

April 6, 2018

Mr. Jon Earle, PE
Windham Town Engineer
Town of Windham
8 School Road
Windham, ME 04062

Subject: **Route 302 Phasing Plan**

Dear Jon,

T.Y. Lin International (TYLI) is excited to present, to the Town of Windham (Town), the developed Phasing Plan for the further implementation of the Route 302 Improvements. The steps taken to develop the phasing are discussed below.

I. COST UPDATE

The first step in developing the phasing was updating the preliminary cost estimate. It had been almost two years since it was originally submitted. The estimate will serve as the basis to define what funding is necessary to implement the project. Therefore, current costs will help make sure the estimate is relevant and as useful as possible. The updated cost information was compiled from bid information from several recent local projects as well as recent MaineDOT bid histories. The costs were then compared against inflation adjusted prices. After the cost information was reviewed, the unit prices in the estimate were then updated.

II. RIGHT-OF-WAY COSTS

The next step in developing the phasing was to develop an initial estimate for costs associated with right-of-way (ROW). This is quite challenging due to the number of dynamic variables that affect the ROW process. The development of the ROW costs began by reviewing the basic nature of the Route 302 Improvements. The Improvements are understood to be positive and would result in facilities that benefit the community, businesses, residents and visitors alike. Because of this it is assumed that there would be little resistance during the ROW process. It is also assumed that the majority of the Improvements would be constructed within the existing ROW. Where this is not possible and the improvements would infringe upon the existing ROW, easements would be needed. Those easements are expected to be primarily temporary easements and construction and maintenance easements. In these situations the owners would be entitled to just compensation. Based on the nature of the project and minimal anticipated impacts to the properties, modest costs are being carried for easement acquisitions. In addition to those costs, the ROW costs used for this estimate also include the ancillary costs associated with ROW research, mapping, negotiations and other miscellaneous tasks necessary to complete the ROW process. See Attachment-C for ROW Costs. These costs are based on the information currently available and project impacts known at this time. The values are approximate and may vary depending on the nature of the research and negotiations for each parcel.

III. DEFINE PHASES

The last step was the definition of the phases. The primary goal for the phasing was to break the overall project into logical segments, which would be more feasible to fund and therefore construct. The idea is that once the initial phase is funded and constructed, this would build momentum for additional funding and construction of subsequent phases.

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a. PHASE DEFINITION

After reviewing the plans, logical locations to start and end construction, connectivity, safety and probability of certain segments being funded, the overall project was broken into eight phases. See Attachments A and B for definition and limits of these phases.

b. SAFETY AND MOBILITY

A review of the transportation benefits from implementation of the improvements was qualified according to safety, mobility, and multi-modal benefits. We have summarized quantitative and qualitative metrics for each of the proposed phases. Safety benefits were based upon the most recent available MaineDOT crash data (2014-2016).

Phase 1

Safety – this location is designated as High Crash Location (42 crashes/CRF = 1.03) and would benefit from intersection enhancement. Of the 42 reported crashes, several were rear-end collision caused by vehicles stopping/slowing to make turns. Key improvement elements that would enhance safety include:

- Several driveways will be narrowed including Republicash; Amato's; and 725 Roosevelt.
- The driveway to Cross Insurance will be closed. This driveway is located within the functional area of the intersection.

Mobility – No significant mobility benefits are expected. However, pedestrian facility connectivity will reduce the need for automobile travel between land uses.

Multi-Modal Benefits – Significant pedestrian improvements are proposed. Current conditions are very unsafe for pedestrians.

- Extend the proposed Route 35 sidewalk to the intersection for crossings.
- Currently pedestrians can't safely cross the intersection from the northwest quadrant of the intersection. New crosswalks and supporting signal equipment will be added on the northerly Route 302 and Route 35 approaches.
- One crash involved a pedestrian and the unexpected nature of someone crossing the street.

Phase 2

Safety – this location is designated as High Crash Location (39 crashes/CRF = 2.21) and would benefit from roadway enhancement. Key improvements elements that would enhance safety include:

- Several driveways will be narrowed including TD Bank; and Maine Pawn Jewelry.
- The driveway to Bank of America will be closed. This driveway is located within the functional area of the intersection.
- The majority of crashes involved driveway movements (Many involved vehicles turning into TD Bank – the driveway being closed).

Mobility – Some mobility benefits are expected. The project includes full replace of the traffic signal from span wire to mast arm. This would allow for video detection and improved signal head visibility and most importantly enhanced signal timing. Pedestrian facility connectivity will improve and reduce the need for automobile travel.

Multi-Modal Benefits – Significant pedestrian improvements are proposed. Current conditions provide pedestrian facilities on the east side of Route 302 only and the Shaw's Plaza and northbound Route 302 approaches do not have crosswalks.

- A sidewalk will be added on the west side of Route 302.
- Currently pedestrians can't safely cross Shaw's Drive and the northerly leg of Route 302.

Phase 3

Safety – this location is not designated as High Crash Location (18 crashes/CRF = 0.93) but would still benefit from roadway enhancement (it is close to being a HCL). Key improvements elements that would enhance safety include:

- The McDonald's driveway will be narrowed/modified.
- Driveways to Evergreen Credit Union and the vacant Restaurant on the opposite side will be closed.

Mobility – Some mobility benefits are expected. The project includes full replace of the traffic signal at Landing Road from span wire to mast arm. This would allow for video detection and improved signal head visibility and most importantly enhanced signal timing. Pedestrian facility connectivity will improve and reduce the need for automobile travel.

Multi-Modal Benefits – Significant pedestrian improvements are proposed. Current conditions provide pedestrian facilities on the east side of Route 302 only and the Landing Road and northbound Route 302 approaches do not have crosswalks.

- A sidewalk will be added on the west side of Route 302.
- Currently pedestrians can't safely cross Landing Road and the northerly leg of Route 302.
- The channelize right lane into the Windham Mall will be controlled by the signal for safer pedestrian crossings.

Phase 4

Safety – this location is not designated as High Crash Location (12 crashes/CRF = 0.98) but would still benefit from roadway enhancement (it is close to being a HCL). Key improvements elements that would enhance safety include:

- CITGO; and Dyer & Harrison driveways will be narrowed/modified.

Mobility – Some mobility benefits are expected. The project includes full replace of the traffic signal at Franklin Drive from span wire to mast arm. This would allow for video detection and improved signal head visibility and most importantly enhanced signal timing. Pedestrian facility connectivity will improve and reduce the need for automobile travel.

Multi-Modal Benefits – Significant pedestrian improvements are proposed. Current conditions provide pedestrian facilities on the east side of Route 302 only and no facilities to cross Route 302 are provided.

- A sidewalk will be added on the west side of Route 302.
- Currently pedestrians can't safely cross Route 302. A crosswalk will be added.

Phase 5

Safety – this location is designated as High Crash Location (59 crashes/CRF = 1.68) and would benefit from roadway enhancement. Key improvements elements that would enhance safety include:

- Rose's; The Children's Adventure; and Fire Department driveways will be narrowed/modified.
- Several driveways will be closed including Lifetime Muffler; SunDeck; and Medical Reimbursement Service.

- Most crashes were related to movements entering and exiting driveways.

Mobility – Some mobility benefits are expected. The project includes full replace of the traffic signal at River Road from span wire to mast arm. This would allow for video detection and improved signal head visibility and most importantly enhanced signal timing. Pedestrian facility connectivity will improve and reduce the need for automobile travel.

Multi-Modal Benefits – Significant pedestrian improvements are proposed. Current conditions provide pedestrian facilities on the east side of Route 302 only. Manchester Elementary School is located in this area and this work enhances Safe Route to School initiatives.

- A sidewalk will be added on the west side of Route 302.
- Sidewalks on the east side will be improved to be fully ADA compliant.
- A crosswalk will be provided at River Road that will allow crossing of Route 302.

Phase 6

Safety – this location is not designated as High Crash Location but would still benefit from roadway enhancement. Key improvements elements that would enhance safety include:

- 75 Tandberg TR, RTE 115 Business Park, 75 Tandberg TR and Patman's Redemption driveways will be narrowed/modified.

Mobility – No mobility benefits are expected.

Multi-Modal Benefits – Significant pedestrian improvements are proposed.

- A sidewalk will be added on the south side of Route 115.
- A crosswalk will be provided at Collins Pond Road that will allow crossing of Route 115.

Phase 7

Safety – this location is not designated as High Crash Location but would still benefit from roadway enhancement. Key improvements elements that would enhance safety include:

- Pavement Striping

Mobility – No mobility benefits are expected.

Multi-Modal Benefits – Significant pedestrian improvements are proposed.

- A sidewalk will be added on the south side of Route 35.
- A crosswalk will be provided at Northwood Dr that will allow crossing of Route 35.
- A crosswalk will be provided at Northwood Dr that will allow crossing of Northwood Dr.
- Pedestrian lighting would be provided from Robin Lane Extending to Boody's Corner.

Phase 8

Safety – this location is designated as High Crash Location (40 crashes with a segment CRF of 1.14) and would still benefit from roadway enhancement. Key improvements elements that would enhance safety include:

- Median Island provided in front of Homestead Mortgage Loans, Carpet Town, Hearing Aid Center and Portland Mattress.
- Pratt Abbot, Richards Boat Yard, and Mattress Town driveways will be narrowed/modified.

Mobility – No mobility benefits are expected.

Multi-Modal Benefits – Significant pedestrian improvements are proposed.

- A sidewalk will be added on the west side of Route 302.

IV. SUMMARY

The Phasing Plan divides the RTE 302 Improvements into eight phases. The cost for each of the eight phases is summarized in Attachment D. The average order of magnitude for each phase is 1 million dollars. At roughly \$1.6 million dollars Phase 5 has the highest cost and significantly higher than the other phases. However, the work for this phase is consistent along the length of the segment. Therefore this phase could easily be broken up into more phases based on length. Increase phasing would need to be weighed against the public's tolerance for increased number and duration of construction disruptions. Phase 3 is also slightly higher than the average phasing cost. This is largely due to the traffic signals and lighting in this segment. Phase 6 and 7 are substantially lower than the other phases. This can be attributed to smaller scopes of work for these segments. In each of these phases the work is primarily limited to addition of a sidewalk on one side of the road with ample ROW for construction for a significant length of the work. Also there is no landscaping in either of these sections and little to no lighting or signal work.

Several assumptions have been made in the development of these costs. These are noted in the footnotes on the Attachments as well as on the plans. We look forward to your input to further refine these assumptions and costs.

As specified in the scope we plan to meet with you to discuss the results further. At your convenience, please contact me at (207) 347-4354 or thomas.errico@tylin.com to schedule this meeting.

Sincerely,

A handwritten signature in black ink that reads "Thomas A. Errico". The signature is written in a cursive, flowing style.

T.Y. LIN INTERNATIONAL
Thomas A. Errico, PE
Senior Associate

ATTACHMENT - A

WINDHAM 21ST CENTURY MASTER PLAN IMPROVEMENTS - PHASING

Windham, Maine

PROJECT PHASING

Based on May 31, 2016 Plans

Date 4/6/2018

PHASE	LOCATION	FROM	TO	INCLUDED FACILITIES	BEGIN STA	END STA
PHASE 1	BOODY'S CORNER	Boody's Cnr (south)	Boody's Cnr (north)	sidewalk, signals, street scape, lighting	48+25	59+50
PHASE 2	SHAW'S DRIVE	Boody's Cnr (north)	Shaw's Drive	sidewalk, signals, street scape, lighting	59+50	68+00
PHASE 3	LANDING ROAD	Shaw's Drive (north)	Landing Road	sidewalk, signals, street scape, lighting	68+00	80+00
PHASE 4	FRANKLIN DRIVE	Landing Road (north)	Franklin Drive	sidewalk, signals, street scape, lighting	80+00	88+75
PHASE 5	RIVER ROAD TO BOODY'S CORNER	River Road (north)	Boody's Corner (south)	sidewalk, signals, street scape, lighting	30+25	48+25
PHASE 6	ROUTE 115 - SOUTH SIDE	RTE 115 - Boody's Cnr (east)	RTE 115 - Collins Pond	sidewalk ped xing	403+00	414+50
PHASE 7	ROUTE 35 - SOUTH SIDE	RTE 35 - Lamb St	RTE 35 - Boody's Cnr (west)	sidewalk, ped xing	303+50	316+75
PHASE 8	FRANKLIN DRIVE TO WHITES BRIDGE ROAD	Franklin Drive (north)	White's Bridge Road	sidewalk, street scape	88+75	116+50

Notes:

- 1 Stations rounded to nearest 25 for convenience. Exact limits to be determined in final design.

ATTACHMENT - B

Filename: ...\\00\\HIGHWAY\\MSTA\\xxx_Title.dgn Division: HIGHWAY Username: Date: 6/2/2016

PLAN LEGEND			
Town, County, State	-----	Centerline-Existing	-----
Property Lines	-----	Centerline-Proposed	-----
R/W Lines-Existing	-----	Travelway-Existing	-----
R/W Lines-Proposed	-----	Travelway-Proposed	-----
Culvert-Existing	-----	Railroad	-----
Culvert-Proposed	-----	Catch Basins	Existing Proposed
Curbing	Existing Proposed	Manholes	Existing Proposed
Type 1	-----	Proposed Underdrain	-----
Type 3	-----	Proposed Ditch	-----
Type 5	-----	Existing Ditch	-----
Outline of Bodies of Water	-----	Utility Poles	Existing Proposed
Ledge	-----	Fire Hydrants	Existing Proposed
Buildings	-----	Existing Water Line	-----
Trees	Conifer Deciduous	Existing San. Sewer	-----
Tree Line	-----	Existing San. Sewer Manhole	-----
Clearing Limit Line	CLL	Guardrail-Existing	-----
		Guardrail-Proposed	-----
		Guardrail-Cable, Other	-----
		Lighting	Existing Proposed

WINDHAM

CUMBERLAND COUNTY

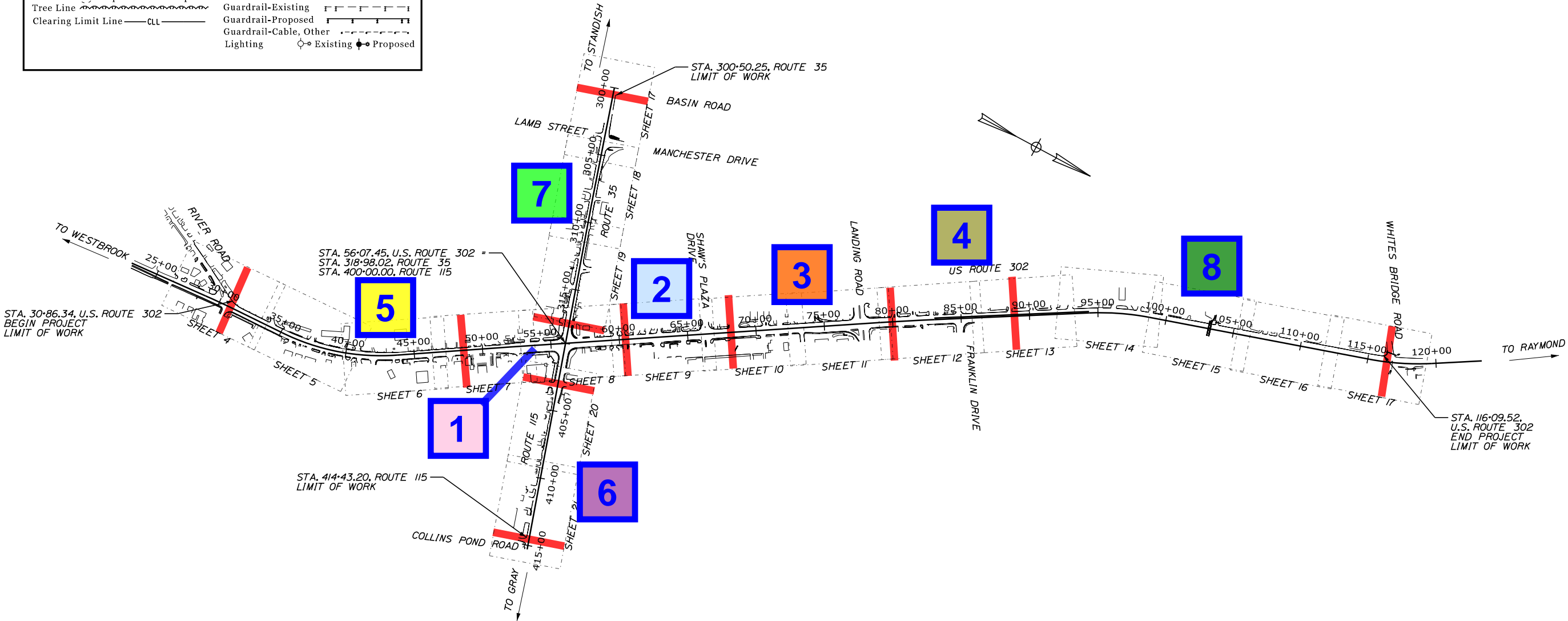
U.S. ROUTE 302

21ST CENTURY MASTER PLAN PRELIMINARY DESIGN

PROJECT LENGTH: 2.23 MILES

INDEX OF SHEETS

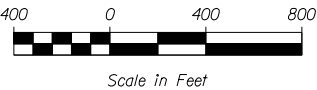
Description	Sheet No.
Title Sheet	1
Typical Sections	2
General Notes	2
Plans	3-21



PROJECT LOCATION:

ALONG U.S. ROUTE 302 BEGINNING AT THE NORTHERLY SIDE OF THE RIVER ROAD AND U.S. ROUTE 302 INTERSECTION AND EXTENDING NORTHERLY FOR 1.61 MILES TO THE SOUTHERLY SIDE OF WHITES BRIDGE ROAD; ALONG ROUTE 35 BEGINNING AT THE EAST SIDE OF BASIN ROAD AND EXTENDING EAST FOR 0.35 MILES TO U.S. ROUTE 302; AND ALONG ROUTE 115 BEGINNING ON THE WEST SIDE OF U.S. ROUTE 302, EXTENDING EAST 0.27 MILES TO THE WEST SIDE OF COLLINS POND ROAD

LAYOUT SCALE



= PROPOSED PHASING

TOWN OF
WINDHAM, MAINE

PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED					
CHECKED-REVIEWED					
DESIGN-DETAILED					
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

21ST CENTURY MASTER PLAN
PRELIMINARY PLANS
TITLE SHEET

SHEET NUMBER
1
OF 21

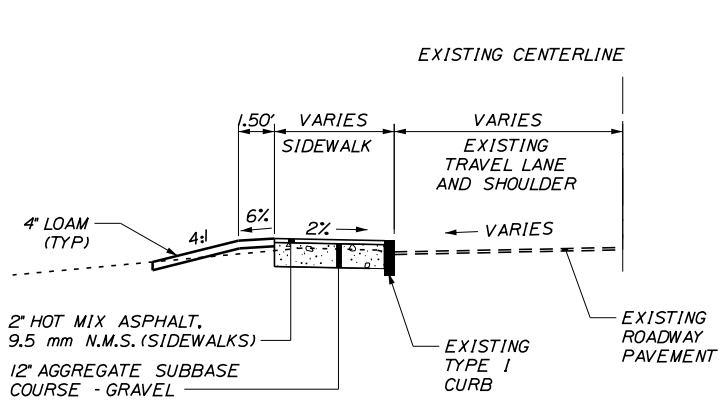
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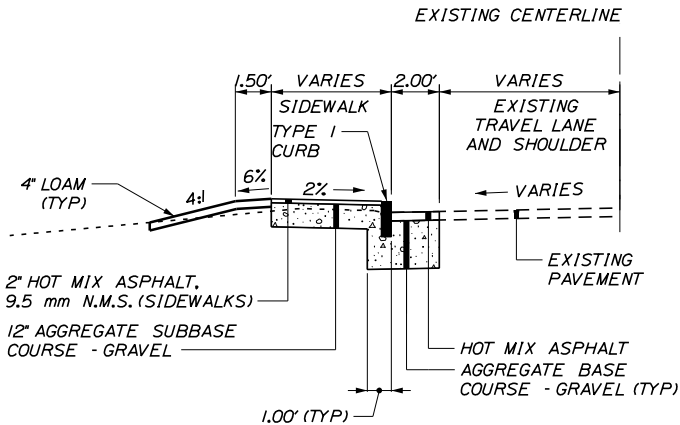
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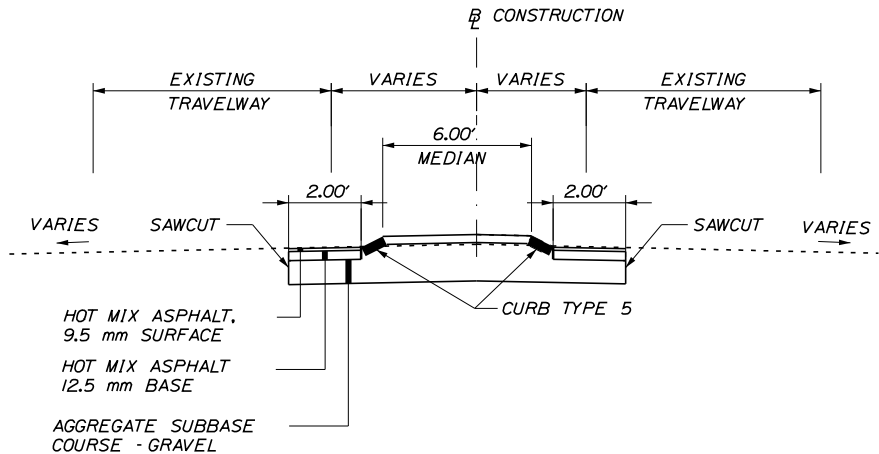
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SIDEWALK DETAIL
 EXISTING CURB RETAINED
 N. T. S.



SIDEWALK DETAIL
 NEW CURB
 N.T.S.



MEDIAN ISLAND DETAIL
 NEW CURB
 N.T.S.

NOTES:

1. PROPOSED SIDEWALK FOR THE WEST SIDE OF U.S. ROUTE 302 FROM THE ROUTE 35 INTERSECTION TO THE FRANKLIN DRIVE INTERSECTION SHALL BE 8FT WIDE UNLESS OTHERWISE NOTED. ALL OTHER PROPOSED SIDEWALK SHALL BE 5FT WIDE UNLESS OTHERWISE NOTED.

GENERAL NOTES

1. COORDINATE THE PLANTING OF ALL NEW STREET TREES WITH ABOVE AND BELOW GROUND UTILITIES IN ADDITION TO EXISTING BUSINESS AND DIRECTIONAL SIGNAGE.
2. THE MATURE CANOPY OF ALL NEW AND REPLACEMENT TREES SHALL BE 10FT CLEAR VERTICALLY AND 8FT CLEAR HORIZONTALLY FROM OVERHEAD UTILITIES.
3. ALL NEW AND REPLACEMENT TREES SHALL BE BE PLANTED WITH A ROOT BARRIER WITH THE TRUNK A MINIMUM OF 2FT FROM THE EDGE OF SIDEWALK OR PARKING AREA. STREET TREES SHALL NOT BE PLANTED CLOSER THAN 30FT ON CENTER.

TOWN OF
 WINDHAM, MAINE

PROJ. MANAGER	BY	DATE	SIGNATURE
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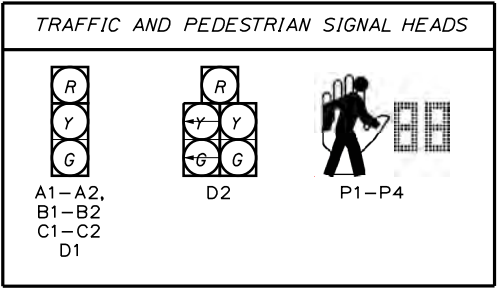
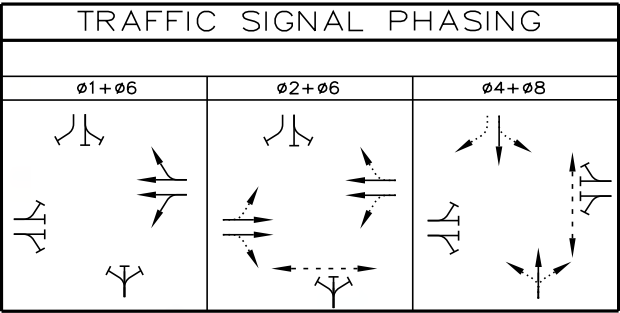
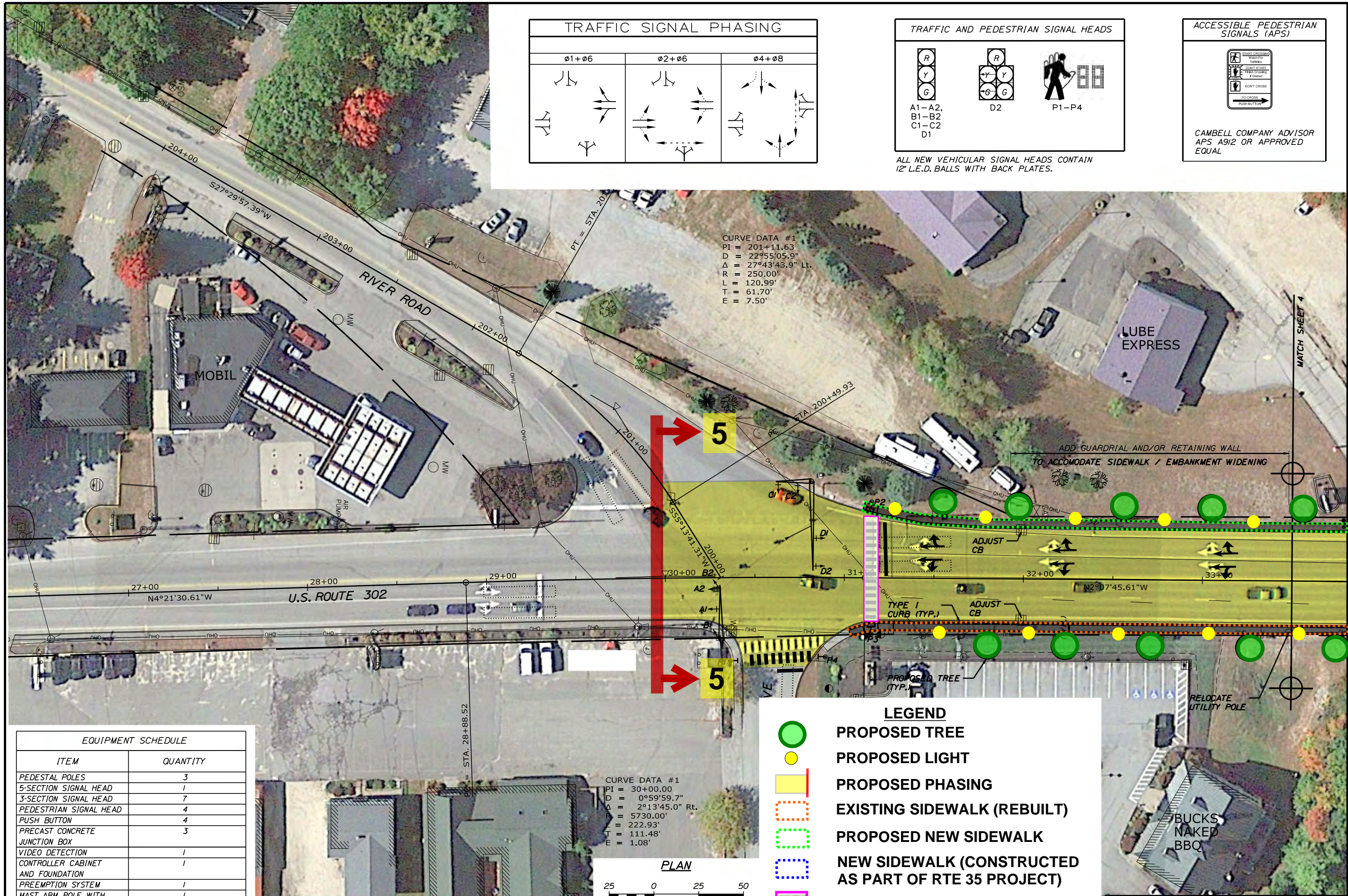
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 PRELIMINARY PLANS
 TYPICAL SECTIONS /
 GENERAL NOTES

SHEET NUMBER

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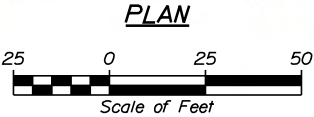
OF 21

TY·LIN INTERNATIONAL



EQUIPMENT SCHEDULE	
ITEM	QUANTITY
PEDESTAL POLES	3
5-SECTION SIGNAL HEAD	1
3-SECTION SIGNAL HEAD	7
PEDESTRIAN SIGNAL HEAD	4
PUSH BUTTON	4
PRECAST CONCRETE JUNCTION BOX	3
VIDEO DETECTION	1
CONTROLLER CABINET AND FOUNDATION	1
PREEMPTION SYSTEM	1
MAST ARM POLE WITH 20' AND 50' MAST ARMS	1
MAST ARM POLE WITH 30' MAST ARM	1

CURVE DATA #1
PI = 30+00.00
D = 0°59'59.7"
Δ = 2°13'45.0" Rt.
R = 5730.00'
L = 222.93'
T = 111.48'
E = 1.08'



- LEGEND
- PROPOSED TREE
 - PROPOSED LIGHT
 - PROPOSED PHASING
 - EXISTING SIDEWALK (REBUILT)
 - PROPOSED NEW SIDEWALK
 - NEW SIDEWALK (CONSTRUCTED AS PART OF RTE 35 PROJECT)
 - PROPOSED CROSS WALK
 - PROPOSED PHASE NUMBER

TOWN OF
WINDHAM, MAINE

21ST CENTURY MASTER PLAN
PRELIMINARY PLANS

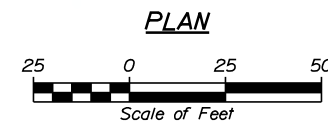
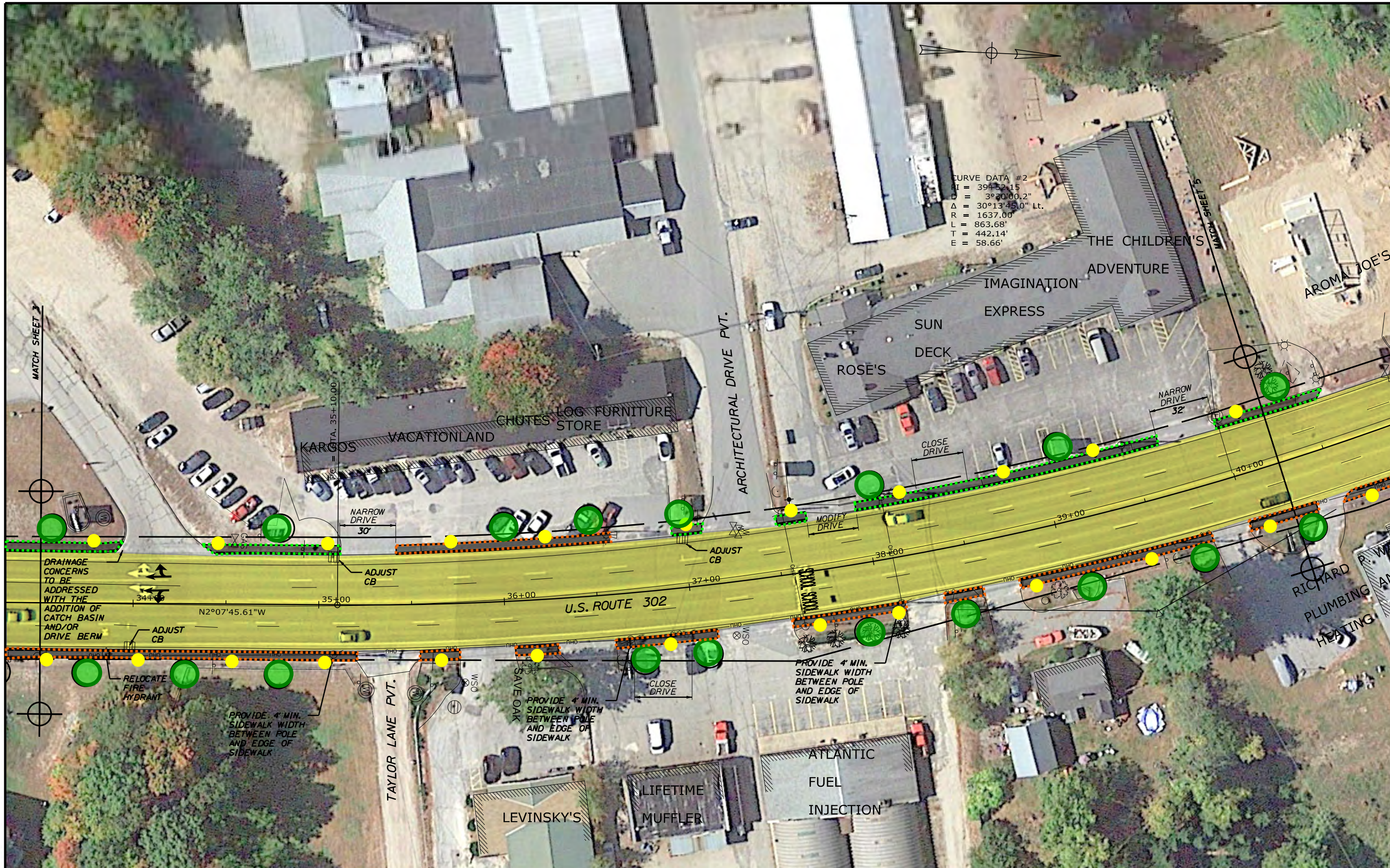
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OF 21

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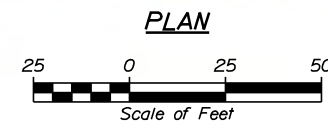
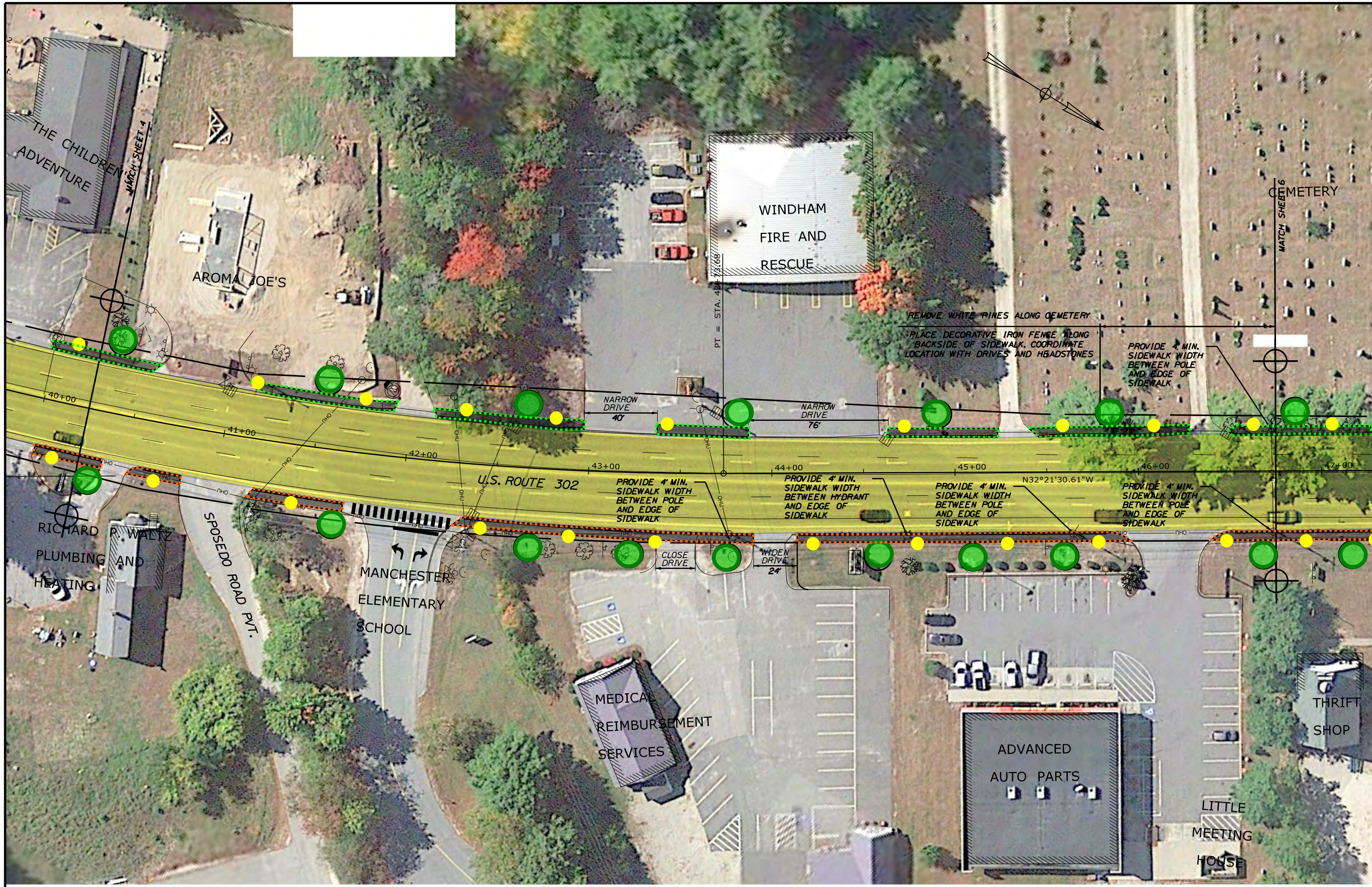
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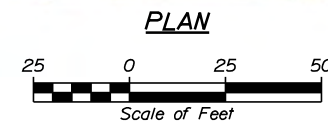
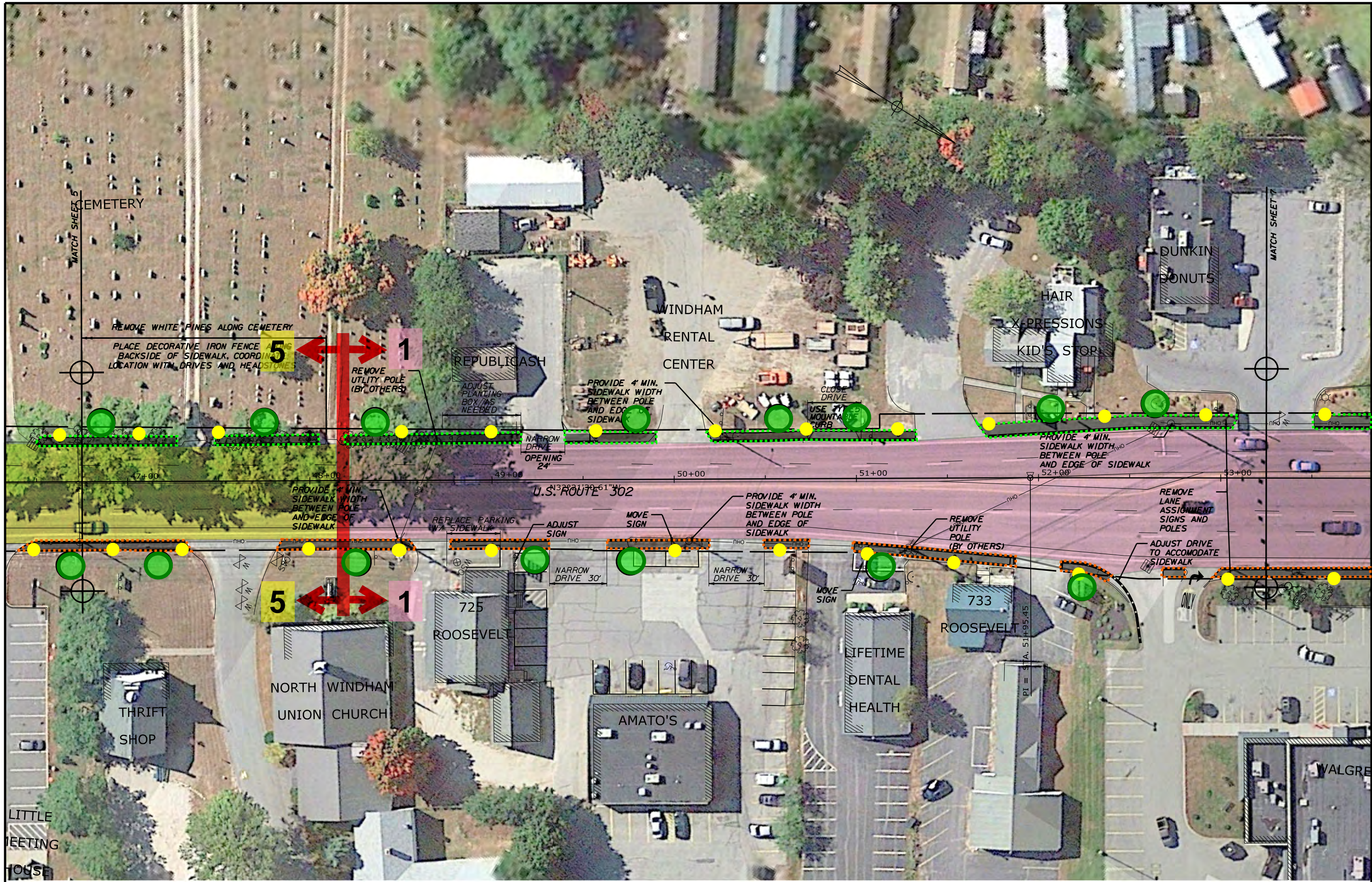
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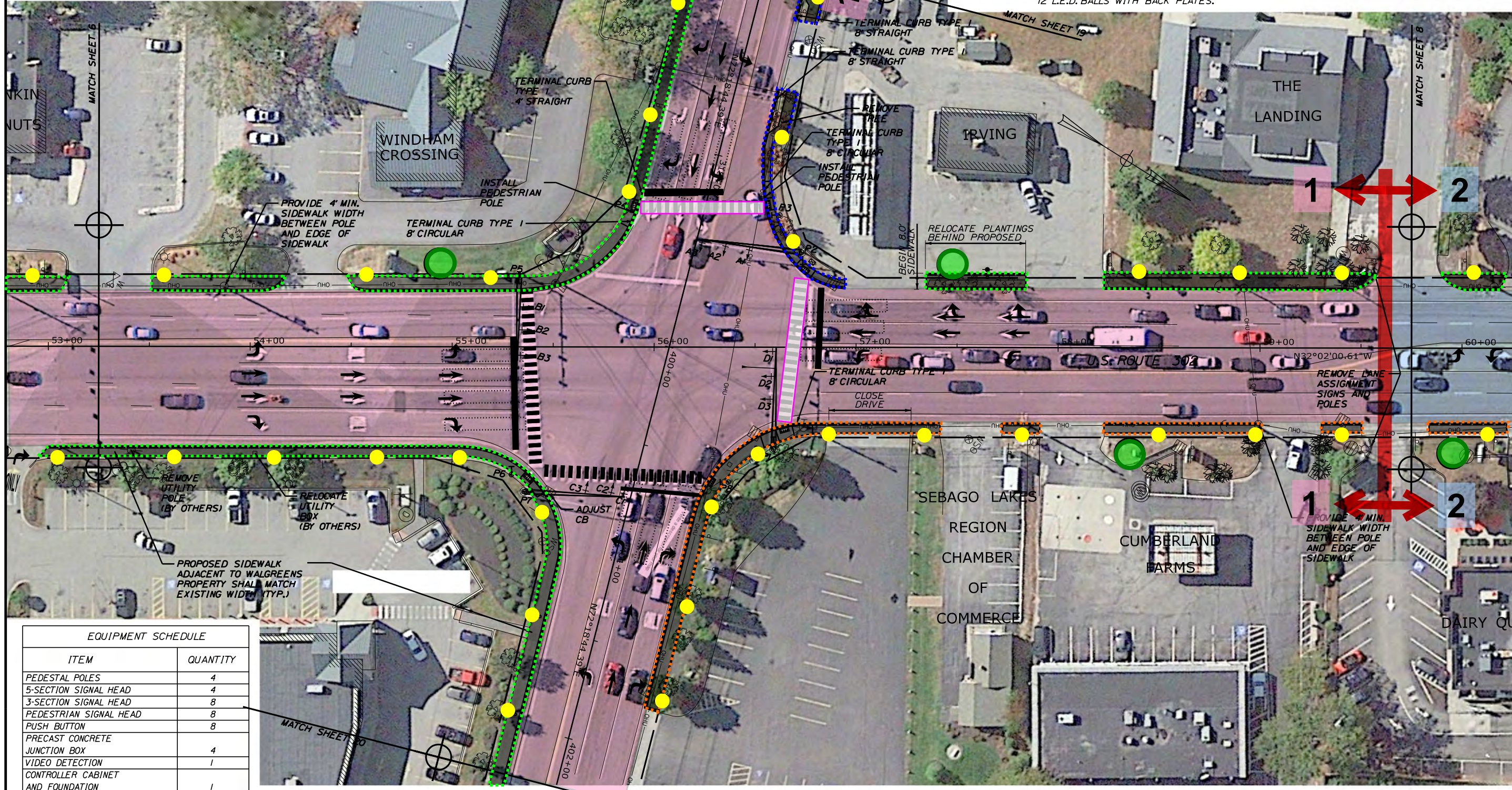
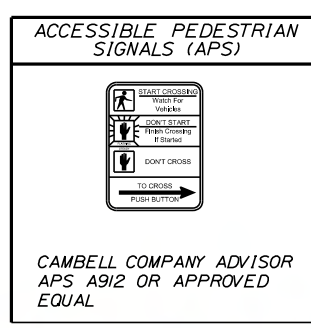
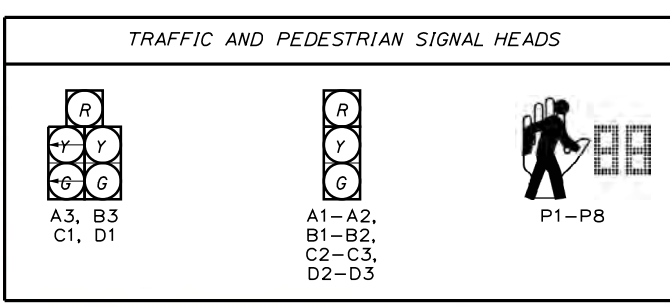
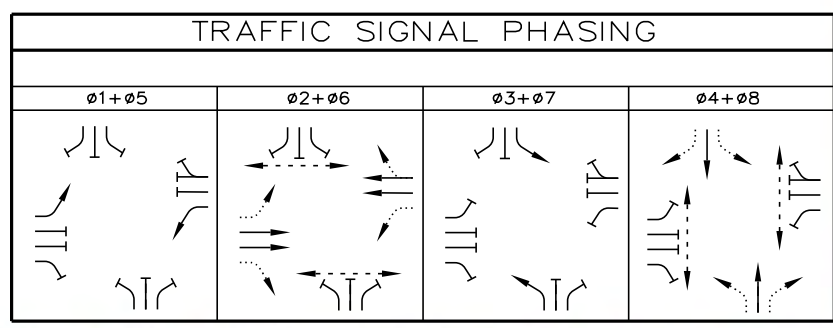
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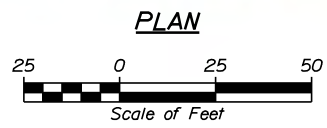
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EQUIPMENT SCHEDULE

ITEM	QUANTITY
PEDESTAL POLES	4
5-SECTION SIGNAL HEAD	4
3-SECTION SIGNAL HEAD	8
PEDESTRIAN SIGNAL HEAD	8
PUSH BUTTON	8
PRECAST CONCRETE JUNCTION BOX	4
VIDEO DETECTION	1
CONTROLLER CABINET AND FOUNDATION	1
PREEMPTION SYSTEM	1
MAST ARM POLE WITH A 50' MAST ARM	3
MAST ARM POLE WITH A 45' MAST ARM	1



TYLIN INTERNATIONAL

TOWN OF
WINDHAM, MAINE

21ST CENTURY MASTER PLAN
PRELIMINARY PLANS

PLAN

SHEET NUMBER
7
OF 21

PROJ. MANAGER	DATE	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
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TRAFFIC AND PEDESTRIAN SIGNAL HEADS

R

Y

G

A1, A2,
B1-B2
C1-C2
D1-D2

R

Y

G

B3, D3

P1-P8

ALL NEW VEHICULAR SIGNAL HEADS CONTAIN 12" L.E.D. BALLS WITH BACK PLATES.

ACCESSIBLE PEDESTRIAN SIGNALS (APS)

START CROSSING
Watch For
Vehicles

DONT START
Walk Crossing
If Stopped

DONT CROSS
TO CROSS
PUSH BUTTON

CAMBELL COMPANY ADVISOR
APS A9/2 OR APPROVED
EQUAL

TRAFFIC SIGNAL PHASING

$\phi 2 + \phi 6$	$\phi 4 + \phi 8$	$\phi 1 + \phi 5$

EQUIPMENT SCHEDULE	
ITEM	QUANTITY
PEDESTAL POLES	4
5-SECTION SIGNAL HEAD	2
3-SECTION SIGNAL HEAD	8
PEDESTRIAN SIGNAL HEAD	8
PUSH BUTTON	8
PRECAST CONCRETE JUNCTION BOX	4
VIDEO DETECTION	1
CONTROLLER CABINET AND FOUNDATION	1
PREEMPTION SYSTEM	1
MAST ARM POLE WITH A 40' MAST ARM	2
MAST ARM POLE WITH A 50' MAST ARM	1
MAST ARM POLE WITH A 30' MAST ARM	1

PLAN

TOWN OF
WINDHAM, MAINE

21ST CENTURY MASTER PLAN
PRELIMINARY PLANS

PLAN

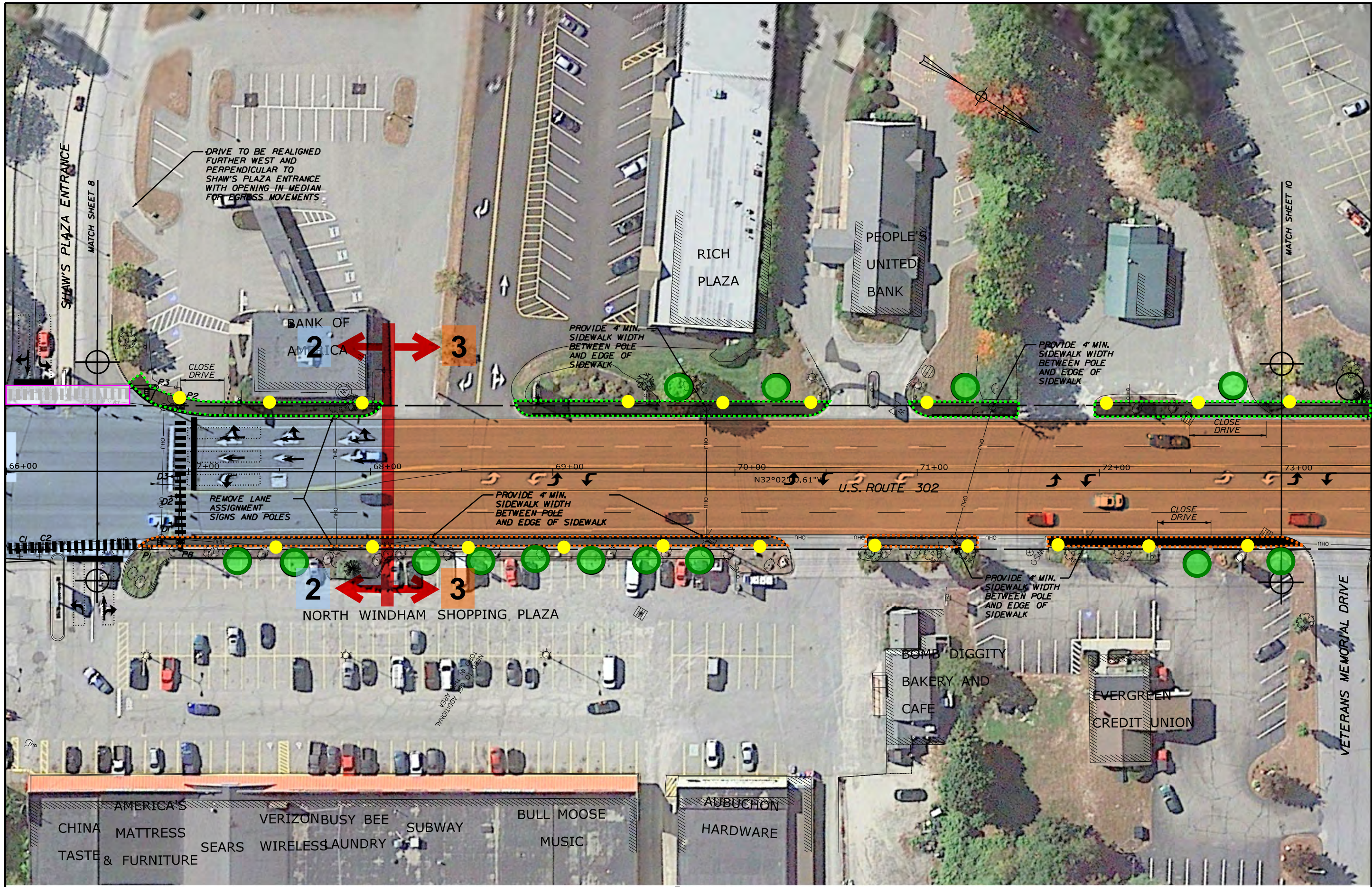
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8
OF 21

PROJ. MANAGER	DATE	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED						
CHECKED-REVIEWED						
DESIGNS DETAILED						
REVISIONS 1						
REVISIONS 2						
REVISIONS 3						
REVISIONS 4						
FIELD CHANGES						

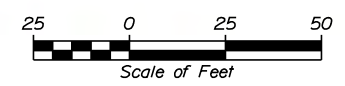
Date: 6/2/2016

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Filename: ... \HIGHWAY\MSTA\xxx_HDP\Plan_07.dgn Division: HIGHWAY



PLAN



TYLIN INTERNATIONAL

TOWN OF WINDHAM, MAINE	
21ST CENTURY MASTER PLAN PRELIMINARY PLANS	
PLAN	
SHEET NUMBER	
9	
OF 21	
PROJ. MANAGER	DATE
CHECKED-REVIEWED	SIGNATURE
DESIGNED-DETAILED	P.E. NUMBER
REVISIONS 1	DATE
REVISIONS 2	
REVISIONS 3	
REVISIONS 4	
FIELD CHANGES	

Date: 6/2/2016

Username:

Filename: ... \HIGHWAY\MST\A\xxx_HDP\plan_08.dgn Division: HIGHWAY

TRAFFIC AND PEDESTRIAN SIGNAL HEADS

R

Y

G

A1, A2
B1, B2
C1, C2
D1, D2

R

Y

G

E1, E2

R

Y

G

A3, B3,
C3, D3

P1-P10

ALL NEW VEHICULAR SIGNAL HEADS CONTAIN 12" L.E.D. BALLS WITH BACK PLATES.

ACCESSIBLE PEDESTRIAN SIGNALS (APS)

START CROSSING
Wait for
Walks

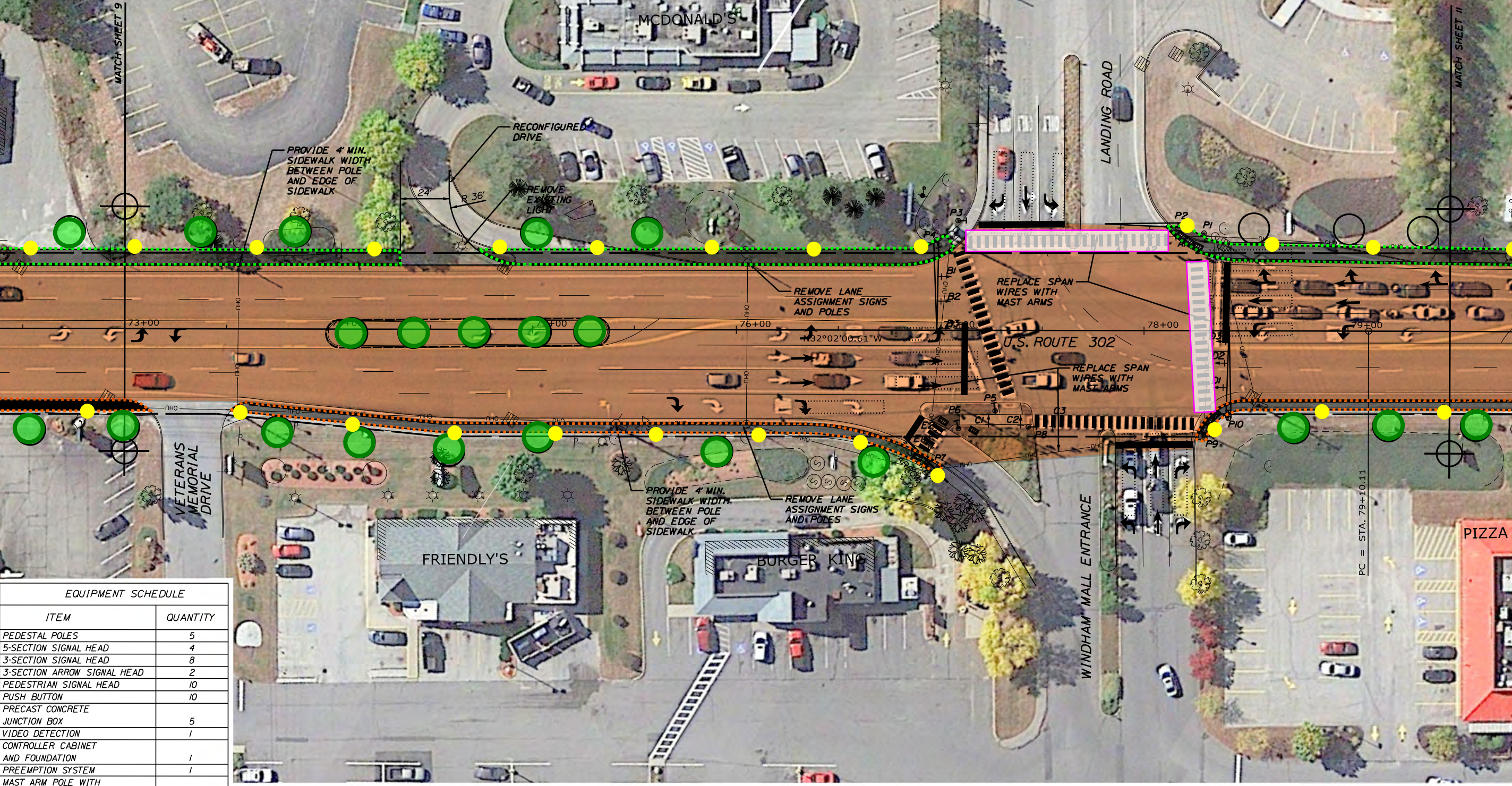
DONT START
Push button
if Stopped

DONT CROSS
Push button

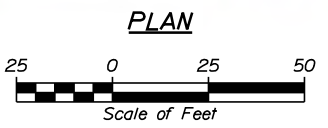
CAMBELL COMPANY ADVISOR
APS A912 OR APPROVED
EQUAL

TRAFFIC SIGNAL PHASING

ø2+ø6	ø1+ø5	ø4+ø8	ø3+ø7



EQUIPMENT SCHEDULE	
ITEM	QUANTITY
PEDESTAL POLES	5
5-SECTION SIGNAL HEAD	4
3-SECTION SIGNAL HEAD	8
3-SECTION ARROW SIGNAL HEAD	2
PEDESTRIAN SIGNAL HEAD	10
PUSH BUTTON	10
PRECAST CONCRETE JUNCTION BOX	5
VIDEO DETECTION	1
CONTROLLER CABINET AND FOUNDATION	1
PREEMPTION SYSTEM	1
MAST ARM POLE WITH A 20' MAST ARM	1
MAST ARM POLE WITH A 40' MAST ARM	2
MAST ARM POLE WITH A 45' MAST ARM	1
MAST ARM POLE WITH A 50' MAST ARM	1



TYLIN INTERNATIONAL

21ST CENTURY MASTER PLAN PRELIMINARY PLANS

PLAN

SHEET NUMBER

10

OF 21

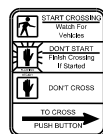
TOWN OF WINDHAM, MAINE

PROJ. MANAGER	BY	DATE	SIGNATURE	P.E. NUMBER	DATE
DESIGN-DETAILED					
CHECKED-REVIEWED					
DESIGNS-DETAILED					
DESIGNS-DETAILED					
REVISIONS 1					
REVISIONS 2					
REVISIONS 3					
REVISIONS 4					
FIELD CHANGES					

P1–P6

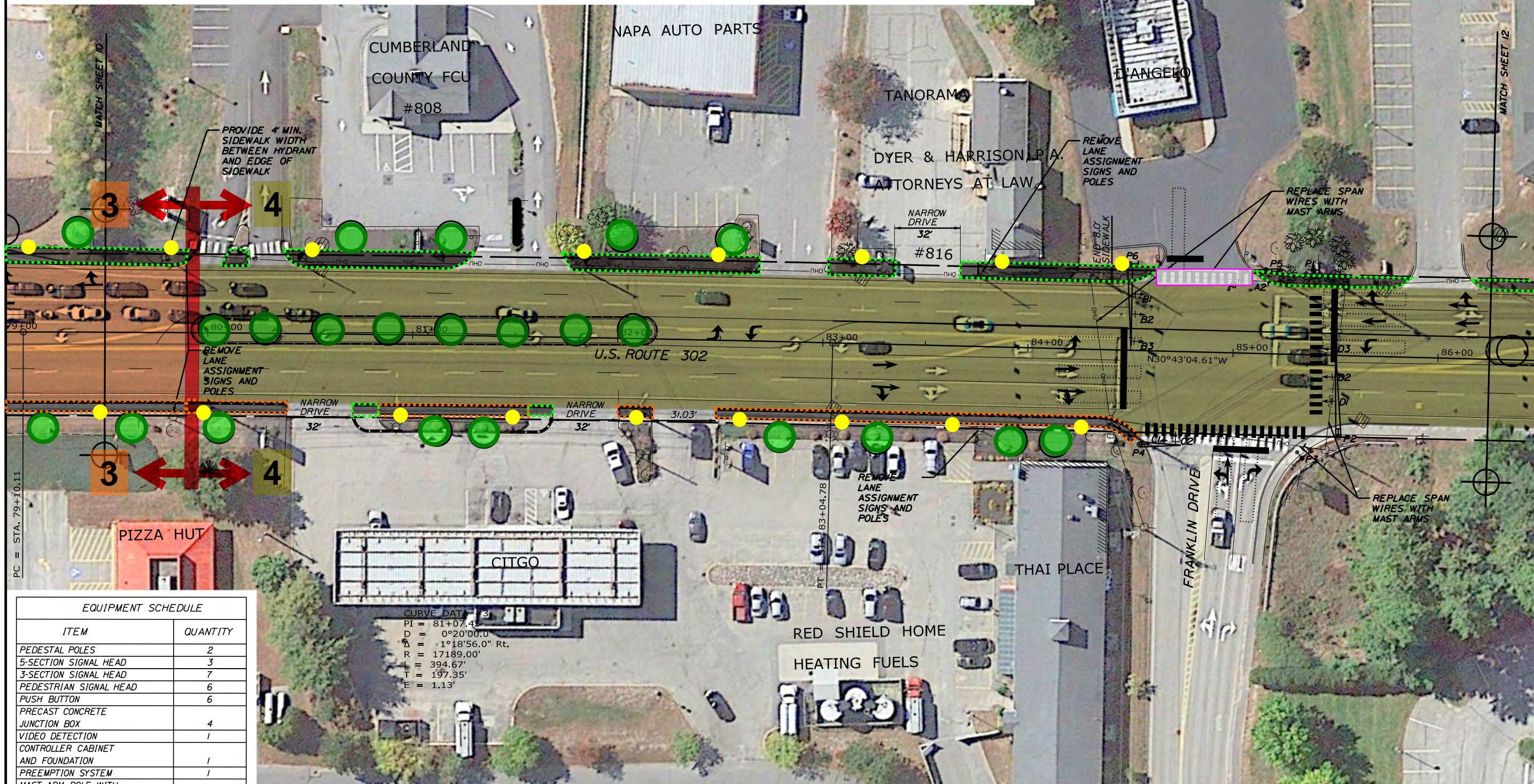
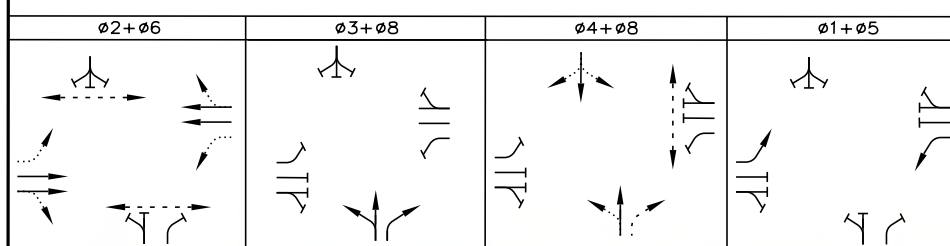
ALL NEW VEHICULAR SIGNAL HEADS CONTAIN
12" L.E.D. BALLS WITH BACK PLATES.

ACCESSIBLE PEDESTRIAN SIGNALS (APS)



CAMBELL COMPANY ADVISOR
APS A912 OR APPROVED
EQUAL

TRAFFIC SIGNAL PHASING



EQUIPMENT SCHEDULE	
ITEM	QUANTITY
PEDESTAL POLES	2
5-SECTION SIGNAL HEAD	3
3-SECTION SIGNAL HEAD	7
PEDESTRIAN SIGNAL HEAD	6
PUSH BUTTON	6
PRECAST CONCRETE JUNCTION BOX	4
VIDEO DETECTION	1
CONTROLLER CABINET AND FOUNDATION	1
PREEMPTION SYSTEM	1
MAST ARM POLE WITH A 20' MAST ARM	2
MAST ARM POLE WITH A 40' MAST ARM	1
MAST ARM POLE WITH A 45' MAST ARM	1

CURVE DATA #3
PI = 81+07.45
D = 0°20'00.0"
Δ = 1°18'56.0"
R = 17189.00'
L = 394.67'
T = 197.35'
E = 1.13'

PLAN

TOWN OF
WINDHAM, MAINE

21ST CENTURY MASTER PLANS PRELIMINARY PLANS

PLAN

SHEET NUMBER

11

OF 21

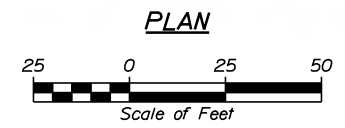
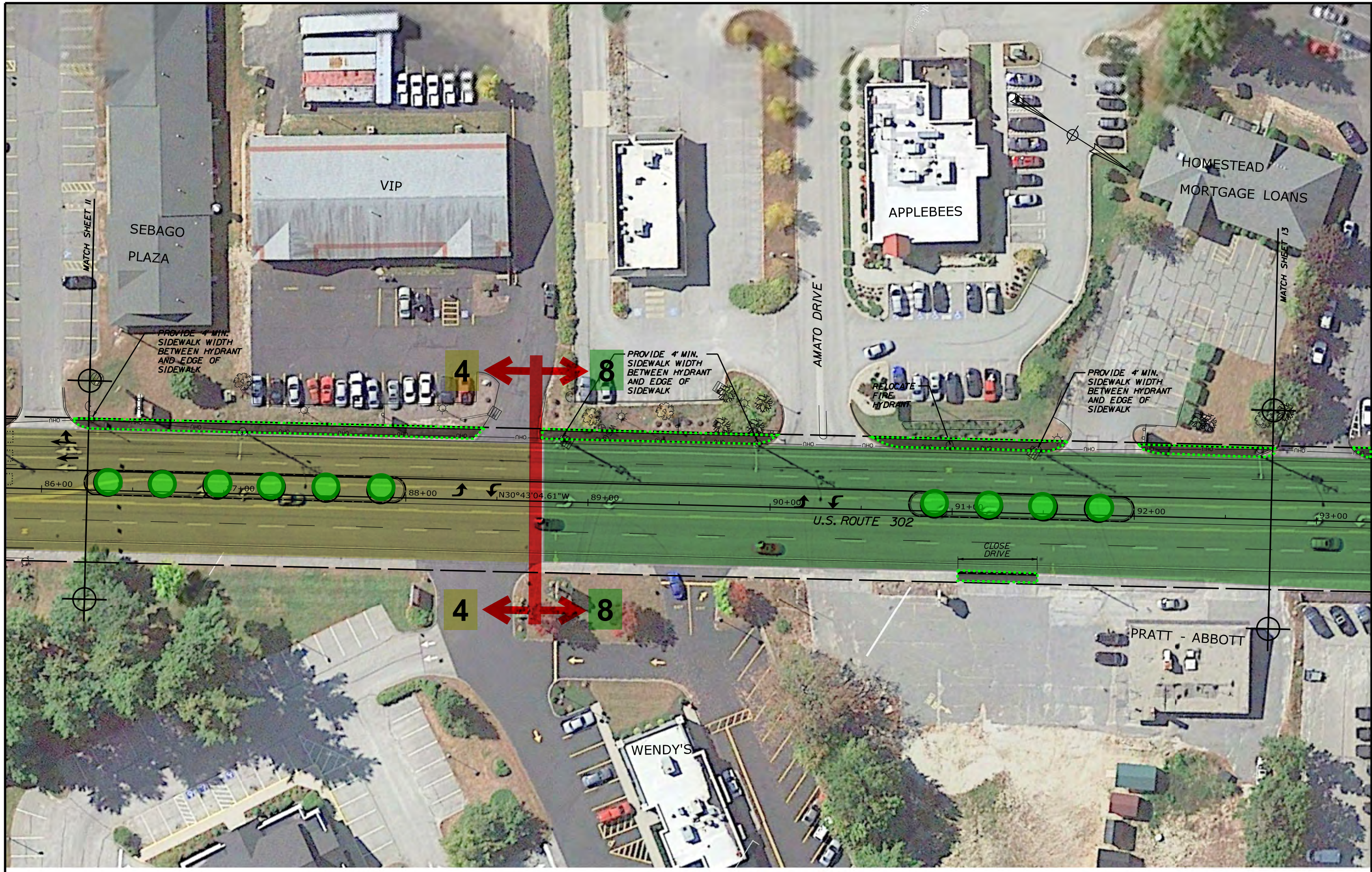
TY·LININTERNATIONAL

Date: 6/2/2016

Username:

Division: HIGHWAY

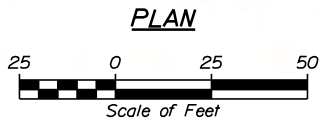
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TYLIN INTERNATIONAL

TOWN OF WINDHAM, MAINE		SIGNATURE		P.E. NUMBER		DATE	
21ST CENTURY MASTER PLAN PRELIMINARY PLANS		PROJ. MANAGER		DESIGN-REVIEWED		DESIGN-REVIEWED	
PLAN		BY		DATE		REVISIONS 1	
SHEET NUMBER		12		OF 21		REVISIONS 2	
						REVISIONS 3	
						REVISIONS 4	
						FIELD CHANGES	



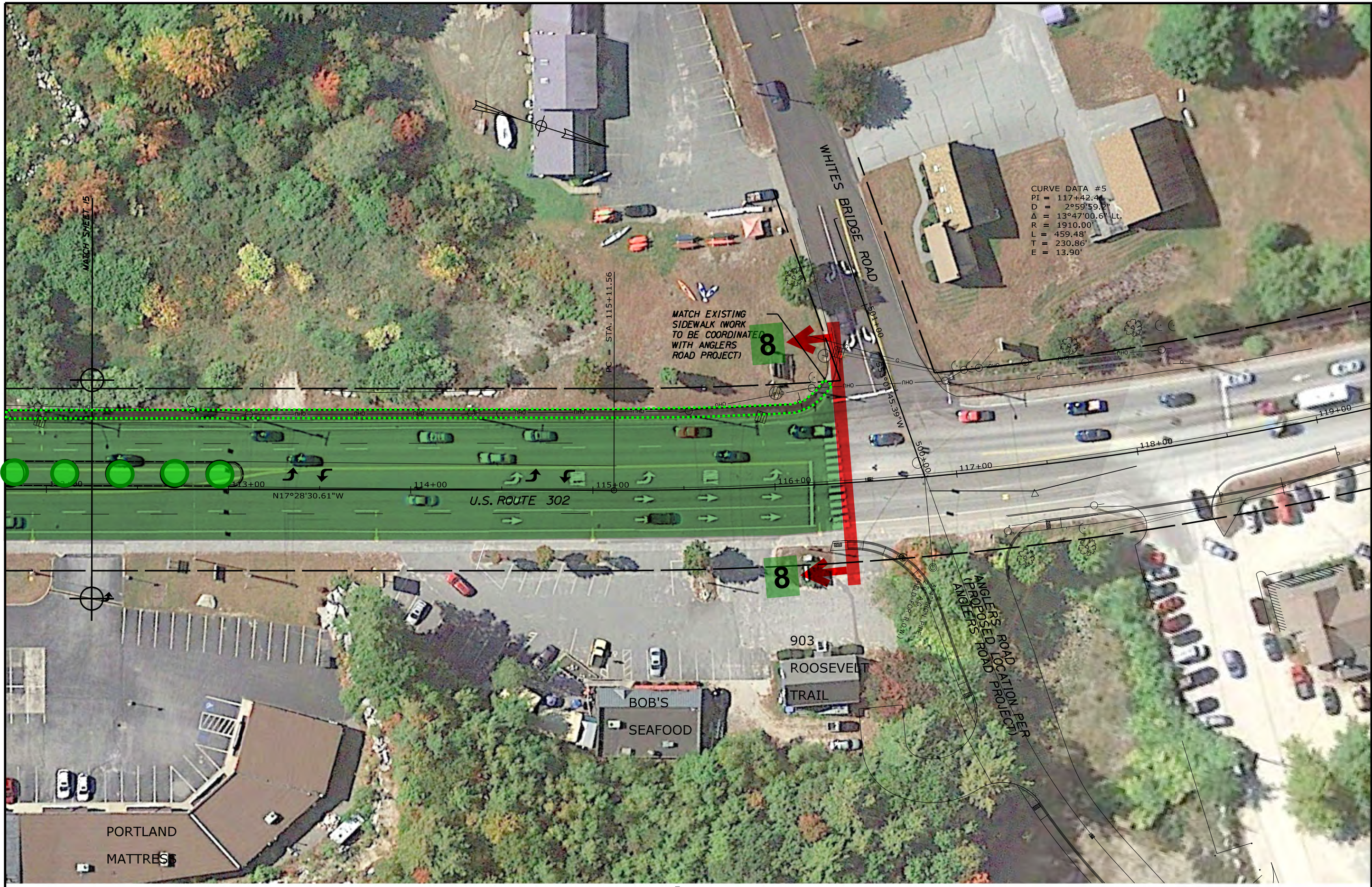


TOWN OF WINDHAM, MAINE		DATE		SIGNATURE	
		DATE		P.E. NUMBER	
21ST CENTURY MASTER PLAN PRELIMINARY PLANS		PROJ. MANAGER	BY	DATE	DATE
		CHECKED-REVIEWED			
		DESIGN DETAILER			
		REVISIONS 1			
		REVISIONS 2			
SHEET NUMBER 15 OF 21		PLAN			
		FIELD CHANGES			

Date: 6/2/2016

Username:

Filename: ... \HIGHWAY\MSTA\xxx_HDPlan_14.dgn Division: HIGHWAY

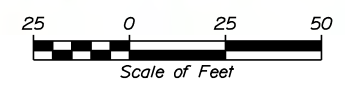


CURVE DATA #5
PI = 117+42.41
D = 2°59'59.2"
Δ = 13°47'00.6" Lt.
R = 1910.00'
L = 459.48'
T = 230.86'
E = 13.90'

MATCH EXISTING
SIDEWALK (WORK
TO BE COORDINATED
WITH ANGLERS
ROAD PROJECT)

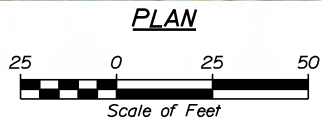
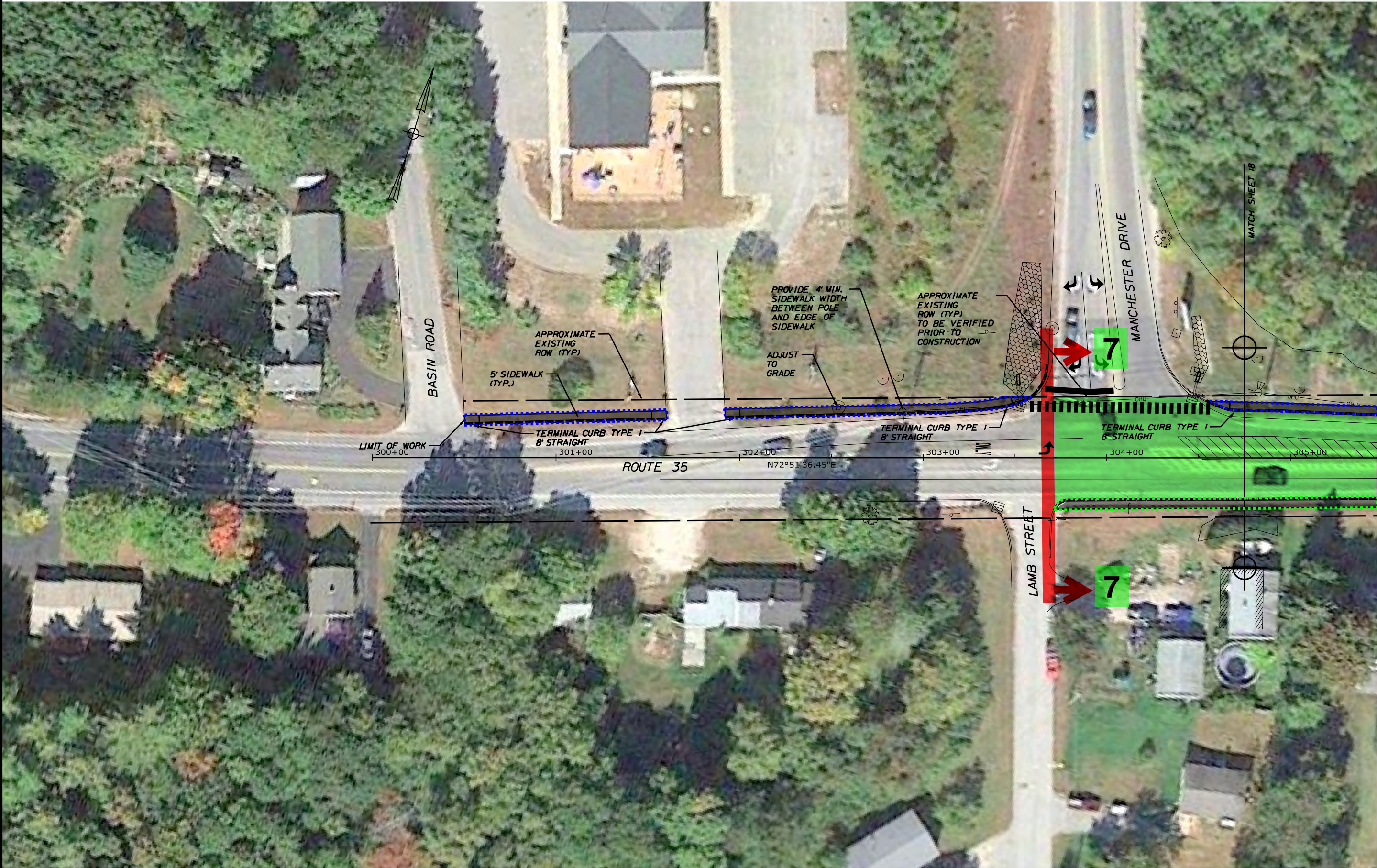
ANGLED ROAD LOCATION PER
PROPOSED ROAD PROJECT

PLAN



TYLIN INTERNATIONAL

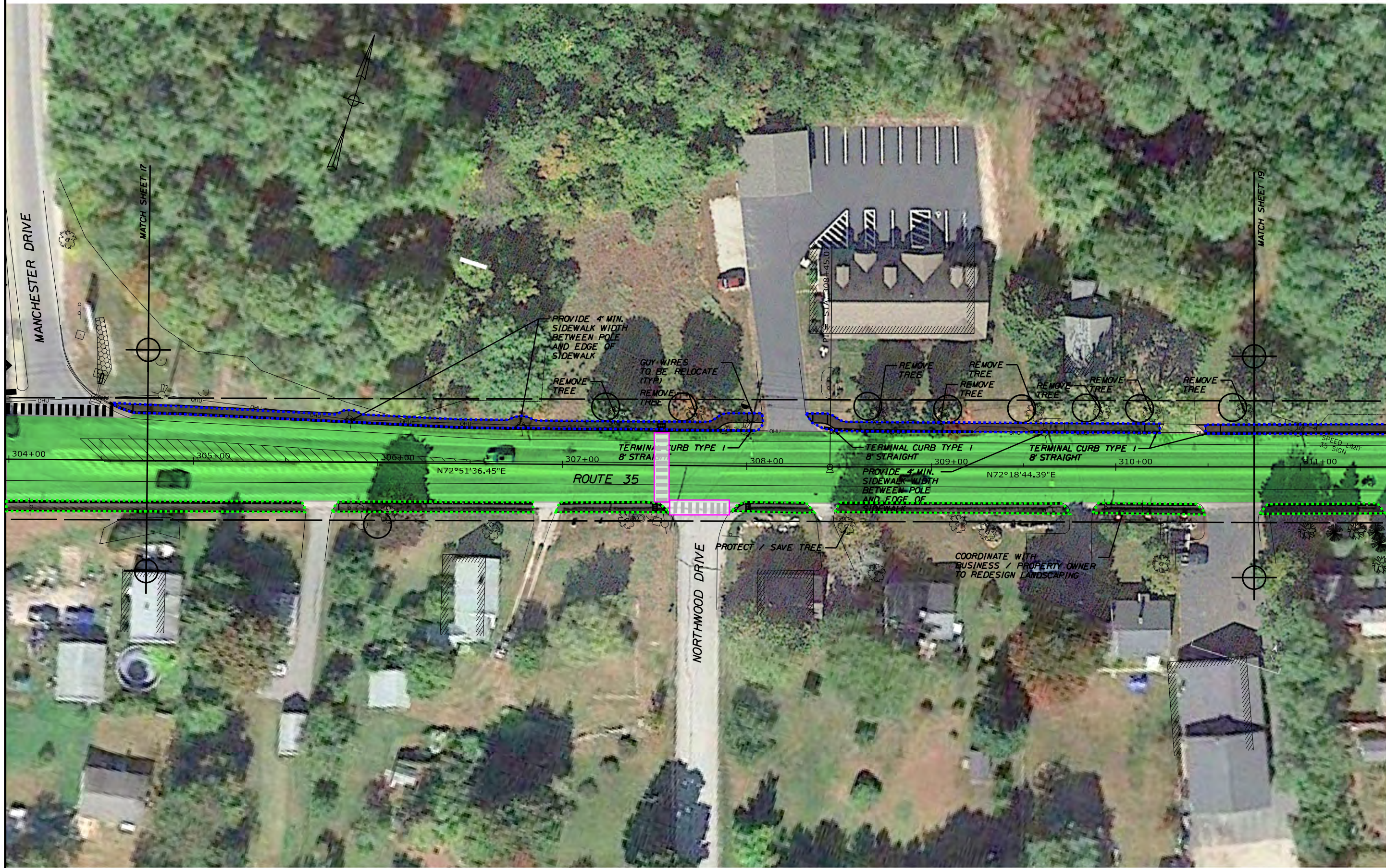
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				CHECKED-REVIEWED							
				DESIGN2-DETAILED2				SIGNATURE			
				DESIGN3-DETAILED3							
				REVISIONS 1						P.E. NUMBER	
				REVISIONS 2							
				REVISIONS 3							
				REVISIONS 4							
				FIELD CHANGES						DATE	



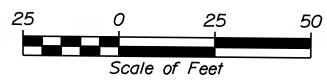
TY·LIN INTERNATIONAL

21ST CENTURY MASTER PLAN PRELIMINARY PLANS				TOWN OF WINDHAM, MAINE		
PLAN				PROJ. MANAGER	BY	DATE
				CHECKED-REVIEWED		
				DESIGN2-DETAILED2		SIGNATURE
				DESIGN3-DETAILED3		P.E. NUMBER
				REVISIONS 1		DATE
				REVISIONS 2		
				REVISIONS 3		
				REVISIONS 4		
				FIELD CHANGES		

Filename: ... \HIGHWAY\MSTA\xxx_HDPlan_16.dgn Division: HIGHWAY Username: Date: 6/2/2016



PLAN



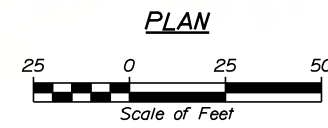
TYLIN INTERNATIONAL

TOWN OF WINDHAM, MAINE		DATE		SIGNATURE	
21ST CENTURY MASTER PLAN PRELIMINARY PLANS		BY	DATE	P.E. NUMBER	
PLAN		PROJ. MANAGER		DATE	
		CHECKED-REVIEWED			
		DESIGNED-DETAILED			
		REVISIONS 1			
		REVISIONS 2			
SHEET NUMBER		REVISIONS 3			
		REVISIONS 4			
		FIELD CHANGES			
18		OF 21			

Date:6/2/2016

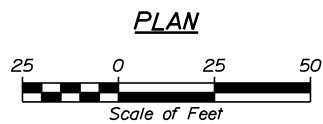
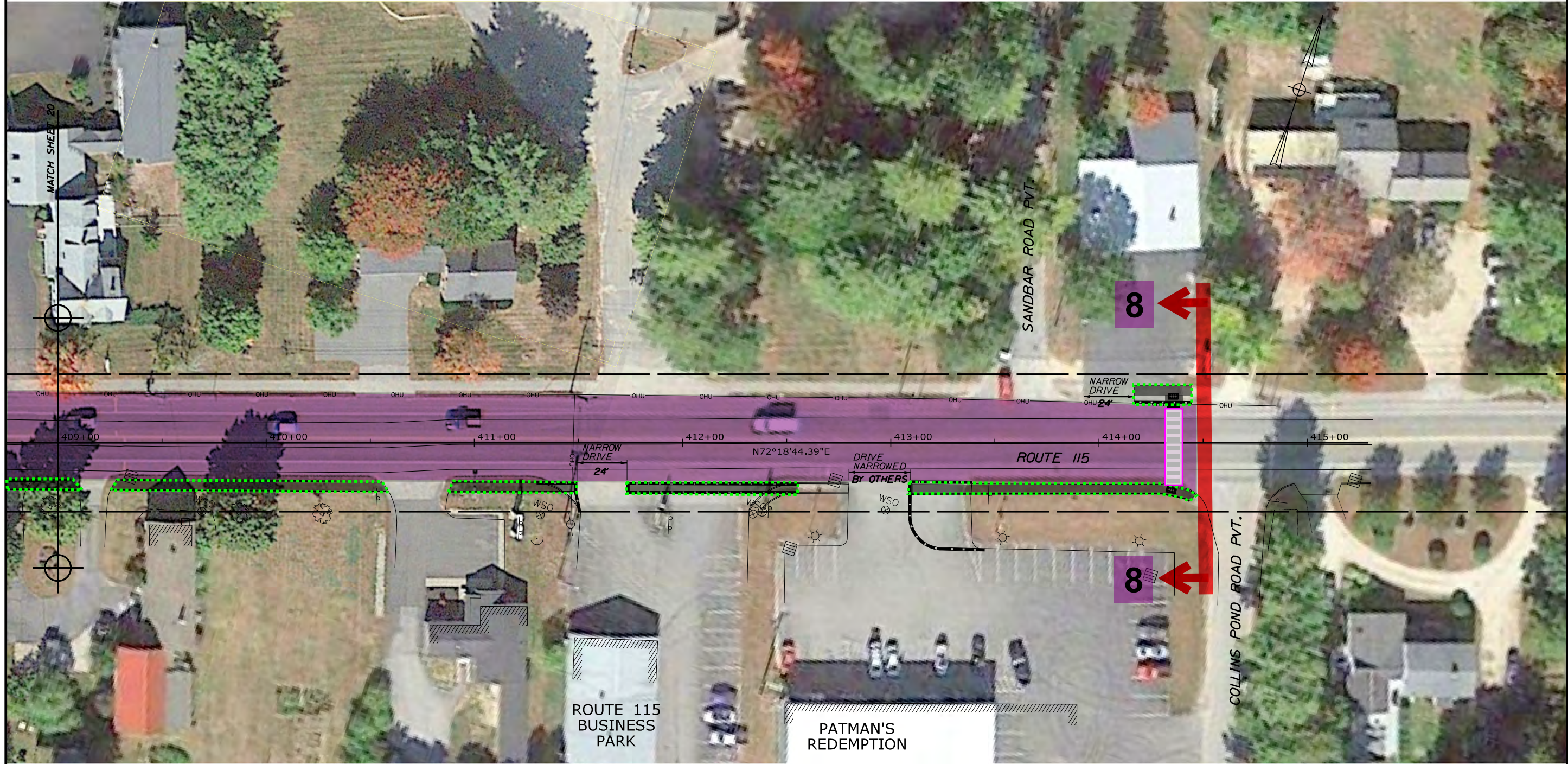
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TYLIN INTERNATIONAL

21ST CENTURY MASTER PLAN PRELIMINARY PLANS		TOWN OF WINDHAM, MAINE	
PLAN		PROJ. MANAGER	DATE
		CHECKED-REVIEWED	SIGNATURE
		DESIGN DETAILER	P.E. NUMBER
		REVISIONS 1	DATE
SHEET NUMBER 20 OF 21		REVISIONS 2	
		REVISIONS 3	
		REVISIONS 4	
		FIELD CHANGES	



TYLIN INTERNATIONAL

21ST CENTURY MASTER PLAN
PRELIMINARY PLANS

SHEET NUMBER

21

OF 21

PLAN

PROJ. MANAGER	BY	DATE
DESIGN-DETAILED		
CHECKED-REVIEWED		
DESIGN-DETAILED		
DESIGN-DETAILED		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

SIGNATURE	P.E. NUMBER	DATE

TOWN OF
WINDHAM, MAINE

ATTACHMENT - C

WINDHAM 21ST CENTURY MASTER PLAN IMPROVEMENTS - PHASING

Windham, Maine

PRELIMINARY ESTIMATE OF RIGHT OF WAY COSTS

Based on May 31, 2016 Plans

RIGHT-OF-WAY COSTS					
	Total No. Abutting Parcels	Anticipated Easements Needed	Grading	Additional Research, Mapping, & Other ROW Effort	ROW COST
PHASE	est. cost per parcel ->	Const. & Maintenance			
1	20	3	16	1	\$45,000.00
2	15	7	8	0	\$40,000.00
3	14	6	8	0	\$35,000.00
4	12	5	3	4	\$25,000.00
5	23	3	14	6	\$45,000.00
6	12	0	1	11	\$20,000.00
7	7	1	0	6	\$15,000.00
8	17	0	7	10	\$30,000.00
Totals	120	25	57	38	\$255,000.00

NOTES:

1. Right-of-way costs are based a number of dynamic factors and as such are highly variable. The costs in the table are approximate and subject to change.
2. The costs represent title research, ROW mapping, negotiations and just compensation for easements,
3. Project is understood to be well received by the community. Impacts to properties are anticipated to be minimal. As such, costs represent a fluid right-of-way process.
4. ROW costs assume no additional ROW research or cost for properties adjacent to RTE 35 sidewalk work
5. ROW costs assume only ROW costs for parcels directly adjacent to limits of construction (i.e. limited costs were carried for the north side of RTE 115 due to limited construction on that side of the road).
6. Number of parcels has been conservatively developed. It is subject to change based on grading and slope treatments which will be determined during final design

80

71

18A

72

70

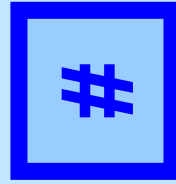
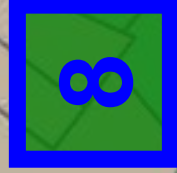
67

54

53

68

69



= PROPOSED PHASING

ATTACHMENT - D

Windham, Maine

PROJECT PROGRESS ESTIMATE

Based on May 31, 2016 Plans

		PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
Bid Item Description		PHASE Cost	PHASE Cost	PHASE Cost	PHASE Cost	PHASE Cost	PHASE Cost	PHASE Cost	PHASE Cost
CIVIL									
	SIDEWALK AND ROADWAY IMPROVEMENTS	\$130,511.00	\$74,864.50	\$129,460.30	\$102,906.30	\$234,407.00	\$92,562.30	\$103,049.30	\$357,870.80
	TRAFFIC & PEDESTRIAN SIGNALS								
		\$41,000.00	\$149,800.00	\$173,050.00	\$143,700.00	\$135,000.00	\$10,000.00	\$10,000.00	\$0.00
	TRAFFIC & PEDESTRIAN SIGNALS SUBTOTAL								
LIGHTING									
		\$370,629.40	\$189,009.20	\$314,836.15	\$149,478.50	\$440,868.95	\$0.00	\$125,969.80	\$0.00
	LIGHTING SUBTOTAL								
LANDSCAPING									
		\$13,648.00	\$8,727.50	\$58,647.00	\$70,323.00	\$68,900.50	\$0.00	\$0.00	\$104,961.50
	LANDSCAPING SUBTOTAL								
TRAFFIC CONTROL									
	SUBTOTAL	\$555,788.40	\$422,401.20	\$675,993.45	\$466,407.80	\$879,176.45	\$102,562.30	\$239,019.10	\$462,832.30
	10%	\$55,578.84	\$42,240.12	\$67,599.35	\$46,640.78	\$87,917.65	\$10,256.23	\$23,901.91	\$46,283.23
	SUBTOTAL 2	\$611,367.24	\$464,641.32	\$743,592.80	\$513,048.58	\$967,094.10	\$112,818.53	\$262,921.01	\$509,115.53
MOBILIZATION (% OF QUANTITY COSTS INCLUDING TRAFFIC CONTROL)									
	10%	\$61,136.72	\$46,464.13	\$74,359.28	\$51,304.86	\$96,709.41	\$11,281.85	\$26,292.10	\$50,911.55
	SUBTOTAL 3	\$672,503.96	\$511,105.45	\$817,952.07	\$564,353.44	\$1,063,803.50	\$124,100.38	\$289,213.11	\$560,027.08
CONTINGENCY (% OF ALL COSTS)									
	25%	\$168,125.99	\$127,776.36	\$204,488.02	\$141,088.36	\$265,950.88	\$31,025.10	\$72,303.28	\$140,006.77
	SUBTOTAL 4	\$840,629.96	\$638,881.82	\$1,022,440.09	\$705,441.80	\$1,329,754.38	\$155,125.48	\$361,516.39	\$700,033.85
FINAL DESIGN AND CONSTRUCTION ENGINEERING (% OF ALL COSTS)									
	15%	\$126,094.49	\$95,832.27	\$153,366.01	\$105,816.27	\$199,463.16	\$23,268.82	\$54,227.46	\$105,005.08
	SUBTOTAL 5	\$966,724.45	\$734,714.09	\$1,175,806.11	\$811,258.07	\$1,529,217.54	\$178,394.30	\$415,743.85	\$805,038.93
RIGHT-OF-WAY									
	SUBTOTAL 5	\$1,011,724.45	\$774,714.09	\$1,210,806.11	\$836,258.07	\$1,574,217.54	\$20,000.00	\$15,000.00	\$30,000.00
	Rounding	\$8,275.55	\$5,285.91	\$9,193.89	\$3,741.93	\$5,782.46	\$1,605.70	\$9,256.15	\$4,961.07
	PHASE TOTAL	\$1,020,000.00	\$780,000.00	\$1,220,000.00	\$840,000.00	\$1,580,000.00	\$200,000.00	\$440,000.00	\$840,000.00
	GRAND TOTAL	\$6,920,000.00							

NOTE(S)

1. Due to uncertainty of the scheduling cost have not been inflated to construction year dollars.
2. The Slope Stabilization line items are based on a anticipated MSE Wall treatment at each area.
3. Design and associated costs are expected to evolve based on further input from property owner meetings and public meetings.
4. Costs are influenced by aesthetic options for items such as the fence and light poles.
5. Estimate does not include ancillary construction costs associated with business/property owner relations (landscaping, signs etc. adjacent to project)
6. No utility costs have been included in this estimate. See supplemental utility estimate for additional costs pertaining to the Under Ground Utilities Feasibility Study.
7. Striping may need to be done in conjunction w/ future overlay project thus influencing schedule and costs.
8. This project has been developed based on approximate Right of Way. Verification of existing ROW is necessary before final design can be done.
9. ROW costs are highly variable and subject to a number of influences. The costs provided in this estimate are based on the expectation that a significant portion of the project will be able to be constructed within the existing ROW. It is assumed that for those portions which may extend beyond the existing ROW, temporary easements and construction and maintenance easements will be able to be obtained without extensive effort or expense.
10. Costs have been developed assuming minimal replacement and/or resetting of existing granite curb.
11. Final design of this project should be coordinated with other roadway and utility projects in the area.
12. Full pavement overlay of roadway surfaces is not included as part of this estimate.
13. By breaking the overall project into phases some economies of scale are lost. This estimat