

## Evaluation of Congress Street Detour Maine Medical Center (MMC) – Bramhall Campus Portland, Maine March 20, 2018

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### Proposed Detour:

The MMC Team met with City staff (including Fire and Police representatives) several times over the past few weeks to discuss various detour options for the closure of Congress Street between Forest Street and Weymouth Street. Based on those discussions, there was general consensus that the best approach was to combine different aspects of the alternatives into one alternative to create a multi-layered approach.

The proposed traffic control plan (TCP) is intended to operate as a three layered approach. The purpose of the multi-layer approach is to gradually decrease the volume of traffic that approaches the closure location, such that traffic is less concentrated at one specific location, minimize the impact of the closure and provide a safe and reliable system for commuters and local traffic. A more detailed description of the three layers is as follows, with plans of the TCP attached:

#### Layer I (Figure I of attached plans)

The first, or outer most, layer involves the use of four Variable Message Boards (VMB). The current detour plan identifies the use of three mobile units on the downtown streets and the use of two mobile units on I-295 (one northbound and one southbound). The locations are as follows:

- St. John Street southbound prior to the intersection with Park Avenue
- Outer Congress Street inbound prior to Fore River Parkway
- Upper Congress Street outbound prior to Mellen Street
- I-295 northbound direction preferably south of ramps that would allow for traffic to seek an alternate route, and I-295 southbound direction preferably north of ramps that would allow for traffic to seek an alternate route. MaineDOT has given permission for the placement of these VMB subject to approval of the exact locations which are to be determined. Final locations will be proximate to I-295 off-ramps in order to remain relevant to commuters and will not impact views of existing highway signage.

The VMBs will flash “Lower Congress Closed” “Seek Alt Route”. The VMBs are specifically located such that it provides notice to drivers as they enter the downtown such that they have alternate routes to take to avoid the Lower Congress Street closure.

Prior to closure – We recommend that the VMBs be placed and utilized a week in advance of the actual closure to inform drivers of the upcoming closure.

Additional Mitigation beyond that shown on the plans: None anticipated



### Layer 2 (Figure 2 of attached plans)

For drivers on Congress Street that are approaching the general area, a primary detour will be established. Inbound traffic on Congress Street will be directed to use St. John Street to Park Avenue to Weymouth Street and back up to Congress Street. A Type III barricade will be placed on Congress Street to discourage through traffic, but will provide enough roadway width such that through traffic will still be allowed to reach local destinations such as the Gilman garage, MOB garage, and local businesses. The Type III barricade on Congress St will also have a “Local Businesses Open” sign indicating continued access to all points on Congress St between St John St and the closure.

For outbound Congress Street traffic, the primary detour will direct traffic onto Weymouth Street to Park Avenue to the intersection with St. John Street. The end detour will be at the intersection with St. John Street because based on our evaluation of the roadway network and traffic patterns, it does not appear to make sense to detour all the traffic back to the Congress Street / St. John Street intersection since the only options at the intersection would be to go back inbound where they just came from or to continue on St John Street, and the outbound volume onto St. John Street has been identified as minimal.

Additional Mitigation beyond that shown on the plans:

- Retiming of the traffic signals. Any exclusive pedestrian timing of the signals involved will be changed to concurrent pedestrian timing to maximize capacity while still providing accommodations for pedestrians. Signage will be erected at the pedestrian push buttons that informs the pedestrian that the phasing has been changed.

St John St was selected to be the primary inbound detour route because it had the least impact to the surrounding neighborhoods, provides the most capacity to accommodate the increase in traffic, accommodates emergency vehicles the best and provides the safest route.

Alternate Detours Considered: In evaluating the inbound detour from Congress onto St. John Street to Park Avenue, other options were considered. Those options are identified as follows:

- Valley to Park: This option did offer some benefits such as minimal impacts to neighborhood parking, the street width was adequate and emergency vehicle access appeared acceptable. However, this option was not pursued for several reasons. The first is the close proximity of the intersection with Park Ave to the signalized intersection. This close proximity with an increase in traffic volume introduces a concern with vehicle / pedestrian / bicycle safety. A second challenge is that this section of Valley Street is not familiar to most drivers, which could confuse drivers as to where they are being detoured. A third challenge is the proximity of the unsignalized intersection on Congress Street and the close proximity to the signalized intersection with St. John Street. The Congress Street traffic volume outbound will be reduced as a result of the closure; however, given the volume of traffic anticipated to be detoured, back up of the left turns from Congress onto Valley would interfere with the signalized intersection at Congress St and St John St.
- Gilman to Park: This option was not selected for several reasons. First, Gilman is currently one-way from Park Ave toward Congress Street, which would need to be reversed, causing significant confusion to those who currently use the road. Second, this option had more impacts to neighborhood parking. Approximately 20 spaces would have to be temporarily closed. Third, the street width is narrower and would be more challenging for emergency vehicles – primarily fire



trucks. Fourth, similar to Valley, it is relatively unknown to those who are not local. Lastly, it is too close to the signalized intersection with Park / St. John Street.

- Forest to Park: This option was not selected for several reasons. First, this option does not appear to be realistic in expecting that drivers would by-pass Boynton to continue to Park Avenue then back up Weymouth. Second, this option impacted neighborhood parking – approximately 15 spaces. Lastly, Forest St has a narrow street width and would be challenging for emergency vehicles.
- Park to State Street: This option does have benefits; however, there are some significant challenges to this option. The first significant impact would be to local businesses. There are numerous businesses located between the closure and State Street. By detouring traffic away from that half a mile section of Congress Street, it would decrease potential customers and may make it more difficult for customers to find their destination. Second, State Street is one-way. By using this as the primary detour, a separate detour would be required for out bound traffic, leading to potentially more confusion for drivers. The goal of a detour is to keep it relatively isolated and as small as possible to reduce the impacts to neighborhoods and businesses and limit the length of time a driver is actually detoured. Third, State St is a mostly residential street. Residents of State St have recently experienced a significant disruption due to the City of Portland's State Street project. Including State St in the detour would further disrupt its residents. This option does not accomplish the goals of the detour.

### Layer 3 (Figure 2 & 3 of attached plans)

For what is expected to be minimal inbound traffic that manages to reach the actual Congress Street closure, rather than try to turn them around, the third layer provides a route. This route would direct traffic onto Forest Street to Boynton Street to Weymouth Street. The current plan is to convert Boynton to one-way inbound which will minimize the potential of outbound traffic trying to use this route. Instead, all outbound traffic will be required to use the primary route described in Layer 2 that directs them to Park Ave.

To allow emergency vehicles adequate width to maneuver, we recommend that on-street parking be temporarily closed while the Congress Street closure is in effect (approximately 8 weeks). This would eliminate approximately four on-street parking spaces on Forest Street and 14 on-street parking spaces on Boynton Street. To also accommodate emergency vehicles, MMC is proposing to increase the south east radius of the Forest Street / Boynton Street intersection to accommodate a firetruck size vehicle. This will include modifications to the sidewalk, as well as construction of a new ADA ramp on that corner. MMC is working with the residents along Boynton Street to provide alternative parking arrangements such as within the MOB parking garage. Letters that MMC has sent to these neighbors has been submitted to the City of Portland.

Additional Mitigation beyond that shown on the plans: None anticipated

### Capacity Analysis:

To further evaluate the options, key intersections were evaluated using Synchro/SimTraffic computer analysis software. Level of service rankings are similar to the academic ranking system, where an 'A' is good with little control delay and an 'F' represents poor traffic conditions. If levels of service fall below a 'D', an evaluation should be made to determine if mitigation should be implemented. The following



tables summarize the relationship between level of service and control delay per vehicle for unsignalized and signalized intersections:

**Level of Service Criteria for Unsignalized Intersections**

Level of Service	Control Delay per Vehicle (sec)
A	Less than 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

**Level of Service Criteria for Signalized Intersections**

Level of Service	Control Delay per Vehicle (sec)
A	Less than 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	Greater than 80.0

The results are based on the average of five SimTraffic runs. It should be noted that detours are typically for those drivers that do not know the area and need guidance due to the street closure. Those drivers that know the area will seek their own routes other than the detour. For the purpose of this evaluation, we assumed that all drivers would use the detours, and therefore this evaluation is conservative and actual levels of service may be better than summarized.

The following summarizes the capacity analysis results.

The key intersections for this detour option have been identified as the following:

- Park Avenue / Weymouth Street
- St. John Street / Park Avenue
- Congress Street / St. John Street

The following table summarizes the forecast operation of the key intersections for existing conditions and with the detour in place. Detailed results are attached.

**Level of Service Summary**

Approach*	Existing Conditions		With Detour	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
<b>Park / Weymouth (Existing = U, Detour = S)</b>				
Park EB	A	A	B	D
Park WB	A	A	B	B
Weymouth NB	C	E	C	D
Parking Lot SB	B	B	A	B
<b>Overall</b>	<b>N/A</b>	<b>N/A</b>	<b>B</b>	<b>C</b>



St. John / Park (S)				
Park WB	C	B	C	C
St. John NB	B	D	B	C
St. John SB	B	C	C	C
<b>Overall</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>C</b>
Congress / St. John (S)				
Congress EB	C	C	B	C
Congress WB	B	B	B	B
St. John NB	C	C	C	C
St. John SB	C	C	C	C
<b>Overall</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>C</b>

\*(U) = Unsignalized, (S) = Signalized

As shown in the table, the intersections of St. John Street with Park Avenue and Congress Street with St. John Street are forecast to operate at similar levels of service to the existing conditions if the detour is implemented. Additionally, the three key intersections are forecast to operate at acceptable levels of service if the detour is implemented. It should be noted that at the intersection of Park Avenue with Weymouth Street, the eastbound and westbound approaches are forecast to operate at lower levels of service with the detour in place than with the existing conditions. This is due to the temporary signalization of the intersection while the detour is operational, which increases the delay of the traffic that is free-flowing in the existing condition. Although the levels of service on Park Avenue are forecast to be lower than the existing conditions, the levels of service on the Weymouth Street approach and the Parking Lot approach are forecast to be maintained or improve from the existing conditions.

### Visitor / Patient Garage

Since the Congress Street access to the Visitor / Patient garage will be unavailable during the Congress Street closure, MMC is proposing a plan (attached Figure 7) to provide access to the Visitor / Patient garage through the Gilman Street access to the employee garage. The two garages are already connected on the base level. The attached plans show the layout that includes an entrance lane for employees and a separate entrance for visitors / patients. Both entrances will be well signed as to communicate who uses which lane. To avoid any crossing of entrance traffic, employees would be required to access the garage from the direction of A Street, while visitors / patients would be expected to access the garage via Congress Street. Signage will be erected within the detour to guide visitors / patients to the garage (see attached Figures 2 & 4). To get employees in the habit of entering from the A Street direction, the new set up would be implemented a minimum of one week prior to the actual closure of the Congress Street access.

Once in the garage, employees would continue into the employee section of the garage and visitors / patients would continue to the other garage. Exiting traffic from both garages would merge into one exit lane. A flagger(s) would be stationed within the merge area during busy times to ensure proper guidance. MMC is committed to safety so if additional flaggers or additional time periods are required they will be supplied as needed.



### METRO Impacts:

The MMC Team met with METRO twice to provide advance notice of the closure of a short section of Congress Street and to show them what the closure would include. Based on these discussions with METRO, they will close the following four bus stops for the duration of the Congress Street closure:

- Eastbound:
  - Congress / Gilman
  - Congress / Weymouth
- Westbound:
  - Congress / Weymouth
  - Congress / Valley

In addition, METRO is considering relocating the eastbound stop at Park / Weymouth approximately 50 feet to the west on Park Avenue to avoid impacts to the temporary signal. MMC will make the necessary improvements to ensure the temporary stop meets ADA requirements, including providing paved access from the curb to the sidewalk. Relocating the bus stop will require the removal of one on-street parking space on Park Avenue. The potential METRO modifications are shown on the attached Figure 5. METRO will make a final decision and MMC will assist as appropriate.

The temporary changes will be communicated to the public by MMC and METRO prior to implementation via social media and press releases.

### Sea Dogs Impact:

MMC met with the Sea Dogs general manager to discuss management of traffic during afternoon games and on Sunday May 13<sup>th</sup> for the Mother's Day 5K race. A proposed plan to manage traffic during game days and on May 13<sup>th</sup> has been submitted to City staff for review.

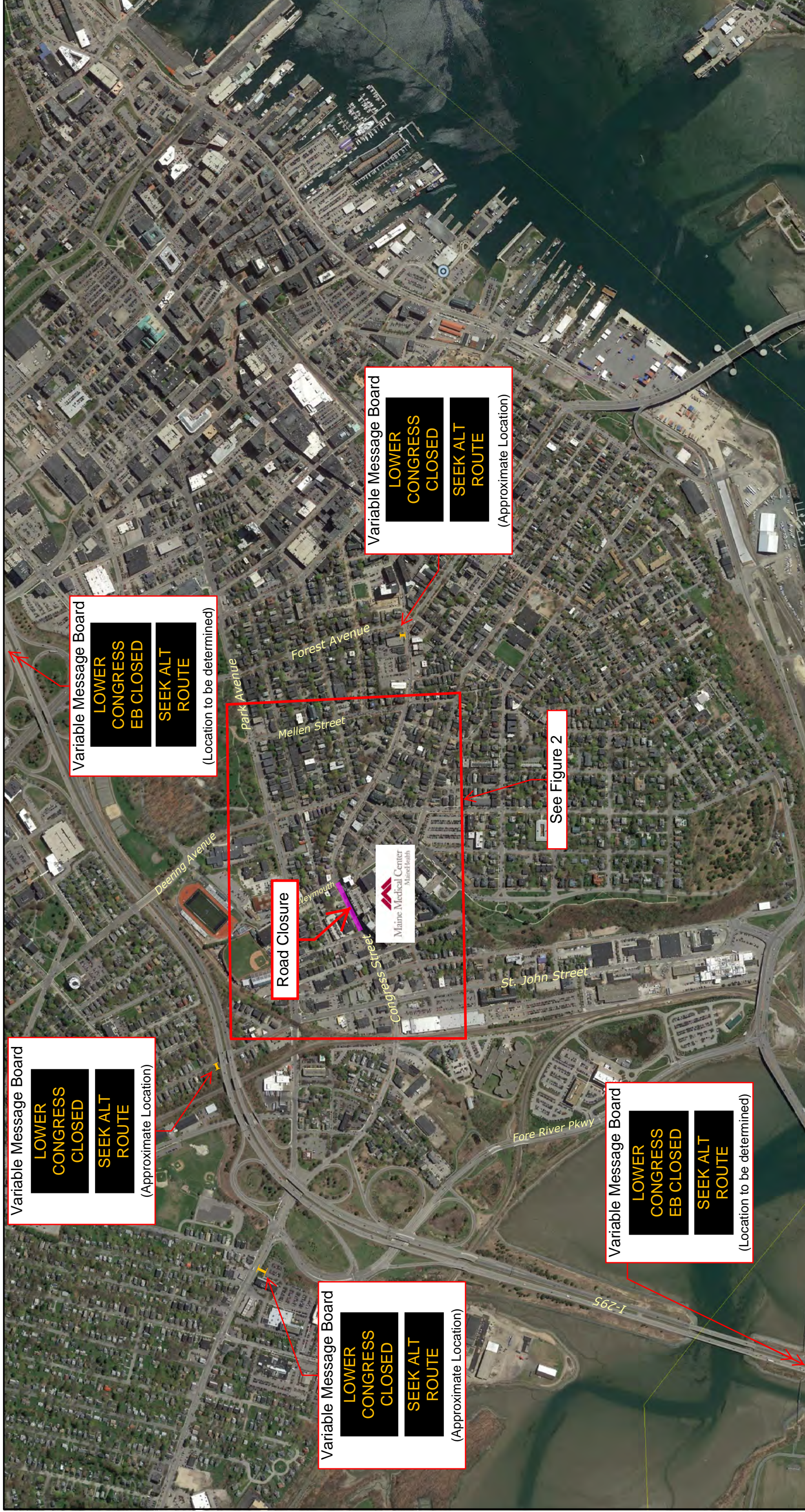
### Construction Related Deliveries, Delivery Routes, and Parking Restrictions:

Turner Construction will be the responsible party for the actual construction and will be providing number, type (size), and routes for deliveries in the construction management plan also submitted to the City of Portland. It should be noted, that additional on-street parking restrictions may be identified when delivery routes are reviewed in the field to ensure proper turning of larger delivery vehicles can be accommodated.

Parking for construction workers will be provided off-site at satellite parking areas, such as the MMC Scarborough Campus, and workers will be shuttled to the work site. Any non-essential vehicles not critical to the work site will be restricted from the site. Any parking by workers in the immediate area reported to MMC or Turner Construction will be taken seriously and addressed by Turner Construction.

# Patient / Visitor Garage Traffic Control Plan

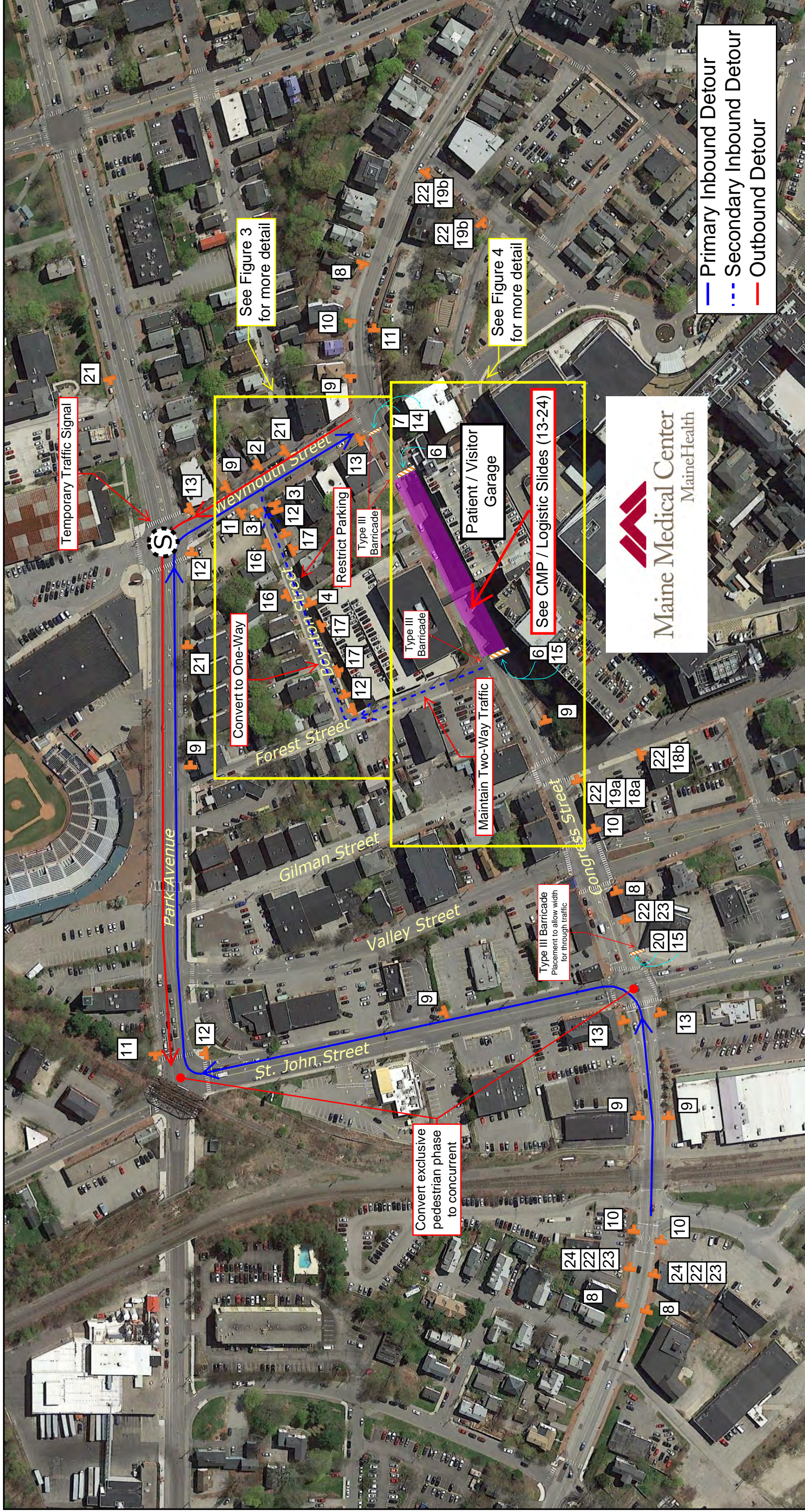
Figure No. 1



## Maine Medical Center Expansion PORTLAND, MAINE

# Congress Street Detour

Figure No. 2



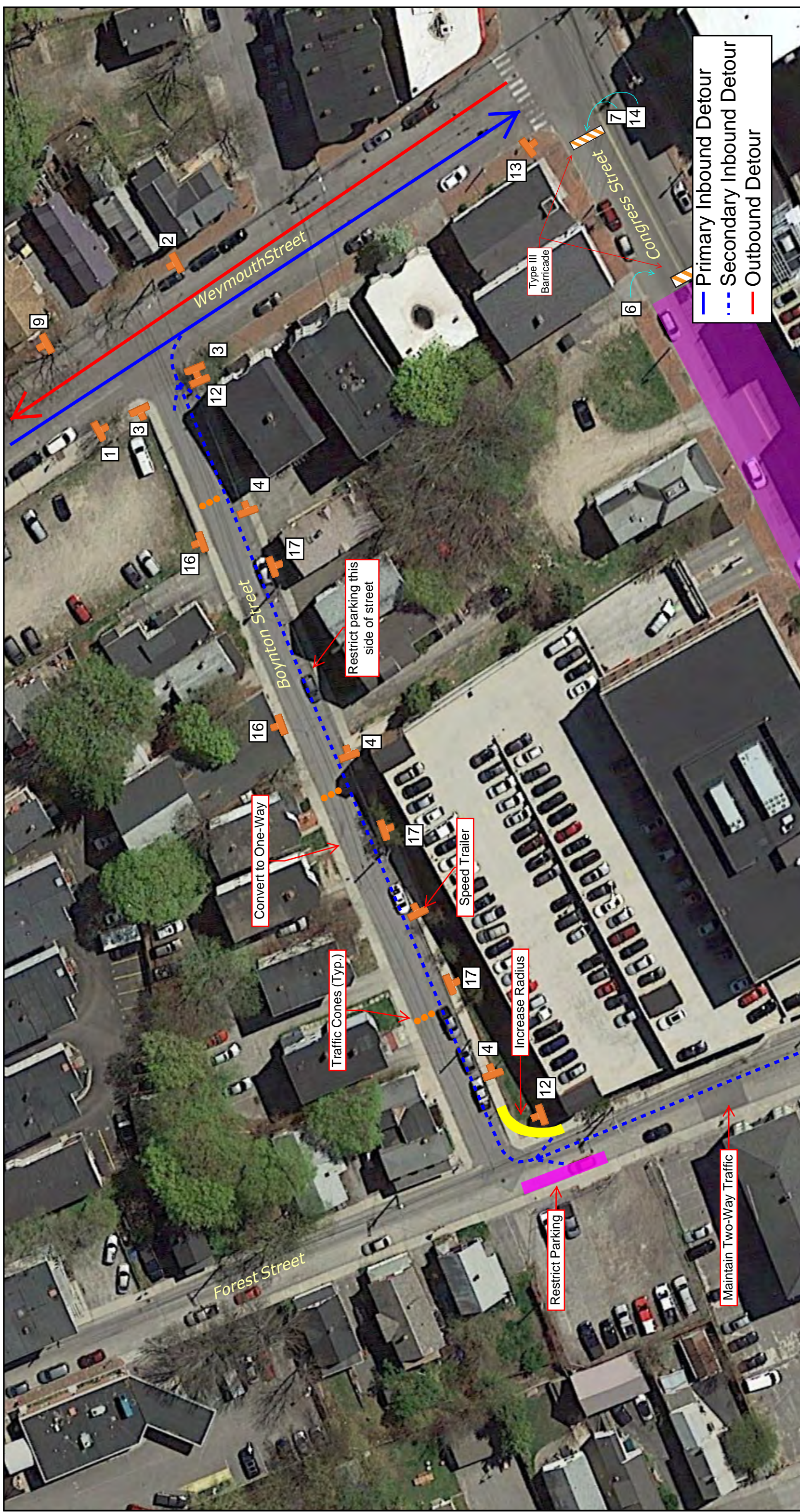
## Maine Medical Center Expansion PORTLAND, MAINE



# Boynton Street Detail

3

Figure No.



## Maine Medical Center Expansion PORTLAND, MAINE

Design: ET Scale: NONE  
Draft: Date: MAR 2018  
Checked: RED File Name: 2866-01-TRAFF.dwg

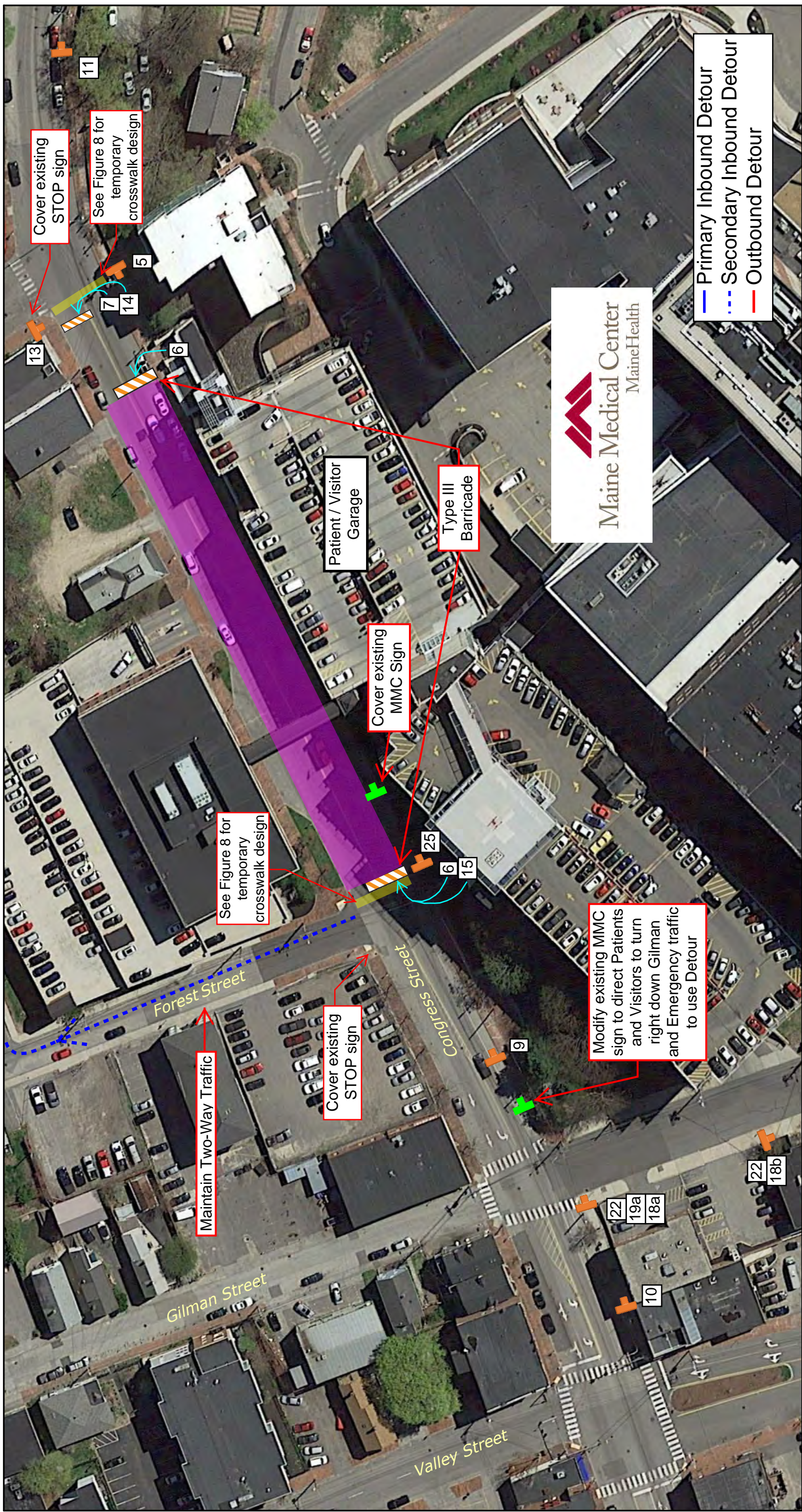


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# Congress Street Detail

4

Figure No.

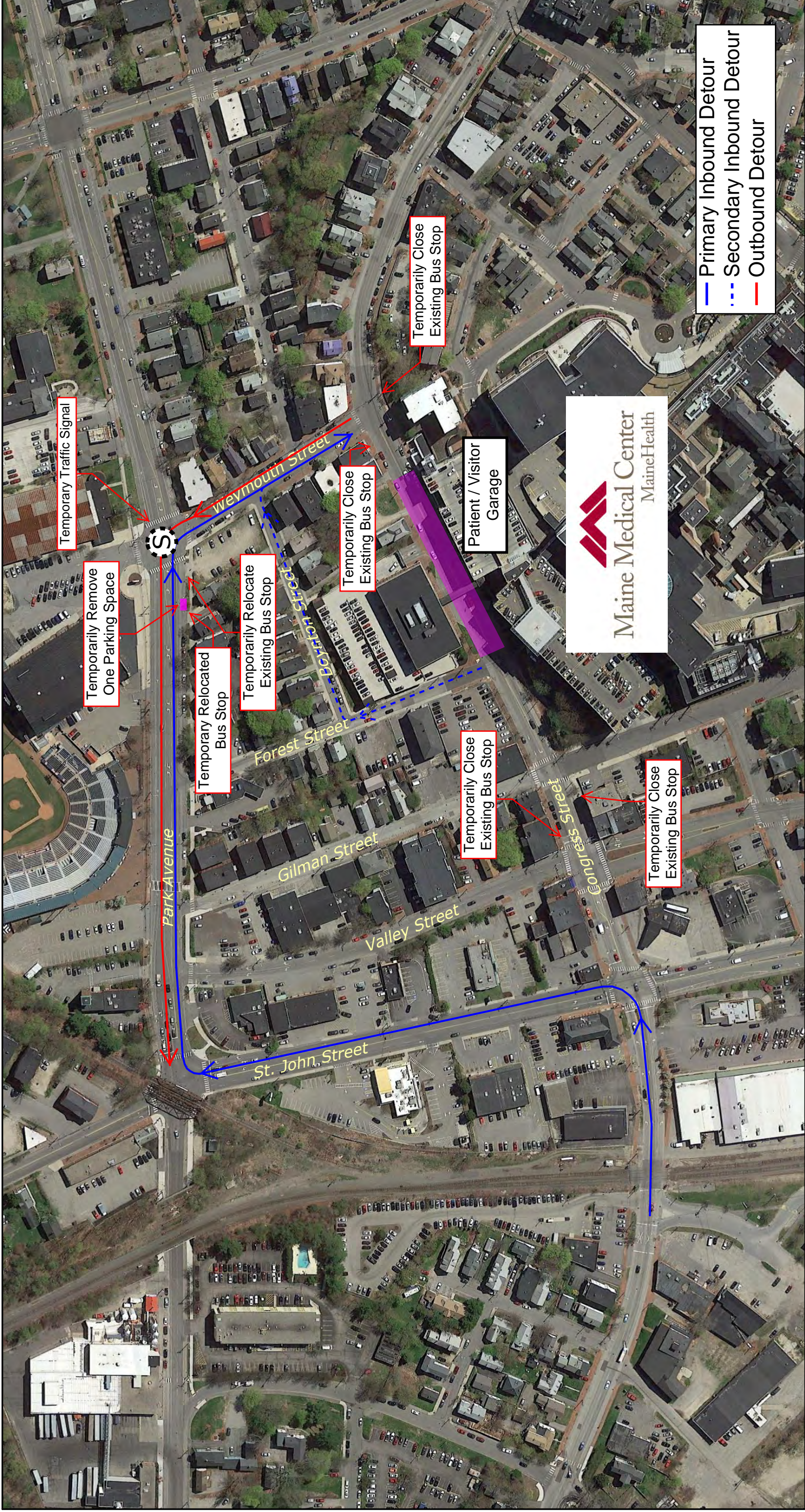


## Maine Medical Center Expansion PORTLAND, MAINE

# METRO Modifications Due to Congress Street Closure

5

Figure No.



## Maine Medical Center Expansion PORTLAND, MAINE

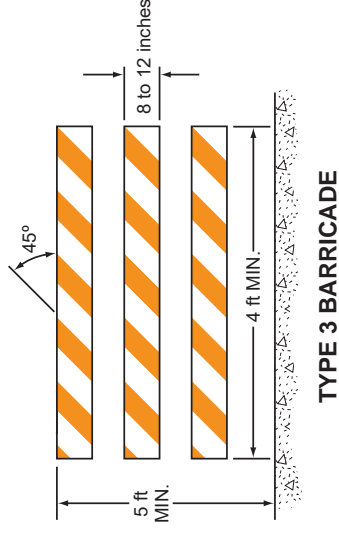
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Date: MAR 2018  
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### GENERAL NOTES:

1. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS (MUTCD), USDOT, FHWA, LATEST EDITION, AND CITY STANDARDS.
2. SIGN LOCATIONS SHOWN ARE APPROXIMATE. ACTUAL LOCATIONS SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE CITY.
3. OTHER SIGNS MAY BE NEEDED AS DIRECTED BY THE CITY. ALL CONTROL DEVICES SHALL BE PLACED IN HIGHLY VISIBLE LOCATIONS.
5. ALL CONSTRUCTION RELATED TRAFFIC CONTROL SIGNS NOT IN EFFECT SHALL BE COVERED OR TURNED FROM TRAFFIC VIEW UNTIL THEY ARE MADE ACTIVE. SIGNS SHALL BE COVERED OR REMOVED WHEN THE WORK IS NOT ACTIVE.
6. ANY EXISTING SIGNS OR PAVEMENT MARKINGS DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO THEIR ORIGINAL CONDITIONS OR REPLACED AS NEEDED.
7. ANY CONFLICTING SIGNS OR PAVEMENT MARKINGS SHALL BE COVERED OR REMOVED AS NEEDED.
8. CHANNELIZING DEVICES SHALL BE PLACED PER MUTCD.
9. POST-MOUNTED SIGNS SHALL BE A MINIMUM HEIGHT OF 7 FEET (TO THE BOTTOM OF THE SIGN) AND MUST BE CRASHWORTHY.



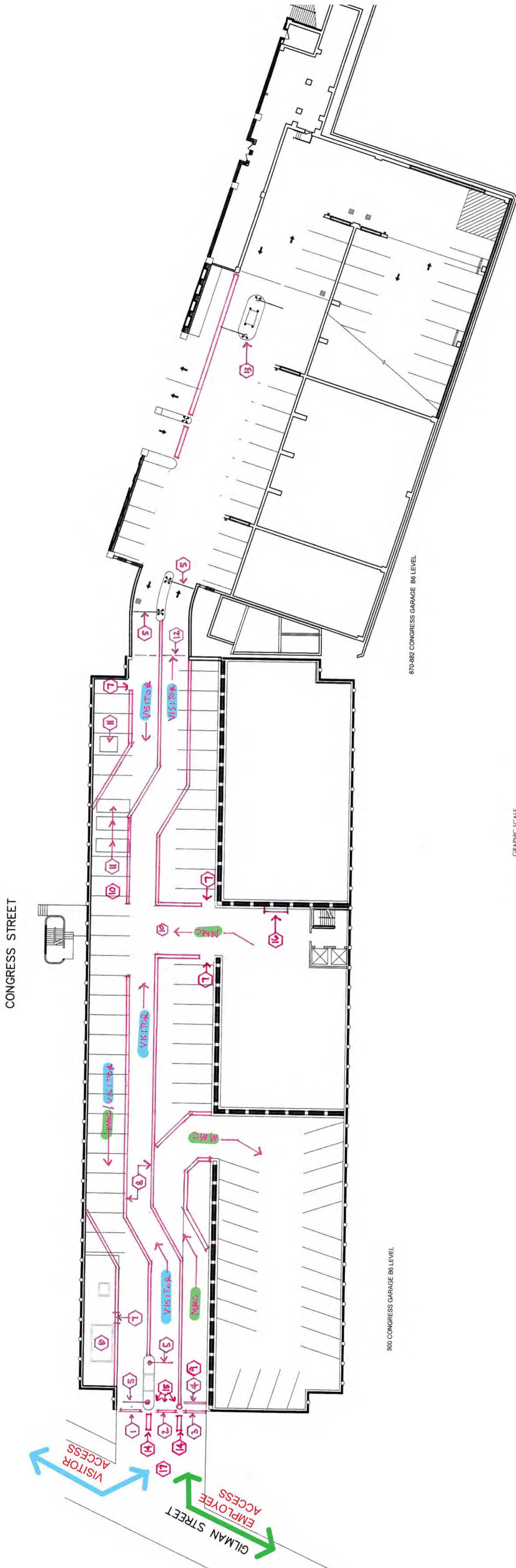
NOTE: SIZES OF SIGNS AND LETTERING ON ALL SIGNS SHALL BE VERIFIED THAT THEY MEET MUTCD REQUIREMENTS PRIOR TO ORDERING AND INSTALLATION.

### SIGN SPECIFICATIONS:

	R3-1 24" x 24"		R3-2 24" x 24"		R5-1 30" x 30"		R8-3 / R7-201aP 24" x 24" / 12" x 6"		R9-11 24" x 18"		R11-2 60" x 30"		R11-3a 60" x 30"
	W20-1 36" x 36"		W20-2 36" x 36"		W20-3 36" x 36"		M4-8a 24" x 18"		M4-9R 30" x 24"		M4-9L 30" x 24"		M4-10R 48" x 18"
	M4-10L 48" x 18"		R6-1R 36" x 12"		R6-1L 36" x 12"		Custom		Custom		Custom		Custom
	R11-3a 60" x 30"		W3-3 36" x 36"		D9-2 24" x 24"		M6-3 21" x 15"		M4-8a Modified 24" x 18"		R9-11a 24" x 12"		

TEMPORARY SIGNALIZATION: SIGNAL SHALL BE ON FLASH FOR A MINIMUM OF ONE WEEK PRIOR TO BEING PUT INTO RED-YELLOW-GREEN OPERATION. THE SIGNAL SHALL BE PUT INTO RED-YELLOW-GREEN OPERATION PRIOR TO 6 AM ON A MONDAY MORNING AND SIGNAL CONTRACTOR SHALL REMAIN ON-SITE UNTIL A MINIMUM OF 9 AM TO MAKE ADJUSTMENTS TO SIGNALS / TIMING PER THE DIRECTION OF THE CITY TRAFFIC ENGINEER OR REPRESENTATIVE. THE CONTRACTOR SHALL ALSO BE AVAILABLE FROM 11 AM TO 1 PM AND AGAIN FROM 3 PM TO 6 PM ON THE SAME DAY TO MAKE ADJUSTMENTS AS DIRECTED BY THE CITY ENGINEER OR THEIR REPRESENTATIVE. TWO WEEKS AFTER INITIAL RED-YELLOW-GREEN INITIALIZATION, THE CONTRACTOR SHALL BE AVAILABLE AT THOSE SAME TIMES FOR FURTHER ADJUSTMENTS AS DIRECTED BY THE CITY TRAFFIC ENGINEER OR THEIR REPRESENTATIVE.

## Maine Medical Center Expansion PORTLAND, MAINE



Maine Medical Center - Garage Access During Congress Street Closure

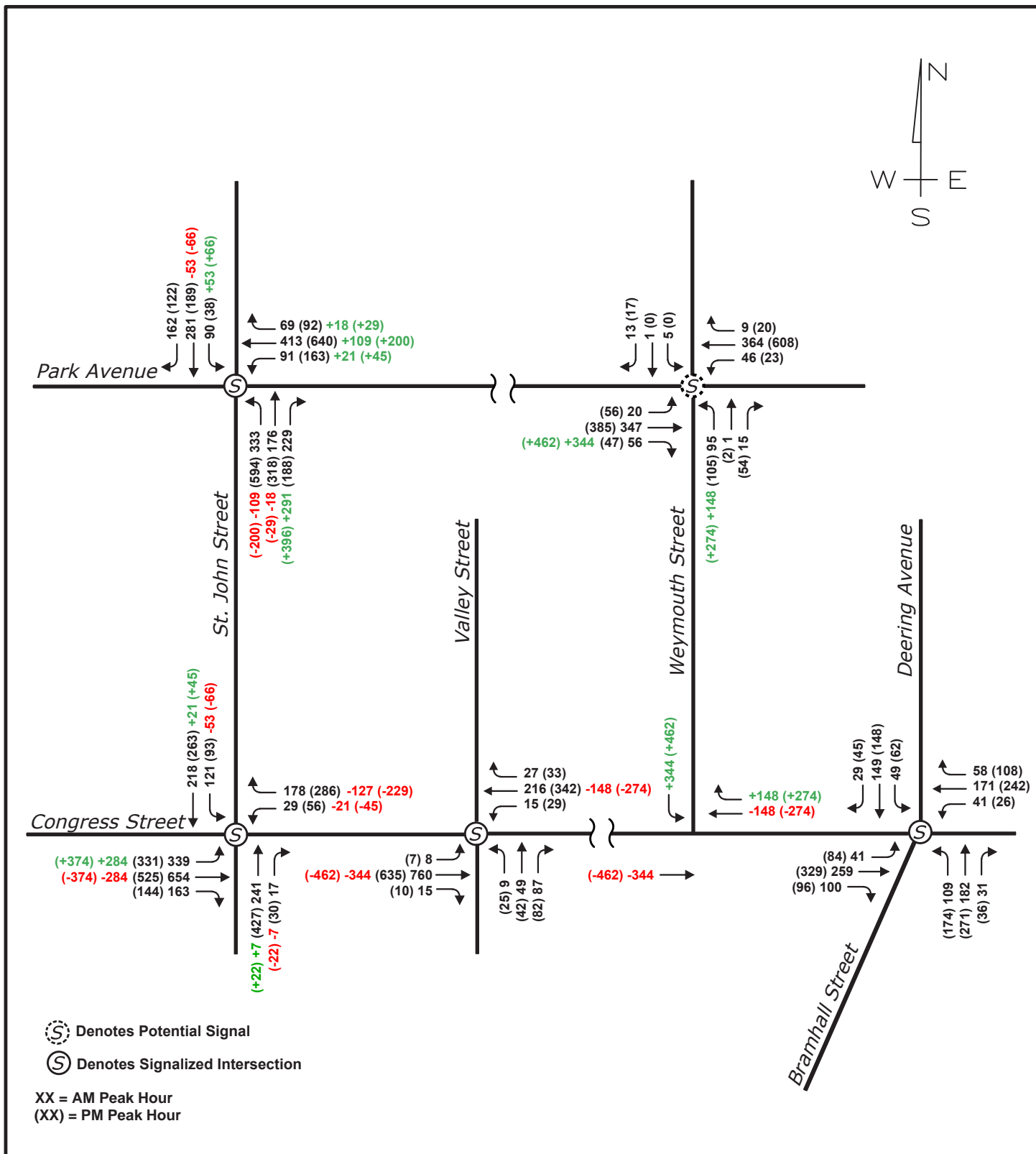
LEGEND :

- 1 - "Exit Only" Sign Facing Gilman Street
- 2 - "Visitor Entry Only" Sign Facing Gilman Street
- 3 - "Employee Entry Only" Sign Facing Gilman Street
- 4 - Add horizontal pvc pipe over employee entry lane
- 5 - Gate arms to remain in upright position
- 6 - Temporary office to remain
- 7- 5 Foot opening in barrier for pedestrian access
- 8 - Jersey Barriers, typical
- 9 - Temporary gate arm to control employee access lane
- 10- Stop sign and staff person at this location during peak times
- 11 - Remove storage containers
- 12- Remove chain link fence gates
- 13 - Visitor access booth to remain as currently functioning

- 14 - One jersey barrier section on driveway apron
- 15 - Activate traffic signal lights
- 16 - Stop Ahead sign
- 17 - Staff person at Gilman Street Entrance at peak times



# DETOUR VOLUMES



## MAINE MEDICAL CENTER EXPANSION PORTLAND, MAINE