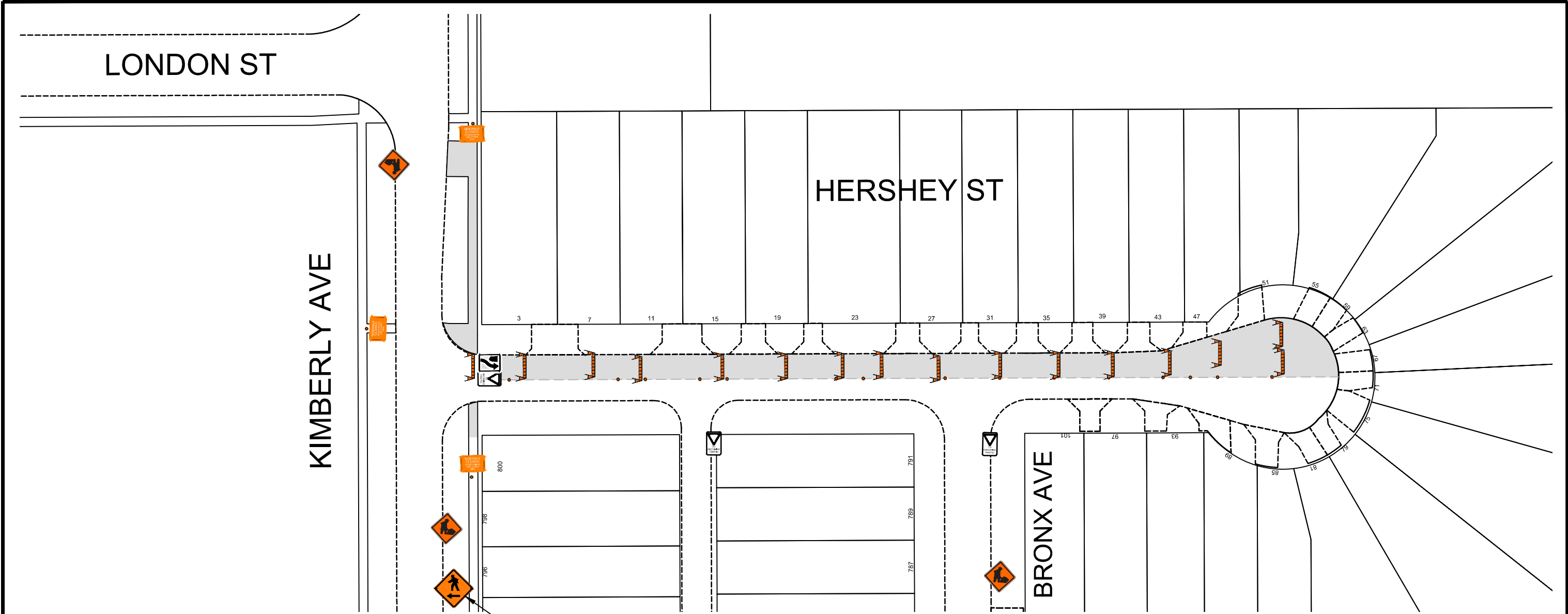


APPENDIX 'D' – TEMPORARY TRAFFIC CONTROL SIGNAGE DRAWINGS

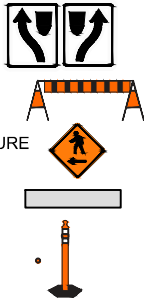


ADVANCED SIDEWALK CLOSURE SIGN
TO BE PLACED AT KIMBERLY AVE
AND GREY ST

TRAFFIC SIGNAGE

- TC-2 ROADWORK
- C 46 SIDEWALK CLOSED
- TC-17 YIELD TO ONCOMING TRAFFIC

- RB-25 KEEP RIGHT/LEFT
- BARRICADE
- ADVANCED SIDEWALK CLOSURE
- WORK AREA
- POLY POST



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN BOTH DIRECTIONS FROM KIMBERLY AVE TO END. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE AND TRAFFIC CONTROL MIRRORED.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
6. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.



FOR INFORMATION ONLY TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

HERSHEY STREET
FROM KIMBERLY AVE TO END
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

LONDON ST

CONCORDIA AVE

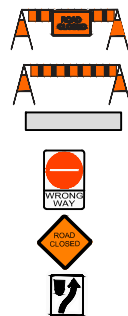
ONE WAY

TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB-10 NO THROUGH TRAFFIC
- TEMPORARY TAB
- POLY POST



- ROAD CLOSED BARRICADE
- BARRICADE
- WORK AREA
- WRONG WAY SIGN
- ROAD CLOSED SIGN
- RB-25-R KEEP RIGHT



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED ON THE EAST BOUND LANE WITH TRAFFIC TO BE MAINTAINED IN THE WEST BOUND DIRECTION.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.



FOR INFORMATION ONLY

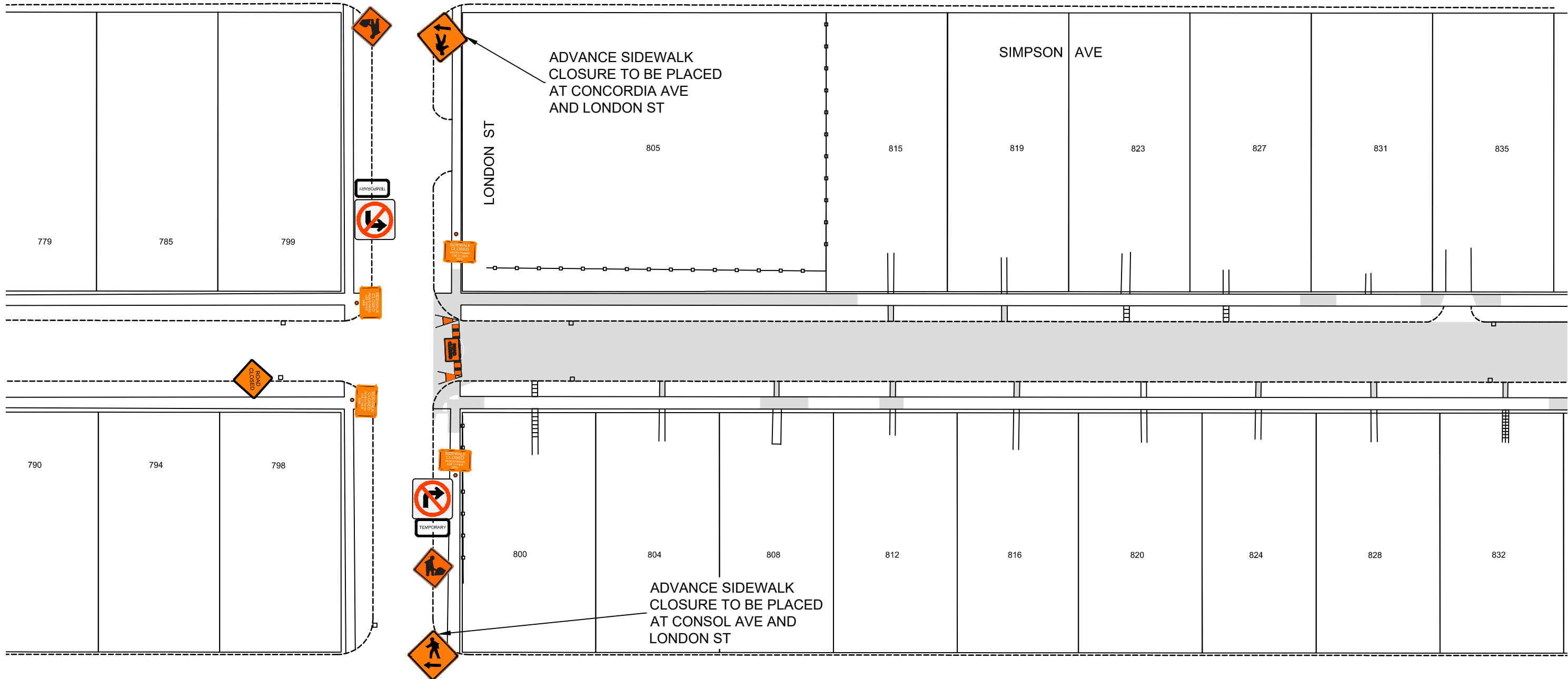
TENDER NO. 11-2025



THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

CONCORDIA AVENUE
TRANSIT LAYBY LANE
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



TRAFFIC SIGNAGE

TC-2 ROADWORK		ROAD CLOSED BARRICADE	
RB-11 (L/R) TURN PROHIBITED		BARRICADE	
C 46 SIDEWALK CLOSED		WORK AREA	
TEMPORARY TAB		WRONG WAY SIGN	
POLY POST		ROAD CLOSED SIGN	

NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. ROAD IS TO BE CLOSED IN BOTH DIRECTIONS FOR THE DURATION OF CONSTRUCTION.
4. PARKING IS TO BE REMOVED AT TIME OF CONSTRUCTION.
5. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.

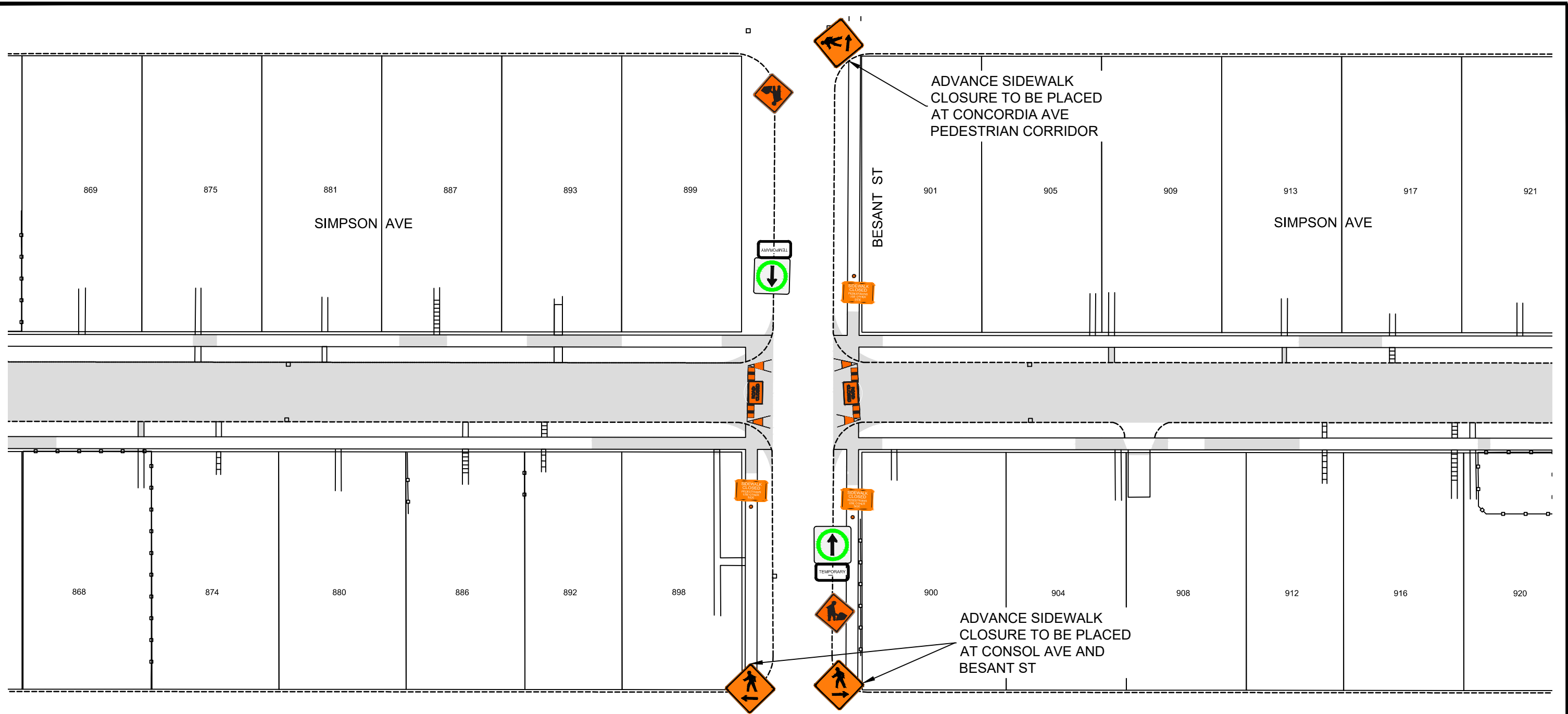


FOR INFORMATION ONLY TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

SIMPSON AVENUE
FROM LONDON ST TO LOUELDA ST
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB-15 NO TURNS ALLOWED
- TEMPORARY TAB
- POLY POST



- ROAD CLOSED BARRICADE
- BARRICADE
- WORK AREA
- WRONG WAY SIGN
- ROAD CLOSED SIGN



NOTES:

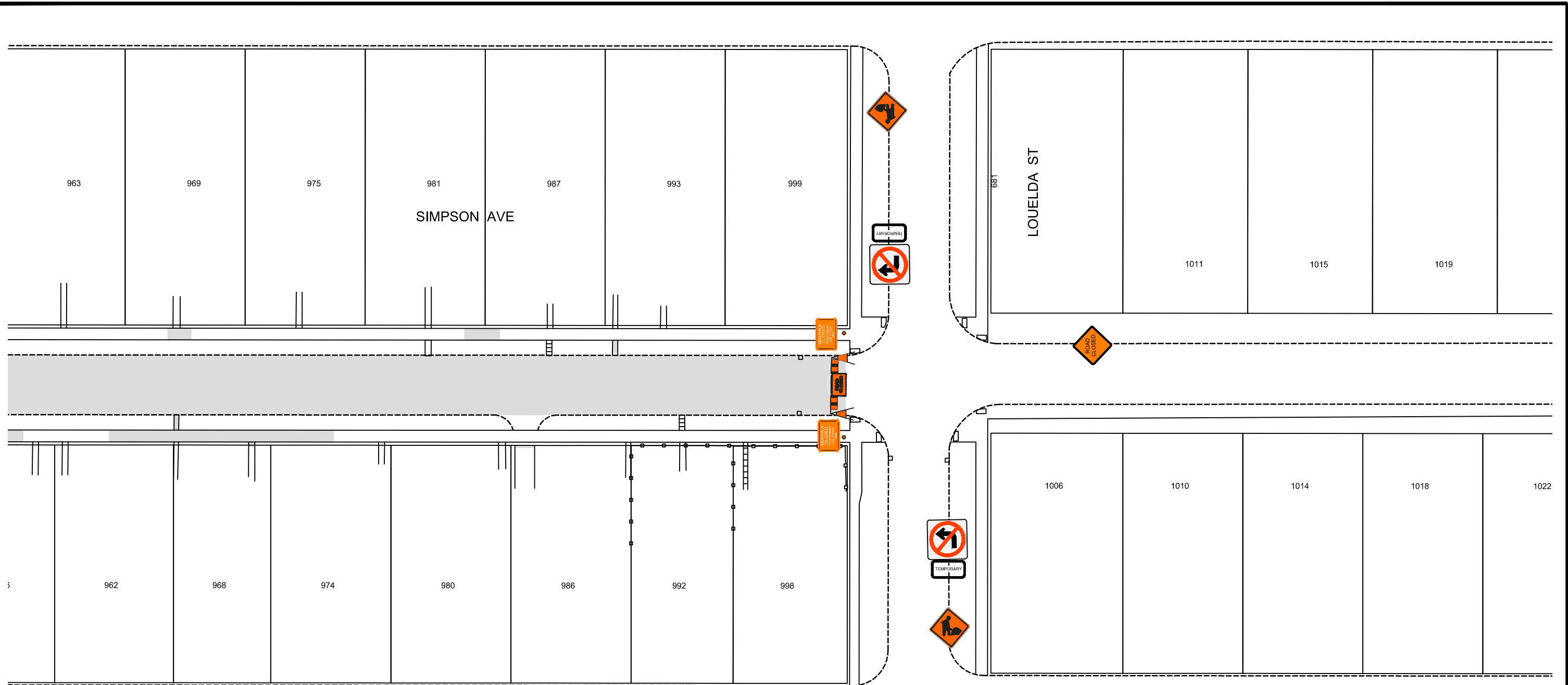
1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. ROAD IS TO BE CLOSED IN BOTH DIRECTIONS FOR THE DURATION OF CONSTRUCTION.
4. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
5. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.

FOR INFORMATION ONLY TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

SIMPSON AVENUE
FROM LONDON ST TO LOUELDA ST
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

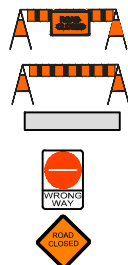


TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- TEMPORARY TAB
- POLY POST



- ROAD CLOSED BARRICADE
- BARRICADE
- WORK AREA
- WRONG WAY SIGN
- ROAD CLOSED SIGN



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. ROAD IS TO BE CLOSED IN BOTH DIRECTIONS FOR THE DURATION OF CONSTRUCTION.
4. PARKING IS TO BE REMOVED AT TIME OF CONSTRUCTION.
5. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.



FOR INFORMATION ONLY

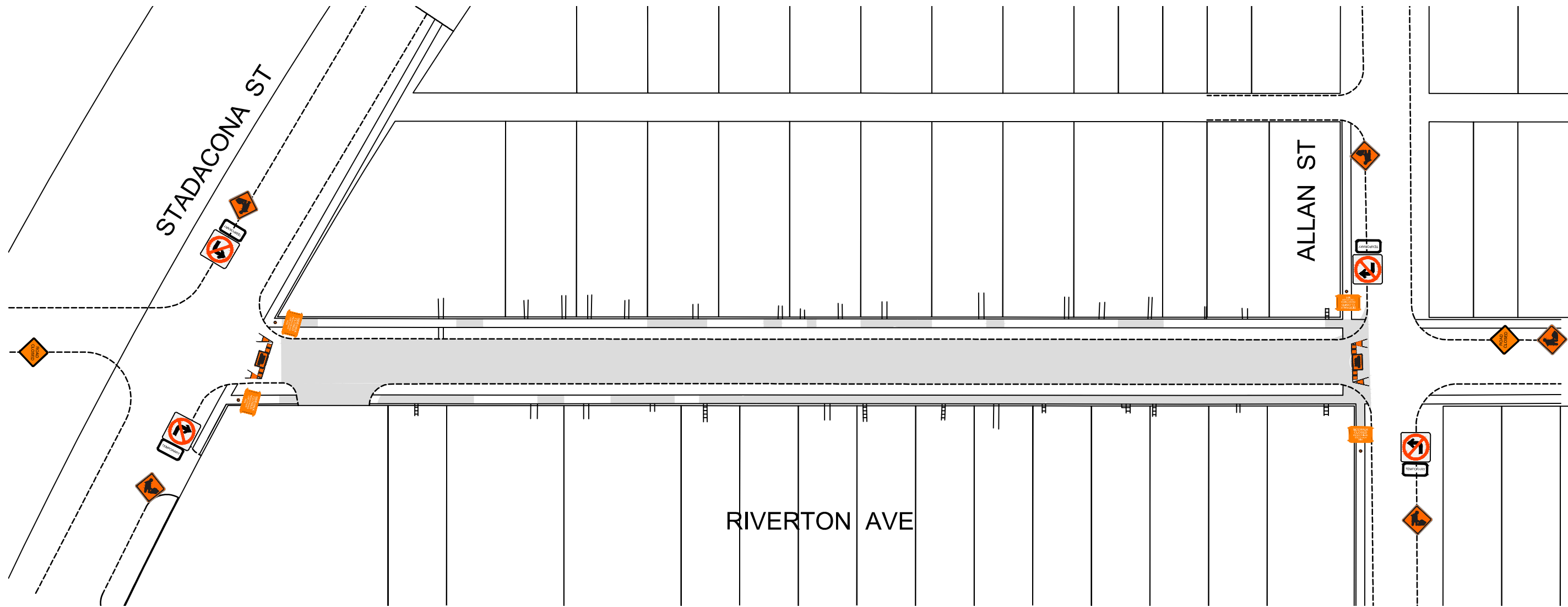
TENDER NO. 11-2025



THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

SIMPSON AVENUE
FROM LONDON ST TO LOUELDA ST
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



TRAFFIC SIGNAGE

TC-2 ROADWORK



ROAD CLOSED BARRICADE



RB-11 (L/R) TURN PROHIBITED



BARRICADE



C 46 SIDEWALK CLOSED



WORK AREA



POLY POST



ROAD CLOSED SIGN



TEMPORARY TAB



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. ROAD IS TO BE CLOSED IN BOTH DIRECTIONS FOR THE DURATION OF CONSTRUCTION.
4. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
5. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.



FOR INFORMATION ONLY TENDER NO. 11-2025

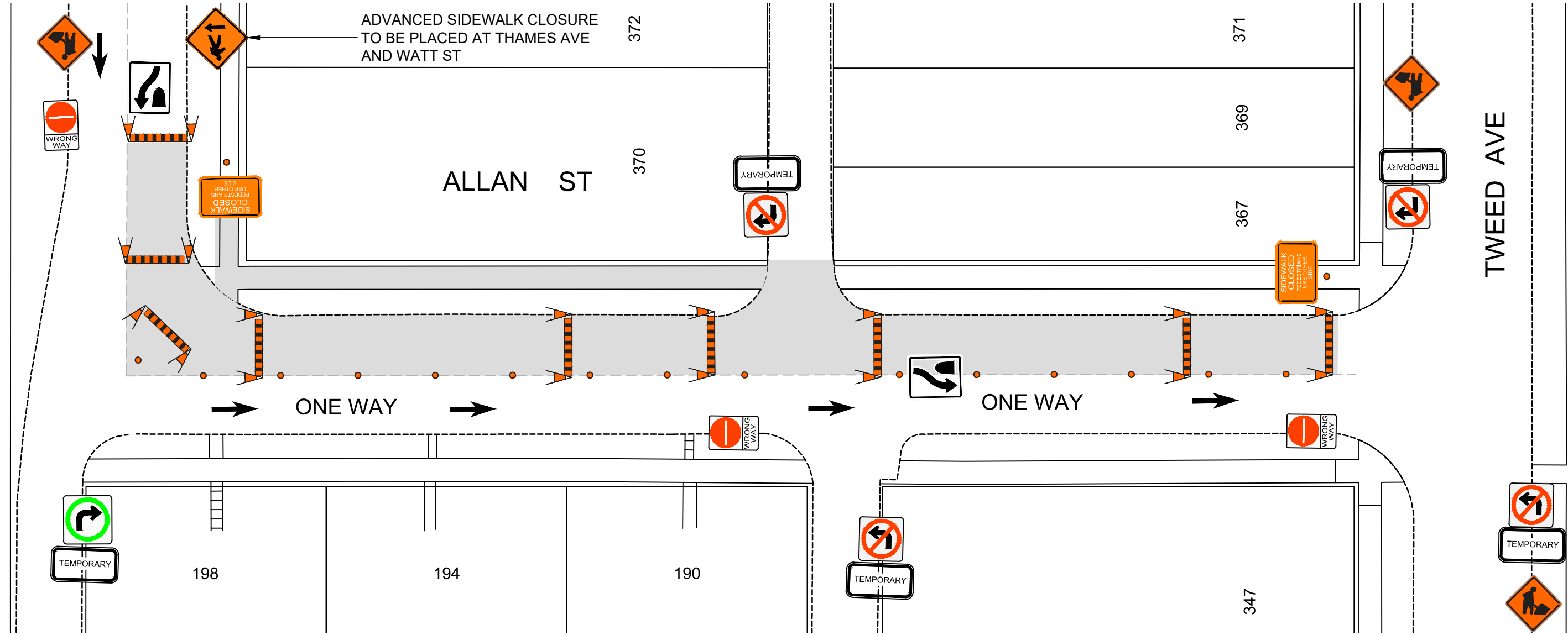
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

RIVERTON AVENUE
FROM STADACONA AV TO ALLAN ST
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

THAMES AVE

TWEED AVE



ADVANCED SIDEWALK CLOSURE
TO BE PLACED AT THAMES AVE
AND WATT ST

ALLAN ST

ONE WAY

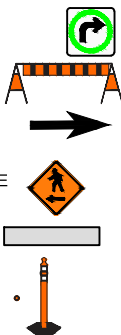
ONE WAY

TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- WRONG WAY SIGN
- RB-25-R KEEP RIGHT
- TEMPORARY TAB



- RB-14-RIGHT TURN ONLY
- BARRICADE
- TRAFFIC DIRECTION
- ADVANCED SIDEWALK CLOSURE
- WORK AREA
- POLY POST



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN ONE DIRECTION. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE AND TRAFFIC CONTROL MIRRORED.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
6. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.



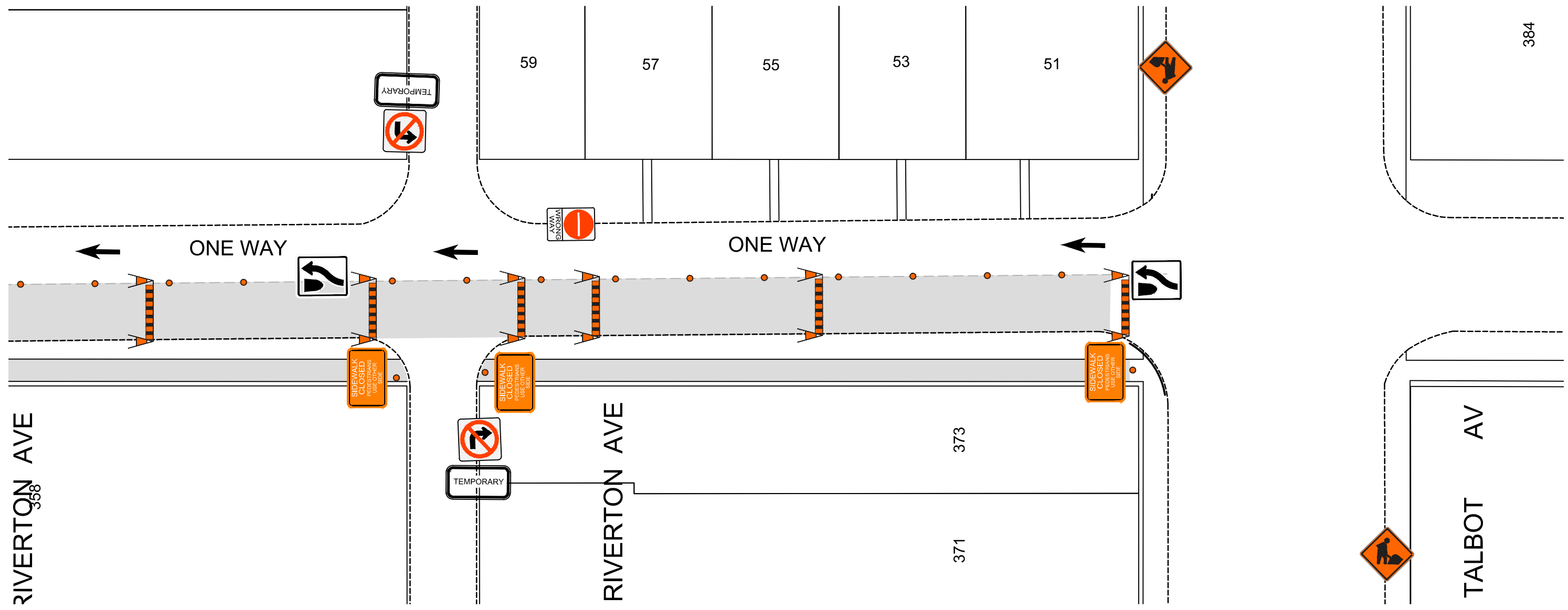
FOR INFORMATION ONLY

TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

ALLAN STREET
FROM THAMES AVE TO TWEED AVE
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

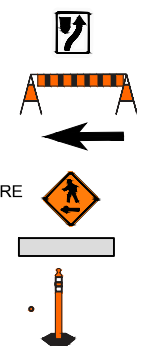


TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- WRONG WAY SIGN
- TEMPORARY TAB



- RB-25-R KEEP RIGHT
- BARRICADE
- TRAFFIC DIRECTION
- ADVANCED SIDEWALK CLOSURE
- WORK AREA
- POLY POST



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN ONE DIRECTION. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE AND TRAFFIC CONTROL MIRRORED.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
6. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

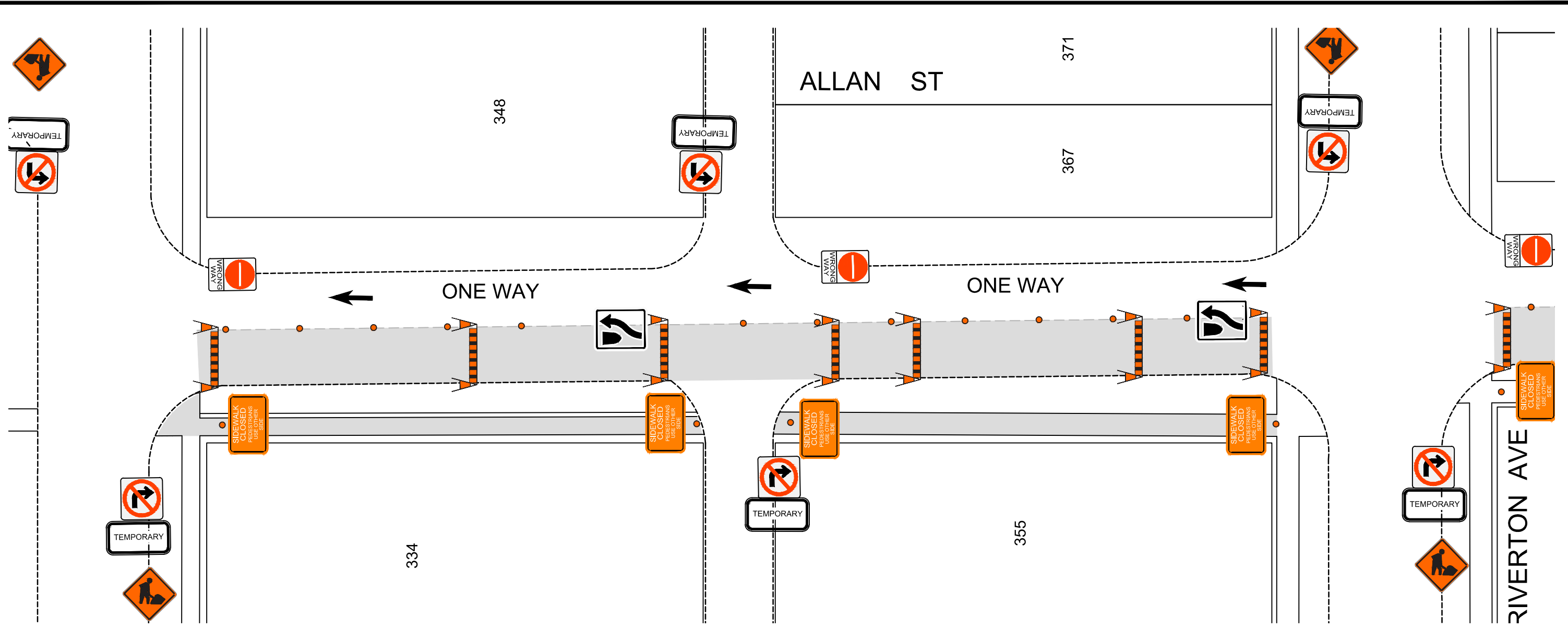
FOR INFORMATION ONLY

TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

ALLAN STREET
FROM TWEED AVE TO TALBOT AVE
TEMPORARY TRAFFIC SIGNAGE





TRAFFIC SIGNAGE

- | | | | |
|-----------------------------|--|---------------------------|--|
| TC-2 ROADWORK | | RB-25-R KEEP RIGHT | |
| RB-11 (L/R) TURN PROHIBITED | | BARRICADE | |
| C 46 SIDEWALK CLOSED | | TRAFFIC DIRECTION | |
| WRONG WAY SIGN | | ADVANCED SIDEWALK CLOSURE | |
| TEMPORARY TAB | | WORK AREA | |
| | | POLY POST | |

NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN ONE DIRECTION. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE AND TRAFFIC CONTROL MIRRORED.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
6. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.

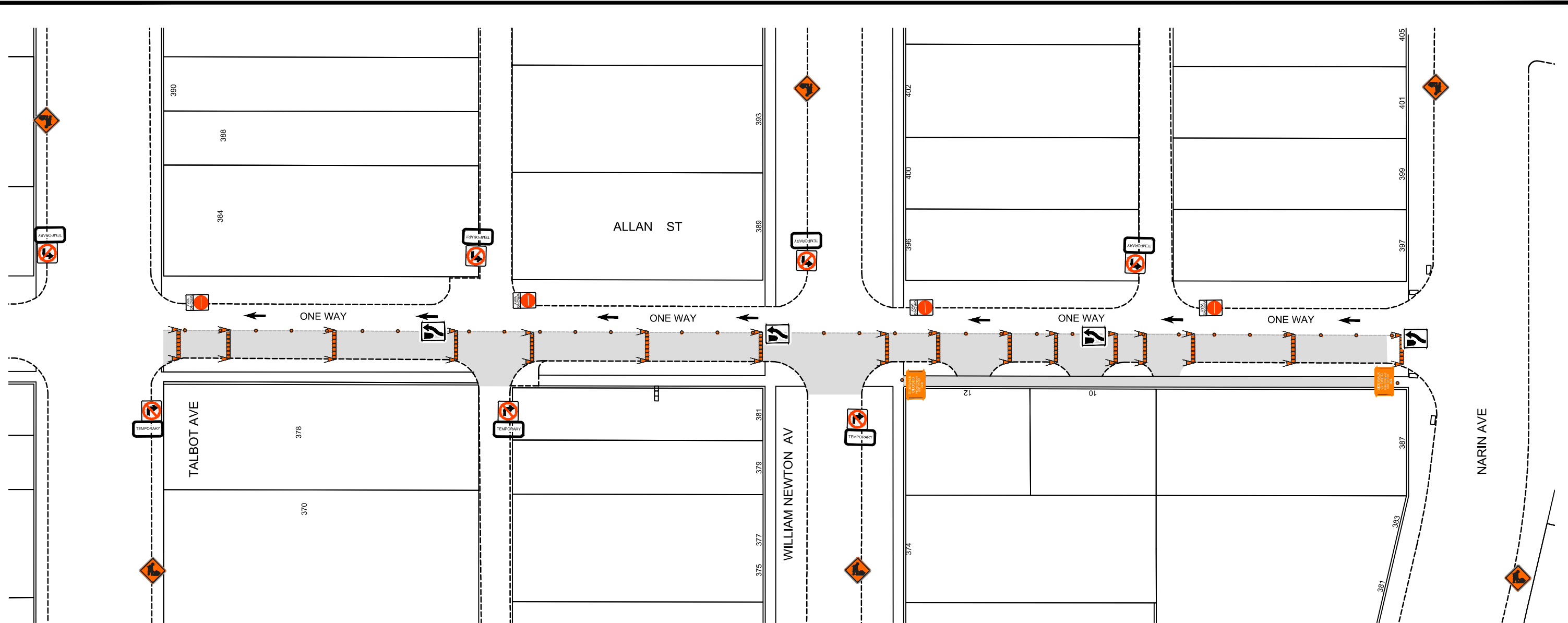


FOR INFORMATION ONLY TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

ALLAN STREET
FROM TWEED AVE TO TALBOT AVE
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



TRAFFIC SIGNAGE

TC-2 ROADWORK		RB-25-R KEEP RIGHT	
RB-11 (L/R) TURN PROHIBITED		BARRICADE	
C 46 SIDEWALK CLOSED		TRAFFIC DIRECTION	
WRONG WAY SIGN		ADVANCED SIDEWALK CLOSURE	
TEMPORARY TAB		WORK AREA	
		POLY POST	

NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN ONE DIRECTION. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE AND TRAFFIC CONTROL MIRRORED.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
6. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.

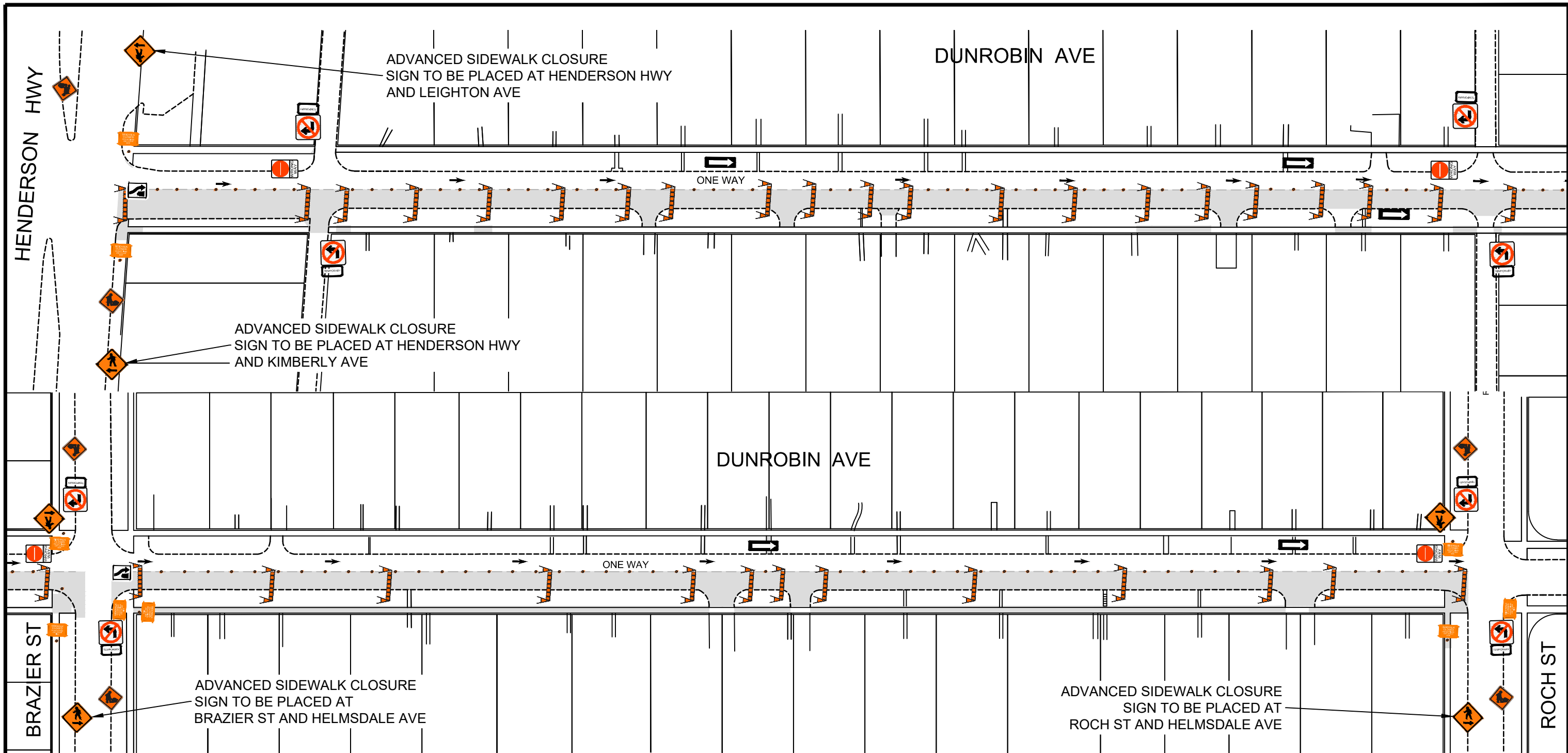


FOR INFORMATION ONLY TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

ALLAN STREET
FROM TALBOT AVE TO NARIN AVE
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



ADVANCED SIDEWALK CLOSURE SIGN TO BE PLACED AT HENDERSON HWY AND LEIGHTON AVE

ADVANCED SIDEWALK CLOSURE SIGN TO BE PLACED AT HENDERSON HWY AND KIMBERLY AVE

ADVANCED SIDEWALK CLOSURE SIGN TO BE PLACED AT BRAZIER ST AND HELMSDALE AVE

ADVANCED SIDEWALK CLOSURE SIGN TO BE PLACED AT ROCH ST AND HELMSDALE AVE

TRAFFIC SIGNAGE

TC-2 ROADWORK		RB-25-L KEEP LEFT	
RB-11 (L/R) TURN PROHIBITED		BARRICADE	
C 46 SIDEWALK CLOSED		TRAFFIC DIRECTION	
WRONG WAY SIGN		ADVANCED SIDEWALK CLOSURE	
RB-21 ONE WAY TRAFFIC		WORK AREA	
TEMPORARY TAB		POLY POST	

NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSINGS. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIMES. CONTRACTOR MUST SUBMIT A SITE ACCESSIBILITY PLAN.
3. CONSTRUCTION TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN THE EAST BOUND DIRECTION AT ALL TIMES. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE.
4. ACCESS TO PUBLIC LANES TO BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION EXCEPT DURING ASPHALT OPERATIONS.
5. PARKING TO BE REMOVED AT TIME OF CONSTRUCTION.
6. ALL TRAFFIC SIGNAGE ON THIS DRAWING IS IN REPRESENTATIVE LOCATION. FOR PROPER SPACING REFER TO THE MANUAL OF TEMPORARY TRAFFIC CONTROL.

FOR INFORMATION ONLY

TENDER NO. 11-2025

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

DUNROBIN AVENUE
FROM HENDERSON HWY TO ROCH STREET
TEMPORARY TRAFFIC SIGNAGE

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



University
of Manitoba | Price Faculty
of Engineering



FIELD STUDY TO INVESTIGATE THE PERFORMANCE
OF WICKING GEOSYNTHETICS ON PAVEMENTS IN
COLD REGIONS



Table-1: Geosynthetics to be used in the field study.

Geosynthetics type	Source
Non-woven geotextile (non-wicking) with geogrid	City of Winnipeg approved products
Woven wicking geotextile	Mirafi H2Ri
Wicking nonwoven geotextile – geogrid composite	Titan WickGrid
High-performance warp-knitted geotextile	TerraTex® DriBase™

Table-2: Geosynthetic test section locations.

Geosynthetics Type	Start (Station)	End (Station)	Total Length
MIRAFI H2Ri	St. 1+00.00	St. 1+88.00	88.0
TerraTex® DriBase™	St. 1+88.00	St. 2+93.00	105.0
TITAN WickGrid™	St. 2+93.00	St. 4+12.00	119.0
Conventional Geotextile	St. 4+20.00	St. 6+75.50	263.5
No Geotextile	St. 6+75.50	St. 7+29.30	53.80



Table-3: Material-1 (Woven wicking geotextile) – MIRAFLI H2Ri

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Wide width tensile strength	ASTM D4595	kN/m	77.0	77.0
Wide Width Tensile Strength @ 2% strain	ASTM D4595	kN/m	7.0	15.8
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	40 (0.425)	
Permittivity	ASTM D4491	sec ⁻¹	0.4	
Flow Rate	ASTM D4491	l/min/m ²	1222	
Pore Size (050)	ASTM D6767	microns	180	
Pore Size (060)	ASTM D6767	microns	234	
Pore Size (095)	ASTM D6767	microns	391	
Wet Front Movement (Vertical direction)	ASTM C1559	inches	6.0	
Wet Front Movement (Horizontal direction)	ASTM C1559	inches	73.3	
Physical Properties				
Roll dimensions	-	m	4.59 x 91.44 (W x L)	



Table-4: Material-2 (Wicking nonwoven geotextile – geogrid composite) – Titan WickGrid.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
HIGH STIFFNESS BI-AXIAL GEOGRID				
Carbon Black Content	ASTM D4218	%	2.0	2.0
Radial Stiffness @ 0.5% strain	ASTM D6637	kN/m	550.0	550.0
Secant Stiffness EA at 0.5% strain	ASTM D6637	kN/m	440.0	440.0
Junction Efficiency	GRI-GG2 ASTM D7737	%	>95	
Flexural Rigidity	ASTM D7748	mg-cm	2,000,000	
Aperture Stability	US. COE	kg-cm/deg	11.0	
Minimum Rib Thickness	-	mm	2.5	1.5
Aperture Size	Nominal	mm	34.0	34.0
NON-WOVEN WICKING GEOTEXTILE				
Grab strength	ASTM D4632	N	740	740
Trapezoidal Tear	ASTM D4533	N	320	320
CBR Puncture Strength	ASTM D6241	kN	2.6	
Permittivity	ASTM D4491	sec ⁻¹	1.59	
Apparent Opening Size (AOS)	ASTM D4751	mm	0.194	
Flow Rate	ASTM D4491	l/min/m ²	4500	
Wet Front Movement (Horizontal direction)	ASTM C1559	inches	90.6	
Physical Properties				
Roll dimensions	-	m	(3.95 or 5.95) x 50 (W x L)	



Table-5: Material-3 (Warp-Knitted) – Terrafix, TerraTex® DriBase™.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Wide width tensile strength	ASTM D4595	kN/m	77.6	77.6
Wide Width Tensile Strength @ 2% strain	ASTM D4595	kN/m	7.3	16.1
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	0.425	
Permittivity	ASTM D4491	sec ⁻¹	0.5	
Flow Rate	ASTM D4491	l/min/m ²	2037	
Wet Front Movement (Vertical direction)	ASTM C1559	inches	6	
Wet Front Movement (Horizontal direction)	ASTM C1559	inches	75	
Physical Properties				
Roll dimensions	-	m	4.57 x 91.4 (W x L)	

Subdrain installation with Geosynthetics

Please note that the subdrains will be wrapped using conventional geotextile. The wicking geotextiles (MIRAFI H2Ri and TerraTex® DriBase™) will terminate with a 200 mm extension at the top of the subdrain as shown in Figure 6. A sketch of this installation process is provided in Appendix B. Due to the rigidity of TITAN WickGrid which is a geogrid-composite material, the material can't be draped into the subdrain and is instead terminated above the centreline of the subdrain as shown in Figure 7.

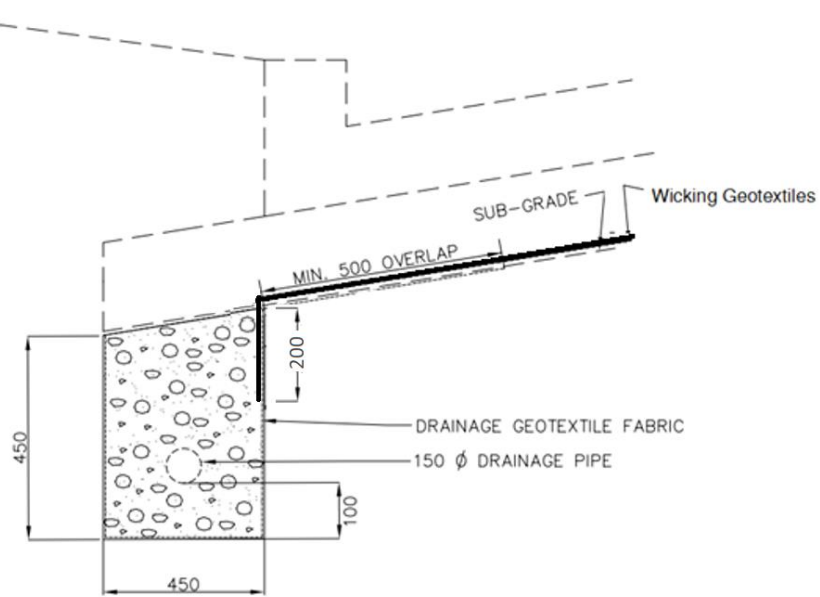


Figure-6: Typical City of Winnipeg subdrain with details for MIRAFI H2Ri and TerraTex® DriBase™ products.

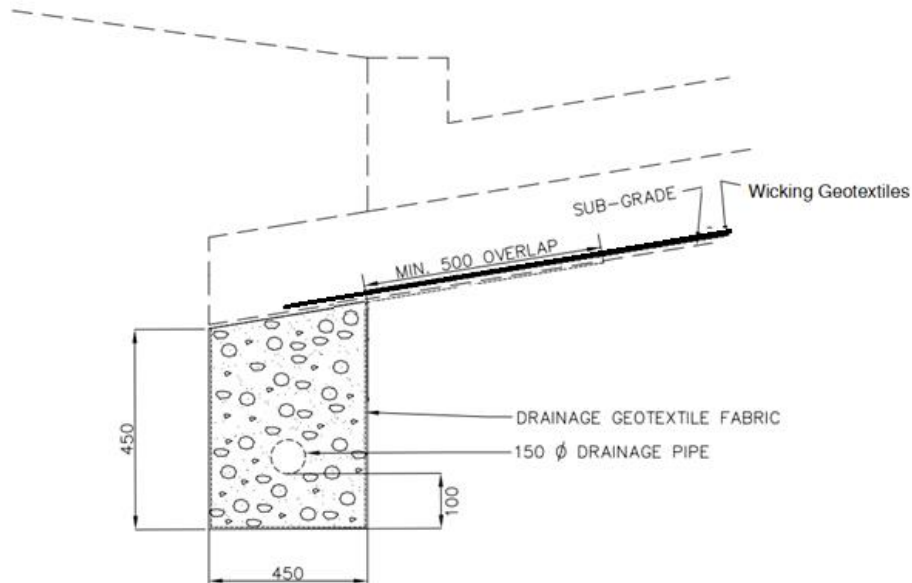
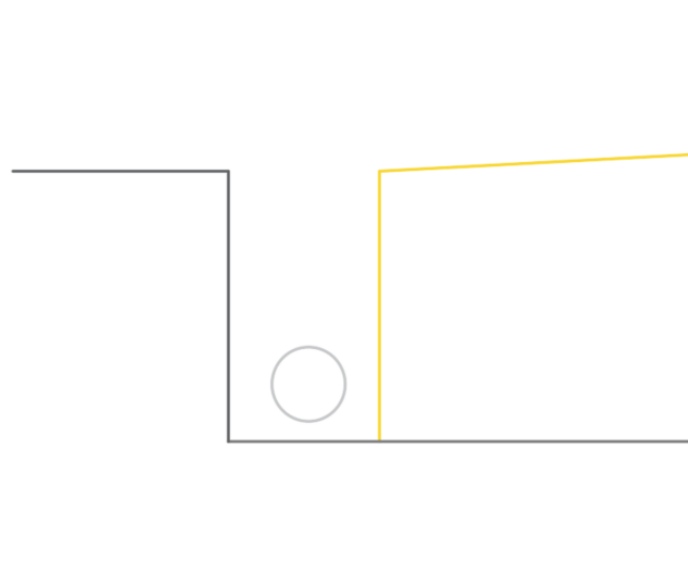
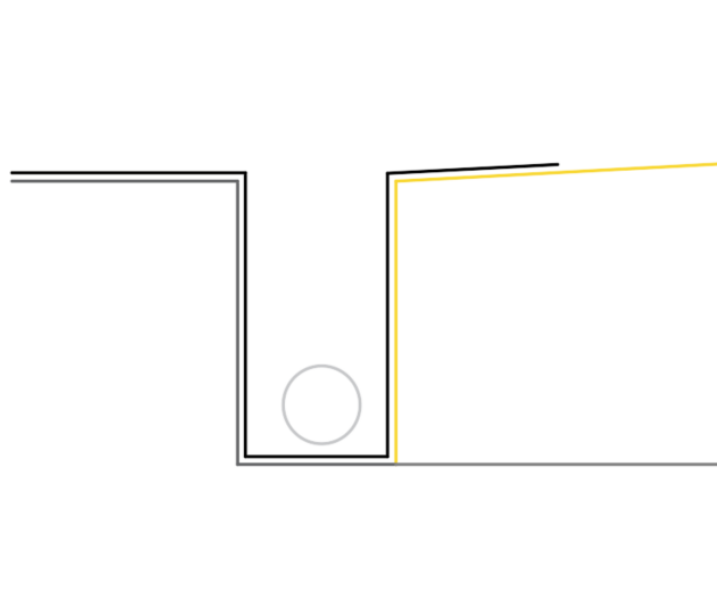


Figure-7: Typical City of Winnipeg subdrain with details for TITAN WickGrid™ product.

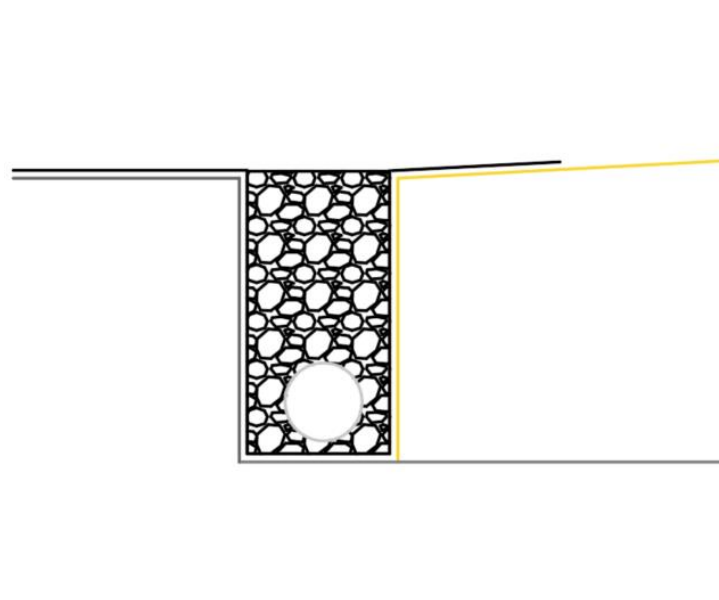


Step-1: Excavate for subdrain construction.

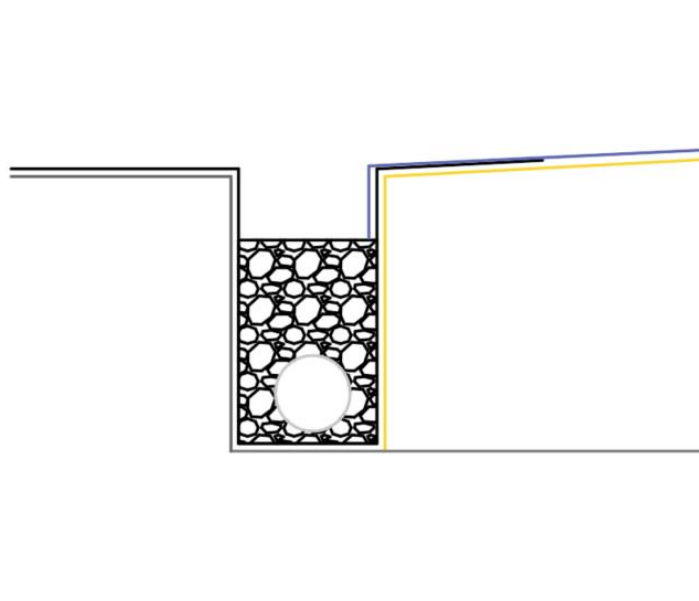


Step-2: Wrap the subdrain with nonwoven geotextile and install the drainage components.

Figure-B.1: Installation Process of the Woven Wicking Geotextile.

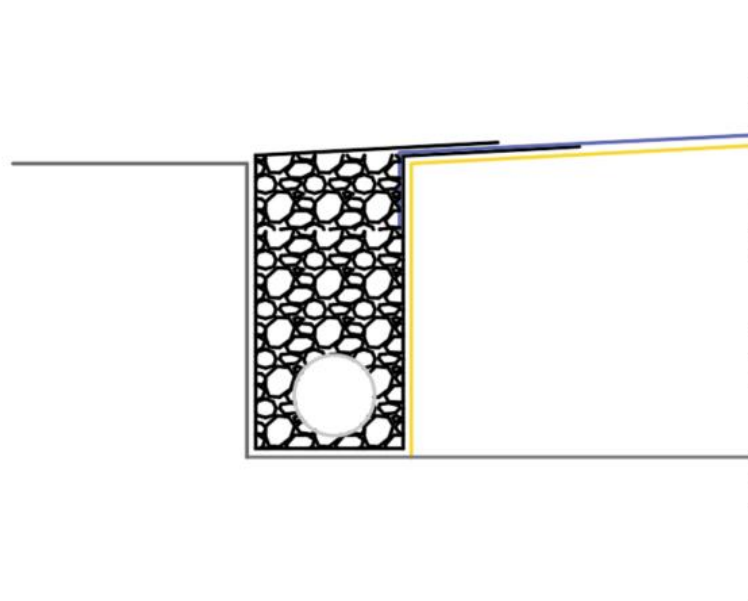


Step-3: Backfill with aggregate.



Step-4: Shovel the top aggregate, lay the woven wicking geotextile, and extend its end to the subdrain.

Figure- B.1 (cont.): Installation Process of the Woven Wicking Geotextile.



Step-5: Pull the nonwoven geotextile flap back over the subdrain.

Figure- B.1 (cont.): Installation Process of the Woven Wicking Geotextile.