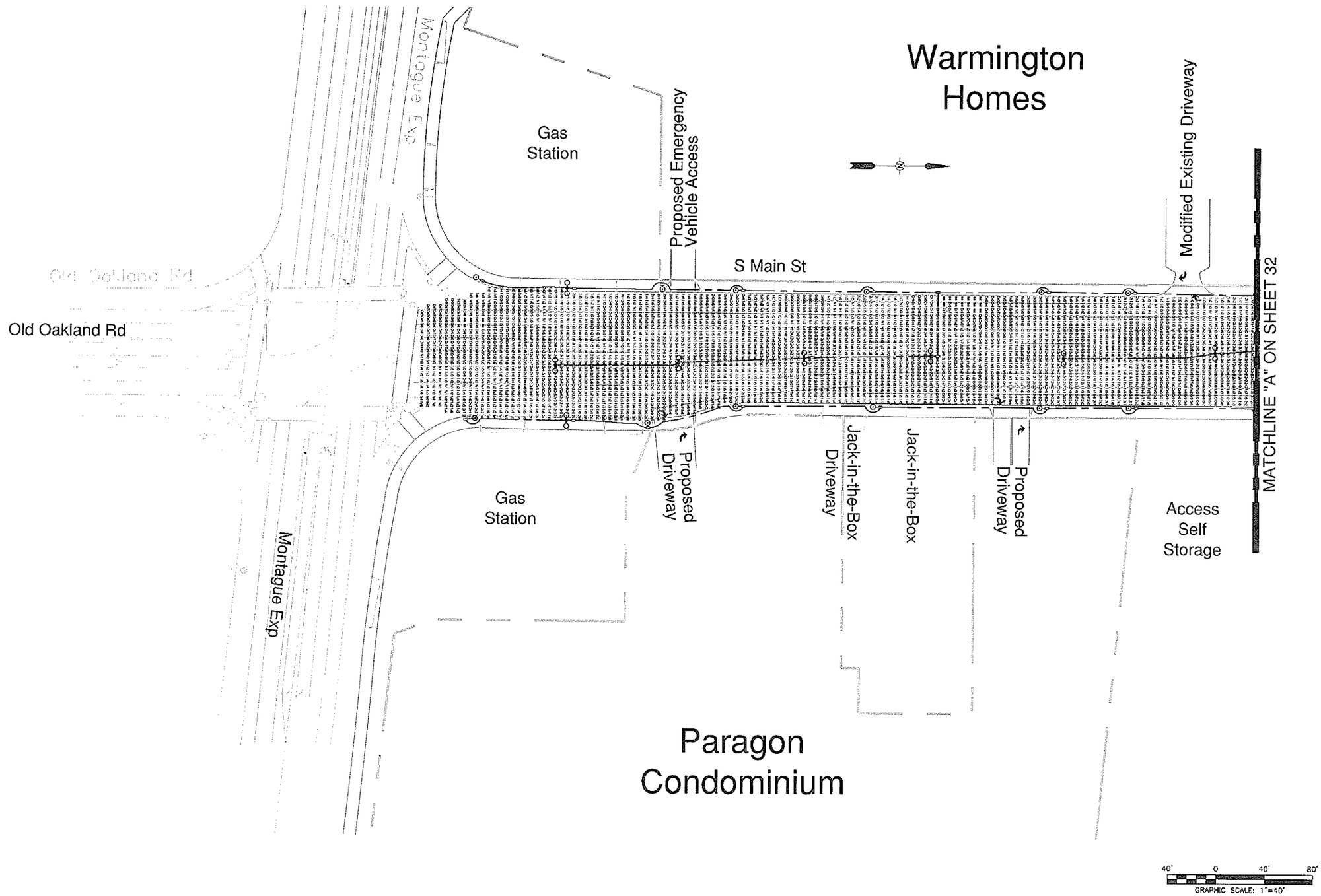
CITY OF MILPITAS
CALIFORNIA

LIGHTING PLAN 4
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____

APPROVED FOR BIDDING BY: _____
GREG ARJENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 30



Apr 18, 2007 – 10:38am
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REGISTERED PROFESSIONAL ENGINEER
THOMAS J. KRAKOW
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Record Drawings

Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC Date: 3-10-07
CHECKED BY: TJK Date: 3-10-07
DESIGNED BY: LHA Date: 3-10-07

Revisions

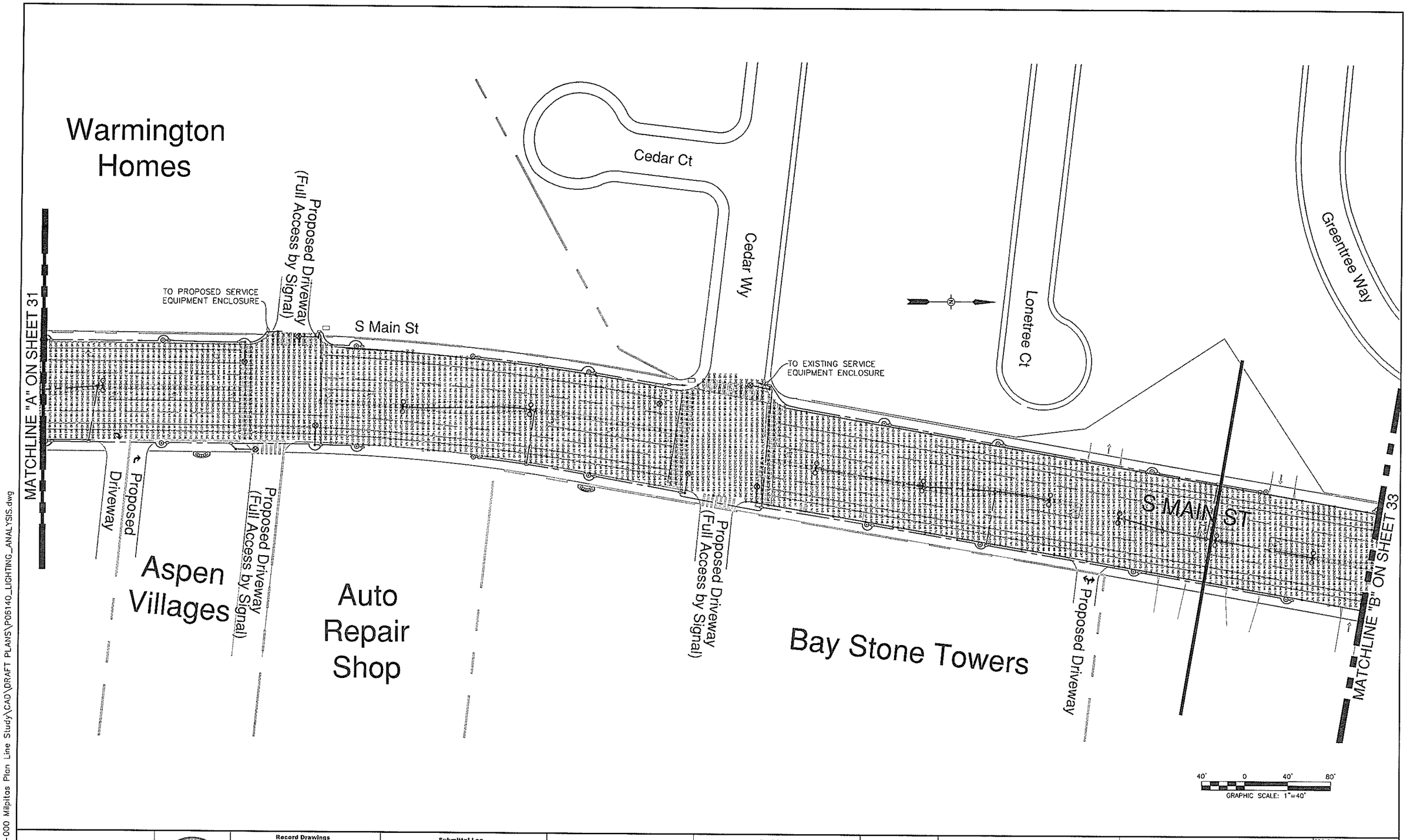
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA
ESTABLISHED 1954

LIGHTING ANALYSIS 1
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____ for
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 31



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Exp. 06/30/08
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STATE OF CALIFORNIA

Record Drawings
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Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
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DRAWN BY: FXC Date: 3-10-07
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CITY OF MILPITAS
CALIFORNIA

LIGHTING ANALYSIS 2
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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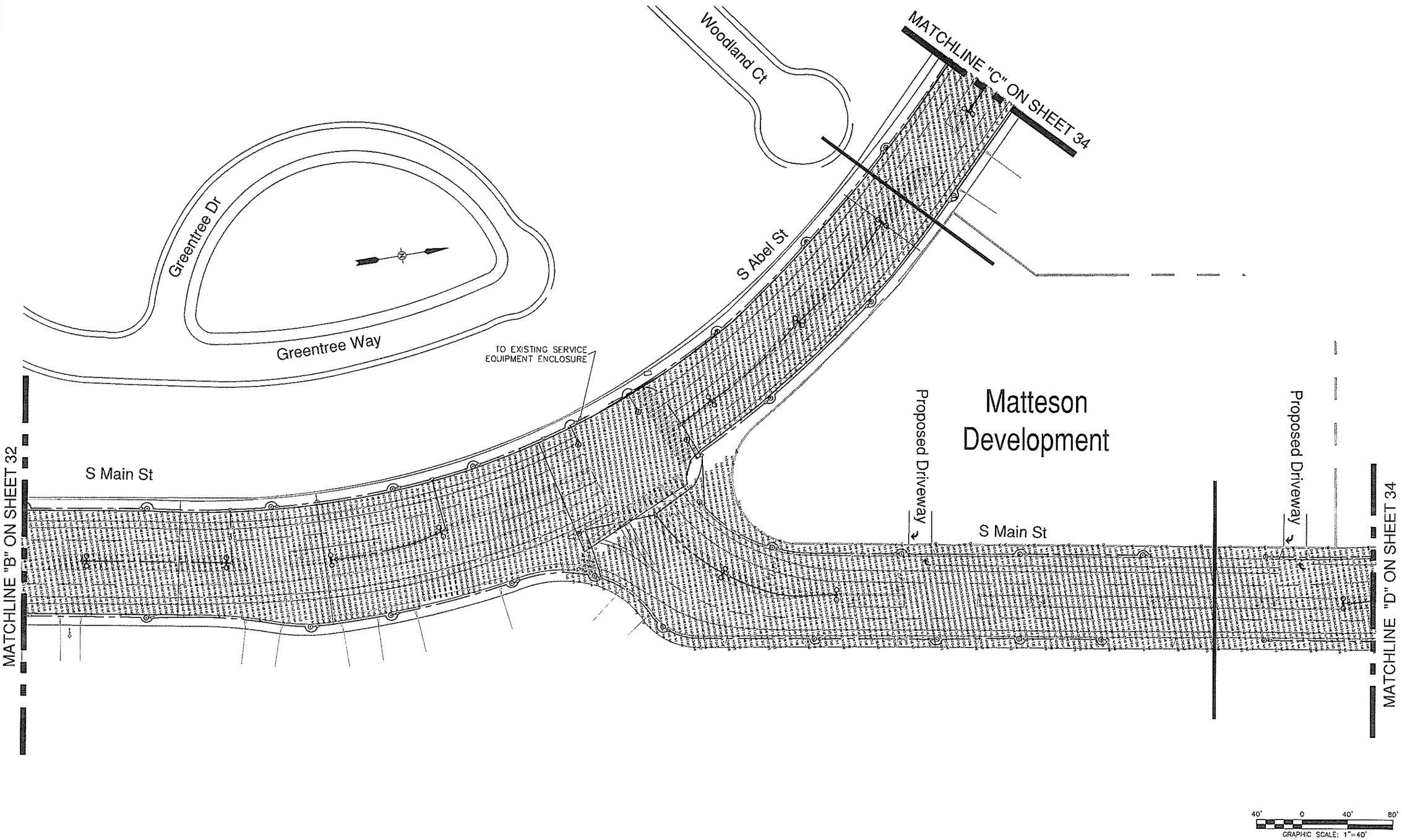
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/17

PROJECT NO.
CIP NO.
SHEET NO. 32



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CITY OF MILPITAS
CALIFORNIA

LIGHTING ANALYSIS 3
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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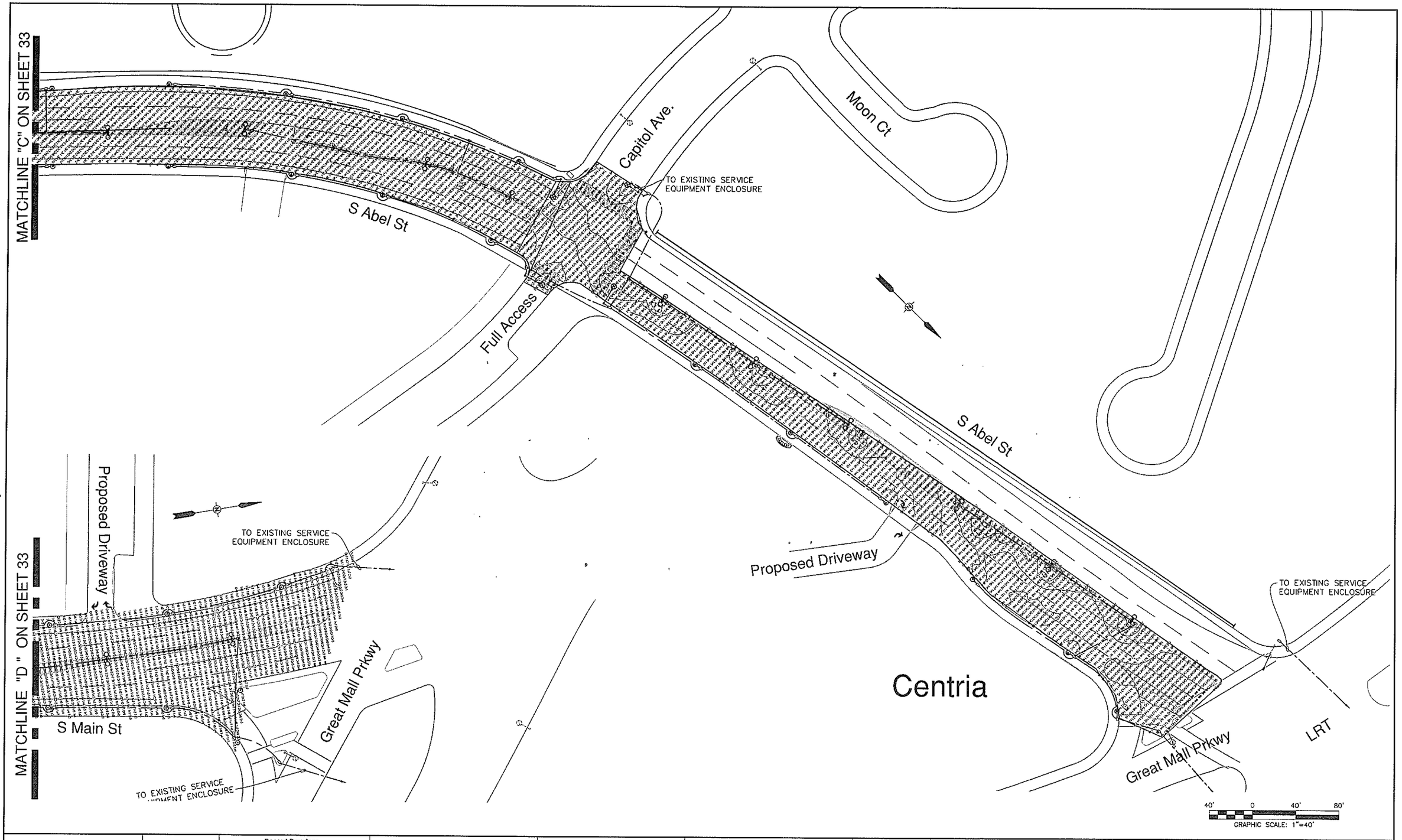
APPROVED FOR BIDDING BY: GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 33



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Revisions

NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA

LIGHTING ANALYSIS 4
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CP NO.
SHEET NO. 34

Pedestrian & Transit Connectivity Plan

Input was received by the Santa Clara County Valley Transportation Authority Transit Planning staff regarding the placement of enhanced transit facilities in the corridor. One bus line – Route 66 travels the corridor in both directions providing connection to an existing transit facility hub at the Great Mall Parkway Light rail transit stop. The enhanced transit stops will provide improved bus waiting conditions for nearby residents to utilize mass transit, in lieu of automobiles. To make the transit stops more user friendly, new transit shelters, meeting ADA requirements are proposed. Seating, transit route information and trash bins are anticipated at these new facilities. High visibility cross walks have been added to the plan at the proposed signalized intersections. This is being proposed as a feature to enhance pedestrian crossing safety. In addition, added illumination of the intersections will also enhance the safety for pedestrians walking to the transit facilities.

The following table depicts all of the transit stops for the corridor which will receive enhancements.

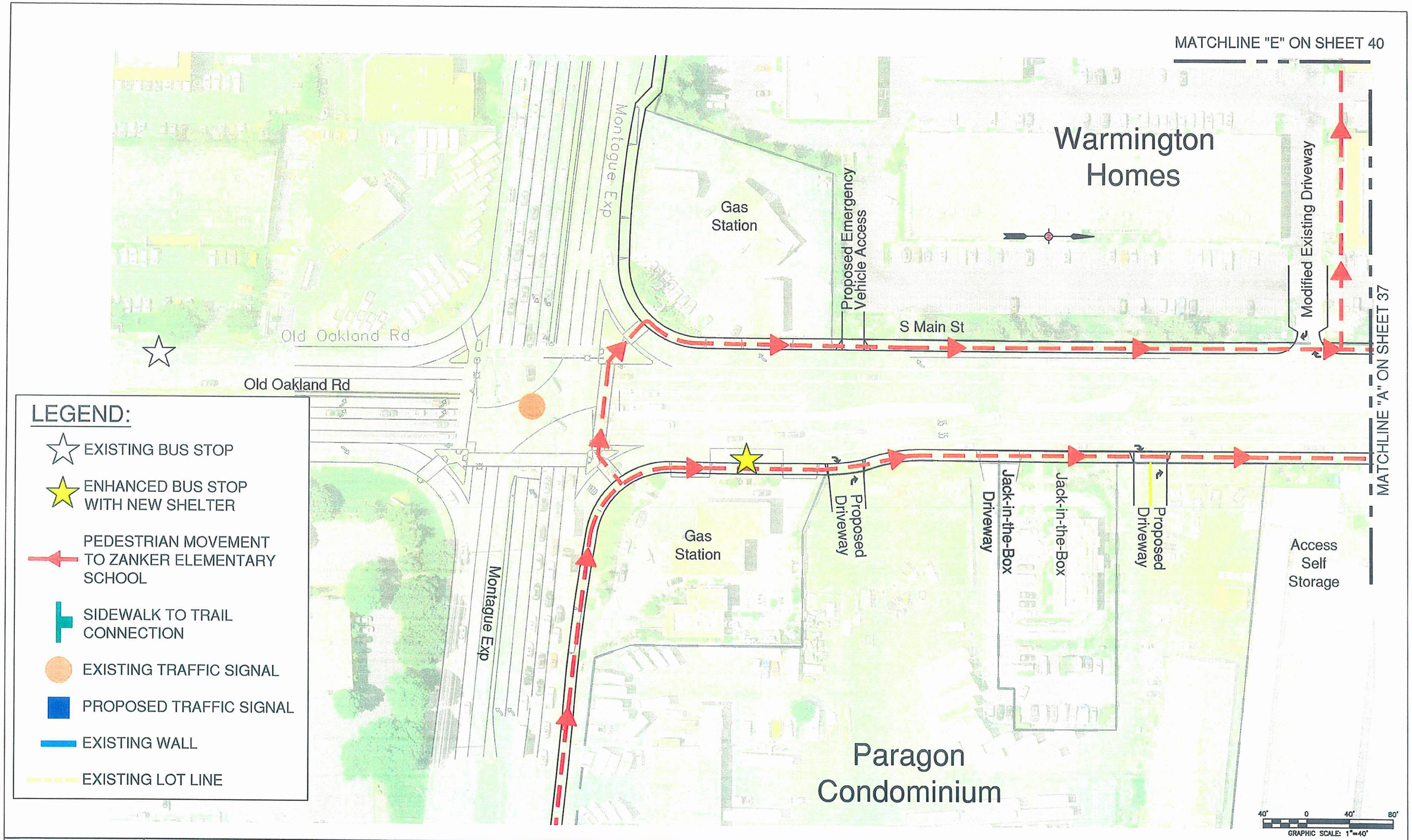
Bus Stop Location Table

Location	Direction	Existing or New
Main Street on far side of intersection of Montague Expressway	Northbound	Existing
Main Street on far side of intersection of Cedar Way	Northbound	Existing
Main Street on the far side of intersection of Cedar Way	Southbound	Existing
Main Street on the near side of intersection of Abel Street	Northbound	Existing
Main Street on the far side of intersection of Abel Street	Southbound	Existing
Main Street on the far side of intersection of Great Mall Parkway	Southbound	Existing

The pedestrian connectivity plan includes the addition of traffic signal controlled crosswalks near transit stops along this study area. Additional street intersections with traffic signals and marked crosswalks provide improved street crossing opportunities. Sidewalk paths of travel have been enhanced in the plan with 10 feet wide sidewalks and three pedestrian friendly sitting areas interspersed along S. Main Street and S. Abel Street.

Seating Area Table

Side of Street	General Location
East side of Main Street	Mid-block near Aspen Villages Driveway
East side of Main Street	Near side of intersection with Cedar Way
East side of Abel Street	North of Capital Avenue in front of Centria Development



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REGISTERED PROFESSIONAL ENGINEER
THOMAS J. KRAKOW
No. C48381
Exp. 06/30/08
CIVIL
STATE OF CALIFORNIA

Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
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Revisions

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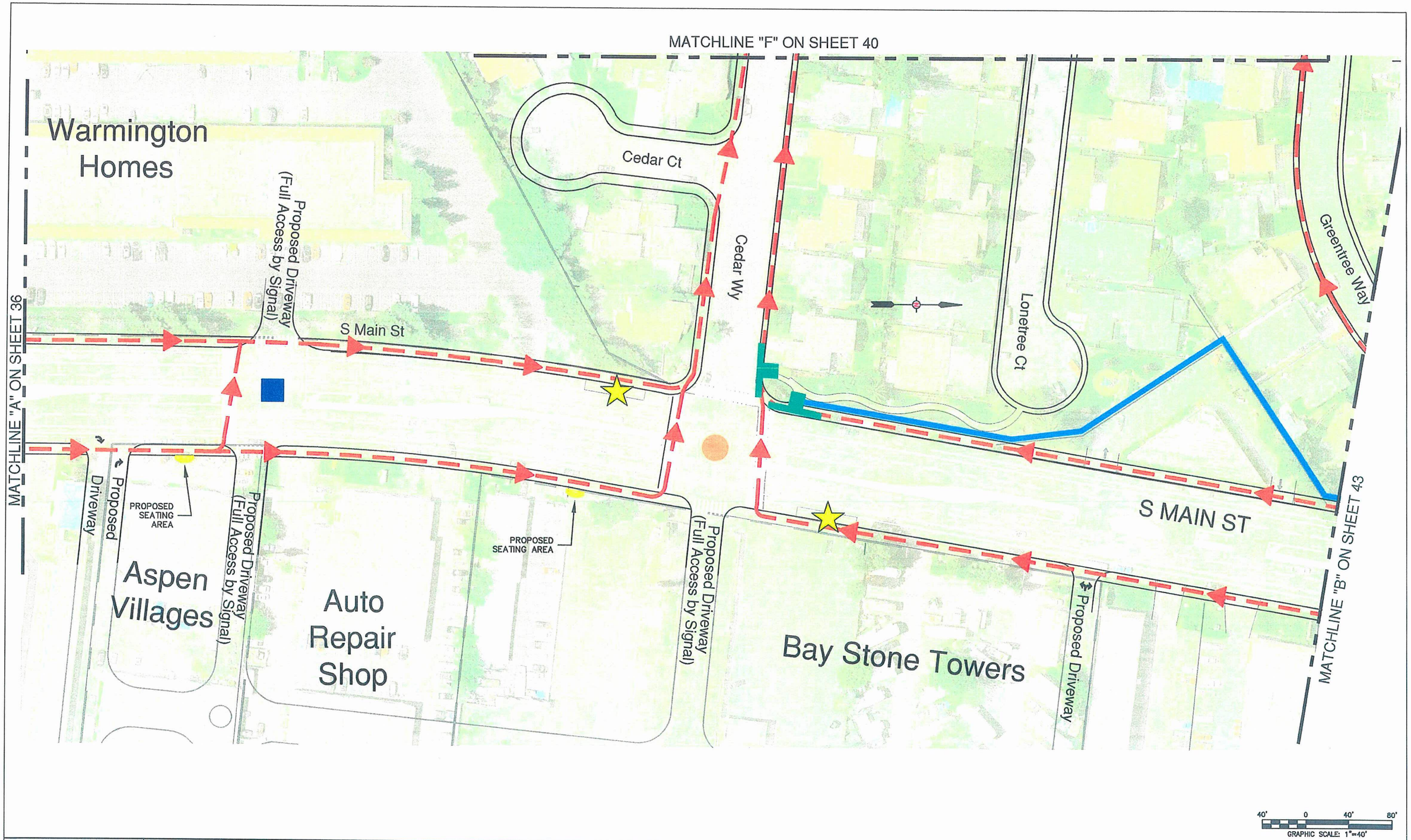
CITY OF MILPITAS
CALIFORNIA

PEDESTRIAN CONNECTIVITY PLAN 1
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 36



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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

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Project Engineer: _____ Date: _____
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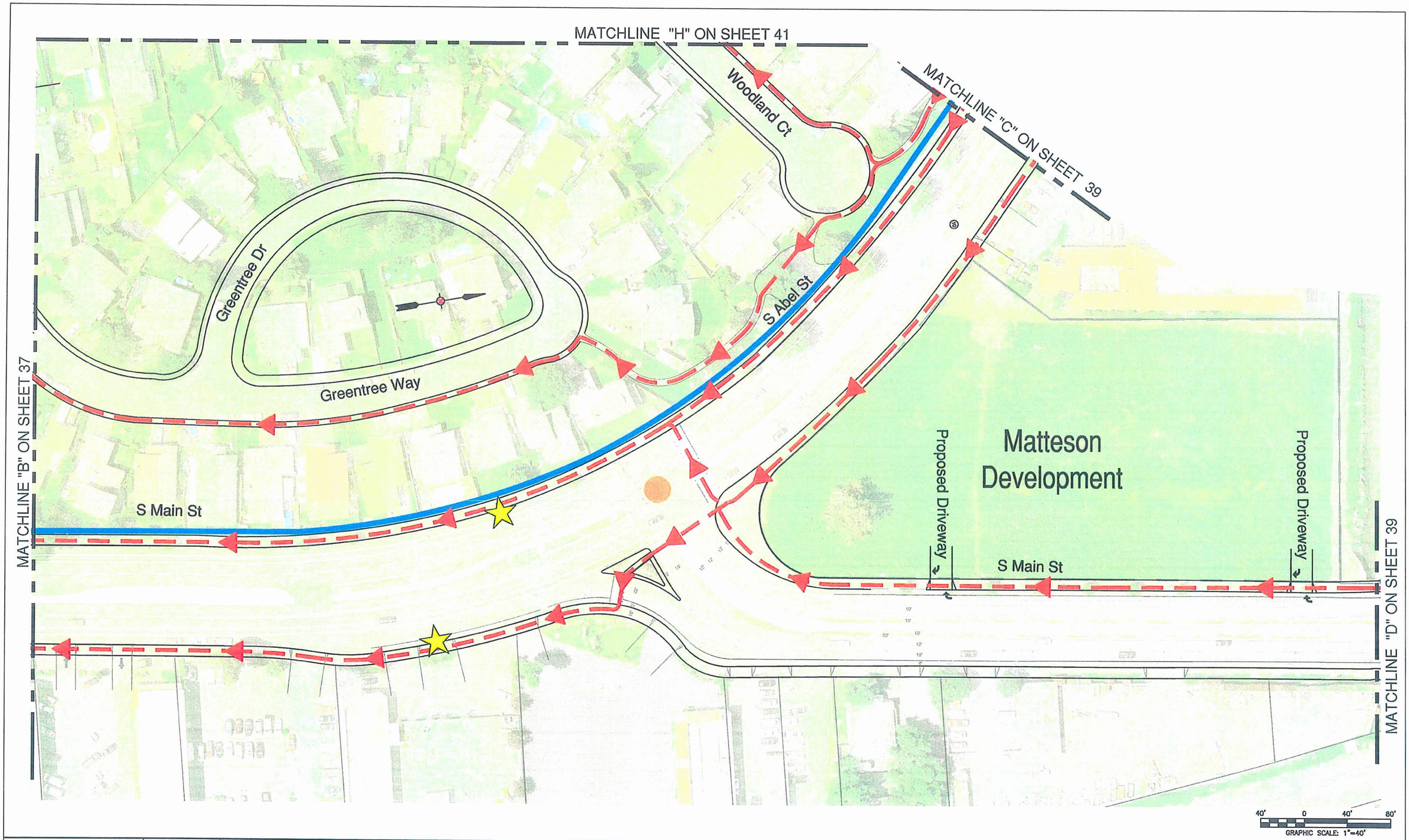
CITY OF MILPITAS
CALIFORNIA
AUTHORIZED 1954

PEDESTRIAN CONNECTIVITY PLAN 2
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____ for
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 37



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REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
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Public Improvements Initially Accepted by the City Council on: _____

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CITY OF MILPITAS
CALIFORNIA
ESTABLISHED 1954

PEDESTRIAN CONNECTIVITY PLAN 3
MILPITAS PLAN LINE STUDY

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DATE: _____
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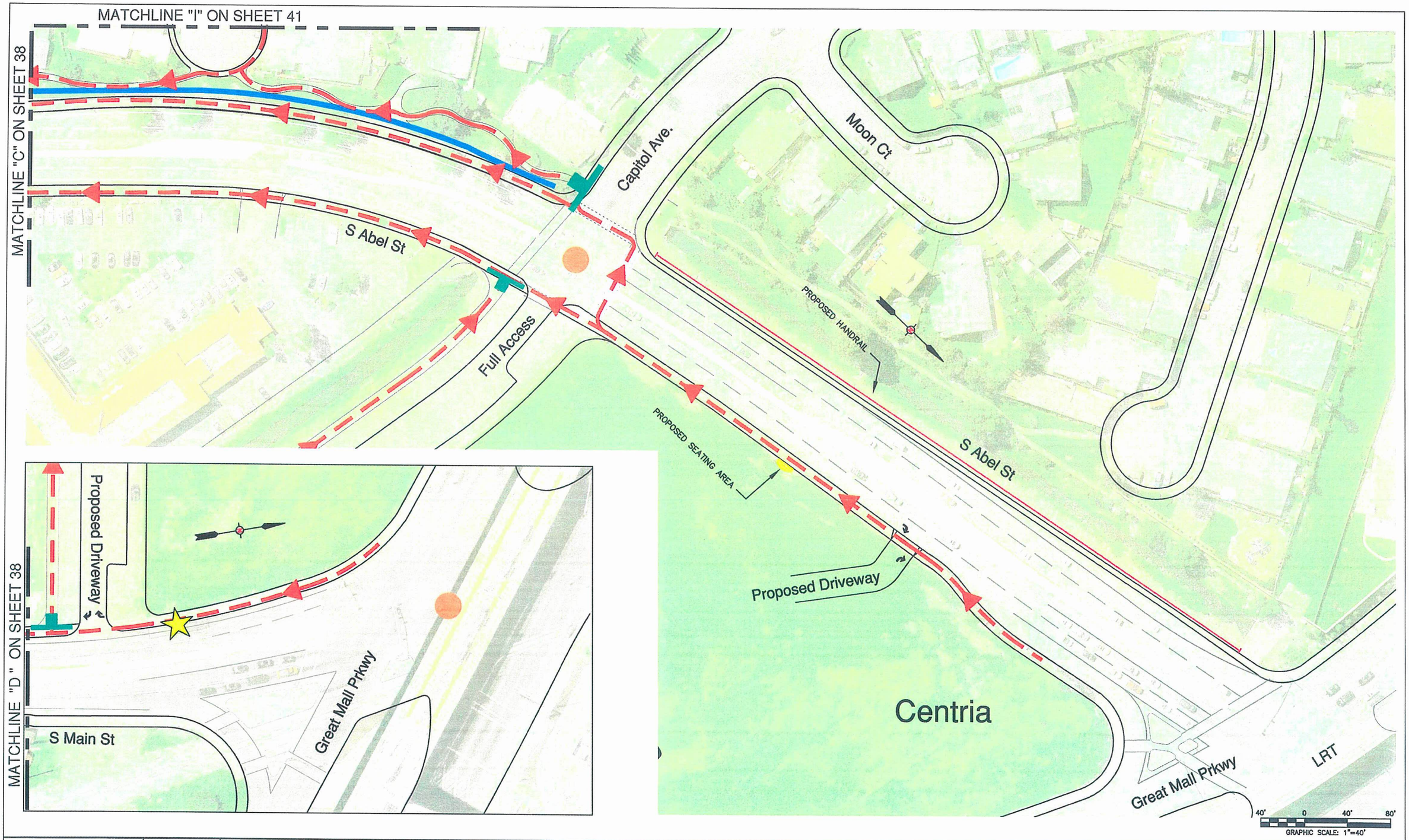
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 38



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REGISTERED PROFESSIONAL ENGINEER
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CITY OF MILPITAS
CALIFORNIA

PEDESTRIAN CONNECTIVITY PLAN 4
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____ for
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO.
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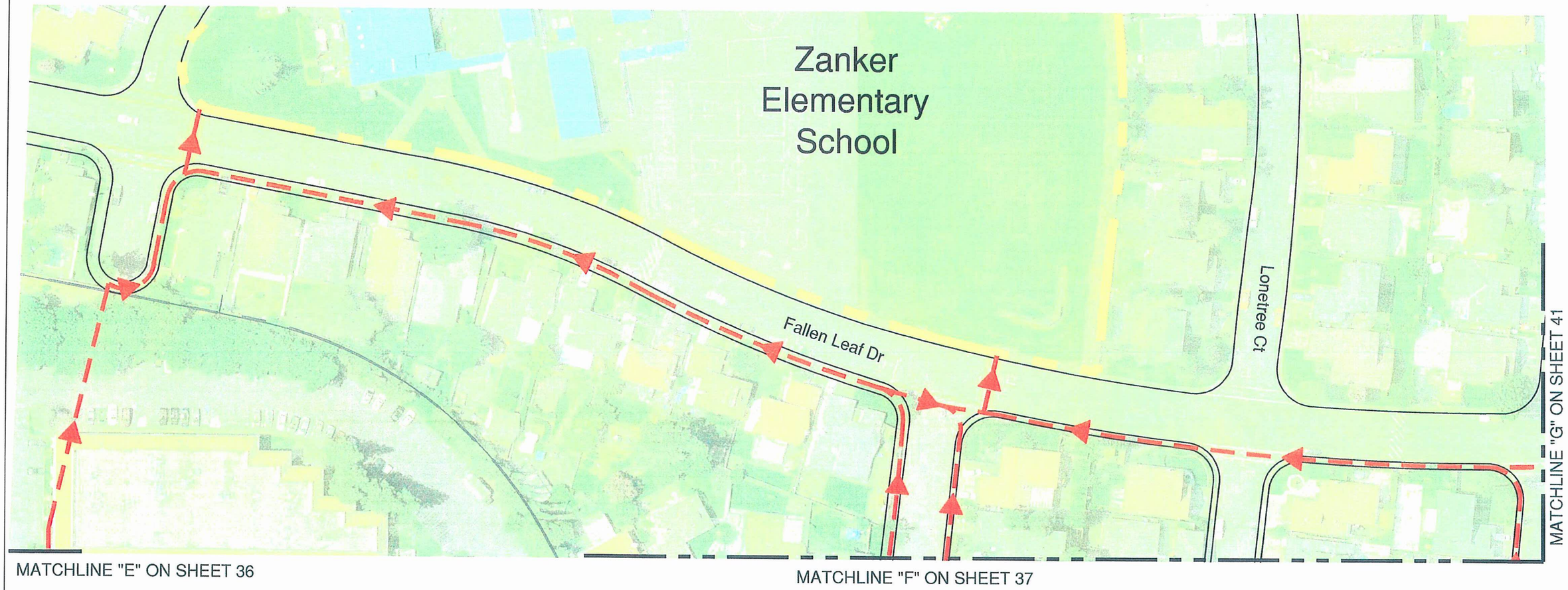

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GRAPHIC SCALE: 1"=40'

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REGISTERED PROFESSIONAL ENGINEER
THOMAS J. KRAKOW
No. C48381
Exp. 06/30/08
CIVIL
STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

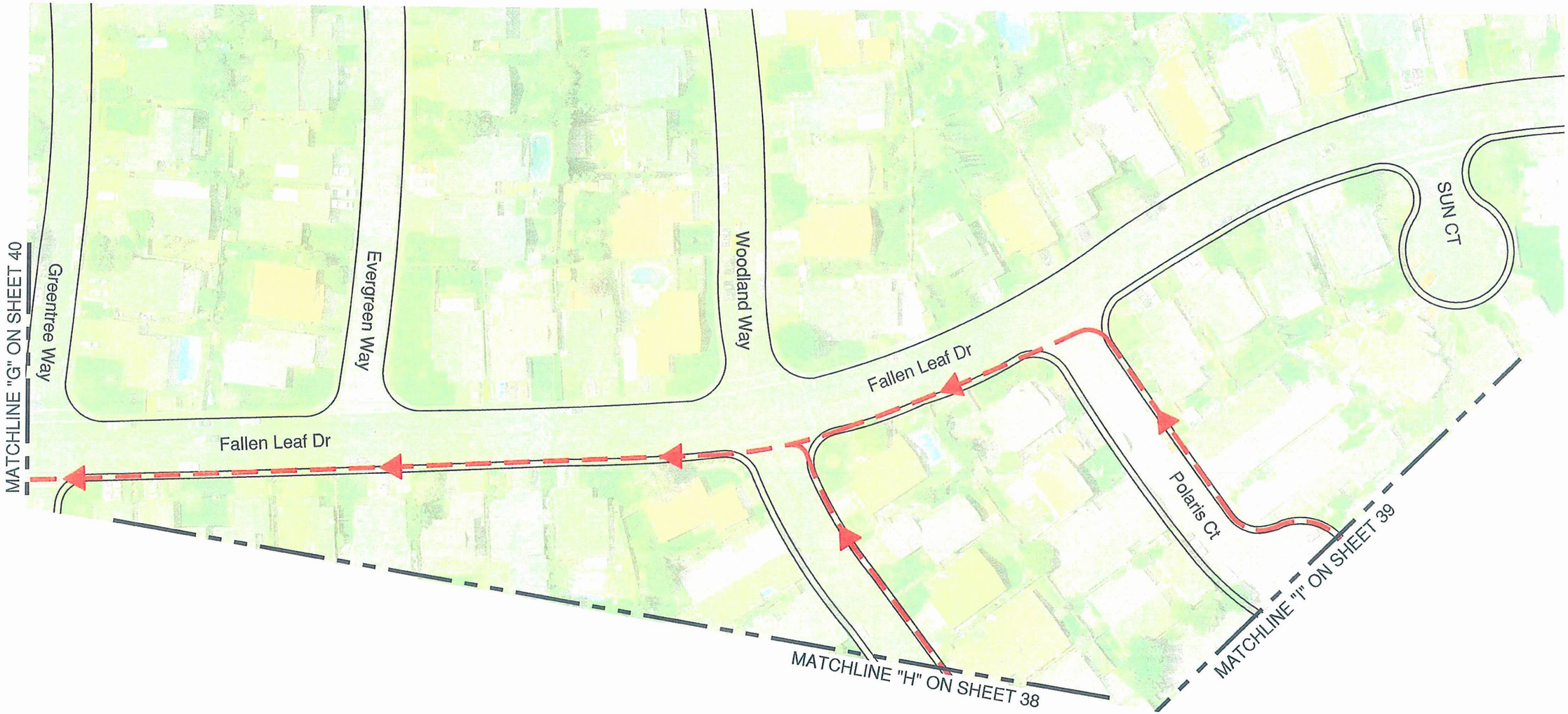
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA
JANUARY 20, 1954

PEDESTRIAN CONNECTIVITY PLAN 5
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 40



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CIVIL
STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

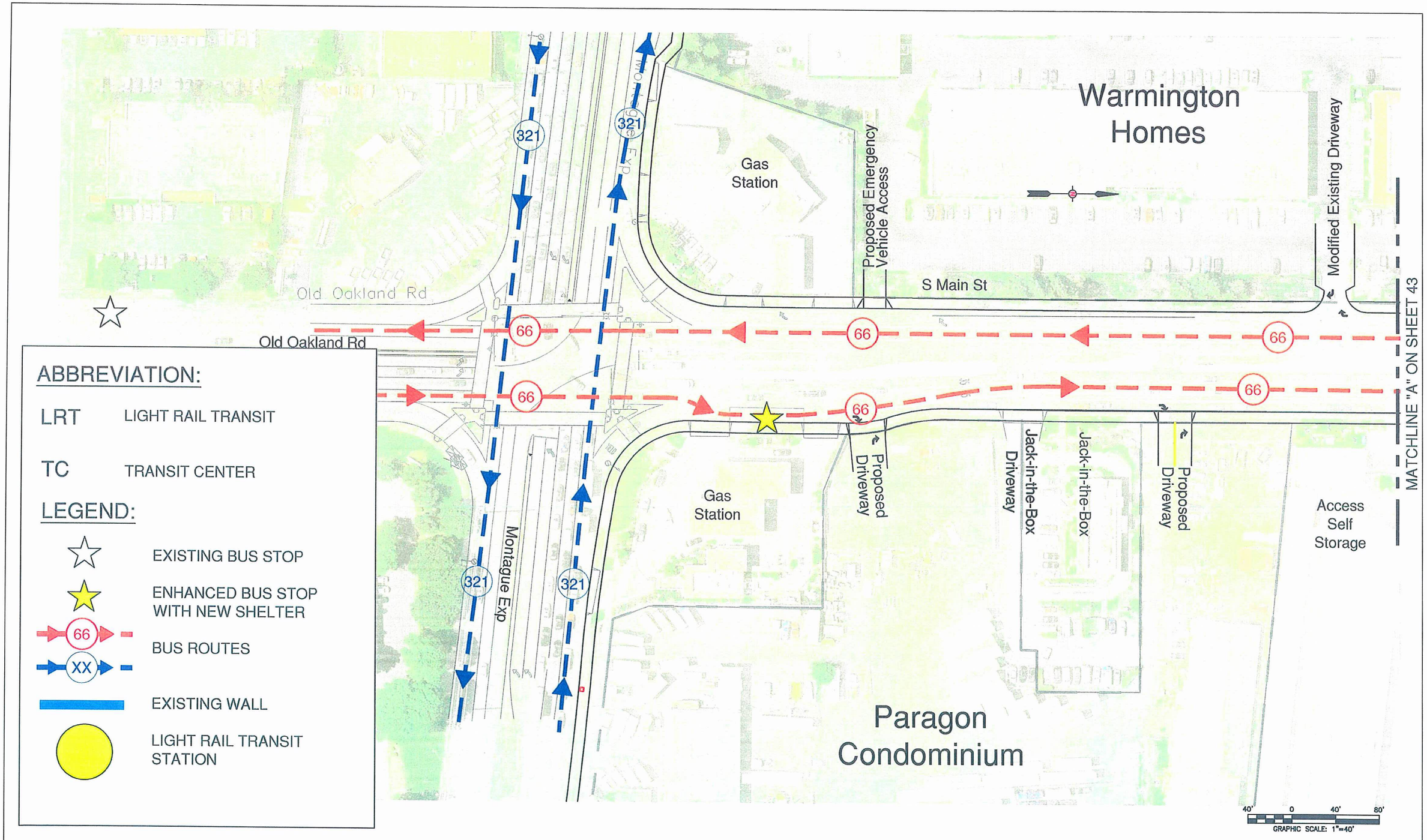
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA

PEDESTRIAN CONNECTIVITY PLAN 6
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 41



ABBREVIATION:

LRT LIGHT RAIL TRANSIT

TC TRANSIT CENTER

LEGEND:

EXISTING BUS STOP

ENHANCED BUS STOP WITH NEW SHELTER

66 BUS ROUTES

XX

EXISTING WALL

LIGHT RAIL TRANSIT STATION

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REGISTERED PROFESSIONAL ENGINEER THOMAS J. KRAKOW No. C48361 Exp. 06/30/08 CIVIL STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____

Designer: _____ Date: _____

Public Works Inspector: _____ Date: _____

Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

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DRAWN BY: FXC/DDM Date: 9-20-06

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DESIGNED BY: WLM Date: 9-20-06

Revisions

NO.	DESCRIPTION	DATE

CITY OF MILPITAS CALIFORNIA

TRANSIT CONNECTIVITY PLAN 1
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____

DATE: _____

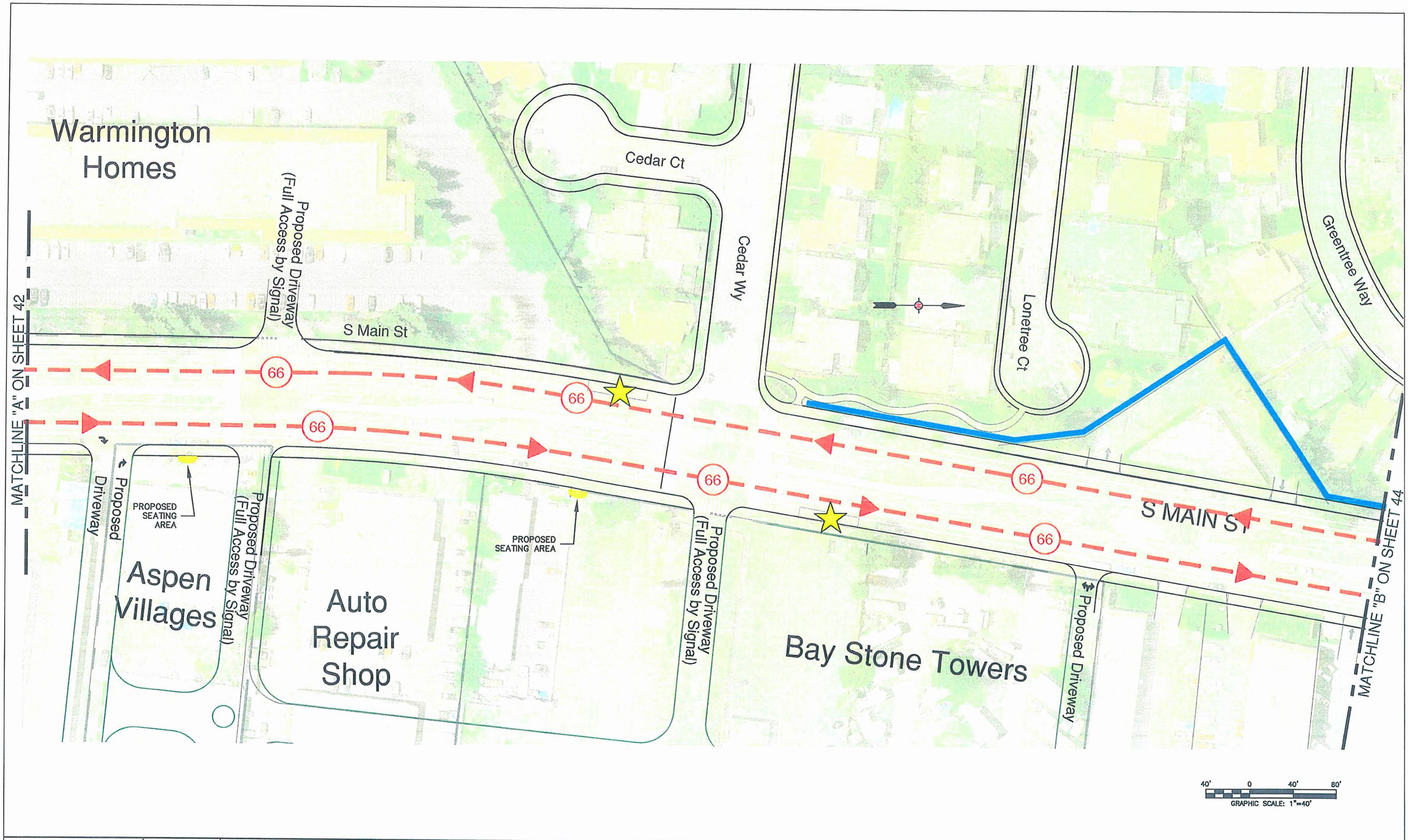
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER

DATE: 12/21/10

PROJECT NO.

CIP NO.

SHEET NO. 42



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Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

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DESIGNED BY: WLM Date: 9-20-06

Revisions

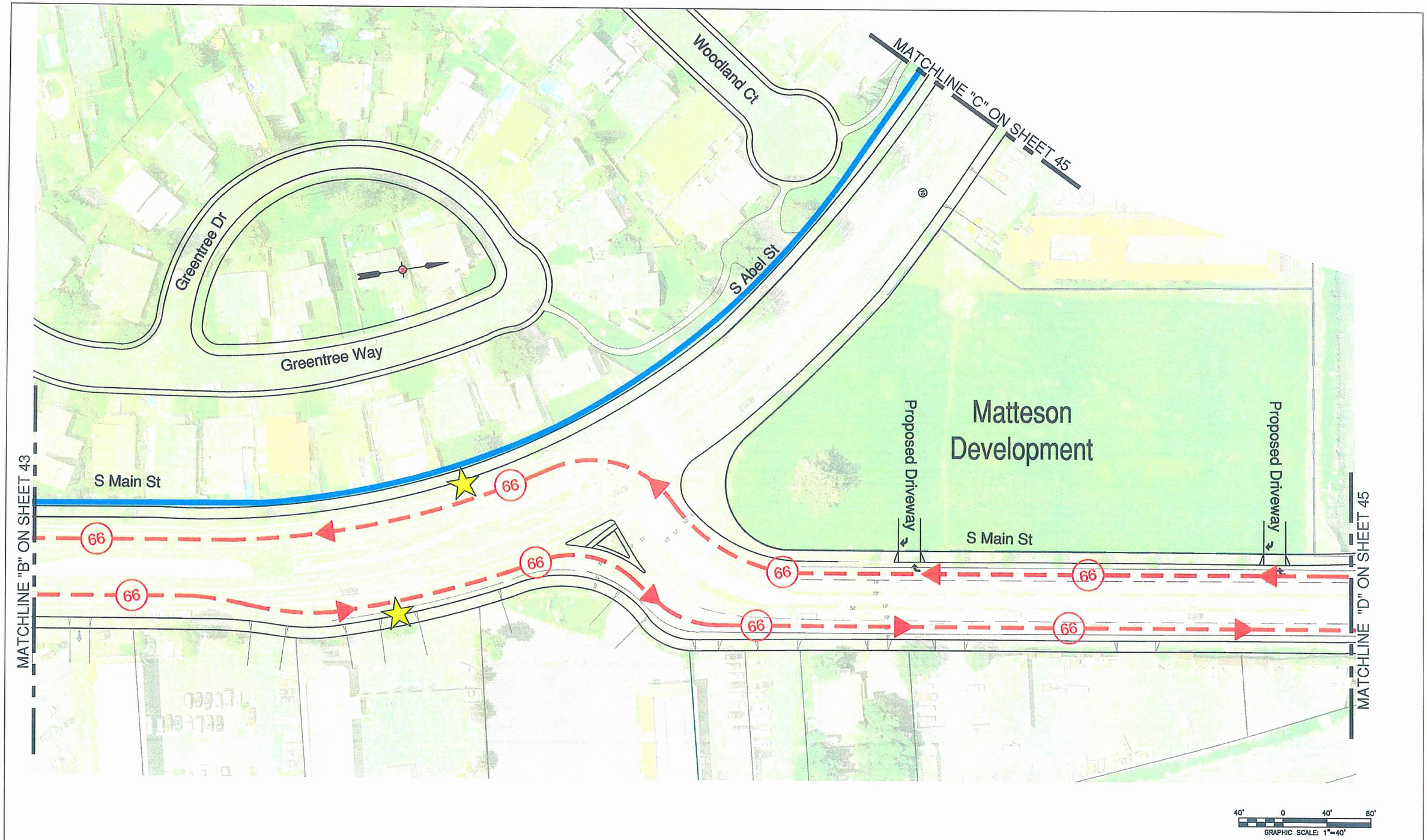
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA
JANUARY 20, 1954

TRANSIT CONNECTIVITY PLAN 2
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 43



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Exp. 06/30/08
CIVIL
STATE OF CALIFORNIA

Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
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DESIGNED BY: WLM Date: 9-20-06

Revisions

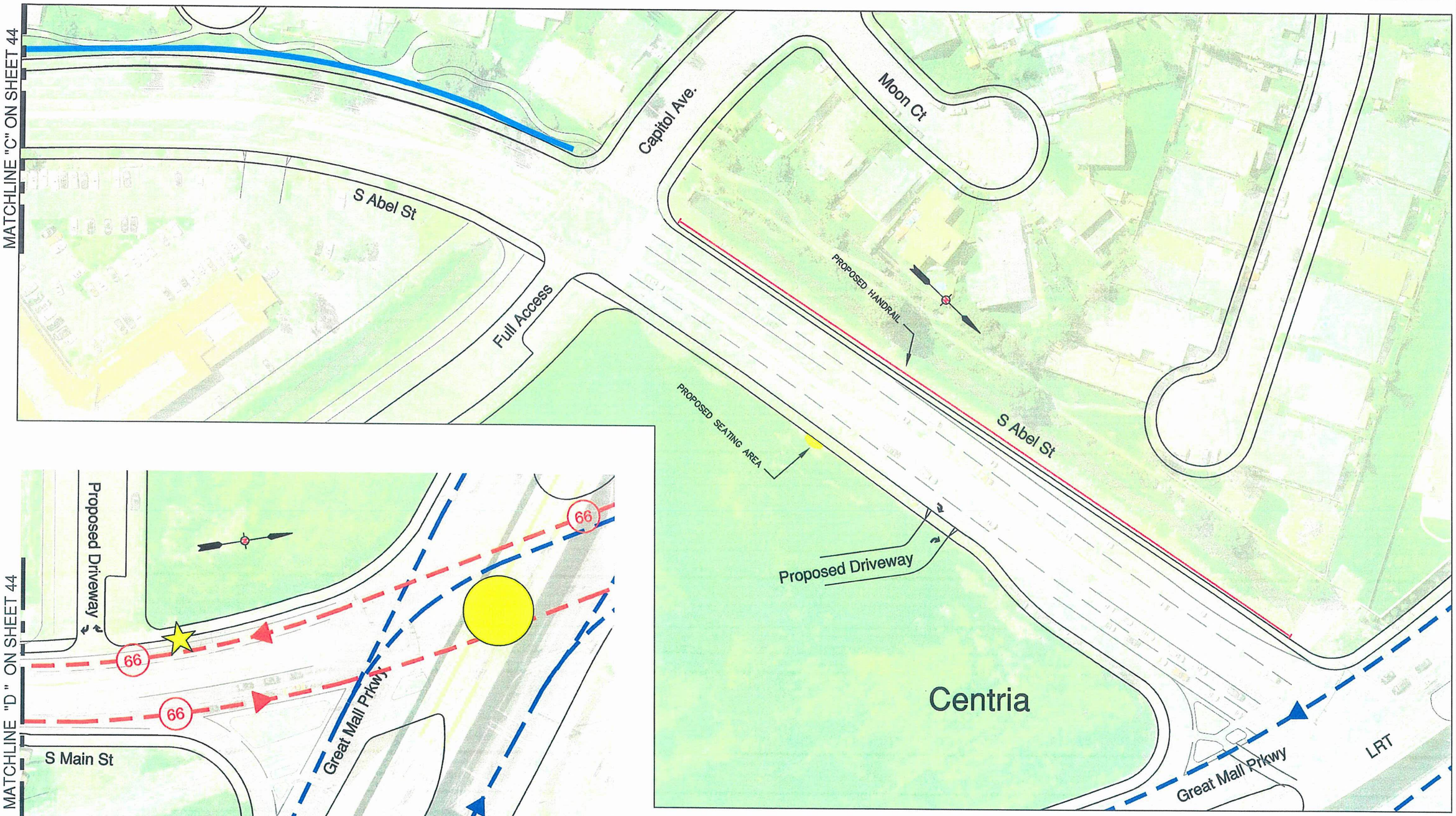
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA

TRANSIT CONNECTIVITY PLAN 3
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 44



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REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

Record Drawings
Project Engineer: _____ Date: _____
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Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

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CITY OF MILPITAS
CALIFORNIA

TRANSIT CONNECTIVITY PLAN 4
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 45

Project Cost Analysis

An engineer's estimate of probable cost was developed to determine the basis of the costs for the major components of the project. The project cost analysis includes several segments, which are described in the following tables. The following estimate includes a contingency of 30%, the median cost has been split into eight segments; the figure on page 48 depicts the locations of these medians. The costs for all median improvements except Median A-7, are included in the cost for the in-lieu fee funding program, discussed in the next section. The descriptions and costs of median improvements are as follows:

Item	Description	Cost
1	Median A-1 Estimate (S.Main Street from Montague Expressway to Cedar Avenue.)	$ 535,690.00
2	Median A-2 Estimate (S.Main Street from Cedar Avenue. to Northern Edge of Baystone Towers Project)	$ 118,720.00
3	Median A-3 Estimate (S.Main Street from Northern Edge of Baystone Towers Project to S.Abel Street)	$ 377,000.00
4	Median A-4 Estimate (S.Main Street from S.Abel Street to Northern Edge of Matteson)	$ 251,280.00
5	Median A-5 Estimate (S.Main Street Centria Frontage)	$ 169,340.00
6	Median A-6 Estimate (S.Abel Street from S.Main Street to Northern Edge of Matteson)	$ 223,600.00
7	Median A-7 Estimate (S.Abel Street from Northern Edge of Matteson to Capitol Avenue.)	$ 220,690.00
8	Median A-8 Estimate (S.Abel Street Centria Frontage)	$ 401,680.00

The total cost of median improvements is $2,298,000.

The cost of sidewalk improvements has been broken down into seventeen segments. The descriptions and costs of the street improvements are as follows:

Item	Description	Cost
9	Aspen Villages Sidewalk Improvement (S.Main Street - East Side)	$ 43,060.00
10	Warmington Family Sidewalk Improvement (S.Main Street - West Side)	$ 511,460.00
11	Paragon Sidewalk Improvement (S.Main Street - East Side)	$ 147,670.00
12	Baystone Sidewalk Improvements (S.Main Street - East Side)	$ 257,140.00
13	Matteson Sidewalk Improvement (S.Main Street - West Side and S.Abel Street - East Side)	$ 357,860.00
14	Future Development Sidewalk Improvements between Aspen Family and Baystone (S.Main Street - East Side)	$ 93,800.00
15	Future Development Sidewalk Improvements between Baystone and S.Abel Street (S.Main Street - East Side)	$ 246,470.00
16	Future Development Sidewalk Improvements along East side of S.Main Street between S.Abel Street and Great Mall Parkway.*	$ 279,470.00
17	Undevelopable Sidewalk Improvements along West side of S.Main Street between Cedar Way and Abel Street	$ 210,860.00
18	Undevelopable Sidewalk Improvements along West side of S.Abel Street between Main Street and Capitol Avenue.	$ 179,710.00
19	Undevelopable Sidewalk Improvements (Including Street Lighting) along West side of S.Abel Street between Capitol Avenue. and Great Mall Parkway. Without Landscaping.*	$ 200,720.00
20	Sidewalk Improvement in front of Jack-in-the-Box along East side of S.Main Street	$ 52,300.00
21	Sidewalk Improvement in front of Access Self Storage** along East side of S.Main Street	$ 75,570.00
22	Gateway Enhancements on Montague Expresswayy/S.Main Street and S.Abel Street/S.Main Street	$ 41,120.00
23	East sidewalk of S.Abel Street between Northern boundary of Matteson and Capitol Avenue	$ 173,920.00
24	Frontage Improvement of Gas Station next to Warmington	$ 81,290.00
25	Frontage Improvement of Gas Station next to Paragon	$ 90,230.00

* Due to uncertainties of future developments, the estimate of this area is based on the area unit cost of Sidewalk Estimate 1

** Access Self Storage between Paragon and Aspen Villages

The total cost of sidewalk improvements is $3,042, 700.

The cost of traffic signal installation has been split into two segments for two intersections depicted as follows:

Item	Description	Cost
26	Traffic Signal Installation at S.Main Street and Warmington-Aspen Family	$ 325,000.00
27	Traffic Signal Installation at S.Main Street and S.Abel Street	$ 350,000.00

The total cost of traffic signal installation is $675,000.

The cost of street furniture consists of six items described in the following table. The construction of bus shelters and sets of seating require easement purchase, which is not accounted for in this estimate.

Item	Description	Cost
28	Six Bus Shelters	$ 45,825.00
29	Six Bollards (Two for Each Seating Area)	$ 7,971.60
30	Nine Trash Receptacle (One for Each Seating Area, One for Each Bus Shelter)	$ 4,095.00
31	Three Sets of Six Seating	$ 15,600.00
32	5' X 5' Tree grate (For Trees on Sidewalk)	$ 138,000.00
33	Tree Guard (For Trees on Sidewalk)	$ 64,400.00

The total cost of street furniture is $275,900.

Handrail shall be installed to divide the sidewalk area on the East side of S.Abel Street and the creek behind the back of walk. The cost and description of handrail are as follows:

Item	Description	Cost
34	Handrail along East side of S.Abel Street from Great Mall Parkway to Capitol Avenue	$ 48,375.00

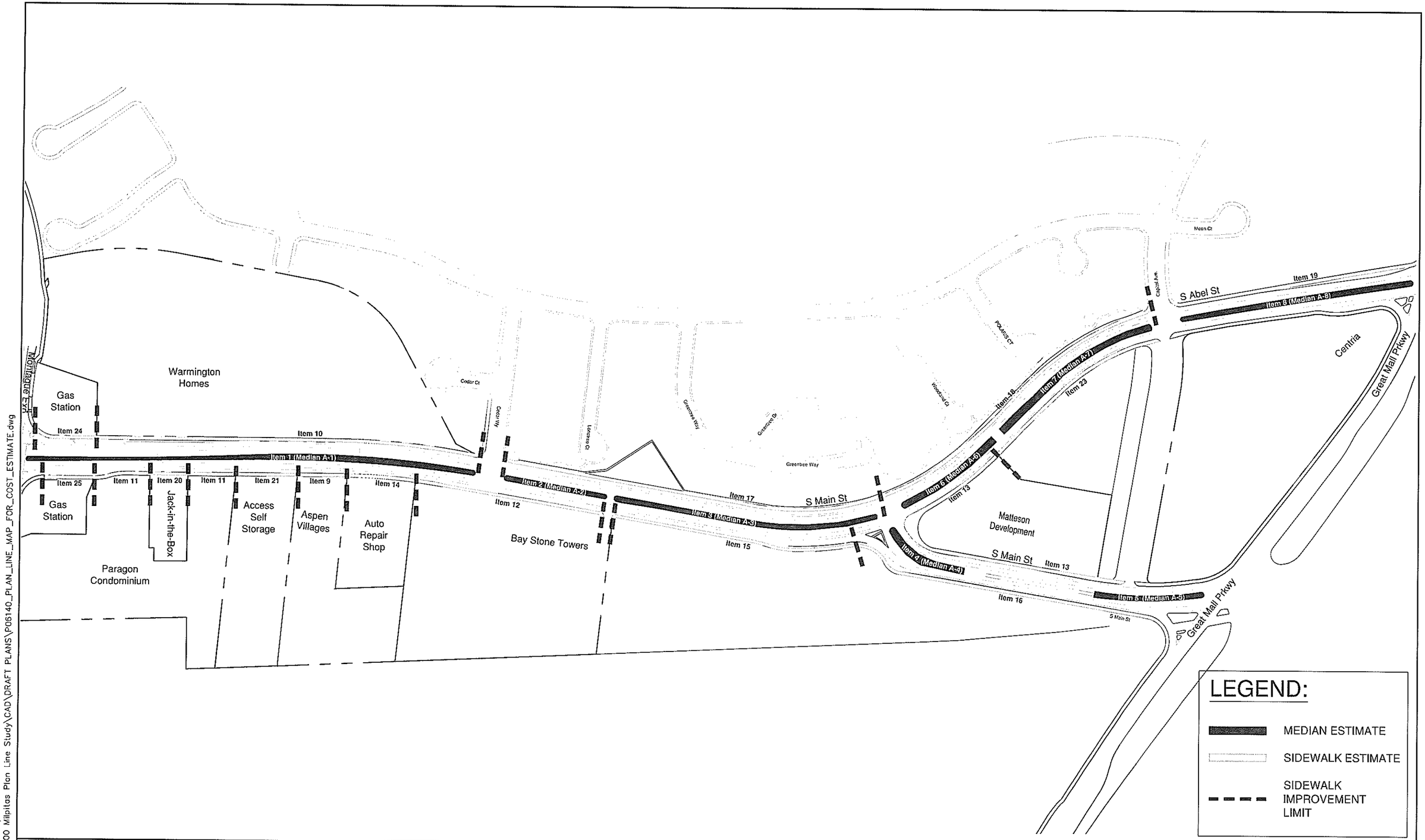
The total cost of handrail is $48,375.

The following table describes the utility relocation cost for the various medians in the project area.

Item	Description	Cost
35	Median 1 (Relocate 80 ft. of 6" water main) (Relocation of 4" SS lateral will be done by Warmington Developer. City is not responsible for the relocation cost of $17,200)	$ 15,200.00
36	Median 3 (Relocation of 6" SS lateral will be done by Warmington Developer. City is not responsible for the relocation cost of $18,750)	-
36	Median 4 (Relocate 90 ft. of 12" RCP, remove existing inlet, install new inlet, and modify existing manhole)	$ 23,000.00
37	Median 5 (Relocate 440 ft. of 24" RCP)	$ 132,000.00
38	Median 8 (Relocate 266 ft. of 36" RCP, abandon 20 ft. of 12" RCP and remove existing manhole)	$ 113,900.00
39	Median 10 (Relocate 404 ft. of 6" SS main, abandon existing SS main and relocate mahole)	$ 107,900.00
40	Median 11 (Relocate 410 ft. of 6" SS main)	$ 102,500.00
41	Median 14 (Relocate 172 ft. of 36" RCP and relocate existing manhole)	$ 75,300.00

The total cost of utility relocation is $569,800, which does not include the cost of utility relocation at Median 3 and relocation of 4" SS lateral at Median 1.

The grand total of the project is $6,909,775, which is the summation of the total cost of the items above.



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Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
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DESIGNED BY: WLM Date: 9-20-06

Revisions

NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA
INCORPORATED 1954

MEDIAN ISLAND PLAN 4
COST ESTIMATE AREA MAP

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/06

PROJECT NO.
CIP NO.
SHEET NO. 48

Funding Plan-In Lieu Fee Funding Replacement

The purpose of this funding plan is to fund, in full, transportation improvements that will be needed as development occurs within the South Main Street Plan Line project area. The project study area includes the developable land within between Aspen & Baystone and the parcel between Baystone & Main Street.

This fee is dedicated to specific transportation improvements identified in the Funding Plan study area. The fees described below are based upon the improvements cost ($3.04M) as described in the cost estimate prepared by DKS Associates, dated March 28, 2007.

Fees can be calculated in one of three ways:

1. Fee per Unit (Number of Dwelling Units, Number of Square Feet)
2. Fee per Average Daily Trip (ADT)
3. Fee per P.M. Peak Hour Trip

Only one of these would apply, based on the City's adopted ordinance language. For example, a project with 100 homes and 25,000 square feet of commercial space would pay based on the total number of daily trips generated, or the total number of P.M. peak hour trips generated, or the amount per unit of housing and the amount per square feet of commercial space.

The amount of the fees would initially be as follows:

Table 1 Funding Plan Summary

Land Use by Category	Size[1]	Units[2]	# of trips		Cost per		
			ADT[3]	P.M. Peak Hour[4]	ADT	P.M. Peak Hour Trip	unit/square foot
Residential	1,860	d.u.	10,676	1,031	$ 270	$ 2,812	$ 1,560
Commercial	2,800	Sq. ft.	292	22	$ 270	$ 2,812	$ 22

Based on revised land use size per e-mail sent January 19, 2007. This assumes change in land use size only (for approved developments), assumes medium density for future developments and no change in ADT and P.M. peak hour trips generated for approved developments. Refer to memo dated January 11, 2007 prepared by DKS Associates.

[2] d.u.-dwelling unit; sq. ft: square feet.

[3] ADT: Average Daily Traffic.

[4] P.M. Peak Hour = the one hour period between 4:00 PM and 6:00 PM, which experiences the highest traffic volume.

[5] P.M. Peak Hour Trip = new vehicle trip generated by the development which occurs during the PM peak hour. This can be by phase or by ultimate build-out.

To see how this fee structure would affect known development in the area, see Table 2. The table calculates the fee for each development under each of the three fee scenarios.

In addition, it is recommended that two projects be included as part of the Capital Improvement Projects (CIP) to build-out the plan in the "undevelopable" areas of the corridor. These two projects are described below:

1). The first project incorporates the West side of S. Main street and Abel Street between Cedar Avenue and Great Mall Parkway (approximately $391,000). The cost estimate does not include inspection costs.

2). The second project would complete the remaining portions of the projects to include the median island on Abel Street from Capitol Avenue to the northern border of the Matteson project and the sidewalk improvements along the same boundary in front of the existing commercial development (approximately $420,690).

3). Storage locker facility along the East side of S.Main Street - $76,000.

Table 2 Traffic Impact Fee Comparison Summary

Development	Cost per Unit		Cost per ADT		Cost per P.M. Peak Hour Trips	
	# of Units	Fee	# of ADT	Fee	# of P.M. Peak Hour Trips	Fee
Centria	464	$ 722,935	2,621	$ 706,967	236	$ 662,668
Baystone	391	$ 609,197	2,194	$ 591,792	219	$ 615,517
Matteson	126	$ 196,314	873	$ 235,476	87	$ 244,610
Aspen	101	$ 157,363	414	$ 111,669	32	$ 91,096
Warmington[3]	376	$ 585,826	1,638	$ 441,821	164	$ 461,103
Paragon	147	$ 229,033	1,224	$ 330,152	122	$ 343,016
FD (Aspen/Baystone)[4]	49	$ 76,344	326	$ 87,933	33	$ 91,512
FD (Baystone/Main)[4]	206	$ 320,958	1,386	$ 373,848	138	$ 388,449
Residential (sub-total)	**1,860**	**$ 2,897,970**	**10,676**	**$ 2,879,658**	**1,031**	**$ 2,897,970**
Matteson Sub-total (Commercial/Retail, in sq. ft)	**2,800**	**$ 60,450**	**292**	**$ 78,762**	**22**	**$ 60,449.54**
GRAND TOTAL		**$ 2,958,420**	**10,968**	**$ 2,958,420**	**1,052**	**$ 2,958,420**

Source: DKS Associates

In-Lieu Contribution

Funding for the improvements would be generated via an in-lieu contribution program, which would apply to small developments located within the project area. It is recommended that the amount paid in fees would be in proportion to the daily traffic (ADT) generated by the individual developments. Although the City of Milpitas has previously collected fees based on P.M. peak hour trips, the recommendation is to use daily trips as the basis for the in-lieu fee contribution.

The reason to base it on daily traffic is to even out any differences in land uses. Some land uses are more peak hour generating, while others are more off-peak generating. Based on input from City staff, and the analysis above, basing the fee calculation on daily trips represents the most equitable manner to supplement the fee program.

The in-lieu contribution is based on the following roadway improvements.

Table 3 In-Lieu Contribution Estimate

Improvements	Cost Estimate
Median A-1 – A-6	$1,700,310
Median A-8	$377,000
Future Sidewalk 1 (Improvements on East side of S.Main Street between Aspen Family and Baystone)	$93,800
Future Sidewalk 2 (Improvements on East side of S.Main Street between Baystone and S.Abel Street)	$246,470
Jack-in-the Box Sidewalk	$52,300
Gateway Enhancements	$41,120
Unocal 76 Gas Frontage	$81,290
Shell Gas Frontage	$90,230
Street Furniture	$275,900
GRAND TOTAL	**$2,958,420**

Source: DKS Associates, 2007. Cost Estimate dated 03.28.07.

Fee Escalation

On an annual basis, and in connection with the preparation and review of the city's annual budget, it is recommended that the in-lieu fee shall be increased by any annual increase in the Construction Cost Index for Milpitas or the surrounding area as published in the Engineering News Record. Any further or other adjustments to the traffic impact fee shall potentially require an engineer's report, public hearing, and findings pursuant to this ordinance. For example, if a 5% increase is a assumed, then the in-lieu fee assessment will be $270 in 2007, $284 in 2008, $298 in 2009, etc. (See Table 4)

Table 4 Fee Escalation

Year	In-Lieu Fee Assessment
2007	$270
2008	$284
2009	$298
2010	$313
2011	$328
2012	$345

Source: DKS Associates, 2007.

Example of Funding Plan Sample Ordinance Language

The following sections provide examples of potential funding plan ordinance language for this project. It is not intended to be all inclusive, but rather a framework for developing the funding plan ordnance policy language. It is strongly recommended that whatever language is put into the ordinance be reviewed and approved by the City's legal counsel.

The amount of in-lieu fee assessment paid would be in proportion to the traffic generated by the respective uses. However such improvements have not been, and are not by virtue of this report, formally adopted by the City and are subject to revision and change.

Nothing in this "report" shall be construed to commit the City to any development pattern in the impacting or impacted areas, including, but not limited to, any road configuration or the type or density of development.

Purpose

This chapter is enacted for the purpose of establishing a funding plan with in-lieu fee assessments to defray the actual or estimated costs of constructing improvements on South Main Street between Montague Expressway and Great Mall Parkway, and on Abel Street between Great Mall Parkway and S. Main Street, for improvements that are required to accommodate projected increases in traffic flow in the area resulting from future building activity in the City.

Residential Fees

For all development projects, which include any residential dwelling units, the in-lieu fee shall be two hundred and seventy eight dollars per additional daily trip generated by all residences in the development project against which the fee is charged. The number of additional daily trips shall be determined to be the maximum number of additional daily trips for the use, size, and density of the development project, as set forth in the most recent edition of the Traffic Generation manual of the Institute of Transportation Engineers. A map showing the precise boundaries of the South Main Street Plan Line properties subject to the fee shall be made available to applicants and developers upon request.

Commercial/Industrial Fees

For all commercially or industrially zoned property with frontage on or access to South Main Street, the in-lieu fee for chargeable space shall be two hundred and seventy eight dollars per additional daily trip generated by the development project against which the fee is charged. The number of additional daily trips generated shall be determined to be the maximum number of additional daily trips for the use, size, and density of the development project as set forth in the most recent edition of the Traffic Generation manual of the Institute of Transportation Engineers. A map showing the precise boundaries of the South Main Street Plan Line properties subject to the fee shall be made available to applicants and developers upon request.

Disposition of Revenues.

It is recommended that the City create a "Benefit Assessment District Fund" into which all in-lieu assessment fees collected pursuant to this chapter shall be deposited. The money in said fund shall be segregated from other City funds and shall be expended solely for the construction of the Benefit Assessment District improvements within the South Main Street Plan Line study area, also defined as the "impacted area."

A benefit assessment district is formed to include a geographical care in which all property owners would equally benefit from the proposed improvement. Property owners or businesses within the district area would pay an fee in the amount necessary to pay for the improvement in the desired time frame.

Administration of in-lieu fees.

Before implementing the in-lieu fee, the approving body shall do all of the following:

A. Identify the purpose of the fee;
B. Identify the use to which the fee is to be put, including any public facilities to be financed by the fee. This identification may be made by reference to a capital improvement plan, master plan, general or specific plan, or other public documents identifying the facilities;
C. Determine how there is a reasonable relationship between the fee's use and the type of development project on which the fee is imposed;
D. Determine how there is a reasonable relationship between the need for the public facility or other use of the fee and the type of development project on which the fee is imposed.

These findings may be made with reference to an engineer's report, improvement study, capital improvement plan, master plan, general or specific plan, or other such document, and shall be supported by substantial evidence.

Definitions

For the purposes of this chapter, unless otherwise apparent from the context, certain words and phrases used in this chapter are defined as follows:

(a) Construction. "Construction" shall mean the original construction of a new commercial unit or new residential.

(b) Dwelling Unit. "Dwelling unit" shall mean one or more habitable rooms which are occupied or which are intended to be occupied by one or more persons with facilities for living, sleeping, cooking, and eating, including single-family detached homes, single-family attached homes, townhomes, condominiums, apartments, and mobile home spaces.

(c) South Main Street Plan Line improvements. "South Main Street Plan Line improvements" shall mean those improvements described in the cost estimate created by DKS Associates dated March 28, 2007.

(d) New commercial unit. "New commercial unit" shall mean and include the construction of any gross floor area used for retail sales or commercial purposes which is in addition to any existing floor area within a structure or is a new area, including hotels, motels, and offices. A unit shall be 1,000 square feet of gross floor area.

(e) New residential unit. "New residential unit" shall mean the original construction of a dwelling unit.

(f) Impacting area. "Impacting area" shall mean that area within the City along
South Main Street between Montague Expressway and Great Mall Parkway, and along Abel Street between S. Main Street and Great Mall Parkway.

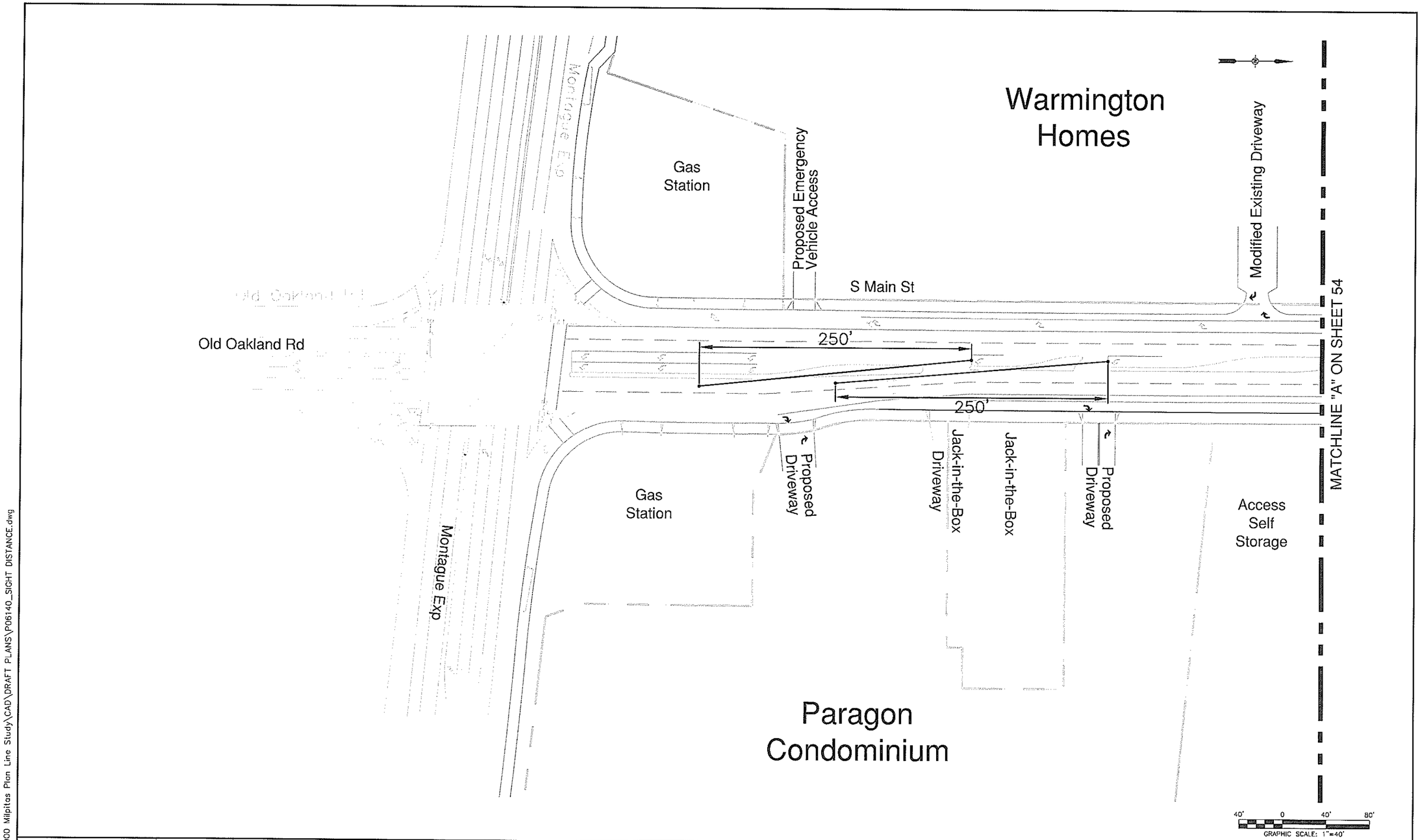
Sight Distance

An important consideration for the implementation of planted medians is an assurance that there is ample safe sight distance for vehicles. The design standard for safe stopping sight distance is set forth in AASHTO's policy on "Geometric Design of Highways and Streets" 2004 edition. Safe stopping distance is a function of vehicle speed and reaction time. To confirm that the design meets AASHTO Standards, a safe stopping sight distance analysis was performed. The analysis provided the criteria for placement of the tree planting within the medians within the study area.

The design speed of S. Main Street and S. Abel Street is set at 35-miles per hour. For a travel speed of 35 miles per hour the required sight distance is 250 feet, and the acceptable variation is a range of 2.5 to 10-feet. ASSHTO defines a line of sight as measured from the driver to the obstruction, which may include items such as trees, shrubs, poles, signs, etc. It is recommended that within a landscaped median, shrubs and tree foliage should not obstruct sight distance.

The following drawings illustrate the drivers' line of sight and the safe stopping sight distance of 250 feet. Acceptable sight distances will be provided at each driveway and median break being created as part of this project.

Sight distance was evaluated for the existing bus stop located on the southbound side of S. Main Street on the far side of the intersection with S. Abel Street. Travel speed is 35 mph which corresponds to a sight distance requirement of 250 feet. There is adequate sight distance at this section.



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REGISTERED PROFESSIONAL ENGINEER
THOMAS J. KRAKOW
No. C48381
Exp. 06/30/08
CIVIL
STATE OF CALIFORNIA

Record Drawings

Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

NO.	DESCRIPTION	DATE

DRAWN BY: FXC/DDM Date: 9-20-06
CHECKED BY: TJK Date: 9-20-06
DESIGNED BY: WLM Date: 9-20-06

Revisions

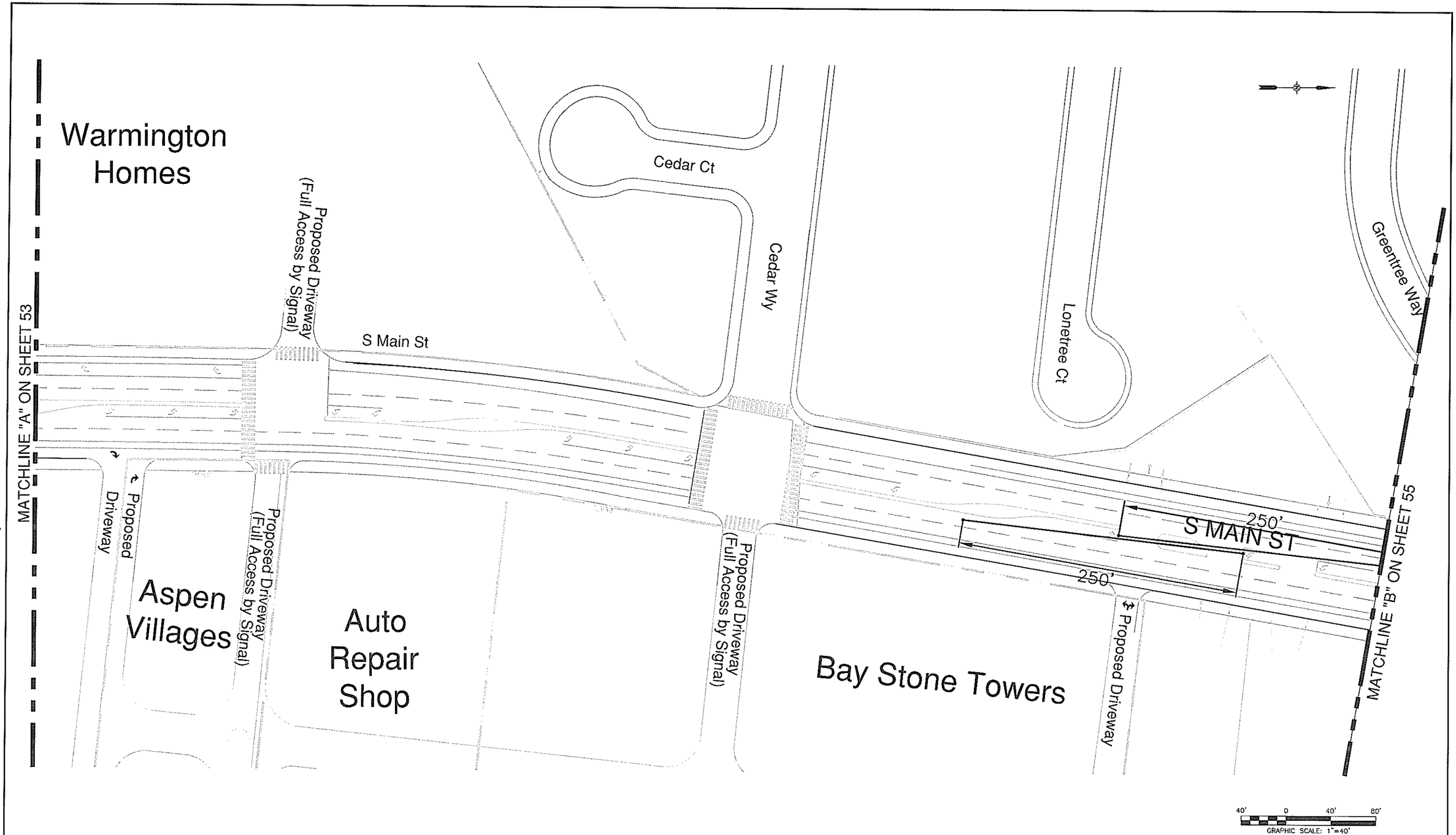
NO.	DESCRIPTION	DATE

CITY OF MILPITAS
CALIFORNIA

SIGHT DISTANCE PLAN
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: [signature]
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO. 53



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CITY OF MILPITAS
CALIFORNIA

SIGHT DISTANCE PLAN
MILPITAS PLAN LINE STUDY

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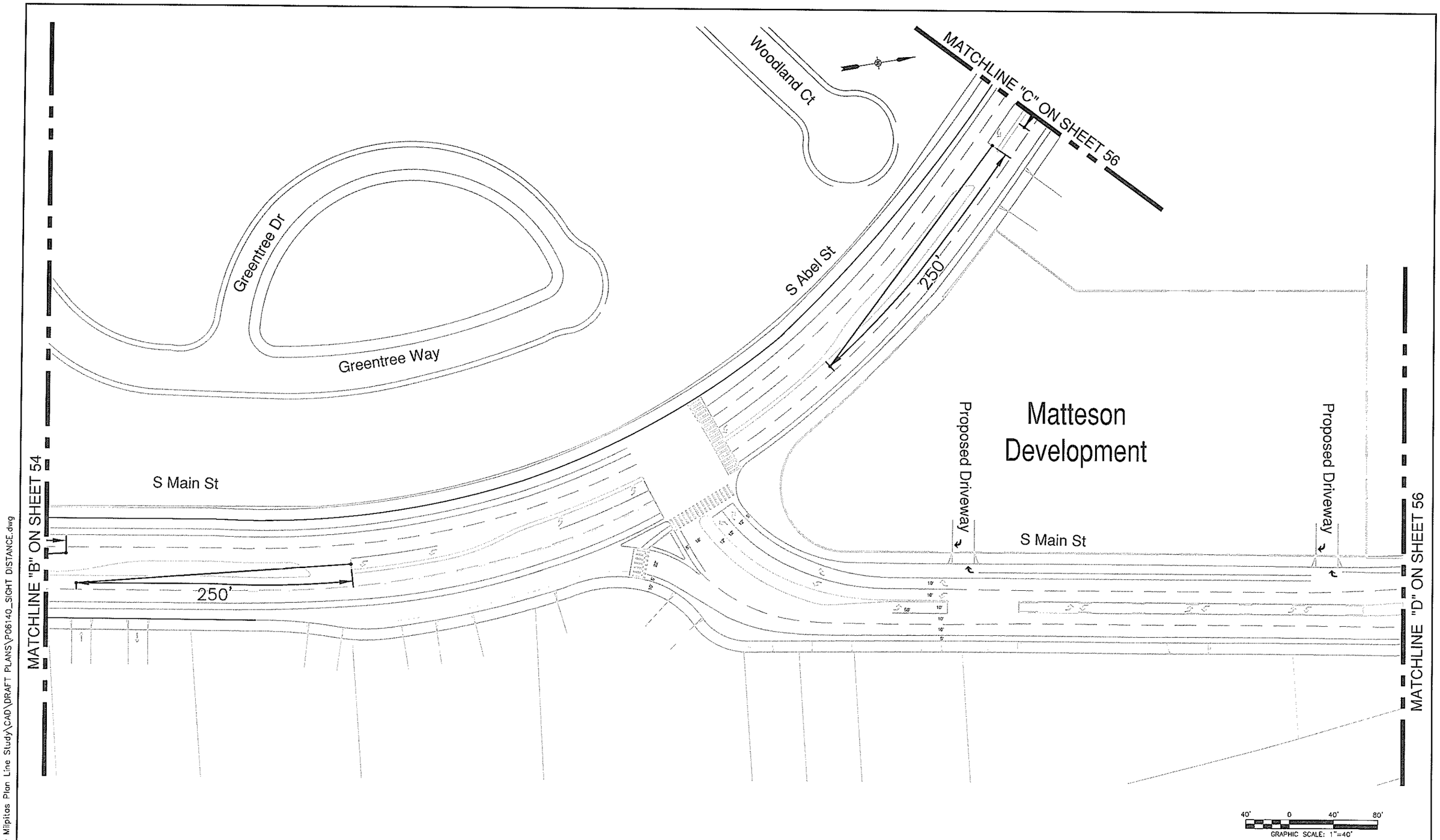
APPROVED FOR BIDDING BY: _____
GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

PROJECT NO.
CIP NO.
SHEET NO.
54



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DATE: 12/21/10

PROJECT NO.
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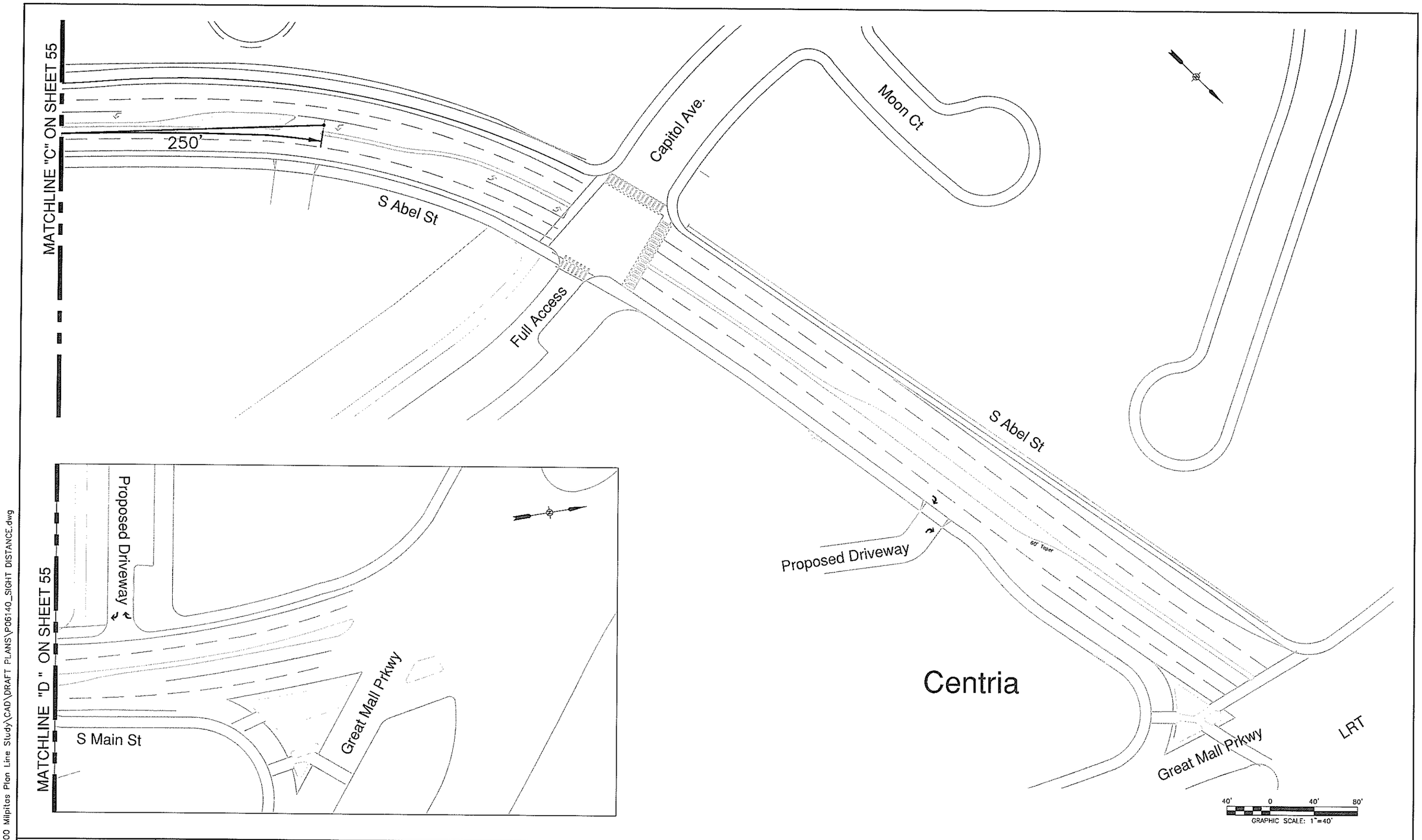
SHEET NO. 55



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PROJECT NO.
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Utility Conflicts

DKS conducted a utility study to determine if there were any conflicts between the proposed tree locations within the medians along S. Main Street and the existing utilities and whether it is feasible to relocate the existing utilities. We have reviewed the proposed tree locations along S. Main Street that appeared on the concept tree layout plan prepared by Jeff Grote of The Planning Collaborative (TPC) and the following contents states our review and recommendations.

The median locations on the attached drawings are numbered and will be referenced in this review by their numbers.

Median 1

There are nine proposed trees within median one. Heading north along S. Main Street, the fourth proposed tree root zone is located above a 4" sanitary sewer lateral and the sixth proposed tree root zone is located above a 6" water main. The 4" sanitary sewer lateral and the 6" water main can be relocated south of the proposed trees to provide adequate clearance.

Relocation of 80 feet of sanitary sewer and 80 feet of water main will be required. Total utility relocation cost for the two trees are approximately $15,300.

Total relocation cost of 80 feet of sanitary sewer will not be incurred by the city.

Median 3

There are four proposed trees within median 3. Heading north along S. Main Street, the second proposed tree root zone lies on top of a 6" sanitary sewer lateral. There is sufficient space to relocate the sewer lateral north of the proposed tree.

Relocation of 75 feet of sanitary sewer lateral will be required. Total utility relocation cost for the one tree is $18,750.

Total utility relocation cost of 75 feet sanitary sewer will not be incurred by the city.

Median 4

There are six proposed trees within median 4. Heading north along S. Main Street, the third proposed tree root zone is above a 12" RCP storm drain line. There is sufficient space south of the tree to relocate the storm drain line, but in doing so an existing manhole will be modified, and an existing drainage inlet will be removed and replaced. The cost for doing such work is as follows:

Relocation of 90 feet of 12" RCP	$18,000
Removal of existing drainage inlet	$1,000
Installation of new drainage inlet	$2,500
Modify existing manhole	$1500

Total utility relocation cost for one tree is $23,000. Because of the high cost of relocating utilities at this location the placement of this tree is not feasible.

This price is contingent on whether the storm drain line is shallow, if not, then trees can remain at their proposed locations.

Median 5

There are five proposed trees within median 5. The proposed locations for each tree lies above a 24" RCP storm drain line that traverses across the median. The storm drain line impacts all tree root zones. The length of this storm drain line is approximately 440 feet. The work involved in relocating this storm drain line is extensive. The storm drain line currently crosses above or below three unknown utility laterals and connects to a manhole with three additional lines.

Total utility relocation cost for the five trees is estimated at $132,000. Recommend that no trees be placed along median 5 due to high cost. This cost is contingent on whether the 24" RCP is shallow, if not, then trees can remain in their proposed locations.

Median 8

There are seven proposed trees within median 8. Heading north along S. Main Street, the fourth, fifth, sixth, and seventh trees are impacted by a 36" RCP storm drain line. The 36" RCP and 12" RCP storm drain lines connect to the same manhole that is positioned just east of the seventh tree. Length of 36" RCP is approximately 220 feet. Relocation of the 36" RCP and 12" RCP would require significant work. Shifting the 36" RCP west of the median would require the construction of an additional manhole and relocation of 220 feet of 36" RCP. A 20' segment of the 12" RCP will be abandoned. Total utility relocation cost for the four trees is approximately $113,900. Placement of tress four, five, six, and seven are not feasible at this location.
This price is contingent on whether the storm drain line is shallow, if not, then trees can remain at their proposed locations.

Median 10

There are seven proposed trees within median 10. Heading north along S. Abel Street, the first, sixth and seventh tree root zones are above two separate 6" sanitary sewer lines. There is a manhole located just west of the first tree. The 6" sewer line transversely crossing S. Abel Street impacts the first tree. It is bounded by a 6" water main to its' north. The proposed tree can be moved south 5 feet so the root zone will be clear of the 6" sewer line.

The sixth and seventh proposed tree locations are in conflict with the 6" sewer line that travels north along S. Abel Street The length of the sewer line is approximately 404 feet. There is adequate space west of the proposed trees for relocation of the sanitary sewer line, but that would require relocation of an existing manhole and the sanitary sewer line. A 20' segment at an existing sewer lateral of unknown size will be abandoned also The cost to complete this work is estimated at $107,900. Placement of trees six and seven are not recommended due to the high cost of relocation.

This cost is contingent on whether the depth of the sanitary sewer line interferes with the root ball, if not then the trees can remain at their proposed locations.

Median 11

There are six proposed trees within median 11. Heading north along S. Abel Street, the first three trees are affected by the same 6" sewer line that impacts trees six and seven of median 10. The amount of work needed to relocate the 6" sewer line that impacts the first three trees of median 11. is identical to the work needed to relocate the 6" sewer line for median 10. Total utility relocation cost is included with $107,900 to relocate the sixth and seventh tree of median 10. Placement of the first three trees is not recommended due to the excessive cost of relocation.

The proposed tree root zones for trees four, five and six of median 11 are impacted by a 6" sanitary sewer line that travels north along S. Abel Street There is adequate space east and west of the proposed trees for relocation of the 6" sewer line. Length of existing sewer line is approximately 410 feet. The work needed to place trees at this location would involve relocation of the 6"sewer line.

The total utility relocation cost for three trees is $102,500. Placement of trees at this location is not feasible.
The cost is dependent on whether the 6" sewer line is shallow or deep. If it is deep than the trees can remain at their proposed locations.

Median 12

There are eight proposed trees within median 12. Heading north along S. Abel Street, the first two trees are affected by the same 6" sewer line that impacts trees four, five, and six of median 11. The amount of work needed to relocate the 6" sewer line for median 12 is identical to the work needed to relocate the 6" sewer line for median 11. Total utility relocation cost is included with the $102,500 to relocate the fourth, fifth, and sixth trees of median 11. Placement of the first three trees is not recommended due to the excessive cost of relocation.
The cost is dependent on whether the 6" sewer line is shallow or deep. If it is deep than the trees can remain at their proposed locations.

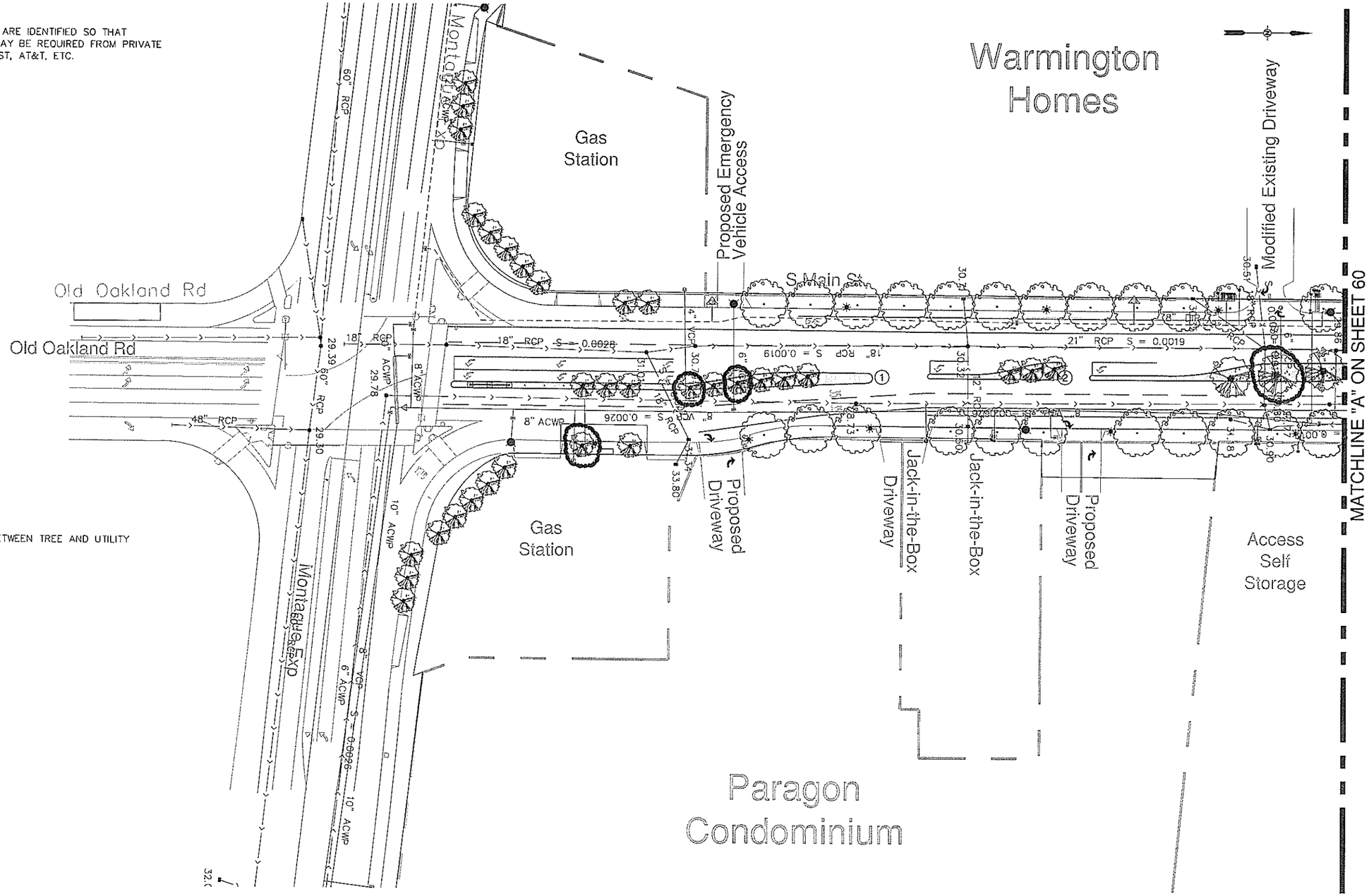
Median 14

There are four proposed trees within median 14. Heading north along S. Main Street the first tree root zone is above an 18" RCP storm drain line. An 8" water main borders the storm drain line to the north. There is sufficient room south of the tree for relocation of the 18" storm drain line. Relocation of approximately 172 feet of 18" RCP storm drain line will be required. An existing manhole that joins the 18" RCP with a 36" RCP storm drain line wil be relocated also. Total utility relocation cost for the one tree is estimated at $75,300. Because of the high cost of relocating utilities at this location the placement of this one tree is not feasible.
This price is contingent on whether the storm drain line is shallow, if not, then trees can remain.

The fourth tree within median 14 is located above a 36" RCP storm drain line. There is sufficient space to move the tree north to avoid any conflicts with the 36"RCP.

Overall the tree locations suggested by The Planning Collaborative would require significant utility relocation. The total cost for utility relocation work, if all recommendations were made would be $605,750.

NOTE:
NOT ALL PRIVATE UTILITIES ARE IDENTIFIED SO THAT ADDITIONAL RELOCATIONS MAY BE REQUIRED FROM PRIVATE UTILITIES INCLUDING COMCAST, AT&T, ETC.



LEGEND:

CONFLICT BETWEEN TREE AND UTILITY

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REGISTERED PROFESSIONAL ENGINEER THOMAS J. KRAKOW No. C48381 Exp. 06/30/08 CIVIL STATE OF CALIFORNIA

Record Drawings
Project Engineer: _____ Date: _____
Designer: _____ Date: _____
Public Works Inspector: _____ Date: _____
Public Improvements Initially Accepted by the City Council on: _____

Submittal Log

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DESIGNED BY: WLM Date: 9-20-06

Revisions

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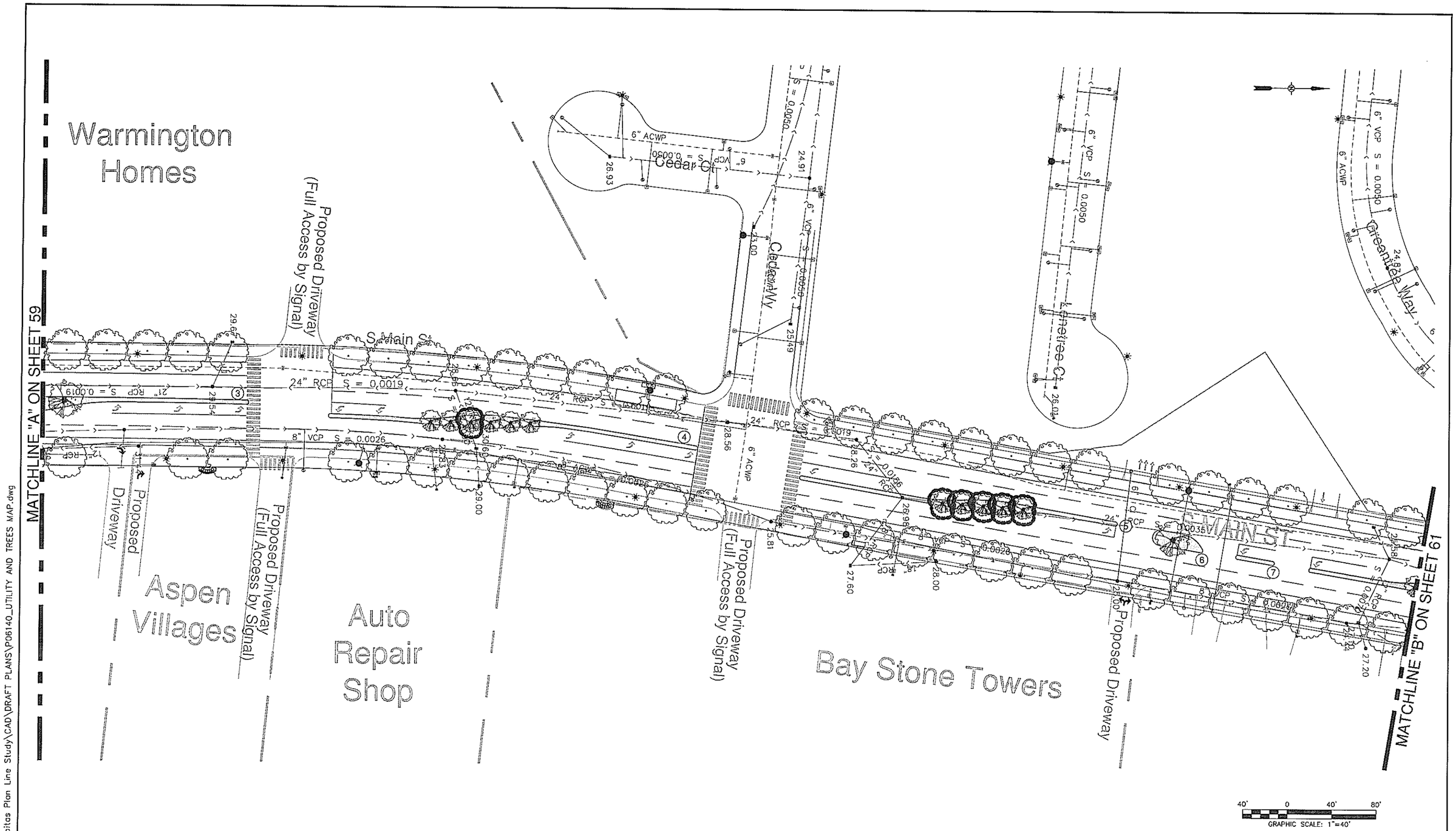
CITY OF MILPITAS CALIFORNIA

UTILITY PLAN
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
DATE: _____
APPROVED FOR BIDDING BY: GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/12/10

PROJECT NO.
CIP NO.
SHEET NO. 59



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REGISTERED PROFESSIONAL ENGINEER — THOMAS J. KRAKOW — No. C48381 — Exp. 06/30/08 — CIVIL — STATE OF CALIFORNIA

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Revisions

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CITY OF MILPITAS — CALIFORNIA — INCORPORATED 1954

UTILITY PLAN
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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APPROVED FOR BIDDING BY: GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

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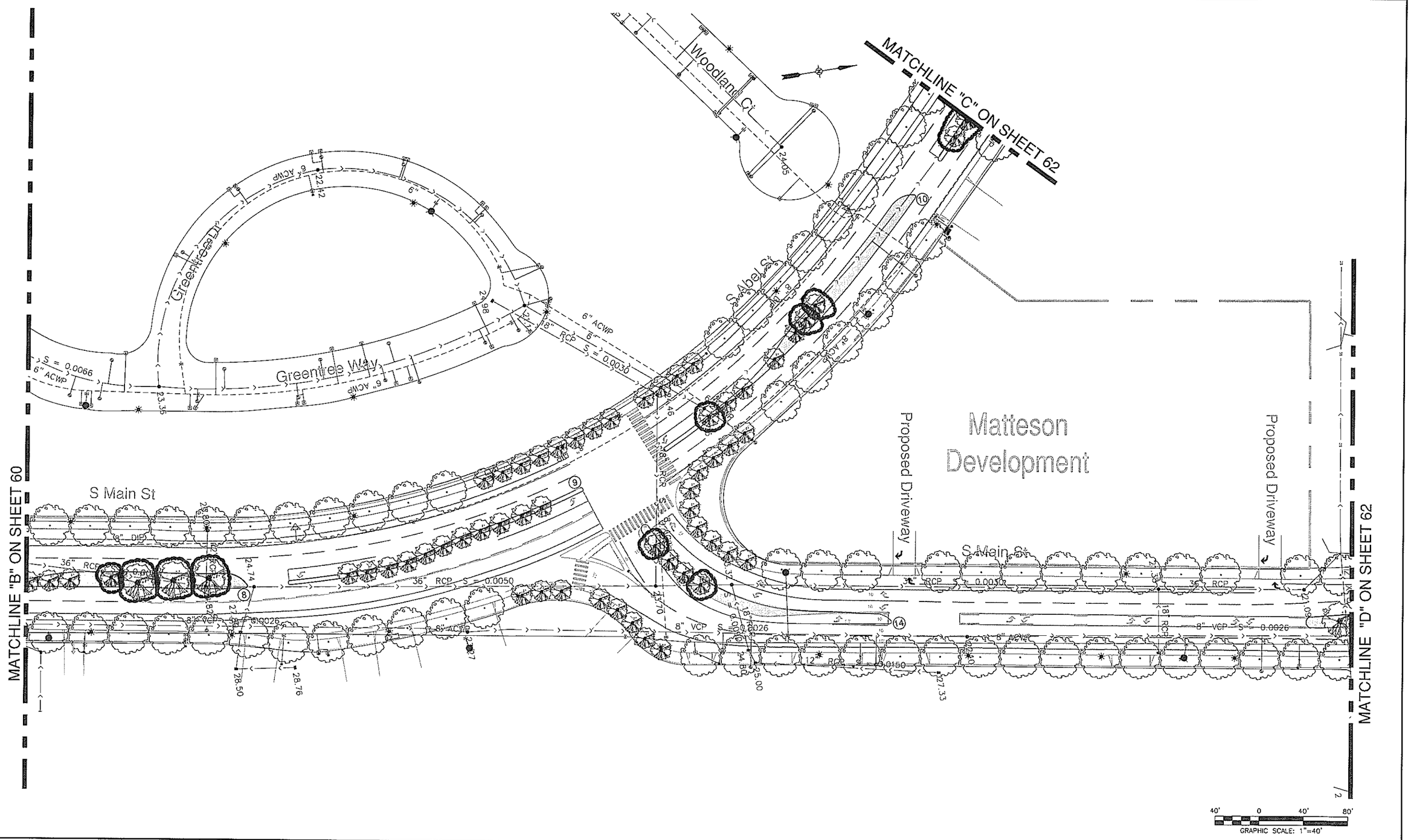

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Revisions

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CITY OF MILPITAS
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JANUARY 20, 1954

UTILITY PLAN
MILPITAS PLAN LINE STUDY

RECOMMENDED FOR BIDDING BY: _____
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GREG ARMENDARIZ, CITY ENGINEER
DATE: 12/21/10

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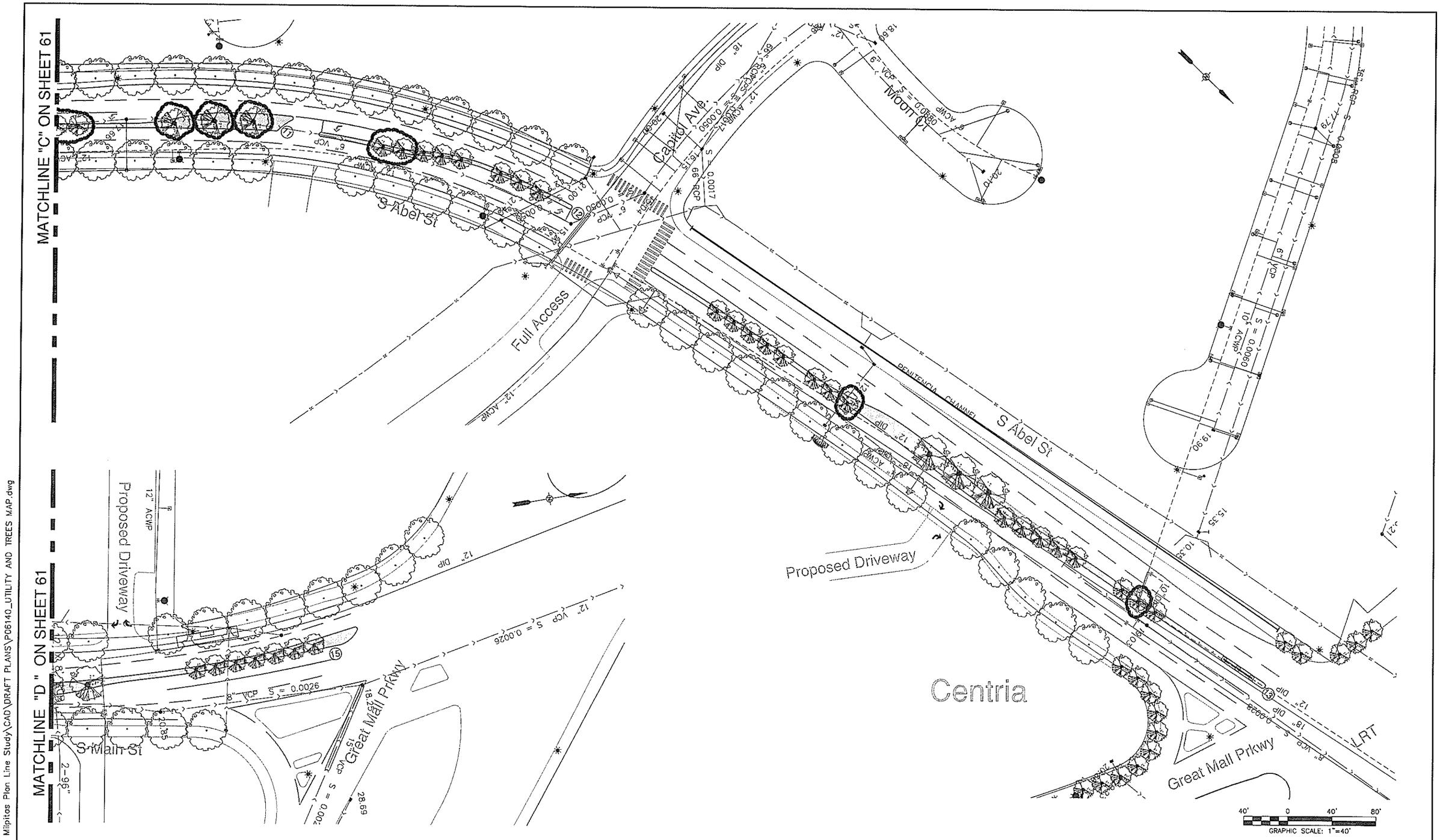

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