CUY-90-14.90

PID 77332/85531

APPENDIX TC-09

B&N Local Route Study
(Reference Document)

State of Ohio
Department of Transportation
Jolene M. Molitoris, Director

Innerbelt Bridge
Construction Contract Group 1 (CCG1)

Revision Date: November 10, 2009

CENTRAL VIADUCT Rehabilitation

CUY-90-15.24 PID No. 83680

LOCAL ALTERNATE ROUTES STUDY

BURGESS & NIPLE

Introduction

The Department requested that several local routes be investigated as part of the maintenance of traffic for the two-phase construction of the Central Viaduct Bridge. These were:

West 25th Street (US42) from I-90 to Lorain Avenue (SR10)
Lorain Avenue (SR 10) from West 25th Street (US42) to Ontario Street (SR14)
Broadway Avenue (SR14) from I-77 to Carnegie Avenue (SR10)
West Boulevard from I-90 to SR2

Subsequently the following routes were added to the investigation:

Carnegie Avenue between Ontario Street and East 30th Street
East 9th Street between Broadway Avenue and Carnegie Avenue
East 14th Street between Broadway Avenue and Carnegie Avenue
East 22nd Street between Orange Avenue and Carnegie Avenue
East 30th Street between Broadway Avenue and Woodland Avenue
Woodland Avenue between East 30th Street and East 22nd Street
Orange Avenue between East 9th Street and E 30th Street.

The investigation included the preparation of base mapping for the routes showing lane and turning movement information, a field inventory of the routes for pavement and traffic signal conditions as well as items such as bus stops or parking restrictions that might impact the anticipated increase in traffic. Modeling of the traffic and the determination of available capacity along the routes was not part of the assignment.

To facilitate the investigation, a field review was held with representatives from the City of Cleveland and the Department on August 27th to review the routes and the traffic control facilities that are currently in place. Input was obtained regarding existing peak traffic conditions, the impacts from anticipated additional traffic detouring from I-90 and potential improvements that might be implemented.

This report has been organized to review and discuss the information obtained during the field review and subsequent field inventory for each of the routes. Base mapping with inventory information and recommendation call outs follow the narrative section. A series of photographs are also included to facilitate the reader's understanding of the routes. The narrative concludes with global recommendations and construction cost information.

West 25th Street (US42) from I-90 to Lorain Avenue (SR10)
and
Lorain Avenue (SR 10) from West 25th Street (US42) to Ontario Street (SR14)
(see Sheets 3-7 of 27)

West 25th Street (US 42) is classified as a 4-lane urban minor arterial. It services the area of Ohio City and also servers as an alternate route into downtown Cleveland. Lorain (SR 10) is classified as an urban minor arterial and for the most part is four lanes. Lorain serves as a connection between downtown and Ohio City as well as an alternative route to downtown. In general the pavement condition was good in this corridor with minimal cracking. The traffic signals on this corridor are in fair to poor condition. The recommendations of improvements for this road to be used as a local detour route for the Central Viaduct bridge reconstruction project are as follows:

Corridor Recommendations

The corridor from I-90 to Lorain Avenue will need to be in a traffic responsive coordinated traffic signal system to maximize the capacity. To accomplish this, each signal will need to be upgraded to insure that proper detection is provided and all signal equipment is compatible. For estimating purposes it is assumed that each signal in the corridor will be replaced and interconnected with aerial standard twisted pair interconnect cable.

Local Improvements

I-90 Eastbound Exit Ramp at West 25th
- Change ramp lane usage at intersection to dual lefts with a thru-right lane

West 25th at I-90 Westbound On-Ramp
- Replace damaged guardrail in southwest quadrant of intersection

West 25th at Barber
- Prohibit West 25th northbound left turns from 7 – 9 am
- Prohibit West 25th southbound left turns from 3 – 6 pm

West 25th at Potter Court
- Replace damaged catch basin
- Eliminate traffic signal and convert Potter Court to one-way eastbound. There is limited traffic using Potter Court and it appears the only reason for the traffic signal is the sight distance restriction (building) in the northeast quadrant. If the traffic signal can not be removed then a new signal must be constructed. For estimating purposes it is assumed the signal will be replaced.

West 25th at Columbus
- Resurface pavement within the intersection

West 25th at Monroe
- Prohibit West 25th Street northbound left turns from 7 – 9 am

West 25th at Gehring
- It is anticipated that detouring traffic will use Gehring as a short cut to Lorain.
- Increase northbound right turn radius to accommodate a free flow right turn. This essentially removes that the traffic calming currently installed at the intersection which will need to be removed once the detour is no longer needed.
- Convert southbound Gehring to dual left-turn lanes with a thru-right lane. To accomplish this and to improve the overall operation at the intersection, Chatham Avenue will need to be restricted to one-way westbound.

Gehring at Abby
- Operate the traffic signal in flash mode until the detour is no longer needed.

Gehring at Lorain
- Prohibit northbound left turns from Gehring and change the lane usage northbound to a right-turn lane and thru-right lane.

Lorain at Commercial and Ontario, Carnegie, and Broadway
- Resurface the intersection area from the Ontario spur to Carnegie since as the pavement condition is poor with heavy cracking.
- Resurface the Ontario Spur at the intersection of Lorain as the pavement condition is poor with rutting and cracking.
- Resurface the Ontario southbound both north and south of the intersection as the pavement condition is poor with heavy rutting and cracking.
- Reconstruct the traffic signals at Lorain and Commercial
- Reconstruct the traffic signal on Lorain/Carnegie at Ontario/Broadway
- Both traffic signals should be equipped with emergency vehicle preemption for emergence vehicles at the Commercial Road fire station. With the additional traffic at the intersection, the intersections will likely become more congested and limit the ability of the emergency vehicles to proceed through these intersections. The preemption should be designed such that the only movements that receive the right-of-way are northbound Commercial and eastbound Lorain. This would allow the intersection to clear-out, enabling better access for the emergency vehicles.
- Commercial Road fire station trucks will need to be equipped with preemption emitters.
- Video detection would be the preferred detection method at these intersections.

Items for Further Study

The intersection of Lorain and Gehring should be further analyzed to determine if one of the westbound Lorain lanes could be converted to a left-turn lane, thus creating dual left-turn lanes onto Gehring. This determination would be verified based on capacity analysis.

Broadway Avenue from I-77 to Carnegie Avenue
(see Sheets 8-12 of 27)

Broadway is classified as an urban principal arterial. The operation of Broadway will be an import aspect to a successful detour. It services downtown Cleveland and has access to both I-77 (two points of access) and I-490. The roadway south of Orange Avenue is four lanes. Multiple lanes exist north of Orange Avenue. It has multiple bus stops and either has no parking or no parking during peak periods in the study area.

Corridor Recommendations

Resurface the corridor from I-77 to the Orange Avenue/East 9th intersection.

Local Improvements

Broadway to Dille

Construct new traffic signal with pedestrian push buttons and vehicle detection on Dille.

Broadway at East 37th and Rockefeller

Replace damaged guardrail in the northwest quadrant of the intersection. The damaged guardrail is an indication that the turn radius is too small. However, the existing structure is too close to the road to increase the size of the radius. Any increase in turn radius would likely result in the need to acquire the structure.

Add video detection to the existing traffic signal. The northbound left turn lane has a protected phase and no detection as it is on a bridge. Adding detection to this movement will increase the overall capacity of the intersection. Standard induction loops do not work well in the bridges as the steel in the bridge affects their performance. The best alternative for detection is video.

Broadway at East 34th

Install temporary signal. This has been proven effective on other projects that used Broadway as a detour.

Broadway at East 30th

Install detection for East 30th. Detection for vehicles is important to ensure the phases are not called for unnecessarily, thus reducing the overall capacity of the intersection.

Broadway at Rockefeller and Post Office

Install detection for post office driveway. Detection for vehicles is extremely important in ensuring that the phases are not called for unnecessarily, thus reducing the overall capacity of the intersection.

Add guardrail to protect the failing wall adjacent to the Rockefeller Bridge.

Items for Further Study

None.

West Boulevard from I-90 to SR2
(see Sheets 13-17 of 27)

West Boulevard is classified as a minor arterial in the study area. It is for the majority of the study area a 4-lane roadway with a short section of 3-lane starting just south of Baltic and ending at SR 2. Bus stops are prevalent throughout the study area and where on-street parking is permitted, it is prohibited during morning and evening peak hours.

Corridor Recommendations

None.

Local Improvements

West Boulevard at I-90 Eastbound Off-Ramp
Change lane usage on off-ramp to a left-turn lane and a right-left turn lane.
Replace push buttons. Broken push buttons decrease the capacity of the signal because the signal is placed in pedestrian recall. If the signal is in pedestrian recall, the side street green is called automatically whether there is a vehicle present or not, thus reducing the throughput of the major street.

West Boulevard between Western Avenue and Madison
Resurface southbound curb lane (~Sta 15+85 to ~Sta 32+75). The curb lane exhibits cracking and is in poor condition.
Resurface entire roadway from the curve near one-way spur from Madison to the intersection of Madison.
The pavement is in poor condition with heavy cracking in the northbound curb lane.

West Boulevard at Madison
Construct new traffic signal with vehicle detection and pedestrian push buttons. Existing signal will give right-of-way to legs with no traffic.
Prohibit West Boulevard northbound left-turns from 7 – 9 am
Prohibit West Boulevard southbound left turns from 3 – 6 pm

West Boulevard between Madison and Detroit
Resurface the road as the pavement condition is poor with heavy cracking and potholes.

West Boulevard at Detroit (westerly intersection)
Construct new traffic signal with vehicle detection and pedestrian push buttons.
Change northbound lane usage to allow for a double right.
See Items for Further Study for discussion on westbound dual left.

West Boulevard at Detroit (easterly intersection)
Construct new signal based on result for recommended additional study.

West Boulevard from Detroit (easterly intersection) to Baltic
Resurface southbound curb lane. The pavement is in poor condition with heavy cracking and ride ability is poor.
Note: West Boulevard is primarily a 4-lane roadway until the railroad bridge south of Baltic where it narrows to three lanes. The only way to accommodate two lanes in each direction would be to either create a reversible lane or choose a direction (northbound preferred) and dedicate a third lane to the other direction.

West Boulevard at Baltic
Prohibit West Boulevard northbound left turns from 7 – 9 am
Prohibit West Boulevard southbound left turns from 3 – 6 pm
Possible new signal dependent on how the 3-lane section is used (see note above).

West Boulevard from Baltic to Clifton
Resurface southbound curb lane. The pavement is in poor condition with heavy cracking and ride ability is poor.
See note above for discussion on lane usage in this 3-lane section.

West Boulevard at Clifton and West Boulevard at SR 2
Possible new signal dependent on how 3-lane section is used (see note above).

Items for Further Study

The intersection of West Boulevard and Detroit (westerly intersection) should be analyzed to determine if one of the westbound lanes could be converted to a left-turn lane, thus creating dual left-turn lanes from the westbound. This determination will need to be based on a capacity analysis.

The intersection of West Boulevard and Detroit (easterly intersection) should be analyzed to determine how best to accommodate an eastbound dual left. It could be accomplished by either making the inside eastbound thru-lane a dedicated left-turn lane or by making it a thru-left lane. In the latter case, the eastbound and westbound phases would need to be split (not operate together) and the pedestrian crossing for Detroit would be eliminated for the duration of the project.

Carnegie Avenue from Lorain Avenue to East 30th
(see Sheets 18-20/27)

Carnegie is classified as an urban principal arterial. Carnegie is a 6-lane roadway to the west of East 22nd and a 5-lane roadway to the east of East 22nd. The operation of Carnegie will be an important aspect to the overall detoured traffic. Carnegie services multiple areas of Cleveland including the Gateway district and Cleveland State University. There are no bus stops on Carnegie and the only area where parking is allowed during peak hours is between East 9th and East 14th.

Corridor Recommendations

None.

Local Improvements

Carnegie from Ontario to East 9th

Resurface roadway as the pavement is in fair to poor condition with rutting noted in the westbound left turn lane at Ontario.

Carnegie at East 9th

Resurface intersection area
Install new pushbuttons and video detection. Detection for both pedestrians and vehicles is extremely important to ensure that the phases are not called unnecessarily thus reducing the overall capacity of the intersection.

Carnegie at East 14th

Replace push buttons. Broken push buttons decrease the capacity of the signal by placing the signal in pedestrian recall. If the signal is in pedestrian recall, the side street green is called automatically whether there is a vehicle present or not thus reducing the throughput of the major street.

Carnegie at East 18th

Replace loops and resurface the southbound approach on East 18th. The pavement was in poor condition with heavy cracking.

Carnegie from I-90 eastbound off ramp to East 28th

Eliminate midblock crosswalk traffic signal. Pedestrians can cross Carnegie at East 30th Street. Unnecessary stops on Carnegie should be eliminated to increase the overall capacity of the corridor.

Items for Further Study

Explore the possibility of eliminating parking during peak hours between East 9th and East 14th, should further analysis show that the additional lane is necessary.

East 9th Street and from Carnegie Avenue to Broadway Avenue
(see Sheet 21 of 27)

East 9th is classified as an urban principal arterial and is a 4-lane roadway with the limits of this study. It is a vital north/south street for traffic entering and leaving the city. Its access to I-90 westbound will be removed during construction however it will still maintain its access to I-77 southbound via an on-ramp or through the use of Broadway. The westbound I-90 access can be re-established via Broadway and I-490. There are no bus stops or on-street parking within the study limits.

Corridor Recommendations

Resurface the roadway from Broadway to Carnegie. The pavement is in fair to poor condition with heavy cracking southbound.

Local Improvements

East 9th at Carnegie

See discussion in the Carnegie evaluation.

Items for Further Study

None.

East 14th Street from Carnegie Avenue to Broadway Avenue

East 14th is classified as an urban collector. It is primarily a bifurcated roadway between the I-90 westbound on-ramp and Orange. East 14th performs the same function as East 9th is this area which is to distribute/collect vehicles from the interstate system and connect them to downtown Cleveland. There are no bus stops or on-street parking on this section of East 14th.

Corridor Recommendations

None.

Local Improvements

East 14th from Carnegie to the East 9th Street exit ramp from I-77 northbound.
Resurface the roadway as the pavement is in poor condition.

East 14th from Orange to Broadway
Resurface the roadway as the pavement is in poor condition.

Items for Further Study

None.

East 22nd Street from Carnegie Avenue to Orange Avenue
(see Sheets 19 and 23 of 27)

East 22nd is classified as an urban minor arterial. It is a 6-lane roadway in the study section and it services St. Vincent Charity Hospital, Cuyahoga Community College, and the U.S. post office. On-street parking is present during the peak periods on sections of the roadway which also has multiple bus stops.

Corridor Recommendations

None.

Local Improvements

East 22nd and Cedar Intersection
Resurface the intersection due to poor pavement condition. Also, include Cedar from the intersection to Carnegie Avenue.

East 22nd from Community College Avenue to Orange
Resurface the roadway as the pavement is in fair to poor condition with the cracking prevalent in the northbound lanes.

Items for Further Study

Explore the possibility of eliminating parking during peak hours between Cedar and Central should further analysis show that an additional lane is necessary.

East 30th Street from Woodland Avenue to Broadway Avenue

East 30th is classified as an urban minor arterial and is a 4-lane roadway. I-77 has on and off ramps servicing both northbound and southbound traffic on this section of the street. There is no on-street parking. A pair of bus stops is present south of the Orange intersection.

Corridor Recommendations

None.

Local Improvements

East 30th at Woodland
Resurface the southbound approach of East 30th north of the intersection as the pavement is in poor condition.
Replace push buttons. Broken push buttons decrease the capacity of the signal because the signal is placed in pedestrian recall. If the signal is in pedestrian recall the side street green is called automatically whether there is a vehicle present or not thus reducing the throughput of the major street.

East 30th at Broadway
See Broadway at East 30th (Page 3).

Items for Further Study

None.

Woodland Avenue from East 22nd Street to East 30th Street
(see Sheet 25 of 27)

Woodland is classified as an urban minor arterial. It is a one-way westbound roadway with 3-lanes between East 22nd and the Orange Avenue spur and 6-lanes from the Orange Avenue spur to East 30th. There are no bus stops in this section of roadway and on-street parking is present in the lane adjacent to Cuyahoga Community College for the entire study section.

Corridor Recommendations

None

Local Improvements

Woodland from East 22nd to the Orange Avenue spur
Resurface the roadway as the pavement is in fair to poor condition.

Woodland at East 30th
See East 30th at Woodland (page 7)

Items for Further Study

Explore the possibility of eliminating parking during peak hours. The need for this lane would be dependent upon the operation of the traffic signal at East 30th. Specifically does the westbound approach of Woodland at East 30th need 5-lanes of through traffic to operate effectively. If the westbound approach does not need the 5-lane then parking may remain.

Orange Avenue from East 9th Street to East 30th Street
(see Sheets 26 and 27 of 27)

Orange Avenue is classified as an urban principal arterial and is a 2-way, 6-lane roadway between East 9th and the post office. After the post office it becomes 3-lanes one-way eastbound. There is no parking or bus stops on this section of Orange.

Corridor Recommendations

None.

Local Improvements

Orange at East 30th
Resurface the eastbound left thru lane near the intersection as the pavement is in poor condition.

Items for Further Study

None.

Global Recommendations

Properly functioning traffic signals are the key to providing the maximum capacity on streets without adding additional lanes. As explained earlier in this report, malfunctioning or missing push buttons decrease the efficiency of signalized intersections. Throughout the field review, it was noticed that multiple intersections had pedestrian push buttons missing. In addition to these specific areas, additional push buttons were included in the cost estimate to ensure that intersections are functioning more efficiently.

The detour streets should be analyzed to determine what, if any, additional capacity is available during peak periods. This would involve obtaining peak hour traffic counts, creating a base year microsimulation traffic model, and conducting a sensitivity analysis to determine the percentage, if any, of additional traffic that this corridor could tolerate without failing in terms of level of service.

Detouring traffic will change the traffic patterns on these roadways. The traffic signals are currently timed for existing traffic conditions. Revised traffic signal timing plans should be generated as part of the analysis in determining the amount of additional traffic a roadway may accept. In cases where there is an existing or proposed closed loop traffic signal system, new system timings should be provided for the AM and PM peak periods with a separate plan for off-peak times. In cases where the signal is not in a system, three timing patterns should be developed. In this case, the patterns can be input into the controller based on the time of day.

Construction Cost Estimate

The overall construction cost estimate is $3,521,000. The detailed information can be found after the photo log.

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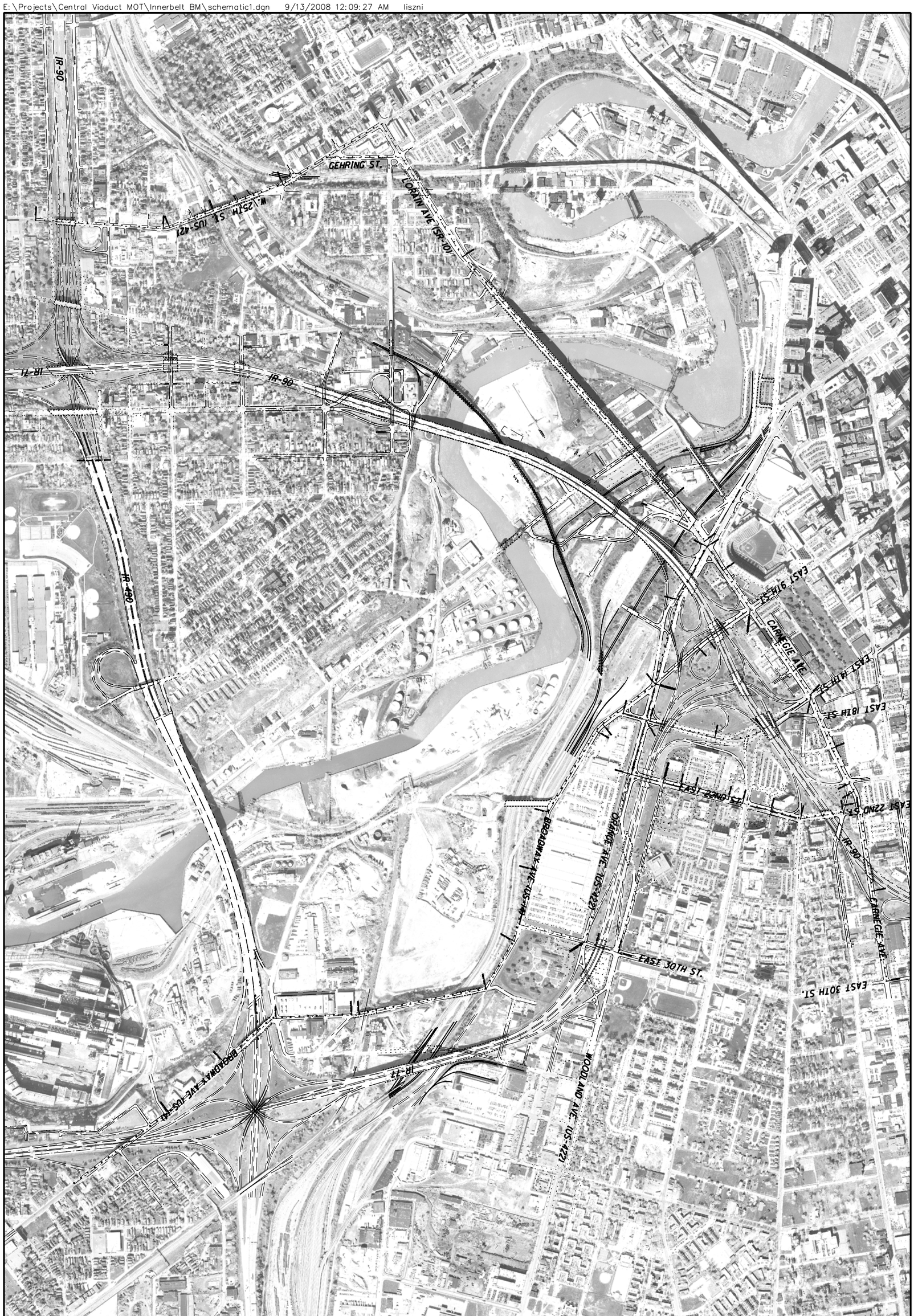

27	**LOCAL ROUTE STUDY**	**SCHEMATIC PLAN: WEST 25TH ST. / LORAIN AVE., BROADWAY AVE. & CENTRAL INTERCHANGE STREETS**

0 500
250 1000
HORIZONTAL SCALE IN FEET

N

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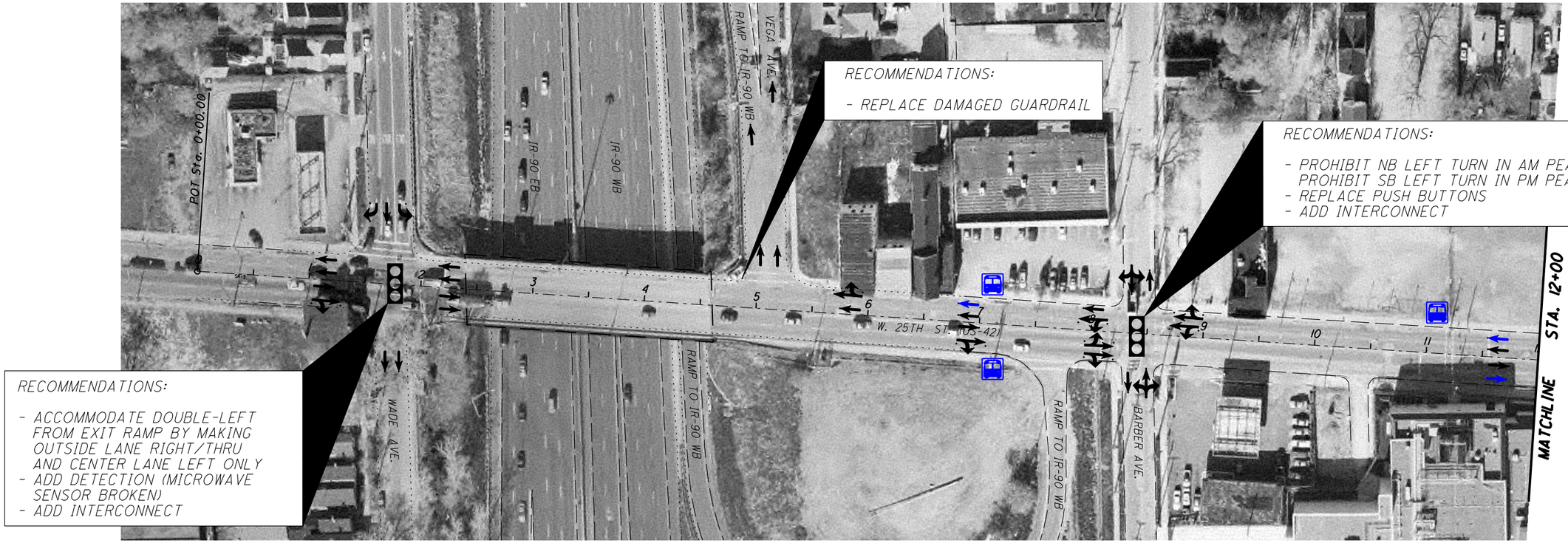
2 / 27	**ALTERNATE ROUTE STUDY**	**SCHEMATIC PLAN - ALTERNATE ROUTES: WEST BLVD.**

0 500
250 1000
HORIZONTAL SCALE IN FEET



HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
WEST 25TH ST - STA. 0+00 TO STA. 24+00

LOCAL ROUTE STUDY

3
27

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HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
WEST 25TH ST - STA. 24+00 TO STA. 43+00

LOCAL ROUTE STUDY

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RECOMMENDATIONS:

- ADD DETECTION ON WEST 20TH ST.
- ADD PUSH BUTTONS

RECOMMENDATIONS:

- ELIMINATE SIGNAL (OPERATE FLASHING)

RECOMMENDATIONS:

- ACCOMMODATE NB DOUBLE-RIGHT BY MAKING INSIDE LANE RIGHT/THRU

MATCHLINE STA. 2+00 SEE SHEET 4

MATCHLINE STA. 4+00

MATCHLINE STA. 14+50

MATCHLINE STA. 14+50

MATCHLINE STA. 27+00 SEE SHEET 6

W. 24TH ST.

LORAIN AVE (SR-10)

COLUMBUS RD.

ABBEY AVE.

OFFHAMS CT.

20TH ST.

OLD LORAIN AVE.

POT STA. 17+98.95

W. 17TH ST.

W. 18TH ST.

TRAFFIC SIGNAL

BUS STOP

PAVEMENT RESURFACING

NO PARKING

PARKING DURING NON-PEAK HOURS

PARKING DURING PEAK HOURS

NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
LORAIN AVE - STA. 2+00 TO STA. 27+00

LOCAL ROUTE STUDY

5
27

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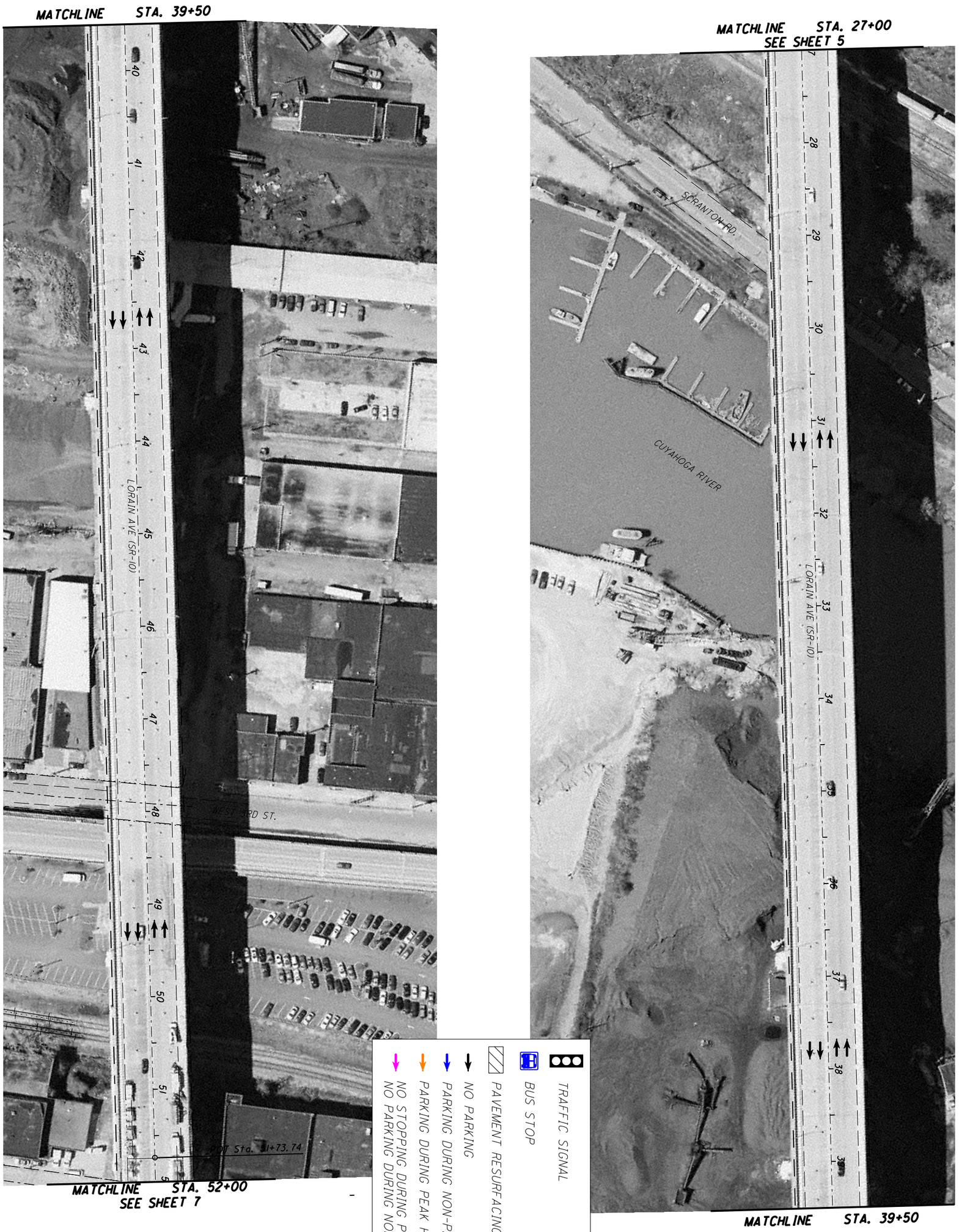
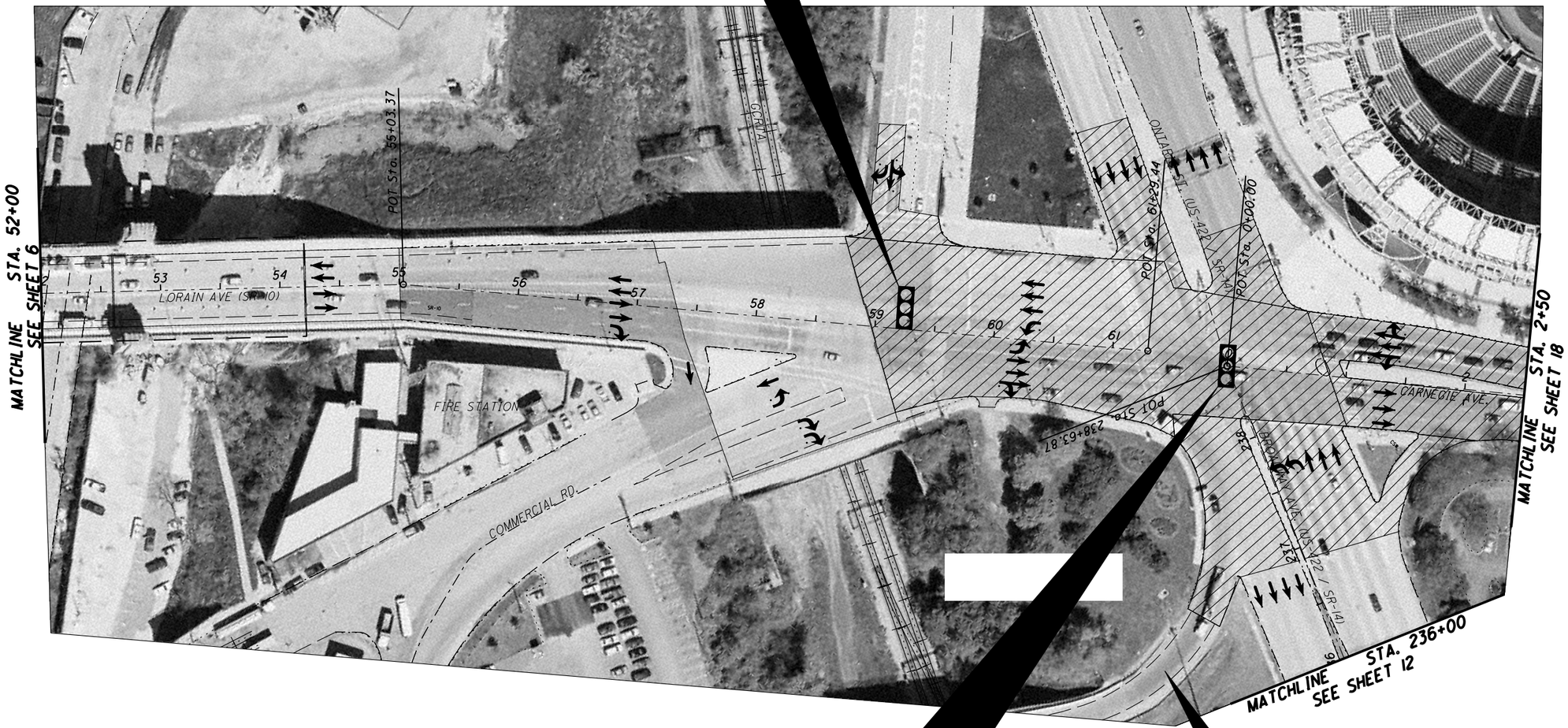


27 / 6	LOCAL ROUTE STUDY	MAINTENANCE OF TRAFFIC LORAIN AVE - STA. 27+00 TO STA. 52+00	0 50 25 100 HORIZONTAL SCALE IN FEET

RECOMMENDATIONS:

- NEW SIGNAL
- VIDEO DETECTION
- PREEMPTION FOR FIRE STATION



RECOMMENDATIONS:

- NEW SIGNAL
- VIDEO DETECTION
- PREEMPTION FOR FIRE STATION

RAMP CLOSED DURING MOT

- TRAFFIC SIGNAL
- BUS STOP
- PAVEMENT RESURFACING
- NO PARKING
- PARKING DURING NON-PEAK HOURS
- PARKING DURING PEAK HOURS
- NO STOPPING DURING PEAK HOURS
  NO PARKING DURING NON-PEAK HOURS

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
LORAIN AVE - STA. 52+00 TO STA. 61+29

LOCAL ROUTE STUDY

7
27

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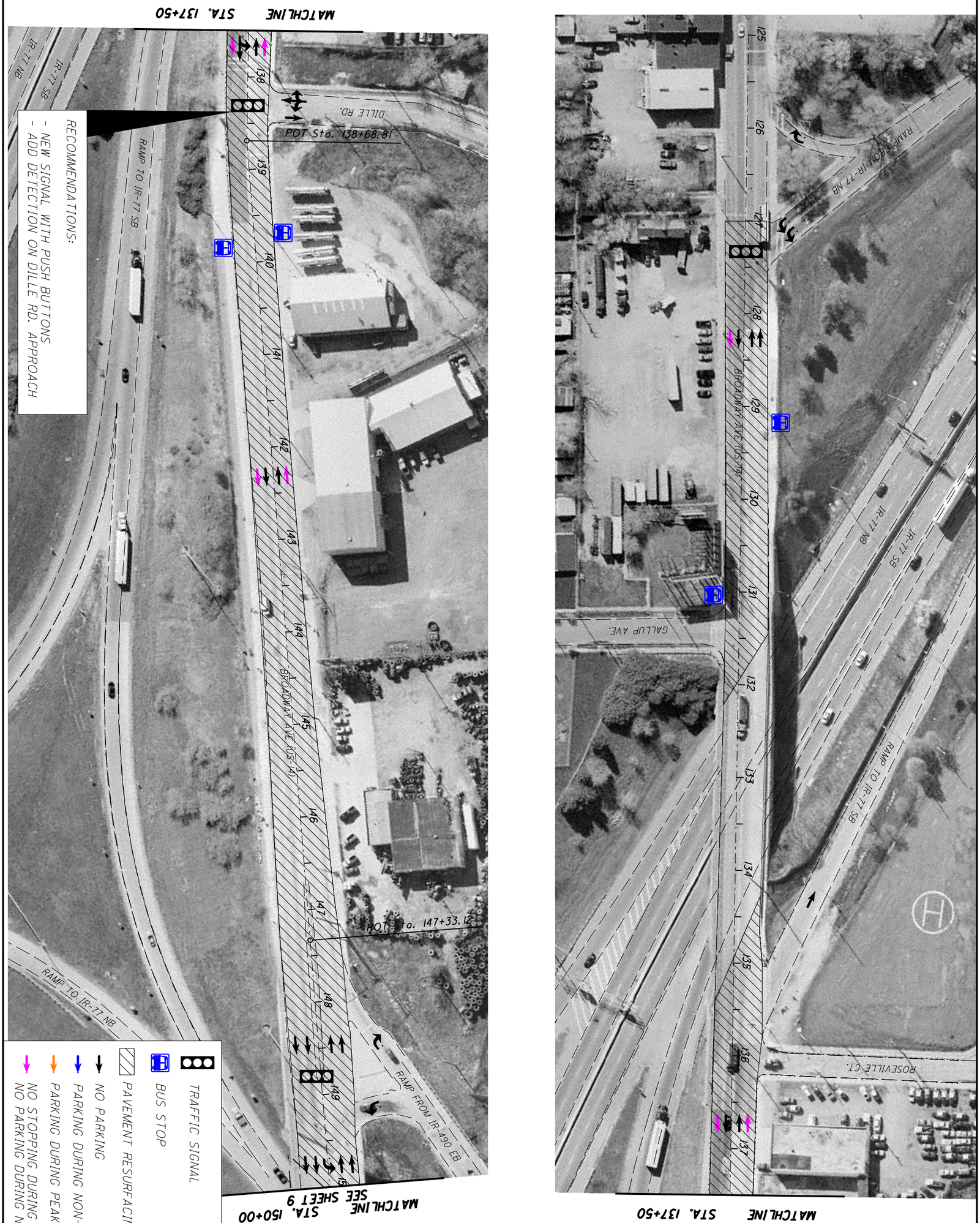

8 / 27	LOCAL ROUTE STUDY	MAINTENANCE OF TRAFFIC BROADWAY AVE - STA. 125+00 TO STA. 150+00	0 50 100 / 25 HORIZONTAL SCALE IN FEET

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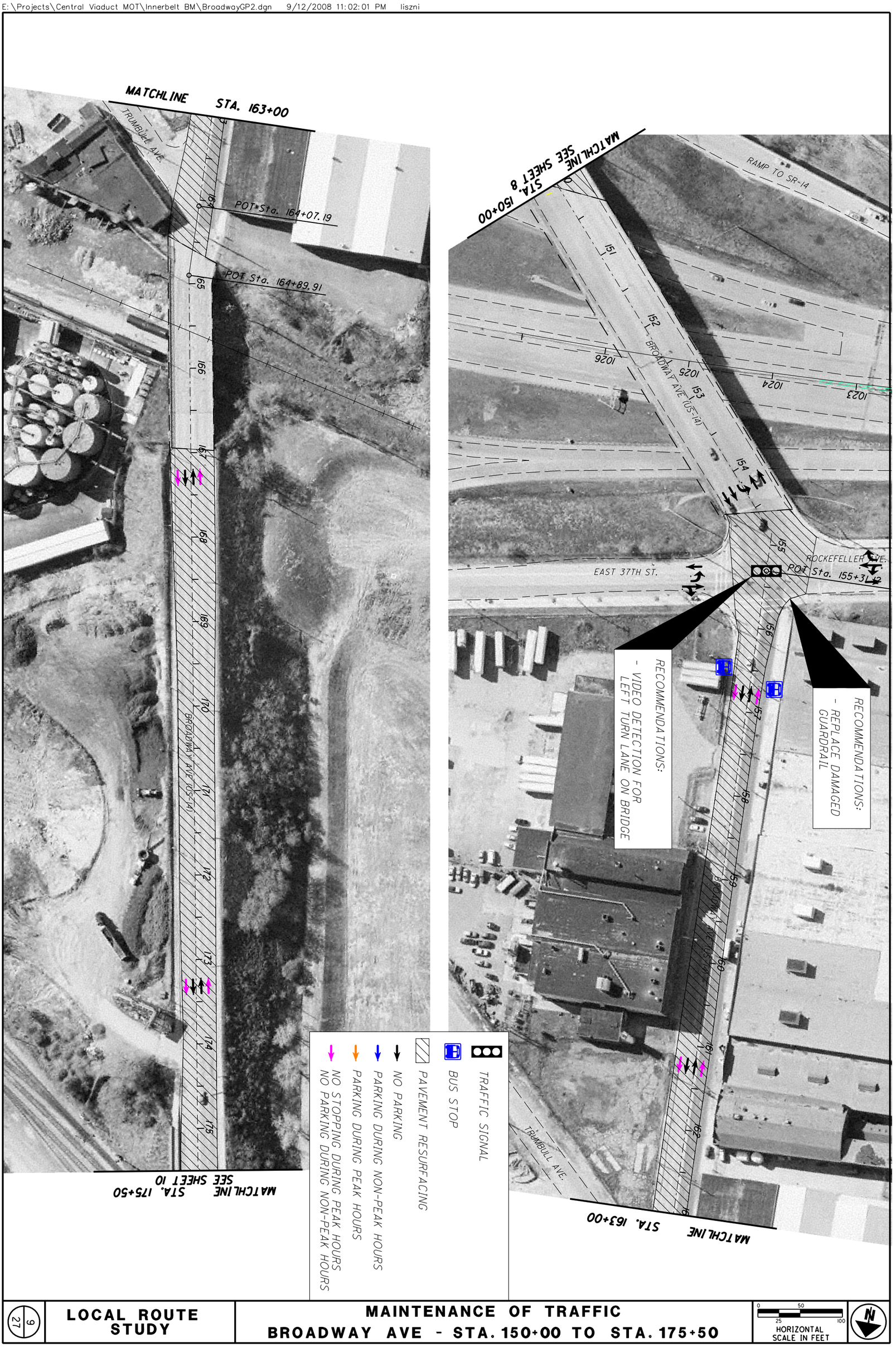

MATCHLINE STA. 175+50
SEE SHEET 9

BROADWAY AVE (US-14)

GCRTA

POT Sta. 179+92.44

RECOMMENDATIONS:

- REINSTALL TEMPORARY SIGNAL WITH DETECTION ON EAST 34TH ST.

EAST 34TH ST.

POT Sta. 186+35.09

MATCHLINE STA. 187+50

MATCHLINE STA. 187+50

POT Sta. 0+00.00

N 75° 08' 00" W

EAST 30TH ST.

RECOMMENDATIONS:

- ADD DETECTION ON EAST 30TH ST.

BUS PULL OFF

UNITED STATES POSTAL SERVICE

POT Sta. 195+00.00

MATCHLINE SEE SHEET 11 STA. 200+50

TRAFFIC SIGNAL

BUS STOP

PAVEMENT RESURFACING

NO PARKING

PARKING DURING NON-PEAK HOURS

PARKING DURING PEAK HOURS

NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
BROADWAY AVE - STA. 175+00 TO STA. 200+50

LOCAL ROUTE STUDY

10
27

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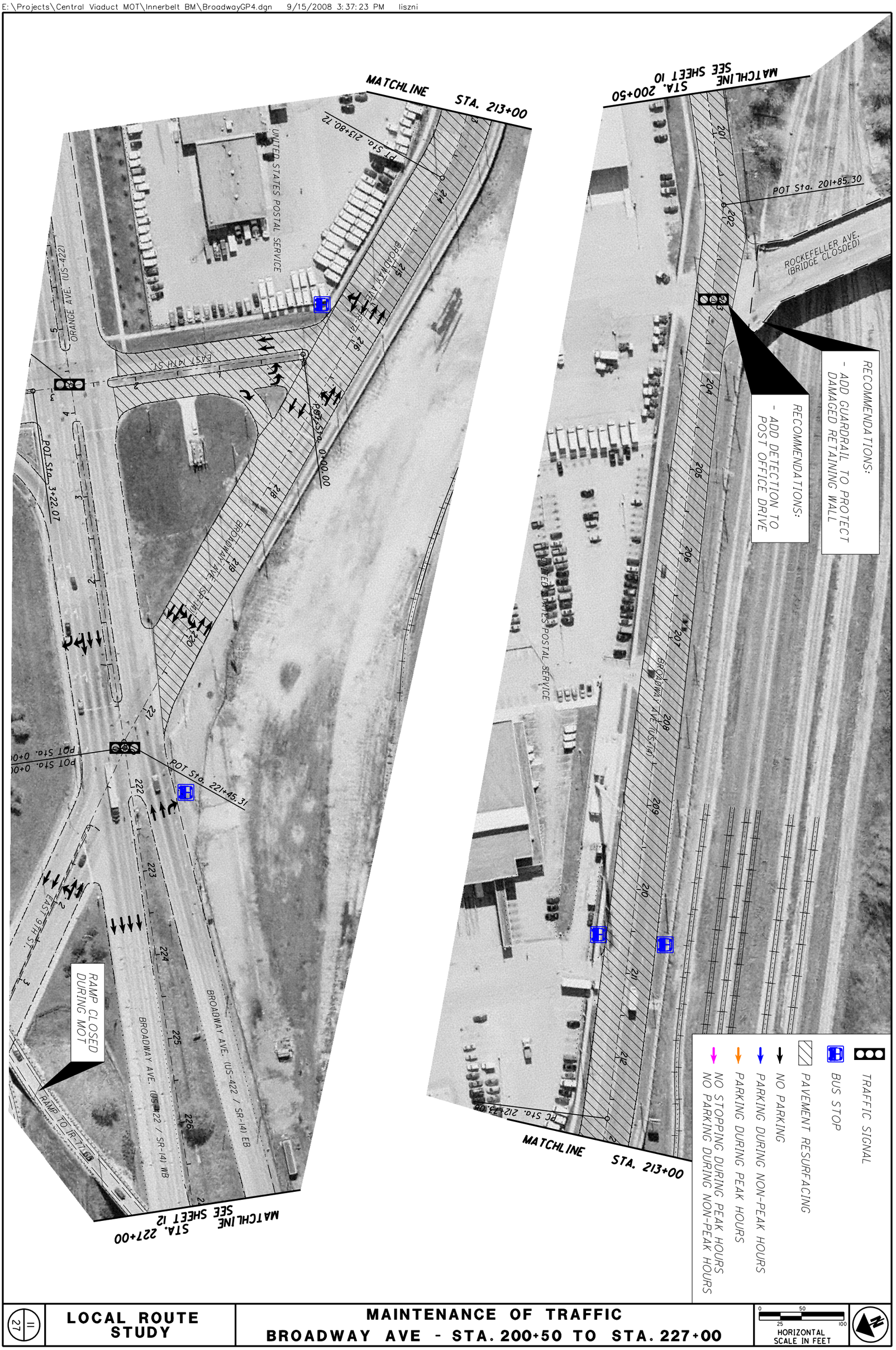

27 / 11	**LOCAL ROUTE STUDY**	**MAINTENANCE OF TRAFFIC** **BROADWAY AVE - STA. 200+50 TO STA. 227+00**

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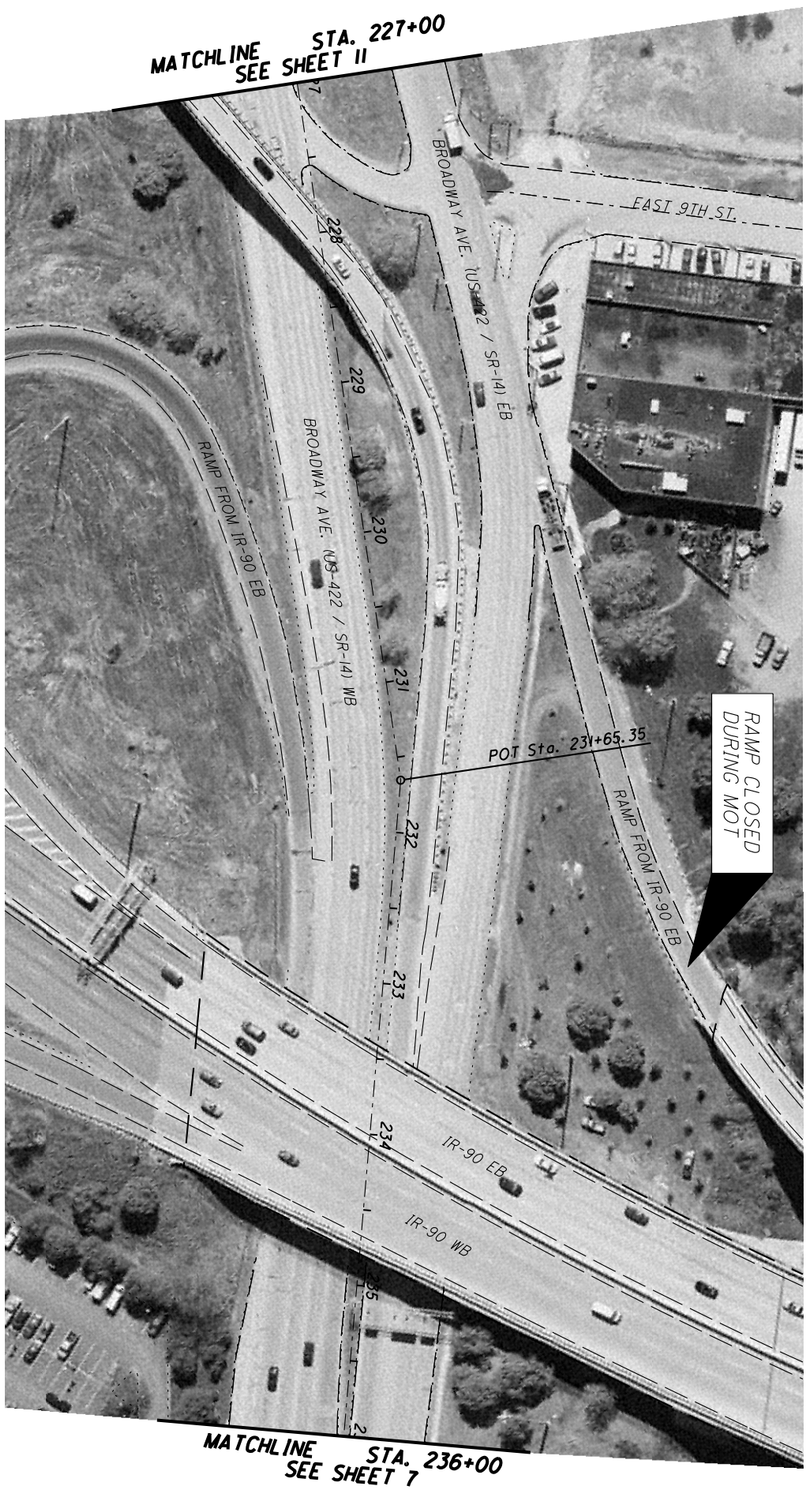

TRAFFIC SIGNAL

BUS STOP

PAVEMENT RESURFACING

NO PARKING

PARKING DURING NON-PEAK HOURS

PARKING DURING PEAK HOURS

NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS

12
27

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
BROADWAY AVE - STA. 197+00 TO STA. 208+64

0 50
25 100
HORIZONTAL SCALE IN FEET

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13/27	LOCAL ROUTE STUDY	MAINTENANCE OF TRAFFIC WEST BLVD - STA. 0+00 TO STA. 25+00

0 50
25 100
HORIZONTAL SCALE IN FEET

N

RECOMMENDATIONS:

- NEW SIGNAL WITH DETECTION
- PROHIBIT NB LEFT TURNS IN AM PEAK / PROHIBIT SB LEFT TURNS IN PM PEAK

- TRAFFIC SIGNAL
- BUS STOP
- PAVEMENT RESURFACING
- NO PARKING
- PARKING DURING NON-PEAK HOURS
- PARKING DURING PEAK HOURS
- NO STOPPING DURING PEAK HOURS
  NO PARKING DURING NON-PEAK HOURS

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
WEST BLVD - STA. 25+00 TO STA. 47+00

LOCAL ROUTE STUDY

14
27

TRAFFIC SIGNAL

BUS STOP

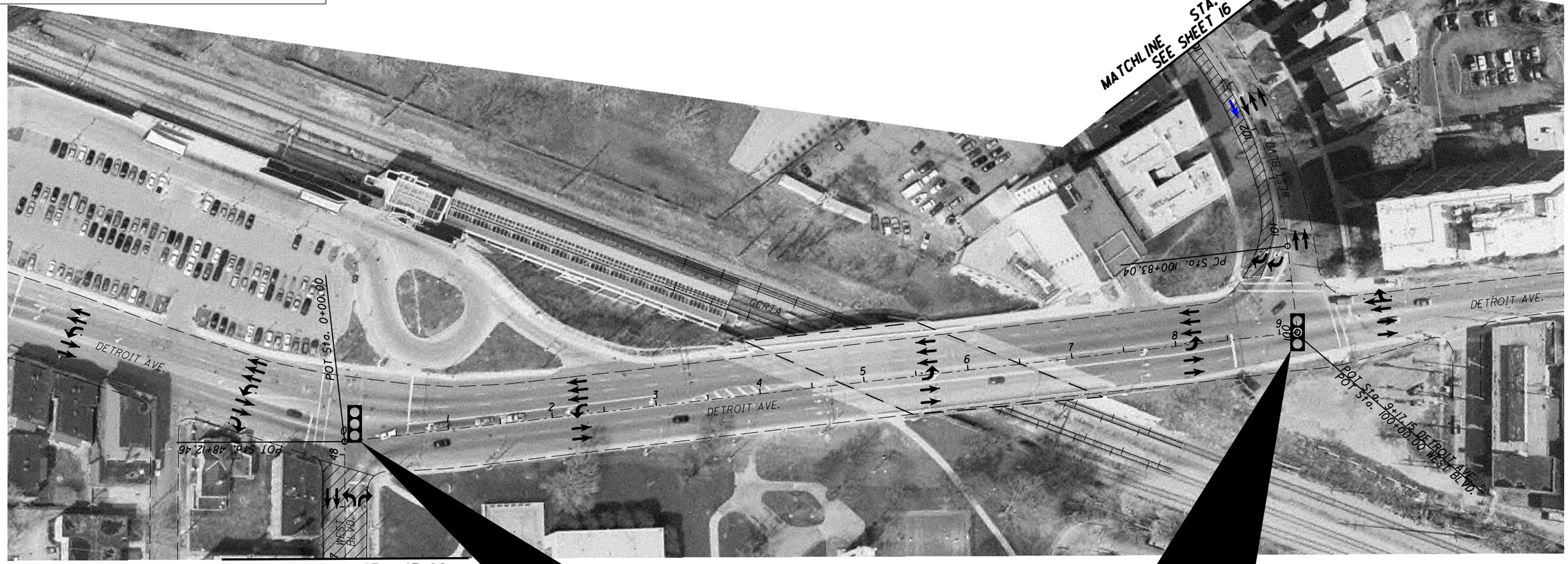
PAVEMENT RESURFACING

NO PARKING

PARKING DURING NON-PEAK HOURS

PARKING DURING PEAK HOURS

NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS



MATCHLINE STA. 47+00
SEE SHEET 14

RECOMMENDATIONS:

- NEW SIGNAL WITH PUSH BUTTONS
- ACCOMODATE NB DOUBLE-RIGHT TURN BY MAKING INSIDE LANE RIGHT/LEFT TURN

RECOMMENDATIONS:

- POSSIBLE NEW SIGNAL BASED ON PHASING
- ACCOMMODATE EB DOUBLE-LEFT TURN BY EITHER:
  - (A) MAKING MIDDLE EB LANE LEFT TURN ONLY
  - (B) MAKING MIDDLE EB LANE LEFT/THRU WITH SPLIT PHASE OPERATION ON DETROIT (WOULD REQUIRE REMOVAL DETROIT PEDESTRIAN CROSSING)

N

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
WEST BLVD - STA. 47+00 TO STA. 103+00

LOCAL ROUTE STUDY

15
27

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16
27

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
WEST BLVD - STA. 103+00 TO STA. 117+00

0 50
25 100
HORIZONTAL SCALE IN FEET

N

RECOMMENDATIONS:

- POSSIBLE NEW SIGNAL BASED ON LANE CONFIGURATION

RECOMMENDATIONS:

- STRIPE 3 LANES WITH CENTER LANE AS EITHER
  (A) REVERSIBLE LANE
  (B) NB THRU LANE

RECOMMENDATIONS:

- POSSIBLE NEW SIGNAL BASED ON LANE CONFIGURATION

MATCHLINE STA. 117+00
SEE SHEET 16

PT Sta. 117+47.17

POT Sta. 123+36.14

POT Sta. 127+56.53

WEST BLVD.

CLIFTON RD. (US-6 / US-20 / SR-21)

EDGEWATER DR.

LAKE AVE.

RAMP TO SR-2 EB

RAMP FROM SR-2 WB

RAMP FROM SR-2 WB

118 119 120 121 122 123 124 125 126 127 153

TRAFFIC SIGNAL

BUS STOP

PAVEMENT RESURFACING

NO PARKING

PARKING DURING NON-PEAK HOURS

PARKING DURING PEAK HOURS

NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS

N

0 25 50 100
HORIZONTAL SCALE IN FEET

MAINTENANCE OF TRAFFIC
WEST BLVD - STA. 117+00 TO STA. 127+57

LOCAL ROUTE STUDY

17
27

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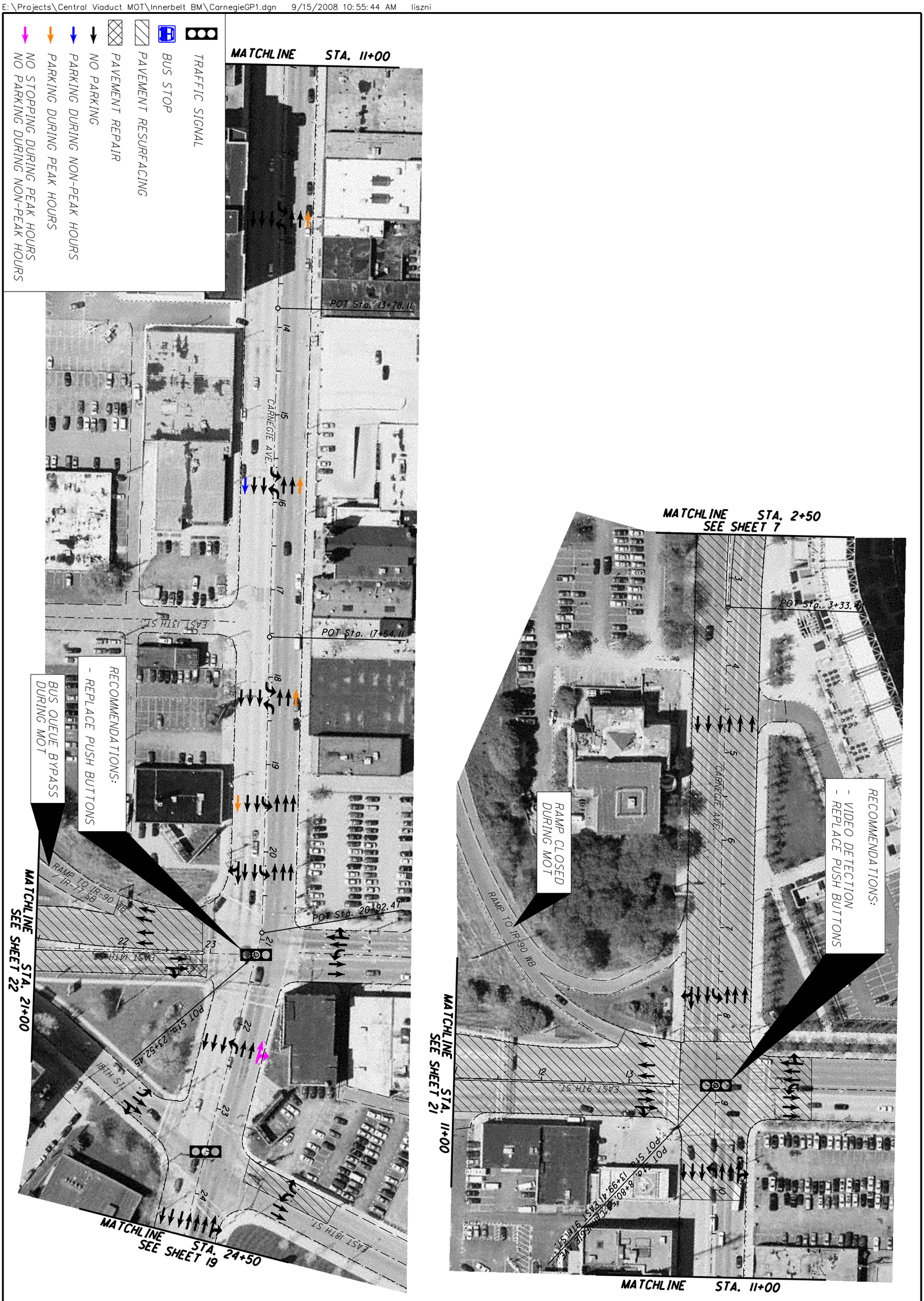

18 / 27	**LOCAL ROUTE STUDY**	**MAINTENANCE OF TRAFFIC** **CARNEGIE AVE - STA. 2+50 TO STA. 24+50**

0 50 25 100
HORIZONTAL SCALE IN FEET

HORIZONTAL SCALE IN FEET
0 25 50 100

MAINTENANCE OF TRAFFIC
CARNEGIE AVE - STA. 24+50 TO STA. 49+00

LOCAL ROUTE STUDY

19
27

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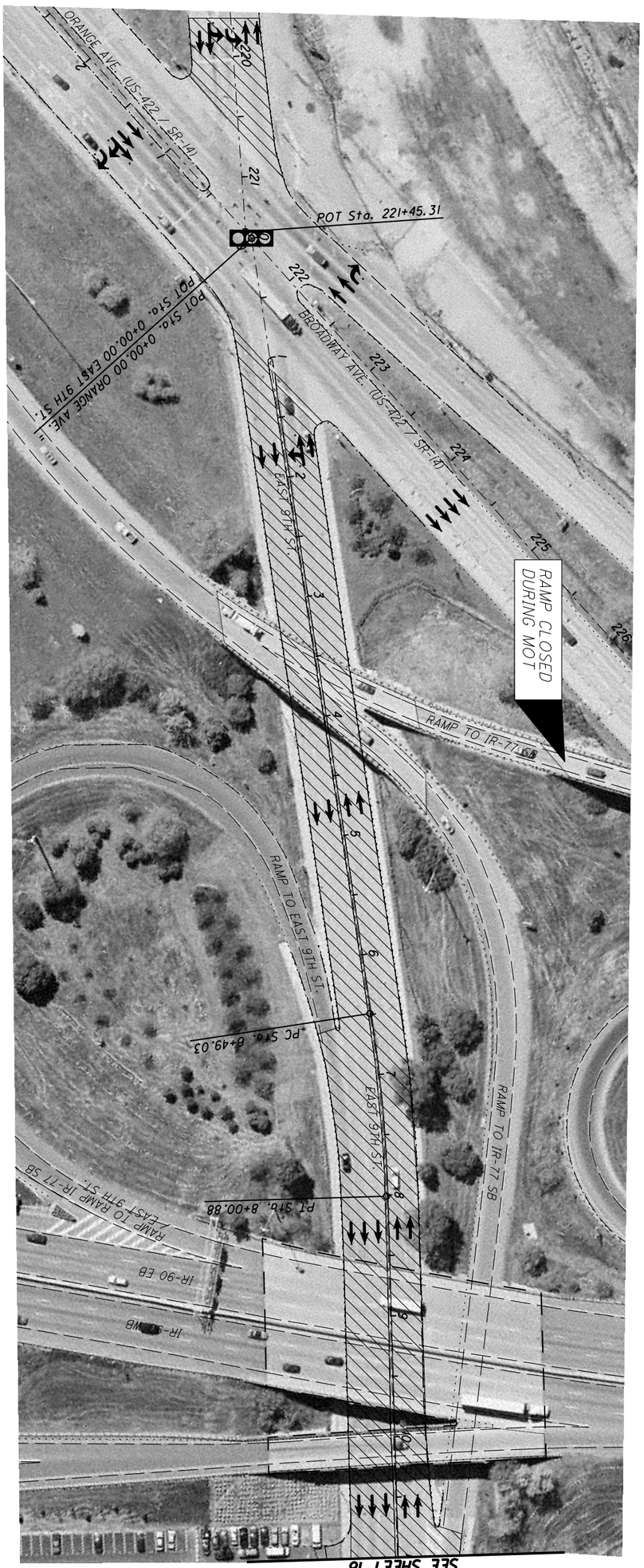
20/27	LOCAL ROUTE STUDY	MAINTENANCE OF TRAFFIC CARNEGIE AVE - STA. 49+00 TO STA. 55+54

0 50
25 100
HORIZONTAL SCALE IN FEET



TRAFFIC SIGNAL

BUS STOP

PAVEMENT RESURFACING

NO PARKING

PARKING DURING NON-PEAK HOURS

PARKING DURING PEAK HOURS

NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
EAST 9TH ST - STA. 0+00 TO STA. 11+00

0 50
25 100
HORIZONTAL SCALE IN FEET

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22/27	**LOCAL ROUTE STUDY**	**MAINTENANCE OF TRAFFIC** **EAST 14TH ST - STA. 0+00 TO STA. 21+00**

HORIZONTAL SCALE IN FEET
0 25 50 100

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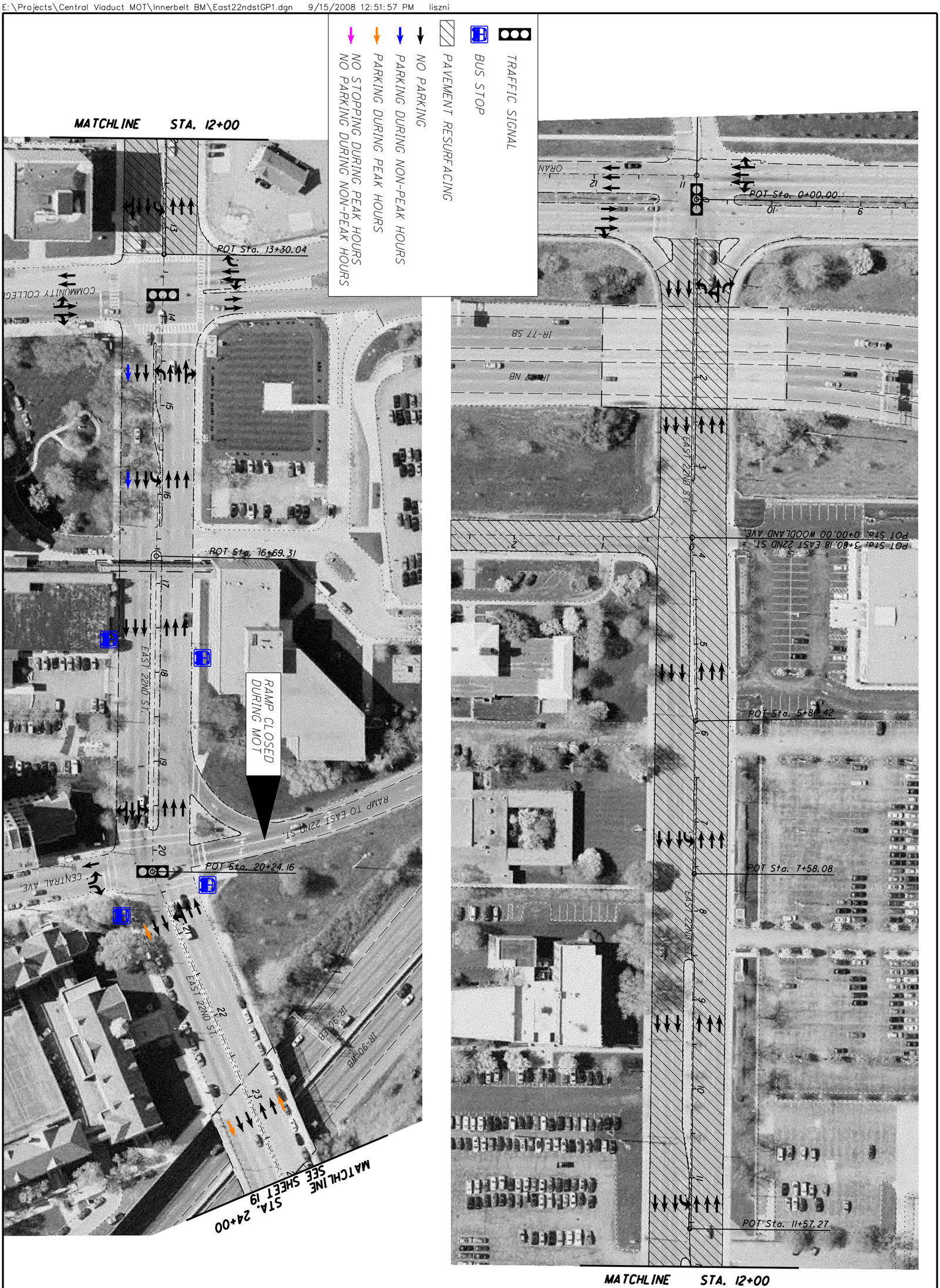

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
EAST 22ND ST - STA. 0+00 TO STA. 24+00

0 50
25 100
HORIZONTAL SCALE IN FEET

N

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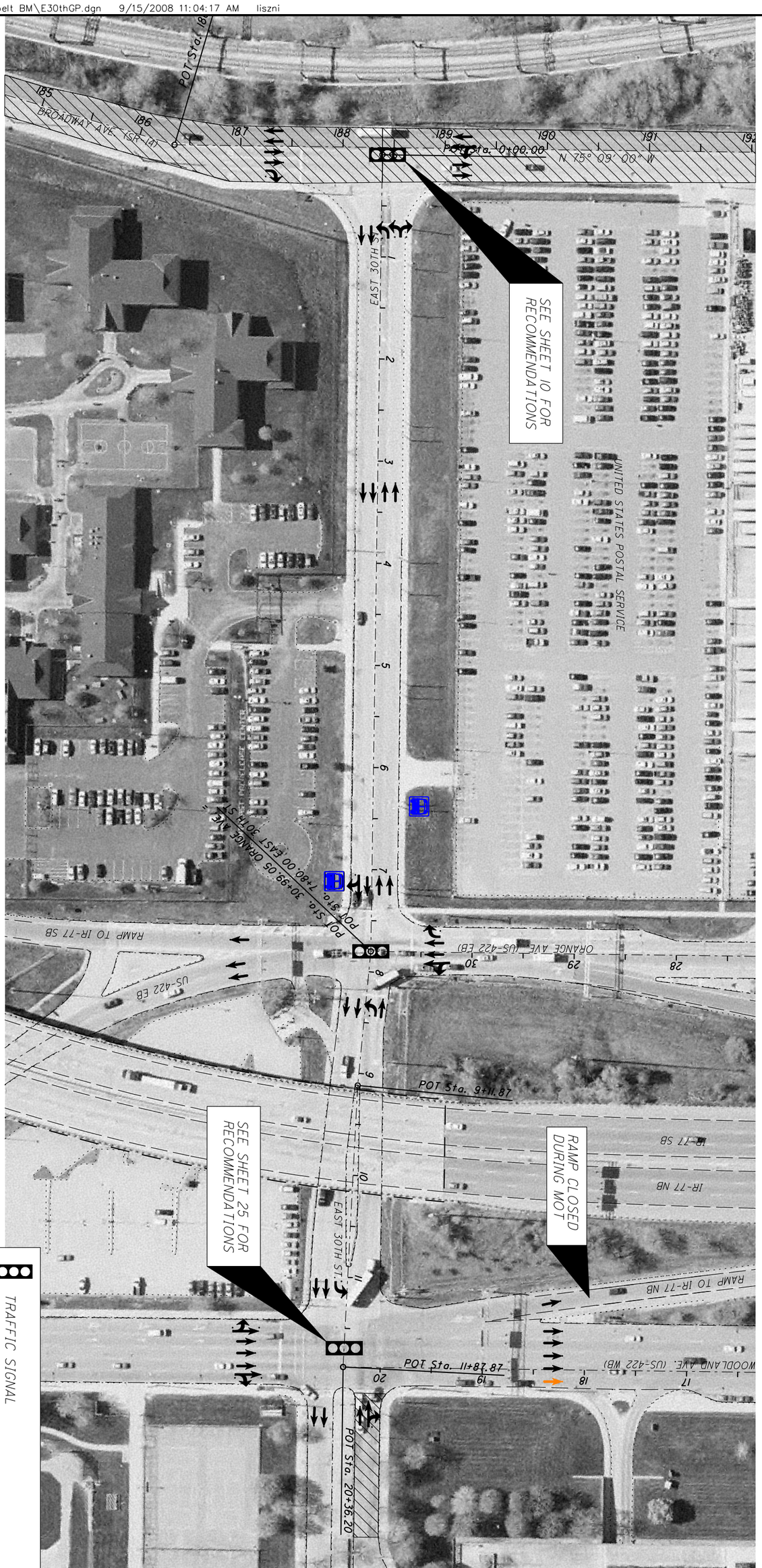

24
27

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
EAST 30TH ST. - STA. 0+00 TO STA. 11+88

0 50
25 100
HORIZONTAL SCALE IN FEET

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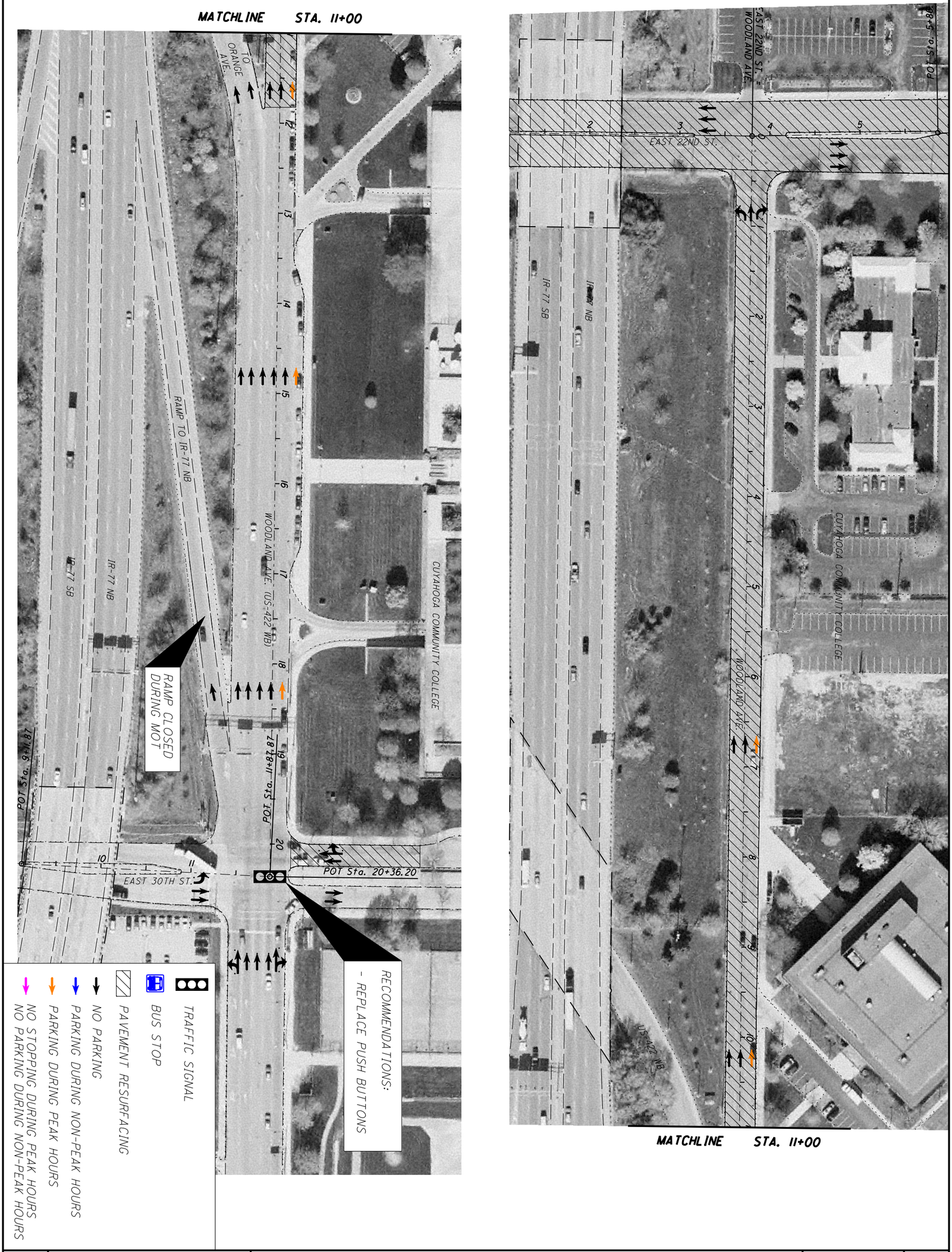

25/27

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
WOODLAND AVE - STA. 0+00 TO STA. 20+36

0 50
25 100
HORIZONTAL SCALE IN FEET

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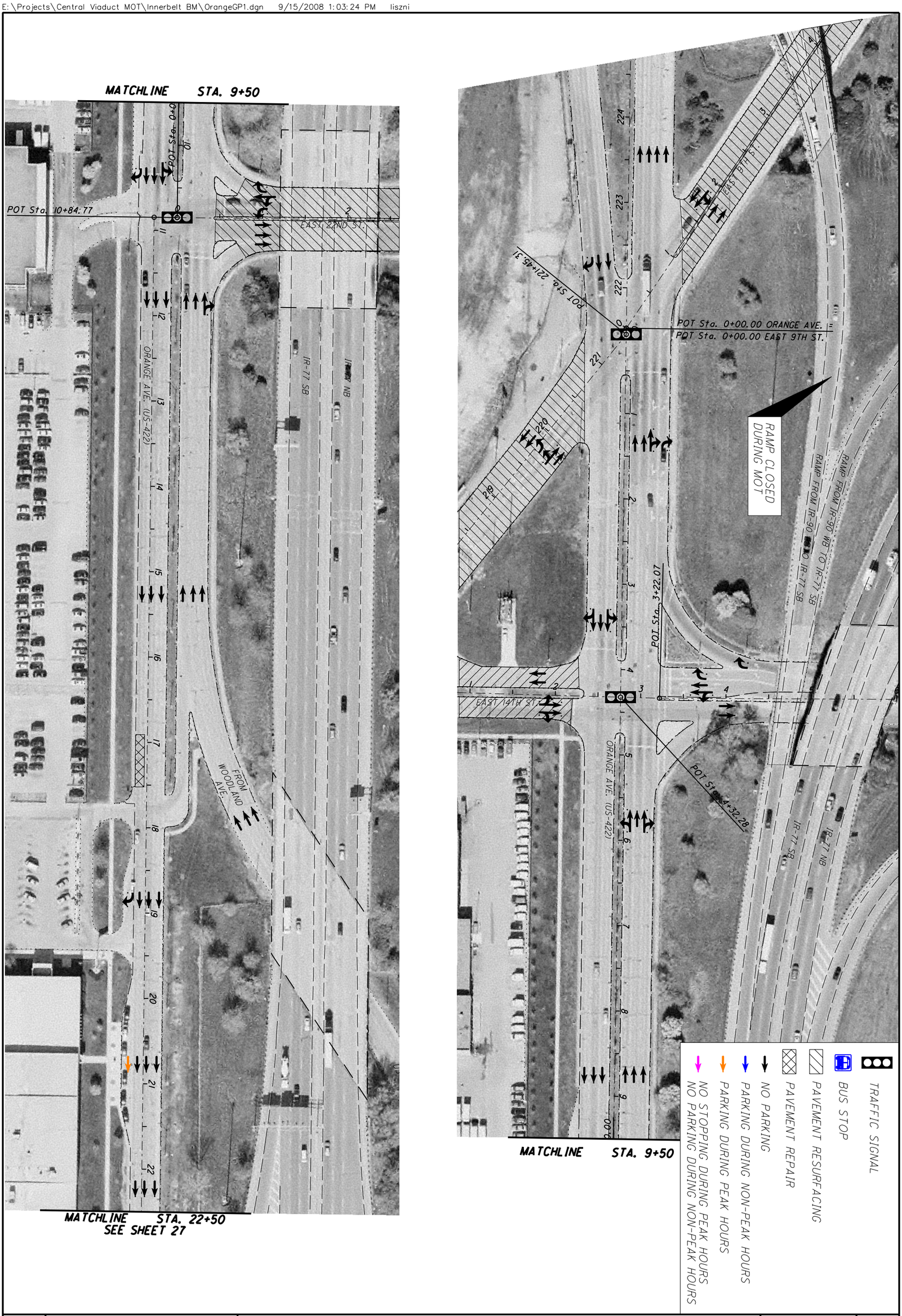

26/27	LOCAL ROUTE STUDY	MAINTENANCE OF TRAFFIC ORANGE AVE - STA. 0+00 TO STA. 22+50	0 50 25 100 HORIZONTAL SCALE IN FEET

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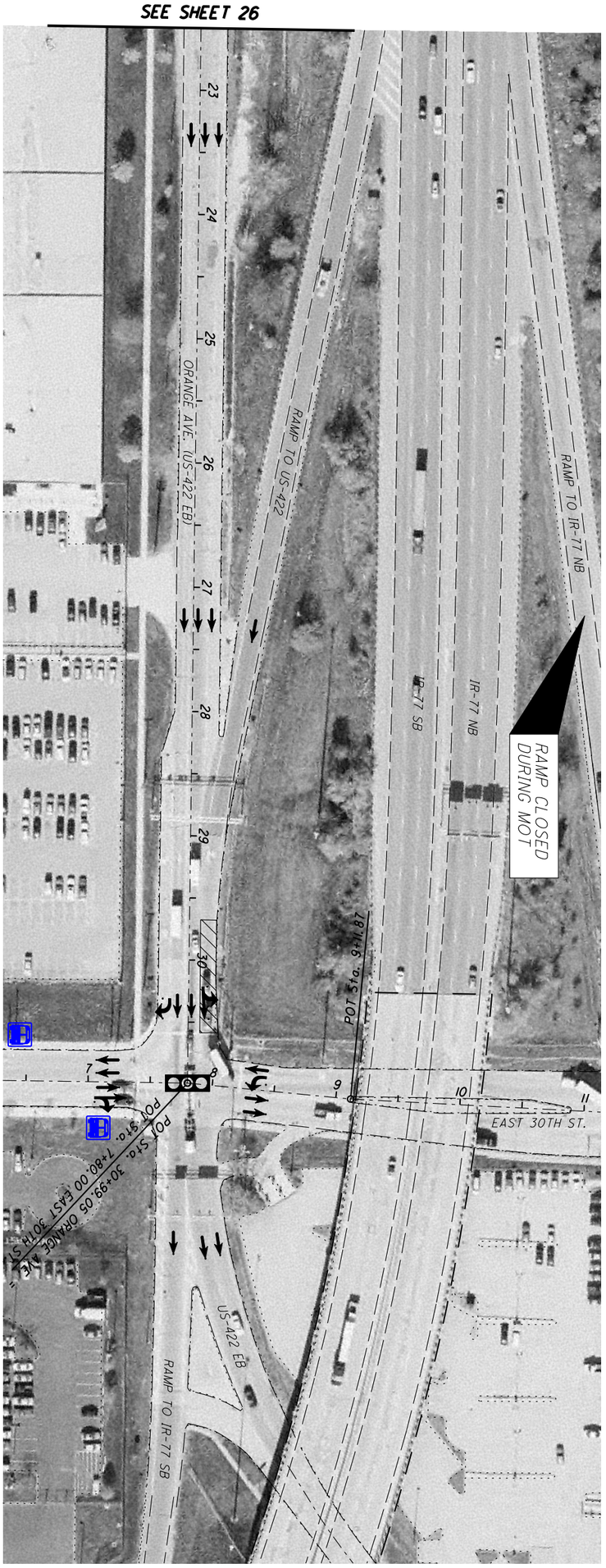
MATCHLINE STA. 22+50
SEE SHEET 26



TRAFFIC SIGNAL
BUS STOP
PAVEMENT RESURFACING
NO PARKING
PARKING DURING NON-PEAK HOURS
PARKING DURING PEAK HOURS
NO STOPPING DURING PEAK HOURS
NO PARKING DURING NON-PEAK HOURS

27
27

LOCAL ROUTE STUDY

MAINTENANCE OF TRAFFIC
ORANGE AVE - STA. 22+50 TO STA. 30+99

0 50
25 100
HORIZONTAL SCALE IN FEET

GROUP 0001: Roadway

0005	202E23000 PAVEMENT REMOVED	147.00	SY	$16.08	$2,363.76
0006	202E38000 GUARDRAIL REMOVED	60.00	FT	$1.52	$91.20
0007	202E58100 CATCH BASIN REMOVED	1.00	EACH	$263.28	$263.28
0008	203E10000 EXCAVATION	265.00	CY	$22.87	$6,060.55
0009	204E10000 SUBGRADE COMPACTION	530.00	SY	$1.25	$662.50
0010	254E01000 PAVEMENT PLANING, ASPHALT CONCRETE	113,021.00	SY	$1.15	$129,974.15
0011	302E46000 ASPHALT CONCRETE BASE, PG64-22	4,731.00	CY	$80.74	$381,980.94
0012	304E20000 AGGREGATE BASE	88.00	CY	$45.82	$4,032.16
0013	407E10000 TACK COAT	8,516.00	GAL	$1.05	$8,941.80
0014	407E14000 TACK COAT FOR INTERMEDIATE COURSE	5,678.00	GAL	$1.06	$6,018.68
0015	408E10000 PRIME COAT	45,420.00	GAL	$1.75	$79,485.00
0016	446E46040 ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, PG64-28	4,731.00	CY	$71.40	$337,793.40
0017	446E47010 ASPHALT CONCRETE SURFACE COURSE, TYPE 1, PG64-28	4,731.00	CY	$74.63	$353,074.53
0018	604E00400 CATCH BASIN, NO. 3	1.00	EACH	$2,290.00	$2,290.00
0019	606E13000 GUARDRAIL, TYPE 5	185.00	FT	$15.39	$2,847.15
0020	609E14000 CURB, TYPE 2-A	131.00	FT	$8.85	$1,159.35
0021	632E26000 PEDESTRIAN PUSHBUTTON	34.00	EACH	$118.03	$4,013.02
0022	632E26500 DETECTOR LOOP	9.00	EACH	$876.26	$7,886.34
0023	632E52600 INTERCONNECT CABLE, 6 CONDUCTOR, NO. 12 AWG	4,000.00	FT	$2.00	$8,000.00
0024	642E00090 EDGE LINE	5.44	MILE	$509.26	$2,770.37
0025	642E00290 CENTER LINE	2.24	MILE	$691.22	$1,548.33
0026	642E00390 CHANNELIZING LINE	3,106.00	FT	$0.49	$1,521.94
0027	642E00490 STOP LINE	1,026.00	FT	$2.21	$2,267.46
0028	642E00590 CROSSWALK LINE	2,230.00	FT	$1.55	$3,456.50
0029	642E00690 TRANSVERSE/DIAGONAL LINE	593.00	FT	$1.81	$1,073.33
0030	642E01290 LANE ARROW	112.00	EACH	$45.00	$5,040.00
0031	816E30000 VIDEO DETECTION SYSTEM	2.00	EACH	$16,274.54	$32,549.08
0032	632E90400 SIGNALIZATION, MISC.: *signalized intersection*	11.00	EACH	$130,000.00	$1,430,000.00

Total for Group 0001: $2,817,164.84

Estimate Local Streets

Estimated Cost: $2,817,164.82

Contingency: 25.00%

Estimated Total: $3,521,456.03

Local Street Upgrades

Base Date: 09/12/08

Spec Year: 08

Unit System: E

Work Type: ASPHALT

Highway Type: 446

Urban/Rural Type: URBAN CLASS

Season: SUMMER

County: CUYAHOGA

Midpoint of Latitude:

Midpoint of Longitude:

District: 12

Federal/State Project Number: 83680

Prepared by EL/JAA on 09/12/08

1

Notes:
None

West 25th @ Wade
Looking North

2

Notes:
Reconfigure lanes on off-ramp/Wade

West 25th @ Wade
Looking West

3

Notes:
Damaged guardrail

West 25th @ Vega
Looking West

4

Notes:
Showing alternative entrance to I-90 west-bound

West 25th @ Barber
Looking East

5

Notes:
Replace damaged catch basin (near southbound stop bar).

West 25th @ Potter Court
Looking Southeast

6

Notes:
Pavement on Columbus approach is in poor condition

West 25th @ Columbus
Looking Southwest from Columbus Road

7

Notes:
None

West 25th @ Monroe
Looking South

8

Notes:
Showing northbound right turn lane and traffic calming area

West 25th @ Gehring
Looking Southwest from Gehring

9

Notes:
Poor is in pavement condition on Gehring

Gehring
Looking Northeast

10

Notes:
None

Gehring @ Abbey
Looking Northeast

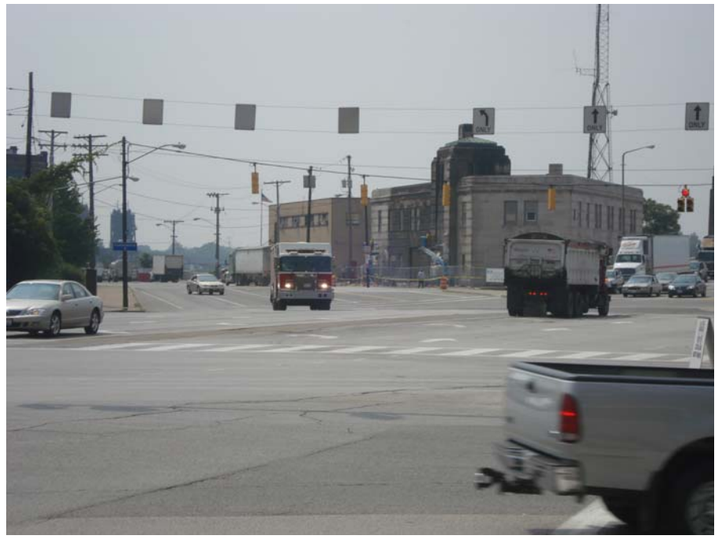
11

Notes:
None

Lorain @ West 20th
Looking West

12

Notes:
Emergency vehicle use intersection.



Lorain / Carnegie @ Ontario Broadway Commercial
Looking West

13

Notes:
Pavement is in poor condition on Ontario Spur

Ontario Spur @ Lorain
Looking South

14

Notes:
Rutting in southbound Ontario north of intersection.

Ontario @ Lorain
Looking East (from median)

15

Notes:
Pavement is in poor condition of east-bound left –turn lane east of intersection

Lorain / Carnegie @ Ontario Broadway Commercial
Looking West

16

Notes:
Signal poles and mast arms showing deteriorated condition.

Lorain / Carnegie @ Ontario Broadway Commercial
Looking West

1

Notes:
None

Broadway @ IR-77 NB Exit Ramp
Looking South

2

Notes:
None

Broadway @ IR-77 NB Exit Ramp
Looking Northwest

3

Notes:
None

Broadway @ Dille
Looking Northwest

4

Notes:
None

Broadway @ IR-490 EB Exit Ramp
Looking Northwest

5

Notes:
Tight left turn radius for trucks

Broadway @ IR-490 EB Exit Ramp
Looking East

6

Notes:
None

Broadway @ East 37th / Rockefeller
Looking Northwest

7

Notes:
Need video detection for left turn lane on bridge

Broadway @ East 37th / Rockefeller
Looking Southeast

8

Notes:
Damaged guardrail

Broadway @ East 37th / Rockefeller
Looking West towards IR-490 WB Entrance Ramp

9

Notes:
Reinstall temporary signal during construction

Broadway @ East 34th
Looking Northwest

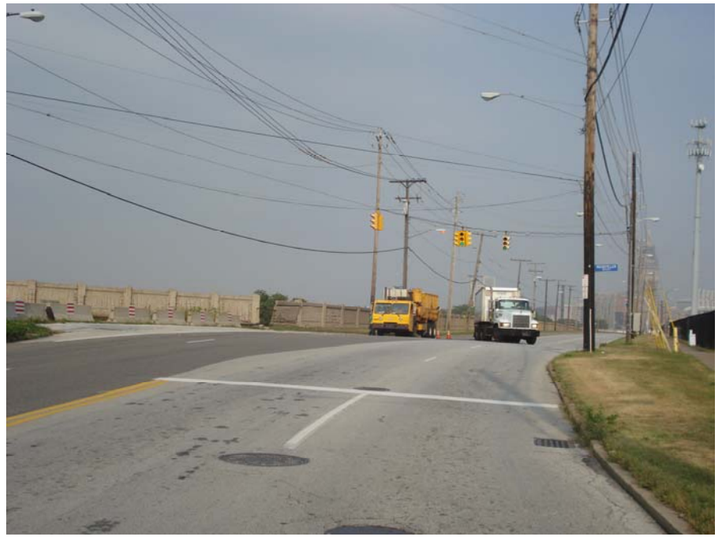
10

Notes:
None

Broadway @ East 30th
Looking Northwest

11

Notes:
Add detection on USPS Drive



Broadway @ Rockefeller / USPS
Looking Northwest

12

Notes:
None

Broadway @ Orange / East 9th
Looking North

13

Notes:
None

Broadway @ Orange / East 9th
Looking Northwest

14

Notes:
None

Broadway @ Carnegie
Looking Southeast

1

Notes:
Reconfigure lanes on off-ramp

West @ I-90 Westbound Off-Ramp
Looking West

2

Notes:
None

West @ I-90 Westbount On-Ramp
Looking West

3

Notes:
None

West @ Western
Looking North

4

Notes:
Pavement is in poor condition in southbound curb lane.

West between Western and Madison
Looking South

5

Notes:
Pavement is in poor condition in southbound curb lane.

West between Madison and Western
Looking South

6

Notes:
None

West between Madison Spur and Madison
Looking West

7

Notes:
Pavement is in poor condition at intersection area (looking as northbound stop bar).

West @ Madison
Looking North

8

Notes:
None

West @ Madison
Looking North

9

Notes:
Pavement is in poor condition on West

West between Madison an Detroit
Looking North

10

Notes:
Pavement is in poor condition on West

West between Madison an Detroit
Looking North

11

Notes:
Change lane usage

West @ Detroit (Westerly Intersection)
Looking North

12

Notes:
Study need for dual left westbound

Detroit @ West (Westerly Intersection)
Looking West

13

Notes:
Study lane use changes on the eastbound approach.

Detroit @ West (Westerly Intersection)
Looking East

14

Notes:
Pavement is in poor condition.

West between Detroit and Baltic
Looking South

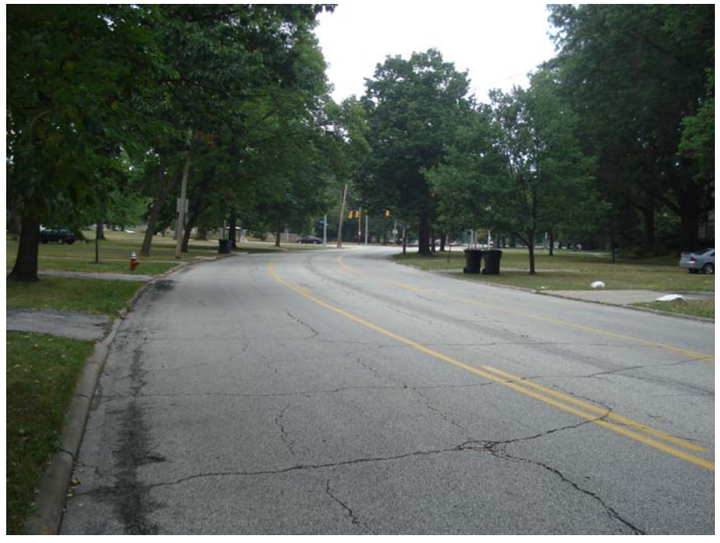
15

Notes:
Pavement condition is poor and beginning of 3-lane section to the north.

West @ Baltic
Looking North

16

Notes:
3-lane section
Pavement condition is poor in southbound curb lane.



West between Baltic and Clifton
Looking North

17

Notes:
None

West between Clifton and SR 2
Looking North

18

Notes:
None

West @ SR 2
Looking North

1

Notes:
Pavement in westbound left-turn lane is in poor condition.

Carnegie between East 9th and Lorain
Looking West

2

Notes:
Pavement in westbound curb lane is in poor condition with poor rideability.

Carnegie between East 9th and Lorain
Looking West

3

Notes:
None

Carnegie @ East 9th
Looking East

4

Notes:
Pavement is in poor condition in intersection area.

Carnegie @ East 9th
Looking East

5

Notes:
On-street parking in peak hours.

Carnegie between East 9th and East 14th
Looking East

6

Notes:
None

Carnegie @ East 14
Looking East

7

Notes:
None

Carnegie @ East 18th
Looking East

8

Notes:
Pavement is in poor condition.

Carnegie @ East 18th
Looking West (southbound approach)

9

Notes:
None

Carnegie @ East 19th
Looking East

10

Notes:
None

Carnegie @ East 21st

11

Notes:
None

Carnegie @ East 22nd

12

Notes:
Eliminate mid-block cross walk.

Carnegie between I-90 eastbound off-ramp and East 28th
Looking East

13

Notes:
None

Carnegie @ East 30th
Looking East

14

Notes:
Pavement is in poor condition.

Carnegie @ East 30th
Looking South (on East 30th)

1

Notes:
None

East 9th @ Carnegie
Looking South towards IR-90

2

Notes:
Pavement is in poor condition.

East 9th
Looking South towards IR-90

3

Notes:
None

Broadway @ East 9th
Looking North

1

Notes:
Pavement is in poor condition.

East 14th @ Broadway
Looking South

2

Notes:
Pavement is in poor condition.

East 14th @ Orange
Looking North

3

Notes:

East 14th
Looking South towards IR-77

4

Notes:
Poor pavement condition north of ramp merge.

East 14th @ IR-77 NB Exit Ramp terminal
Looking South

5

Notes:
Pavement is in poor condition.

East 14th
Looking South towards IR-90

1

Notes:
Pavement is in poor condition.

East 22nd between Carnegie and Cedar
Looking East

2

Notes:
Pavement is in poor condition.

Cedar Spur between Carnegie and East 22nd
Looking Southeast

3

Notes:
Parking present during peak hours.

East 22nd between Cedar and Central
Looking South

4

Notes:
None

East 22nd @ Central

5

Notes:
None

East 22nd @ Community College Ave.

6

Notes:
Pavement is in poor condition.

East 22nd Between Community College Ave. and Orange
Looking North

7

Notes:
None

East 22nd @ Orange
Looking South

1

Notes:
None

East 30th @ Broadway
Looking South

2

Notes:
None

East 30th
Looking South towards Broadway

3

Notes:
None

East 30th @ Orange
Looking North

4

Notes:
None

East 30th @ Orange
Looking South

5

Notes:
None

East 30th under IR-77
Looking North

6

Notes:
None

East 30th @ Woodland
Looking South

7

Notes:
Pavement is in poor condition.

East 30th
Looking South towards Woodland

1

Notes:
Pavement is in poor condition.

Woodland @ East 22nd
Looking West

2

Notes:
Pavement is in poor condition.

Woodland west of Orange Spur
Looking West

3

Notes:
None

Woodland east of Orange Spur
Looking West

1

Notes:
None

Orange @ East 14th
Looking East

2

Notes:
None

Orange @ East 22nd
Looking East

3

Notes:
Poor pavement condition in curb lane just before drive

Orange @ USPS Drive
Looking East

4

Notes:
None

Orange @ IR-77 SB Exit Ramp Merge
Looking East

5

Notes:
None

Orange @ East 30th
Looking East