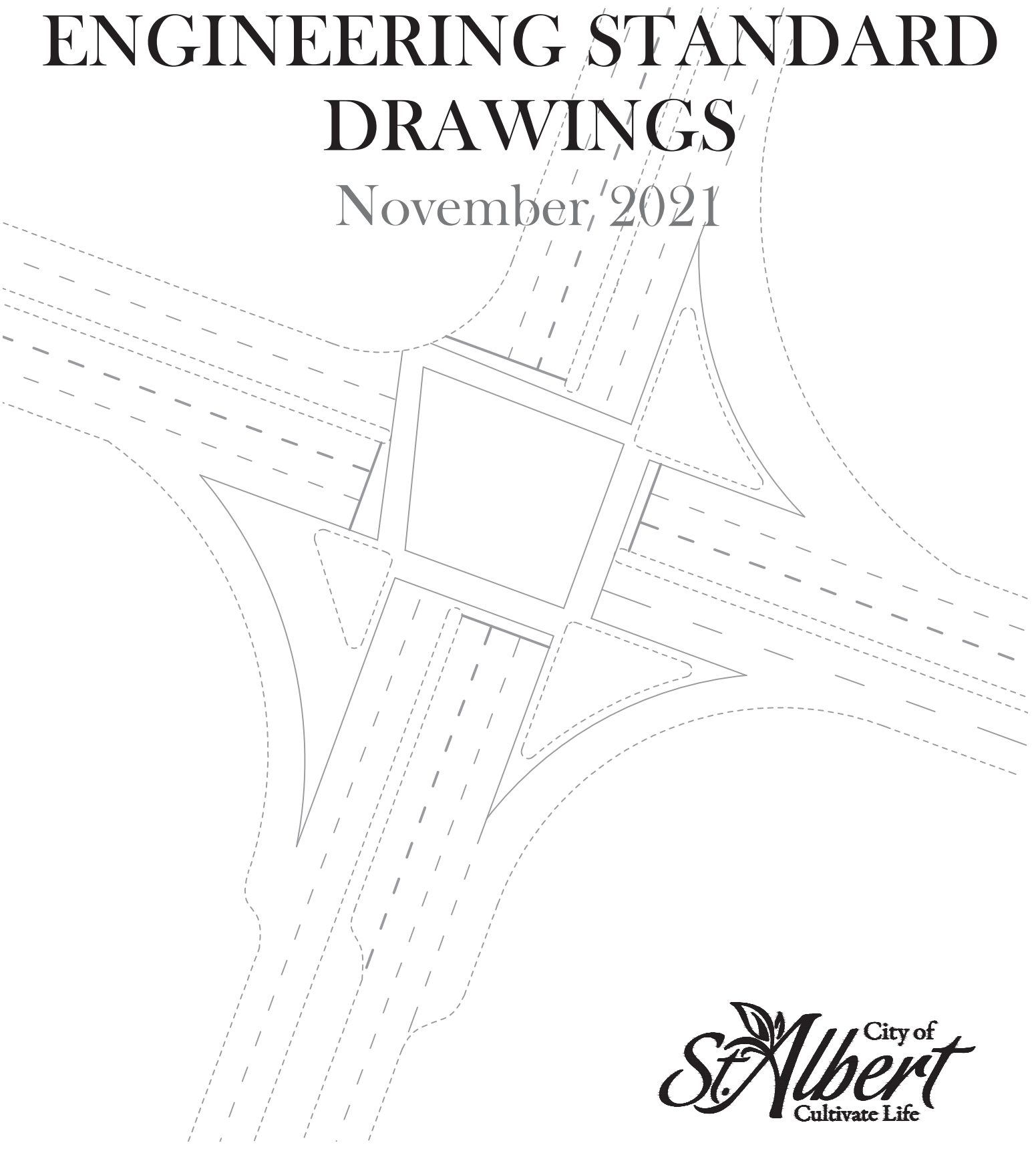
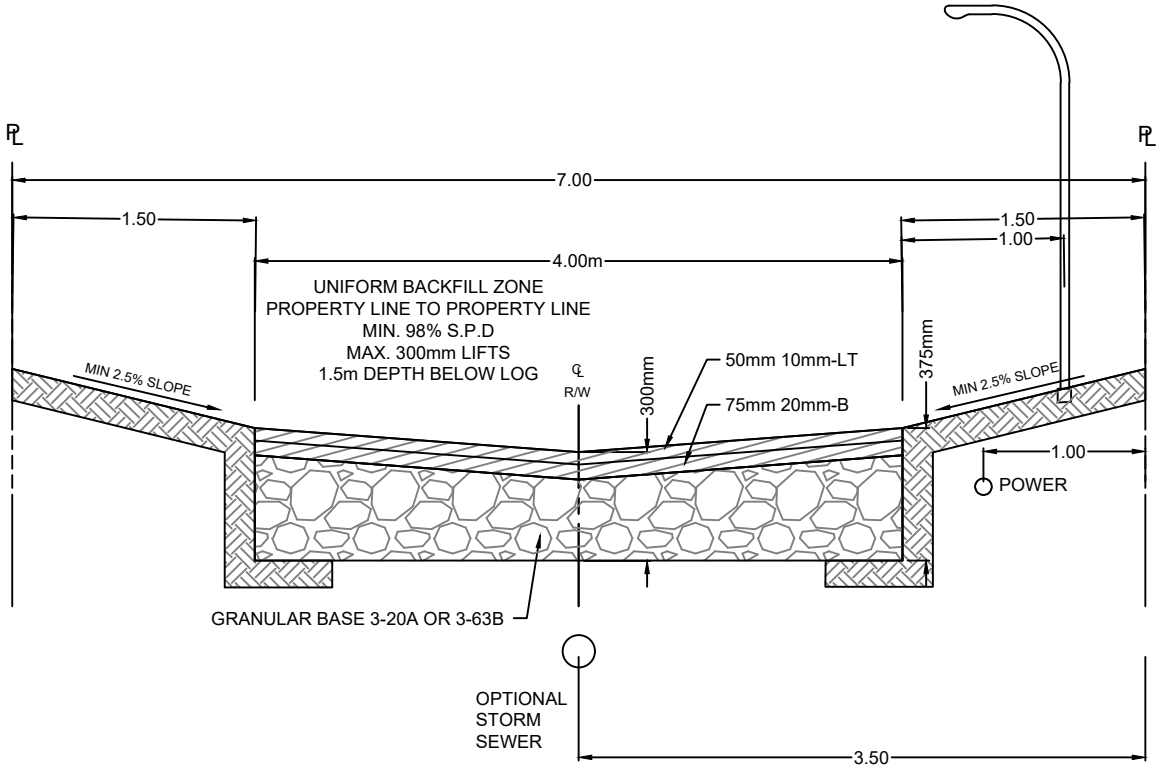
APPENDIX A

CITY OF ST. ALBERT ENGINEERING STANDARD DRAWINGS

November, 2021



City of St. Albert
Cultivate Life



LANEWAY RESIDENTIAL

N.T.S.

STAGED ASPHALT PAVING:
THE FOLLOWING STAGED ASPHALT PAVING WILL BE REQUIRED IF MULTIPLE UTILITIES ARE INSTALLED WITHIN 4.0m PAVED AREA:

	CENTRE (mm)	EDGE (mm)
10mm-LT (FINAL LIFT)	50	50
20mm-B (INITIAL LIFT)	75	75
GRANULAR BASE	175	250

NOTE
SUBGRADE TO BE PREPARED AS PER GEOTECHNICAL ENGINEER'S RECOMMENDATION IN FIELD AT THE TIME OF CONSTRUCTION

NOTES:
1. EDGES OF PAVEMENT MUST HAVE FLUSH TRANSITION TO DRIVEWAYS.
2. ALLEY IS CENTERED IN R.O.W.
3. CEMENT STABILIZED SUBGRADE 10kg/m² (MIN.) TO BE VERIFIED BY THE GEOTECHNCAL ENGINEER AT THE TIME OF CONSTRUCTION.
4. MINIMUM 2.5% SIDE SLOPE.

4.0 m Laneway (Residential)

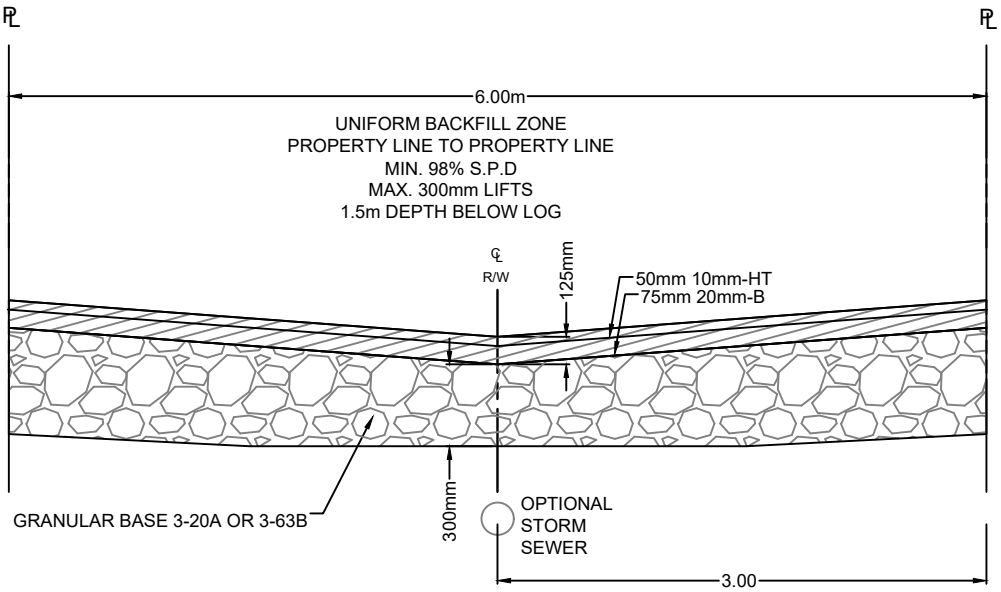
REVIEWED BY:

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 10, 2021
SCALE: NTS
DRAWING NO.: 3.0A



LANEWAY COMMERCIAL / EMPLOYMENT

N.T.S.

STRUCTURE:	CENTRE (mm)	EDGE (mm)
10mm-HT (FINAL LIFT)	50	50
20mm-B (INITIAL LIFT)	75	75
GRANULAR BASE	300	375

NOTE:
SUBGRADE TO BE PREPARED AS PER GEOTECHNICAL ENGINEER'S RECOMMENDATION IN FIELD AT THE TIME OF CONSTRUCTION

NOTES:
1. IN ALLEY CONSTRUCTION, THE SAG POINT MAY BE OFF CENTERED AND/OR THE CROSS-FALL VARIED TO MATCH EXISTING GRADES ALONG THE ALLEY EDGES.
2. ALLEY IS CENTERED IN R.O.W.
3. CEMENT STABILIZED SUBGRADE 10kg/m² (MIN.) TO BE VERIFIED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION

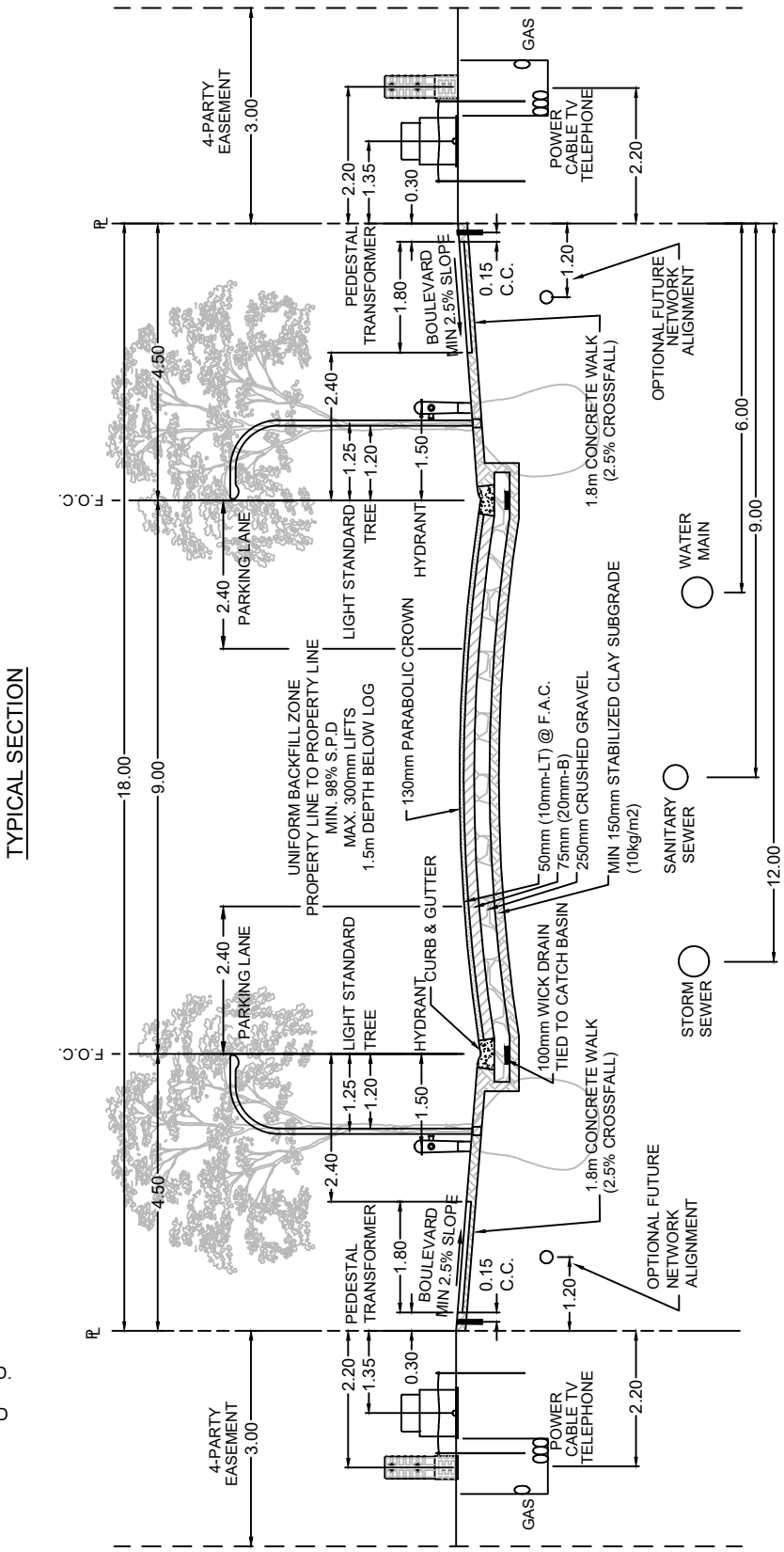
6.0 m Laneway (Commercial / Employment)

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 10, 2021
SCALE: NTS
DRAWING NO.: 3.0B



NOTES:

1. ALL DIMENSIONS IN METRES, UNLESS OTHERWISE NOTED.
2. ALL ROAD STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.
3. MINIMUM 2.5% SLOPE REQUIRED ON BOULEVARD
4. DOES NOT ACCOMMODATE PUBLIC TRANSIT BUSES OR COMMERCIAL/LARGE LOADS
5. IN FLANKAGE SCENARIOS, ALTERNATE LOCATION OF POWER AND GAS TO BE CENTERED UNDER WALKS.
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

9.0 m LOCAL (Residential)

REVIEWED BY:

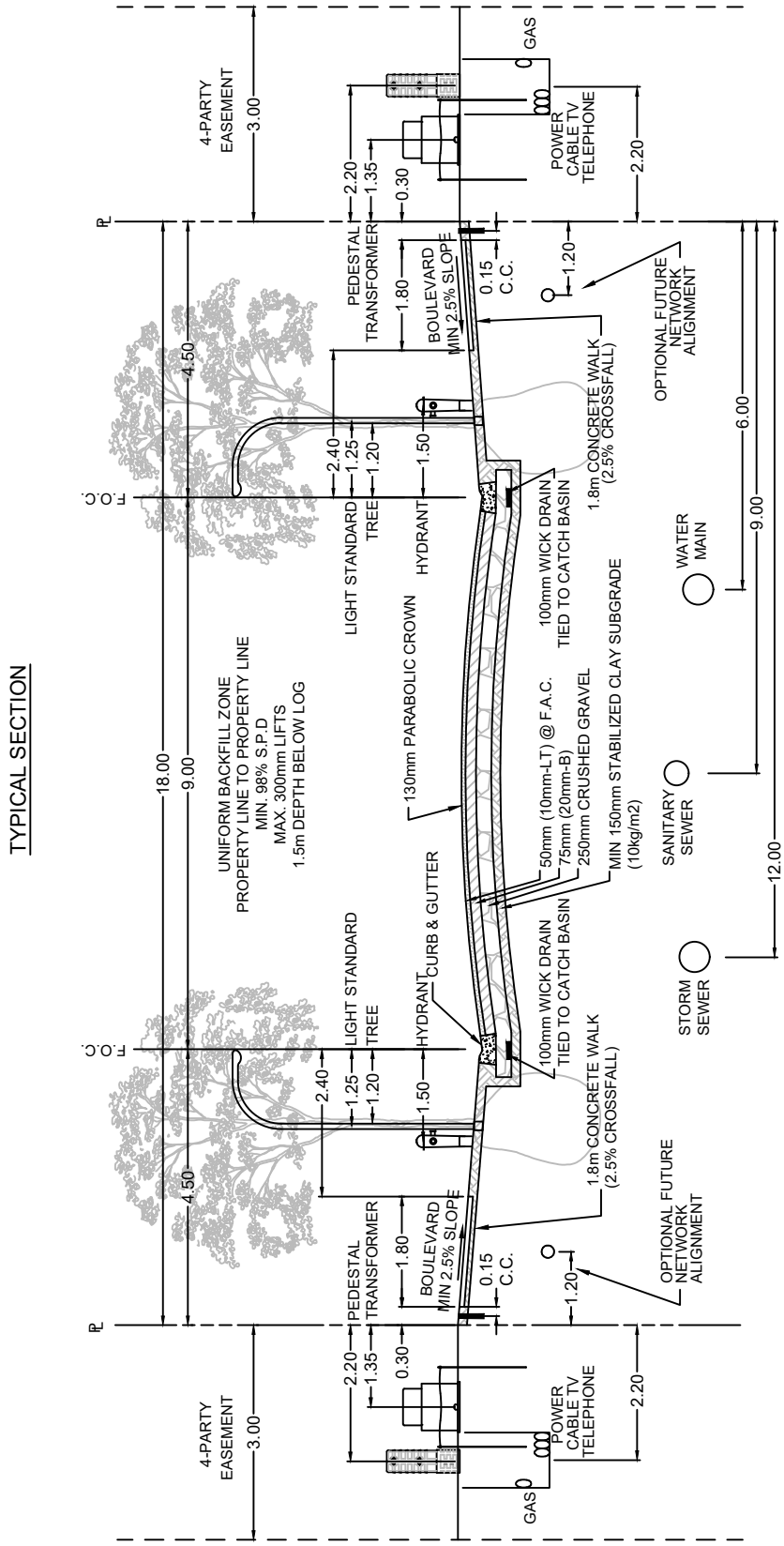
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 10, 2021

SCALE: NTS

DRAWING NO.: 3.1



NOTES:

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2. ALL ROAD STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION.
3. MINIMUM 2.5% SLOPE REQUIRED ON BOULEVARD
4. ACCOMMODATES COMMERCIAL/LARGE LOADS
5. IN FLANKAGE SCENARIOS, ALTERNATE LOCATION OF POWER AND GAS TO BE CENTERED UNDER WALKS
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

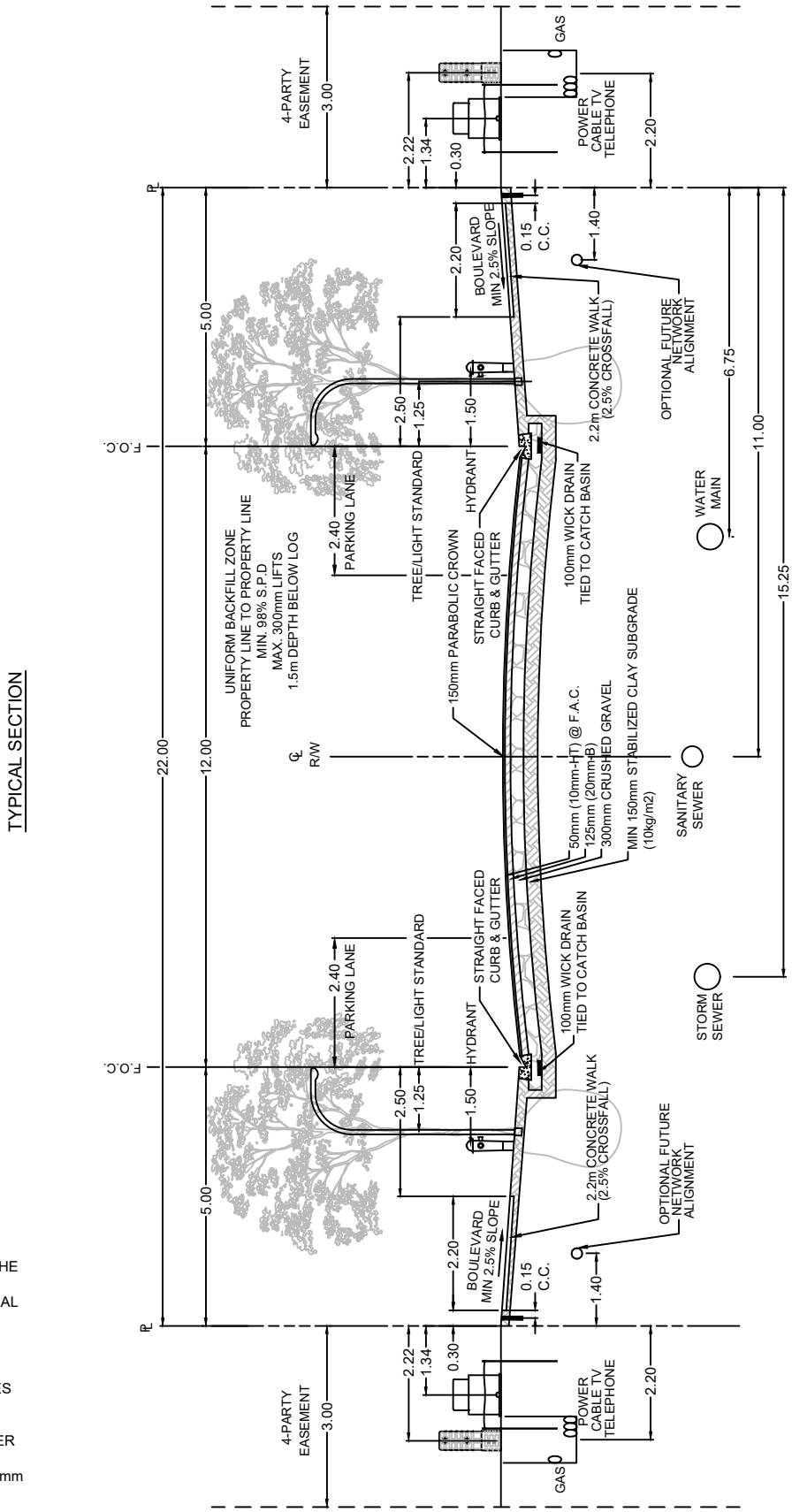
9.0 m LOCAL (Employment)

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.2



TYPICAL SECTION

NOTES:

1. ALL DIMENSIONS IN METRES, UNLESS OTHERWISE NOTED.
2. ALL ROAD STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTCHNICAL REPORT AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTIONS.
3. MOUNTABLE CURB AND GUTTER TO BE USED IN RESIDENTIAL DEVELOPMENTS WHERE DRIVEWAYS ARE PRESENT.
4. STRAIGHT FACE CURB AND GUTTER TO BE USED FOR COMMERCIAL DEVELOPMENTS.
5. MINIMUM 2.5% SLOPE REQUIRED ON BOULEVARD.
6. ACCOMMODATES PUBLIC TRANSIT BUSES. ACCOMMODATES COMMERCIAL/LARGE LOADS IN EMPLOYMENT CONFIGURATION.
7. IN FLANKAGE SCENARIOS, ALTERNATE LOCATION OF POWER AND GAS TO BE CENTERED UNDER WALKS.
8. FOR APPLICABLE SCENARIOS, FENCING TO BE PLACED 150mm INTO PROPERTY.
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

12.0 m COLLECTOR (Neighbourhood Employment)

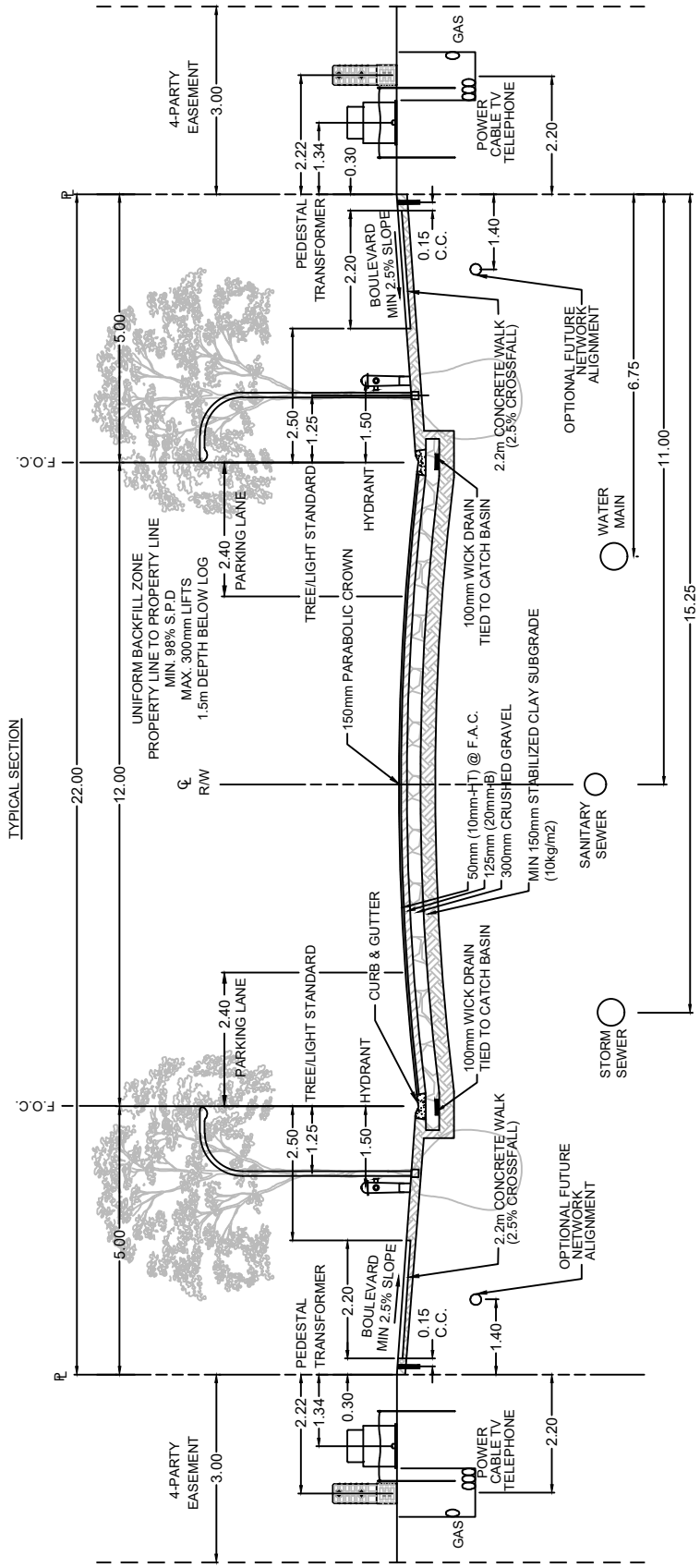
City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

REVIEWED BY:

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.3



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12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

12.0 m COLLECTOR (Neighbourhood Residential)

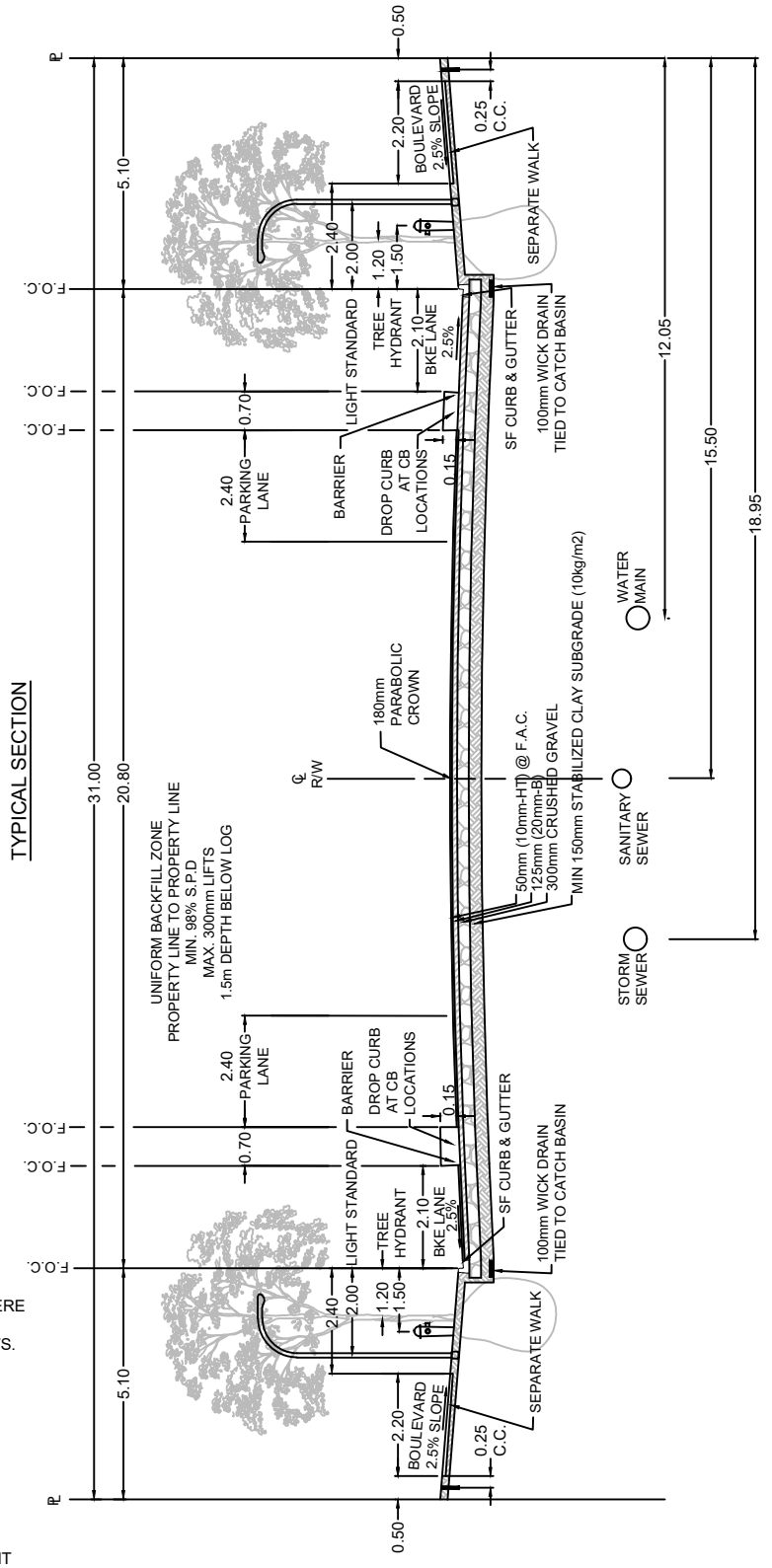
REVIEWED BY:

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.4



NOTES:

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4. STRAIGHT FACE CURB AND GUTTER TO BE USED FOR COMMERCIAL DEVELOPMENTS.
5. MINIMUM 2.5% SLOPE REQUIRED ON BOULEVARD.
6. ACCOMMODATES PUBLIC TRANSIT BUSES. ACCOMMODATES COMMERCIAL/LARGE LOADS BUT IS NOT TYPICALLY A TRUCK ROUTE.
7. IN FLANKAGE SCENARIOS, ALTERNATE LOCATION OF POWER AND GAS TO BE CENTERED UNDER WALKS.
8. FOR APPLICABLE SCENARIOS, FENCING TO BE PLACED 150mm INTO PROPERTY.
9. ALTERNATE PIPE ALIGNMENTS TO ACCOMMODATE ADDITIONAL MAIN LINES OR ALTERNATE TRANSMISSION/TRUNK MAIN ALIGNMENTS MAY BE ACCEPTABLE CONTINGENT ON REVIEW AND APPROVAL FROM THE MUNICIPALITY.
10. DROP CURB AT CB LOCATIONS TO FACILITATE DRAINAGE.
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

20.8 m UNDIVIDED ARTERIAL (Connector Commercial)

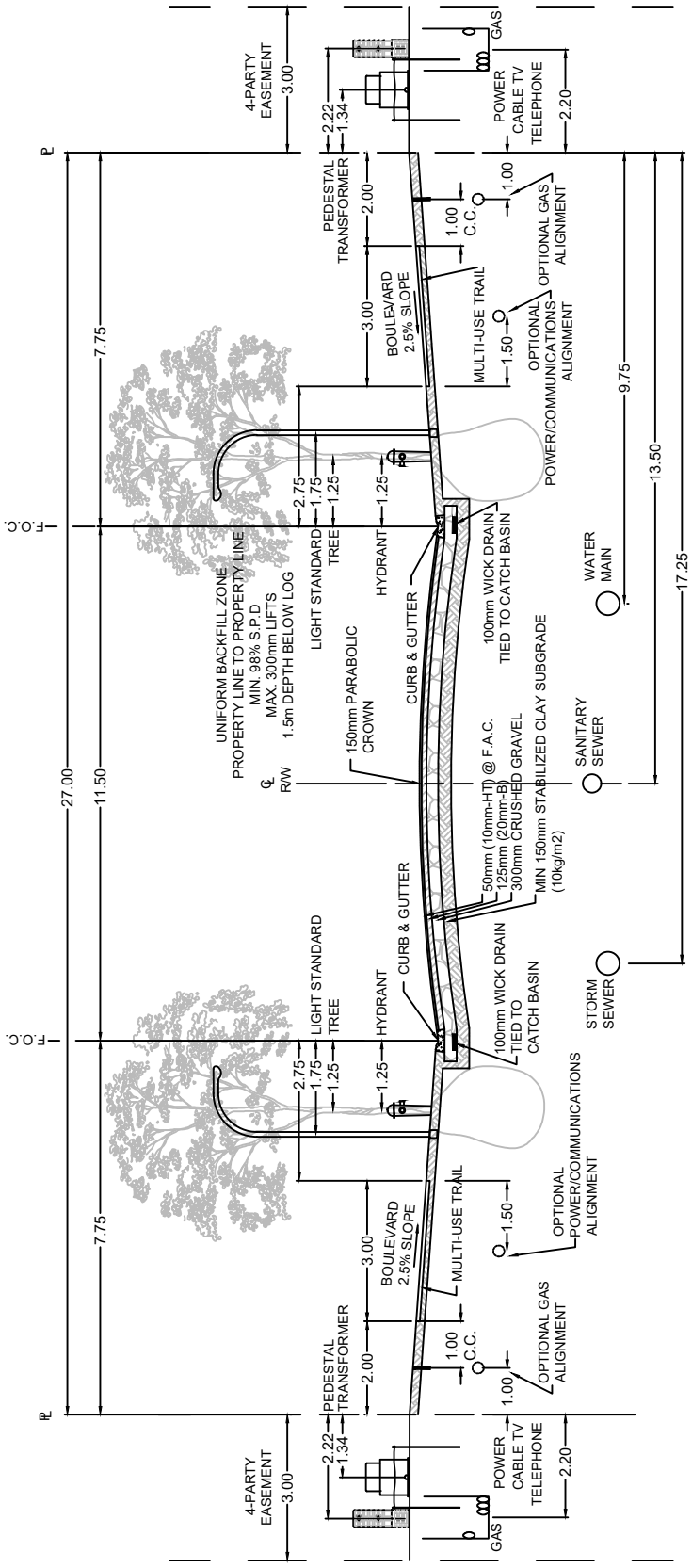
REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.5

TYPICAL SECTION



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7. 4-PARTY EASEMENT CONFIGURATION ACCEPTABLE WHEREVER APPLICABLE CONTINGENT ON REVIEW AND APPROVAL FROM THE MUNICIPALITY.
8. ALTERNATE LOCATION OF POWER AND GAS SHOWN IN CROSS SECTION.
9. FOR APPLICABLE SCENARIOS, FENCING TO BE PLACED 150mm INTO PROPERTY.
10. ALTERNATE PIPE ALIGNMENTS TO ACCOMMODATE ADDITIONAL MAIN LINES OR ALTERNATE TRANSMISSION/TRUNK MAIN ALIGNMENTS MAY BE ACCEPTABLE CONTINGENT ON REVIEW AND APPROVAL FROM THE MUNICIPALITY.
11. LINE PAINTING ON MULTI-USE TRAIL IS OPTIONAL.
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

11.50 m UNDIVIDED ARTERIAL (Connector Residential)

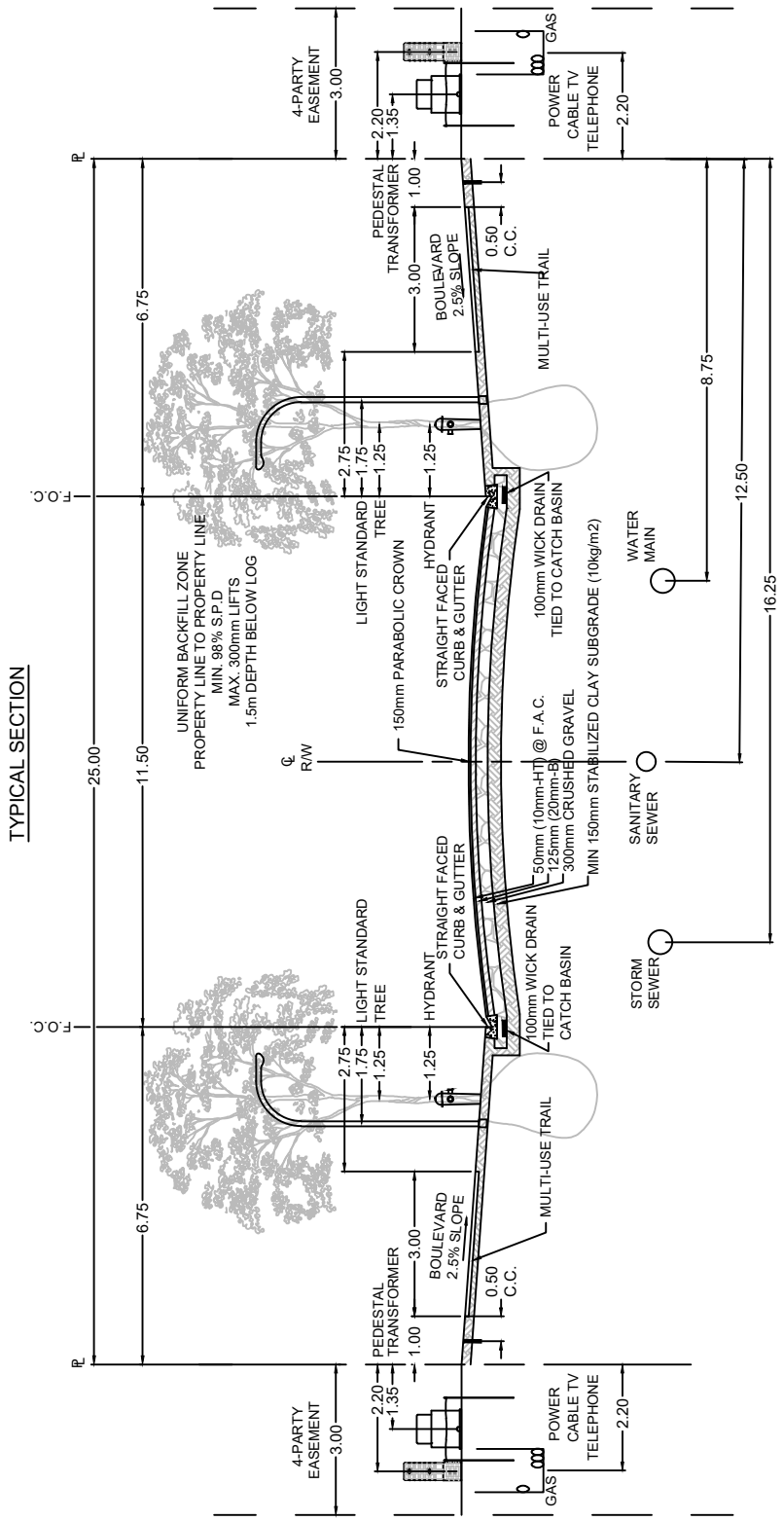
REVIEWED BY:

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 12, 2021	NTS	3.6



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10. LINE PAINTING ON MULTI-USE TRAIL IS OPTIONAL.
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

11.50 m UNDIVIDED ARTERIAL (Connector Employment)

REVIEWED BY:

City of St. Albert — Cultivate Life

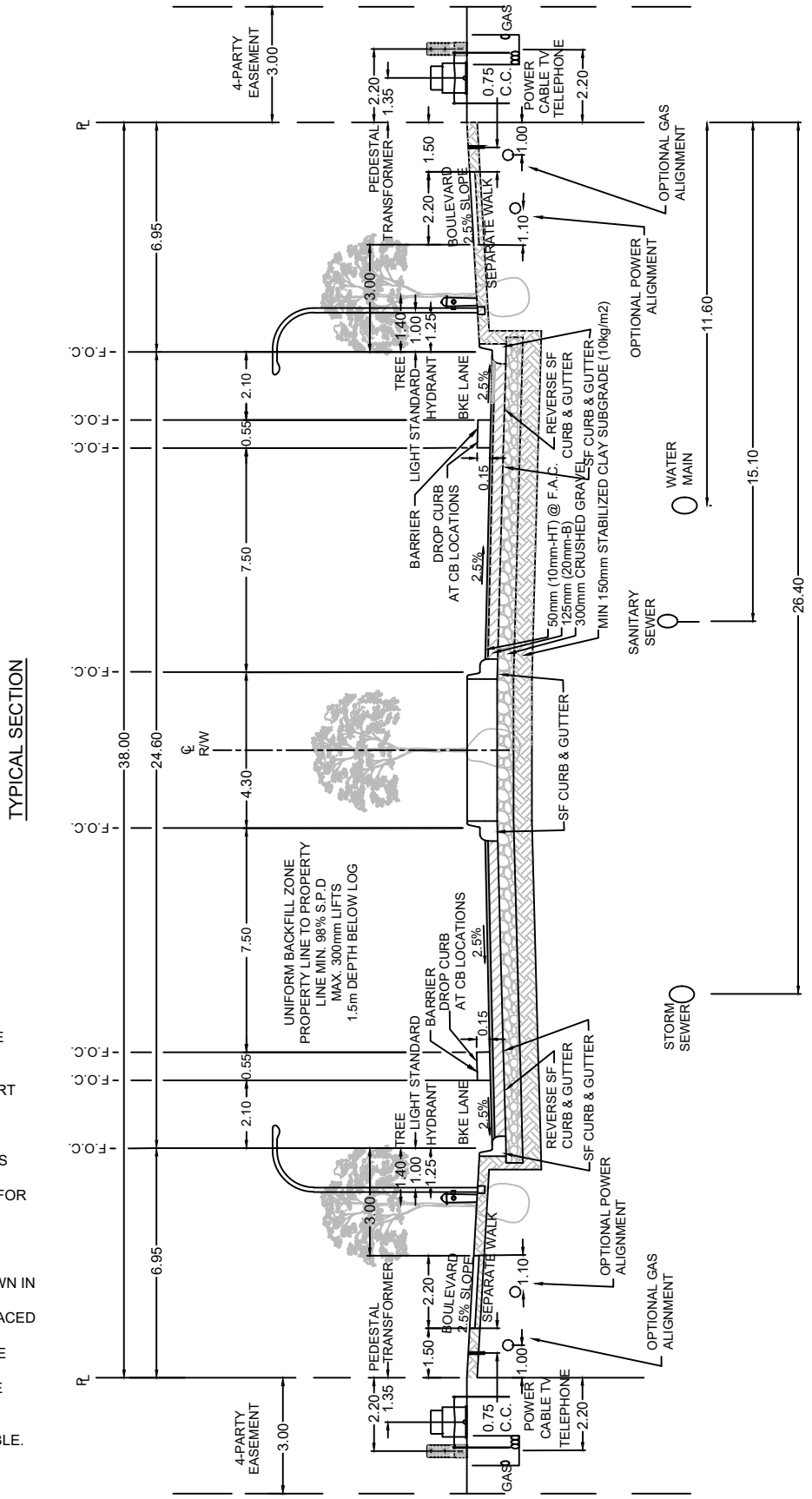
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 12, 2021

SCALE: NTS

DRAWING NO.: 3.7



NOTES:

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10. SANITARY MAY BE PAIRED WITH STORM IF POSSIBLE.
11. DROP CURB AT CB LOCATIONS TO FACILITATE DRAINAGE.
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

24.60 m DIVIDED ARTERIAL (Crosstown Residential / Employment)

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

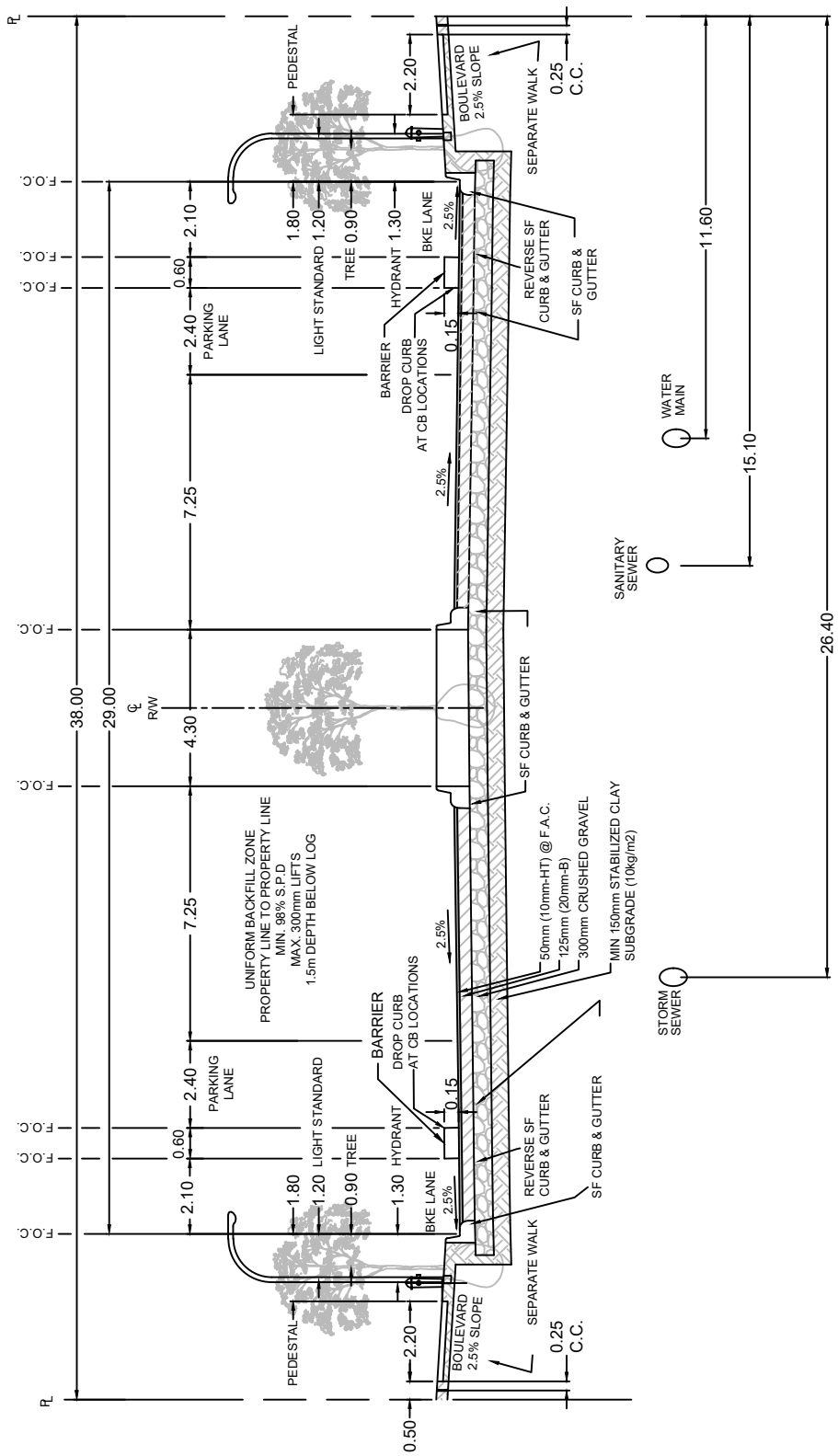
DATE	DESCRIPTION	BY

DATE: Nov. 12, 2021

SCALE: NTS

DRAWING NO.: 3.8

TYPICAL SECTION



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10. SANITARY MAY BE PAIRED WITH STORM IF POSSIBLE.
11. DROP CURB AT CB LOCATIONS TO FACILITATE DRAINAGE
12. PAVEMENT STRUCTURES ARE TO BE CONFIRMED WITH AN APPROPRIATE PAVEMENT DESIGN AND SUBGRADE ANALYSIS.

29.00 m DIVIDED ARTERIAL (Crosstown Commercial)

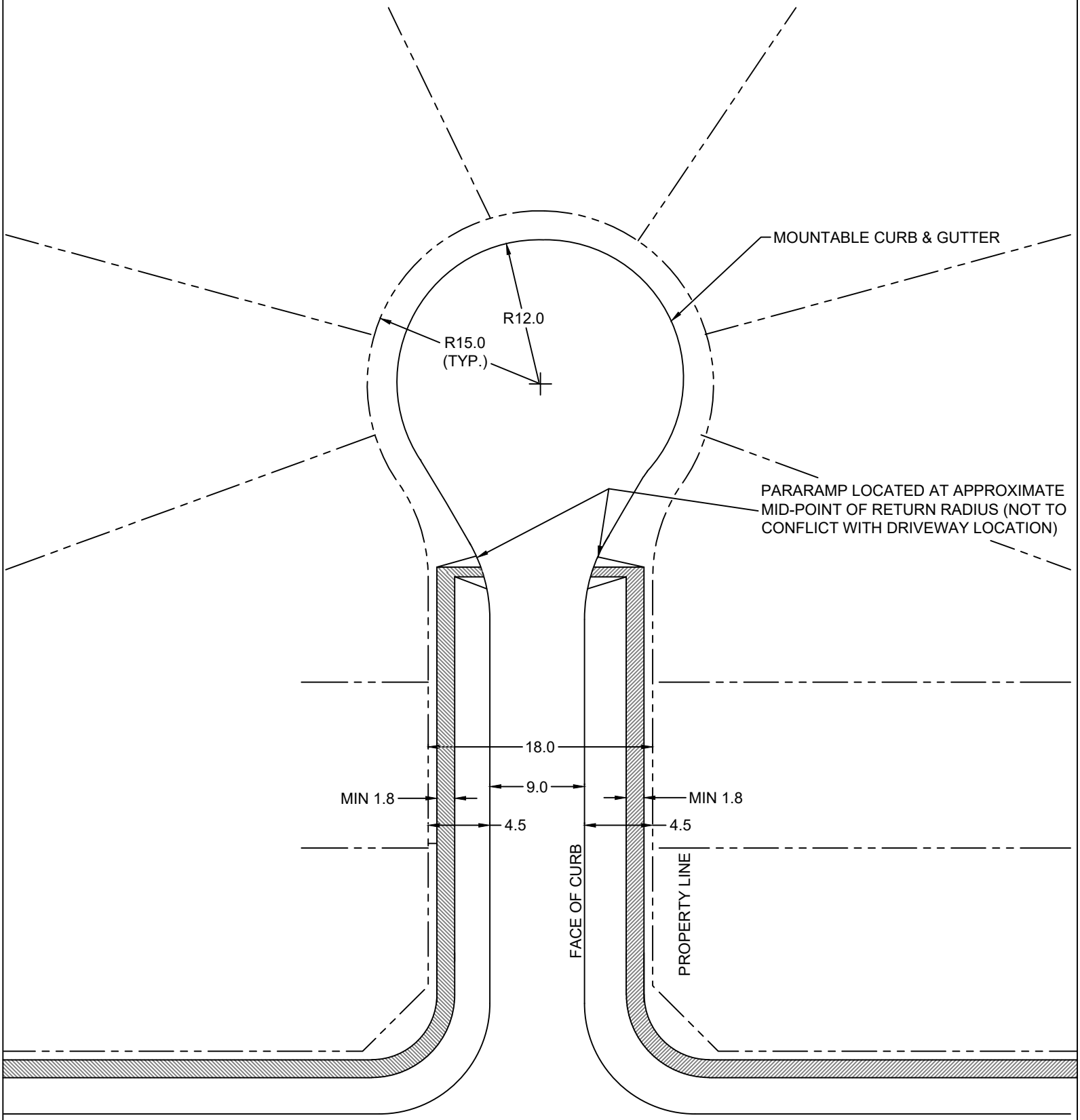
REVIEWED BY:

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 12, 2021	NTS	3.9



NOTES:

1. ALL DIMENSIONS IN METRES.

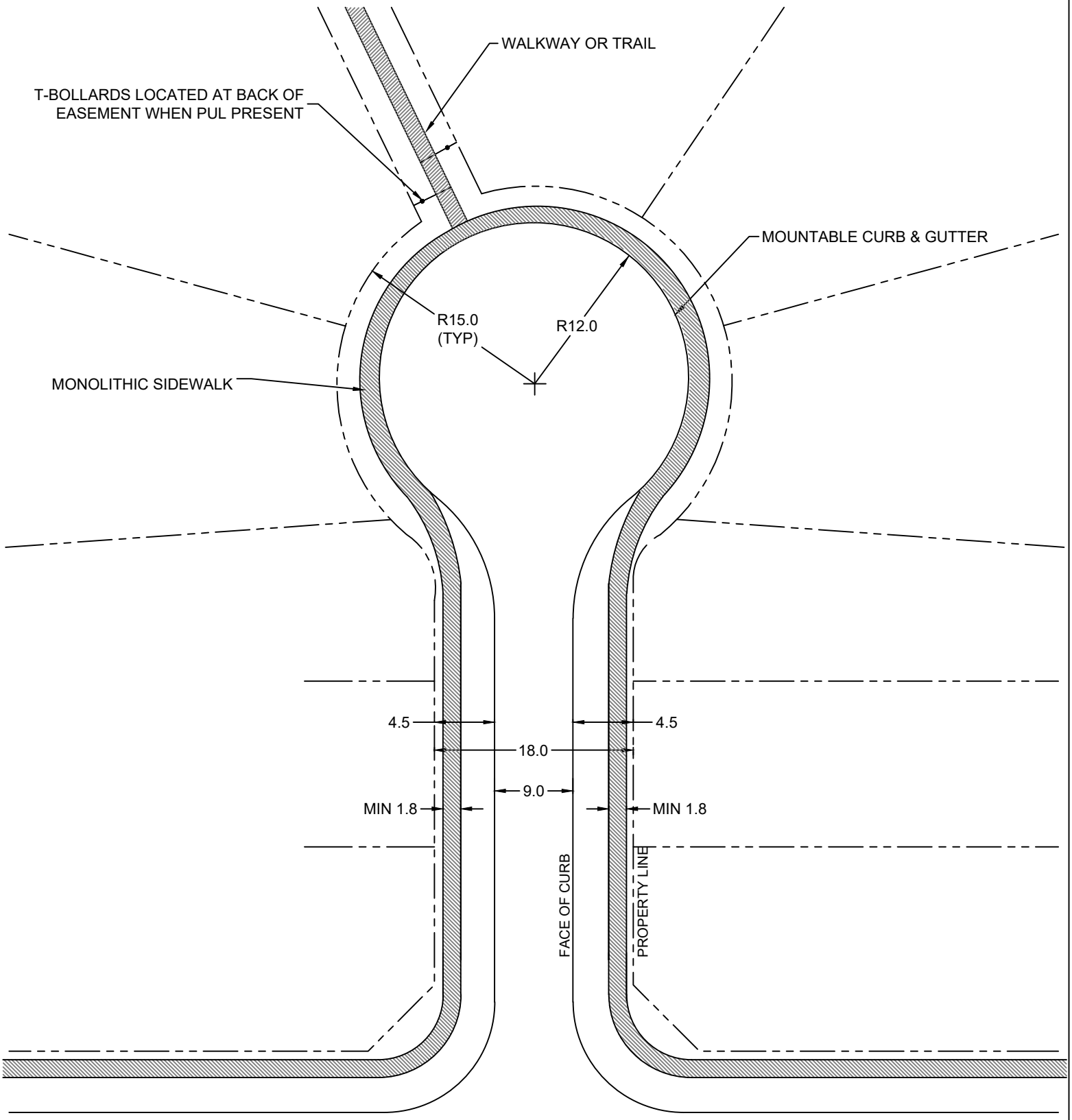
Cul-de-Sac Bulb - No Walkway

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.10



NOTES:

1. SIDEWALK TO END AT PROPERTY LINE PRIOR TO CURB RETURN.
2. ALL DIMENSIONS IN METRES.

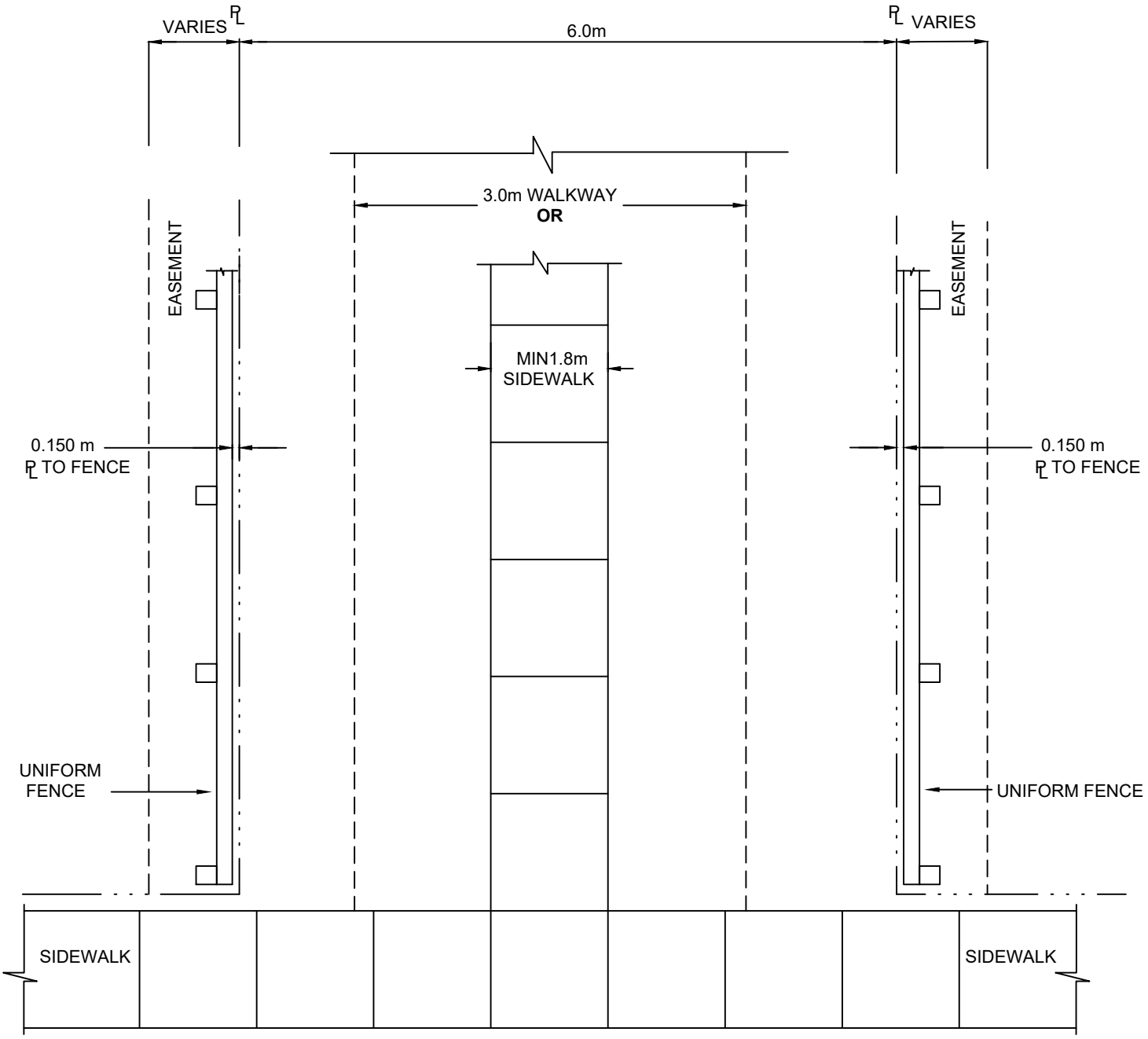
Cul-de-Sac Bulb - Monolithic Sidewalk

REVIEWED BY:

DATE	DESCRIPTION	BY

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.11



6.0 - Metre P.U.L. Utility Easement

REVIEWED BY:

City of St. Albert Cultivate Life

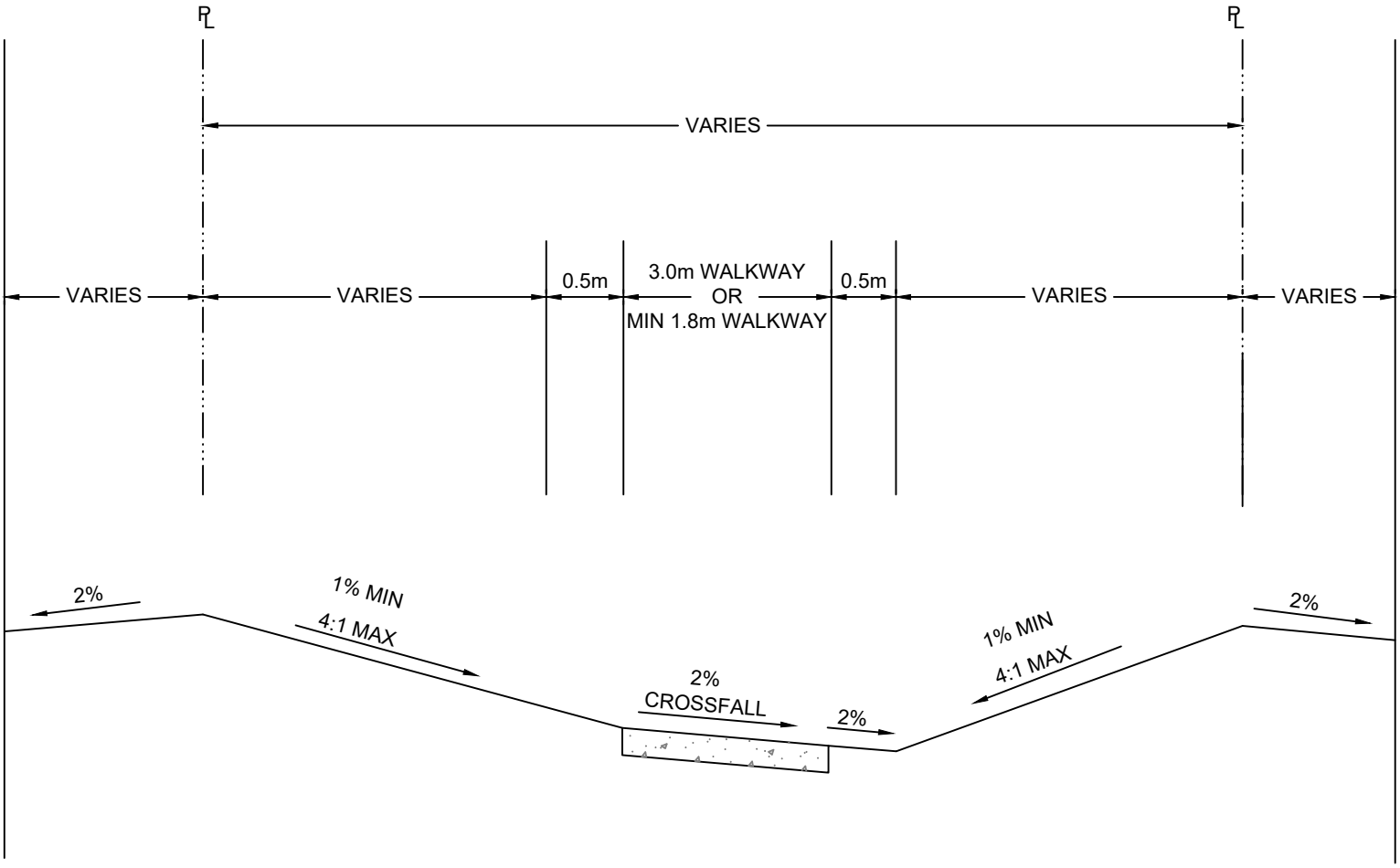
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 10, 2021

SCALE: NTS

DRAWING NO.: 3.12



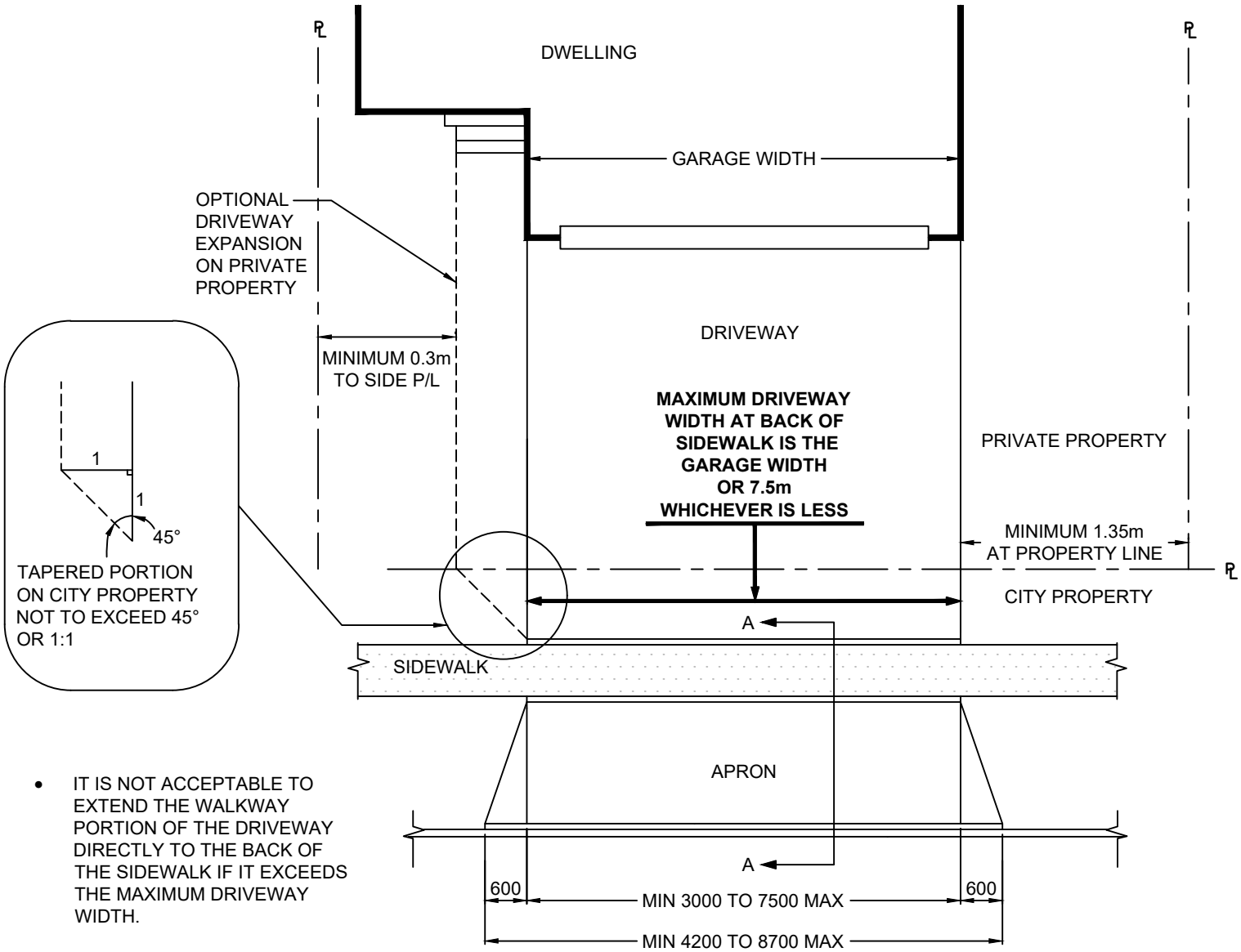
P.U.L. Section

REVIEWED BY:

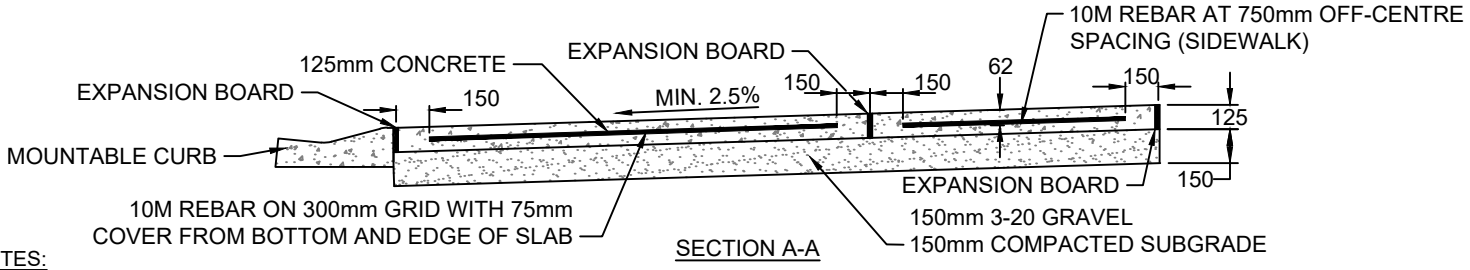
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 10, 2021	NTS	3.13



- IT IS NOT ACCEPTABLE TO EXTEND THE WALKWAY PORTION OF THE DRIVEWAY DIRECTLY TO THE BACK OF THE SIDEWALK IF IT EXCEEDS THE MAXIMUM DRIVEWAY WIDTH.



SECTION A-A

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. SIDEWALK CROSSFALL MIN. 2.5% TOWARDS THE ROAD UNLESS OTHERWISE AUTHORIZED.
3. NO DOWELING TO CURB OR SIDEWALK.
4. MAINTAIN MINIMUM CLEARANCE OF 1.25m FROM DRIVEWAY EDGE TO EDGE OF NEAREST STREET FURNITURE.
5. MAINTAIN MINIMUM CLEARANCE OF 1.5m FROM DRIVEWAY EDGE TO EDGE OF NEAREST TREE.
6. CALL CITY ENGINEERING SERVICES TO INSPECT APRON FORMS BEFORE CONCRETE POUR.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
8. THE WIDTH OF TAPERED APRON ARE NOT TO EXTEND BEYOND THE PROJECTION OF SIDE PROPERTY AT CURB.
9. DRIVEWAYS CANNOT EXTEND INTO THE CUT CORNER OR CURB RETURN (BC/EC).
10. APRON MATERIAL MUST BE A POURED IN PLACE CONCRETE.
11. ASPHALT, PAVING STONES OR OTHER NON-POURED IN PLACE CONCRETE PRODUCTS WILL NOT BE PERMITTED FOR CITY APRONS.
12. THE CITY RESERVES THE RIGHT TO REPLACE APRONS AND DRIVEWAYS THAT FALL UPON CITY PROPERTY WITH STANDARD CONCRETE IF INFRASTRUCTURE REPAIRS ARE REQUIRED.
13. THE DRIVEWAY WIDTH AT THE BACK OF THE SIDEWALK SHALL MATCH THE APRON WIDTH AT THE FRONT OF THE SIDEWALK

Driveway Residential Crossing 2 Car Garage (Max 7.5m)

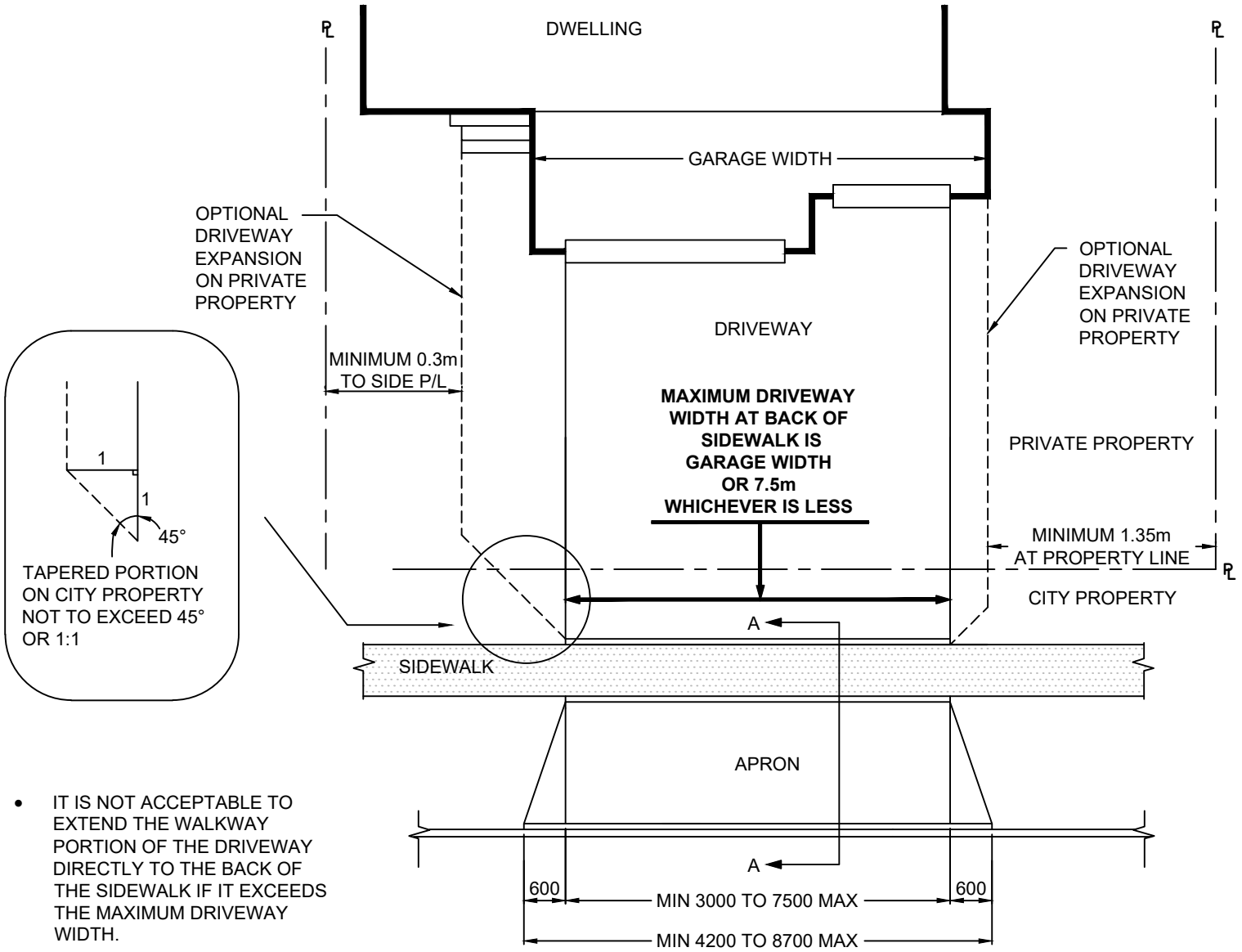
REVIEWED BY:

Faizal Kanji

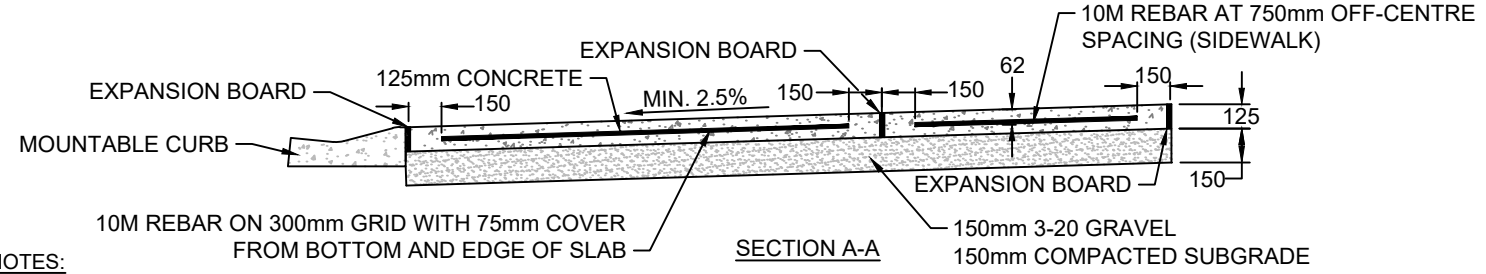
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.14



- IT IS NOT ACCEPTABLE TO EXTEND THE WALKWAY PORTION OF THE DRIVEWAY DIRECTLY TO THE BACK OF THE SIDEWALK IF IT EXCEEDS THE MAXIMUM DRIVEWAY WIDTH.



SECTION A-A

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. SIDEWALK CROSSFALL MIN. 2.5% TOWARDS THE ROAD UNLESS OTHERWISE AUTHORIZED.
3. NO DOWELING TO CURB OR SIDEWALK.
4. MAINTAIN MINIMUM CLEARANCE OF 1.25m FROM DRIVEWAY EDGE TO EDGE OF NEAREST STREET FURNITURE.
5. MAINTAIN MINIMUM CLEARANCE OF 1.5m FROM DRIVEWAY EDGE TO EDGE OF NEAREST TREE.
6. CALL CITY ENGINEERING SERVICES TO INSPECT APRON FORMS BEFORE CONCRETE POUR.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
8. THE WIDTH OF TAPERED APRON ARE NOT TO EXTEND BEYOND THE PROJECTION OF SIDE PROPERTY AT CURB.
9. DRIVEWAYS CANNOT EXTEND INTO THE CUT CORNER OR CURB RETURN (BC/EC).
10. APRON MATERIAL MUST BE A POURED IN PLACE CONCRETE.
11. ASPHALT, PAVING STONES OR OTHER NON-POURED IN PLACE CONCRETE PRODUCTS WILL NOT BE PERMITTED FOR CITY APRONS.
12. THE CITY RESERVES THE RIGHT TO REPLACE APRONS AND DRIVEWAYS THAT FALL UPON CITY PROPERTY WITH STANDARD CONCRETE IF INFRASTRUCTURE REPAIRS ARE REQUIRED.
13. THE DRIVEWAY WIDTH AT THE BACK OF THE SIDEWALK SHALL MATCH THE APRON WIDTH AT THE FRONT OF THE SIDEWALK

Driveway Residential Crossing 3 Car Garage (Max 7.5m)

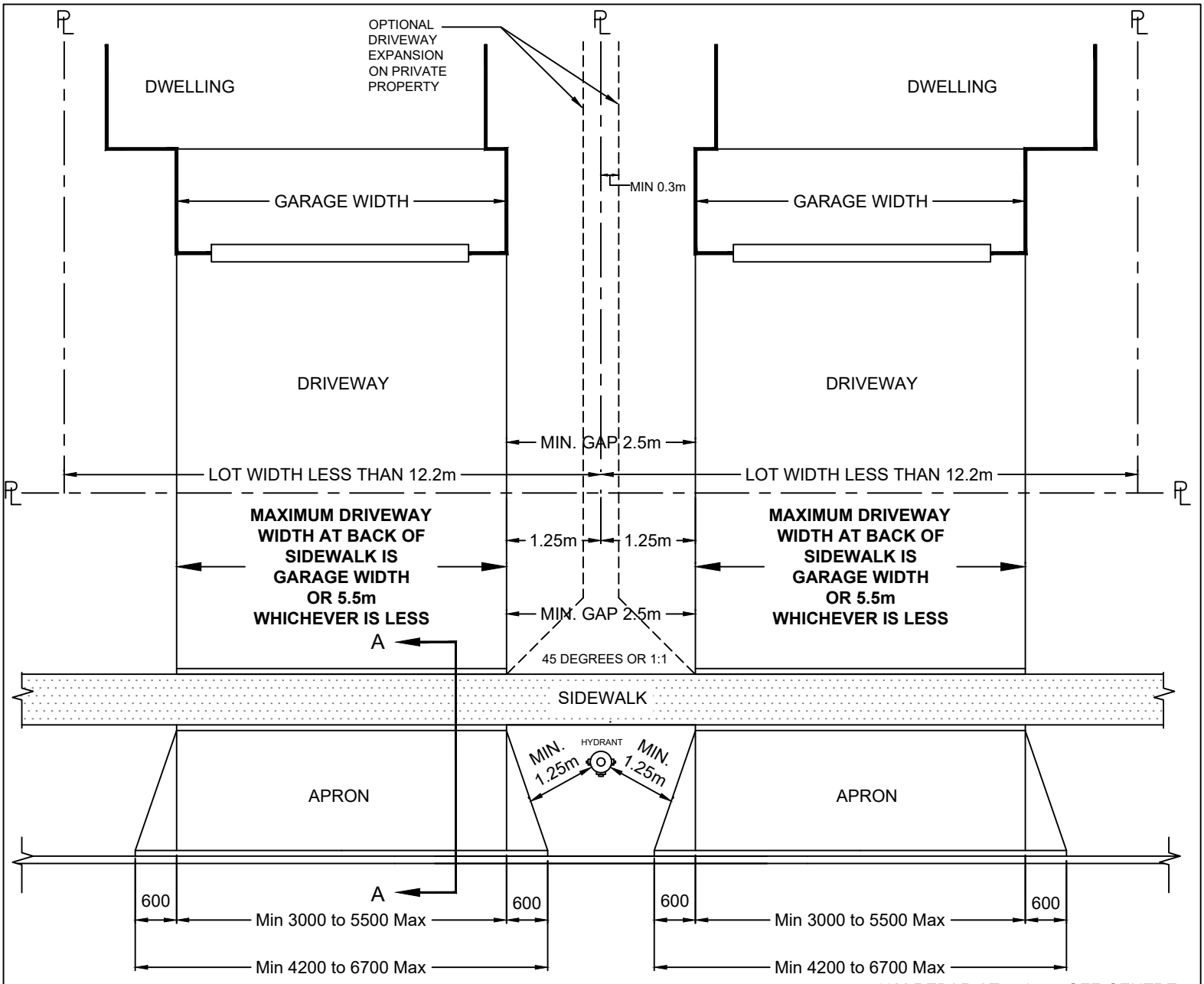
REVIEWED BY:

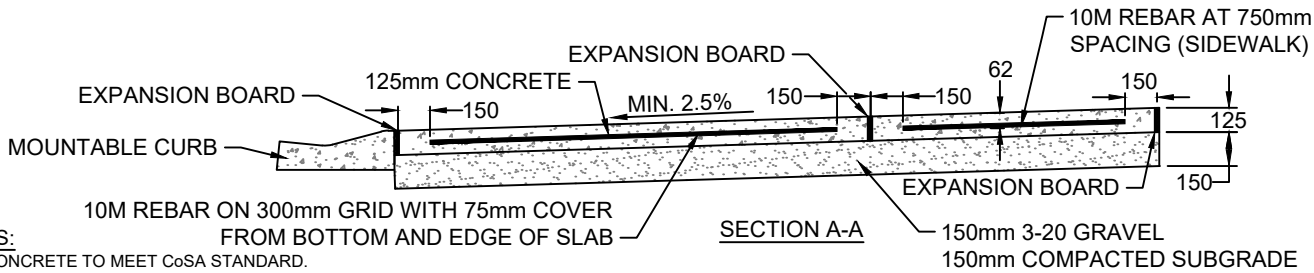
Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.15





NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. SIDEWALK CROSSFALL MIN. 2.5% TOWARDS THE ROAD UNLESS OTHERWISE AUTHORIZED.
3. NO DOWELING TO CURB OR SIDEWALK.
4. MAINTAIN MINIMUM CLEARANCE OF 1.25m FROM DRIVEWAY EDGE TO EDGE OF NEAREST STREET FURNITURE.
5. MAINTAIN MINIMUM CLEARANCE OF 1.5m FROM DRIVEWAY EDGE TO EDGE OF NEAREST TREE.
6. CALL CITY ENGINEERING SERVICES TO INSPECT APRON FORMS BEFORE CONCRETE POUR.
7. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
8. THE WIDTH OF TAPERED APRON ARE NOT TO EXTEND BEYOND THE PROJECTION OF SIDE PROPERTY AT CURB.
9. DRIVEWAYS CANNOT EXTEND INTO THE CUT CORNER OR CURB RETURN (BC/EC).
10. APRON MATERIAL MUST BE A POURED IN PLACE CONCRETE.
11. ASPHALT, PAVING STONES OR OTHER NON-POURED IN PLACE CONCRETE PRODUCTS WILL NOT BE PERMITTED FOR CITY APRONS.
12. THE CITY RESERVES THE RIGHT TO REPLACE APRONS AND DRIVEWAYS THAT FALL UPON CITY PROPERTY WITH STANDARD CONCRETE IF INFRASTRUCTURE REPAIRS ARE REQUIRED.
13. THE DRIVEWAY WIDTH AT THE BACK OF THE SIDEWALK SHALL MATCH THE APRON WIDTH AT THE FRONT OF THE SIDEWALK

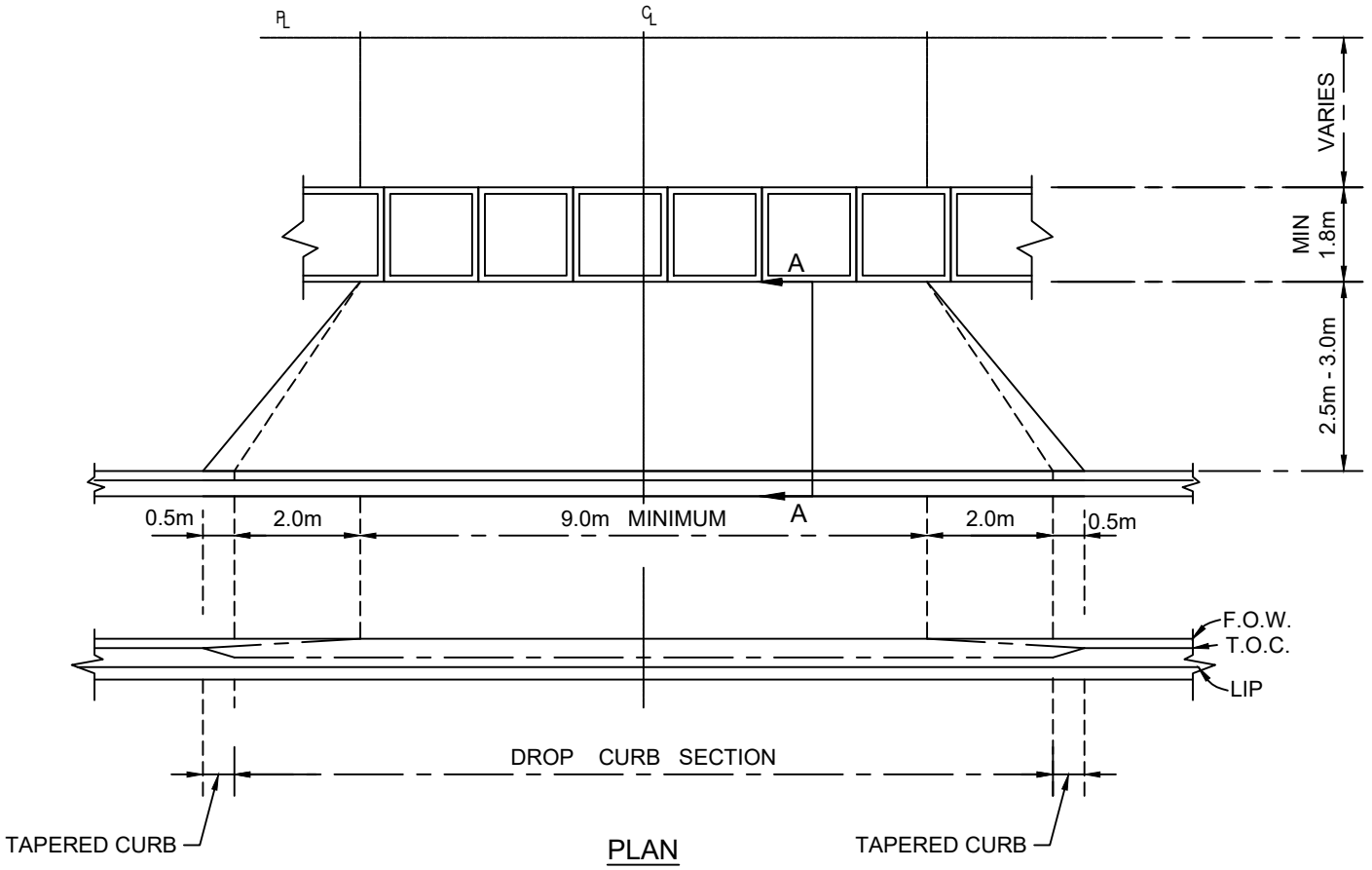
Driveway Residential Crossing for Small Lots (<12.2m)

REVIEWED BY: Faizal Kanji

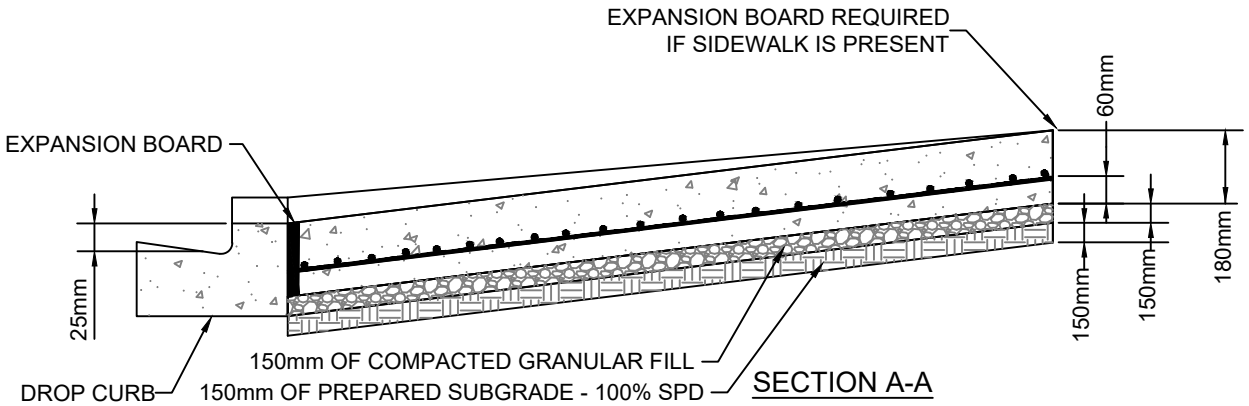
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.16



PLAN



SECTION A-A

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. TYPICAL BOULEVARD CROSSFALL IS 3% FROM TOC ELEVATION UP TO THE PROPERTY LINE ELEVATION UNLESS OTHERWISE NOTED.
3. COMMERCIAL CROSSING SHALL BE MIN. 180mm IN THICKNESS REINFORCED WITH 100 X 200 No. 6 STEEL WELDED WIRE MESH OR MIN. 10M REBAR SPACED @ 300mm O.C. IN BOTH DIRECTIONS.
4. EXISTING ROADWAY CURB AND GUTTER TO BE REMOVED & REPLACED WITH TAPER DROP CURB SECTIONS.
5. MAINTAIN MIN 1.5m CLEARANCE TO NEAREST STREET FURNITURE, FIRE HYDRANT, AND TREES.
6. COMMERCIAL CROSSING TO BE COMPLETED IN 2 POURS. FORM AND POUR THE CURB & GUTTER. INSTALL DOWELS AT THE CONNECTIONS TO EXISTING CONCRETE CURBS. INSTALL EXPANSION BOARD BETWEEN THE CURB & GUTTER AND THE CONCRETE APRON. POUR THE CONCRETE APRON. INSTALL EXPANSION BOARD AT THE CONNECTION TO THE EXISTING SIDEWALK (IF PRESENT).
7. COMMERCIAL CROSSING TO BE CONSTRUCTED USING CONCRETE FROM CURB LINE TO PROPERTY LINE AND ACCOMMODATE ANY EXISTING SIDEWALK (IF PRESENT) WITH EXPANSION BOARDS.
8. MINIMUM 3.0m x 3.0m SQUARE JOINTS SAWCUT INTO CONCRETE.

Traditional Style Commercial Curb Crossing

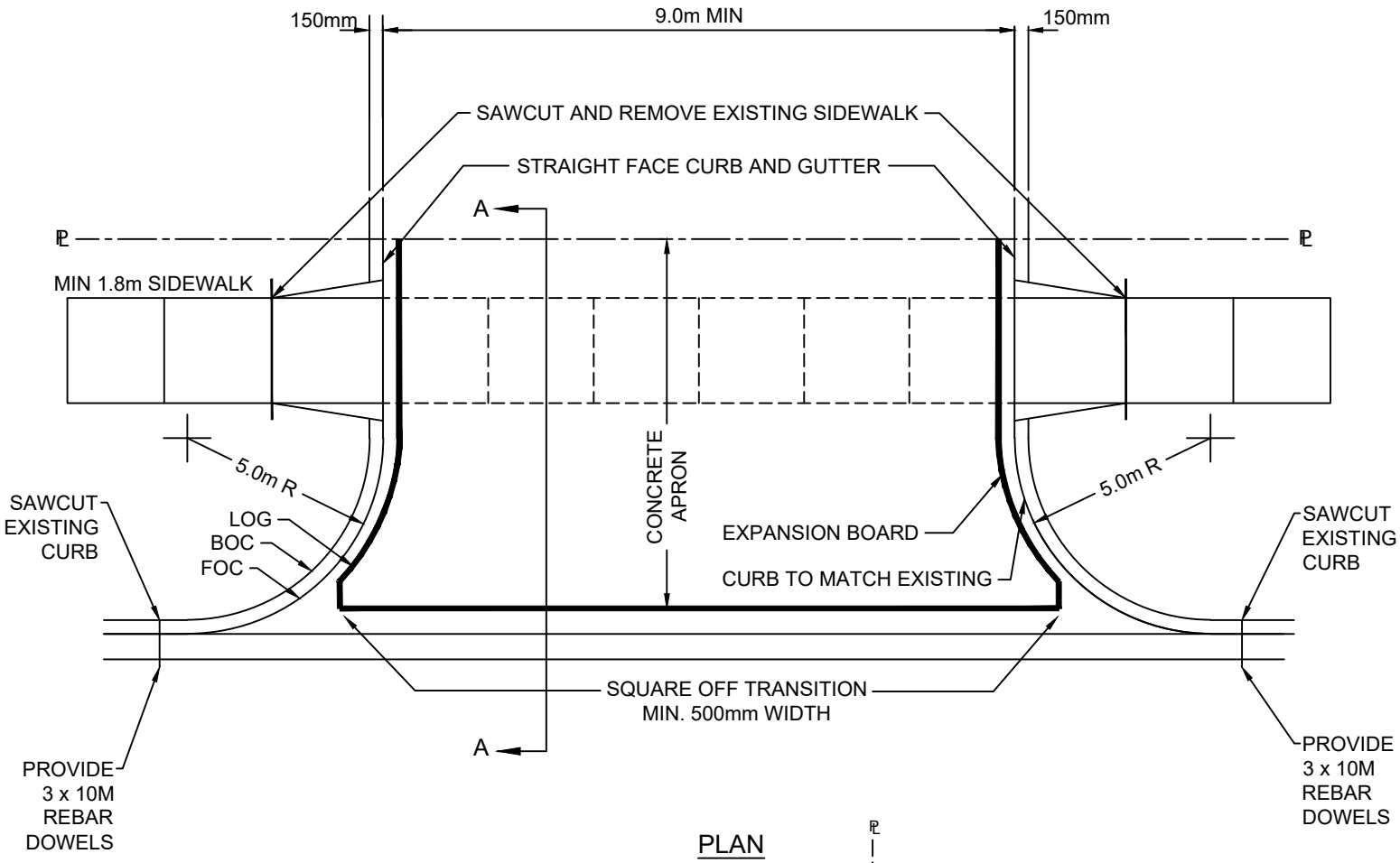
REVIEWED BY:

Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

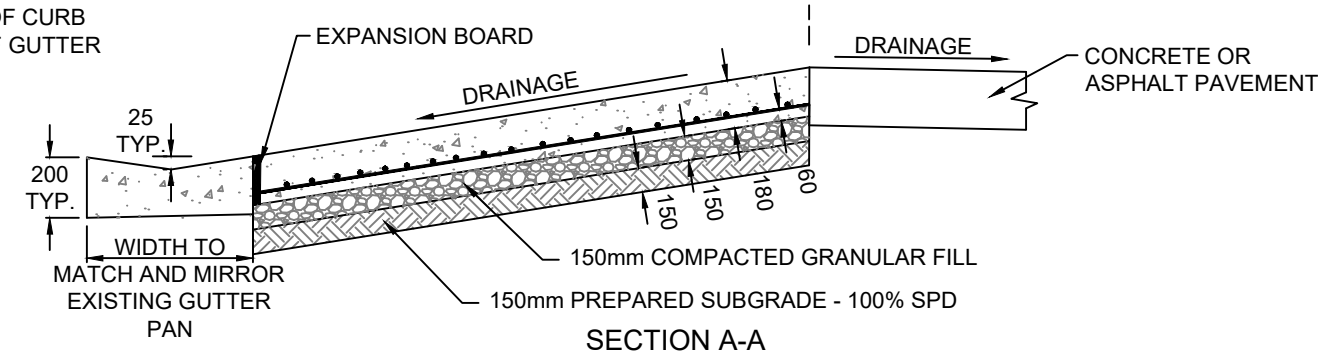
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.17



PLAN

FOC = FACE OF CURB
BOC = BACK OF CURB
TOC = TOP OF CURB
LOG = LIP OF GUTTER



SECTION A-A

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. TYPICAL BOULEVARD CROSSFALL IS 3% FROM TOC ELEVATION UP TO THE PROPERTY LINE ELEVATION UNLESS OTHERWISE NOTED.
3. COMMERCIAL CROSSING SHALL BE MIN. 180mm IN THICKNESS REINFORCED WITH 100 X 200 No. 6 STEEL WELDED WIRE MESH OR MIN. 10M REBAR SPACED @ 300mm O.C. IN BOTH DIRECTIONS.
4. EXISTING ROADWAY CURB & GUTTER TO BE REMOVED & REPLACED WITH MIRRORED CONCRETE GUTTER.
5. EXISTING ROADWAY CURB & GUTTER TO CONNECT TO CONCRETE APRON AS SHOWN.
6. MAINTAIN MIN 1.5m CLEARANCE TO NEAREST STREET FURNITURE, FIRE HYDRANT, AND TREES.
7. UNITS IN MILLIMETERS UNLESS OTHERWISE INDICATED.
8. COMMERCIAL CROSSING TO BE COMPLETED IN 2 POURS. FORM AND POUR THE CURB AND GUTTER. INSTALL DOWELS AT THE CONNECTIONS TO EXISTING CONCRETE CURBS. INSTALL EXPANSION BOARDS. POUR THE CONCRETE APRON.
9. COMMERCIAL CROSSING TO BE CONSTRUCTED USING CONCRETE FROM ROADWAY TO PROPERTY LINE.
10. IF PRESENT, EXISTING SIDEWALK BETWEEN THE PEDESTRIAN RAMPS INSIDE THE CONCRETE APRON TO BE SAW CUT AND REMOVED.
11. MINIMUM 3.0m x 3.0m SQUARE JOINTS SAWCUT INTO CONCRETE.

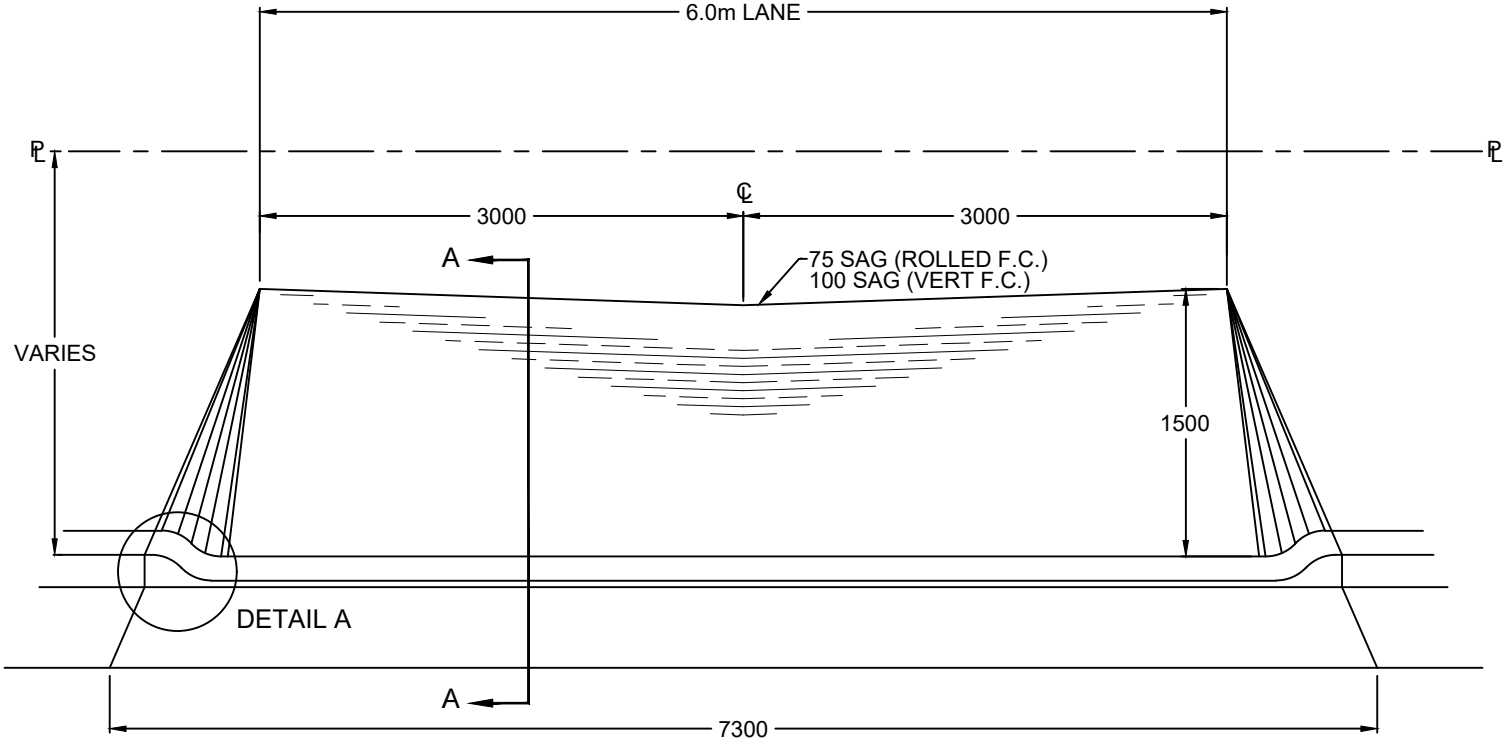
Commercial Curb Crossing

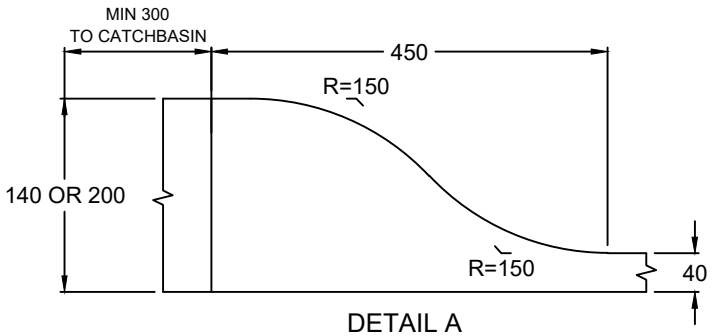
REVIEWED BY: Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

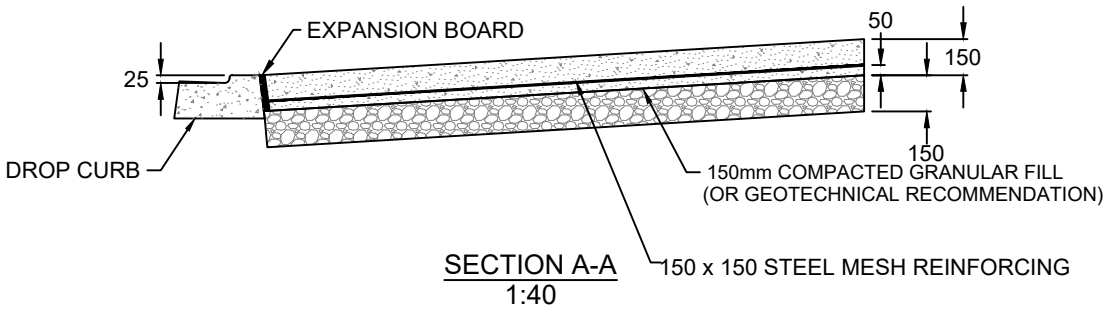
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.18





DETAIL A



SECTION A-A
1:40

NOTES:
1. CONCRETE TO MEET CoSA STANDARD.
2. SIDEWALK CROSSFALL TO 2.5% TOWARDS THE ROAD UNLESS OTHERWISE AUTHORIZED.
3. LANE APRONS SHALL BE MINIMUM 150mm THICK WITH 150 x 150 NO. 6 STEEL MESH REINFORCEMENT CAN SUBSTITUTE #10M OR BETTER REBAR @ 12" OC BOTH DIRECTIONS.
4. EXISTING STANDARD CURB & GUTTER TO BE REMOVED AND REPLACED WITH TAPER AND DROP CURB SECTIONS.
5. MAINTAIN MIN 1.5m CLEARANCE TO NEAREST STREET FURNITURE, FIRE HYDRANT, AND TREES.
6. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

(Existing) Lane Apron for Curb & Gutter with No Sidewalk

REVIEWED BY:

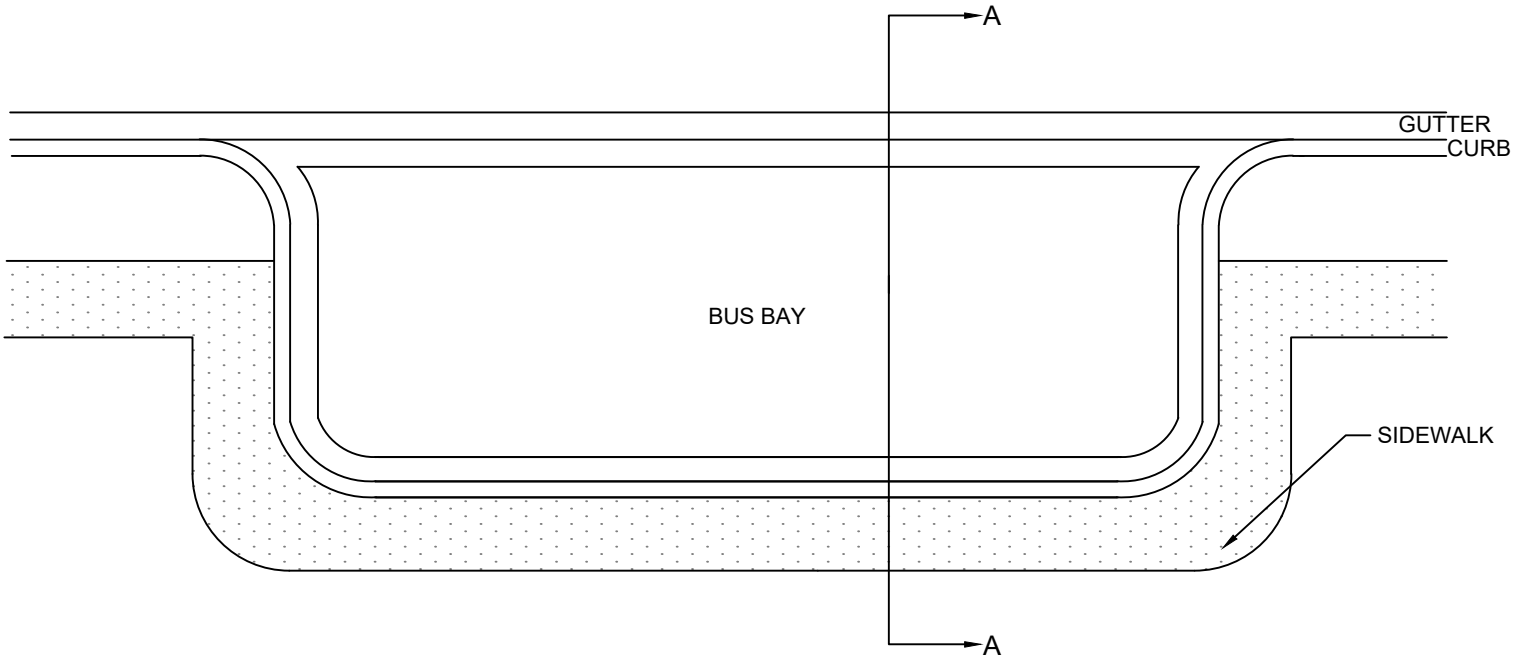
Faizal Kanji

City of St. Albert Cultivate Life

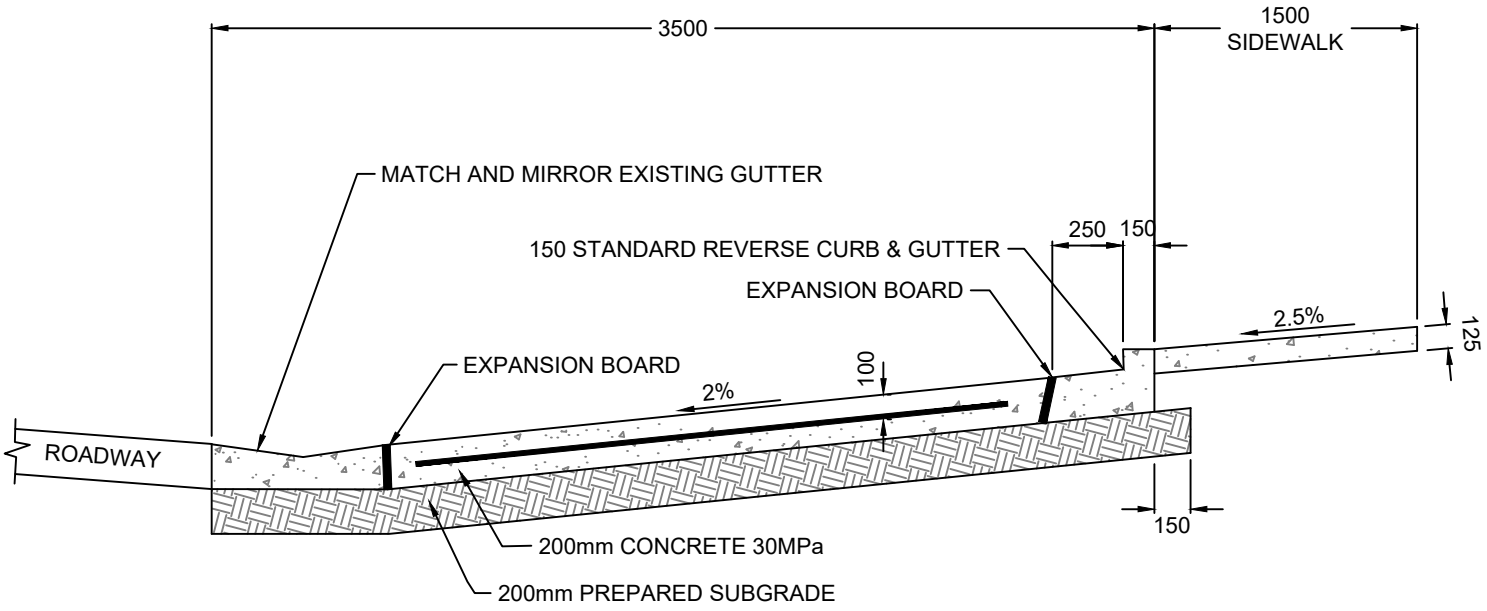
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.19



PLAN



SECTION A-A

NOTES:
1. ALL DIMENSIONS IN MILLIMETERS.
2. CONCRETE TO MEET CoSA STANDARD.
3. CONCRETE REINFORCED WITH #10M OR BETTER REBAR PLACED AT 100mm DEEP AND 300mm EACH WAY.
4. 50 mm DEEP TRANSVERSE SAWCUTS TO BE MADE AT 3.0mm C-C AND CAULKED WITH AN APPROVED SEALANT ALONG LIP OF GUTTER. (OR CONTRACTION JOINT DURING INSTALLATION.)

School Bus Bay Detail

REVIEWED BY:

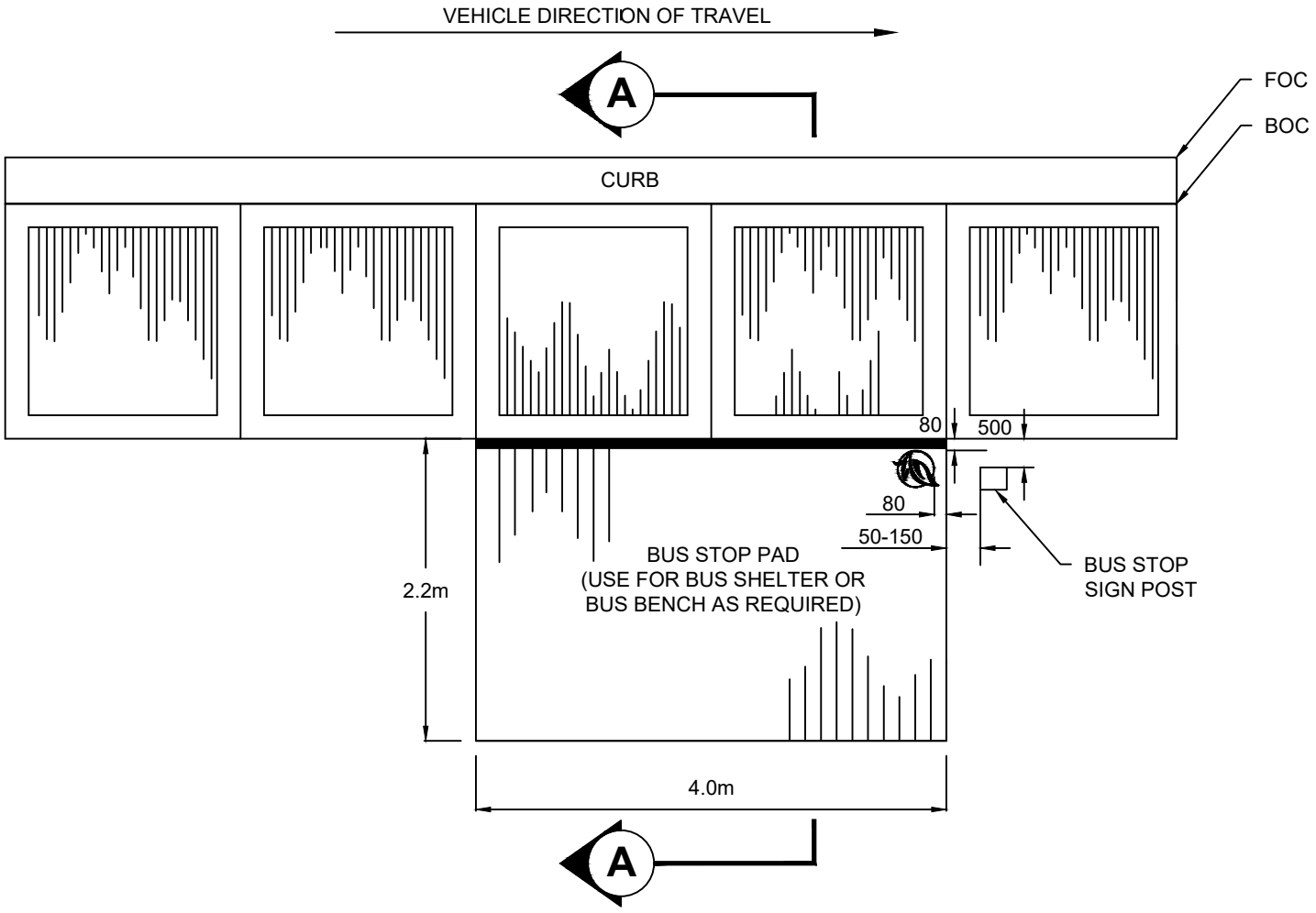
Faizal Kanji

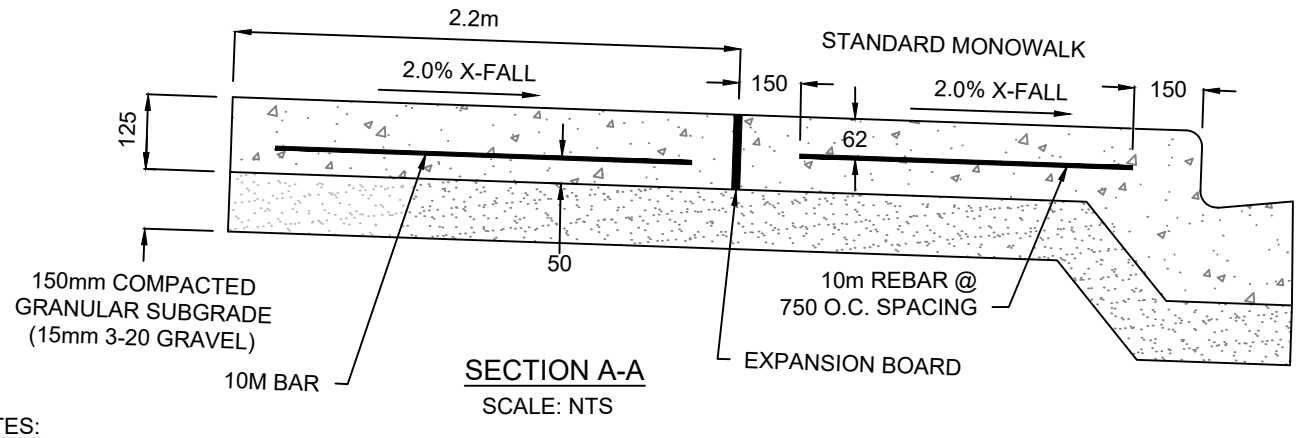
City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.20





SECTION A-A
SCALE: NTS

NOTES:

1. CONCRETE TO CLASS C STANDARD.
2. CONTRACTION JOINTS ARE TO BE PROVIDED AT A MINIMUM 3.0m SPACING.
3. UNITS IN MILLIMETERS UNLESS OTHERWISE INDICATED.
4. CITY OF ST. ALBERT BRANDING STAMP TO BE PLACED IN THE CORNER AT THE BUS STOP PAD (AS SHOWN). THE EDGE OF THE STAMP IS TO BE LOCATED 80mm FROM THE EDGE AT THE BUS STOP PAD AND 80mm FROM THE BOC. APPLY A RELEASING AGENT TO THE SURFACE OF THE CONCRETE WHEN APPLYING THE BRANDING STAMP.
5. BUS STOP BENCH MUST BE ANCHORED TO THE CONCRETE PAD.
6. THE FRONT EDGE OF BUS STOP BENCH MUST BE SET BACK A MINIMUM 0.5m FROM THE SIDEWALK AND ANGLED TO FACE DIRECTION OF TRAVEL.
7. THE EDGE OF THE BUS STOP SHELTER (INCLUDING ANCHOR PLATE) MUST NOT EXTEND ONTO THE SIDEWALK.
8. THE OPENING OF THE BUS STOP SHELTER MUST DIRECT USERS TO THE SIDEWALK.
9. ADVERTISEMENTS UPON BUS STOP BENCHES AND SHELTERS ARE NOT PERMITTED WITHOUT WRITTEN CONSENT FROM THE CITY OF ST. ALBERT TRANSIT DEPARTMENT.

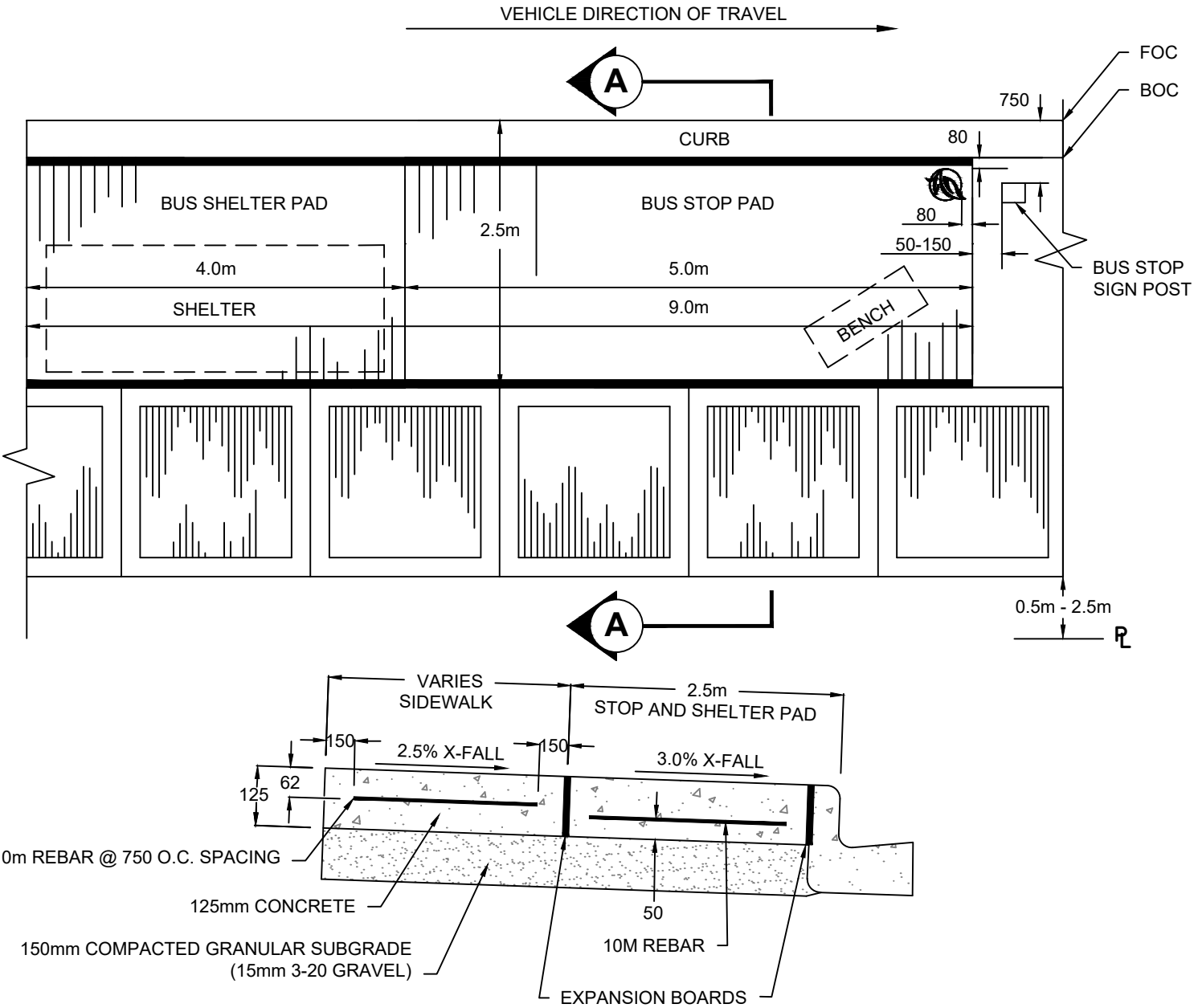
Bus Stop Pad (On Existing Monowalk)

REVIEWED BY: Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.21



SECTION A-A

SCALE: NTS

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. CONTRACTION JOINTS ARE TO BE PROVIDED AT A MINIMUM 3.0m SPACING.
3. UNITS IN MILLIMETERS UNLESS OTHERWISE INDICATED.
4. THE DEVELOPER IS RESPONSIBLE TO INSTALL BUS SHELTERS UPON ARTERIAL ROADS.
5. THE DEVELOPER IS RESPONSIBLE TO INSTALL BUS SHELTERS UPON COLLECTOR ROADS ADJACENT TO MULTI-FAMILY SITES.
6. CITY OF ST. ALBERT BRANDING STAMP TO BE PLACED IN THE CORNER AT THE BUS STOP PAD (AS SHOWN). THE EDGE OF THE STAMP IS TO BE LOCATED 80mm FROM THE EDGE AT THE BUS STOP PAD AND 80mm FROM THE BOC. APPLY A RELEASING AGENT TO THE SURFACE OF THE CONCRETE WHEN APPLYING THE BRANDING STAMP.
7. BUS STOP BENCH MUST BE ANCHORED TO THE CONCRETE PAD.
8. THE FRONT EDGE OF BUS STOP BENCH MUST BE SET BACK A MINIMUM 1.5m FROM THE FACE OF CURB AND ANGLED TO FACE DIRECTION OF TRAVEL. THE REAR EDGE OF THE BUS STOP BENCH MUST NOT EXTEND ONTO THE SIDEWALK.
9. THE FRONT EDGE OF THE BUS STOP SHELTER MUST BE SET BACK A MINIMUM OF 1.0m FROM THE FACE OF CURB. THE REAR EDGE OF THE BUS STOP SHELTER (INCLUDING ANCHOR PLATE) MUST NOT EXTEND ONTO THE SIDEWALK.
10. THE OPENING OF THE BUS STOP SHELTER MUST DIRECT USERS TO THE SIDEWALK.
11. ADVERTISEMENTS UPON BUS STOP BENCHES AND SHELTERS ARE NOT PERMITTED WITHOUT WRITTEN CONSENT FROM THE CITY OF ST. ALBERT TRANSIT DEPARTMENT.

Bus Stop Pad and Bus Shelter Pad Collector Roadway

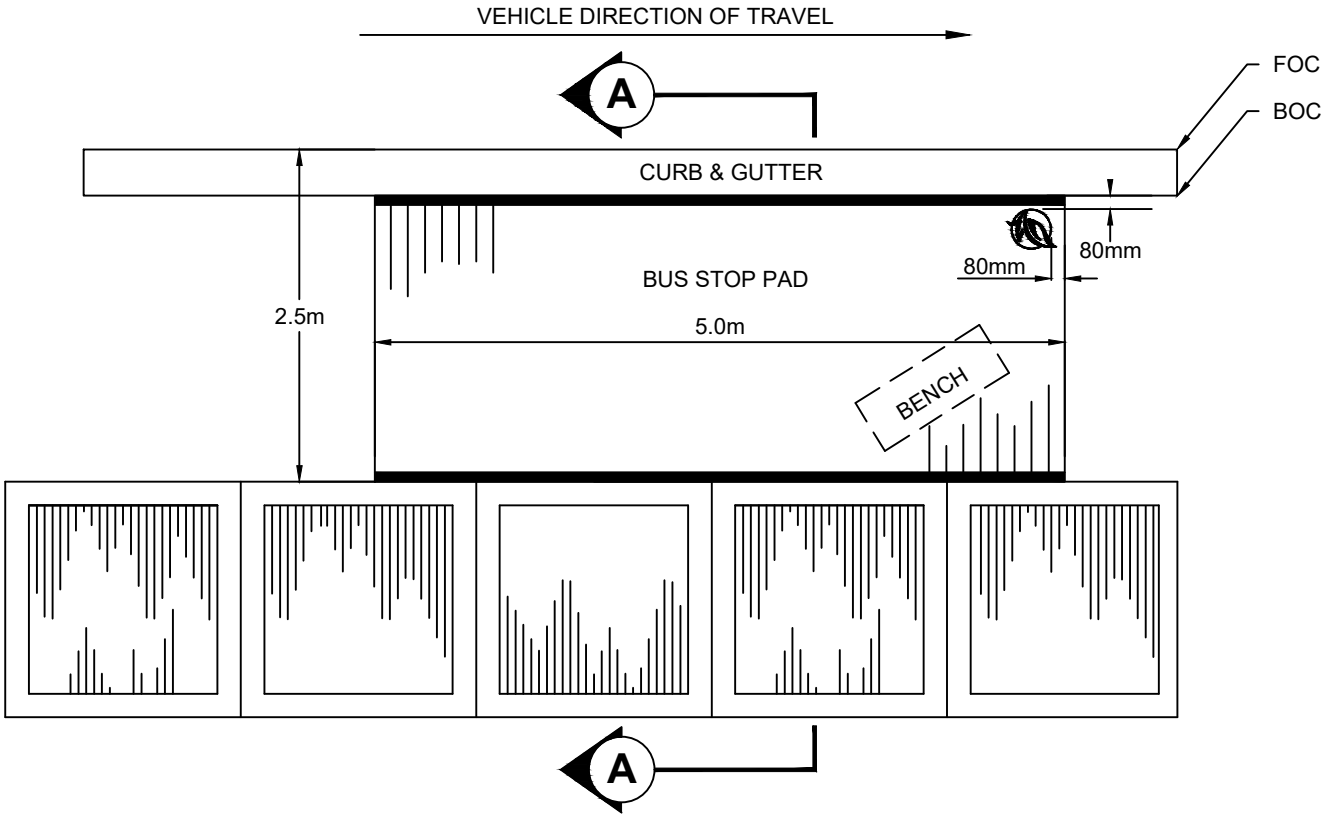
REVIEWED BY:

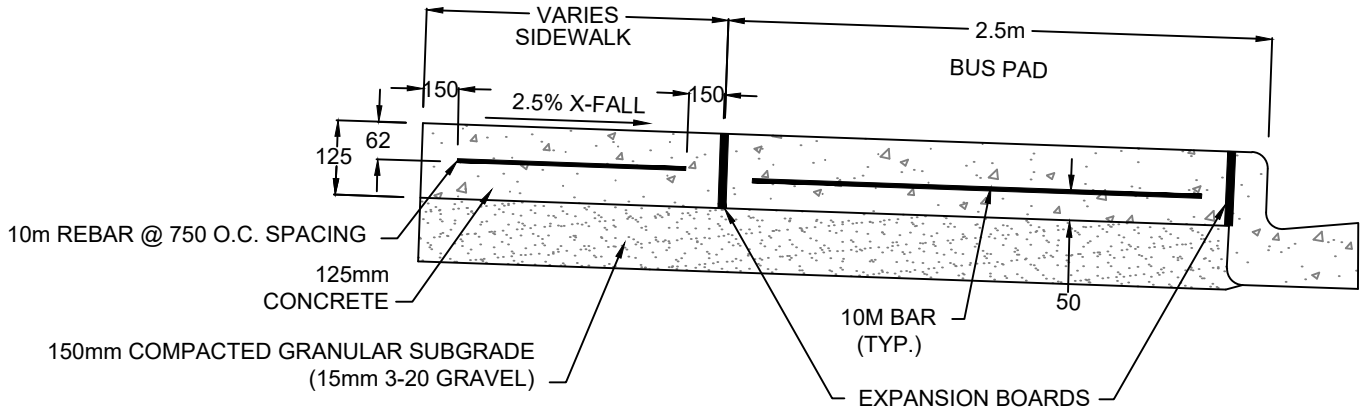
Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.22





SECTION A-A

SCALE: NTS

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. UNITS IN MILLIMETERS UNLESS OTHERWISE INDICATED.
3. CITY OF ST. ALBERT BRANDING STAMP TO BE PLACED IN THE CORNER AT THE BUS STOP PAD (AS SHOWN). THE EDGE OF THE STAMP IS TO BE LOCATED 80mm FROM THE EDGE AT THE BUS STOP PAD AND 80mm FROM THE BOC. APPLY A RELEASING AGENT TO THE SURFACE OF THE CONCRETE WHEN APPLYING THE BRANDING STAMP.

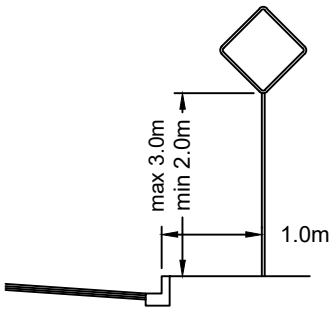
Bus Stop Pad (On Collector No Bus Shelter)

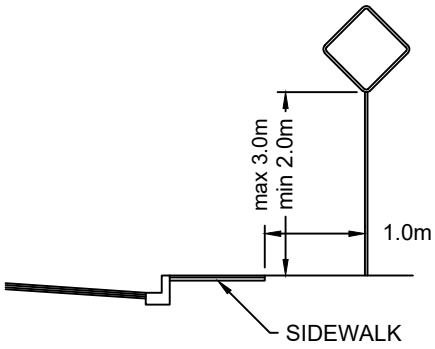
REVIEWED BY: Faizal Kanji

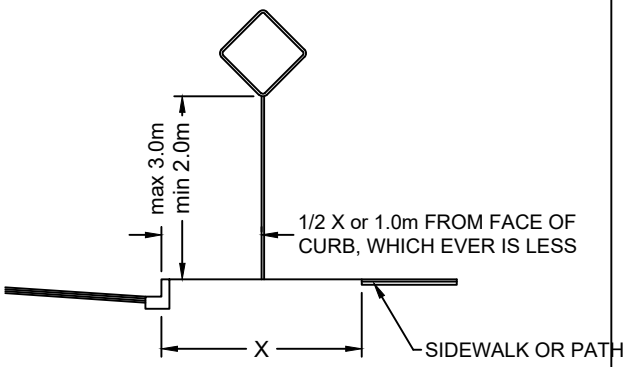
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	3.23

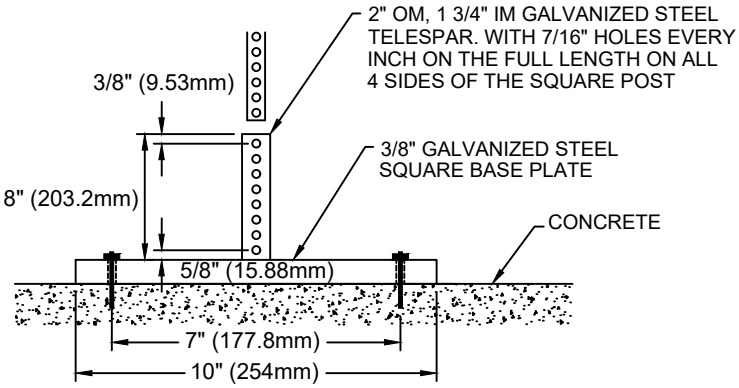






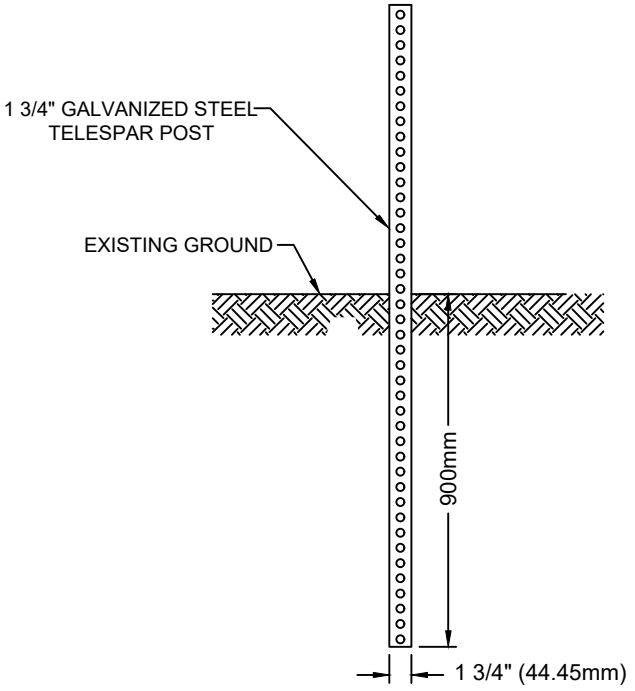
CONCRETE

POST INSTALLATION DETAIL



GROUND

POST INSTALLATION DETAIL

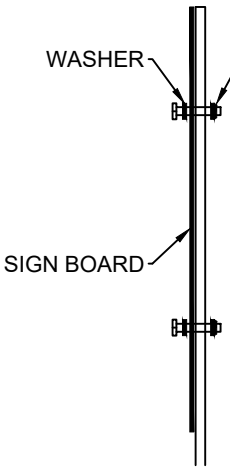


NOTES:

1) WHERE AVAILABLE, MOUNT SIGNS TO EXISTING STREET POLES.
2) OTHER THAN PARKING/STOPPING RESTRICTION SIGNS, MOUNT SIGNS PERPENDICULAR TO THE ROADWAY.
3) DO NOT INSTALL POSTS WITH BREAKAWAY DEVICES UNLESS DIRECTED BY THE CITY.
4) STEEL BANDING IS TO BE USED TO SUPPORT THE BRACKET AND HOLD THE SIGN THAT IS TO BE MOUNTED.
5) USE "U'" SHAPED BRACKETS (PART UB021).

ACTUAL INCH & MILLIMETER SIZES	
1.75"	44.45mm
1.875"	47.50mm
2.00"	50.80mm
2.25"	57.15mm
2.50"	63.50mm
WALL	
0.105"	2.667mm

SIGN BOARD FASTENING DETAIL



NOTE:
ALL FASTENING HARDWARE MUST HAVE NON-CORROSIVE COATING

APPROVED POSTS AND HARDWARE:

GROUND & CONCRETE MOUNT:
- TELESPAR.
- SQUARE FIT.
- EACH SIGN INSTALLATION REQUIRES A POST, BASE, AND BASE SLEEVE.

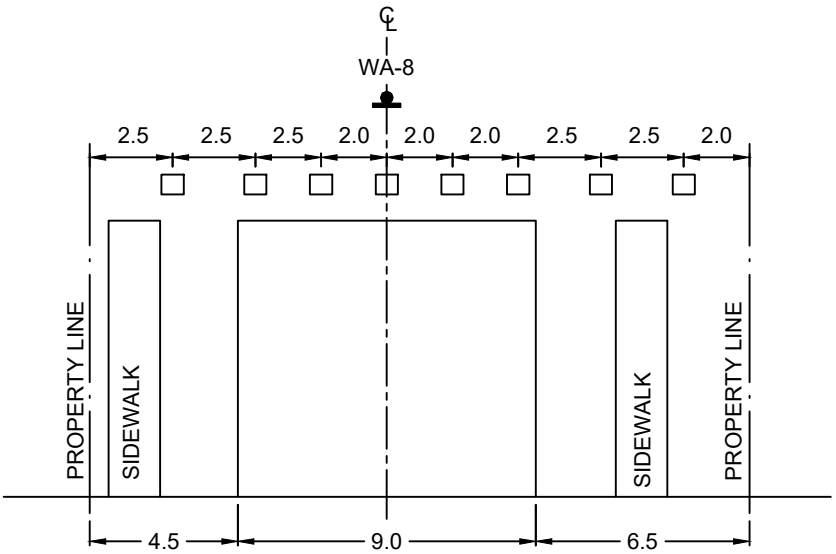
Urban Sign Installation

REVIEWED BY:

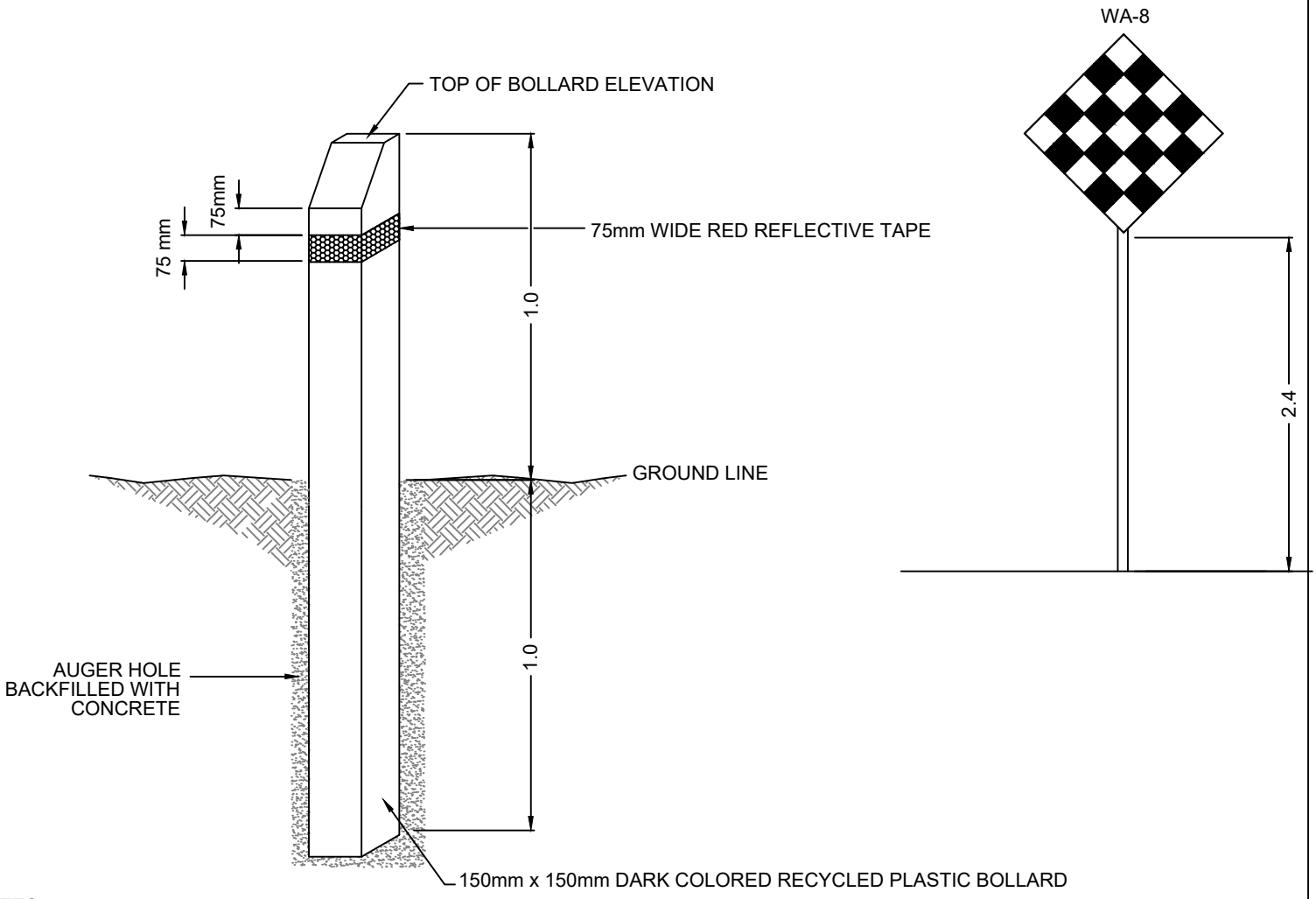
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021
SCALE: NTS
DRAWING NO.: 3.24



BOLLARDS LAYOUT FOR END OF THE ROAD STRUCTURE



NOTES:

1. ALL UNITS IN METRES UNLESS NOTED OTHERWISE.
2. BOLLARD SPACING MEASURED ON CENTRE OF BOLLARDS.
3. A BOLLARD AND THE WARNING SIGN ARE TO BE PLACED AT THE CENTER LINE OF THE ROADWAY.
4. BOLLARDS ARE TO BE SET PLUMB.
5. THE TOP OF BOLLARD ELEVATION SHOULD BE CONSISTENT ALONG A SET OF BOLLARDS.

Roadway Bollards

REVIEWED BY:

City of St. Albert Cultivate Life

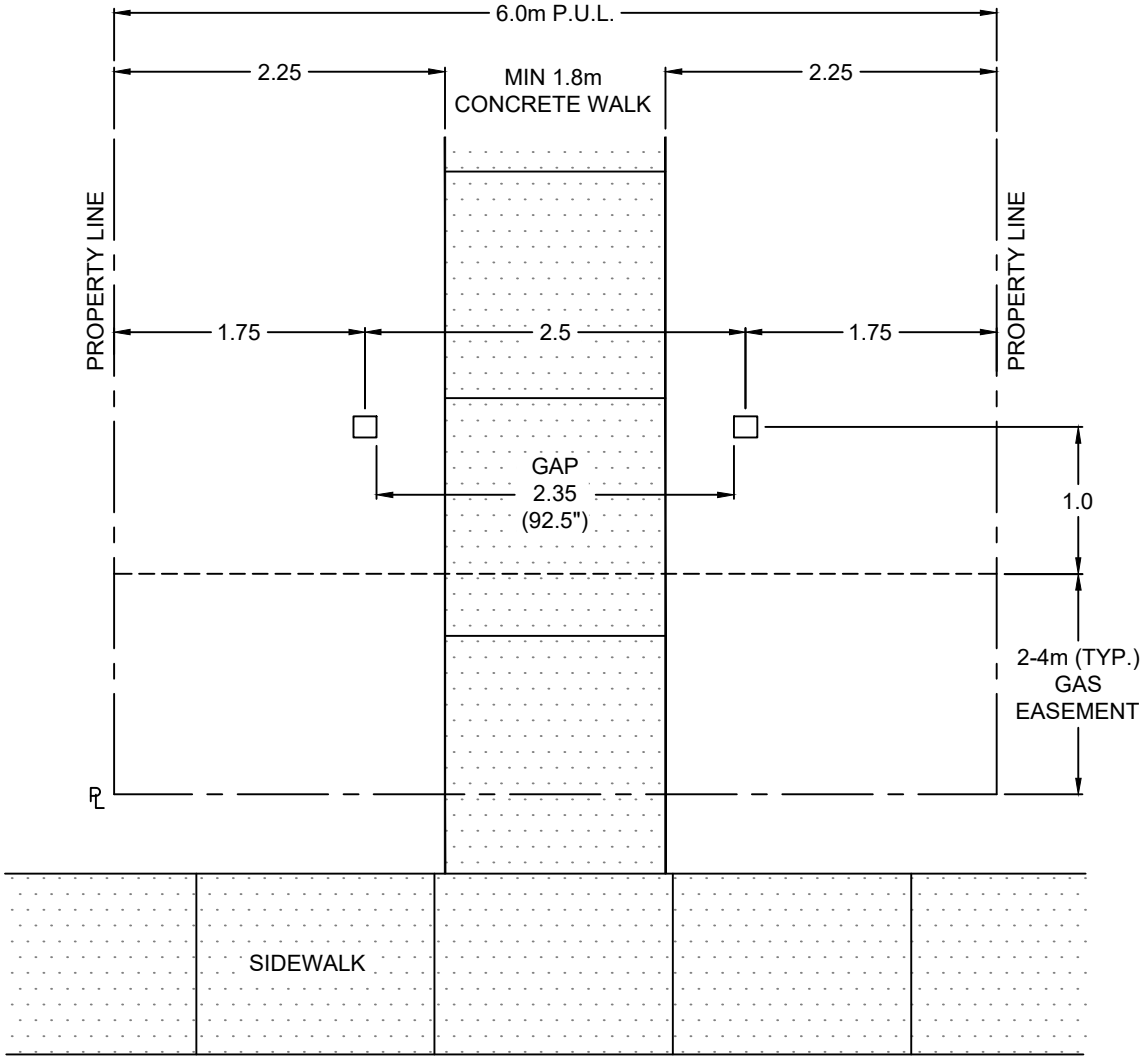
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

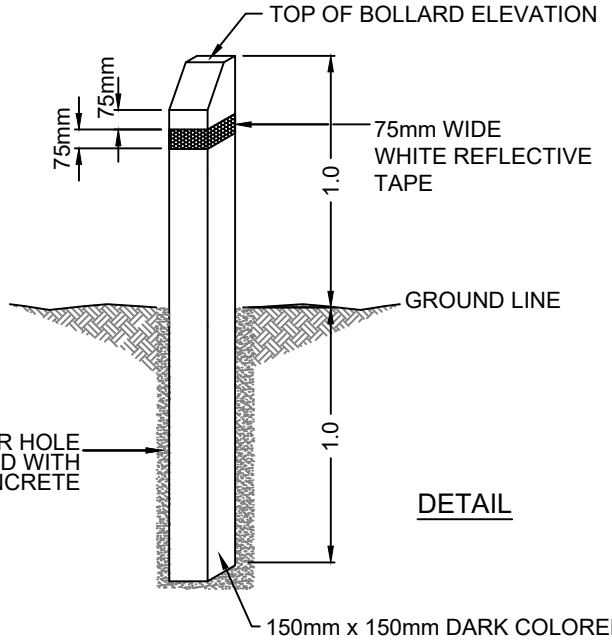
DATE: Nov. 18, 2021

SCALE: NTS

DRAWING NO.: 3.25



PLAN



DETAIL

NOTES
1. ALL UNITS IN METRES UNLESS OTHERWISE NOTED.
2. POSITION BOLLARDS MINIMUM 1.0m BEHIND GAS EASEMENT.
3. CAN BE USED WITH 1.8m WALK OR NO SIDEWALK
4. MAXIMUM WIDTH OF PUBLIC WORKS MAINTENANCE EQUIPMENT IS 73".
5. BOLLARDS ARE TO BE SET PLUMB.
6. THE TOP OF BOLLARD ELEVATION SHOULD MATCH ONE ANOTHER.

Standard Recycled Bollards 6.0m PUL (1.8m Walk)

REVIEWED BY:

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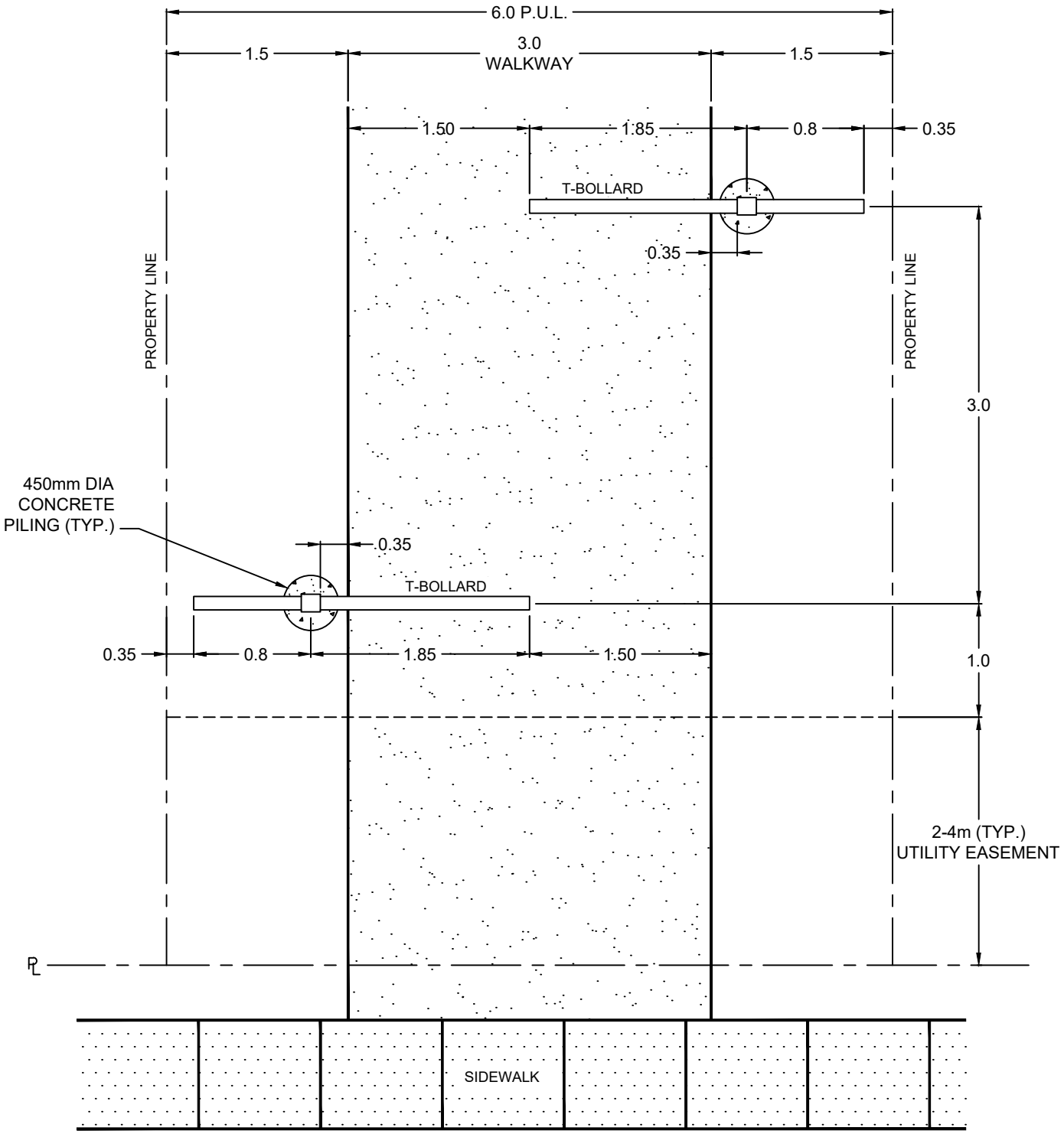
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.26



PLAN

NOTES
1. ALL UNITS IN METERS
2. POSITION FIRST T-BOLLARD MINIMUM 1.0m BEHIND UTILITY EASEMENT.
3. BOLT AND LOCK TO BE INSTALLED AFTER CCC INSPECTION.

T-Bollards Installation 6.0m PUL (3.0m Walkway)

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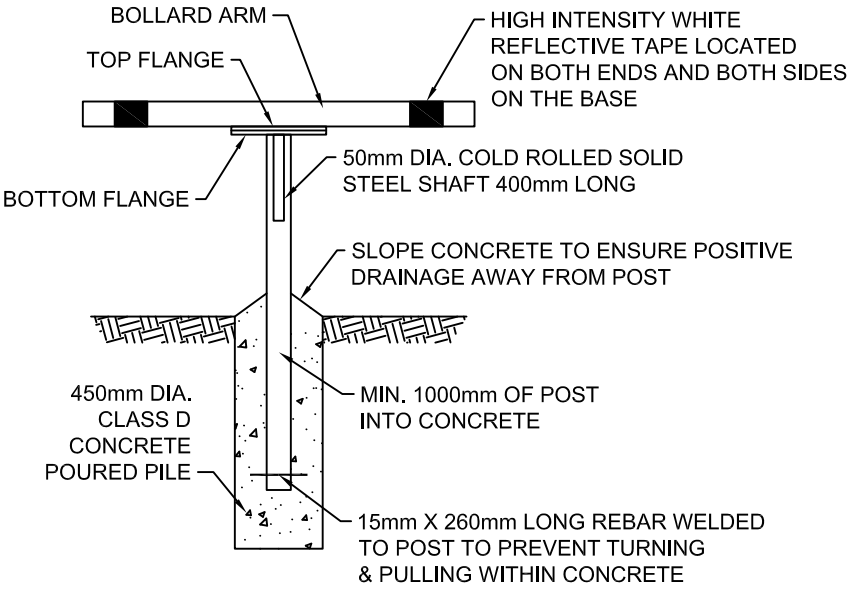
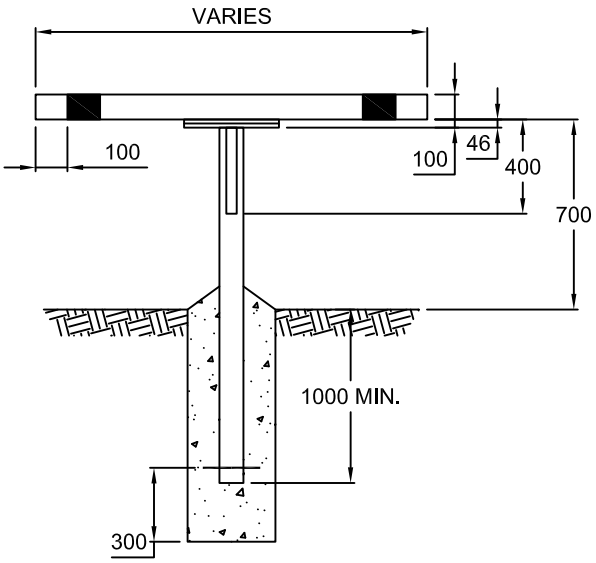
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

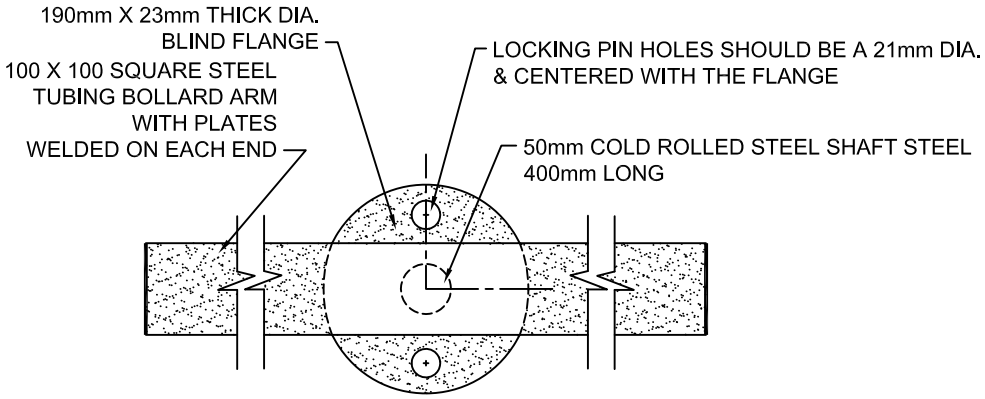
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.27

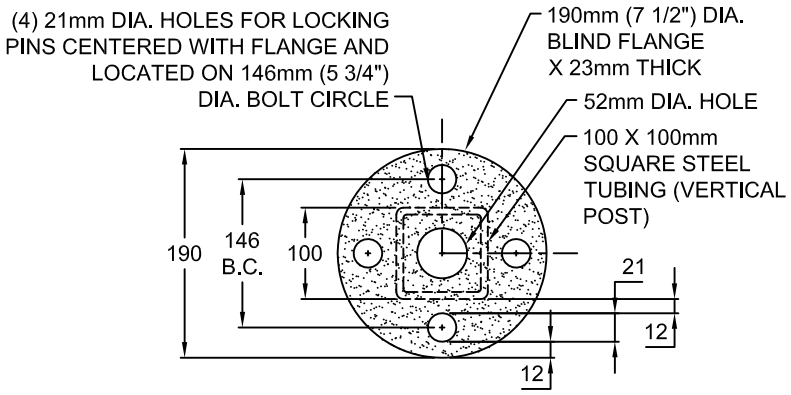




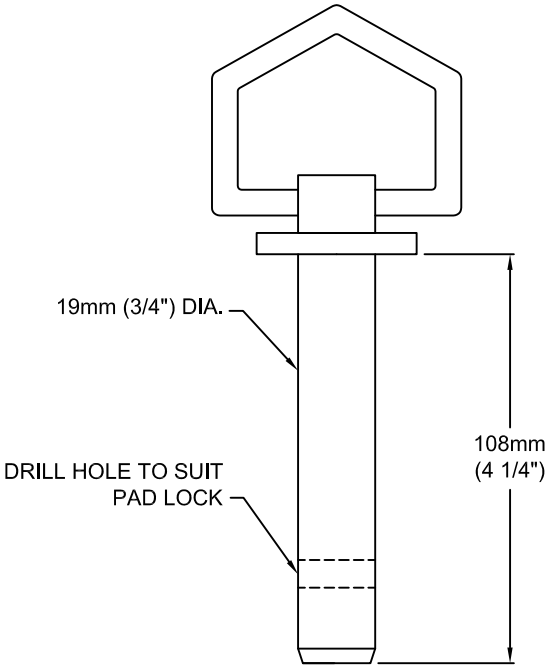
T-BOLLARD & PILING - SECTION



TOP FLANGE
(WELDED TO UNDERSIDE OF BOLLARD ARM)



BOTTOM FLANGE
(WELDED TO TOP OF VERTICAL POST)



LOCKING PIN

NOTES:
1. ALL UNITS IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL METAL TO BE GALVANIZED AND BLACK POWDER COATED.
3. THE LOCKING PIN IS A PURCHASE ITEM (DYNALINE 3/4" X 4 1/4" HITCH PIN #66283). PADLOCK HOLE NEEDS TO ALIGN WITH HANDLE.
4. THE BOLLARD ARM AND VERTICAL POST TO BE FABRICATED FROM 101.6mm X 101.6mm X 4.8 SQUARE STEEL TUBING (4 X 4 X 0.188 HSS).

T-Bollards - Assembly Sheet 1 of 3

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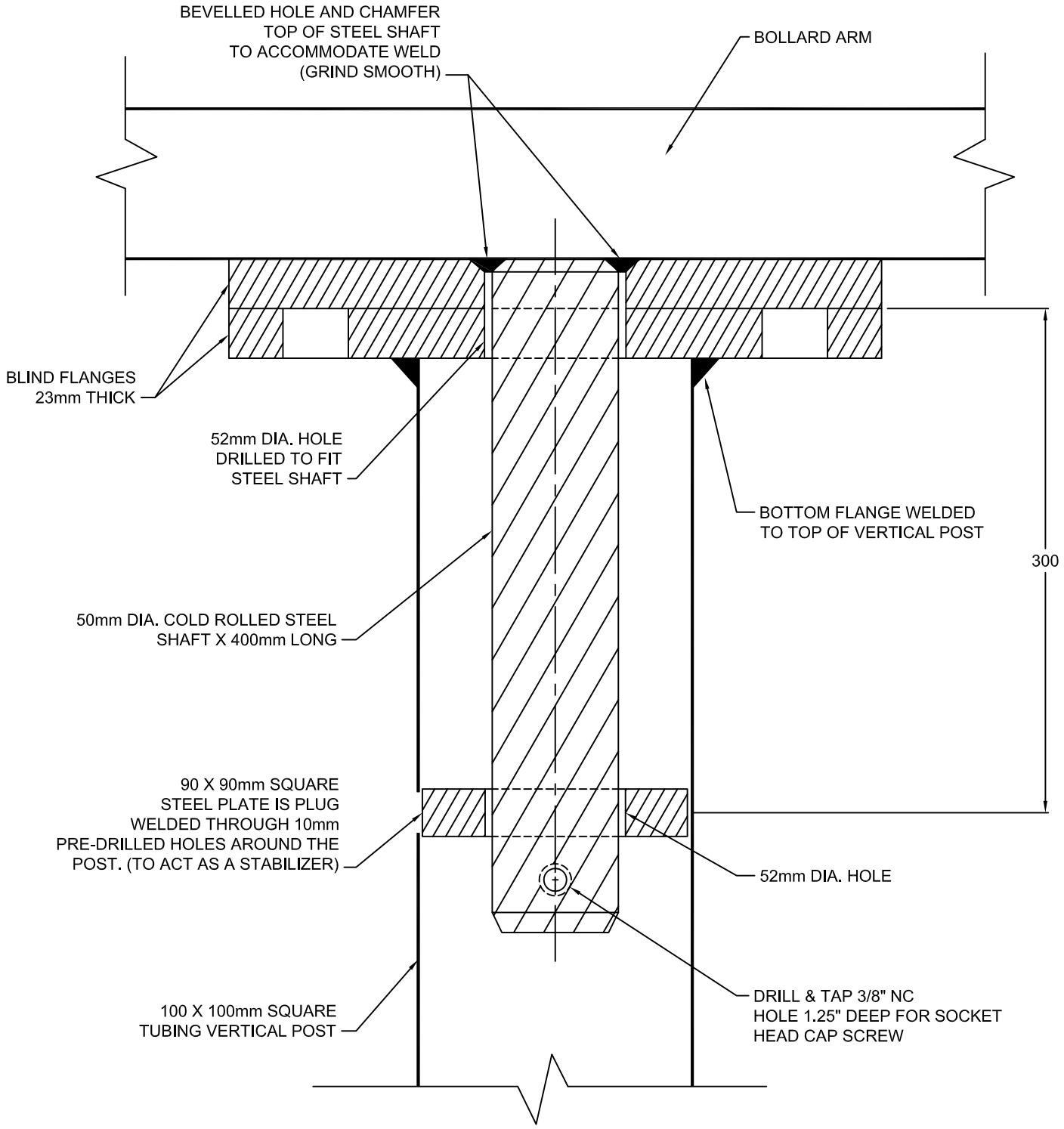
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.28A



ASSEMBLY DETAIL

NOTES:
1. ALL UNITS IN MILLIMETERS UNLESS OTHERWISE NOTED.

T-Bollards - Assembly Sheet 2 of 3

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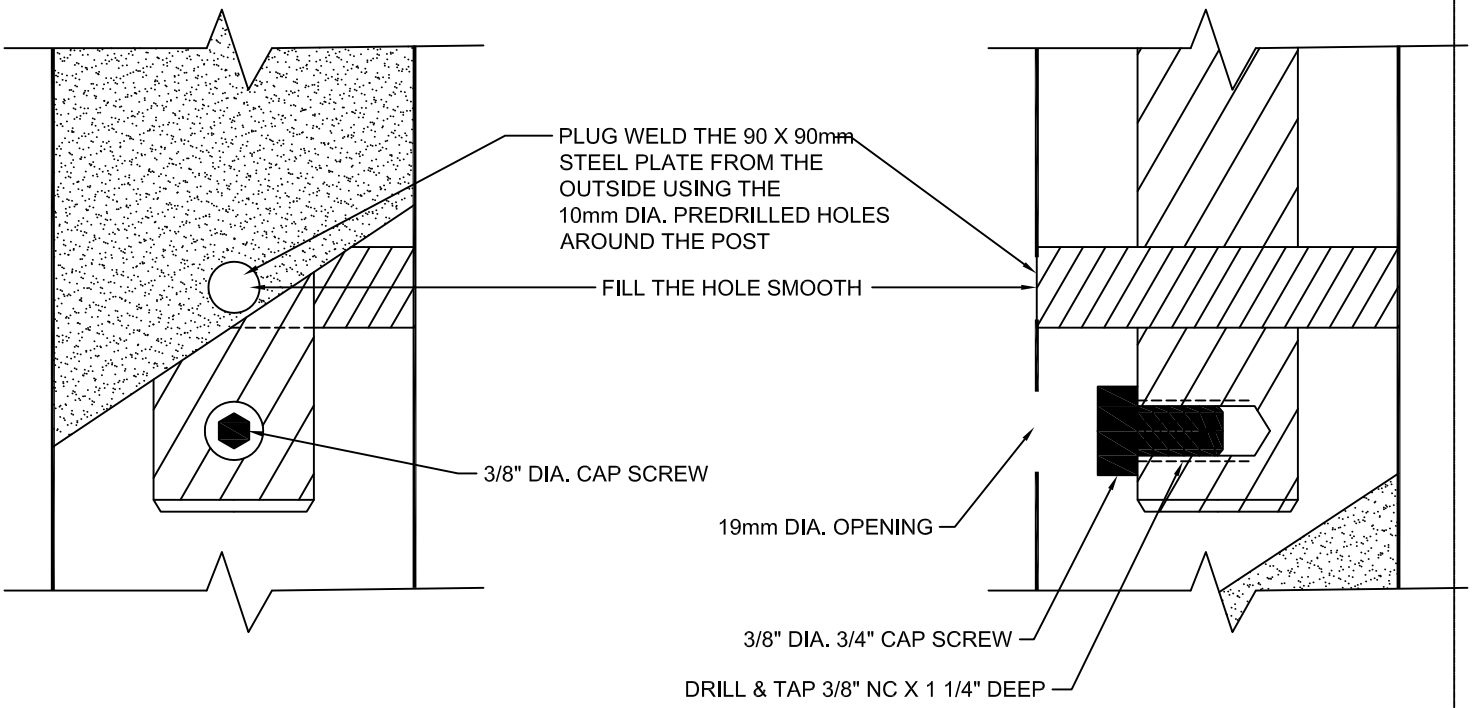
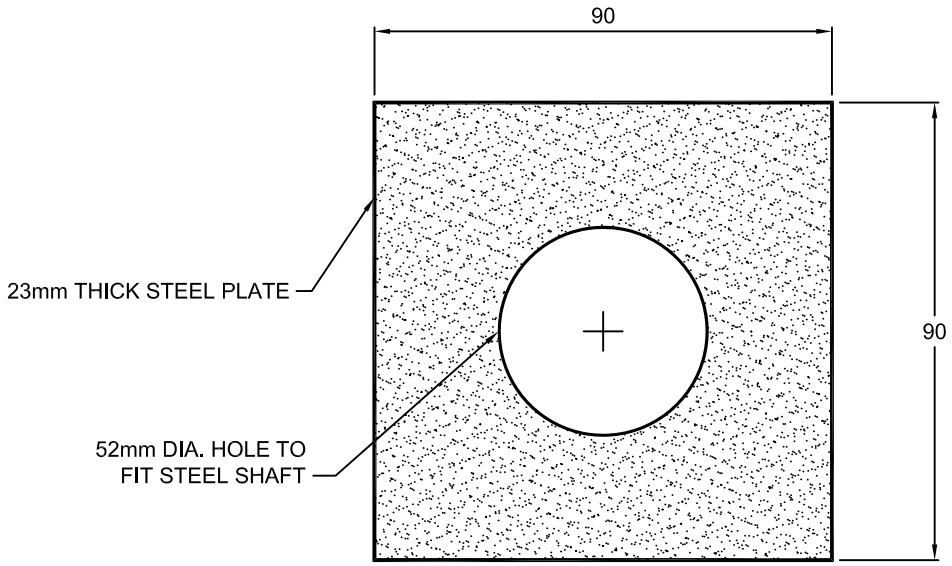
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.28B





90 X 90mm SQUARE STEEL PLATE

NOTES:
1. ALL UNITS IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. THE CAP SCREW IS INSTALLED TO PREVENT REMOVAL OF BOLLARD ARM. THEN COVER THE 19mm HOLE WITH REFLECTIVE TAPE.

T-Bollards - Assembly Sheet 3 of 3

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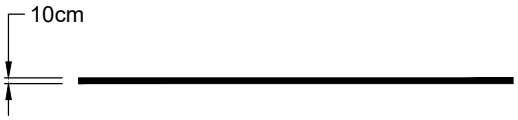
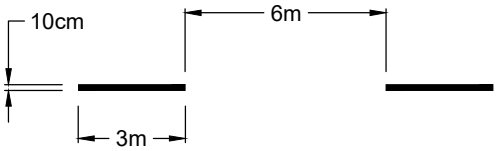
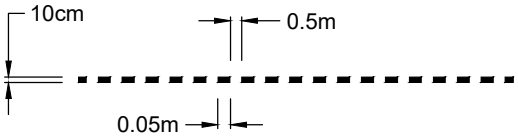
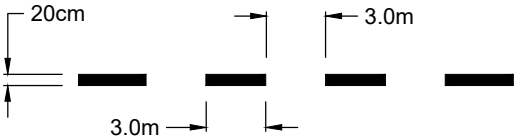
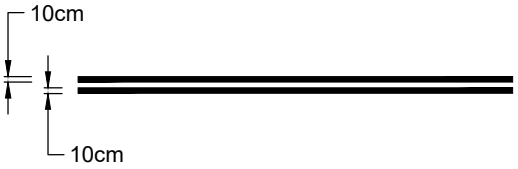
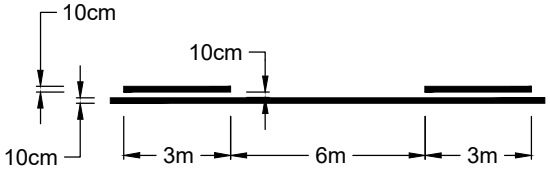
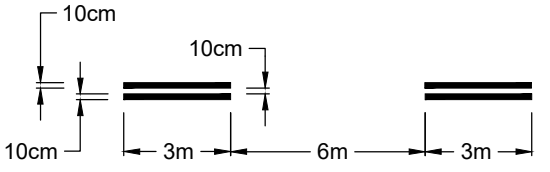
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.28C

STYLE OF LINE	DIMENSION (m)	NAME/USE/COLOR
SOLID		-EDGE LINES (WHITE OR YELLOW) -DIRECTIONAL DIVIDING LINES (YELLOW) -LANE LINES PROHIBITING LANE CHANGES (WHITE)
BROKEN		-LANE LINES (WHITE)
DENSE BROKEN		-GUIDE LINES (eg. INTERSECTION MOVEMENTS) YELLOW OR WHITE.
WIDE SOLID		-EDGE LINES IN CRITICAL AREAS (WHITE ON THE RIGHT, YELLOW ON THE LEFT) -CONTINUITY LINES PROHIBITING LANE CHANGES (WHITE)
WIDE BROKEN		-CONTINUITY LINES IN MERGING AND DIVERGING AREAS -FORCED TURN LANE (LANE ENDING)
DOUBLE SOLID		-DIRECTIONAL DIVIDING LINES (YELLOW) -LANE LINES WHERE LANE CHANGES FROM EITHER SIDE ARE PROHIBITED (WHITE)
SIMULTANEOUS SOLID AND BROKEN		-DIRECTIONAL DIVIDING LINES, TWO-WAY LEFT TURN LANES (YELLOW) -LANE LINES WHERE LANE CHANGES FROM ONE SIDE ARE PROHIBITED (WHITE)
DOUBLE BROKEN		-REVERSIBLE LANES (YELLOW)

Road Lines Template

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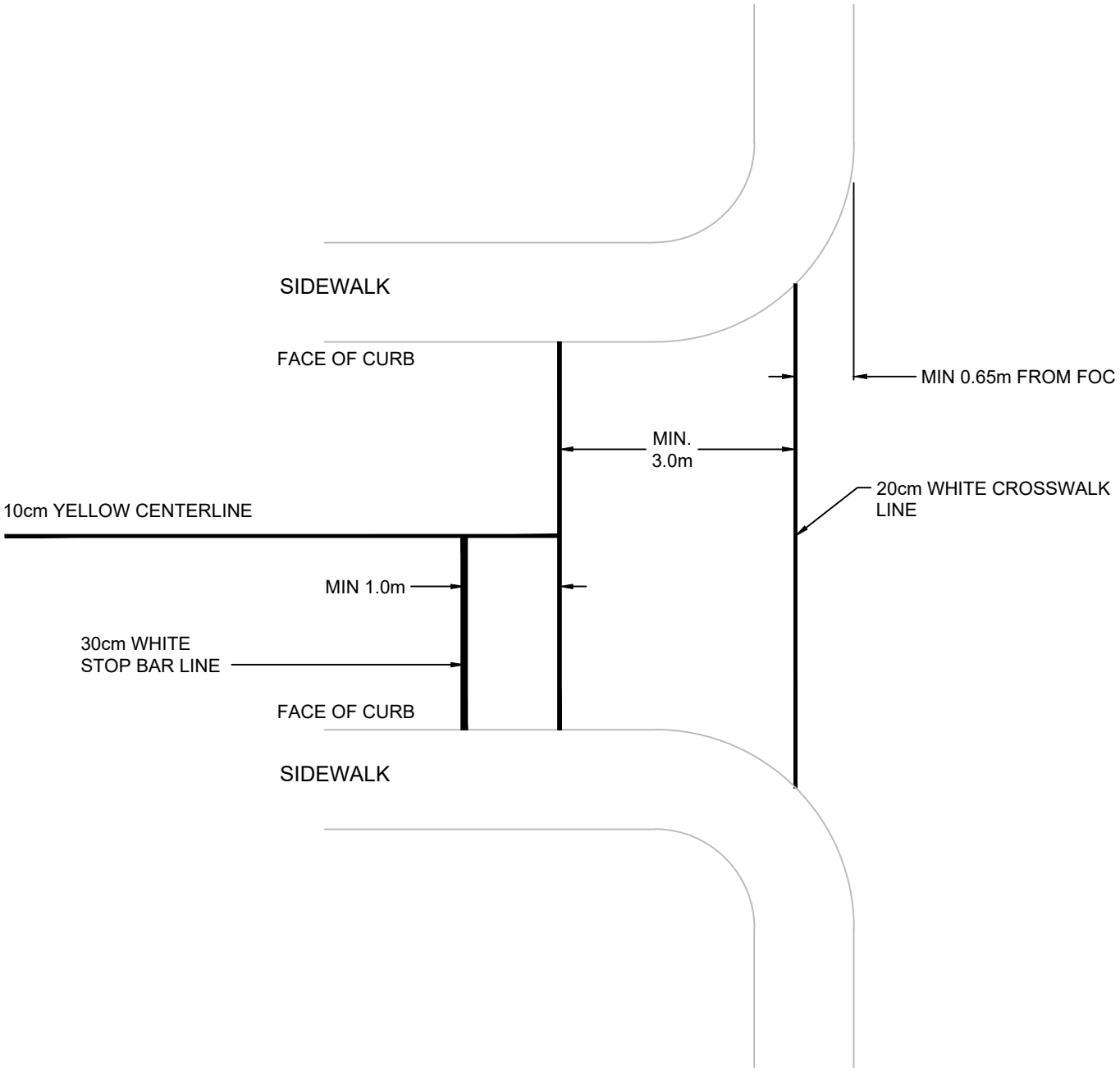
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.29



NOTES:

1. INLAID TRANSVERSE MARKINGS ARE TO BE MINIMUM 8mm DEEP
2. YELLOW CENTER LINE IS TO BE CARRIED TO THE BACK CROSSWALK LINE
3. THE STOP BAR IS TO BE PLACED PERPENDICULAR TO THE ROADWAY - MINIMUM DISTANCE TO THE CROSSWALK IS 1.0m

Pedestrian Crosswalk and Stop Bar Detail

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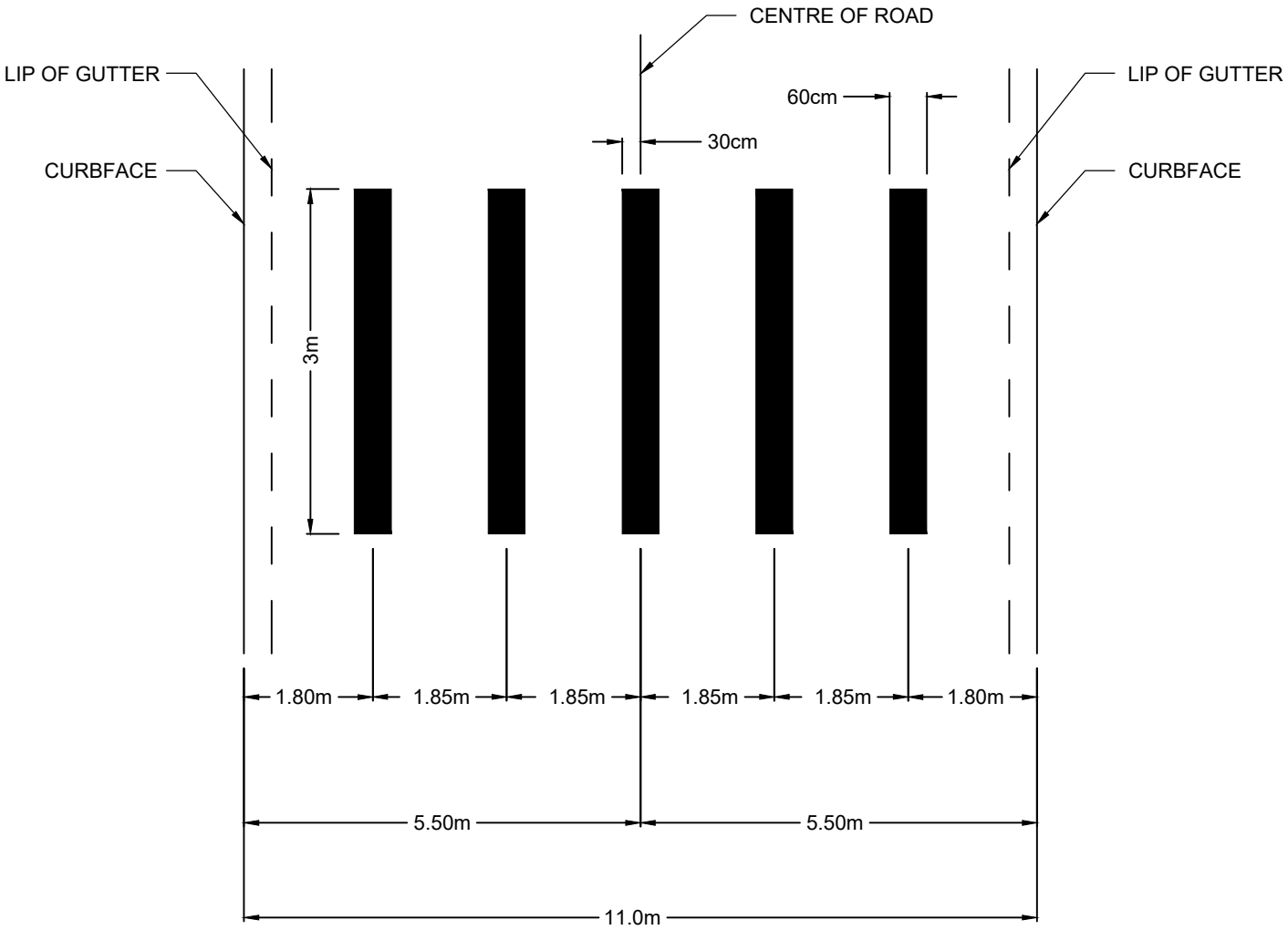
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.30



11m Wide Collector Detail Zebra Stripe Crosswalk

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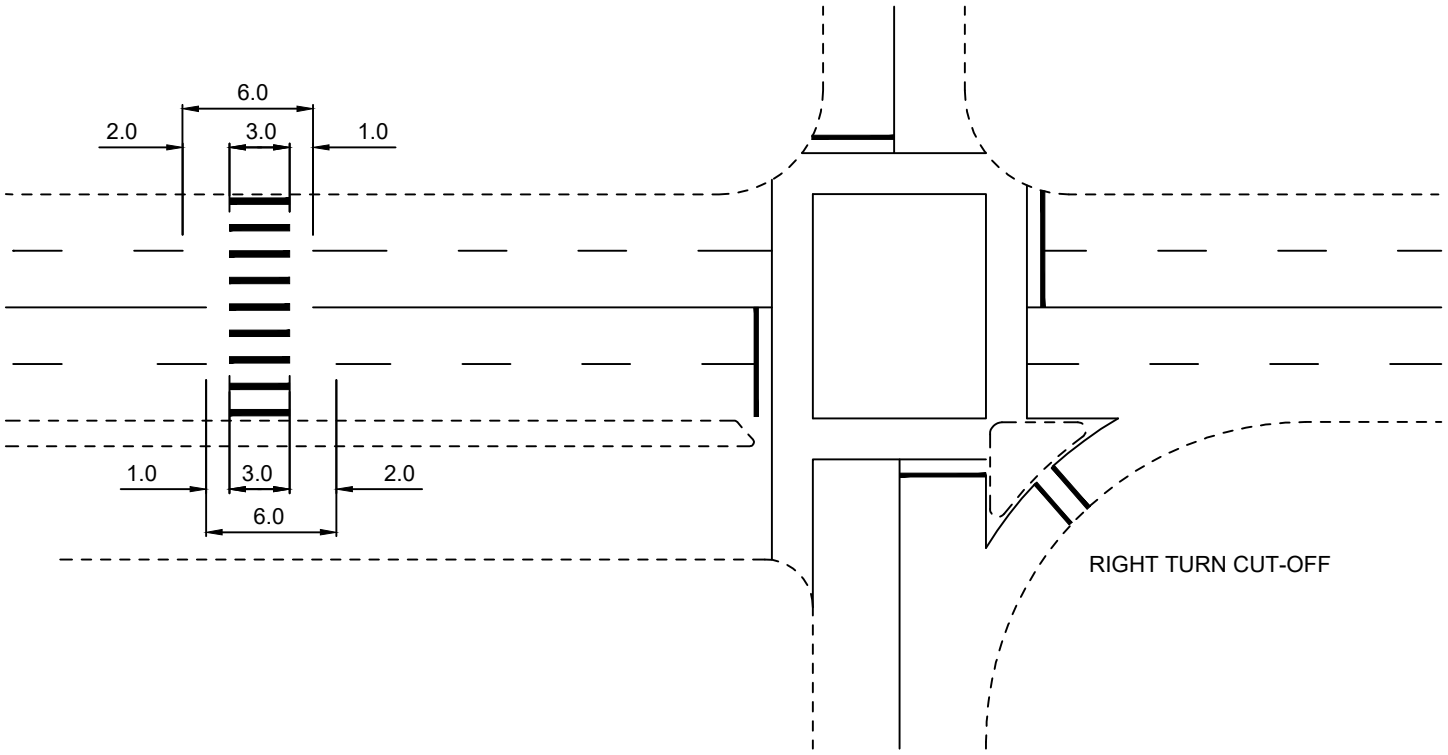
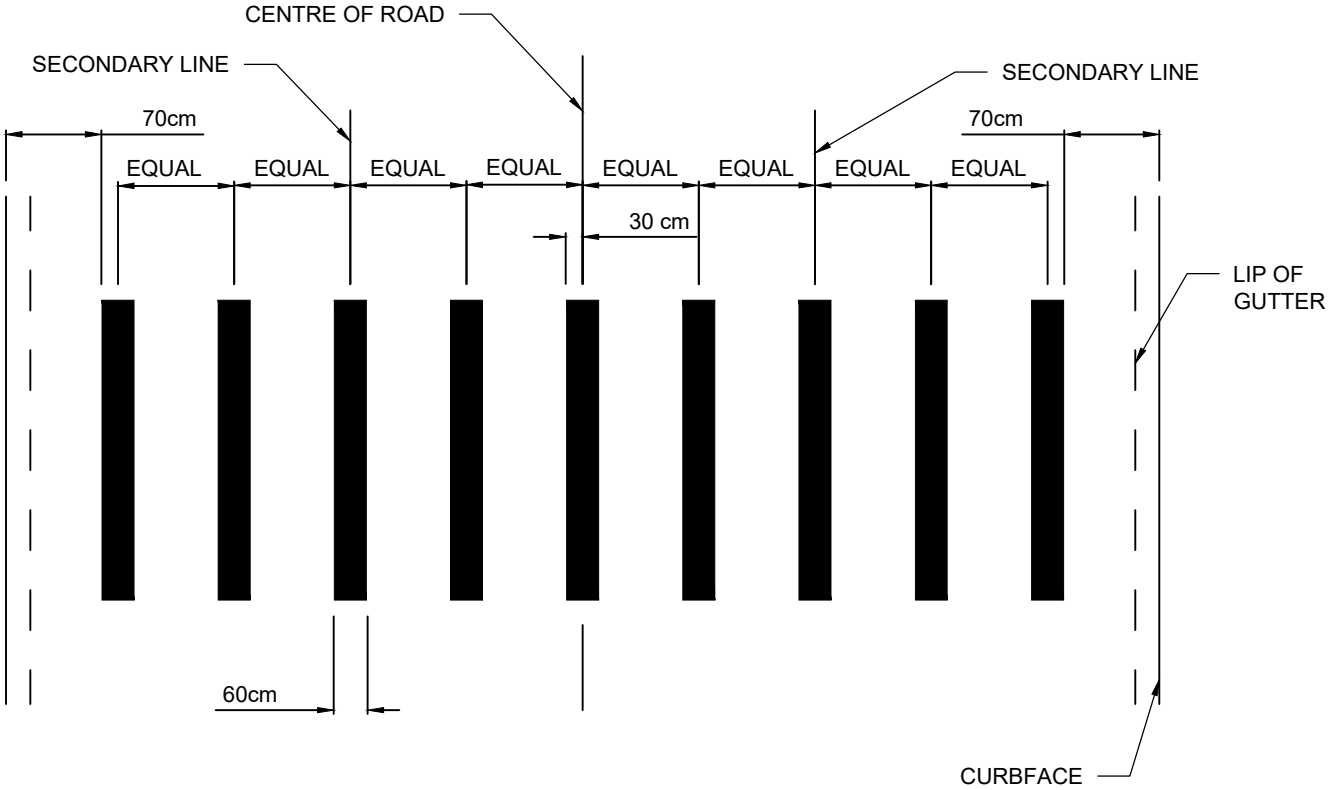
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.31





NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ENTERING LANE LINES ARE 1.0m OFF OF ZEBRA BARS.
3. ENTERING YELLOW CENTER LINE IS 1.0m OFF OF ZEBRA BARS.
4. EXITING LANE LINES ARE 2.0m OFF OF ZEBRA BARS.
5. EXITING YELLOW CENTER LINE IS 1.0m OFF OF ZEBRA BARS.

Arterial Zebra Stripe Crosswalk Detail

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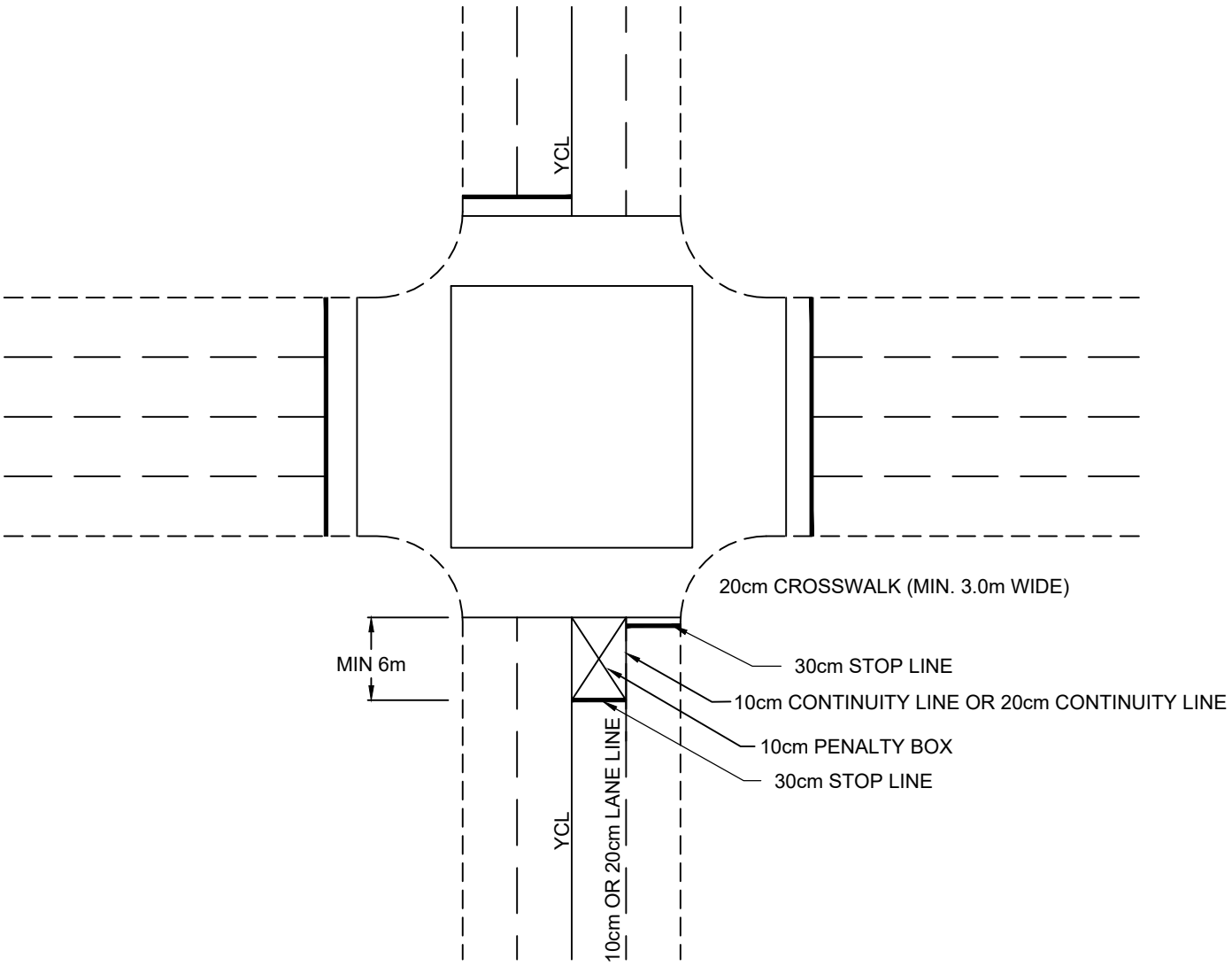
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.32



NOTES:

1. LENGTH OF STOP BOX TO BE DETERMINED BY TURNING TEMPLATES
2. IF LANE LINES ARE 10cm WIDE, THEN THE LINE (RIGHT SIDE) OF THE PENALTY BOX SHALL BE 10cm FROM BACK STOP BAR TO CROSSWALK.
3. IF IT IS A TURN LANE, THE LANE LINES SHALL BE 20cm WIDE AND THE LINE (RIGHT SIDE) OF THE PENALTY BOX SHALL BE 20cm FROM BACK STOP BAR TO CROSSWALK.
4. A 3.0m LANE LINE (20cm OR 10cm) SHALL RUN DIRECTLY OFF OF THE BACK STOP BAR. THEREFORE, TOTAL DISTANCE OF SOLID LINE FROM CROSSWALK TO FIRST GAP OF LANE LINES PRIOR TO THE PENALTY BOX IS A MINIMUM OF 9.0m.

Stop Box Pavement Marking

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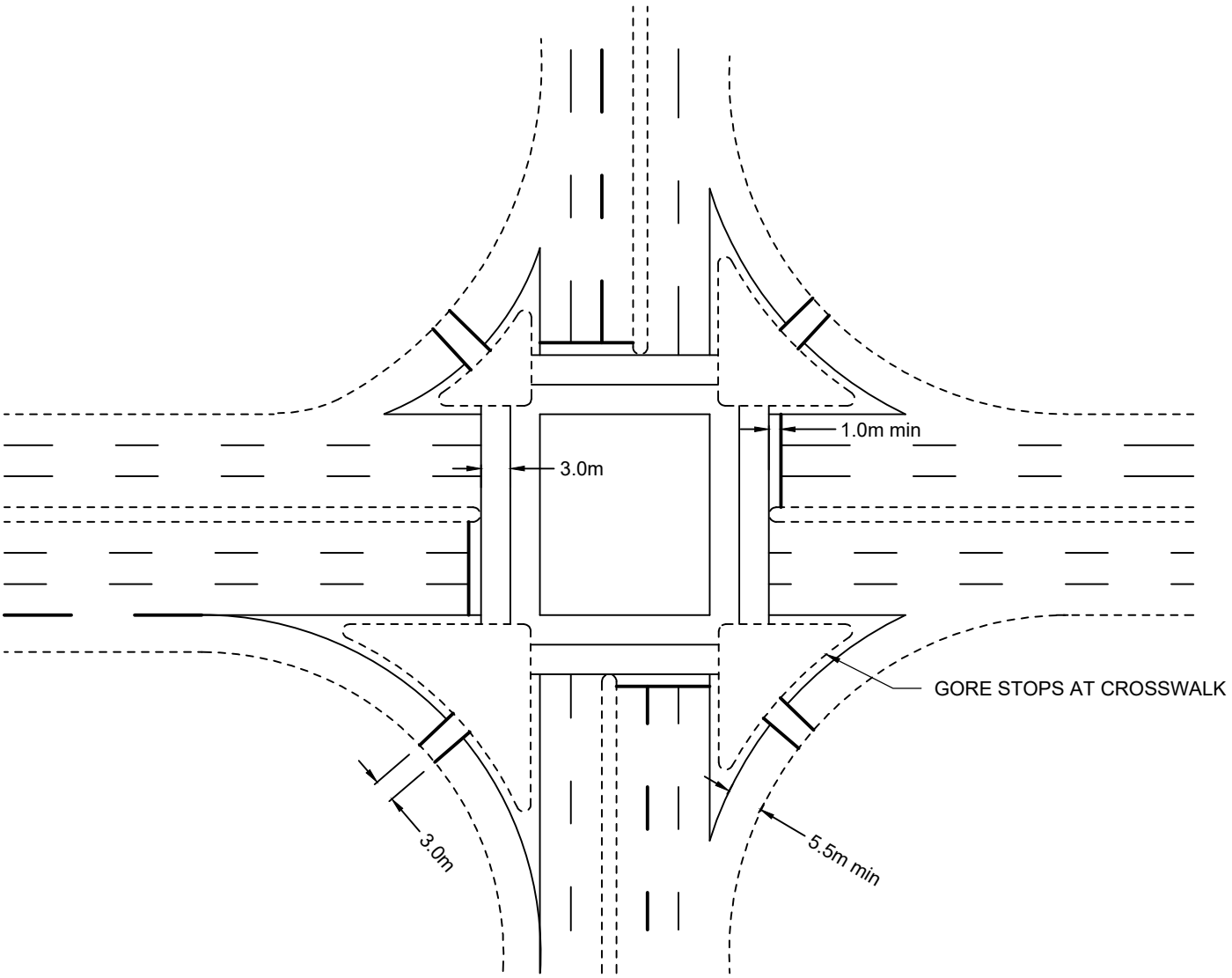
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.33



NOTES:

1. LANE LINES STOP AT STOP BARS.
2. CROSSWALK LINES RUN TO THE CURB.

Crosswalks at Signalized Intersections

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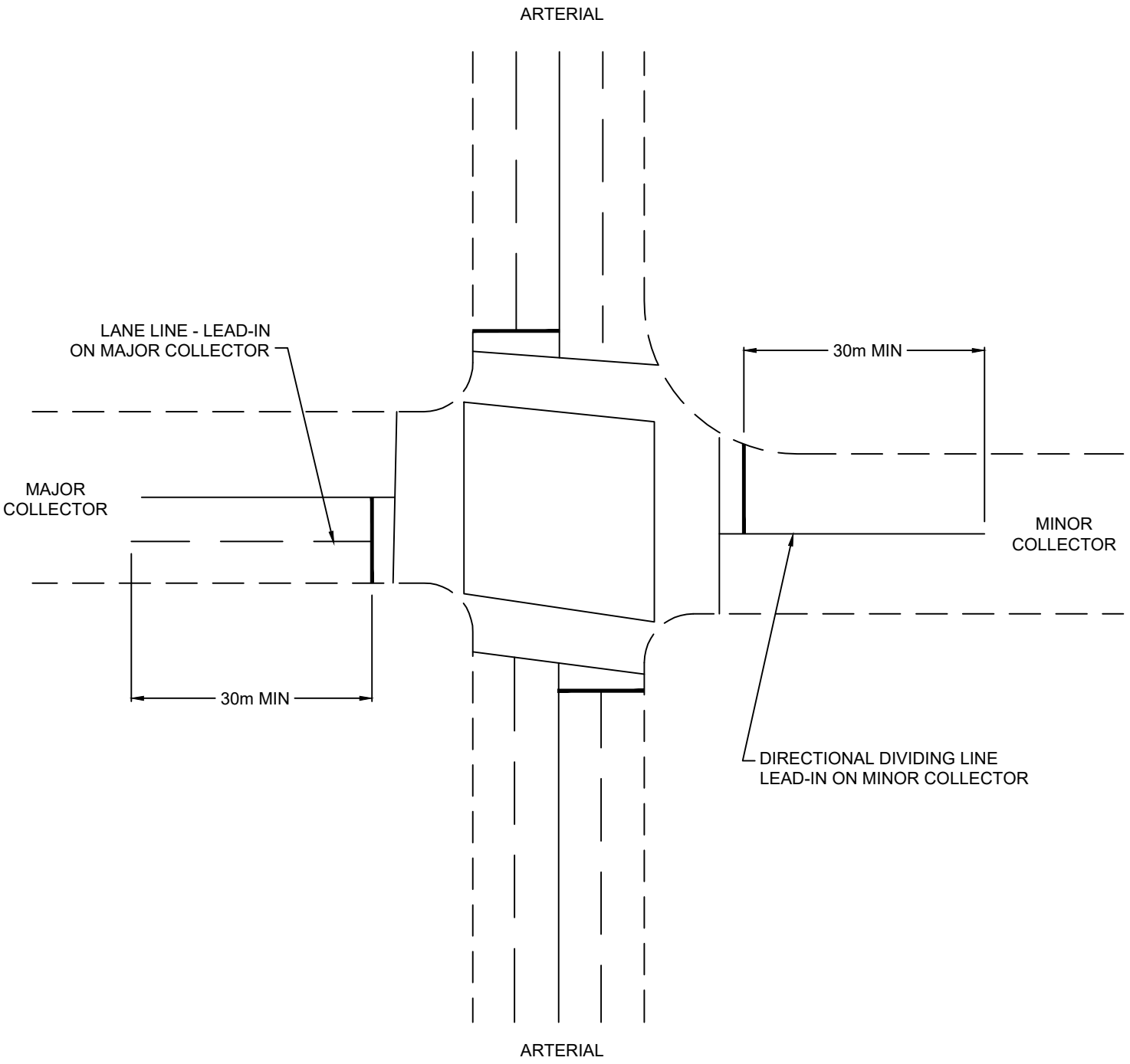
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.34



Lane and Lead In Lines

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ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.35

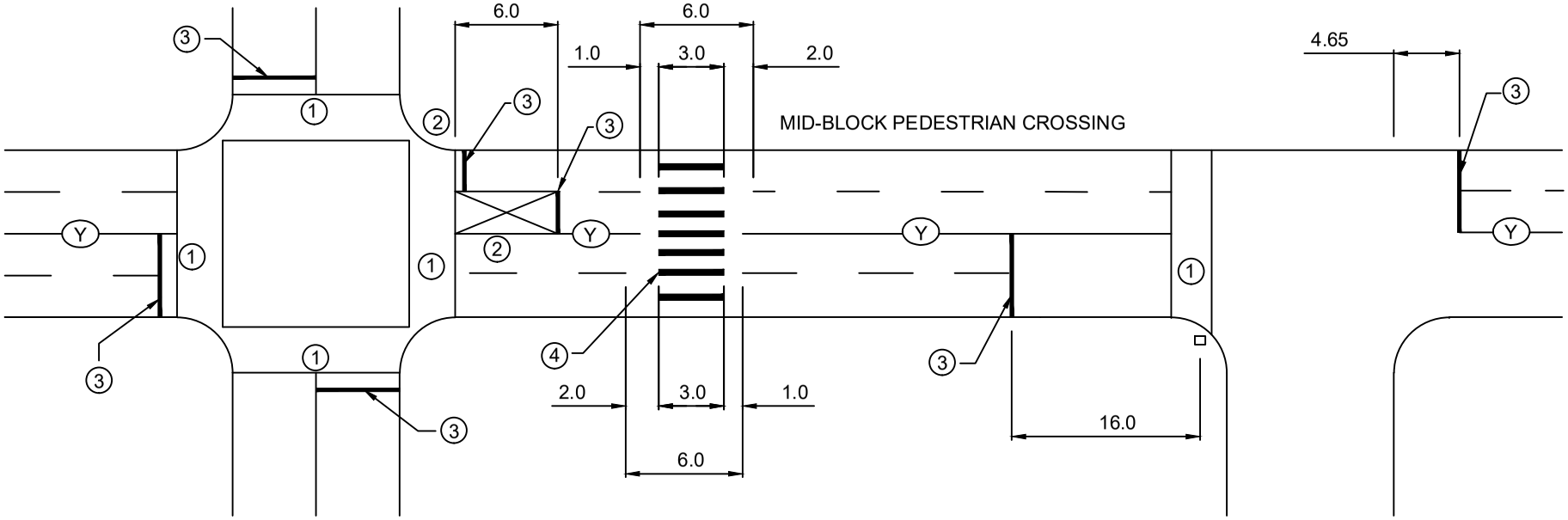
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

Lateral Pavement Markings

NAME	BASIC PATTERN	APPLICATION - WHITE	NUMBER
SOLID STRIP 20cm		CROSSWALK : TWO PARALLEL SOLID STRIPES STOP BOX: TWO CROSSED SOLID STRIPES	1 2
SOLID STRIPE 30cm		STOP LINE : ONE SOLID STRIPE	3
SOLID STRIPE 60cm		ZEBRA STRIPE CROSSWALK	4

FULLY SIGNALIZED INTERSECTION

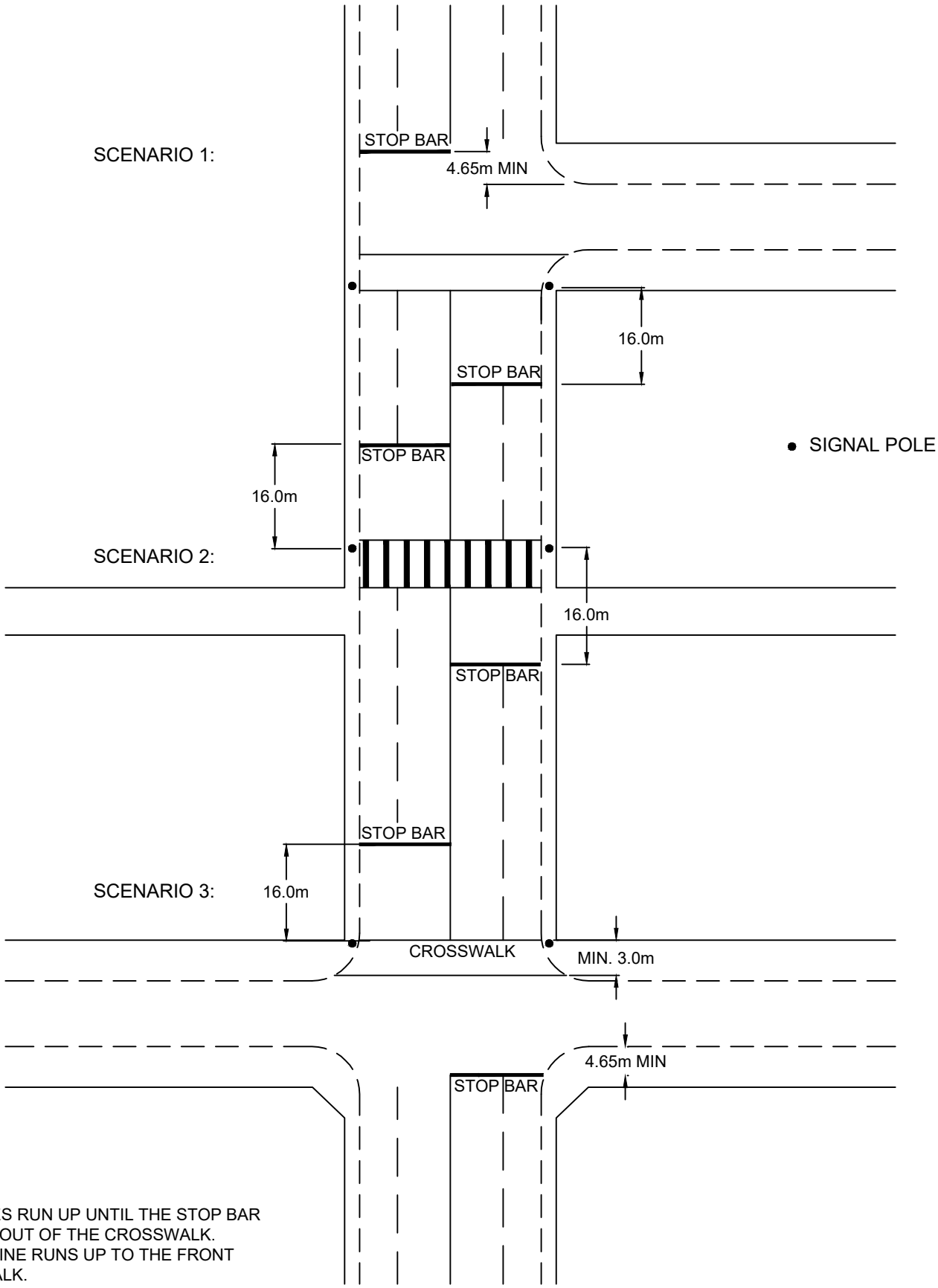
PEDESTRIAN ACTIVATED SIGNALIZED INTERSECTION



NOTES:
1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
2. ENTERING LANE LINES ARE 1.0m OFF OF ZEBRA BARS.
3. ENTERING YELLOW CENTER LINE IS 1.0m OFF OF ZEBRA BARS.
4. EXITING LANE LINES ARE 2.0m OFF OF ZEBRA BARS.
5. EXITING YELLOW CENTER LINE IS 1.0m OFF OF ZEBRA BARS.

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021
REVIEWED BY:
SCALE: NTS
DRAWING NO.: 3.36



NOTES:
1. LANE LINES RUN UP UNTIL THE STOP BAR AND EXIT OUT OF THE CROSSWALK.
2. CENTER LINE RUNS UP TO THE FRONT CROSSWALK.

Crosswalks at Intersections With Pedestrian Actuated Signals

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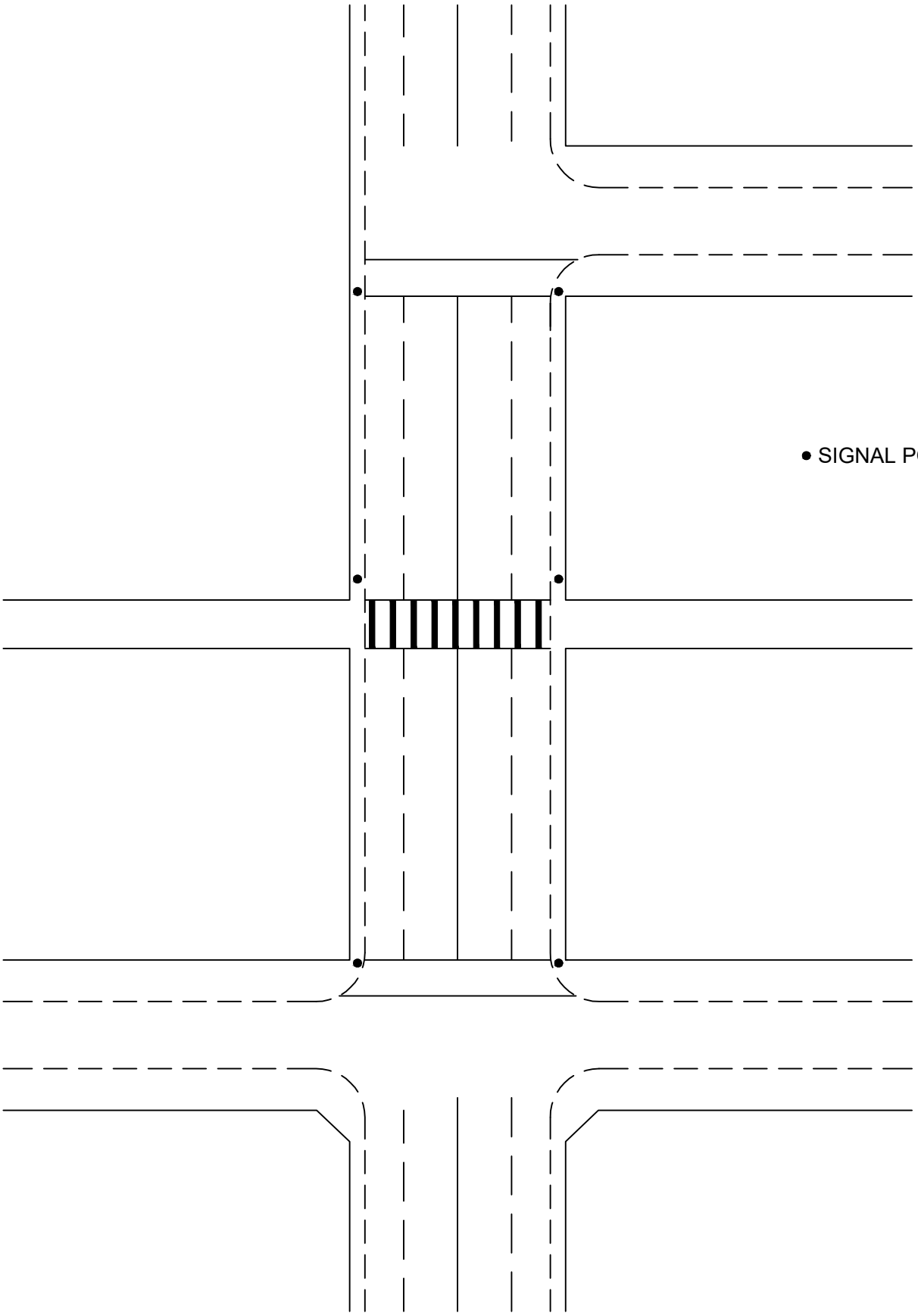
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.37



Crosswalks at Intersections, Midblock and T-Intersection with Pedestrian Flashers or Signs

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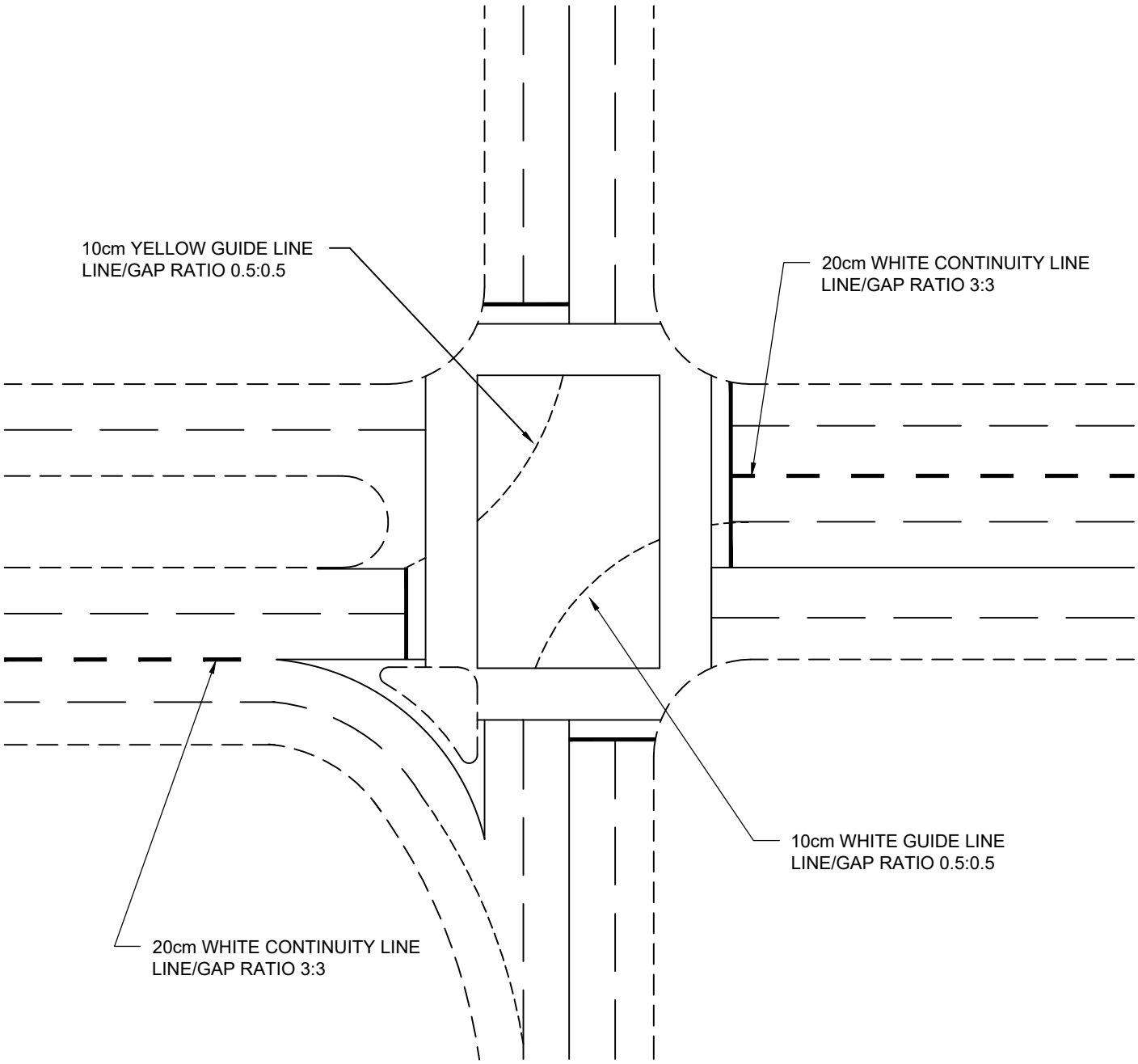
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021

SCALE: NTS

DRAWING NO.: 3.38



Guide Lines

REVIEWED BY:

City of St. Albert Cultivate Life

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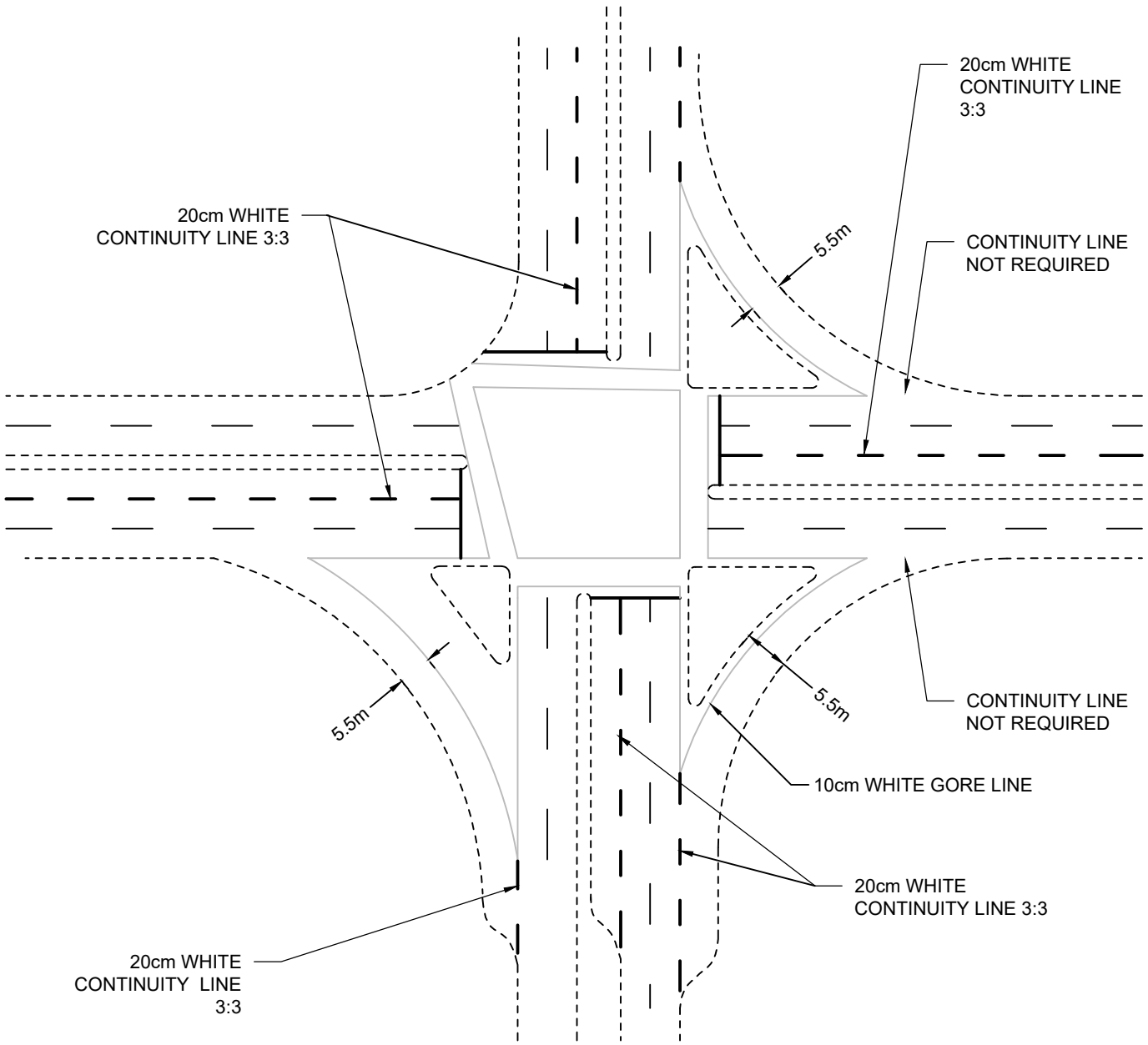
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.39



Continuity Lines

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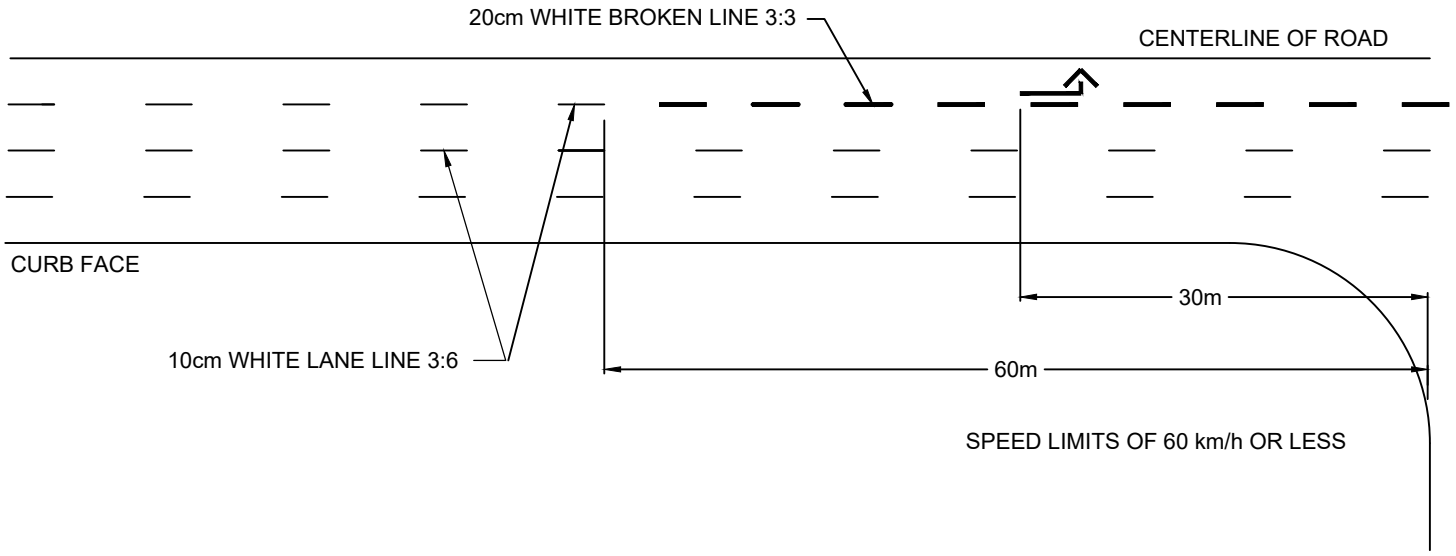
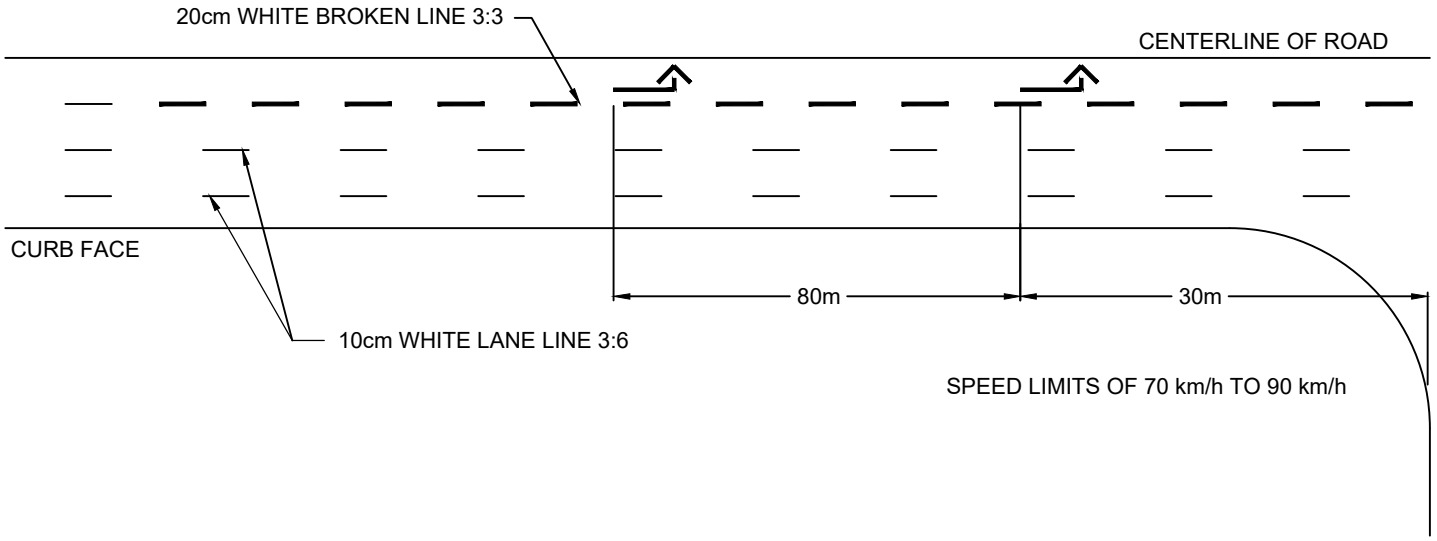
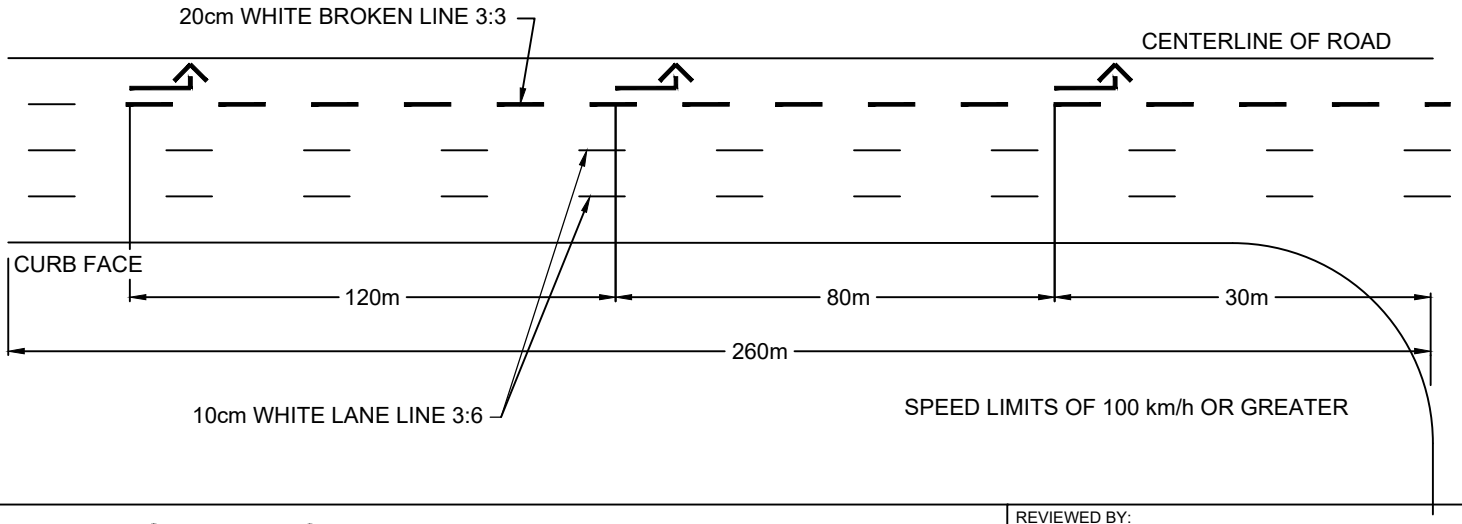
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.40







Spacing of Turn Arrows in Forced Left Turn Lane

REVIEWED BY:

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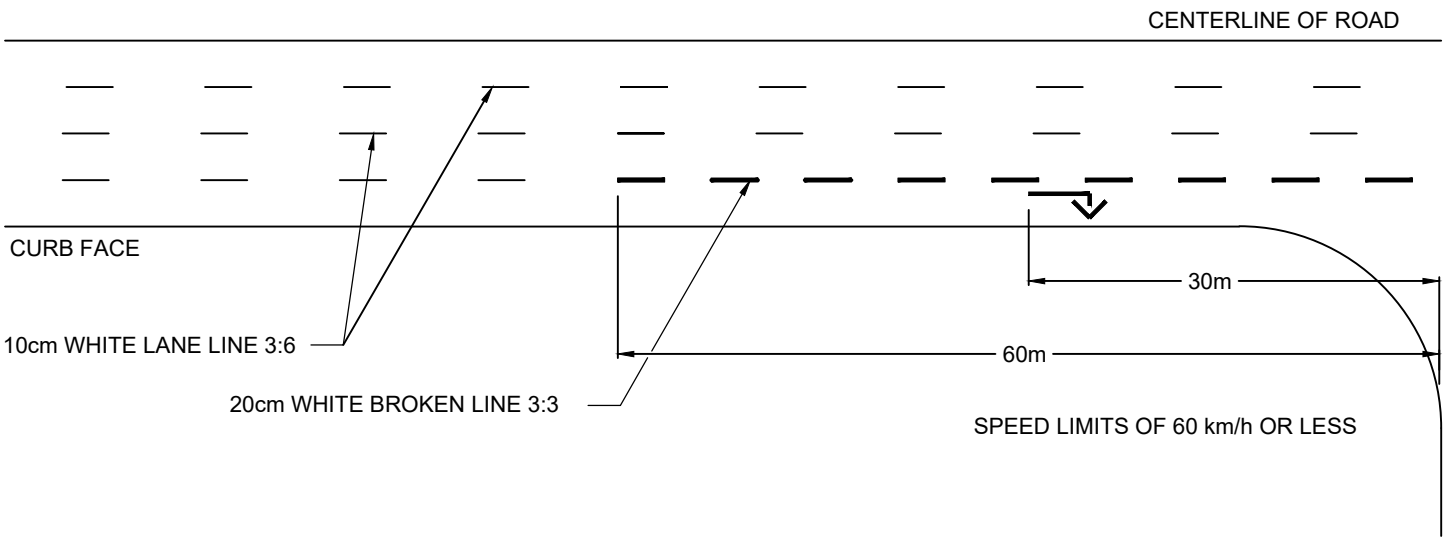
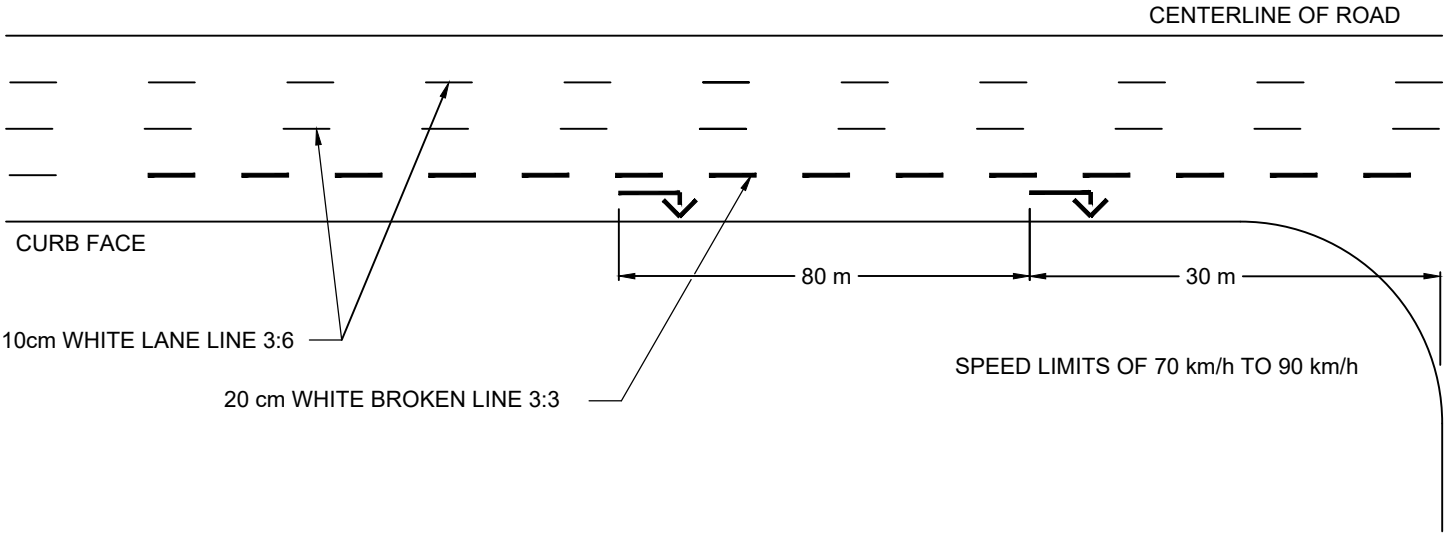
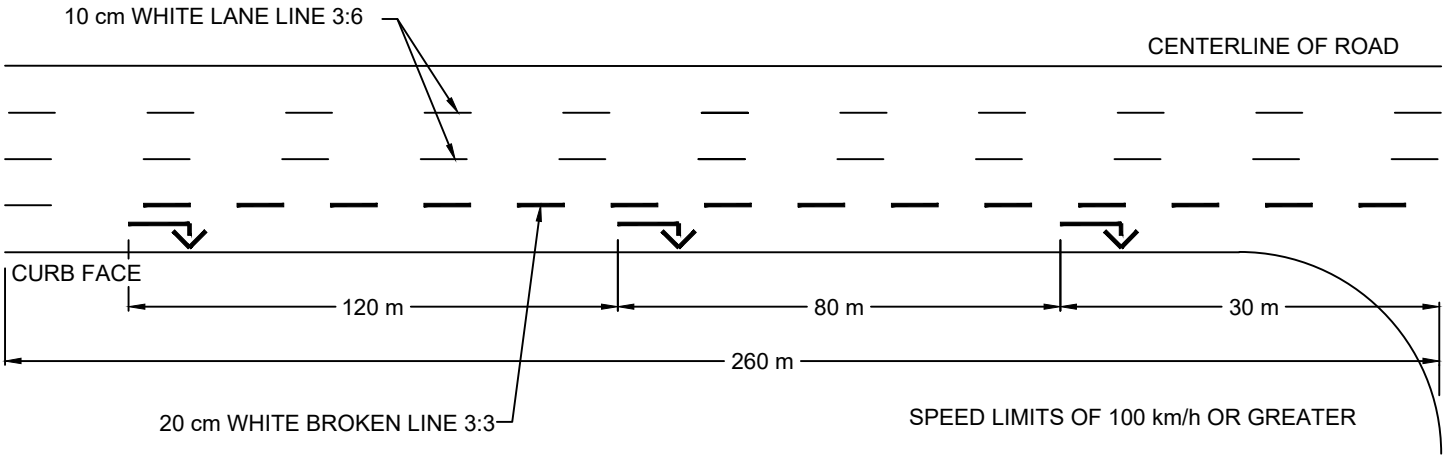
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.41







Spacing of Turn Arrows in Forced Right Turn Lane

REVIEWED BY:

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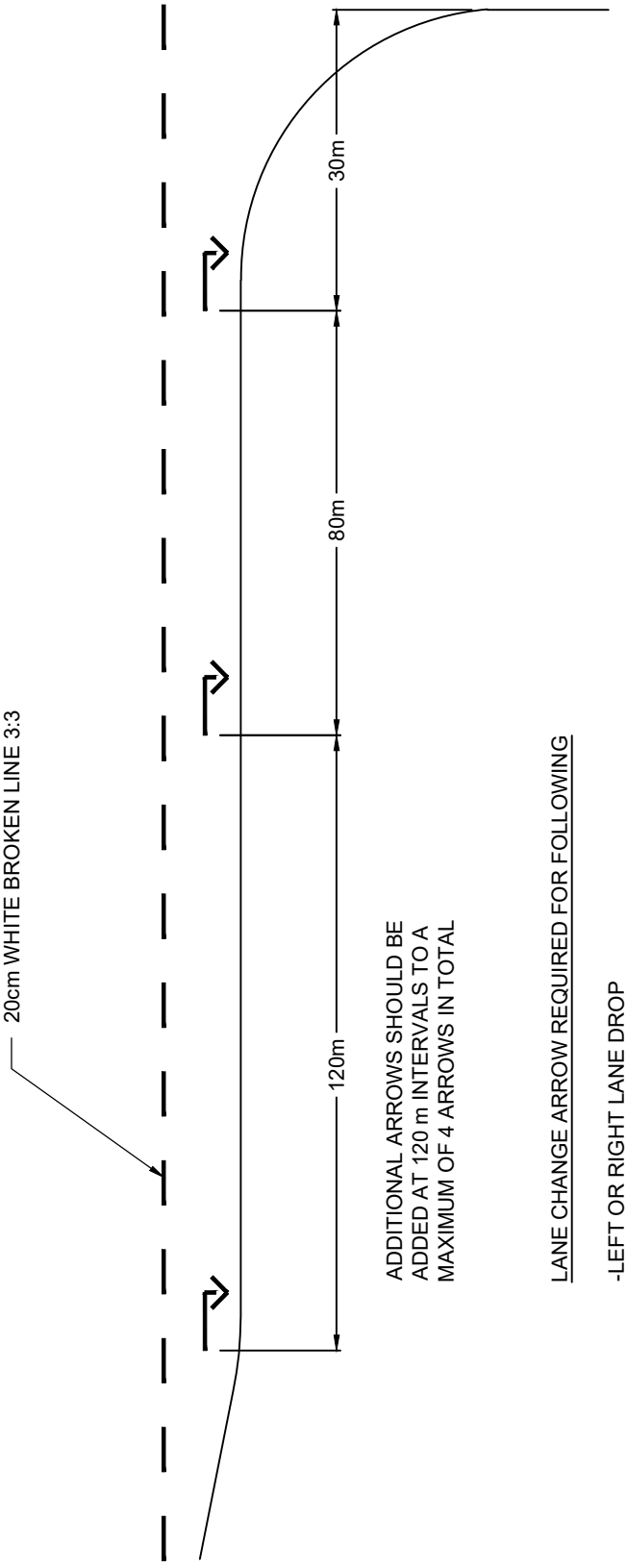
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

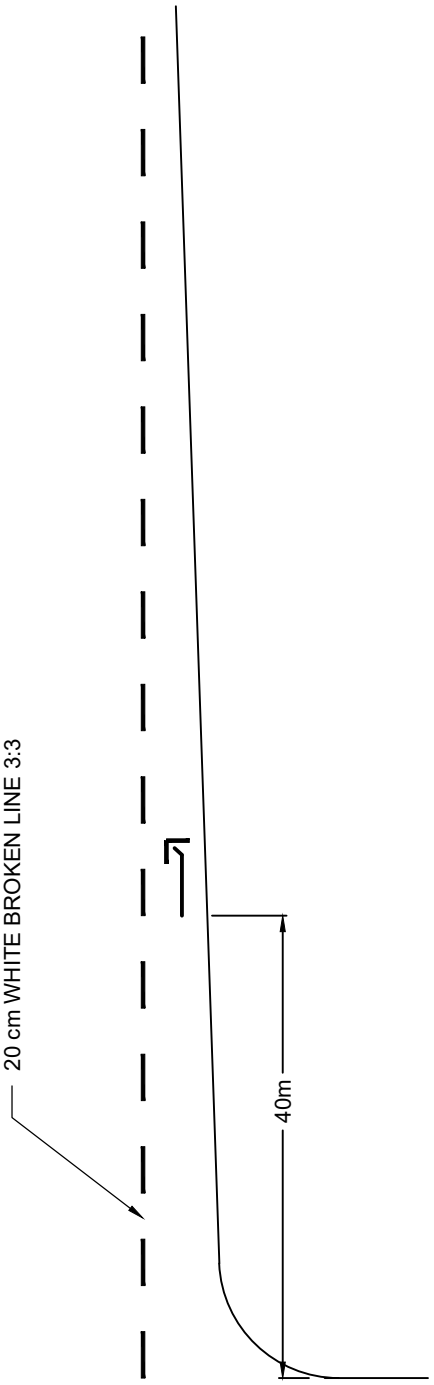
DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.42



ADDITIONAL ARROWS SHOULD BE
ADDED AT 120 m INTERVALS TO A
MAXIMUM OF 4 ARROWS IN TOTAL

LANE CHANGE ARROW REQUIRED FOR FOLLOWING

-LEFT OR RIGHT LANE DROP
-MERGE LANE GREATER THAN 200 m
-DOUBLE LANE ENTRY
-UNPROTECTED TURN LANE
-WHEN A THROUGH LANE BECOMES A TURN LANE



Spacing of Turn Arrows

REVIEWED BY:

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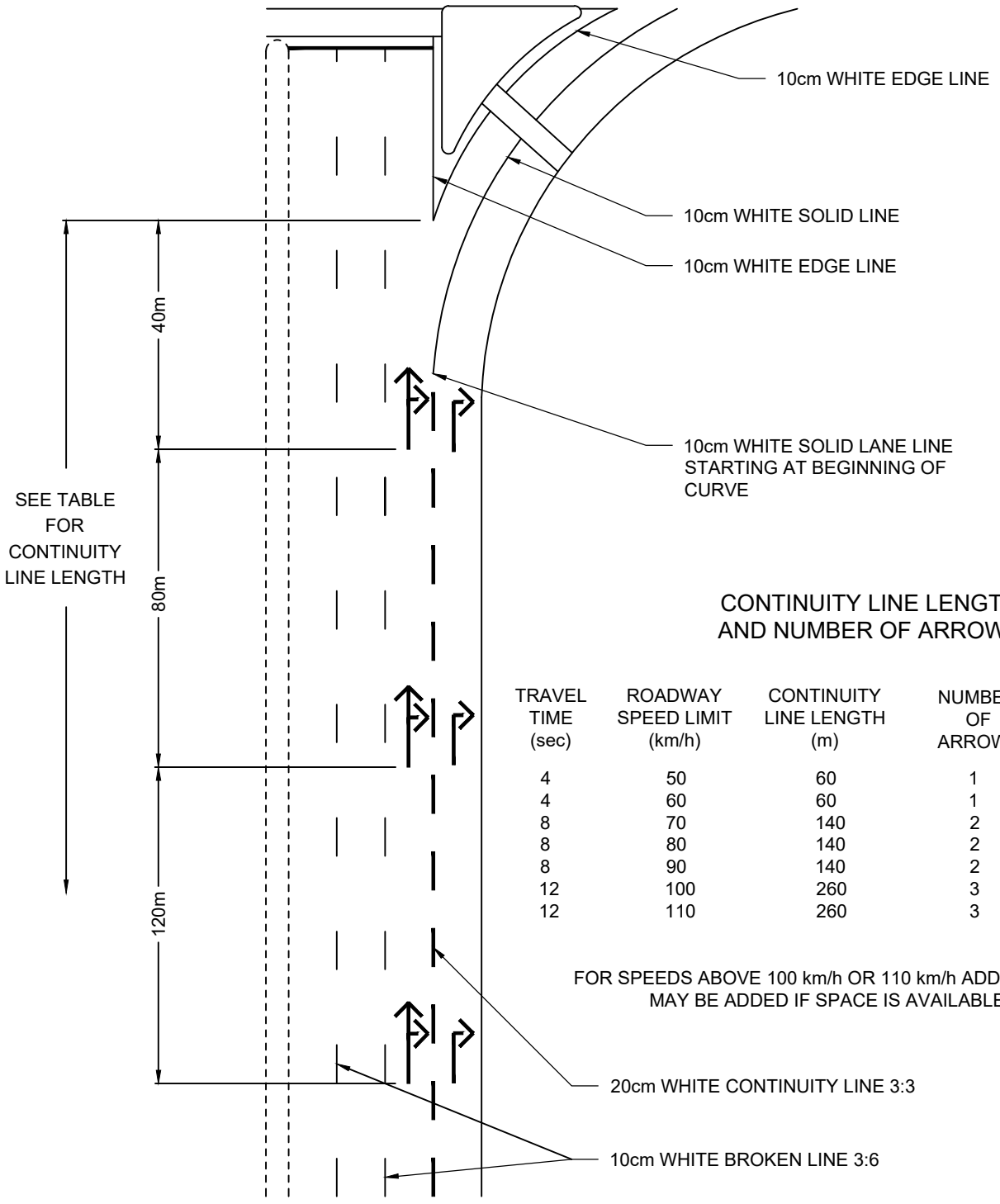
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.43



CONTINUITY LINE LENGTH AND NUMBER OF ARROWS

TRAVEL TIME (sec)	ROADWAY SPEED LIMIT (km/h)	CONTINUITY LINE LENGTH (m)	NUMBER OF ARROWS	ARROW SPACING AT (m)
4	50	60	1	40
4	60	60	1	40
8	70	140	2	40, 80
8	80	140	2	40, 80
8	90	140	2	40, 80
12	100	260	3	40, 80, 120
12	110	260	3	40, 80, 120

FOR SPEEDS ABOVE 100 km/h OR 110 km/h ADDITIONAL ARROWS MAY BE ADDED IF SPACE IS AVAILABLE AT 120m

Two Lane Exit Forced Right With Through Right Option

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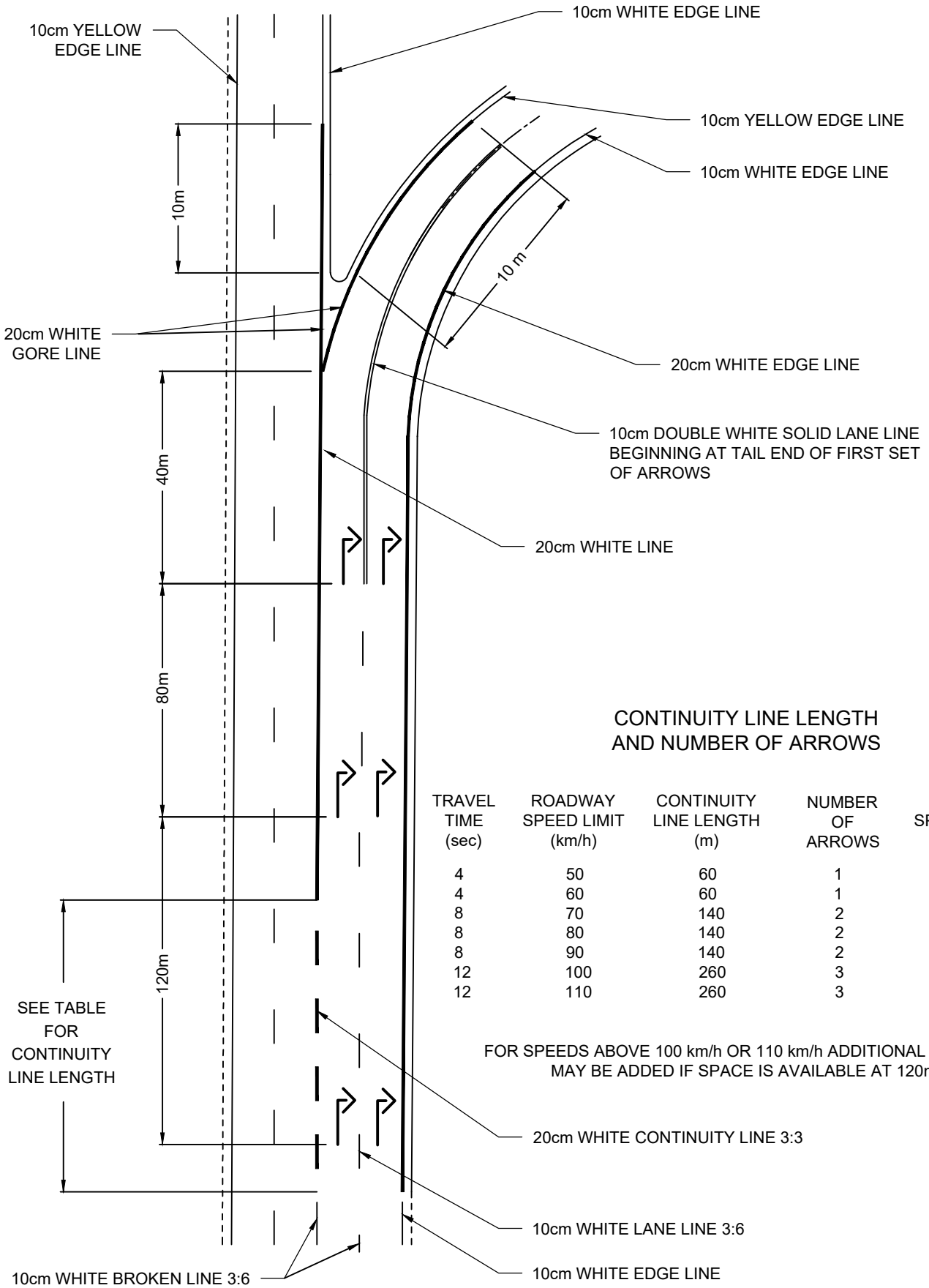
City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021
SCALE: NTS
DRAWING NO.: 3.44



CONTINUITY LINE LENGTH AND NUMBER OF ARROWS

TRAVEL TIME (sec)	ROADWAY SPEED LIMIT (km/h)	CONTINUITY LINE LENGTH (m)	NUMBER OF ARROWS	ARROW SPACING AT (m)
4	50	60	1	40
4	60	60	1	40
8	70	140	2	40, 80
8	80	140	2	40, 80
8	90	140	2	40, 80
12	100	260	3	40, 80, 120
12	110	260	3	40, 80, 120

FOR SPEEDS ABOVE 100 km/h OR 110 km/h ADDITIONAL ARROWS MAY BE ADDED IF SPACE IS AVAILABLE AT 120m

Two Lane Exit Only on Right

REVIEWED BY:

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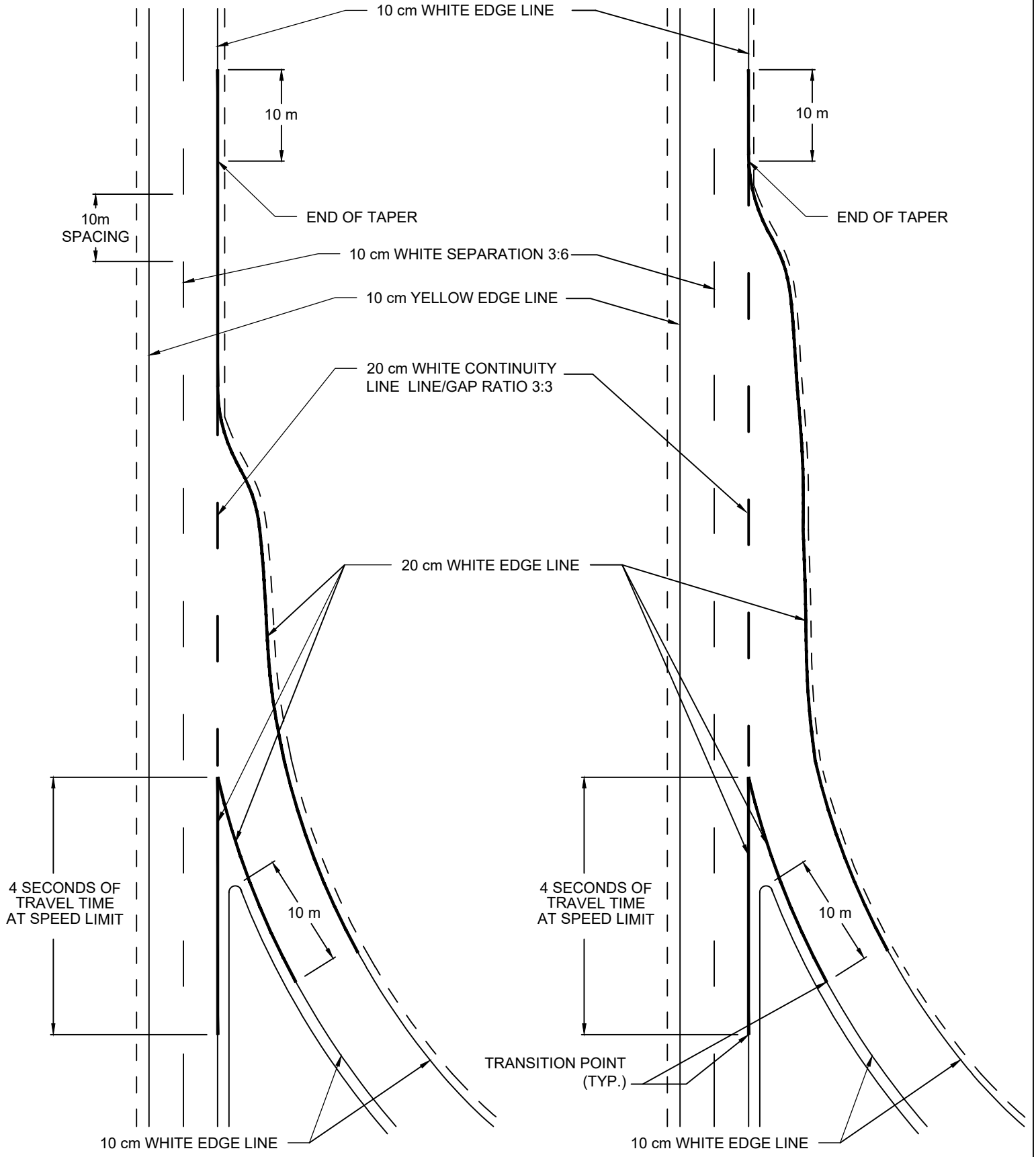
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021

SCALE: NTS

DRAWING NO.: 3.45



Pavement Edge Lines at Yields and Merge Entrances

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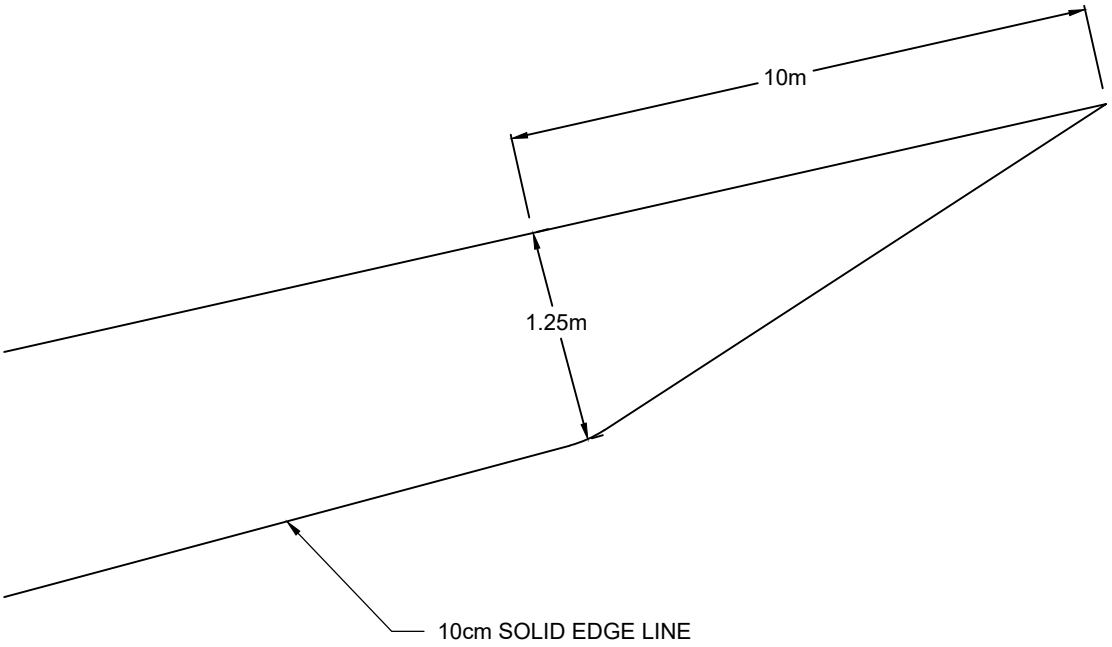
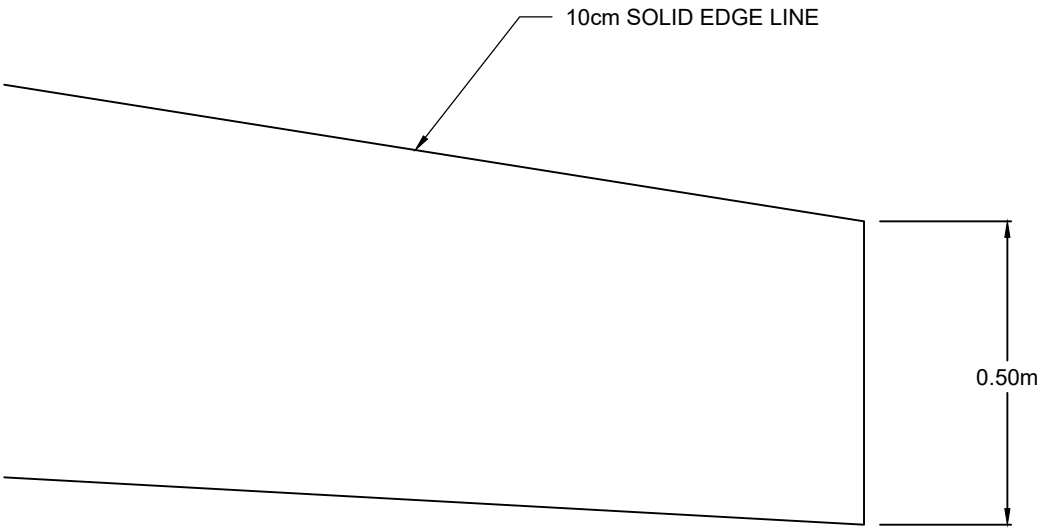
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.46



DIVERGING GORE DETAIL



MERGING GORE DETAIL

Merging / Diverging Gore Details

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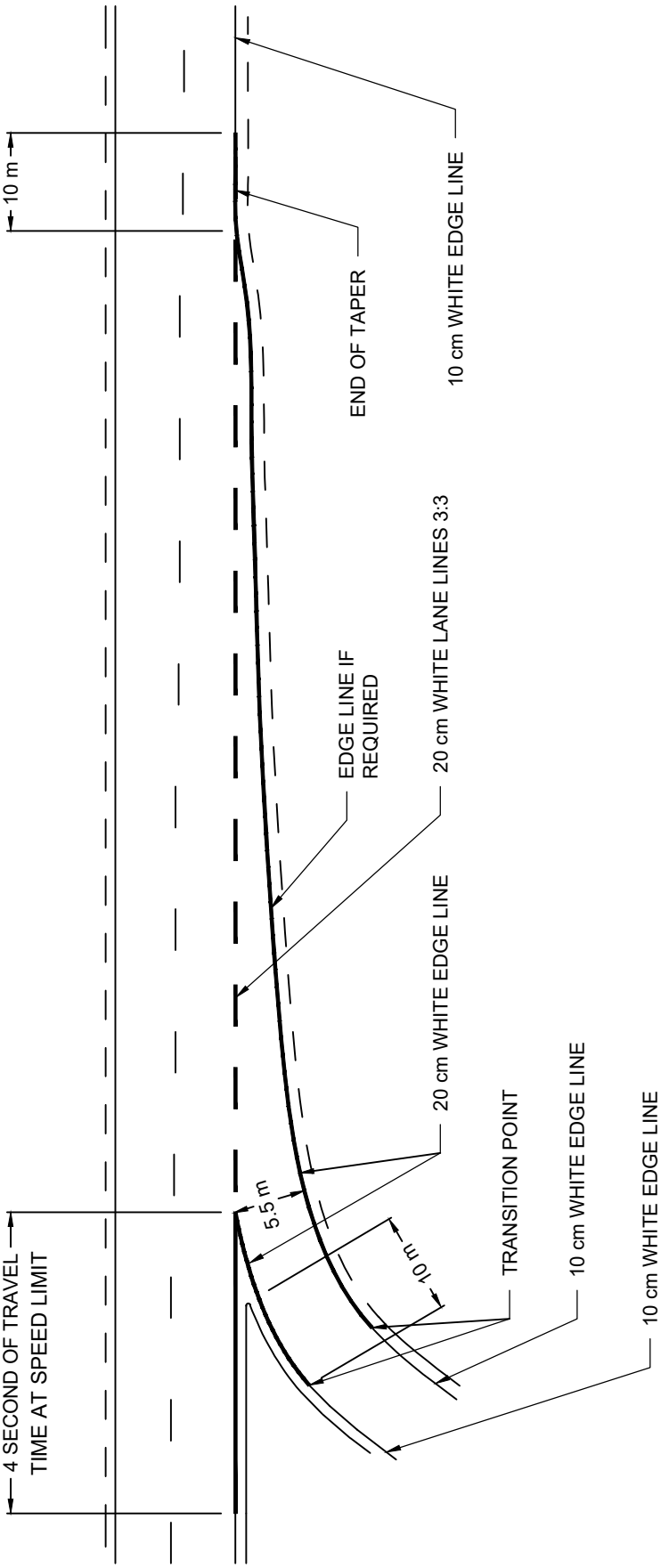
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.47



Merge Area

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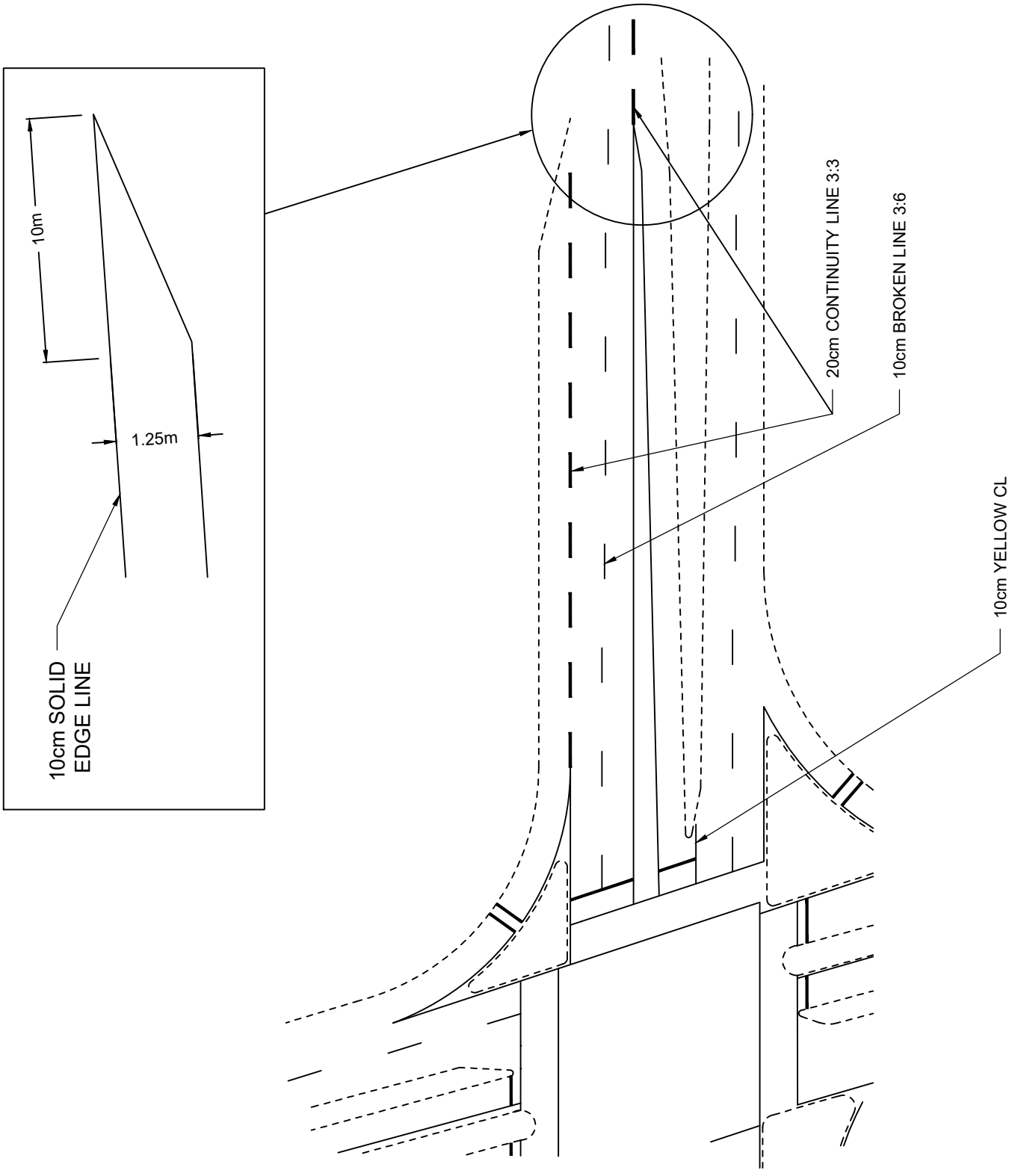
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.48



Left Turn Bay Marking With Slab-on Island

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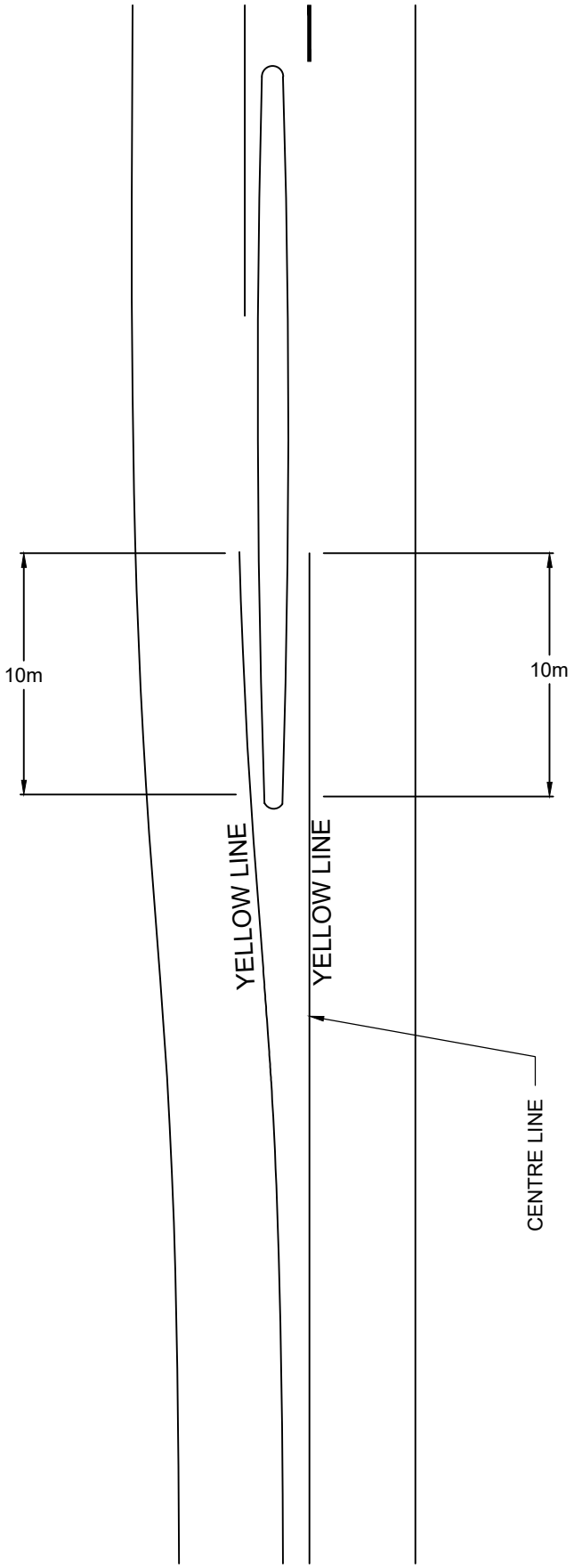
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021

SCALE: NTS

DRAWING NO.: 3.49



Diverge Area Opposing Flow

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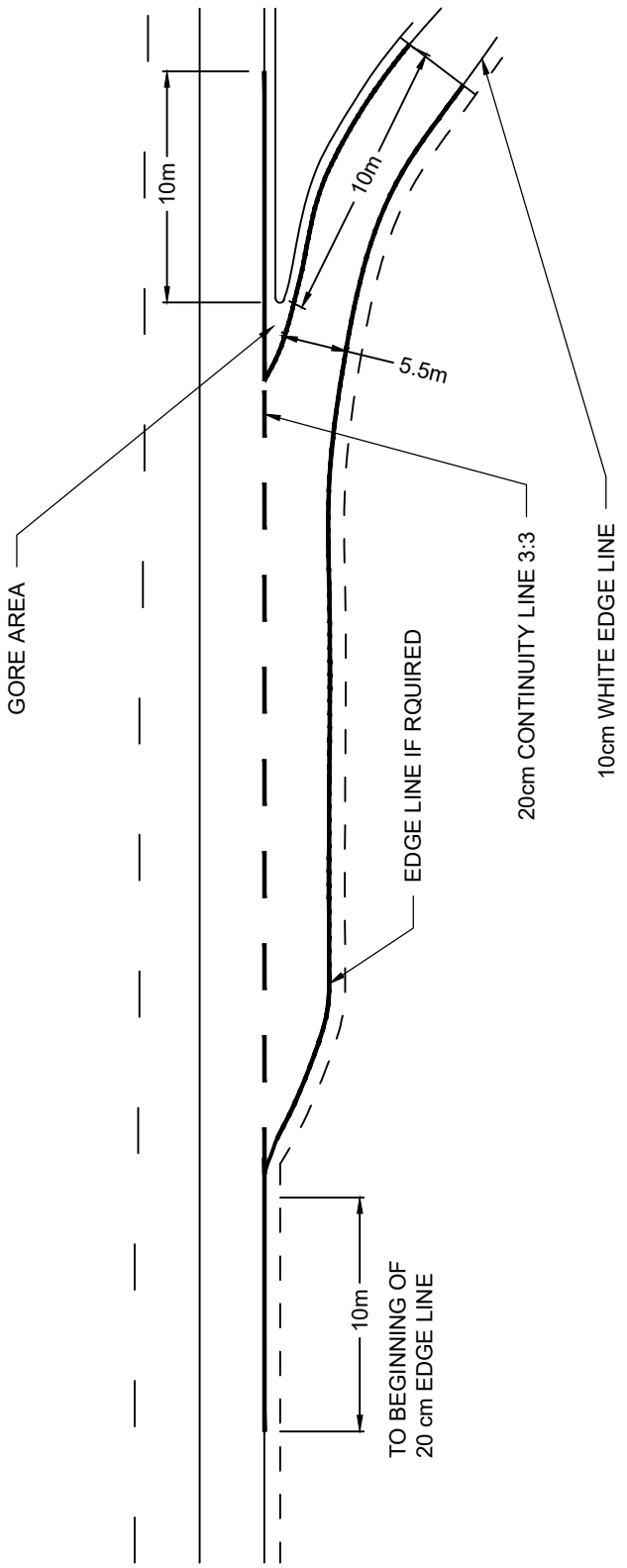
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.50



Diverge Area Common Flow

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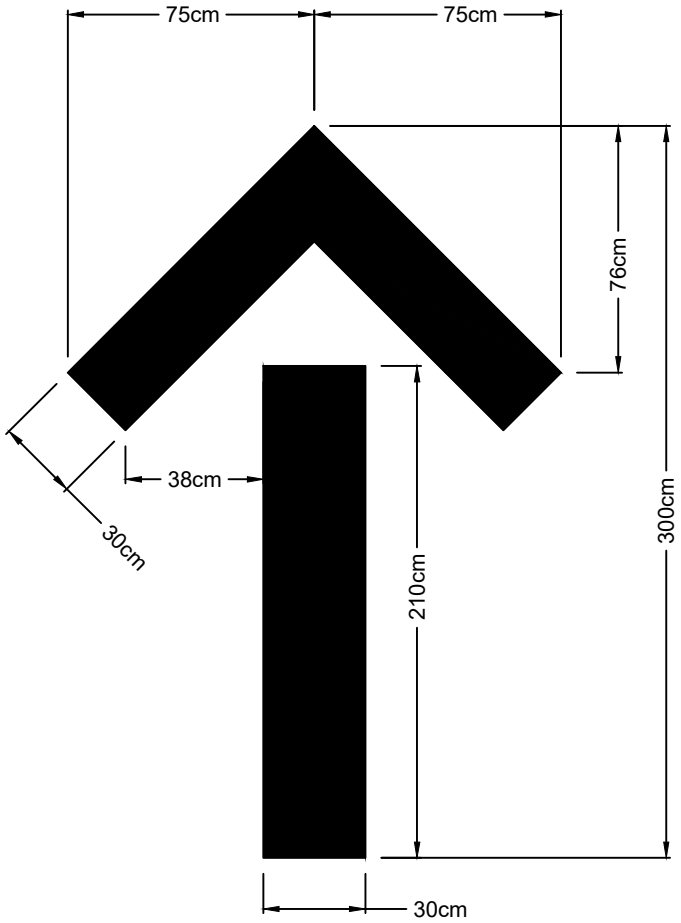
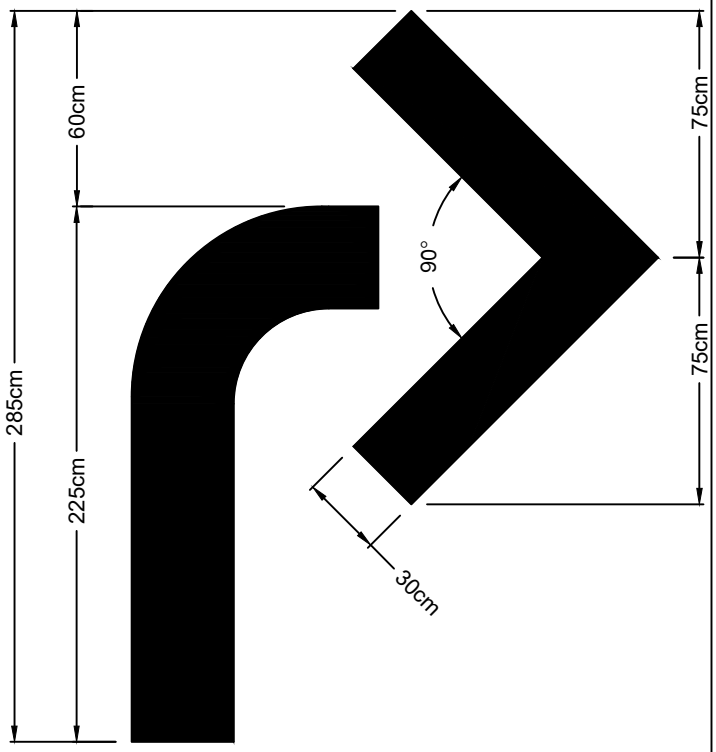
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.51





Single Arrow

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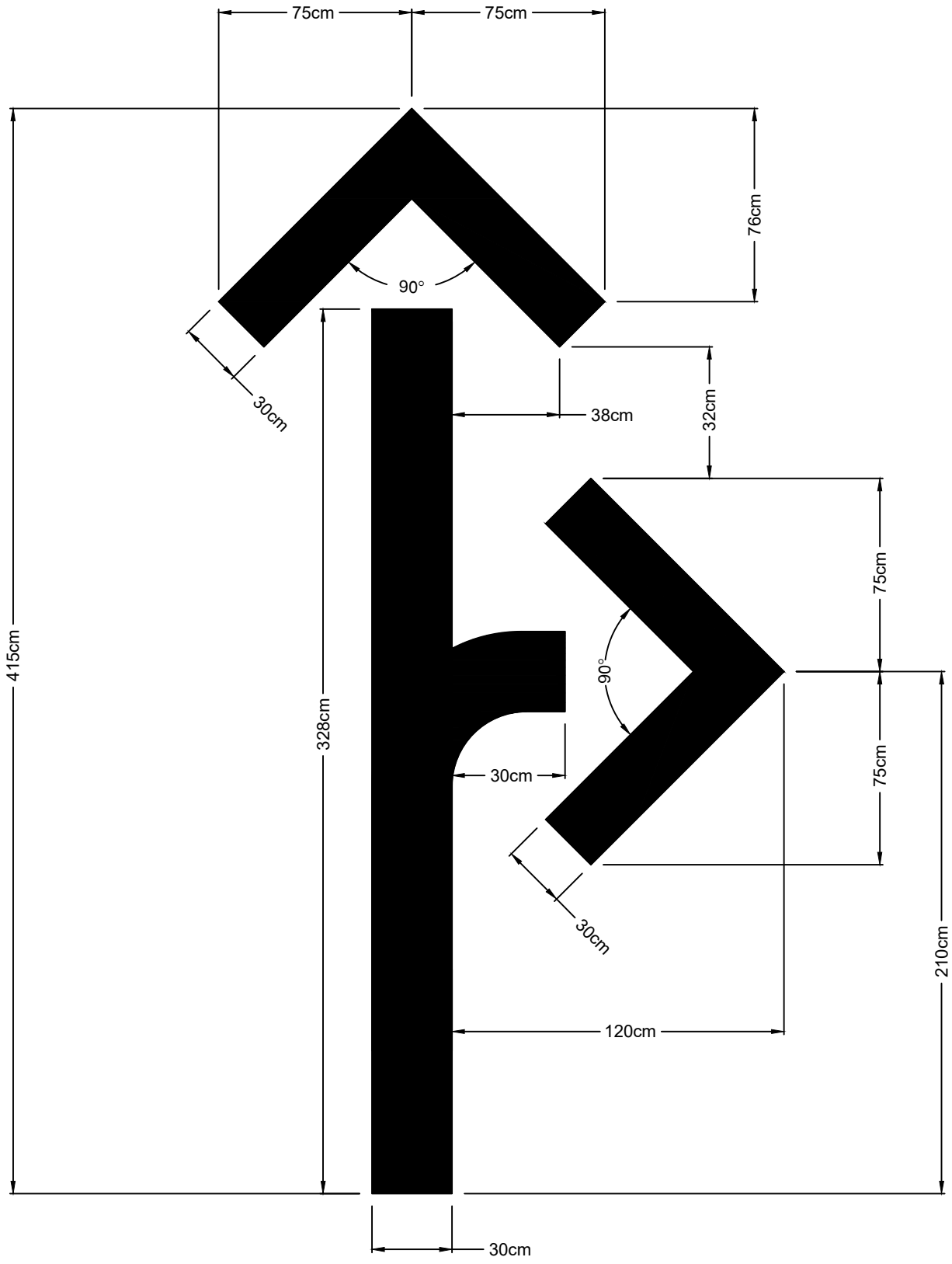
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE 11/18/21 | Scale: N.T.S. | SCALE NTS | DRAWING NO. 3.52



Double Arrow

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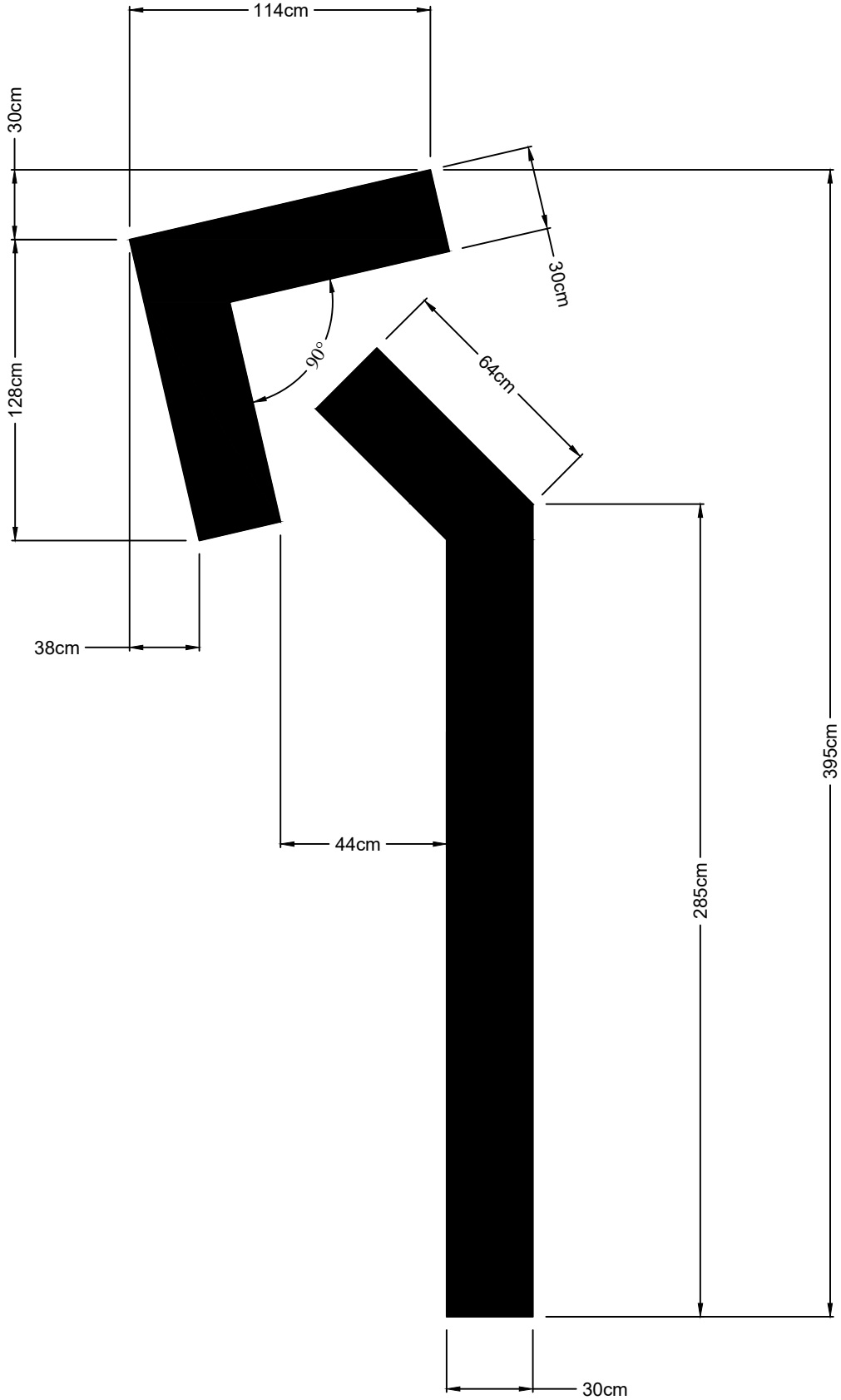
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	3.53



Merging Arrow

REVIEWED BY:

City of St. Albert Cultivate Life

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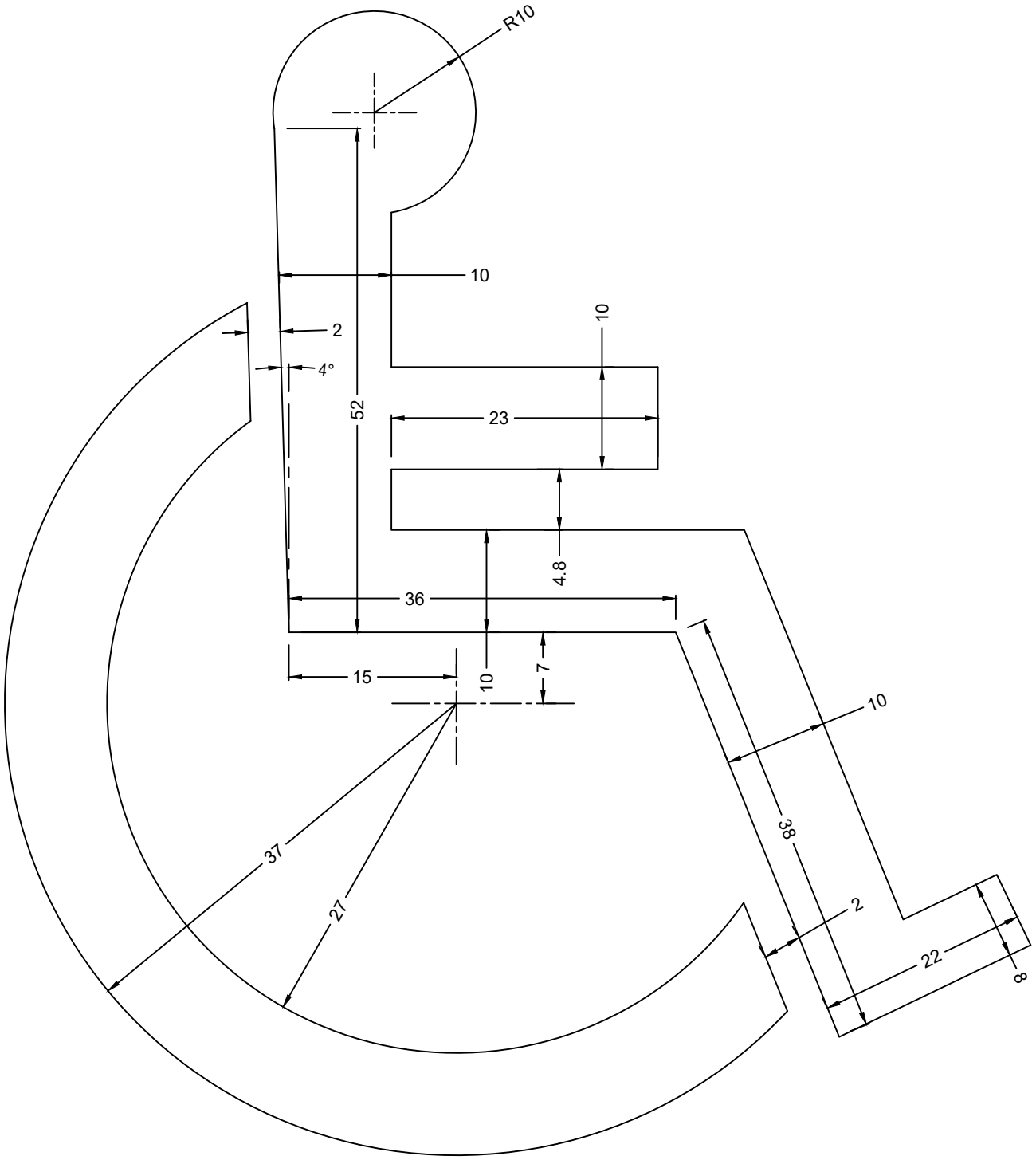
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE: Nov. 18, 2021

SCALE: NTS

DRAWING NO.: 3.54



NOTES:
1. ALL DIMENSIONS IN CENTIMETERS.

Handicap Symbol

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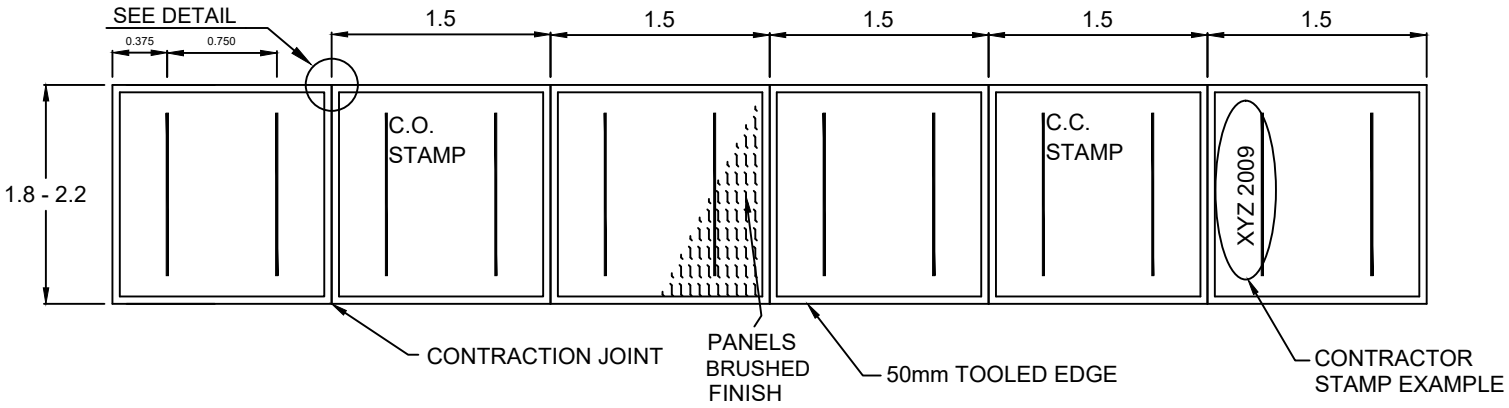
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

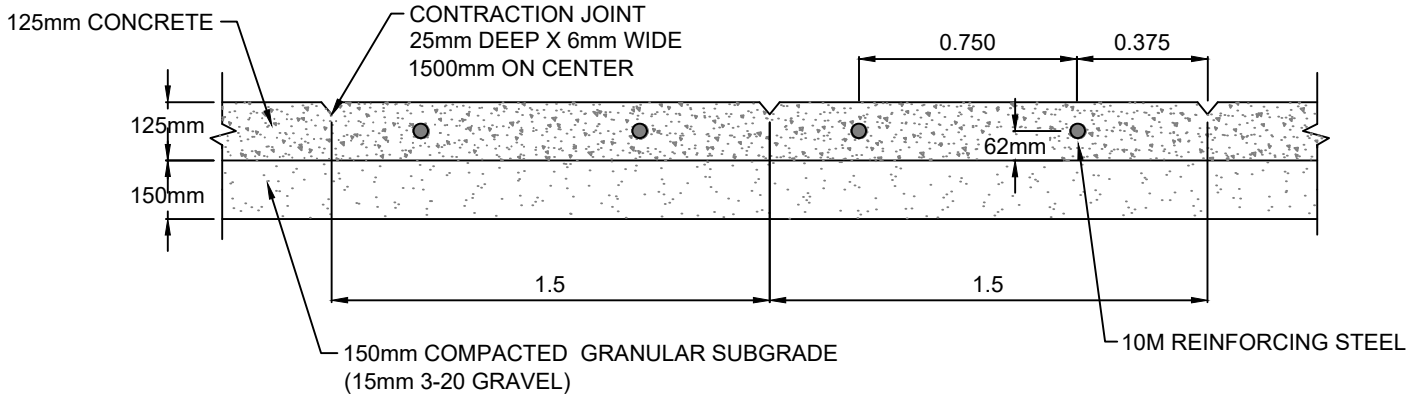
DATE: Nov. 18, 2021

SCALE: NTS

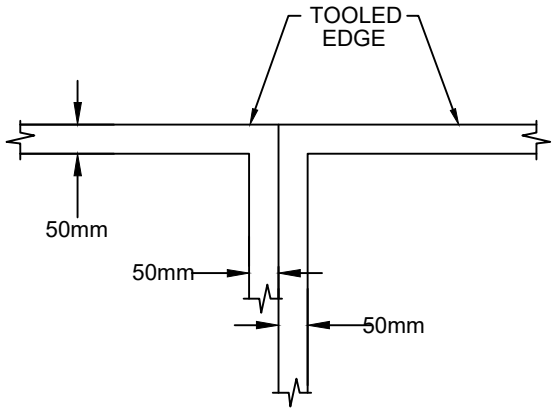
DRAWING NO.: 3.55



PLAN



PROFILE



DETAIL

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. B.O.W. ELEVATION ESTABLISHED BY PROJECTING 3% FROM T.O.C.
3. SIDEWALK CROSSFALL MIN 2.5%
4. TRANSVERSE CONTRACTION JOINTS EVERY 1.5m.
5. C.C. STAMP REQUIRED AND LOCATED PERPENDICULAR TO C.C. LOCATION.
6. CONTRACTOR CONSTRUCTION STAMP REQUIRED AT BEGINNING AND END OF DEVELOPMENT STAGE.

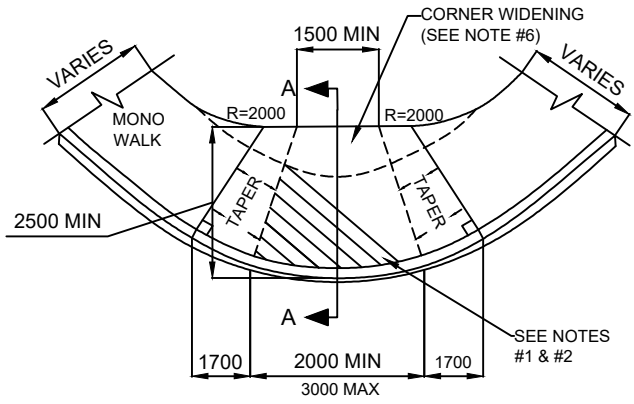
Extruded Concrete Sidewalk - Standard Detail

REVIEWED BY:

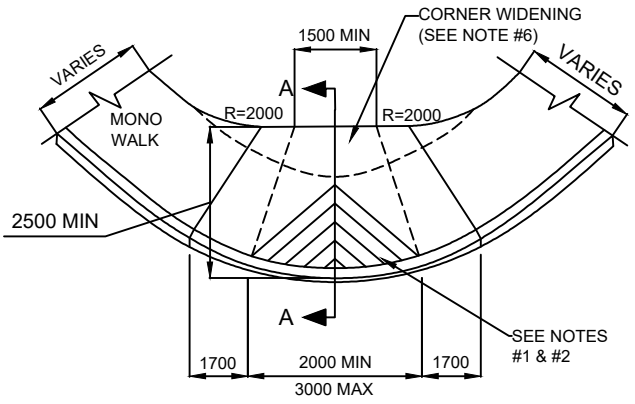
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

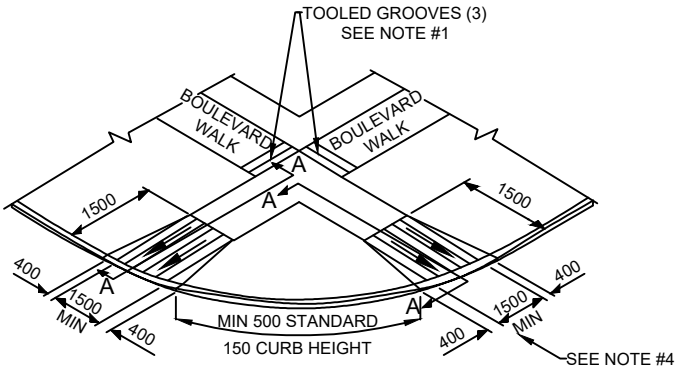
DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.1



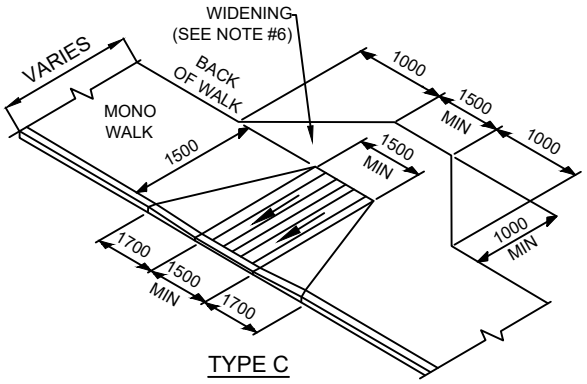
TYPE A1 (ONE DIRECTION)



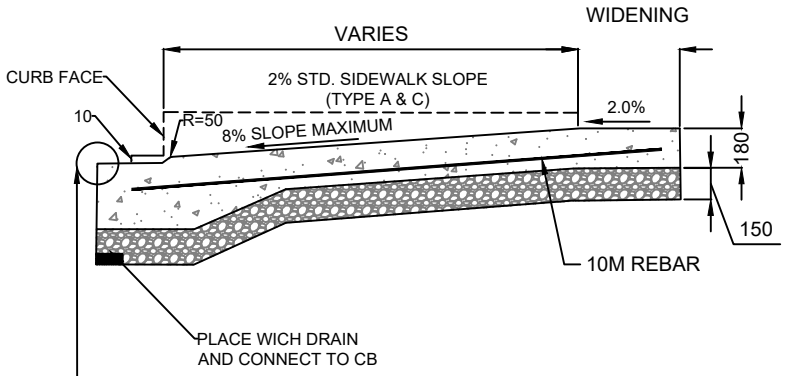
TYPE A2 (TWO DIRECTIONS)



TYPE B

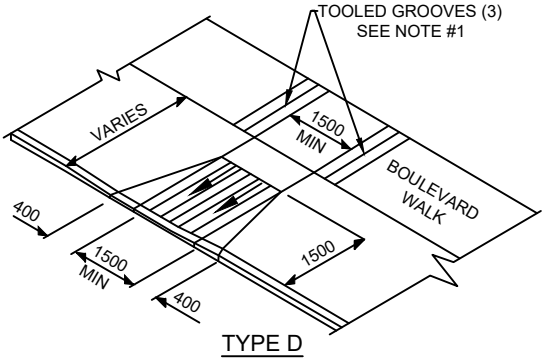


TYPE C



a) MATCH ASPHALT SURFACE TO GUTTER LIP WITHIN 3mm
b) IF ASPHALT TOPLIFT IS DEFERRED, PLACE ASPHALT RAMP FOR THE WIDTH OF CURB RAMP, AND EXTENDING MINIMUM 1.0m UNTO ROAD.

TYPICAL CROSS SECTION A-A



TYPE D

NOTES:
1. CONCRETE TO MEET CoSA STANDARD.
2. TOOLED GROOVES 5mm WIDE X 10mm DEEP, BROOM FINISH. GROOVE SPACING 150mm O,C, ADJACENT TO CURB.
3. GROOVES TO BE IN DIRECTION OF TRAVEL.
4. WHEN REQUIRED, TRANSITION FROM STRAIGHT FACE CURB TO ROLLED FACE CURB AT CURB RAMP.
5. CURBS AND RAMPS TO BE POURED MONOLITHICALLY
6. WIDTH OF RAMP MUST EQUAL WIDTH OF WALK (MIN 1.5m, MAX 3.0m) EXCEPT "TYPE A."
7. PROVIDE 1.0m WIDENING (AT 2.0% X-FALL) FROM BACK OF CURB RAMP (TYPES A & C) WHERE ROAD RIGHT-OF-WAY ALLOWS.

Typical Intersection Curb Ramp and Boulevard Ramp

REVIEWED BY:

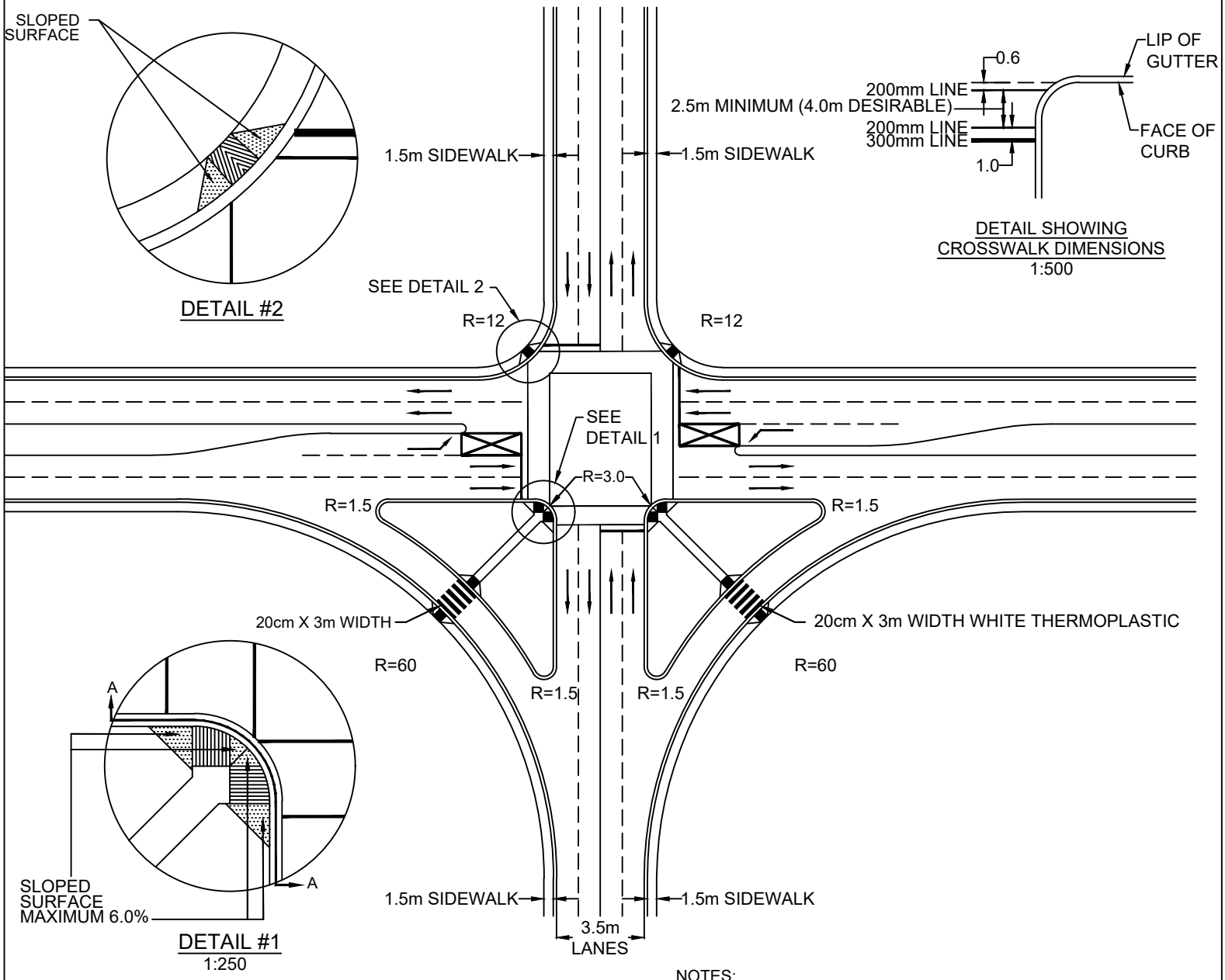
Faizal Kanji

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

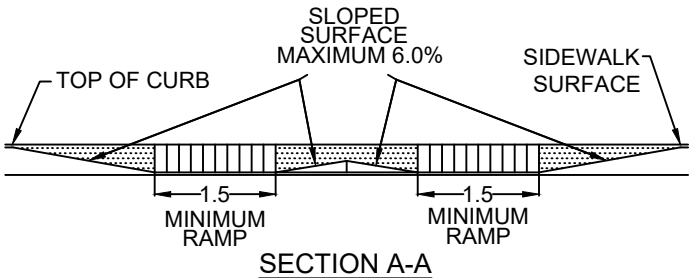
DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.2



DETAIL #2

DETAIL #1
1:250

DETAIL SHOWING CROSSWALK DIMENSIONS
1:500



SECTION A-A
N.T.S.

NOTES:

1. SIDEWALK RAMPS MUST PROVIDE ACCESS DIRECTLY TO CROSSWALKS.
2. THE SECTION OF CURB RAMP TYPE OS DEPENDANT ON THE LOCATION OF THE CROSSWALK RELATIVE TO THE CURB FACE. WHERE THE CURB RETURN RADIUS IS GREATER THAN OR EQUAL TO 4.0m, ONE TYPE 2 RAMP CAN BE USED. WHERE THE CURB RETURN RADIUS IS LESS THAN 4.0m, TYPE 1 RAMPS ARE REQUIRED.
3. WHERE CROSSWALKS ARE CONTROLLED BY SIGNALS WITH A PUSH-BUTTON SYSTEM, THE SIDEWALKS AND RAMPS MUST ALLOW ACCESS BY WHEELCHAIR TO THE PUSH-BUTTON.
4. REFER TO DRAWINGS 4.6 & 4.7 FOR DETAIL OF TYPE 1 AND TYPE 2 RAMPS.
5. ON A SHARP CORNER WHERE TWO TYPE 1 RAMPS ARE BEING USED, THE SLOPE ON THE FLARED AREAS CAN BE LESS THAN THE 8% MAX SLOPE SHOWN. THIS WILL PROVIDE A SMOOTHER SIDEWALK FOR GENERAL USE, ESPECIALLY FOR PEDESTRIANS WHO ARE NOT USING THE CROSSWALK.
6. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE NOTED.

Layout of Crosswalks and Ramps at Urban Intersections

REVIEWED BY:

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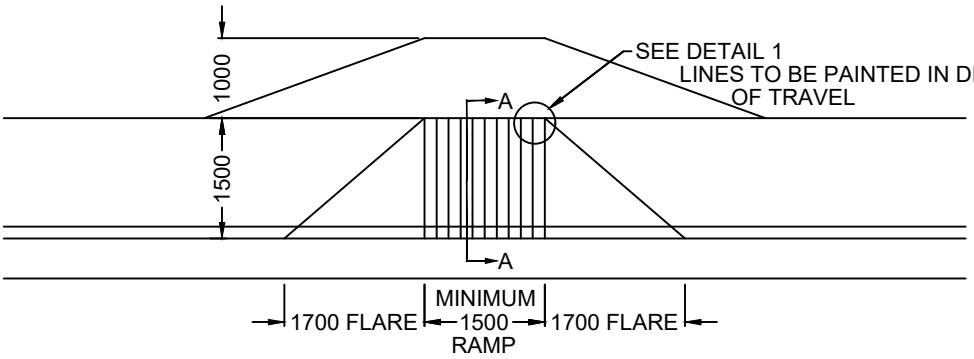
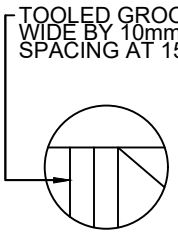
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

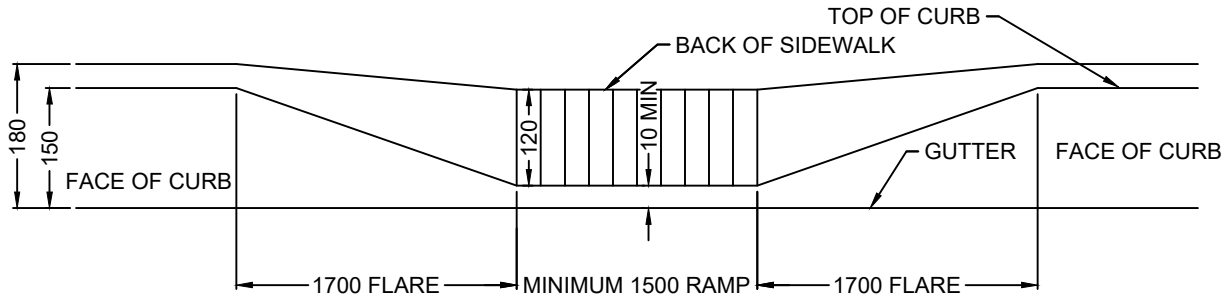
DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	4.3



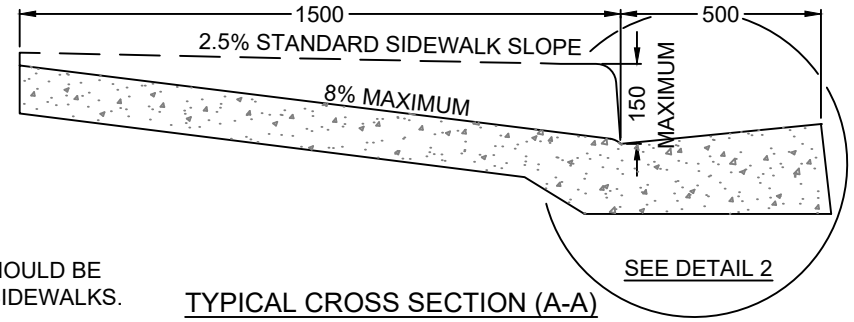
TYPICAL PLAN VIEW



DETAIL 1



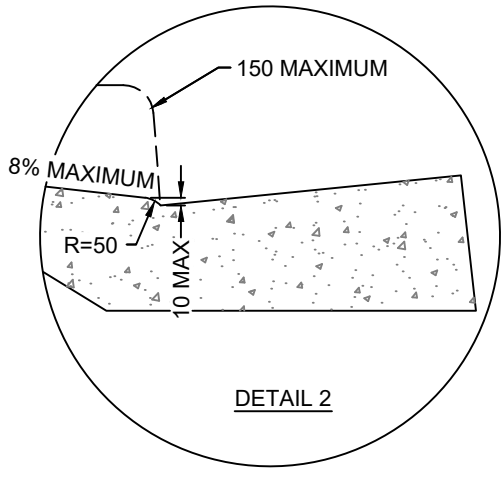
TYPICAL ELEVATION



TYPICAL CROSS SECTION (A-A)

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. RAMPS FOR USERS OF WHEELCHAIRS & BICYCLES SHOULD BE LOCATED AT ALL JUNCTIONS OF CROSSWALKS AND SIDEWALKS. RAMPS MUST BE LOCATED WITHIN A CROSSWALK.
3. GROOVES ON SIDEWALK RAMPS ARE TO ALERT PERSONS, WHO ARE VISUALLY IMPAIRED, OF THE CURBE-CUT AND A STREET CROSSING.
4. WHERE CROSSWALKS ARE CONTROLLED BY SIGNALS WITH A PUSH BUTTON SYSTEM, THE SIDEWALKS AND RAMPS MUST ALLOW ACCESS BY WHEELCHAIR TO THE PUSH BUTTON.
5. CONCRETE SIDEWALKS, CURBS, AND RAMPS TO BE POURED MONOLITHICALLY.
6. MINIMUM WIDTH OF RAMP IS 1.5m. IT MAY BE NECESSARY TO BUILD WIDER RAMPS IN BUSY URBAN AREAS WHERE THE VOLUME OF PEDESTRIAN TRAFFIC IS HIGH.
7. MAXIMUM RAMP SLOPE IS 8%
8. WHERE THE SIDEWALK IS LESS THAN 1.5m WIDE, THE 8% MAXIMUMS SLOPE SHOULD NOT BE EXCEEDED AND THEREFORE THE BACK OF THE SIDEWALK MUST BE LOWERED ACCORDINGLY.
9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



DETAIL 2

Sidewalk Ramp for Wheelchairs and Bicycles on Corner (Type C)

REVIEWED BY:

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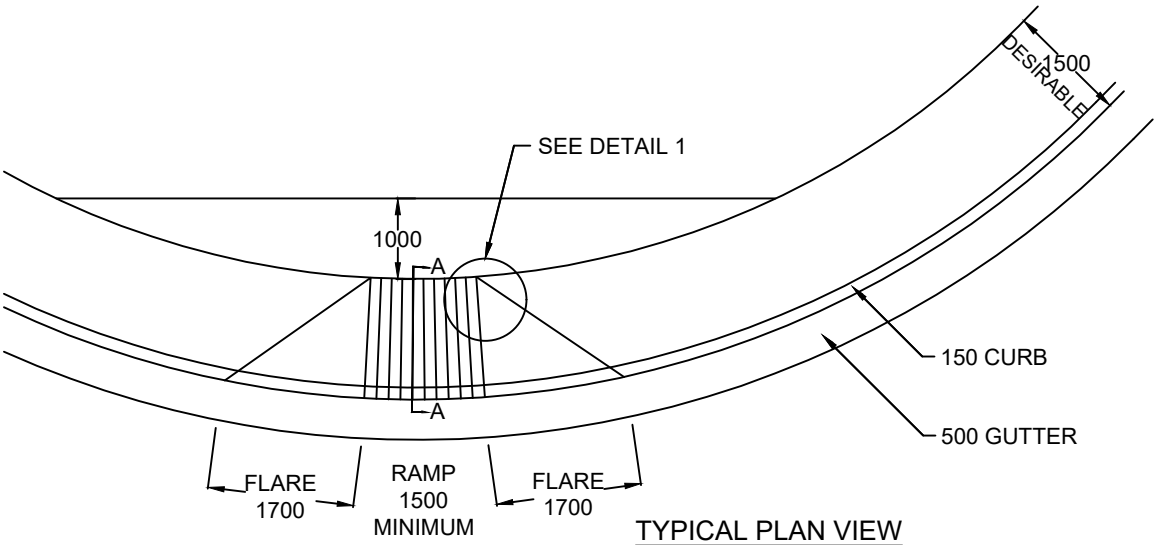
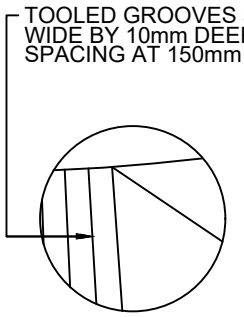
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

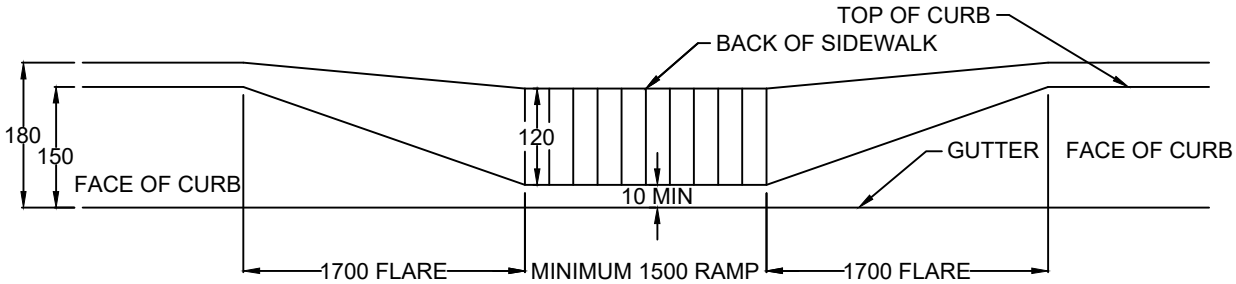
DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	4.4



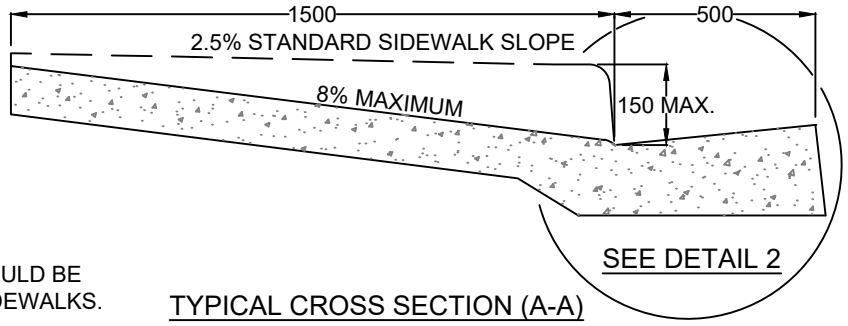
TYPICAL PLAN VIEW



DETAIL 1



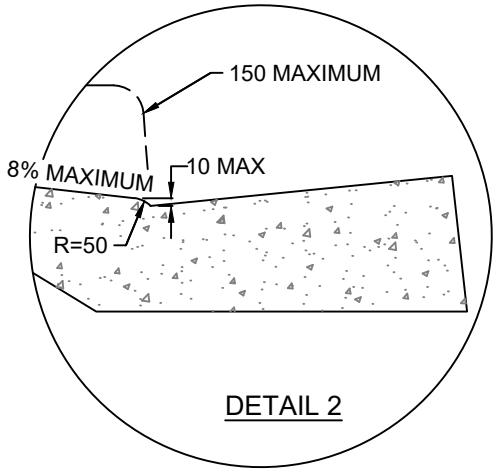
TYPICAL ELEVATION



TYPICAL CROSS SECTION (A-A)

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. RAMPS FOR USERS OF WHEELCHAIRS & BICYCLES SHOULD BE LOCATED AT ALL JUNCTIONS OF CROSSWALKS AND SIDEWALKS. RAMPS MUST BE LOCATED WITHIN A CROSSWALK.
3. GROOVES ON SIDEWALK RAMPS ARE TO ALERT PERSONS, WHO ARE VISUALLY IMPAIRED, OF THE CURBE-CUT AND A STREET CROSSING.
4. WHERE CROSSWALKS ARE CONTROLLED BY SIGNALS WITH A PUSH BUTTON SYSTEM, THE SIDEWALKS AND RAMPS MUST ALLOW ACCESS BY WHEELCHAIR TO THE PUSH BUTTON.
5. CONCRETE SIDEWALKS, CURBS, AND RAMPS TO BE POURED MONOLITHICALLY.
6. MINIMUM WIDTH OF RAMP IS 1.5m. IT MAY BE NECESSARY TO BUILD WIDER RAMPS IN BUSY URBAN AREAS WHERE THE VOLUME OF PEDESTRIAN TRAFFIC IS HIGH.
7. MAXIMUM RAMP SLOPE IS 8%
8. WHERE THE SIDEWALK IS LESS THAN 1.5m WIDE, THE 8% MAXIMUMS SLOPE SHOULD NOT BE EXCEEDED AND THEREFORE THE BACK OF THE SIDEWALK MUST BE LOWERED ACCORDINGLY.
9. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.



DETAIL 2

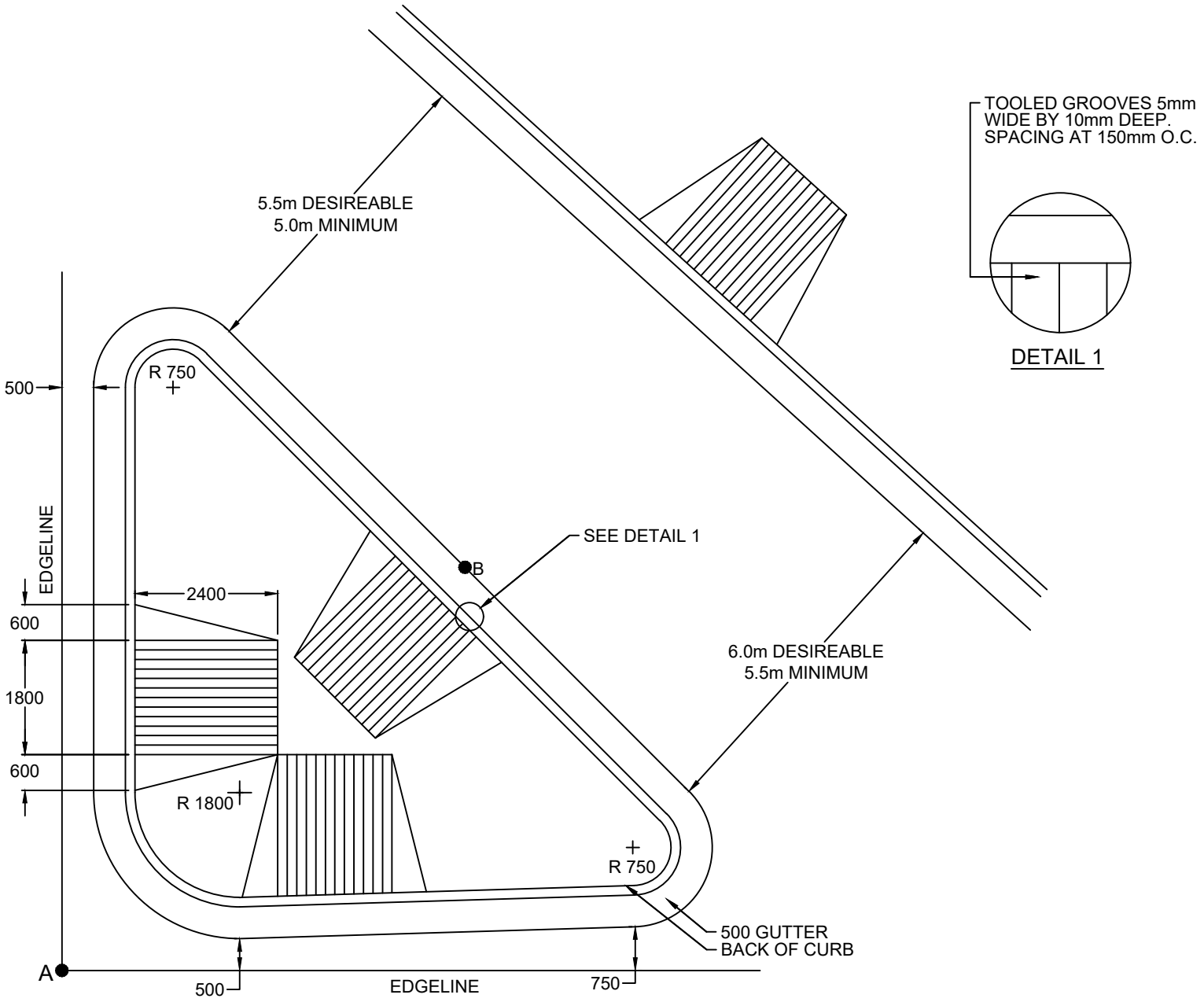
Sidewalk Ramp for Wheelchairs or Bicycles on Corner (Type A)

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	4.5



PLAN VIEW

NOTES:

1. CONCRETE TO MEET CoSA STANDARD.
2. MINIMUM DIMENSION POINT A TO B IS 9.0m
3. WHERE CROSSWALKS ARE CONTROLLED BY SIGNALS WITH A PUSH BUTTON SYSTEM, THE SIDEWALKS AND RAMPS MUST ALLOW ACCESS BY WHEELCHAIR TO THE PUSH BUTTON.
4. RAMP LENGTH OF 2.4m IS BASED ON A CURB HEIGHT OF 200mm AND A MAXIMUM RAMP INCLINE OF 8%
5. ADD 10M REINFORCING RODS TO THE ENDS OF ALL BULLNOSES, MEDIANS, AND TRAFFIC ISLANDS.
6. FILL MATERIAL FOR ISLANDS SHALL BE EARTH, CONCRETE OR ASPHALTIC CONCRETE AS SPECIFIED.
7. SIDEWALKS AND RAMPS SHALL BE CONCRETE.
8. CROSSFALL MINIMUM OF 2% ACROSS ISLAND.
9. ALL DIMENSIONS ARE IN MILLIMETERS.

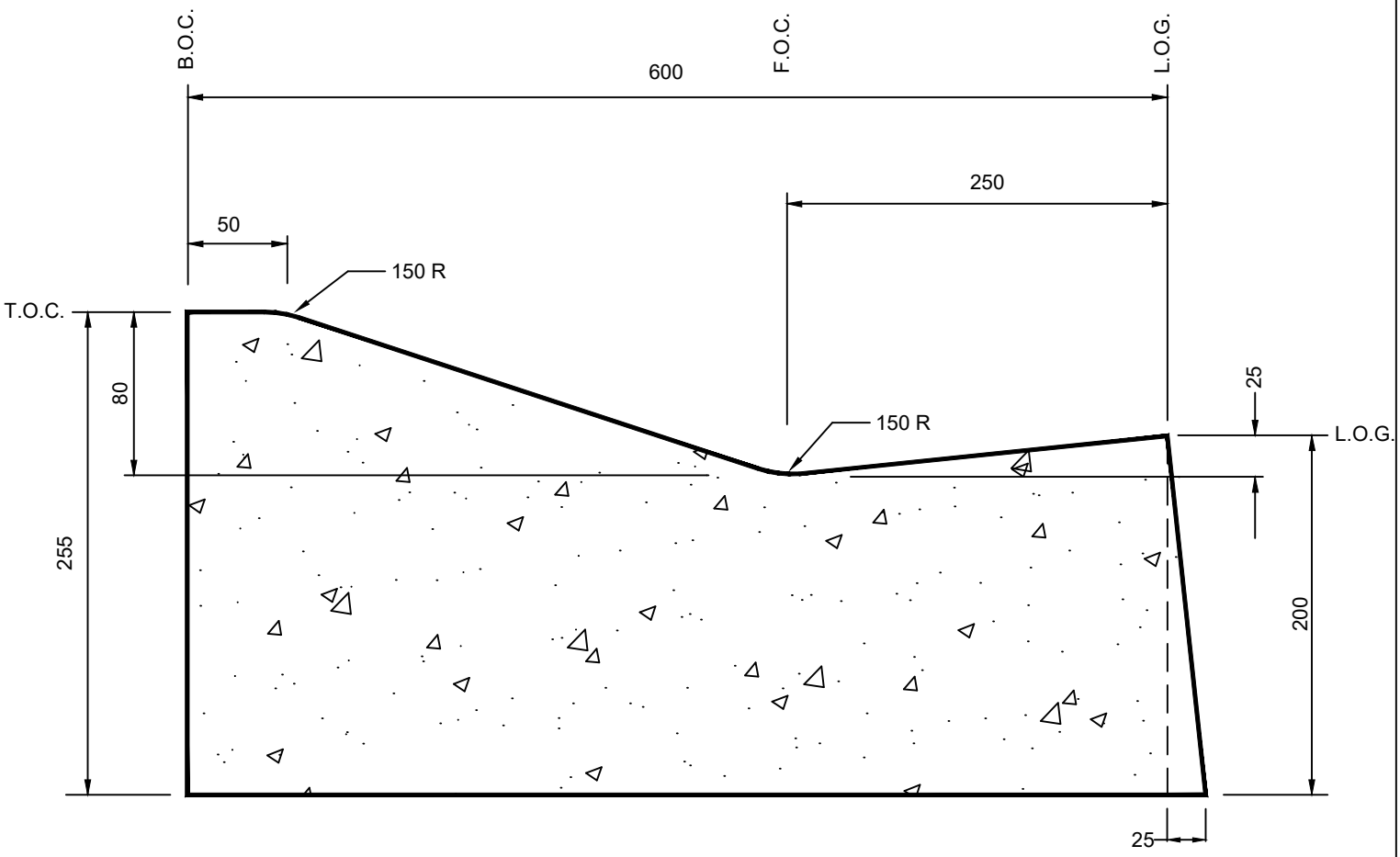
Intersection Islands - Minimum Size

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	4.6



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE TO MEET CoSA STANDARD.

Roll Face Curb and Gutter (Mountable)

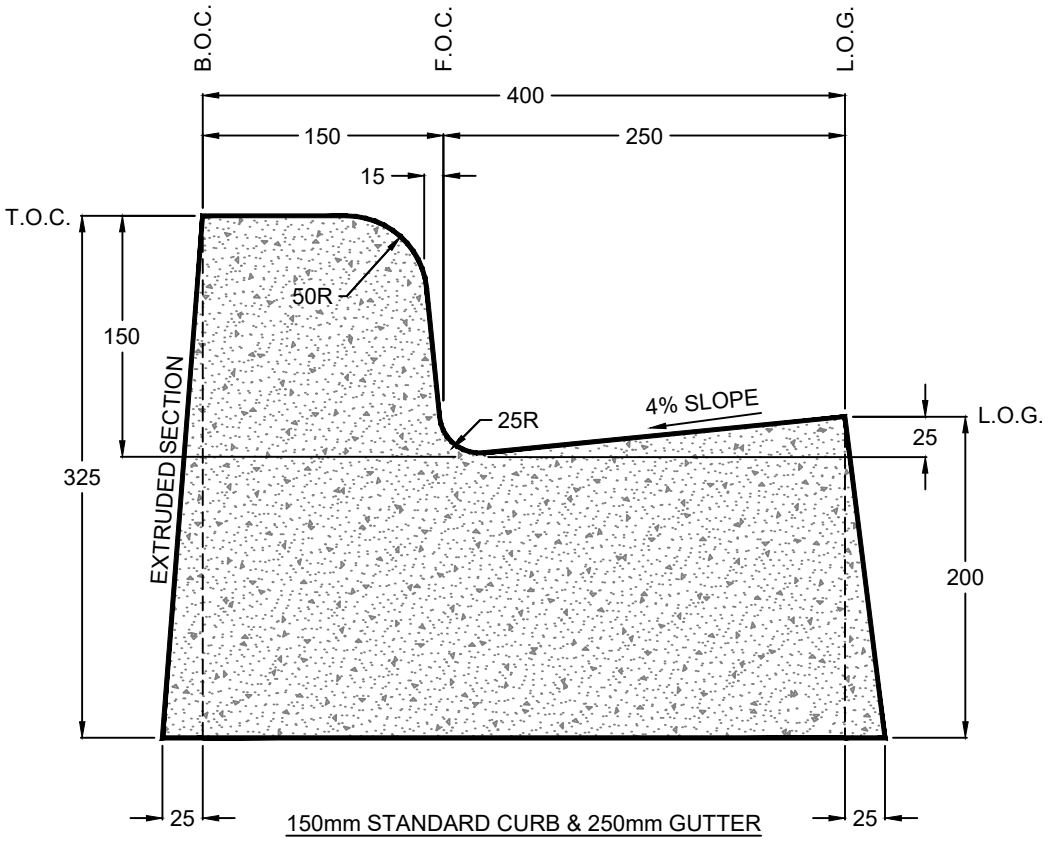
REVIEWED BY:

Faizal Kanji

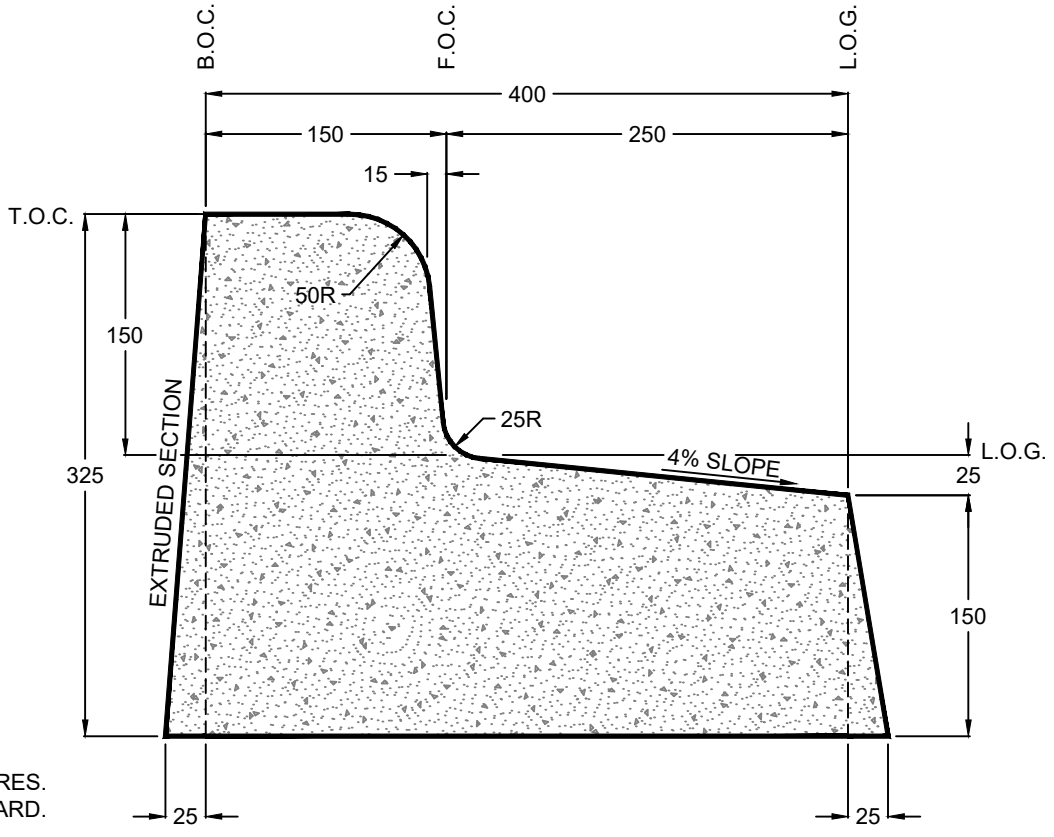
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.8



150mm STANDARD CURB & 250mm GUTTER



150mm STANDARD CURB & 250mm REVERSE GUTTER

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE TO MEET CoSA STANDARD.

150mm Standard Reverse Curb 250mm Gutter

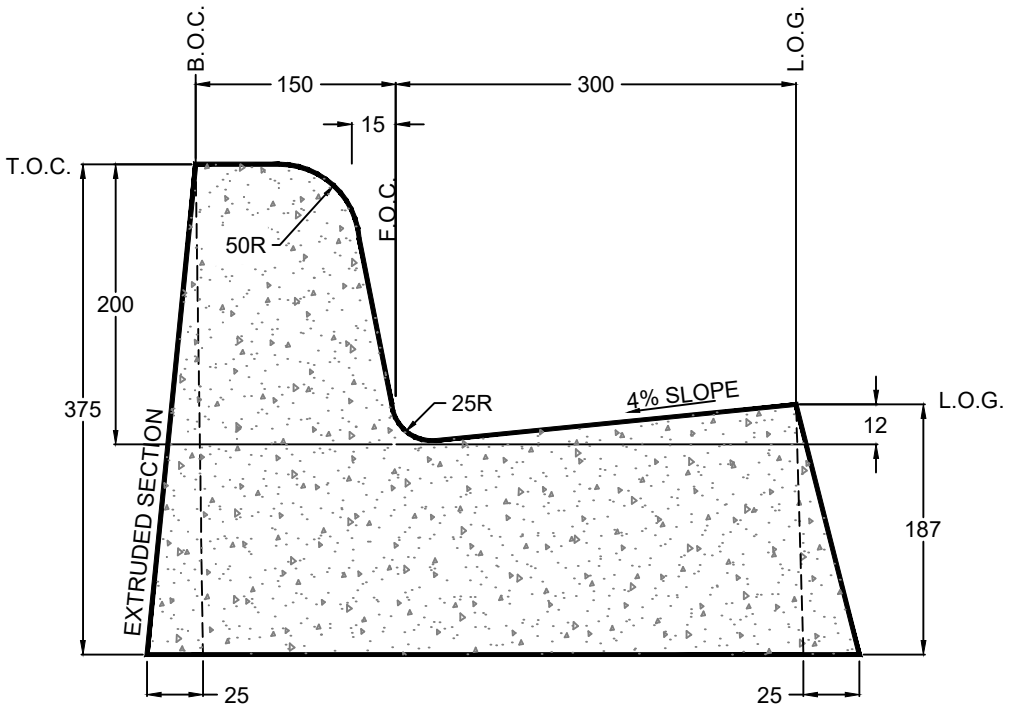
REVIEWED BY:

Faizal Kanji

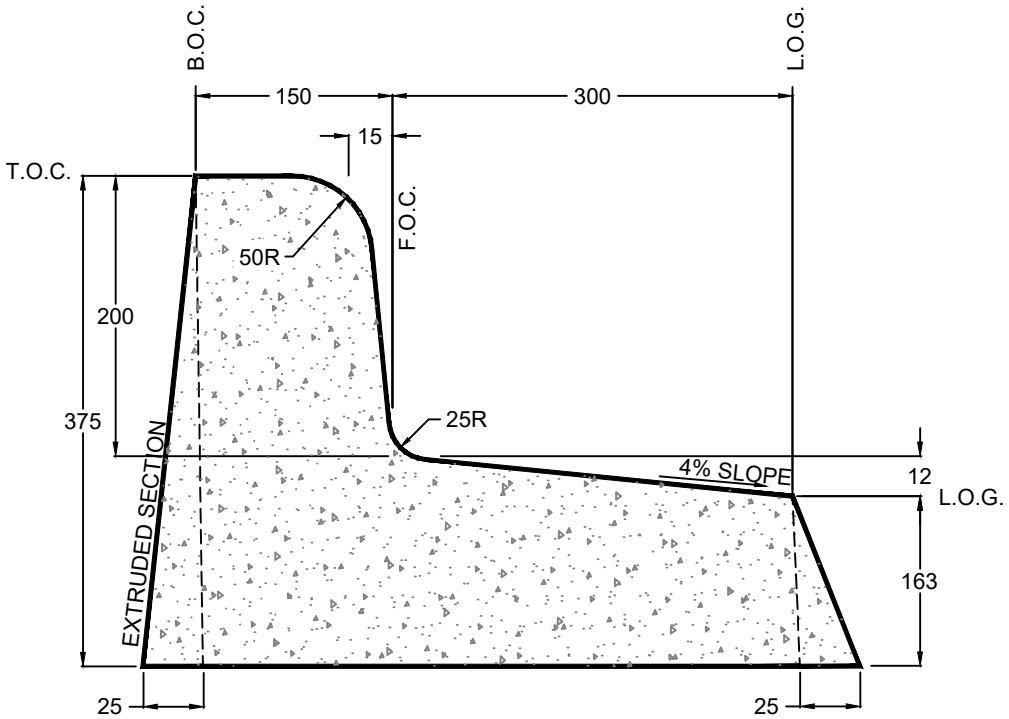
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.9



200mm STANDARD CURB & 300mm GUTTER



200mm STANDARD CURB & 300mm REVERSE GUTTER

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE TO MEET CoSA STANDARD.

200 mm Standard Curb With 300 mm Gutter - REHAB ONLY

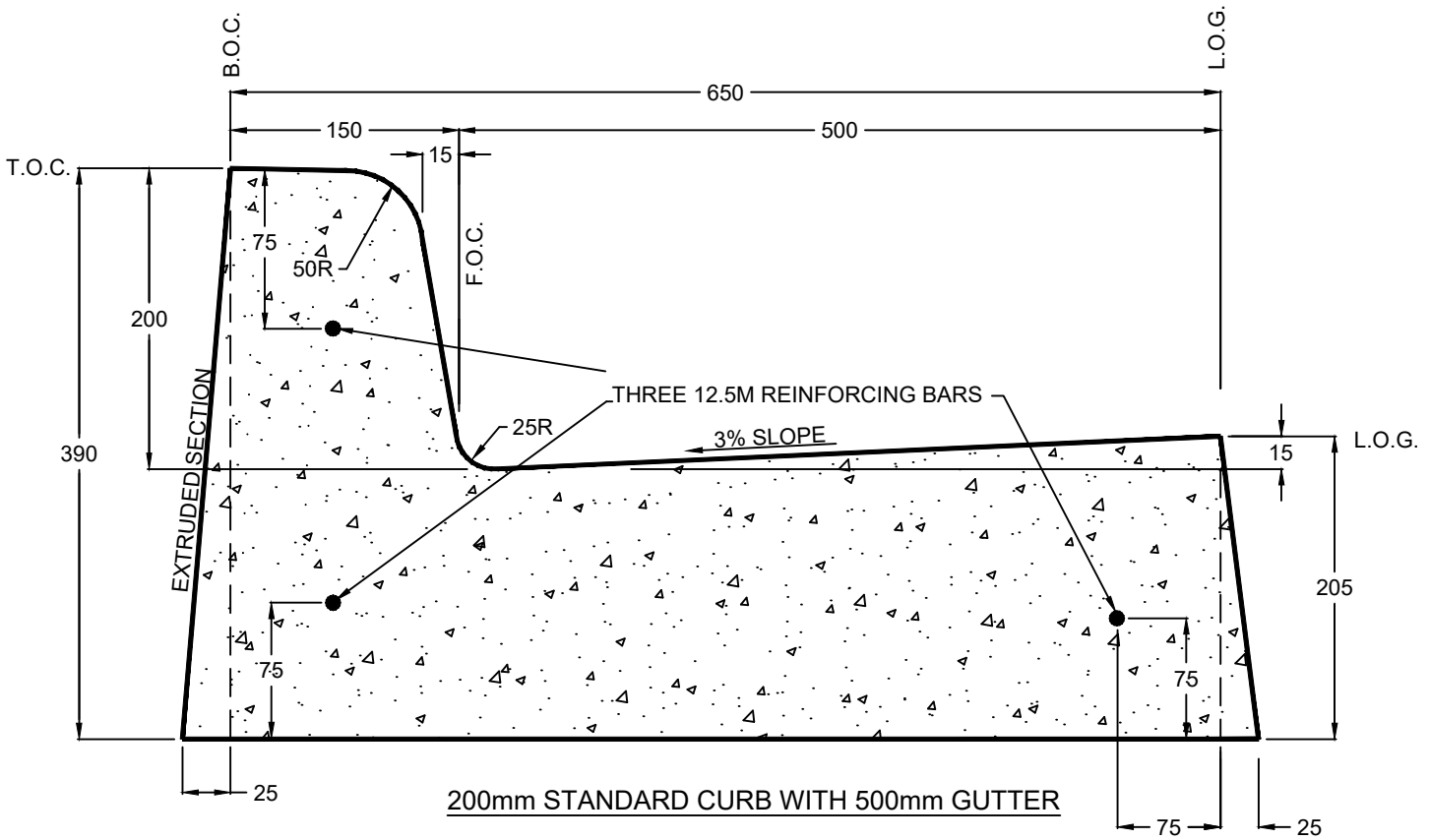
REVIEWED BY:

Faizal Kanji

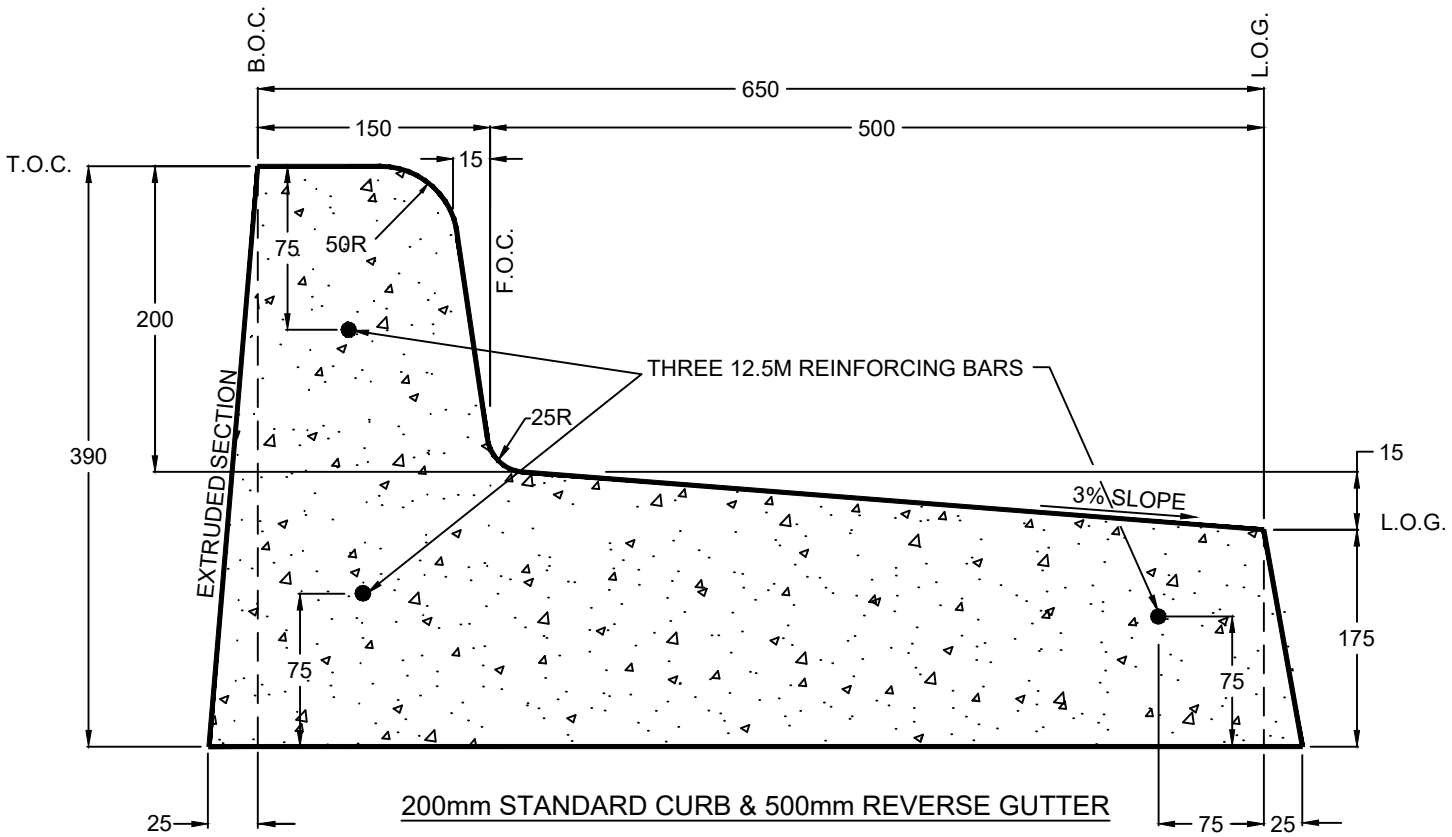
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.10



200mm STANDARD CURB WITH 500mm GUTTER



200mm STANDARD CURB & 500mm REVERSE GUTTER

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE TO MEET CoSA STANDARD.

200 mm Standard Curb & 500 mm Gutter

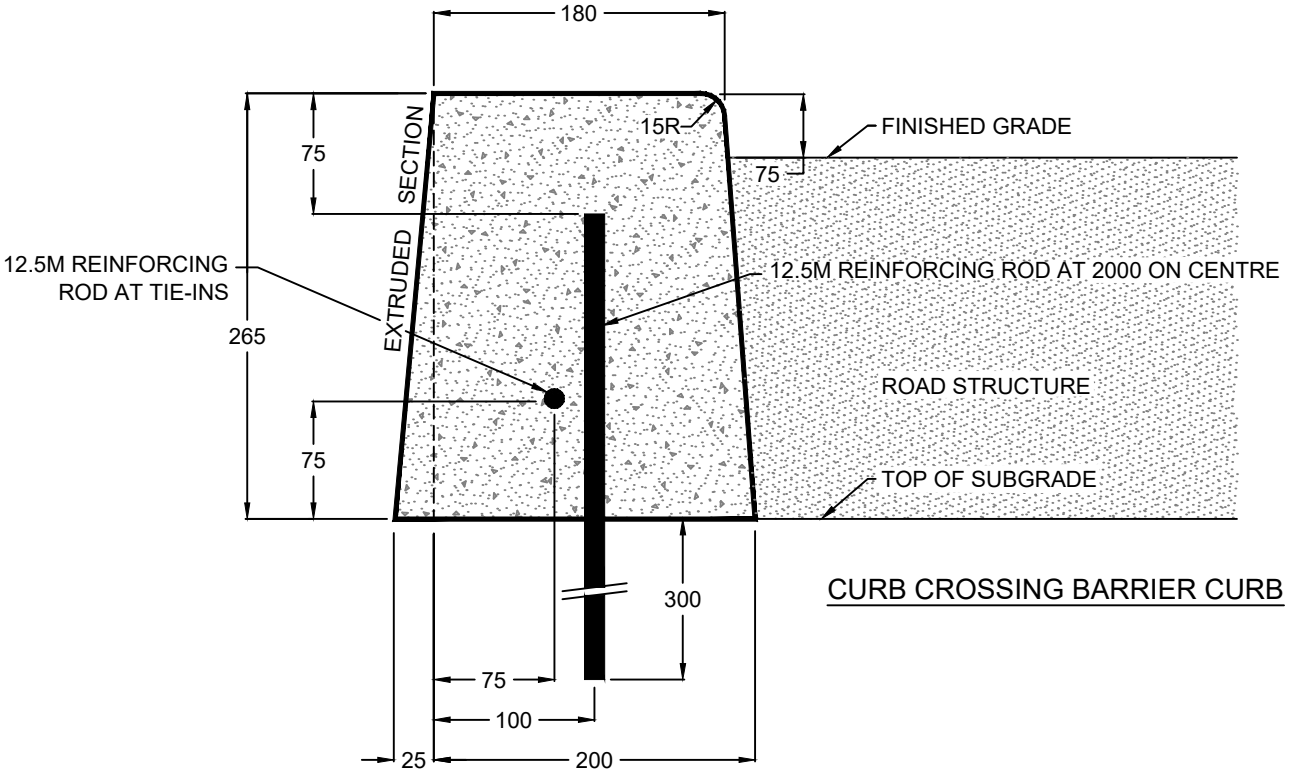
REVIEWED BY:

Faizal Kanji

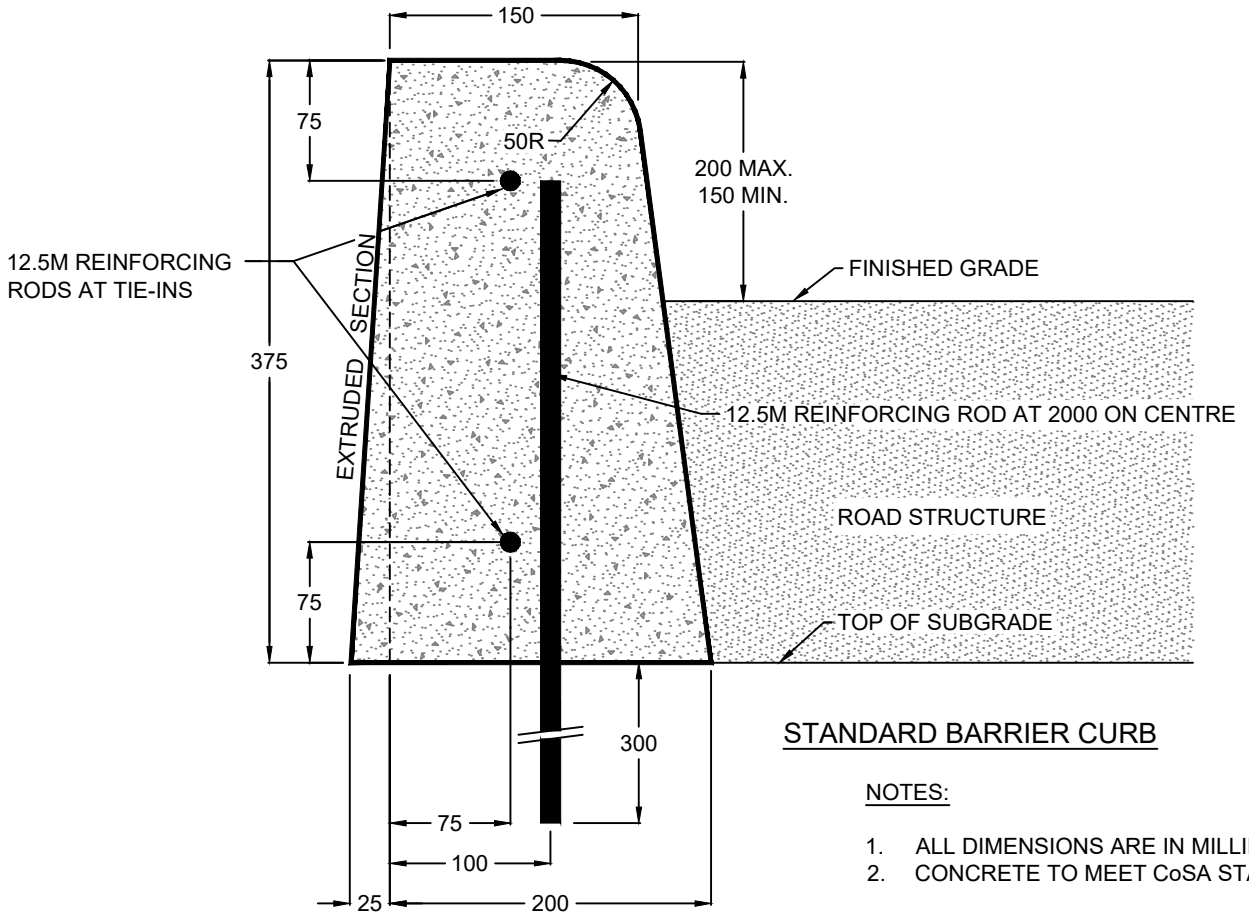
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.11



CURB CROSSING BARRIER CURB



STANDARD BARRIER CURB

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE TO MEET CoSA STANDARD.

Standard Barrier Curb & Curb Crossing

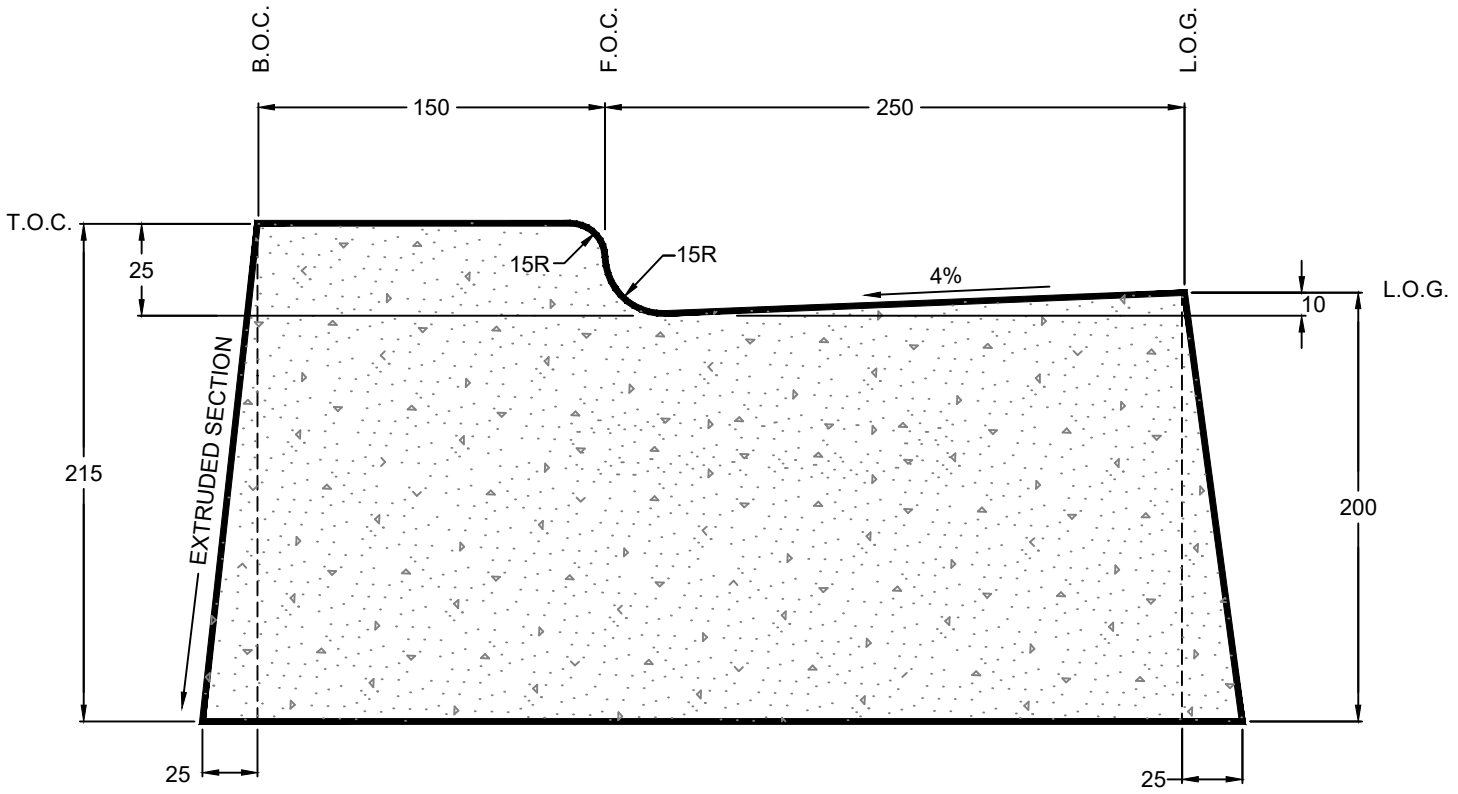
REVIEWED BY:

Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	4.12



DROP CURB

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. CONCRETE TO MEET CoSA STANDARD.

Drop Curb

REVIEWED BY:

Faizal Kanji

City of St. Albert Cultivate Life

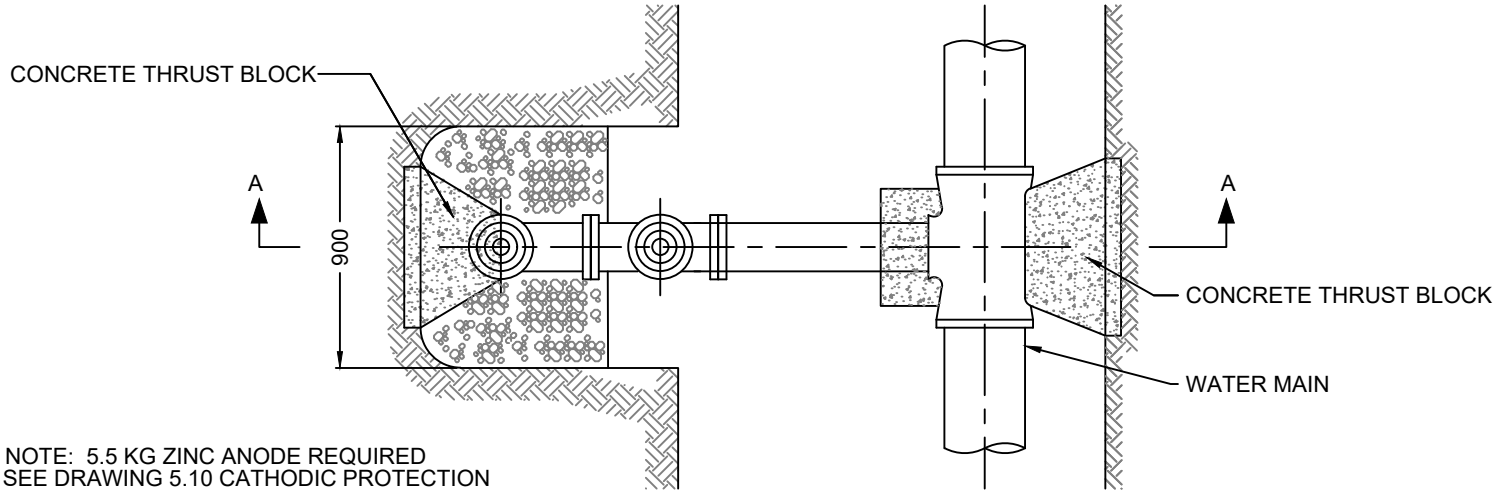
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE 11/10/2021

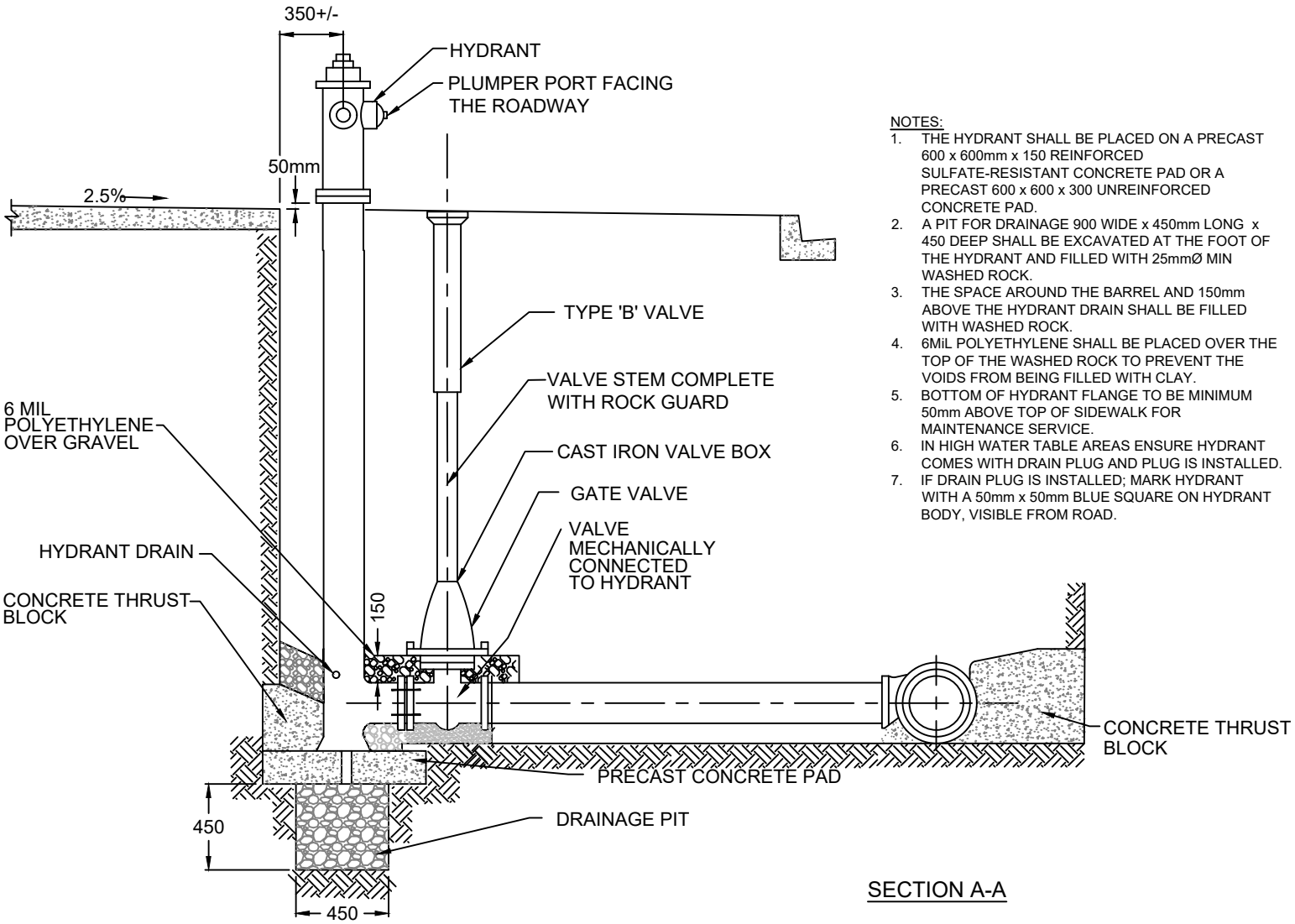
SCALE NTS

DRAWING NO. 4.13



NOTE: 5.5 KG ZINC ANODE REQUIRED
SEE DRAWING 5.10 CATHODIC PROTECTION

PLAN



NOTES:
1. THE HYDRANT SHALL BE PLACED ON A PRECAST 600 x 600mm x 150 REINFORCED SULFATE-RESISTANT CONCRETE PAD OR A PRECAST 600 x 600 x 300 UNREINFORCED CONCRETE PAD.
2. A PIT FOR DRAINAGE 900 WIDE x 450mm LONG x 450 DEEP SHALL BE EXCAVATED AT THE FOOT OF THE HYDRANT AND FILLED WITH 25mmØ MIN WASHED ROCK.
3. THE SPACE AROUND THE BARREL AND 150mm ABOVE THE HYDRANT DRAIN SHALL BE FILLED WITH WASHED ROCK.
4. 6MiL POLYETHYLENE SHALL BE PLACED OVER THE TOP OF THE WASHED ROCK TO PREVENT THE VOIDS FROM BEING FILLED WITH CLAY.
5. BOTTOM OF HYDRANT FLANGE TO BE MINIMUM 50mm ABOVE TOP OF SIDEWALK FOR MAINTENANCE SERVICE.
6. IN HIGH WATER TABLE AREAS ENSURE HYDRANT COMES WITH DRAIN PLUG AND PLUG IS INSTALLED.
7. IF DRAIN PLUG IS INSTALLED; MARK HYDRANT WITH A 50mm x 50mm BLUE SQUARE ON HYDRANT BODY, VISIBLE FROM ROAD.

SECTION A-A

Typical Hydrant Connection & Valve Placement

REVIEWED BY:

Maggie Wang, Utilities Engineer

13/05/15

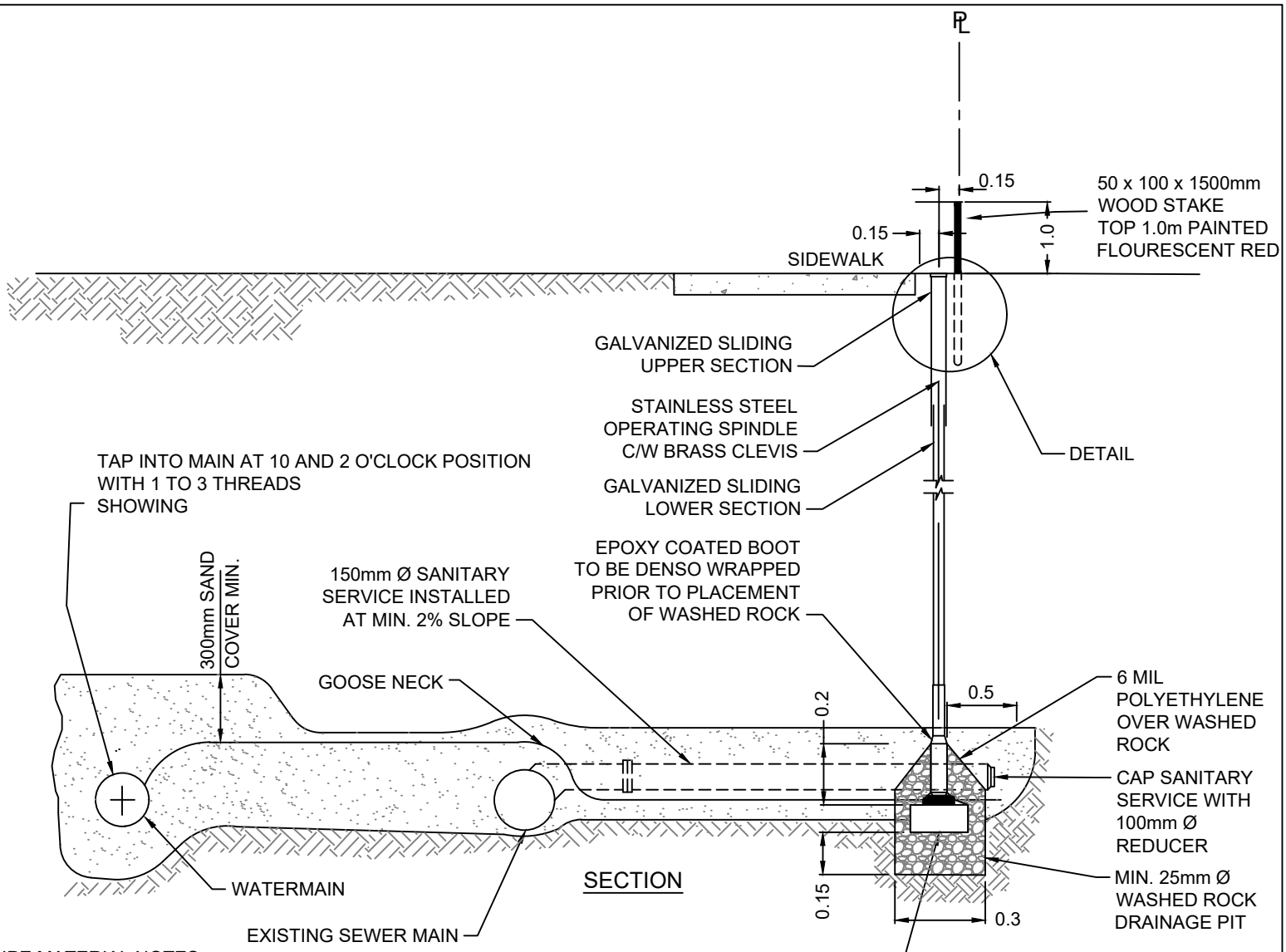
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE

SCALE NTS

DRAWING NO. 5.1



PIPE MATERIAL NOTES:

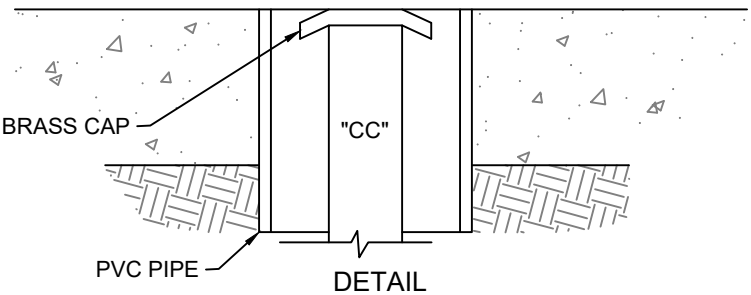
1. FOR 25mm PIPE DIAMETERS - USE TYPE K COPPER, PEXa (CROSS LINKED POLYETHYLENE), PEX-AL-PEX OR ACCEPTED ALTERNATE.
2. FOR 50mm PIPE DIAMETERS - USE TYPE K COPPER PIPE OR ACCEPTED ALTERNATIVE.
3. PIPE CLAMP TO BE ALL BRASS OR ACCEPTED ALTERNATE.
4. PEXa PIPE REQUIRES 2" STAINLESS STEEL INSERTS BE PLACED ON BOTH SIDES OF THE "CC" CONNECTION.

GENERAL NOTES:

1. GOOSENECK IS REQUIRED AT SEWER CROSSINGS AND ARE TO BE BEDDED WITH SAND AND SANDBAGS.
2. MAINSTOP TAPS SHALL BE A MIN. OF 600mm APART, AND NO LESS THAN 300mm TO A COUPLING OR COLLAR.
3. WATER SERVICE SHALL BE ONE CONTINUOUS LENGTH.
4. INVERT ELEVATION AT STUBBED END SHALL BE 3.0m BELOW ESTABLISHED FINISHED GRADE.
5. NO HORIZONTAL GOOSENECK REQUIRED AT MAINSTOP.
6. TAP INTO UPPER PORTION OF WATER MAIN, AT 10 AND 2 O'CLOCK POSITIONS.
7. HOME BUILDER TO INSTALL A COUPLING TO THE TERMINUS OF THE HOUSE SERVICE WHIP EXPOSED AT SURFACE AND CONTINUE THE WATER SERVICE TO THE HOUSE.
8. CATHODIC PROTECTION MAY BE A REQUIREMENT IN AREAS OF HOT SOILS. ENSURE TO WET ANODE PRIOR TO BACKFILL.

"CC" TO BE SUPPORTED UPON A SINGLE CHANNEL RECYCLED PLASTIC BLOCK (MIN. 40x200x200mm).
- DO NOT STRAP/BOLT THE "CC" TO THE SUPPORTING BLOCK UNLESS "CC" CHAIR IS DENSO WRAPPED.
- SET THE "CC" CENTERED UPON THE SUPPORTING BLOCK AND USE BACKFILL MATERIAL TO SET THE "CC" PLUMB.

WHEN CITY OF ST. ALBERT BRASS CAP OF THE "CC" FALLS WITHIN CONCRETE, ENCLOSE IT WITH A SECTION OF 100mm PVC PIPE, (I.E. ON A DRIVEWAY)



DETAIL

25/50mm Water Connection ("CC")

REVIEWED BY:

Maggie Wang, Utilities Engineer

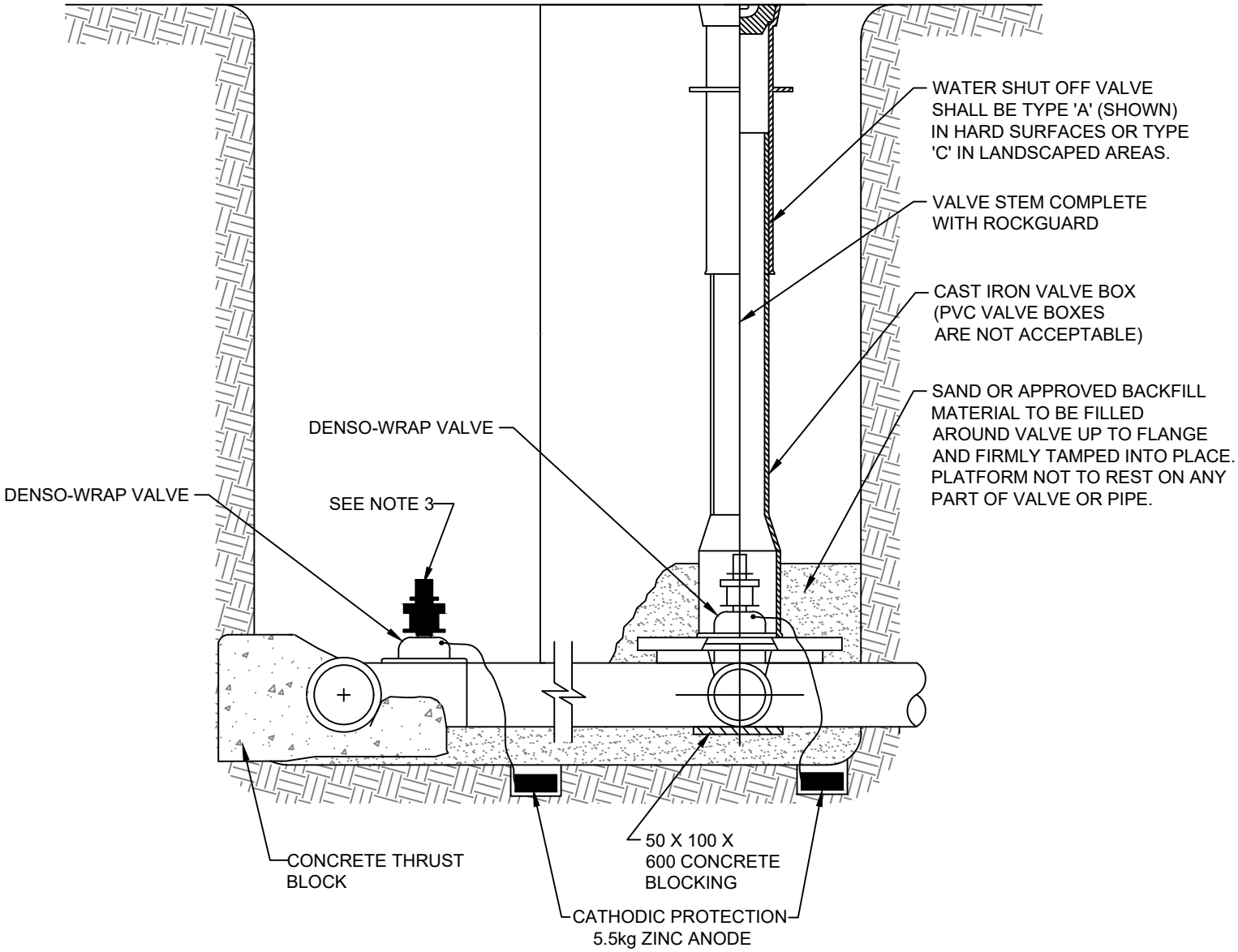
DATE

SCALE NTS

DRAWING NO. 5.2A

DATE	DESCRIPTION	BY

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA



SECT: TYPICAL TVS CONNECTION
(TAPPING VALVE SLEEVE)

NOTES:
1. CONCRETE TO MEET CoSA STANDARD.
2. CONCRETE THRUST BLOCK REQUIRED FOR ALL WATER SERVICES GREATER THAN OR EQUAL TO 100m DIAMETER.
3. HOT TAP VALVE AND SLEEVE TO BE DENSO-WRAPPED, CATHODICALLY PROTECTED, LEFT IN OPEN POSITION AND BURIED WITHOUT ROD OR BOX.

Typical TVS Connection (Tapping Valve Sleeve)

REVIEWED BY:

Maggie Wang, Utilities Engineer

DATE

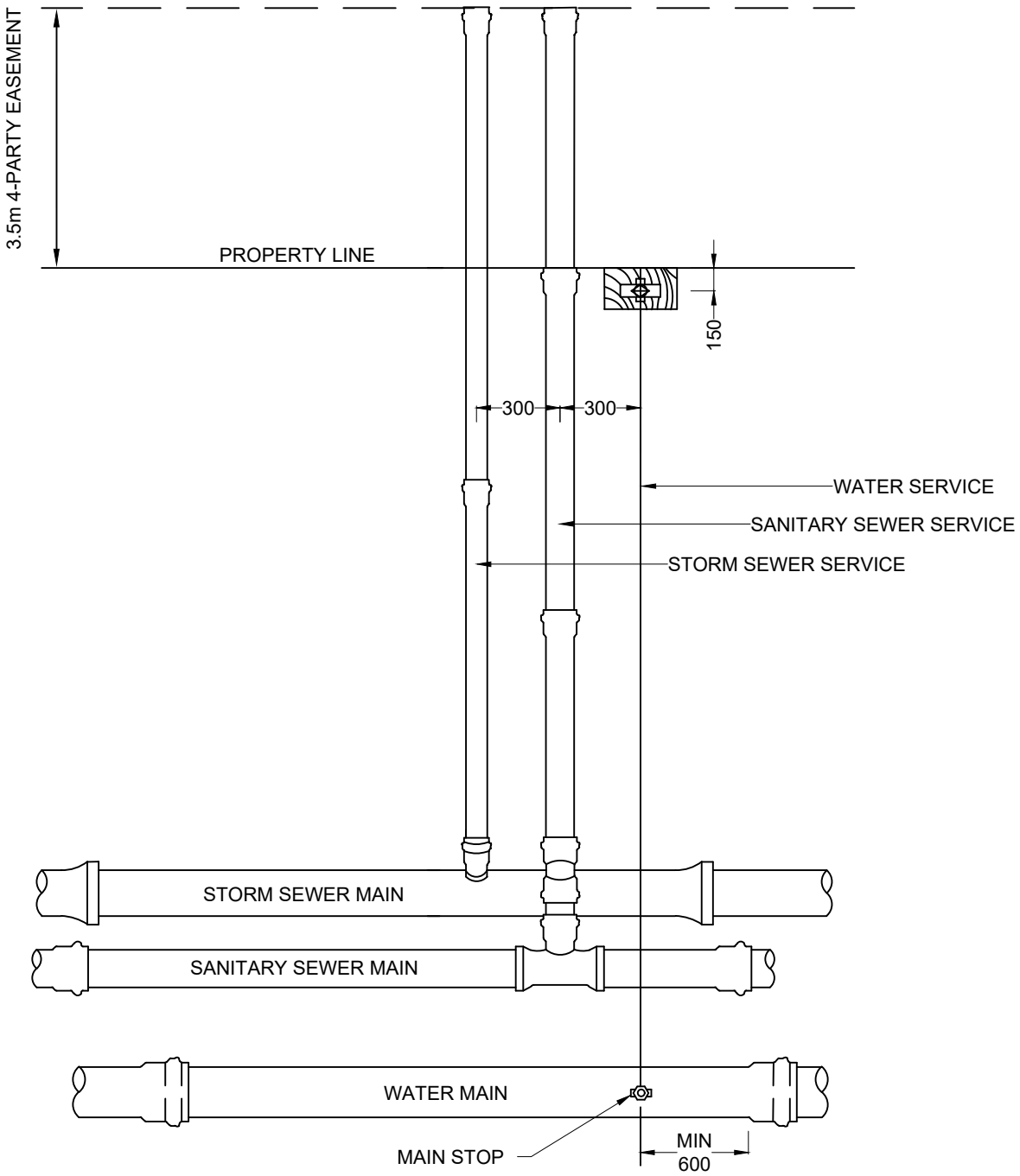
DATE	DESCRIPTION	BY

SCALE: NTS

DRAWING NO.: 5.2B

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

SERVICES NORMALLY MADE IN MIDDLE OF THE
PROPERTY AND INTERSECTS PROPERTY LINE AT 90°



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. SERVICES MAY BE EXTENDED INTO PRIVATE PROPERTY TO EDGE OF EASEMENT.

Single Service

REVIEWED BY:

Maggie Wang, Utilities Engineer

DATE

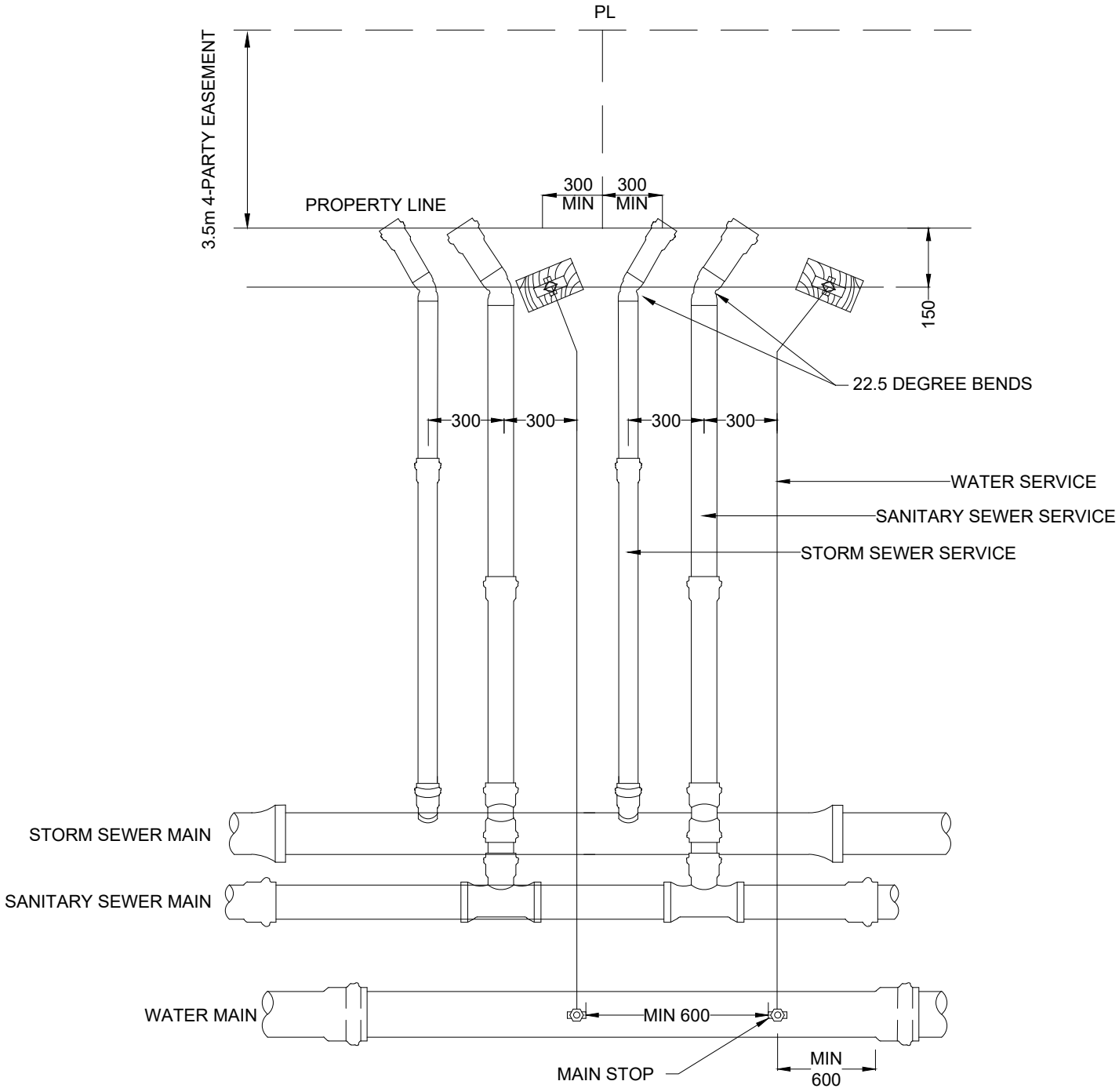
SCALE NTS

DRAWING NO. 5.3A

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

SERVICES NORMALLY MADE IN MIDDLE OF THE
PROPERTY AND INTERSECTS PROPERTY LINE AT 90°



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. SERVICES MAY BE EXTENDED INTO PRIVATE PROPERTY TO EDGE OF EASEMENT.

Dual Service (Single Trench)

REVIEWED BY:

Maggie Wang, Utilities Engineer

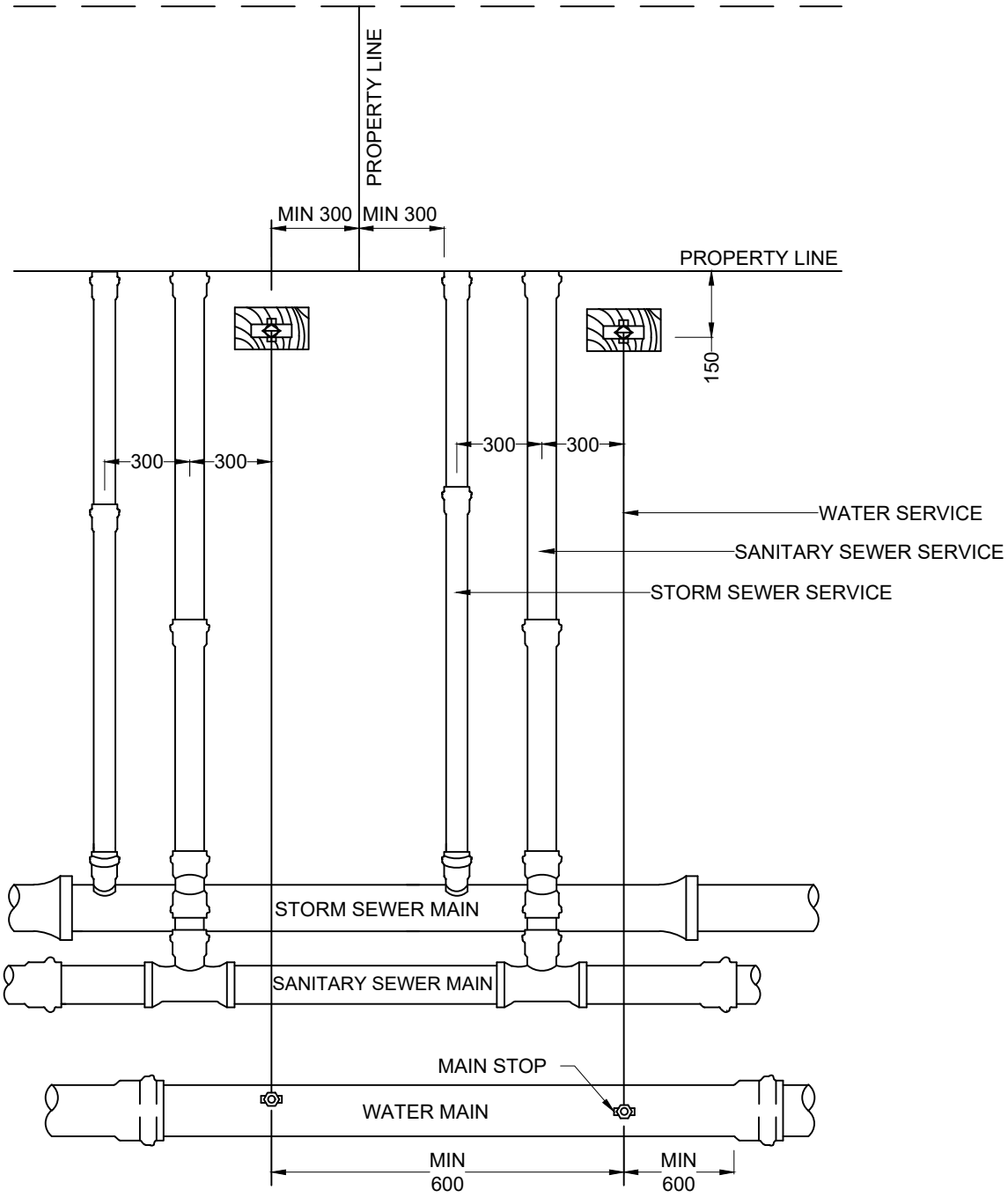
DATE

SCALE NTS

DRAWING NO. 5.3B

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.
2. SERVICES MAY BE EXTENDED INTO PRIVATE PROPERTY TO EDGE OF EASEMENT IN LANELESS SUBDIVISIONS.
3. REFER TO APPLICABLE SECTIONS FOR REQUIREMENTS FOR SEWER MAINS AND SEWER SERVICES.

Dual Service (Duplex / Semi Detached Lot)

REVIEWED BY:

Maggie Wang, Utilities Engineer

DATE

SCALE NTS

DRAWING NO. 5.3C

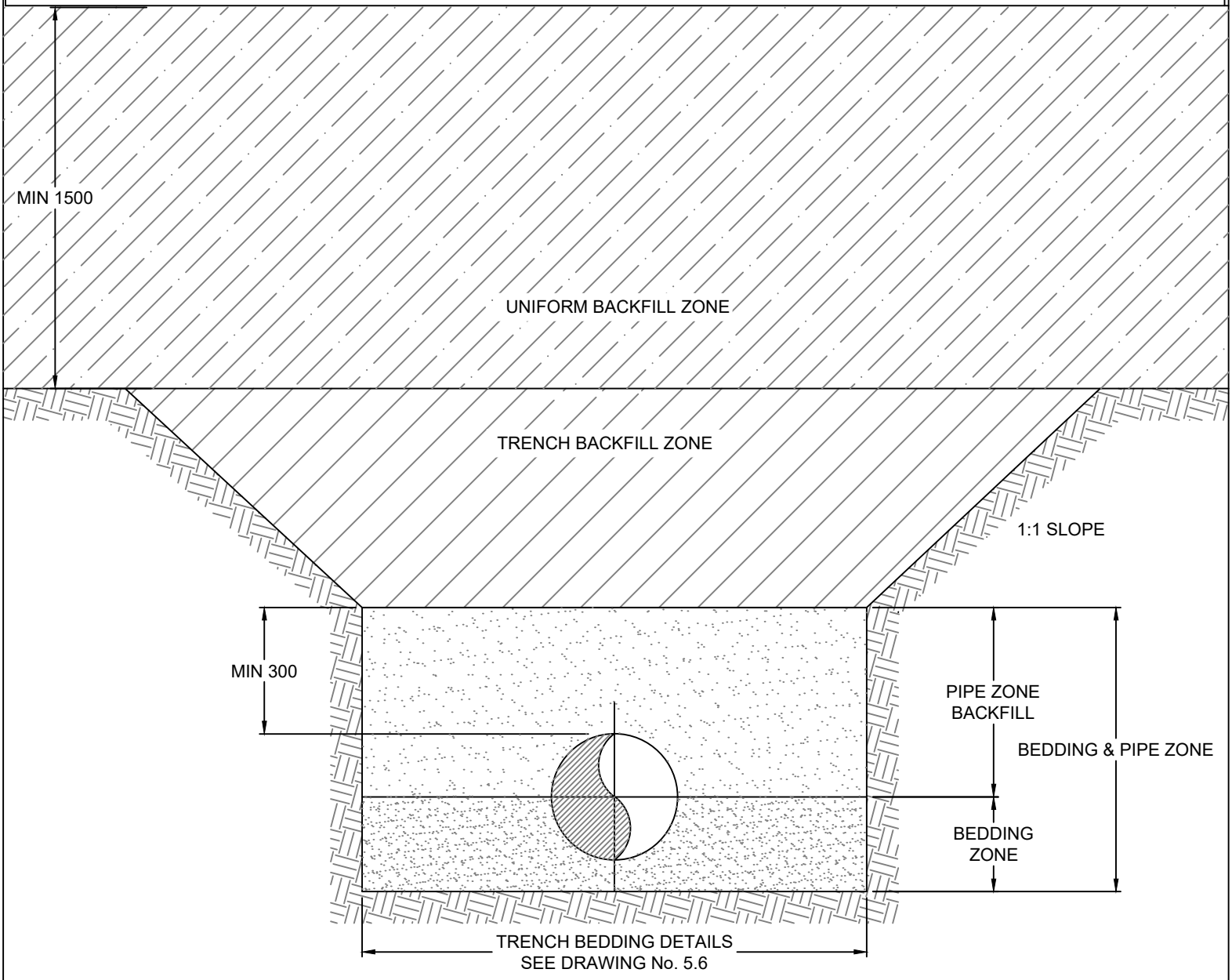
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

PL

PL

TRENCH SIDE SLOPE AS REQUIRED BY OCCUPATIONAL
HEALTH AND SAFETY REQUIRMENTS



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. FOR FURTHER CLARIFICATION ON BEDDING TYPES AND COMPACTION REQUIREMENTS REFER TO WRITTEN STANDARDS.

Uniform Backfill

REVIEWED BY:

Maggie Wang, Utilities Engineer

DATE

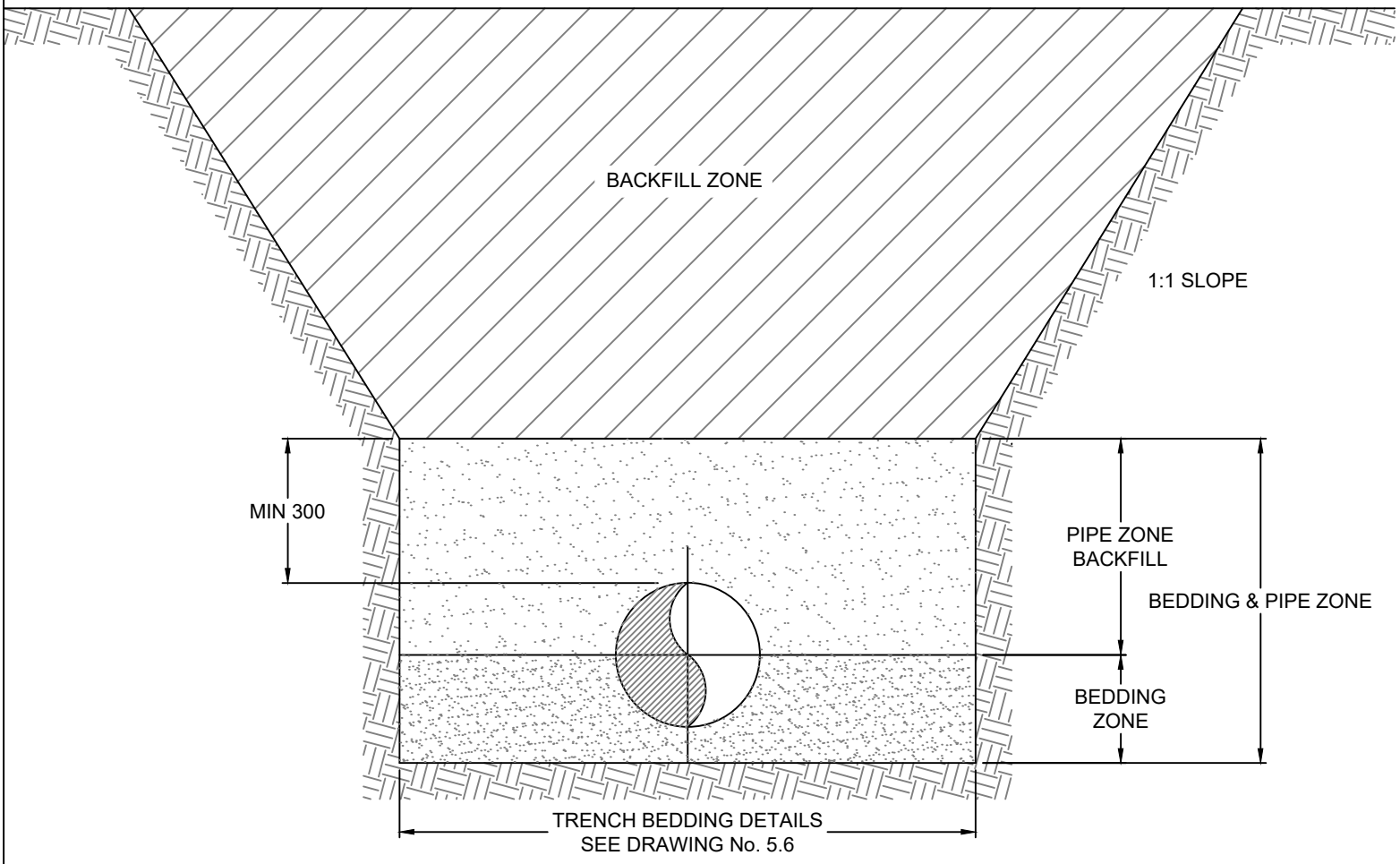
DATE	DESCRIPTION	BY

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

SCALE	DRAWING NO.
NTS	5.4

TRENCH SIDE SLOPE AS REQUIRED BY OCCUPATIONAL
HEALTH AND SAFETY REQUIRMENTS



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. FOR FURTHER CLARIFICATION ON BEDDING TYPES AND COMPACTION REQUIREMENTS REFER TO WRITTEN STANDARDS.

Trenching Detail

REVIEWED BY:

Maggie Wang, Utilities Engineer

DATE

DATE	DESCRIPTION	BY

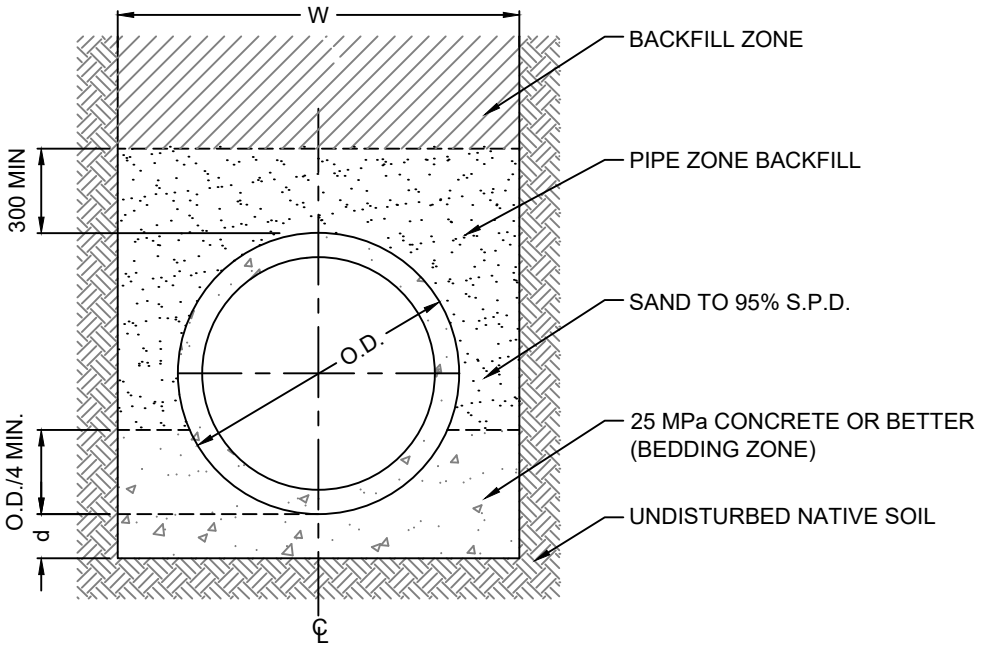
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

SCALE: NTS

DRAWING NO.: 5.5

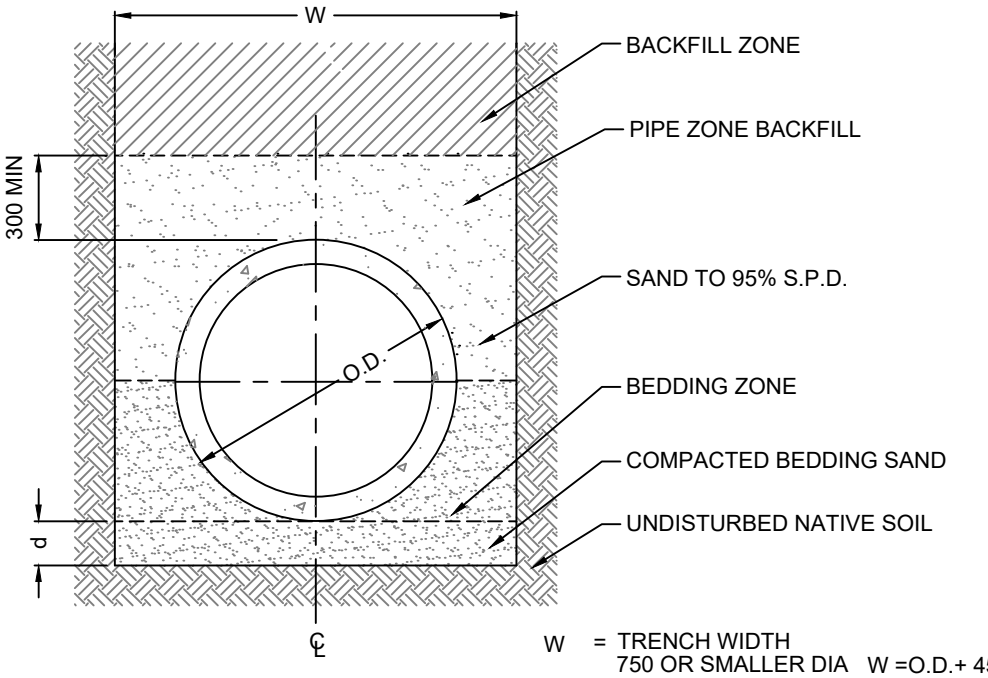
CLASS 'A' BEDDING

$L_f = 2.8$



CLASS 'B' BEDDING

ALTERNATE = $L_f = 1.9$



W = TRENCH WIDTH
750 OR SMALLER DIA W =O.D.+ 450
LARGER THAN 750 DIA.W =O.D.+ 600
O.D. = OUTSIDE PIPE DIAMETER
I.D. = INSIDE PIPE DIAMETER
L_f = LOAD FACTOR
d = DEPTH OF BEDDING BELOW PIPE
I.D. = 675mm OR SMALLER - d min = 100mm
I.D. = 750mm TO 1500 - d min =150mm
I.D. = 1650 AND LARGER - d min. =150mm

NOTE:
1. WHERE NO SPECIFIC BEDDING AND PIPE ZONE BACKFILL IS INDICATED ON THE DRAWING, USE CLASS 'B'
2. GRANULAR BEDDING AND BACKFILL SHALL BE PLACED AND COMPACTED IN UNIFORM LIFTS NOT EXCEEDING 150mm IN DEPTH

Types of Pipe Bedding And Pipe Zone Backfill

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

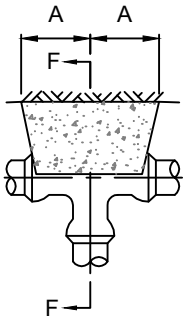
REVIEWED BY:

Maggie Wang, Utilities Engineer

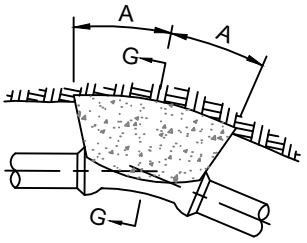
DATE

SCALE NTS

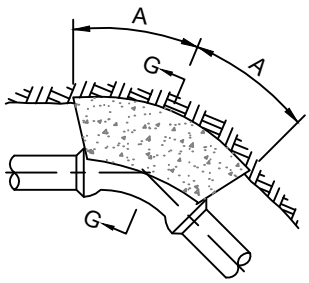
DRAWING NO. 5.6



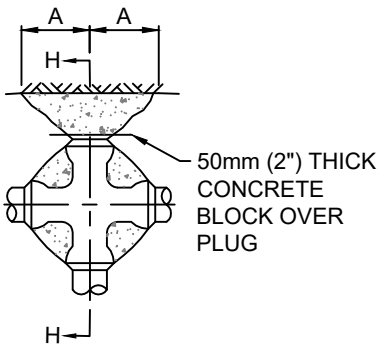
TEE & DEAD END CONN.



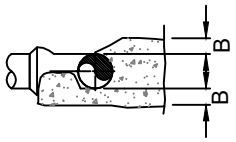
22.5° & 11.25° BENDS



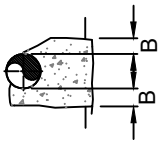
45° BENDS



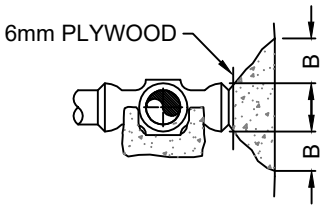
CROSS & DEAD END PLUG



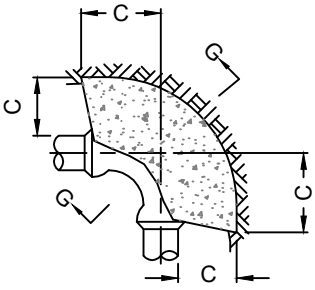
SECTION F-F



SECTION G-G



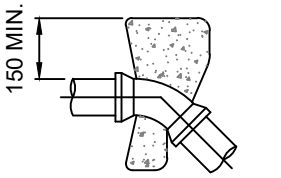
SECTION H-H



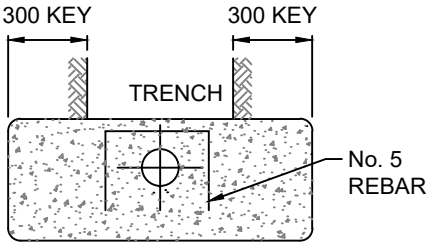
90° BEND

THRUST AREAS CALCULATED FOR 1035 KPa, TOTAL PRESSURE 1490 MPa BEARING

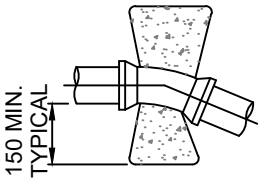
	TEE	BRANCH AND CROSS				11.25° & 22.5° BENDS					45° BENDS					90° BENDS				
DIA.	350	300	250	200	150	350	300	250	200	150	350	300	250	200	150	350	300	250	200	150
A	1200	950	750	525	375	375	305	230	200	150	750	560	450	375	305					
B	75	75	75	75	75	150	150	125	100	75	150	150	125	100	75	550	525	350	300	200
C																600	450	400	350	300
AREAm^2	1.39	1.02	0.76	0.46	0.28	0.56	0.42	0.28	0.19	0.14	1.11	0.79	0.56	0.37	0.23	2.04	1.49	1.02	0.69	0.37



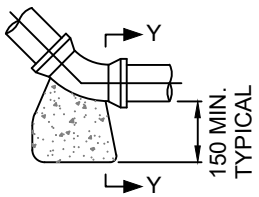
45° VERTICAL BEND

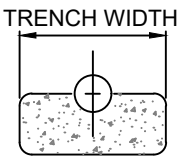


SECTION

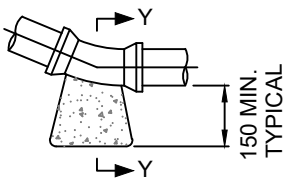


VERTICAL BEND





SECTION Y-Y



NOTES:
1. CONCRETE TO MEET CoSA STANDARDS.
2. CONCRETE TO BE CLEAR OF BELLS AND PIPE.
3. MINIMUM 75mm OF CONCRETE UNDER ALL FITTINGS.
4. DIMENSIONS IN MILLIMETRES.

Concrete Thrust Block Details for Water Mains

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

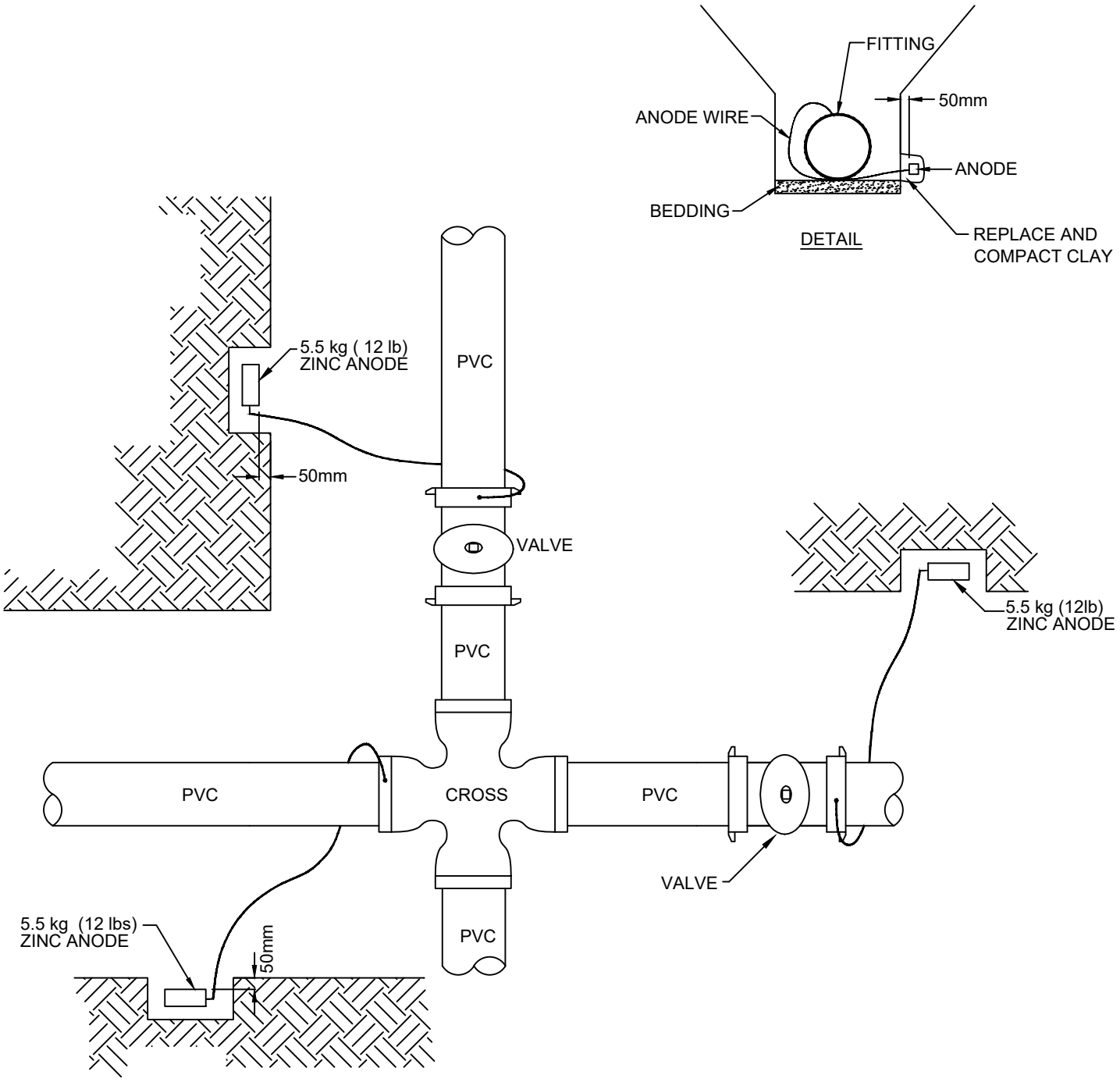
REVIEWED BY:

Maggie Wang, Utilities Engineer

DATE

SCALE NTS

DRAWING NO. 5.7



NOTES:

1. ALL ANODES TO BE 5.5kg ZINC.
2. INSTALL ANODE AT PIPE DEPTH IN NATIVE SOIL.
3. MIN. DISTANCE FROM ANODE TO PIPE IS 150mm
4. MIN. DISTANCE FROM ANODE TO THRUST BLOCK IS 300mm
5. ANODES TO BE EMBEDDED IN UNDISTURBED TRENCH WALL WITH A MIN. OF 50mm OF NATIVE CLAY COVER AROUND ANODE.
6. ANODE TO BE 'WETTED' WITH WATER PRIOR TO BACKFILL TO ACTIVATE THE ANODE.

Cathodic Protection for Watermain Fittings

REVIEWED BY:

Maggie Wang, Utilities Engineer

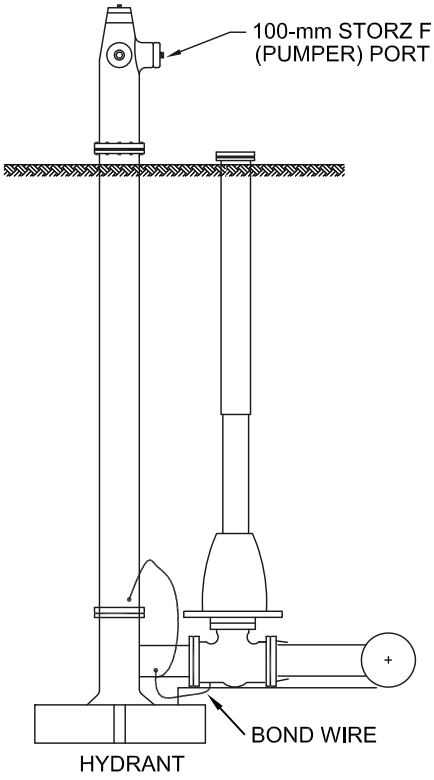
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

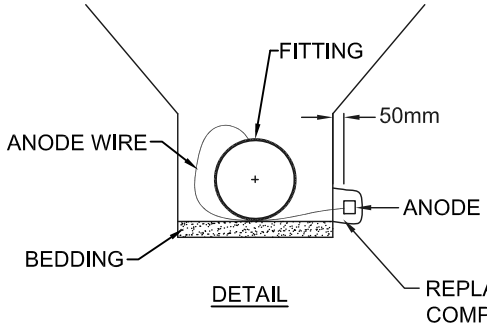
DATE

SCALE NTS

DRAWING NO. 5.9



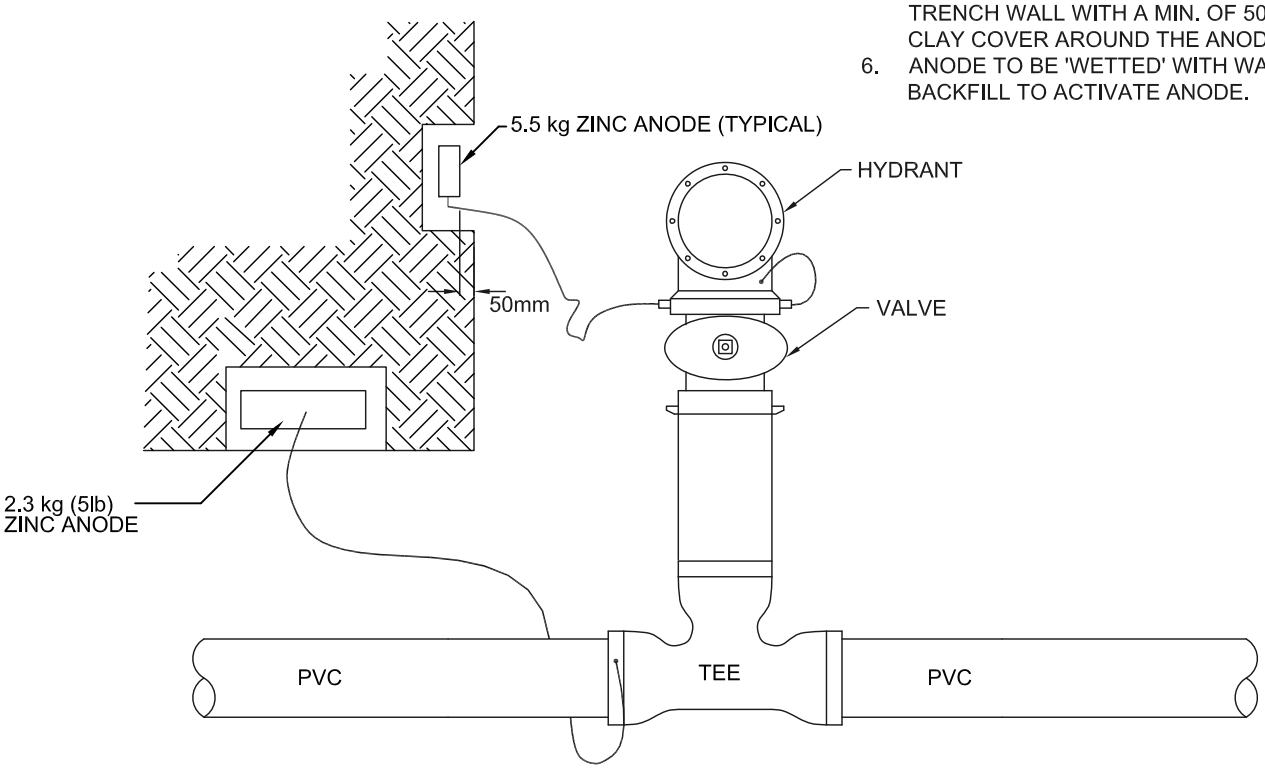
SIDE VIEW



DETAIL

NOTES:

1. ALL ANODES TO BE 2.3kg ZINC.
2. INSTALL ANODE AT PIPE DEPTH IN NATIVE SOIL.
3. MIN. DISTANCE FROM ANODE TO PIPE IS 150mm
4. MIN. DISTANCE FROM ANODE TO THRUST BLOCK IS 300mm
5. ANODES TO BE EMBEDDED IN UNDISTURBED TRENCH WALL WITH A MIN. OF 50mm OF NATIVE CLAY COVER AROUND THE ANODE.
6. ANODE TO BE 'WETTED' WITH WATER PRIOR TO BACKFILL TO ACTIVATE ANODE.



PLAN VIEW

Cathodic Protection for Hydrants

REVIEWED BY:

Maggie Wang, Utilities Engineer

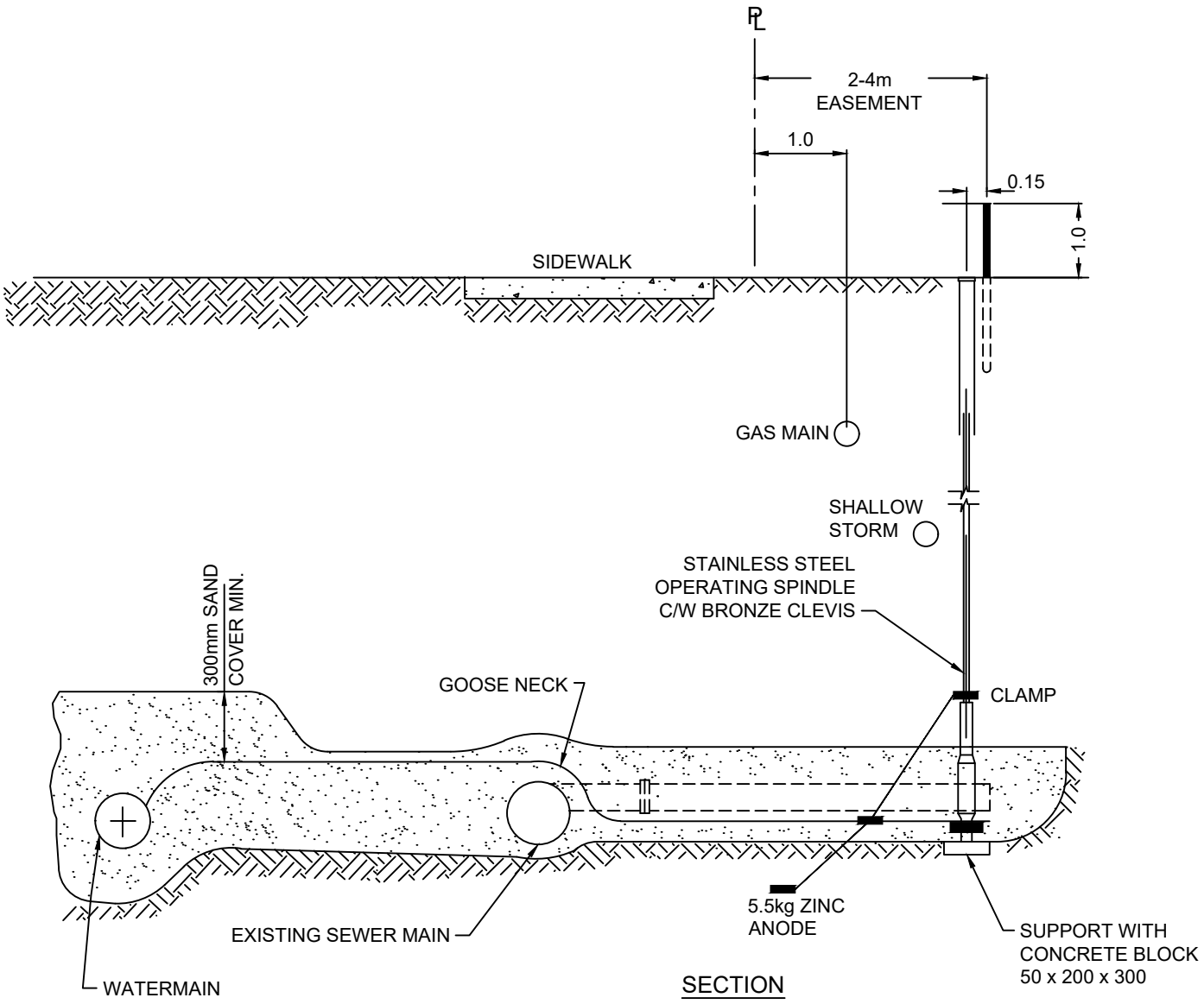
DATE

SCALE NTS

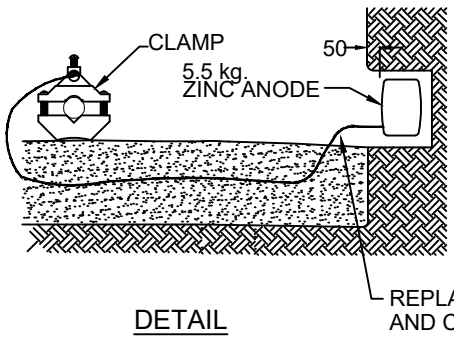
DRAWING NO. 5.10

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY



SECTION



DETAIL

NOTES:

1. PIPE CAMP TO BE ALL BRASS OR ACCEPTED EQUIVALENT.
2. FOR PEX-AL-PEX PIPE CATHODIC CLAMP REQUIRED TO SPINDLE ONLY.
3. ZINC ANODES TO BE EMBEDDED INTO TRENCH WALL TO PROVIDE FOR A MINIMUM OF 50mm NATIVE CLAY COMPLETELY COMPACTED AROUND ANODE.
4. ZINC ANODE TO BE "WETTED" WITH A PAIL OF WATER PRIOR TO BACKFILL TO ACTIVATE THE ANODE.

Cathodic Protection Typical Connection Water Service

REVIEWED BY:

Maggie Wang, Utilities Engineer

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
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DATE	DESCRIPTION	BY

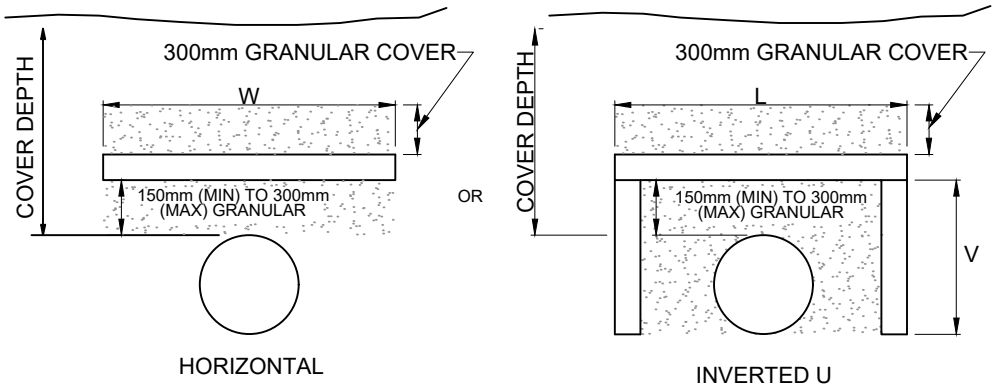
DATE

SCALE NTS

DRAWING NO. 5.11

COVER DEPTH m	THICKNESS mm (IN)	WIDTH (W) m
1.1 - 1.4	90 (3.5)	3.4
1.4 - 1.7	75 (3.0)	2.8
1.7 - 2.0	75 (3.0)	2.2
2.0 - 2.3	50 (2.0)	1.6
2.3 - 2.6	40 (1.5)	1.0
2.6 - 2.9	40 (1.5)	0.4
BELOW 2.9	-	-

* USING DOW HI-40 STYROFOAM BOARD AND FILLCRETE OR GRANULAR BACKFILL



HORIZONTAL

INVERTED U

W = L+2V
V TO BE LESS THAN OR EQUAL TO L

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
2. APPLICABLE WHEN USING FILLCRETE, GRANULAR OR CLAY BACKFILL FOR WATER MAINS WITH A DEPTH OF COVER LESS THAN THE MINIMUM, AS DESCRIBED IN THE DESIGN STANDARDS.
3. USE DOW HI-40 STYROFOAM BOARDS, OR APPROVED EQUIVALENT.
4. ENSURE THAT INSULATION IS BUTTED TOGETHER AS PER MANUFACTURERS SPECIFICATIONS. ANOTHER LAYER OF STYROFOAM MAY BE REQUIRED AT THE DISCRETION OF CoSA UTILITIES.
5. CITY PERSONNEL MUST BE PRESENT ON SITE DURING INSTALLATION.

Insultation Requirements Water Mains and Services

REVIEWED BY:

Maggie Wang, Utilities Engineer

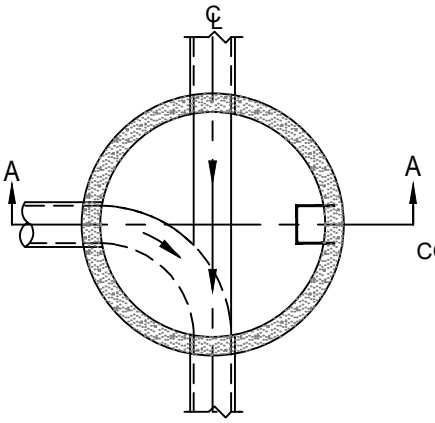
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

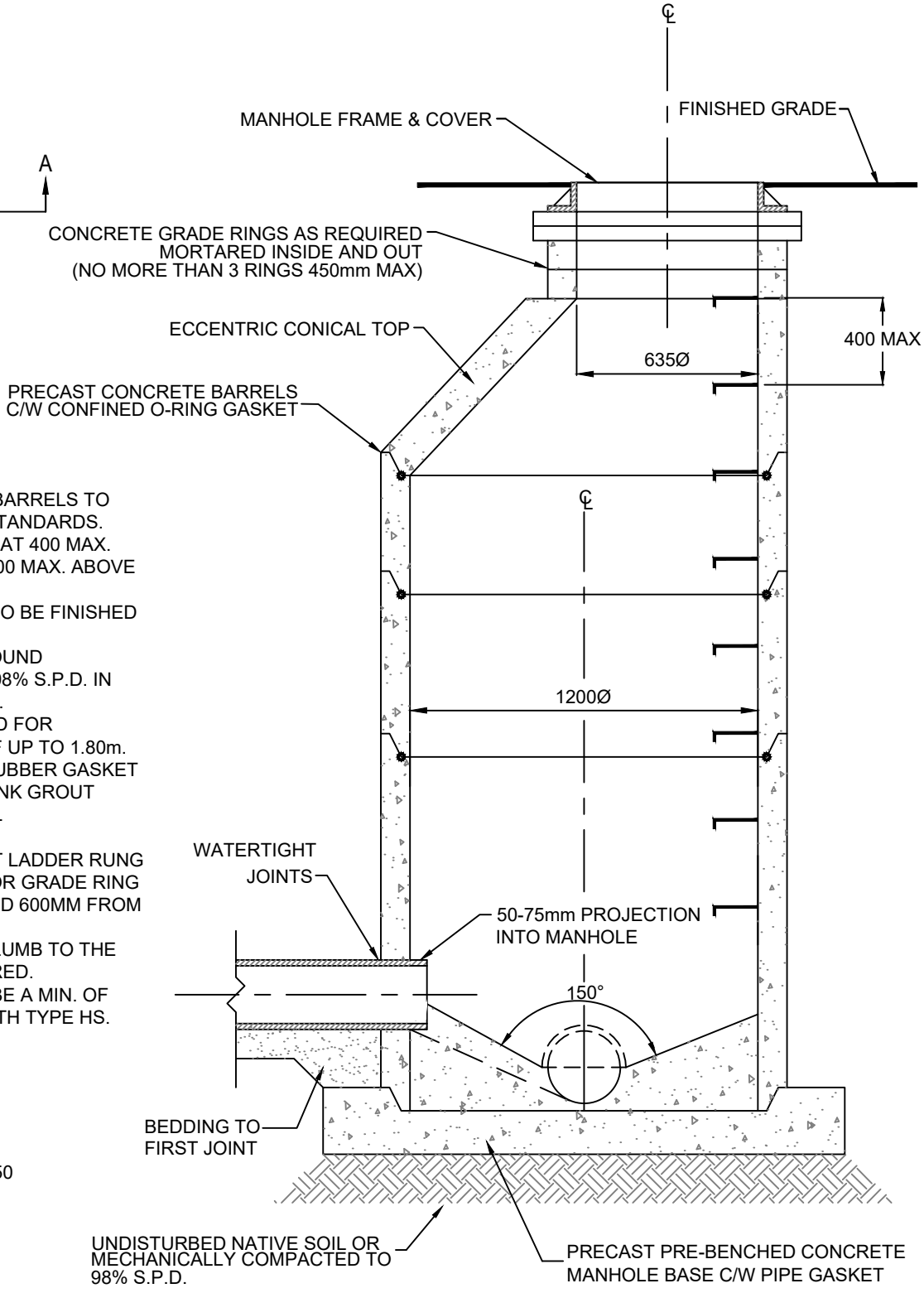
DATE

SCALE NTS

DRAWING NO. 5.12



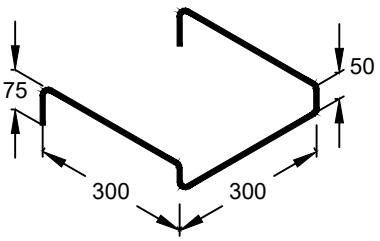
PLAN VIEW



SECTION A-A

NOTES:

1. PRECAST RINGS, CONES AND BARRELS TO MEET CURRENT A.S.TM C478 STANDARDS.
2. SAFETY STEPS TO BE SPACED AT 400 MAX. DISTANCE. LAST STEP TO BE 300 MAX. ABOVE BENCHING.
3. CHANNELING AND BENCHING TO BE FINISHED TO TROWEL SMOOTHNESS.
4. COMPACT SAND BACKFILL AROUND MANHOLES TO A MINIMUM OF 98% S.P.D. IN LIFTS NOT EXCEEDING 150 MIN.
5. FLAT TOP SECTION TO BE USED FOR SHALLOW BURY MANHOLES OF UP TO 1.80m.
6. ALL JOINTS TO BE SET WITH RUBBER GASKET AND FINISHED WITH NON-SHRINK GROUT INSIDE AND OUTSIDE FOR FULL CIRCUMFERENCE.
7. THE PLACEMENT OF THE FIRST LADDER RUNG CAN VARY (BARREL SECTION OR GRADE RING INSERT) BUT MUST NOT EXCEED 600MM FROM RIM TO FIRST RUNG.
8. GRADE RINGS MUST BE SET PLUMB TO THE BARREL AND NOT BE STAGGERED.
9. BENCHING CONCRETE SHALL BE A MIN. OF 32mpa COMPRESSIVE STRENGTH TYPE HS.



20Ø SAFETY STEPS

(ALUMINIUM FORGED OR AS PER MANUFACTURER SPECIFICATION)

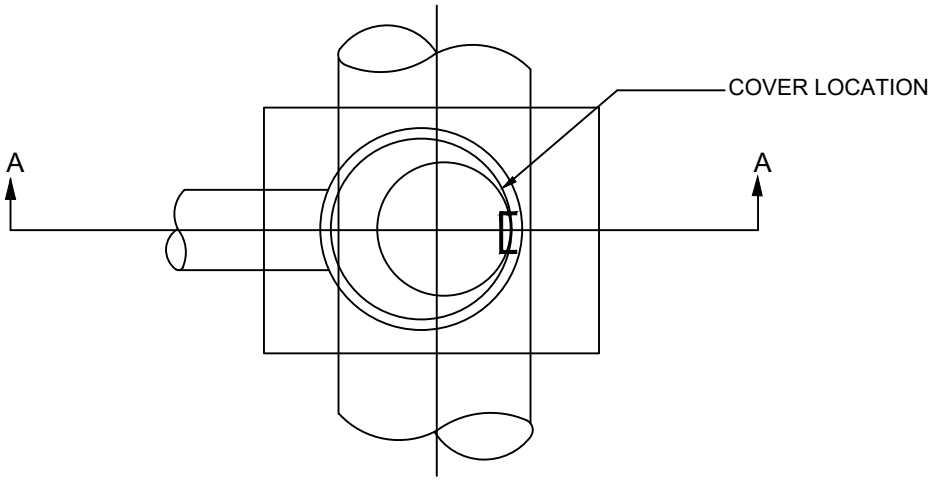
Standard 1200 Diameter Manhole

REVIEWED BY: Neeraj Sinha, Utilities Engineer

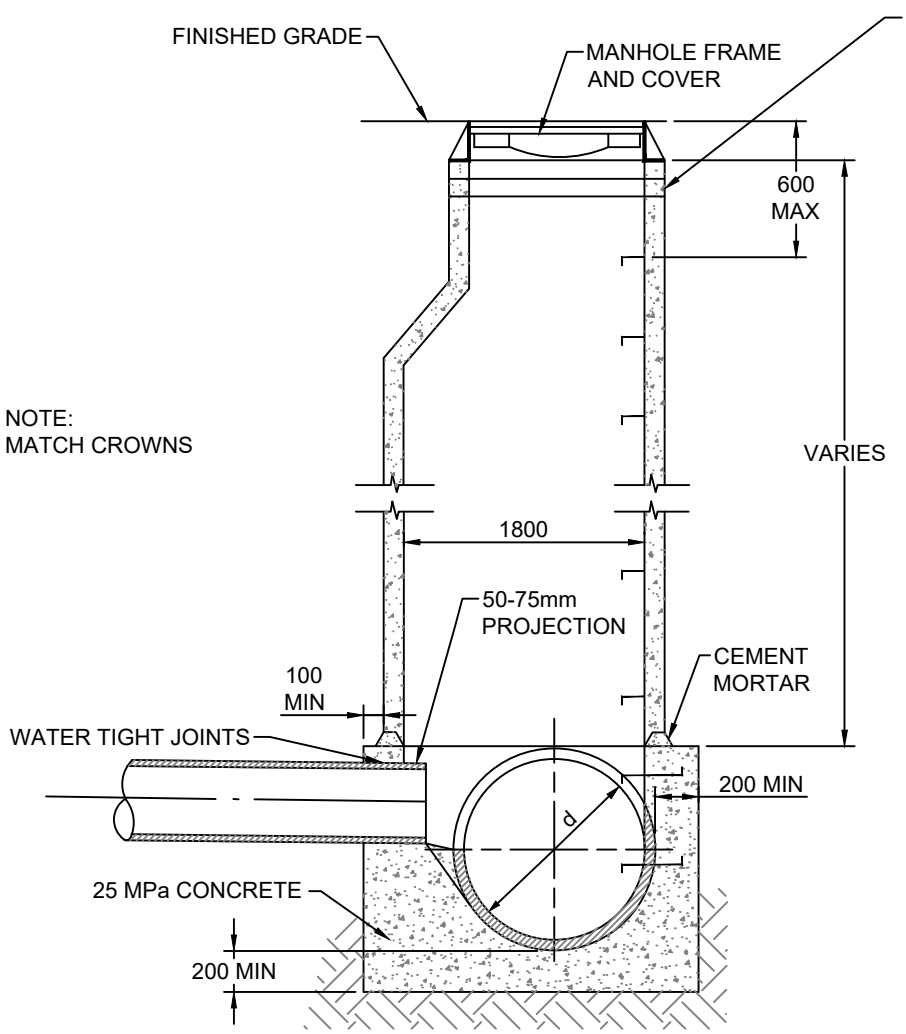
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov 09,2021	NTS	6.1



PLAN

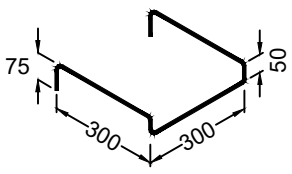


NOTE:
MATCH CROWNS

SECTION A-A

NOTES:

1. d = 600mmØ TO 1050mmØ
2. WHERE UNSUITABLE TRENCH CONDITIONS EXIST, CRUSHED ROCK WILL BE REQUIRED IN PLACE OF BEDDING MATERIAL BENEATH MANHOLE BASE.
3. FLAT TOP SECTION TO BE USED FOR SHALLOW BURY MANHOLES OF UP TO 1.80m.
4. SAFETY STEPS TO BE SPACED AT 400 MAX. DISTANCE LAST STEP TO BE 300 MAX. ABOVE BENCHING.
5. CHANNELING AND BENCHING TO BE FINISHED TO TROWEL SMOOTHNESS.
6. COMPACT SAND BACKFILL AROUND MANHOLES TO A MINIMUM OF 98% S.P.D. IN LIFT NOT EXCEEDING 150 MIN.
7. ALL JOINTS TO BE SET WITH RUBBER GASKET AND FINISHED WITH NON-SHRINK GROUT INSIDE AND OUTSIDE FOR FULL CIRCUMFERENCE.
8. THE PLACEMENT OF THE FIRST LADDER RUNG CAN VARY (BARREL SECTION OR GRADE RING INSERT) BUT MUST NOT EXCEED 600MM FROM RIM TO FIRST RUNG.
9. GRADE RINGS MUST BE SET PLUMB TO THE BARREL AND NOT BE STAGGERED.



20Ø SAFETY STEPS

Typical Perched Manhole For Pipes 600mm T0 1050mm Diameter

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
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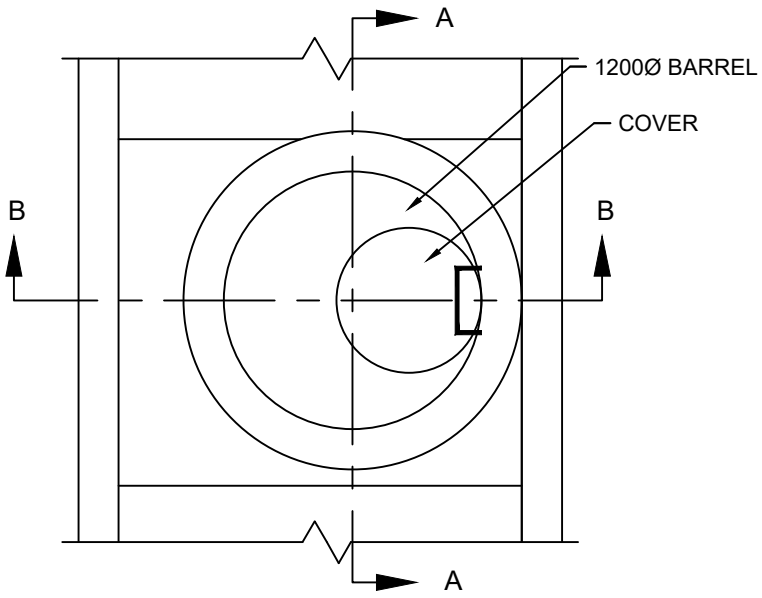
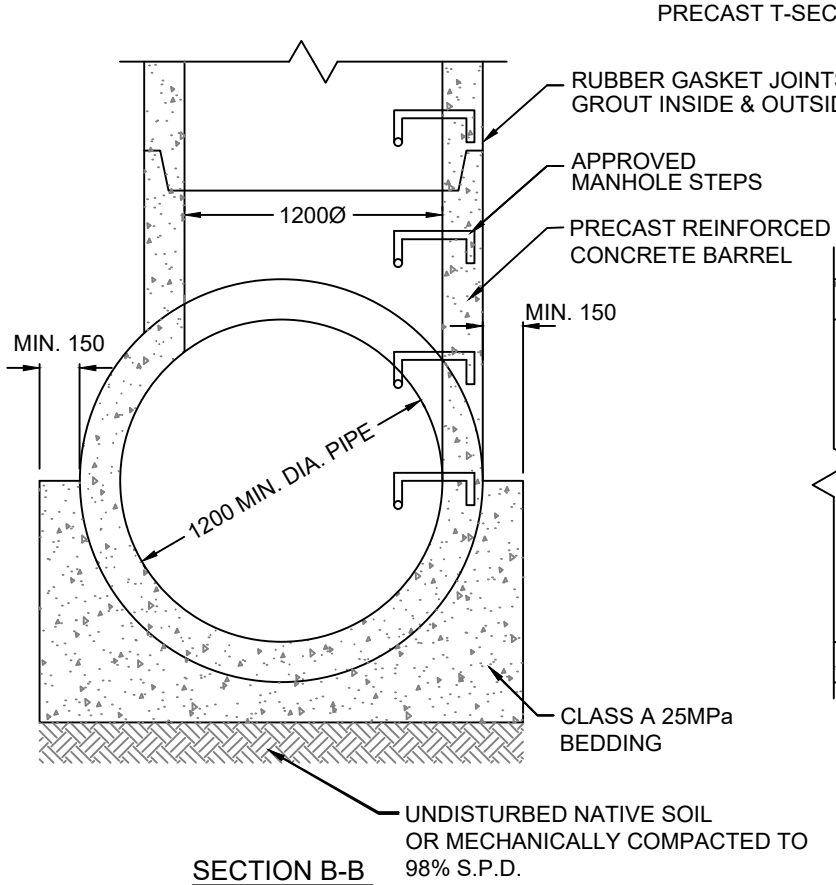
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov 09,2021	NTS	6.2

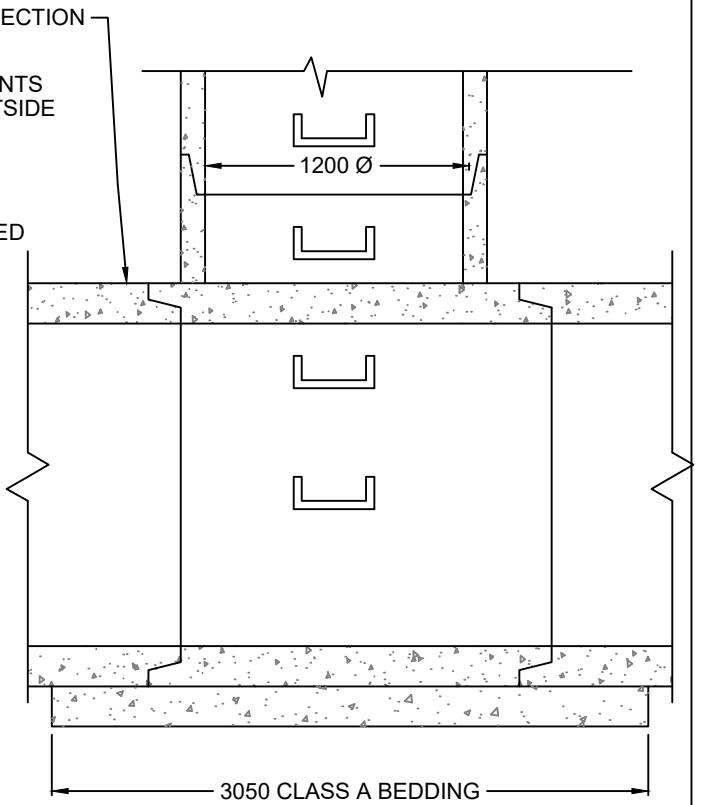


NOTES:

1. THIS TYPE OF MANHOLE IS TO BE BUILT ONLY ON MAINS OF 1200mm DIAMETER OR LARGER AND WHERE THERE IS NO CHANGE IN DIRECTION OF FLOW, I.E. A "STRAIGHT-THROUGH" FLOW.
2. SAFETY STEPS TO BE SPACED AT 400 MAX. DISTANCE. LAST STEP TO BE 300 MAX. ABOVE BENCHING.
3. FLAT TOP SECTION TO BE USED FOR SHALLOW BURY MANHOLES OF UP TO 1.80m.
4. CHANNELING AND BENCHING TO BE FINISHED TO TROWEL SMOOTHNESS.
5. COMPACT SAND BACKFILL AROUND MANHOLES TO A MINIMUM OF 98% S.P.D. IN LIFTS NOT EXCEEDING 150 MIN.
6. ALL JOINTS TO BE SET WITH RUBBER GASKET AND FINISHED WITH NON-SHRINK GROUT INSIDE AND OUTSIDE FOR FULL CIRCUMFERENCE.



SECTION B-B



SECTION A-A

T-Riser Manhole

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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5 ST. ANNE STREET, ST. ALBERT
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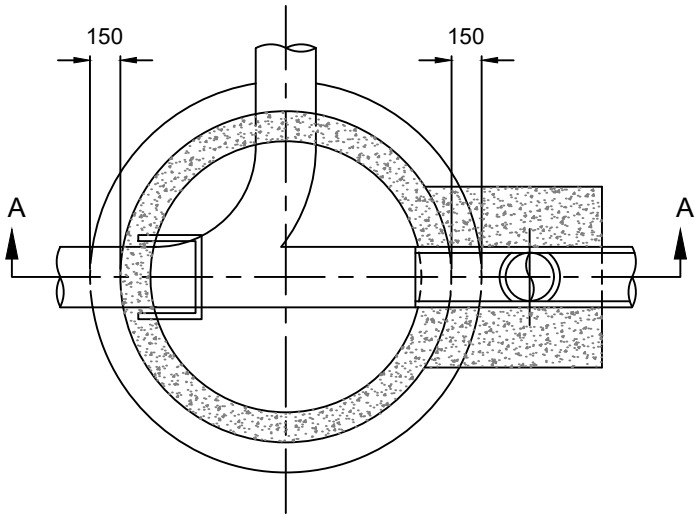
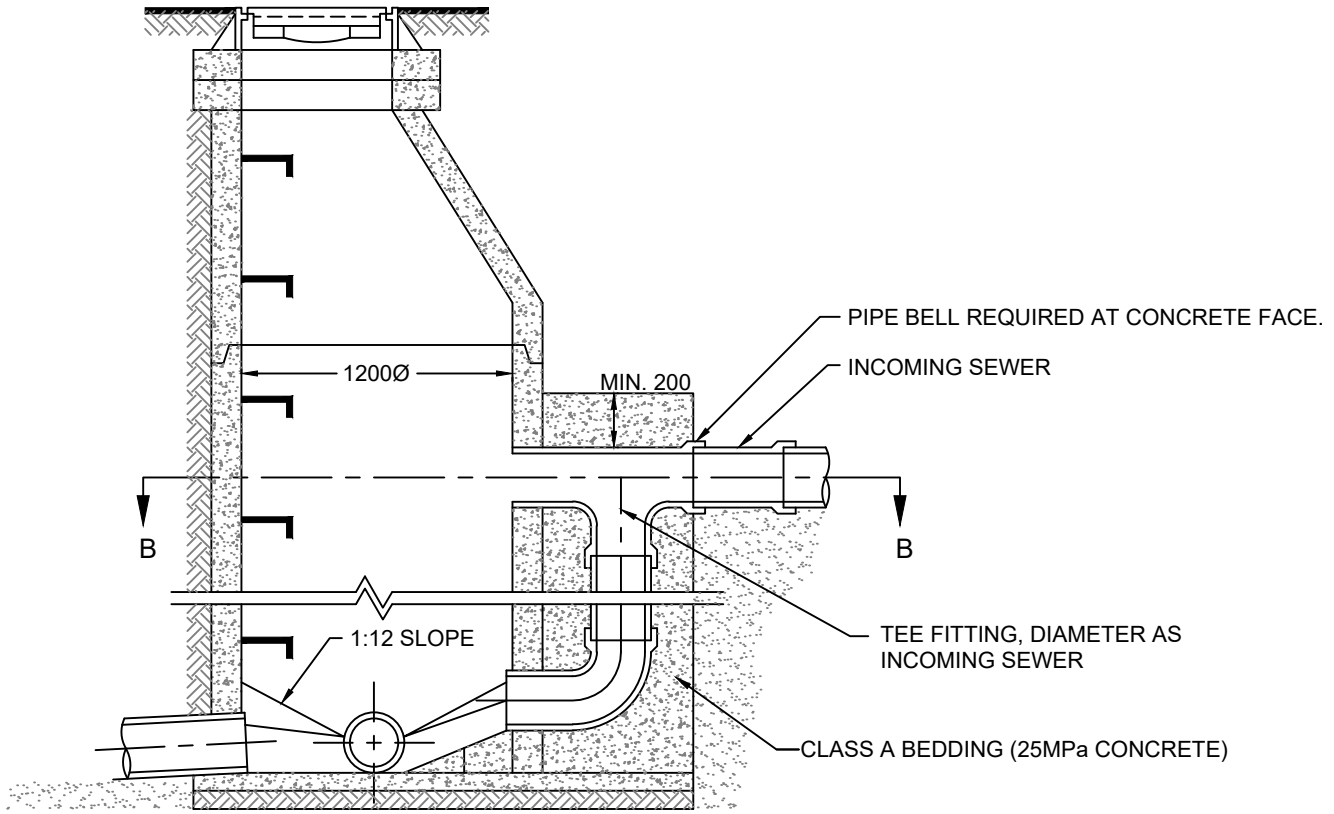
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov 09,2021	NTS	6.3



PLAN SECTION B-B



SECTION A-A

NOTES:

1. PRECAST CONCRETE COMPONENTS TO MEET CURRENT A.S.T.M. C478 STANDARDS.
2. CAST IN PLACE CONCRETE TO BE 25 MPa AT 28 DAYS.
3. CHANNELING AND BENCHING TO BE FINISHED TO TROWEL SMOOTHNESS.
4. COMPACT BACKFILL AROUND MANHOLES TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.

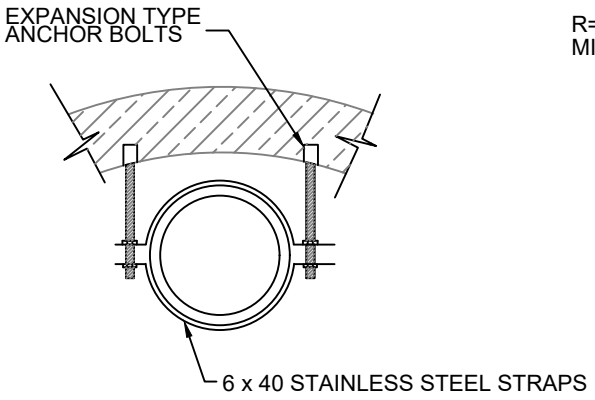
External Drop Manhole

REVIEWED BY: Neeraj Sinha, Utilities Engineer

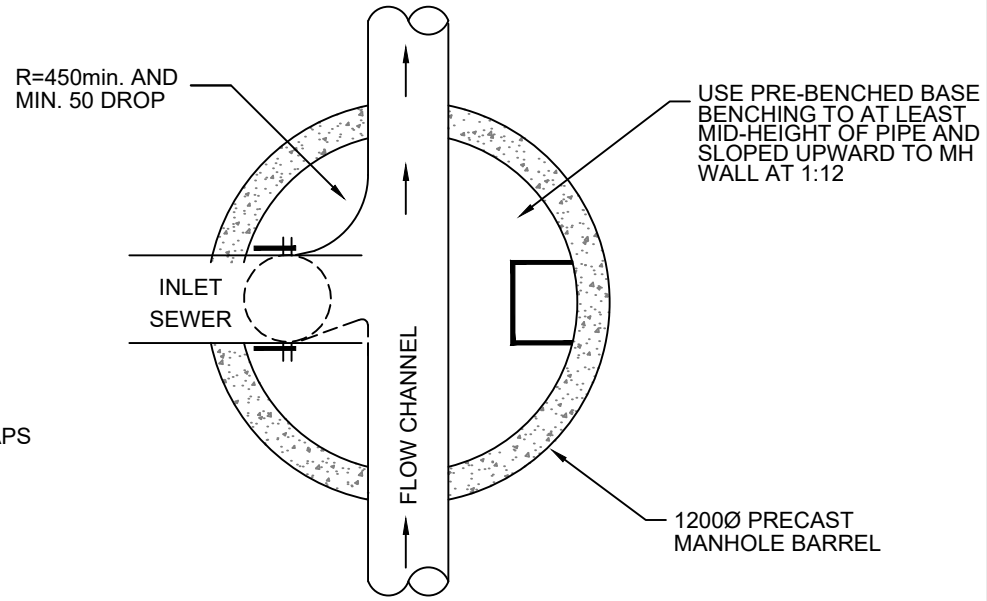
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

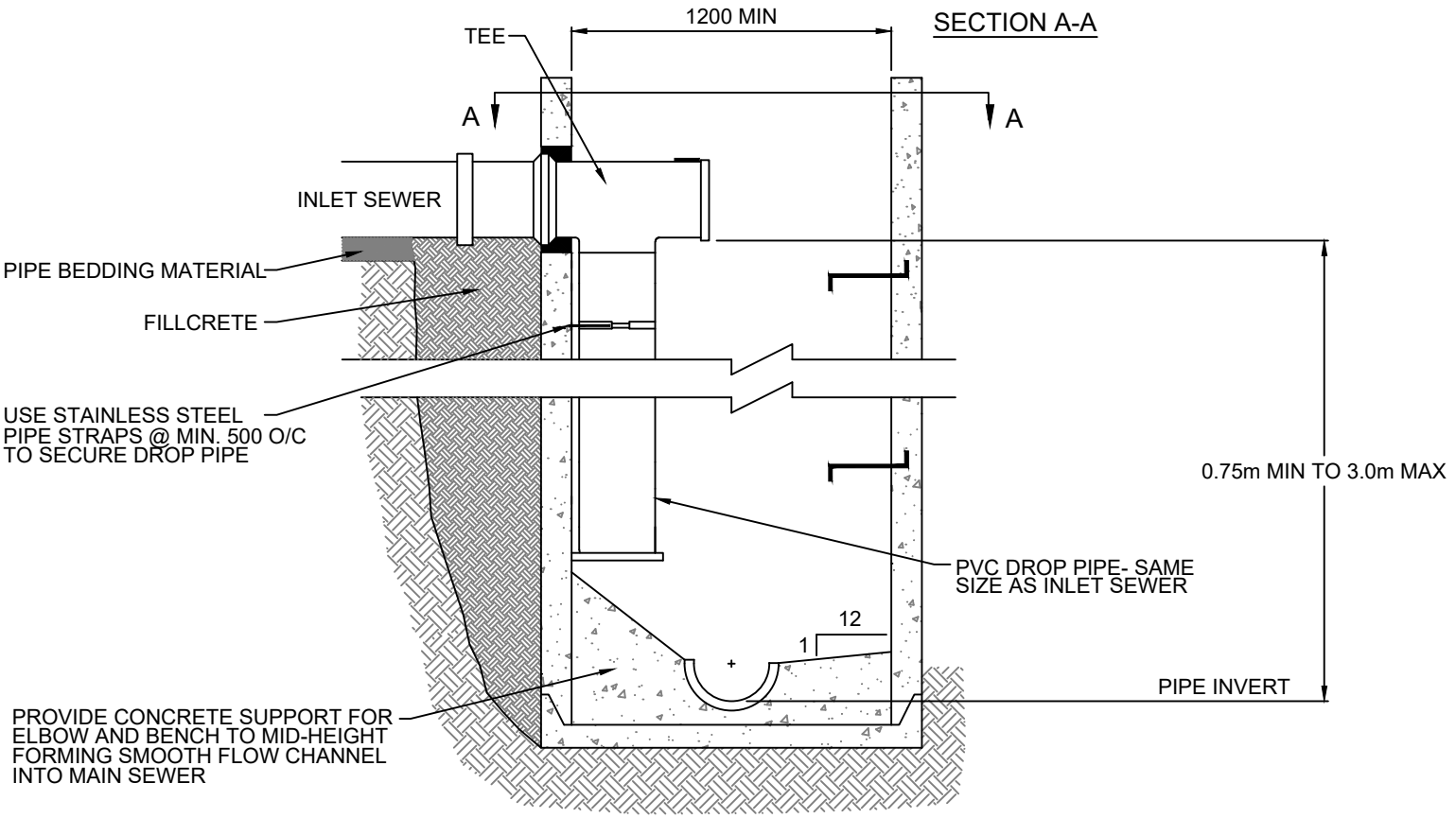
DATE	SCALE	DRAWING NO.
Nov 09,2021	NTS	6.4



BRACKET DETAIL



SECTION A-A



SECTION THROUGH MANHOLE

NOTES:

1. MAXIMUM INLET SEWER OF 250 DIA.
2. DROP PIPE SIZE TO EQUAL INLET SIZE.
3. TEE FITTING TO BE APPROVED PRIOR TO ORDERING.
4. CAST IN PLACE CONCRETE 25 MPa IN 28 DAYS.
5. MANHOLE BASE TO BE PRE-BENCHED.
6. FOR SANITARY SEWER - MIN DROP 0.75m TO MAX 3.0m THEN EXTERNAL DROP.
7. FOR STORM SEWER - MIN DROP 1.5m TO MAX 3.0m THEN EXTERNAL DROP.

Internal Drop Manhole

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
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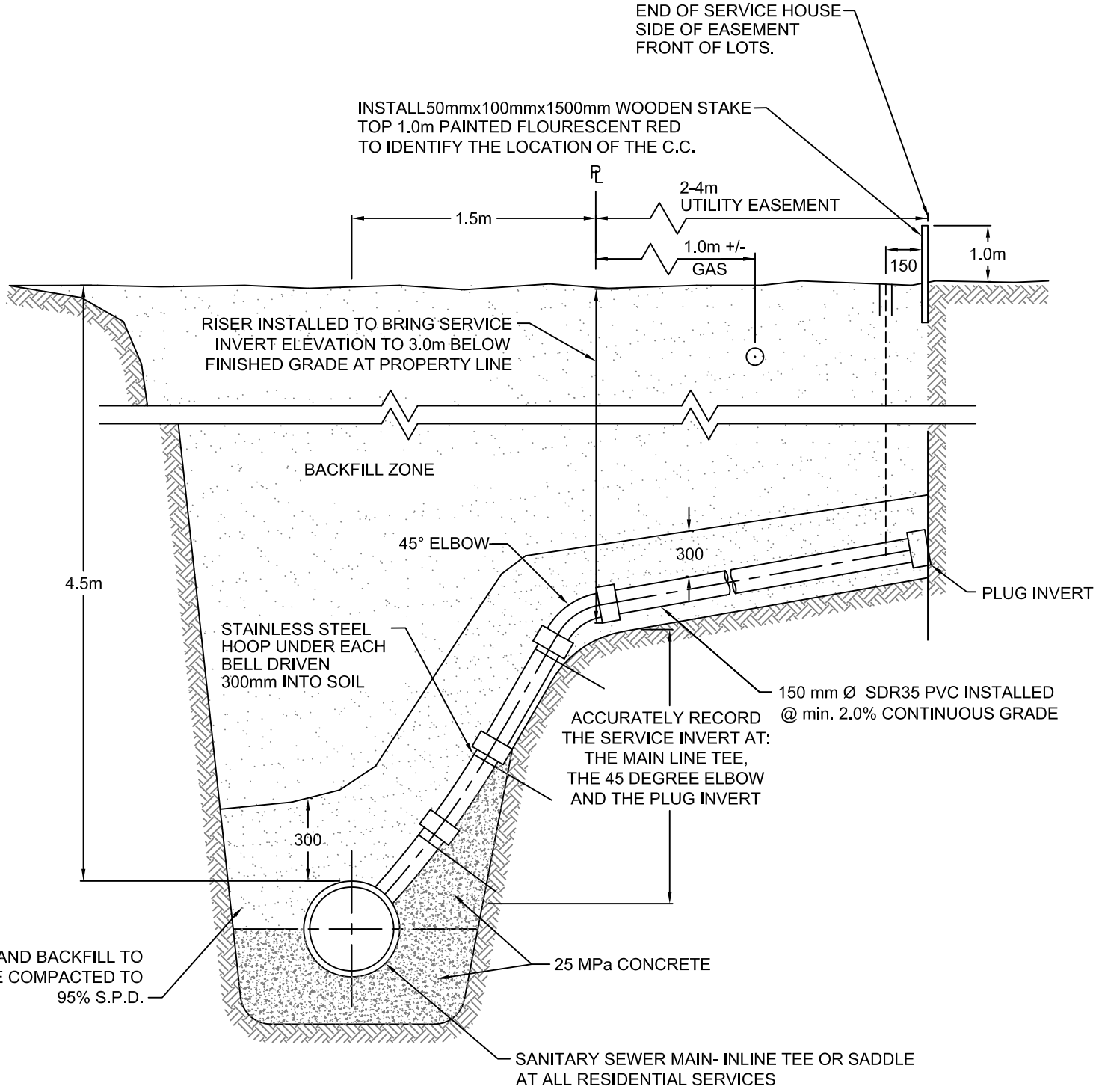
DATE	SCALE	DRAWING NO.
Nov 09, 2021	NTS	6.5



NOTES:

1. MINIMUM SLOPE FOR 150mm PIPE IS 2% CONTINUOUS GRADE.
2. SANITARY SERVICE CONNECTIONS SHALL BE 150 mm, UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED.

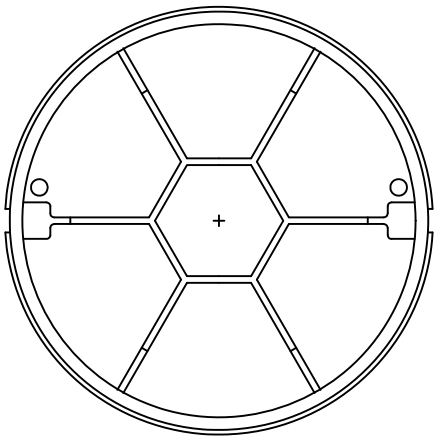
Sanitary Sewer Service With Riser

REVIEWED BY: Neeraj Sinha, Utilities Engineer

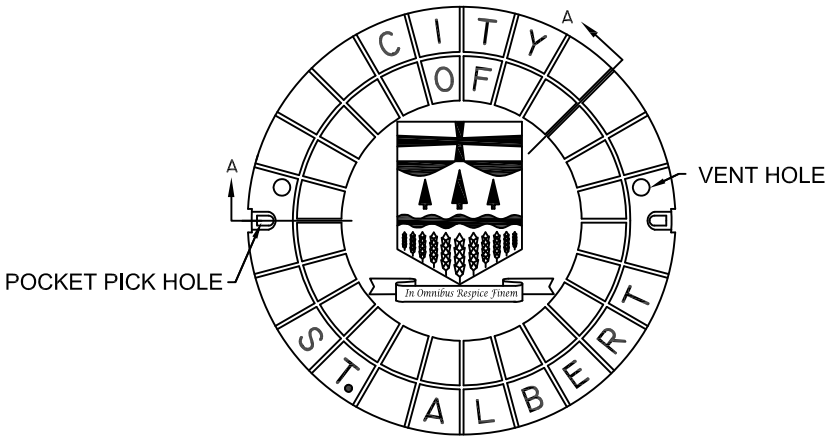
City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

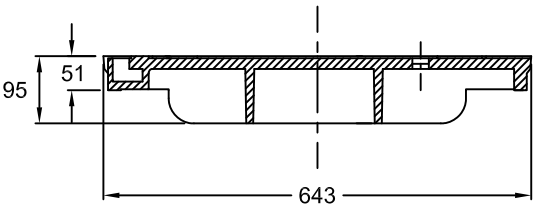
DATE	SCALE	DRAWING NO.
Nov 09,2021	NTS	6.6



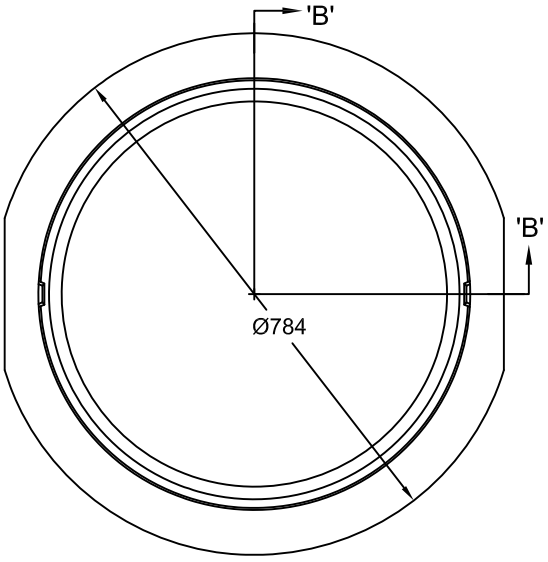
COVER - BOTTOM VIEW



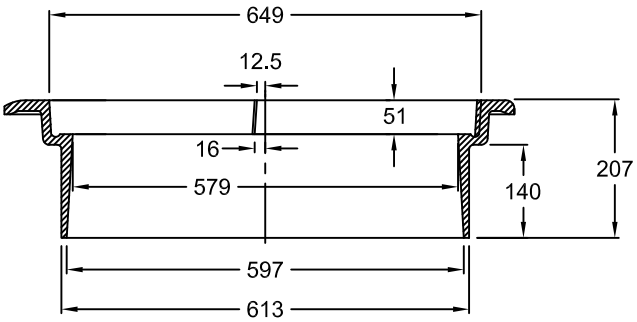
COVER - TOP VIEW



COVER SECTION 'A-A'



FRAME - TOP VIEW



FRAME SECTION 'B-B'

NOTES:

1. PROVISION F-80 FRAME AND COVERS ON MANHOLE THAT FALLS ONTO CONCRETE SURFACE.

Floating Type Manhole Frame and Cover F-80

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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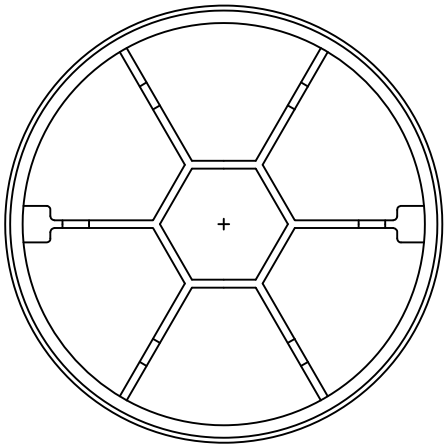

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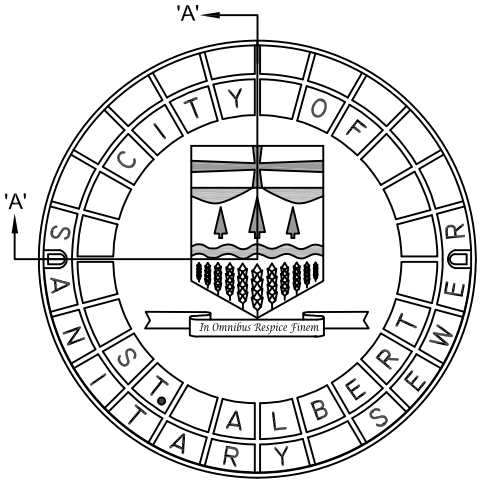
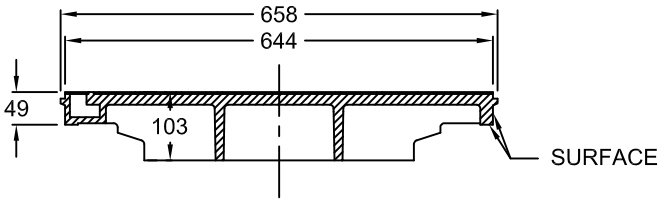


COVER - TOP VIEW



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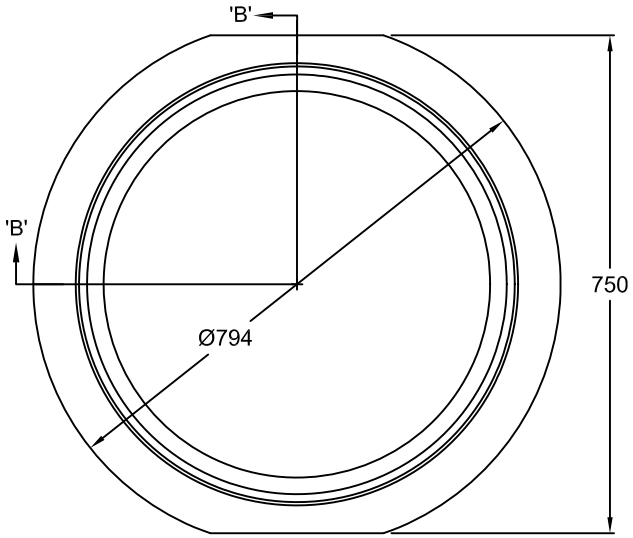
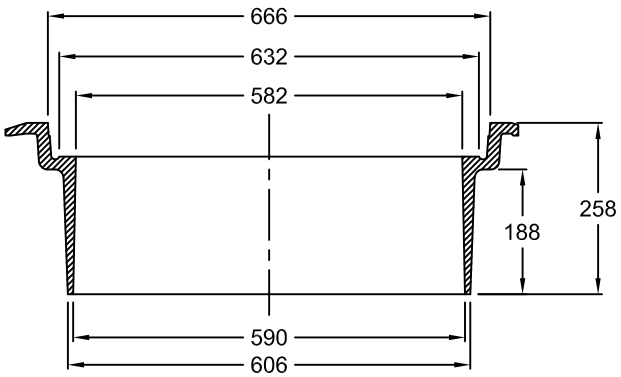


FRAME - TOP VIEW



COVER SECTION 'B-B'

NOTES:
PROVISION F-90 ON CONCRETE SURFACE WITH MANHOLE ON SAG LOCATIONS.

Floating Type Manhole Frame And Cover With Gasket Seal F-90

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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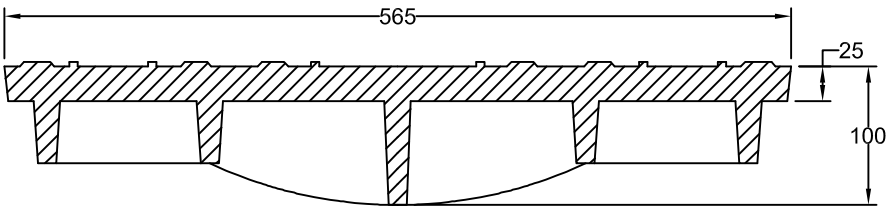
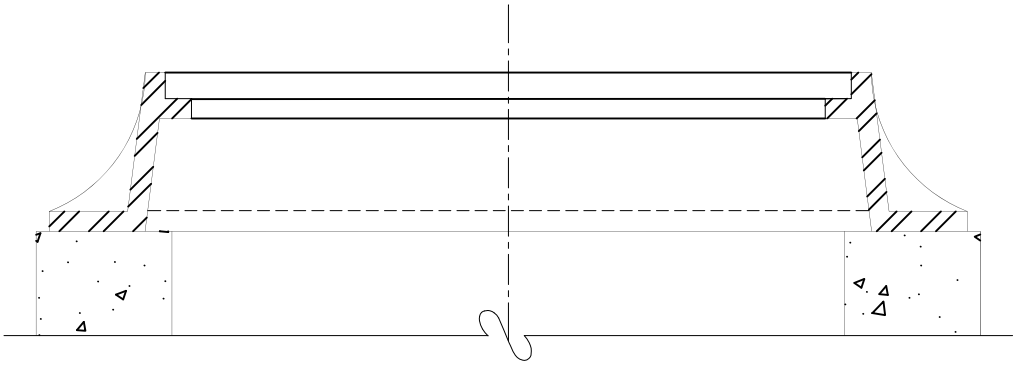
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov 09,2021	NTS	6.8

COVER - TOP VIEW



COVER -SECTION 'A-A'



F-39 FRAME - SECTION VIEW

NOTES:
PROVISION F-39 ON MANHOLE IN PAVED SURFACE AREA

Standard F-39 Manhole Cover Plate

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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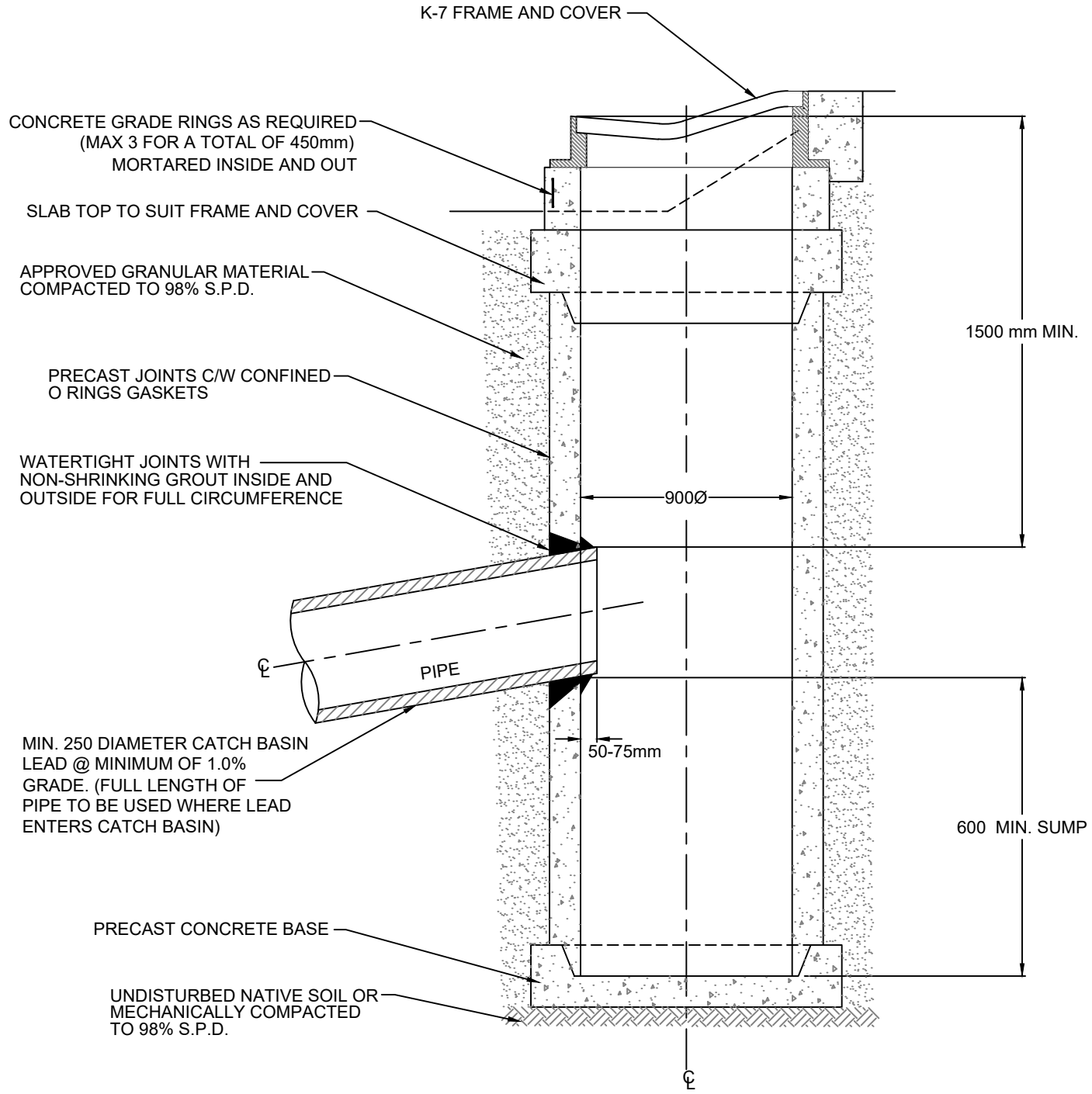

NOTES:

1. PRECAST CONCRETE COMPONENTS TO MEET CURRENT A.S.T.M. C478 STANDARDS.
2. CAST IN PLACE CONCRETE TO BE 25 MPa AT 28 DAYS.
3. ALL GRADE RING JOINTS TO BE FINISHED WITH RAM NECK MATERIAL AND FINISHED WITH NON-SHRINK GROUT INSIDE AND OUTSIDE FOR FULL CIRCUMFERENCE. THIS INCLUDES JOINTS BETWEEN GRADE RINGS, GRADE RINGS AND FRAMES, AND BETWEEN GRADE RINGS AND SLAB TOPS.
4. ALL BARREL JOINTS TO BE RUBBER GASKET WITH NON-SHRINK GROUT INSIDE & OUT.
5. ALL WICK DRAINS TO EXTEND 100mm - 150mm INTO CATCH BASIN.
6. GRADE RINGS MUST BE SET PLUMB TO THE BARREL AND NOT BE STAGGERED.

Typical 900 Diameter Catch Basin With K-7 Frame and Cover

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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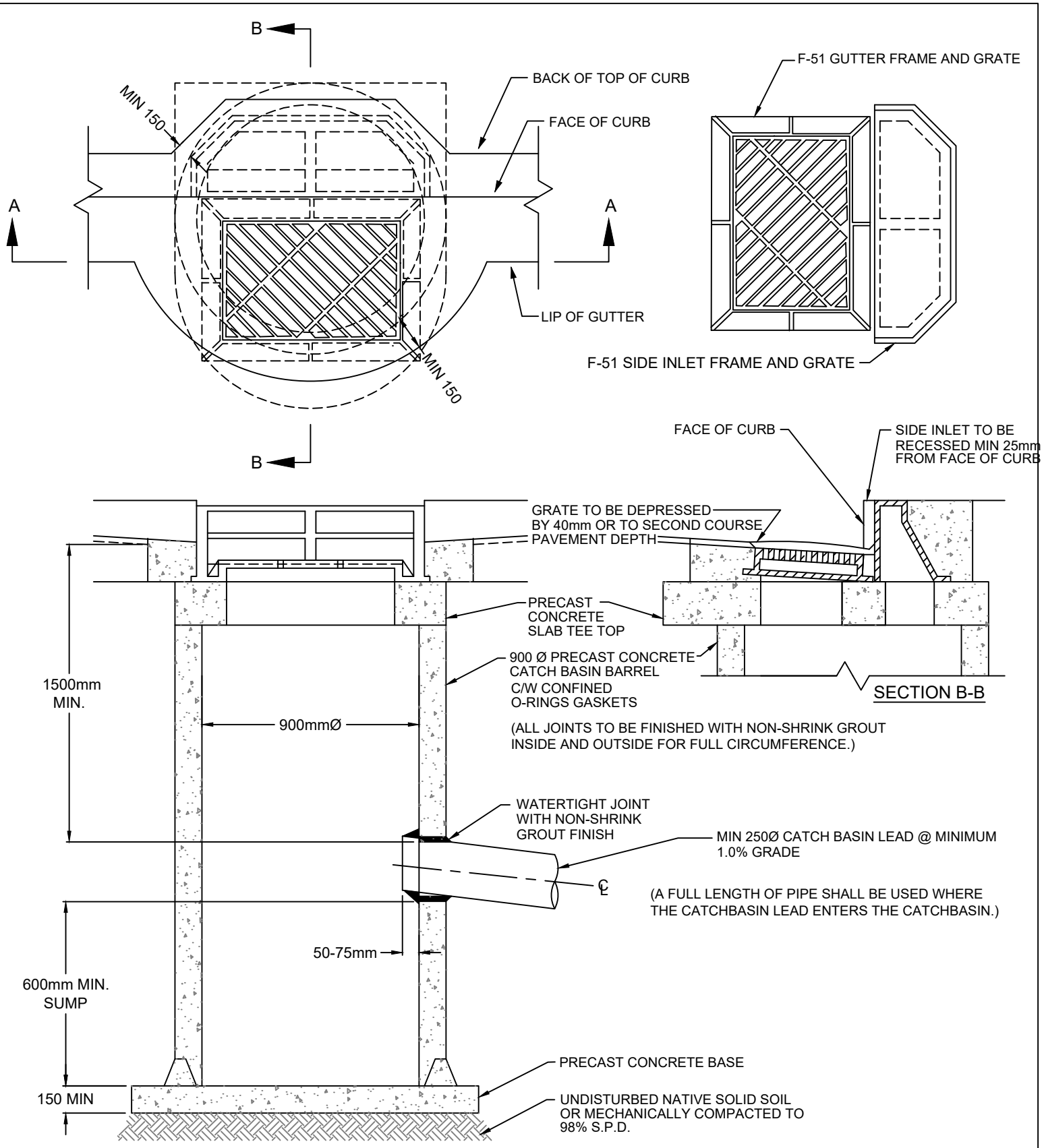

NOTES:

1. WICK DRAINS TO EXTEND 100mm - 150mm INTO CATCH BASIN.
2. PRECAST CONCRETE COMPONENTS TO MEET CURRENT ASTM C478 STANDARDS.
3. CAST IN PLACE CONCRETE TO BE 25MPa AT 28DAYS.
4. SUPPLY NORWOOD TYPE NF-51, TROJAN TYPE K-1A-2 PIECE OR APPROVED EQUIVALENT.

900 Diameter Catchbasin With F-51 Two-Piece Frame & Cover

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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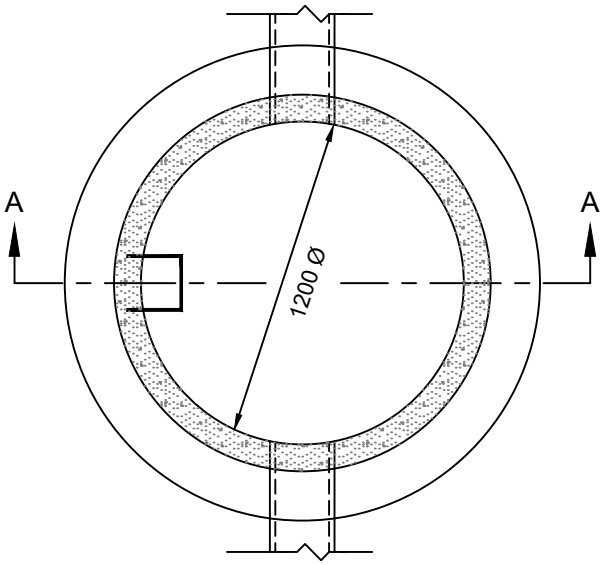
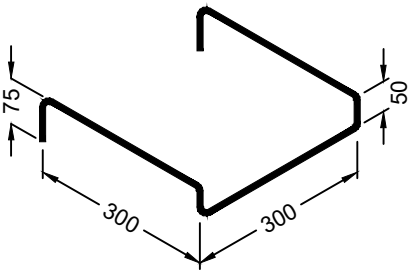
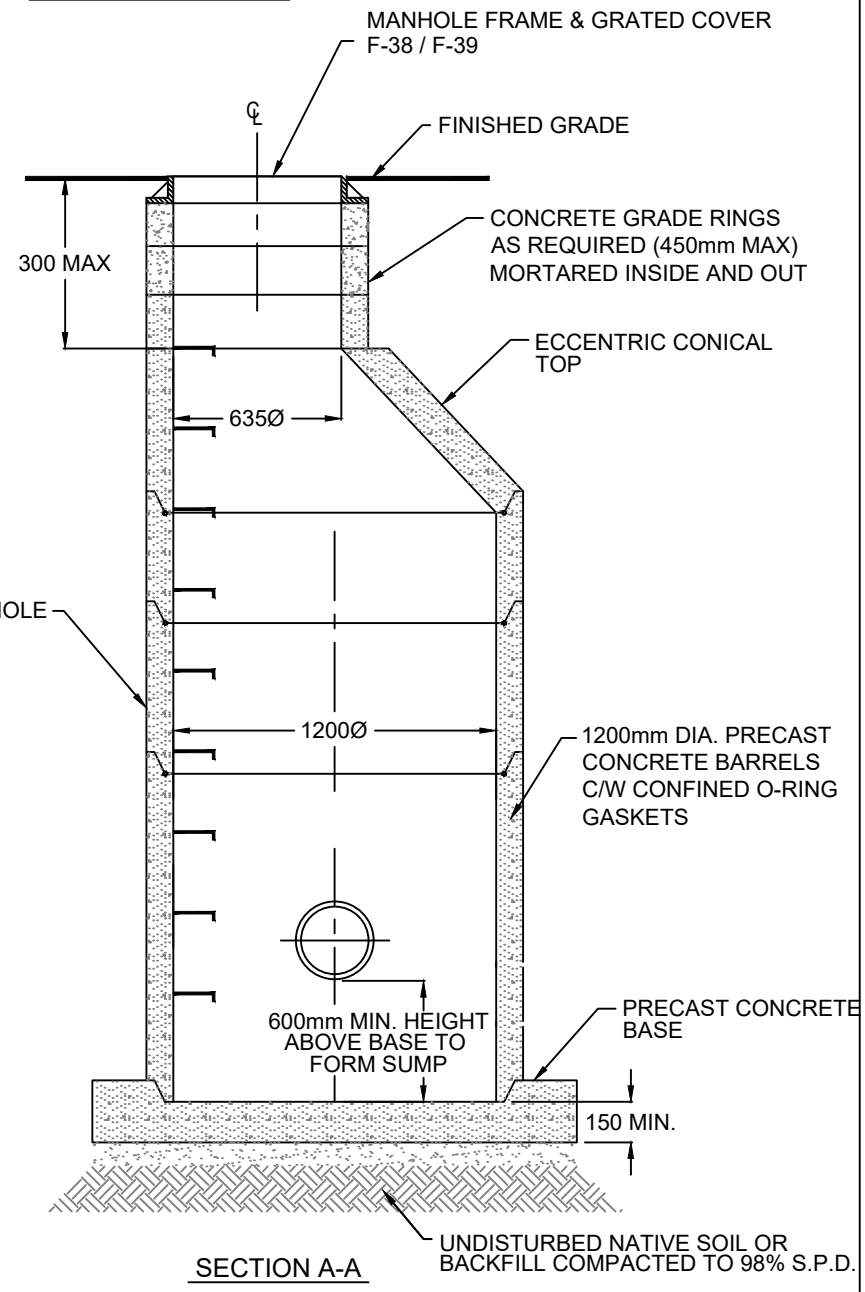


PLAN VIEW



20Ø SAFETY STEPS



SECTION A-A

NOTES:

1. SAFETY STEPS TO BE SPACED AT 400 MAX. DISTANCE. LAST STEP TO BE 300 MX. ABOVE BENCHING.
2. PRECAST CONCRETE COMPONENTS TO MEET CURRENT A.S.T.M. C478 STANDARDS.
3. CAST IN PLACE CONCRETE TO BE 25 MPa AT 28 DAYS.
4. CHANNELING AND BENCHING TO BE FINISHED TO TROWEL SMOOTHNESS.
5. COMPACT BACKFILL AROUND MANHOLES TO A MINIMUM OF 98% STANDARD PROCTOR DENSITY.
6. JOINTS, GRADE RINGS AND CONES, AND BETWEEN RINGS AND FRAMES MUST BE FINISHED WITH A RAM NECK MATERIAL AND FINISHED WITH NON-SHRINK GROUT INSIDE AND OUT.
7. WICK DRAINS TO EXTEND 100mm - 150mm INTO CATCH BASIN
8. THE PLACEMENT OF THE FIRST LADDER RUNG CAN VARY (BARREL SECTION OR GRADE RING INSERT) BUT MUST NOT EXCEED 600mm FROM RIM TO FIRST RUNG.
9. GRADE RINGS MUST BE SET PLUMB TO THE BARREL AND NOT BE STAGGERED.

1200 Diameter Catch Basin Manhole With F38/F39 Frame and Cover

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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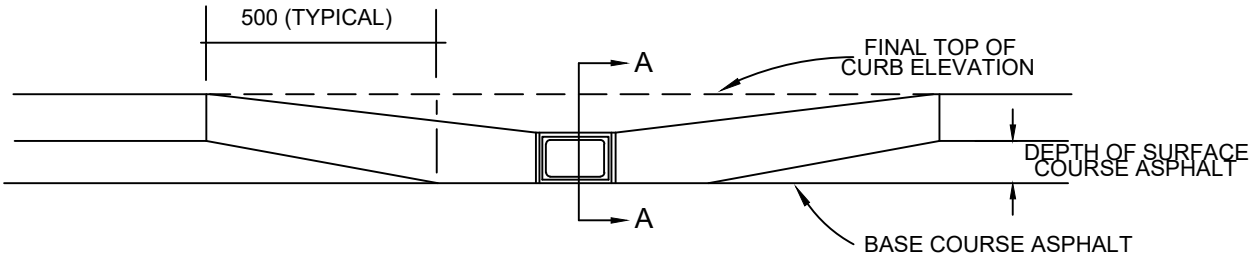
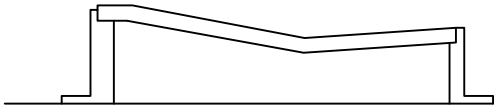
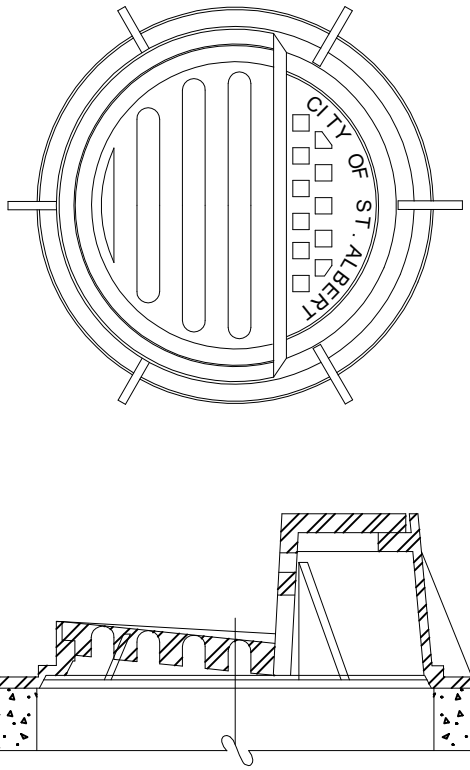




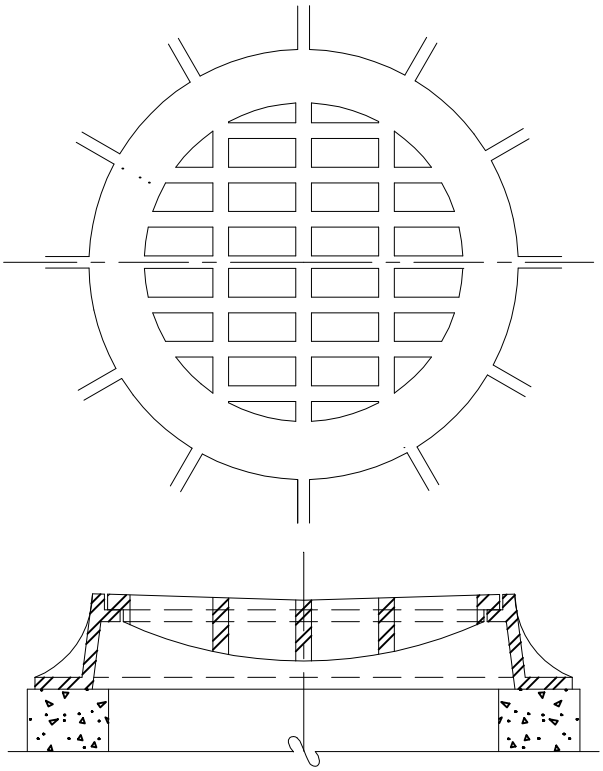
SECTION A-A

TYPICAL CATCH BASIN IN LOW POINT, PRIOR TO SURFACE COURSE ASPHALT

STANDARD FRAMES AND COVERS



F - 36A
(2 - PIECE, BIKE SAFE GRATE)



F - 38

Typical Catch Basin Cover Details

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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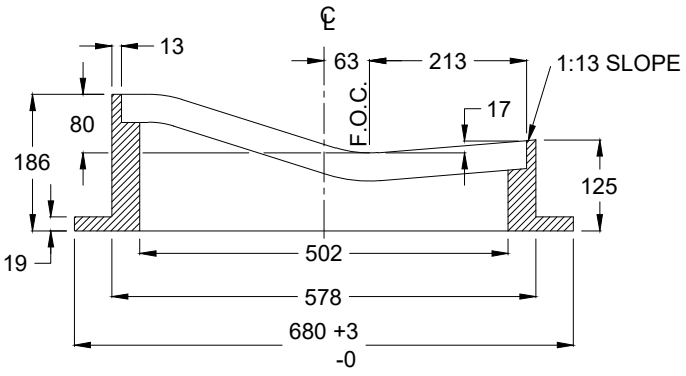
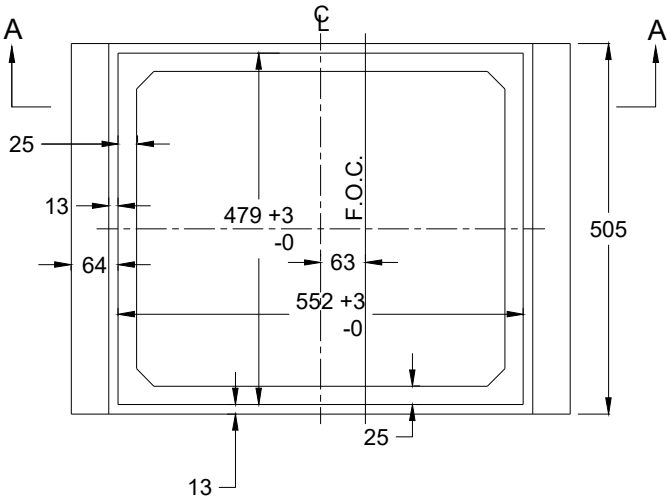
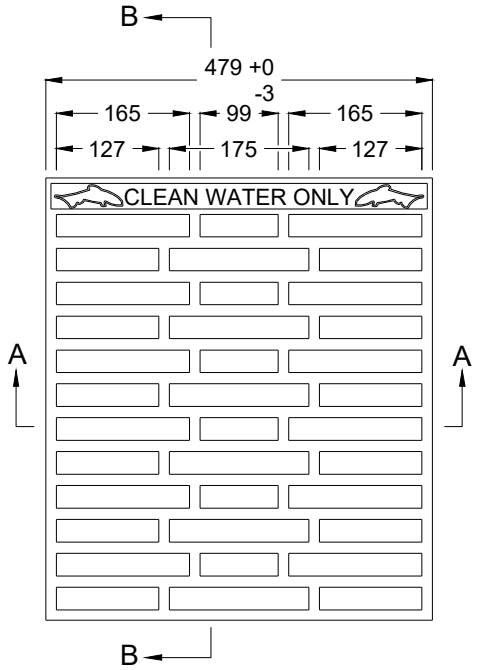


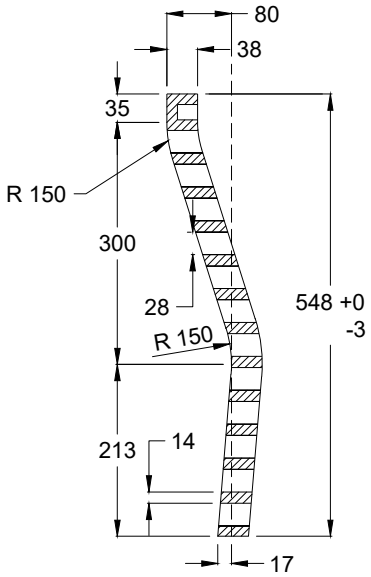
FRAME - SECTION A-A



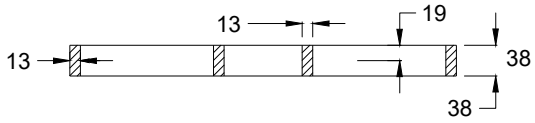
FRAME - PLAN



GRATE - PLAN



GRATE - SECTION B-B



GRATE - SECTION A-A

MATERIAL SPECIFICATIONS

FRAME

* GREY CAST IRON TO CONFORM TO CLASS 25B A.S.T.M. A48 (LATEST EDTION)

GRATE

* DUCTILE IRON TO CONFORM TO A.S.T.M. A536 (LATEST EDITION) GRADE 80-55-06

K-7 Type Catch Basin

REVIEWED BY: Neeraj Sinha , Utilities Engineer

City of St. Albert Cultivate Life
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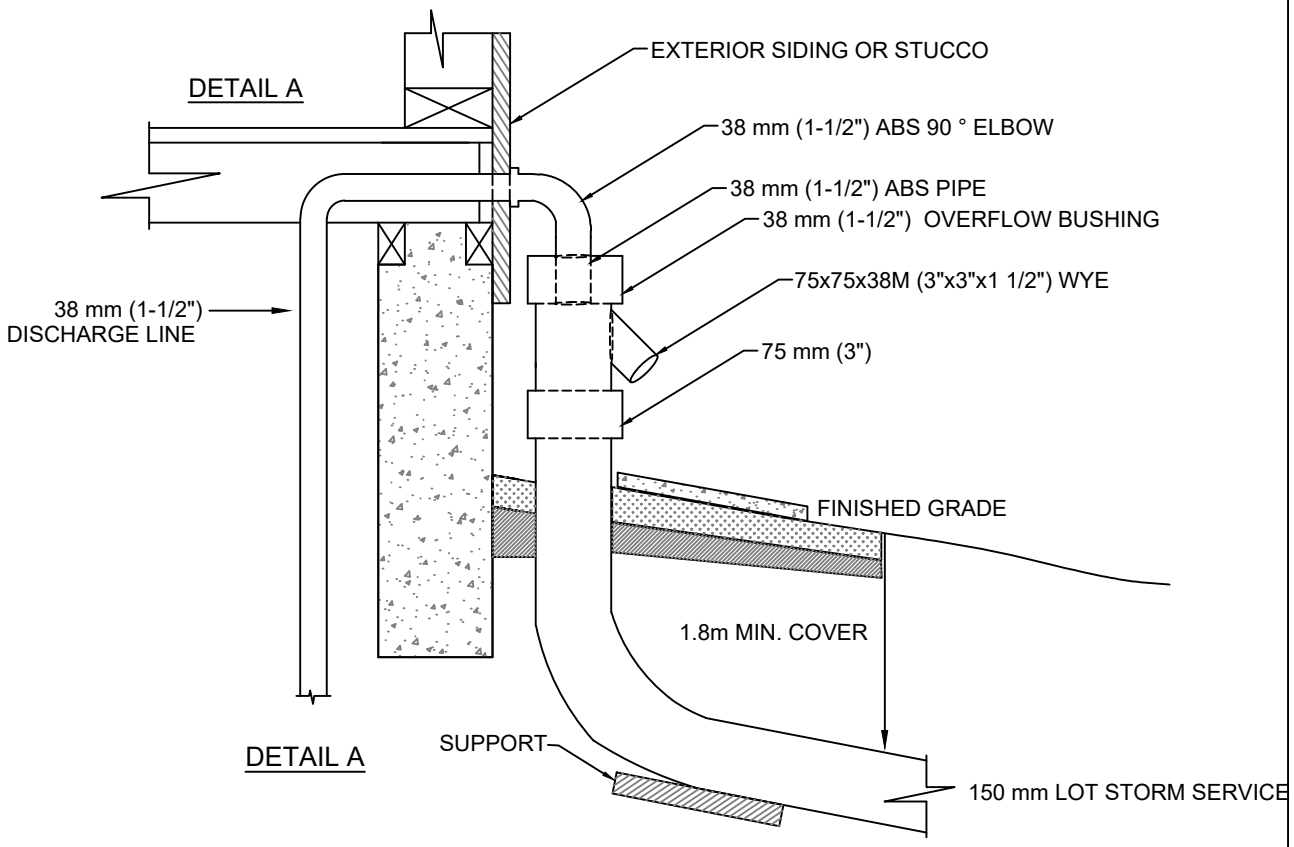
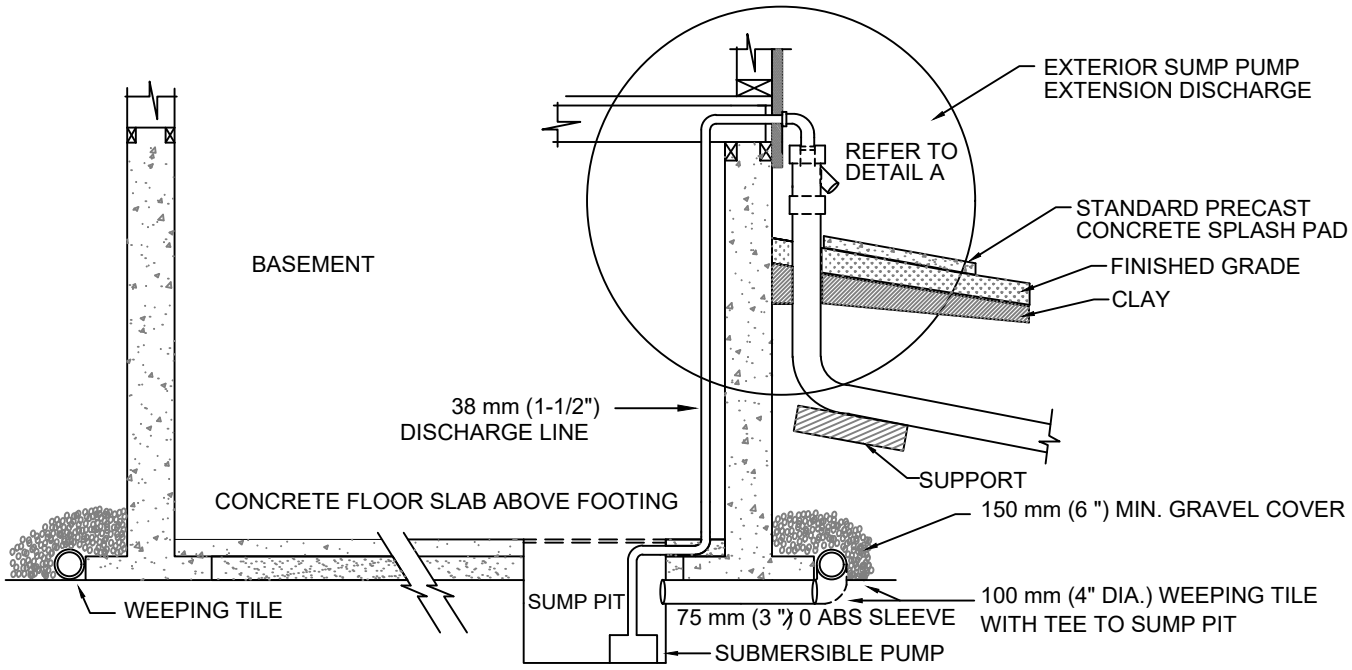
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov 09, 2021	NTS	7.5





NOTES:

1. THE SUMP PUMP DISCHARGE EXTENSION SYSTEM MUST BE INSTALLED TO PROVIDE AN OVERFLOW IN THE EVENT THAT THE STORM DRAINAGE FLOWS CEASE DUE TO BLOCKAGE, FREEZING OR OTHER PROBLEMS.
2. IF THE 150 mm SHALLOW STORM PIPE SYSTEM (3rd PIPE) IS PRESENT WITHIN THE UTILITY EASEMENT, THEN CONNECT THE 150 mm LOT STORM SERVICE INTO THE SHALLOW STORM PIPE SYSTEM.
3. IF THERE IS NO 150 mm SHALLOW STORM PIPE SYSTEM (3rd PIPE) PRESENT WITHIN THE UTILITY EASEMENT, THEN CONNECT THE 150 mm LOT STORM SERVICE DIRECTLY INTO THE STORM MAIN.

Typical Sump Pump Connection

REVIEWED BY:

City of St. Albert Cultivate Life
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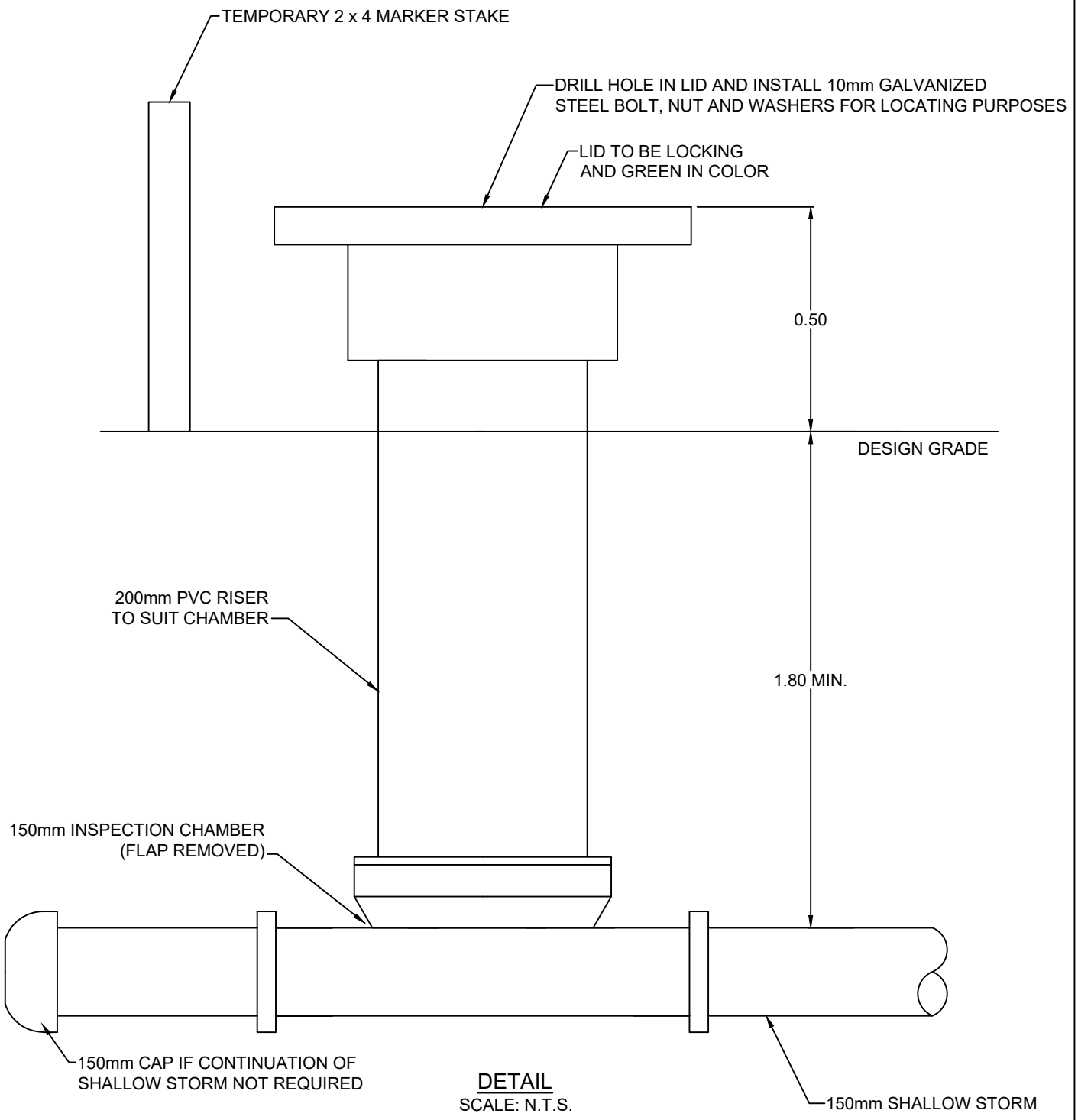
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov. 18, 2021	NTS	7.6



DETAIL
SCALE: N.T.S.

NOTES:
1. LOCATION TO BE IN ACCORDANCE WITH ENGINEERING DRAWINGS.
2. THE LID TO BE LOWERED TO FINISH GRADE AT F.A.C.

Typical Clean Out

REVIEWED BY: Neeraj Sinha, Utlities Engineer

DATE	DESCRIPTION	BY

City of St. Albert Cultivate Life
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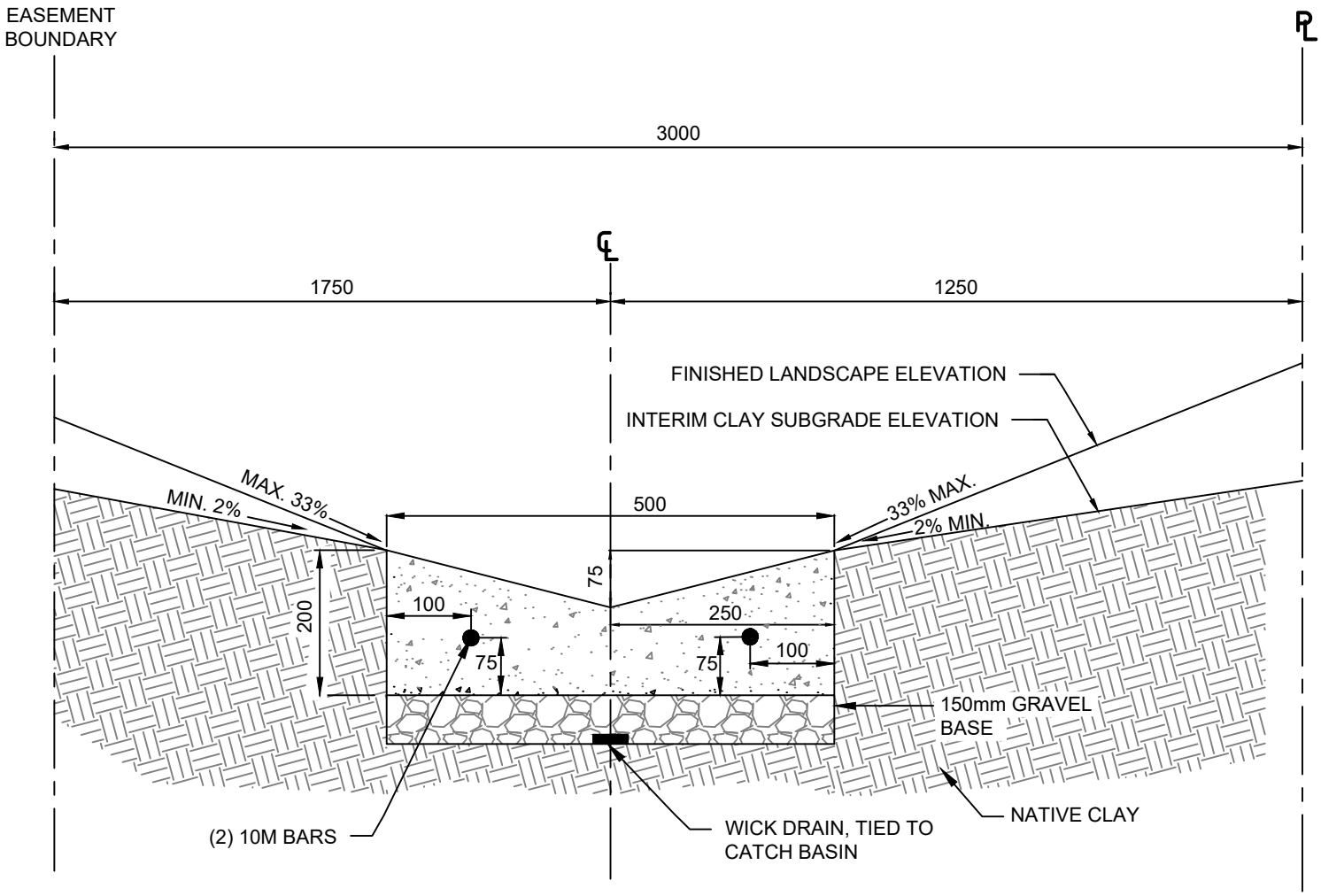
ALBERTA, T8N 3Z9, CANADA

DATE	SCALE	DRAWING NO.
Nov 09, 2021	NTS	7.7



NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. INSTALL WICK DRAIN UNDERNEATH CENTERLINE OF CONCRETE SWALE AND CONNECT TO CATCH BASIN AT TERMINUS OF SWALE.
3. 150 mm TO 25 mm DIAMETER CRUSHED GRAVEL COMPACTED TO 98% SPD.
4. NATIVE CLAY COMPACTED TO 98% SPD (CEMENT STABILIZE AS REQUIRED).
5. CLAY SUBGRADE ADJACENT TO SWALE EDGES TO BE PLACED AFTER SWALE INSTALLATION AND SHALL REMAIN UNTIL FINISHED LANDSCAPING IS COMPLETE.
6. FINISHED LANDSCAPE GRADE ADJACENT TO SWALE MAY VARY BETWEEN 2% - 33% BUT MUST MATCH THE EDGE OF THE CONCRETE SWALE AND CONVEY DRAINAGE INTO THE CHANNEL OF THE SWALE.
7. SWALE AND CHANNEL CAPACITY MUST BE DESIGNED TO CONVEY THE 1:100 STORM EVENT OF THE CONTRIBUTING AREA WITHIN THE BOUNDS OF THE EASEMENT.
8. MINIMUM 0.75% LONGITUDINAL GRADE IS REQUIRED FOR ALL CONCRETE SWALES.

3.0 m Drainage Easement - Concrete Swale 500 mm

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
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DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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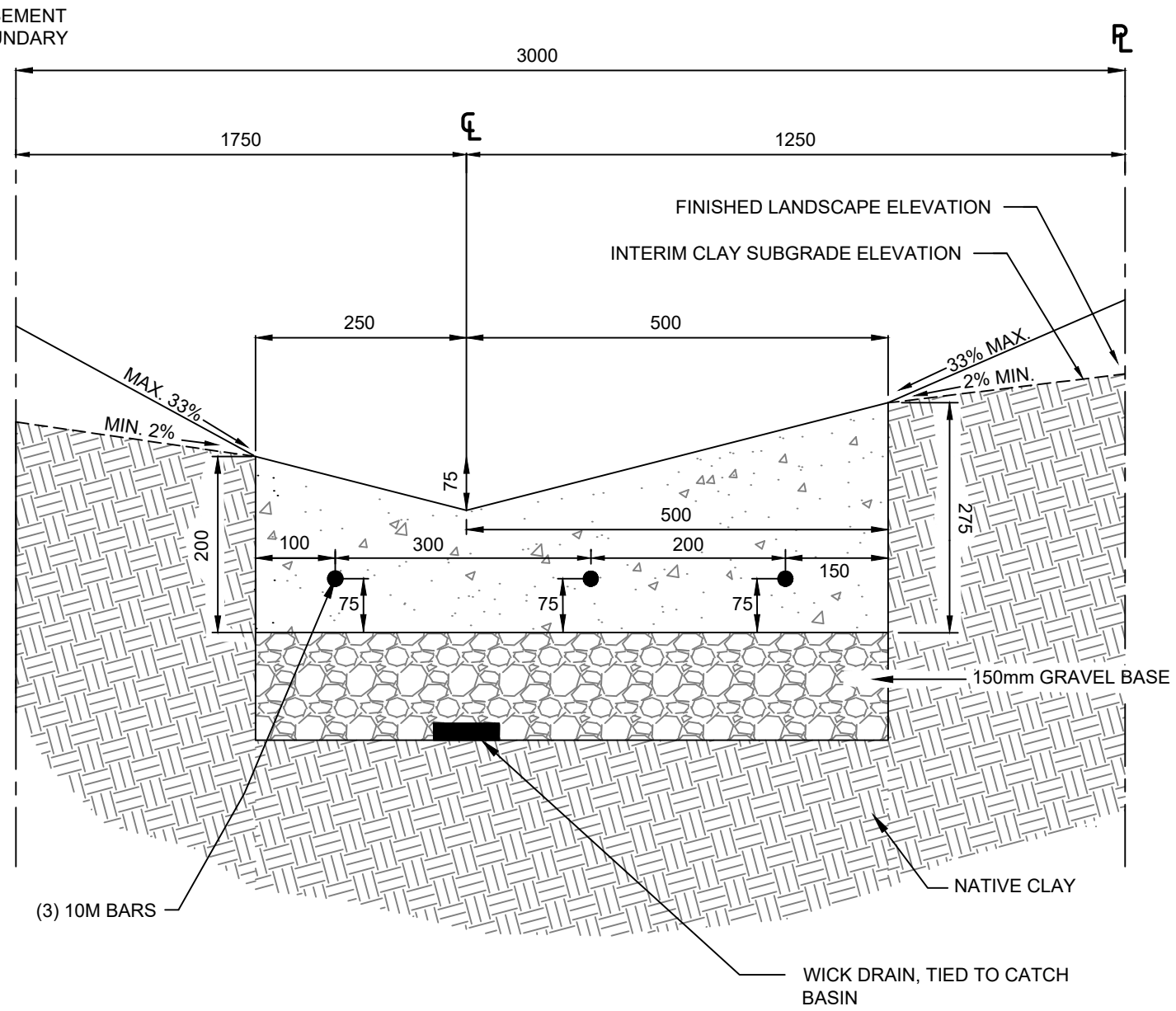

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS.
2. INSTALL WICK DRAIN UNDERNEATH CENTERLINE OF CONCRETE SWALE AND CONNECT TO CATCH BASIN AT TERMINUS OF SWALE.
3. 150 mm OF 25 mm DIAMETER CRUSHED GRAVEL COMPACTED TO 98% SPD.
4. NATIVE CLAY COMPACTED TO 98% SPD (CEMENT STABILIZE AS REQUIRED).
5. CLAY SUBGRADE ADJACENT TO SWALE EDGES TO BE PLACED AFTER SWALE INSTALLATION AND SHALL REMAIN UNTIL FINISHED LANDSCAPING IS COMPLETE.
6. FINISHED LANDSCAPE GRADE ADJACENT TO SWALE MAY VARY BETWEEN 2% - 33% BUT MUST MATCH THE EDGE OF THE CONCRETE SWALE AND CONVEY DRAINAGE INTO THE CHANNEL OF THE SWALE.
7. SWALE AND CHANNEL CAPACITY MUST BE DESIGNED TO CONVEY THE 1:100 STORM EVENT OF THEN CONTRIBUTING AREA WITHIN THE BOUNDS OF THE EASEMENT.
8. MINIMUM 0.75% LONGITUDINAL GRADE IS REQUIRED FOR ALL CONCRETE SWALES.

3.0 m Drainage Easement - High Back Concrete Swale 750 mm

REVIEWED BY: Neeraj Sinha, Utlities Engineer

City of St. Albert Cultivate Life
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DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
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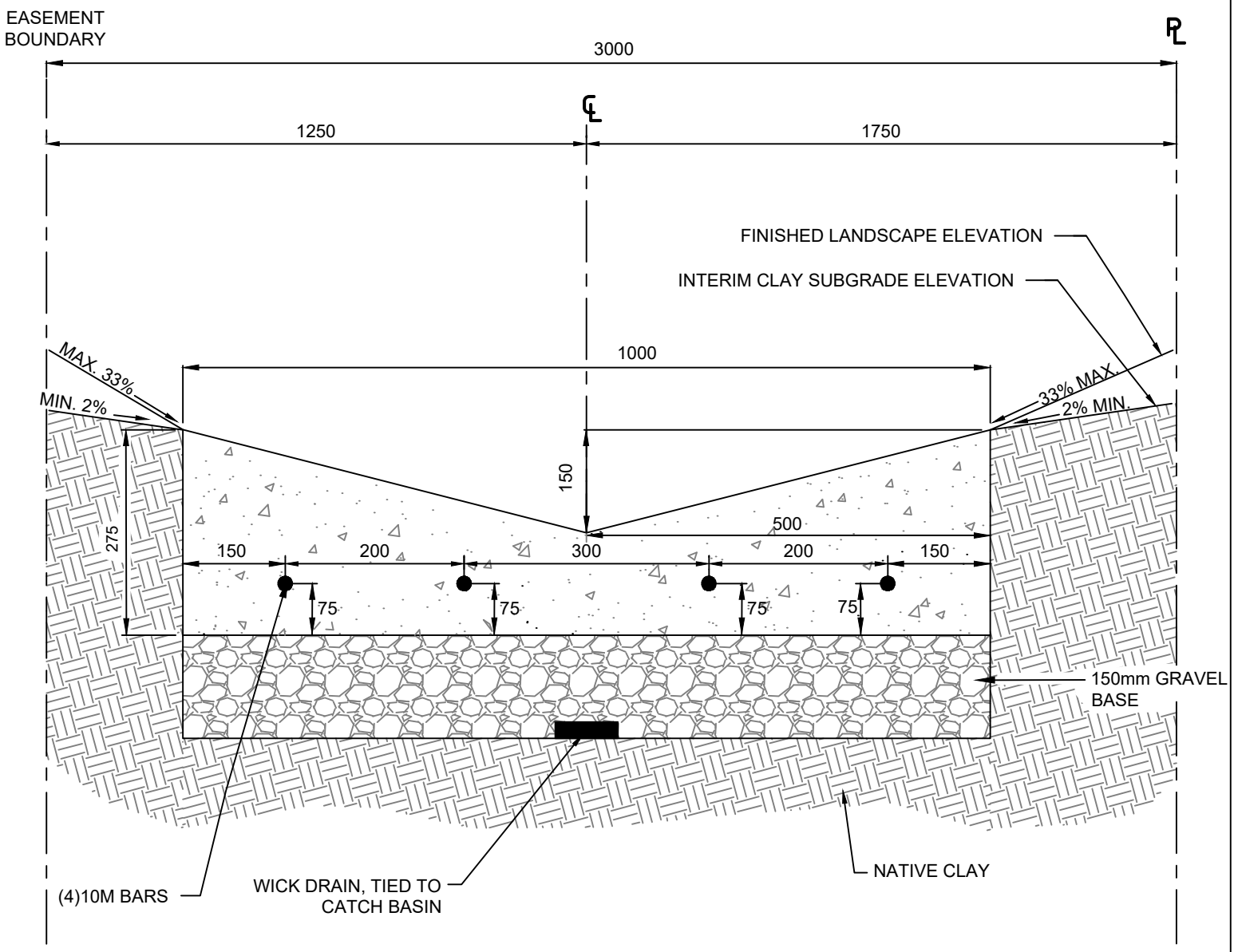

NOTES:

1. ALL DIMENSIONS IN MILLIMETRES.
2. INSTALL WICK DRAIN UNDERNEATH CENTERLINE OF CONCRETE SWALE AND CONNECT TO CATCH BASIN AT TERMINUS OF SWALE.
3. 150 mm TO 25 mm DIAMETER CRUSHED GRAVEL COMPACTED TO 98% SPD.
4. NATIVE CLAY COMPACTED TO 98% SPD (CEMENT STABILIZE AS REQUIRED).
5. CLAY SUBGRADE ADJACENT TO SWALE EDGES TO BE PLACED AFTER SWALE INSTALLATION AND SHALL REMAIN UNTIL FINISHED LANDSCAPING IS COMPLETE.
6. FINISHED LANDSCAPE GRADE ADJACENT TO SWALE MAY VARY BETWEEN 2% - 33% BUT MUST MATCH THE EDGE OF THE CONCRETE SWALE AND CONVEY DRAINAGE INTO THE CHANNEL OF THE SWALE.
7. SWALE AND CHANNEL CAPACITY MUST BE DESIGNED TO CONVEY THE 1:100 STORM EVEN OF THE CONTRIBUTING AREA WITHIN THE BOUNDS OF THE EASEMENT.
8. MINIMUM 0.75% LONGITUDINAL GRADE IS REQUIRED FOR ALL CONCRETE SWALES.

3.0 m Drainage Easement - Concrete Swale 1000 mm

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
ENGINEERING SERVICES
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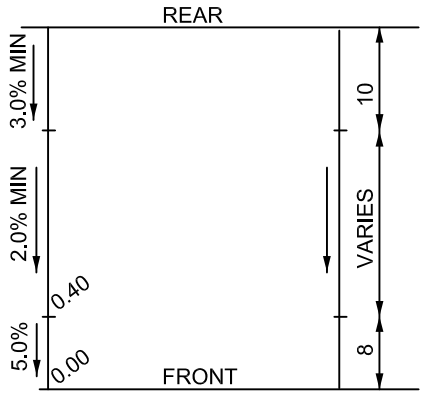
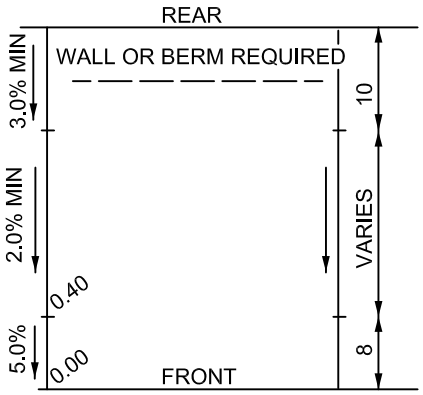
DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
Nov 09, 2021	NTS	7.8C

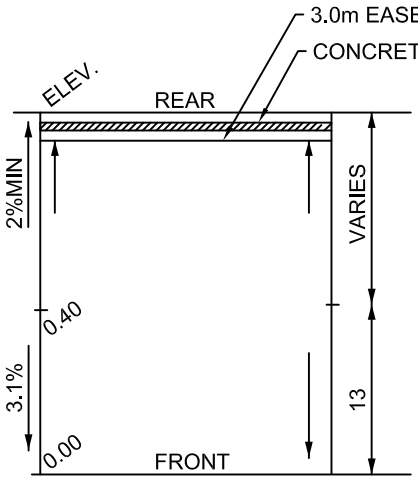
BACK TO FRONT DRAINAGE



TYPE 1
3 - 6% OVERALL

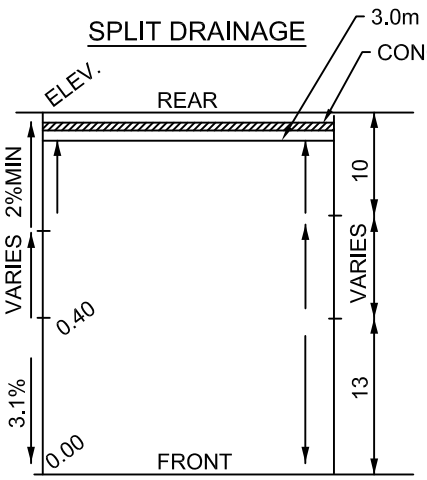


TYPE 2
6 - 10% MAX. OVERALL



TYPE 3
BASIC

SPLIT DRAINAGE



TYPE 4
WALKOUT BASEMENT

FOR SPLIT DRAINAGE REAR CONCRETE SWALE REQUIRED WITHIN 3.0m EASEMENT. WITH WRITTEN APPROVAL FROM CITY ENGINEER

SANITARY SERVICE INVERT TO BE 3.0m BELOW FINAL GRADE AT PROPERTY LINE.

CONSIDERATION MUST BE GIVEN TO THE DEPTH OF SANITARY SERVICE INVERT WHEN SETTING FINISHED GRADE AT PROPERTY LINE.

NOTES:

1. ALL RESIDENTIAL LOTS SHALL CONVEY SURFACE DRAINAGE TO PUBLIC PROPERTY OR DRAINAGE EASEMENTS WITHOUT ADVERSELY AFFECTING ADJACENT PRIVATE PROPERTY OWNERS.
2. LOT GRADING DESIGN SHALL BE PREFERENTIALLY BACK TO FRONT DRAINAGE (TYPES 1 AND 2).
3. SPLIT DRAINAGE LOT DESIGNS (TYPE 3 AND 4) REQUIRE A CONCRETE SWALE AND CONCRETE CHANNEL CAPACITY ANALYSIS BE COMPLETED BY THE DESIGN ENGINEER. THIS ANALYSIS SHALL DEMONSTRATE THE REQUIRED CAPACITY TO CONVEY THE 1:100 YEAR STORM EVEN FROM THE CONTRIBUTING AREA WITHIN THE CONCRETE CHANNEL.
4. DESIGN ELEVATIONS MUST BE SHOWN AT REAR PROPERTY LINE AND CONCRETE SWALE INVERT.
5. SUGGESTED HOUSE FLOOR ELEVATIONS ARE NOT REQUIRED ON THE OVERALL PLAN.
6. THE SURVEYOR SHALL SET THE HOUSE GRADES TO MEET BUILDING ELEVATION REQUIREMENTS.
7. FINAL ELEVATION OF FENCES MUST BE RECORDED AND FORWARDED TO THE CITY.

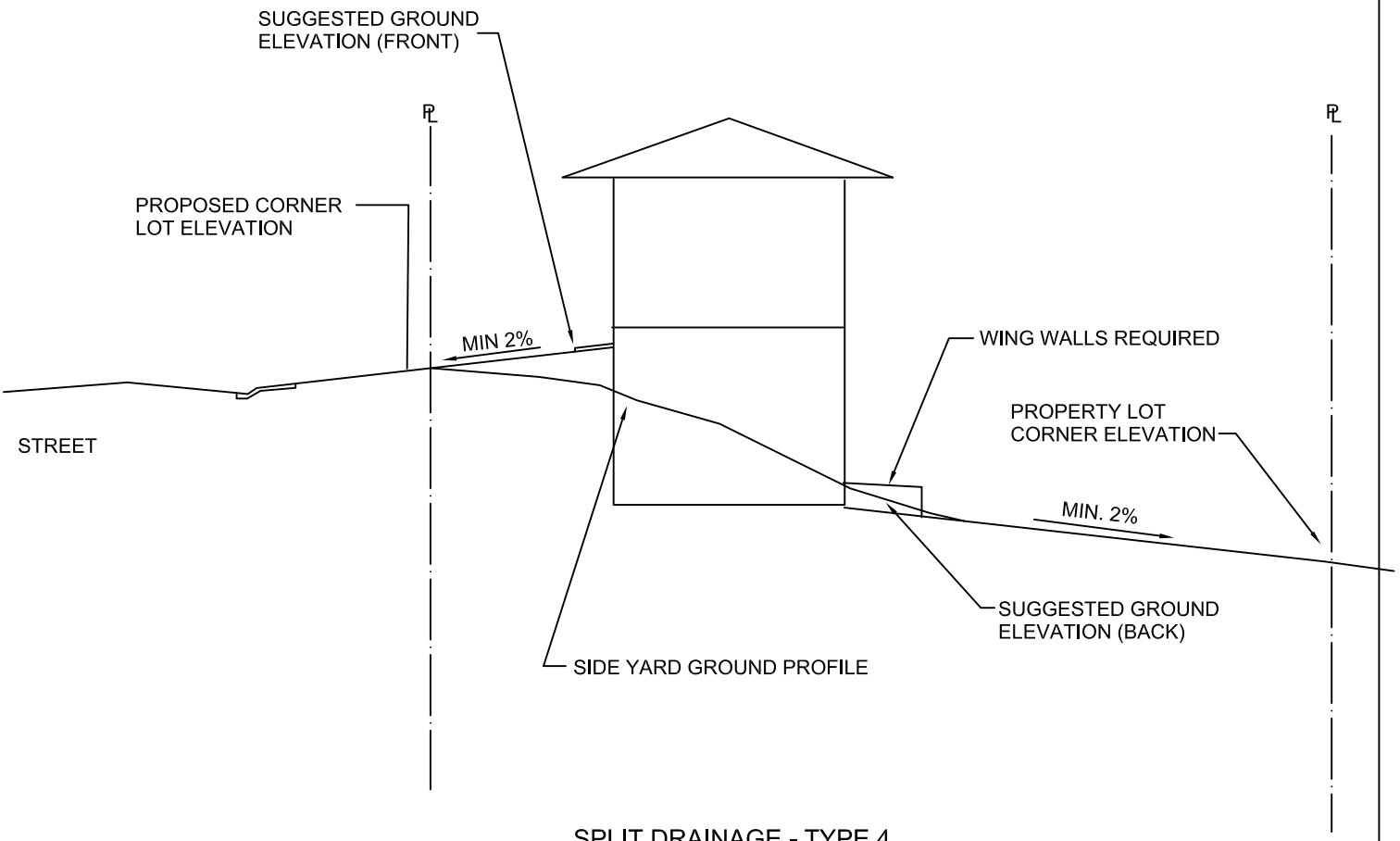
Lot Grading

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
November 23, 2021	NTS	7.9



SPLIT DRAINAGE - TYPE 4

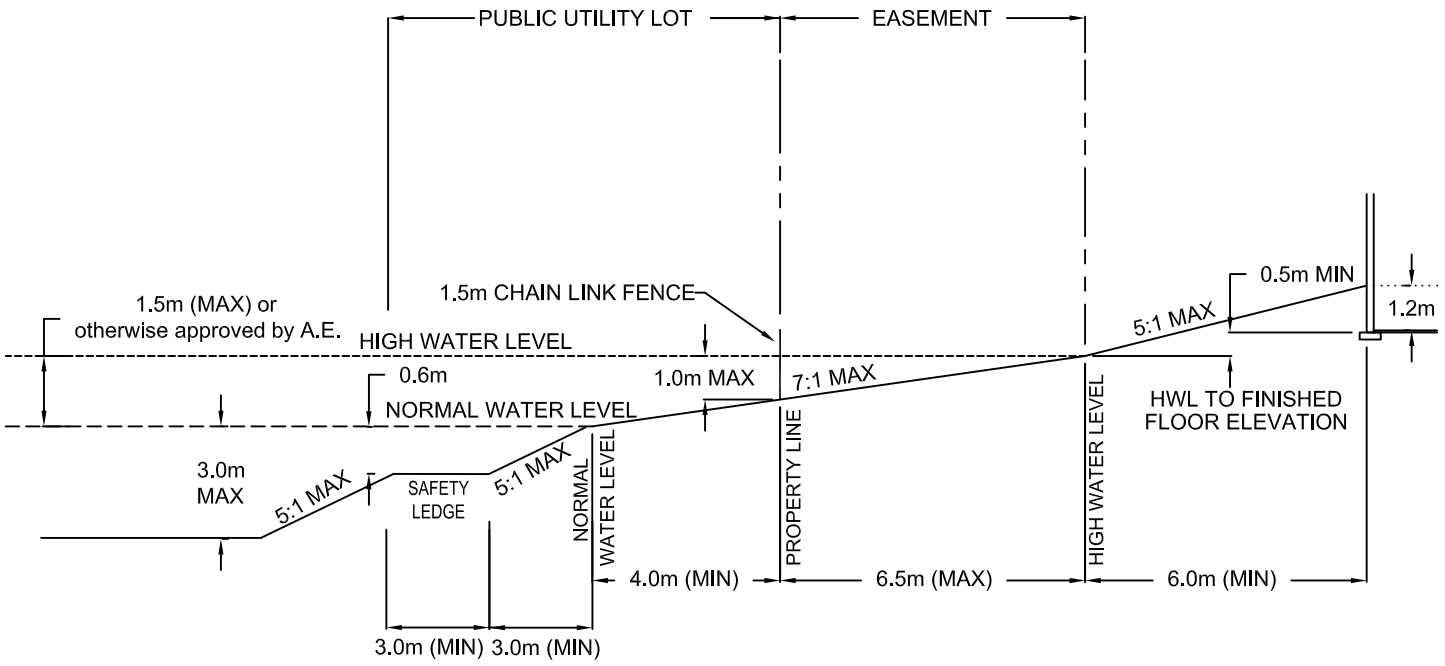
Typical Walk-Out Basement Lot Grading

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
November 23, 2021	NTS	7.10



NOTES:

1. WHERE POND DOES NOT BORDER RESIDENTIAL YARDS THE SIDE SLOPE FROM NORMAL WATER LEVEL TO HIGH WATER LEVEL MAY BE INCREASED TO 5:1.
2. WHERE POND DOES NOT BORDER RESIDENTIAL YARDS THE SIDE SLOPE FROM THE BOTTOM OF THE POND TO THE NORMAL WATER LEVEL MAY BE INCREASED TO 4:1. A 3.0m SAFETY LEDGE WILL STILL NEED TO BE PROVIDED AT A MAXIMUM DEPTH OF 0.6m.

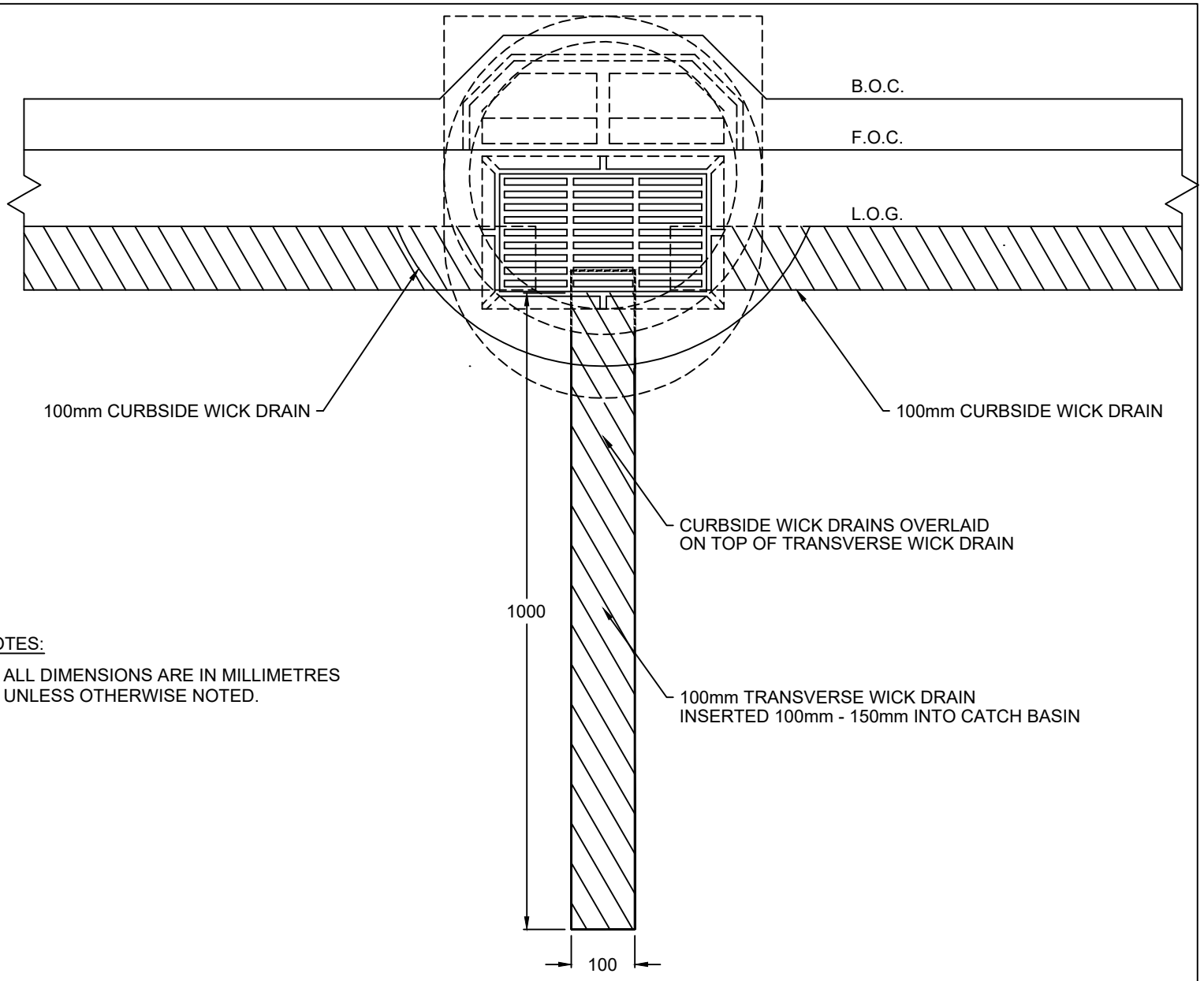
Cross Section For Storm Water Retention Lake

REVIEWED BY: Neeraj Sinha, Utilities Engineer

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

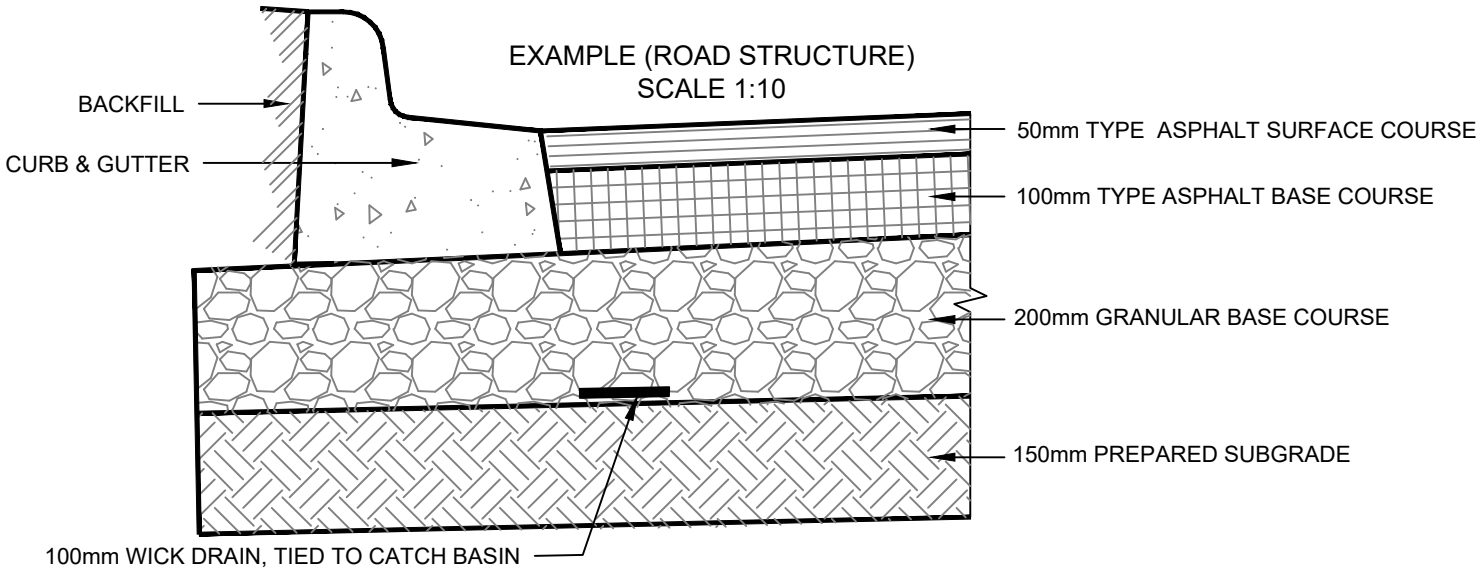
DATE	SCALE	DRAWING NO.
Nov 09, 2021	NTS	7.11



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.

EXAMPLE (ROAD STRUCTURE)
SCALE 1:10



Wick Drain Connection to Catch Basin

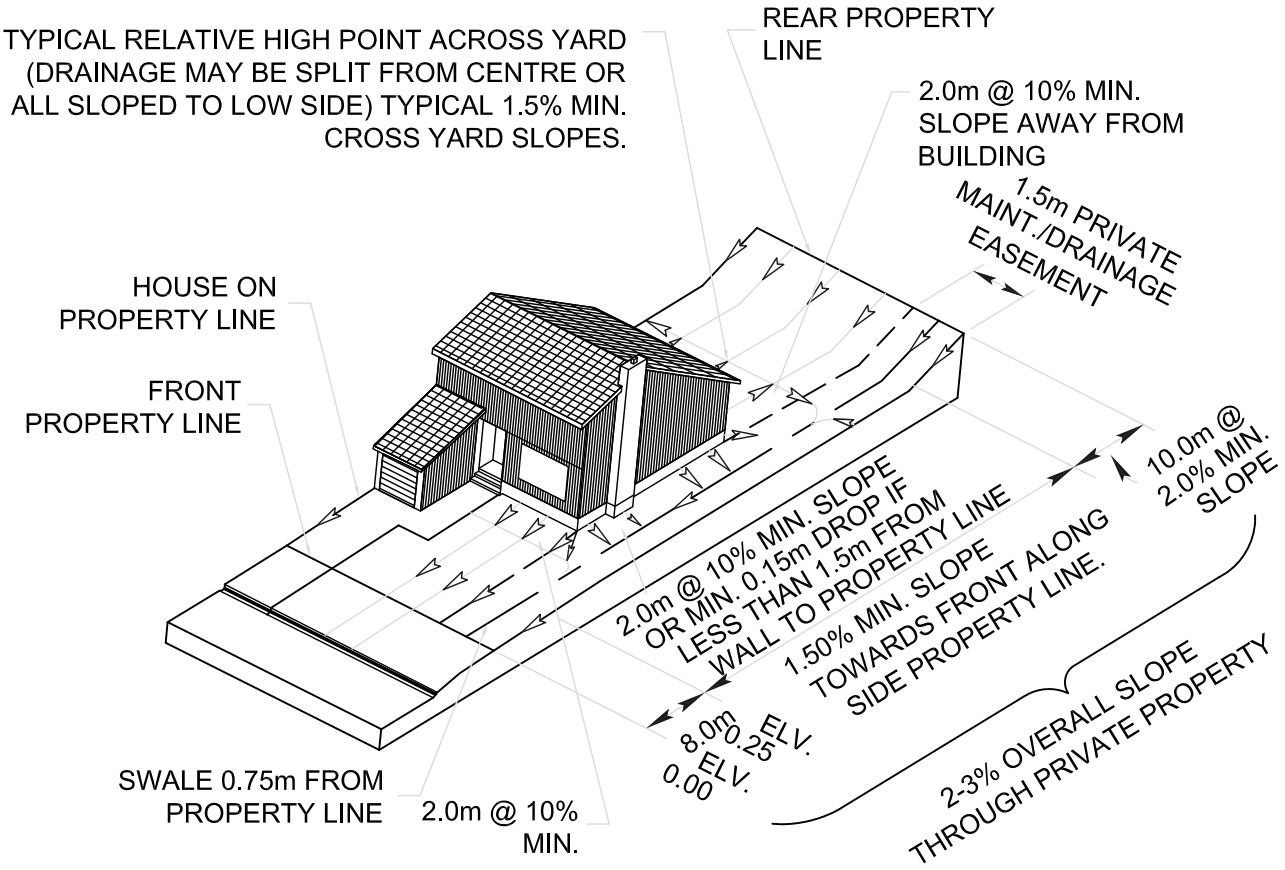
REVIEWED BY:

Faizal Kanji

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
11/10/2021	NTS	7.12



NOTE:

1. ALL ROOF LEADERS FROM THE DWELLING ARE CONNECTED TO THE STORM SEWER SERVICE.
2. NO ROOF LEADER DISCHARGE SHALL BE DIRECTED TO THE MAINTENANCE EASEMENT.

2-3% OVERALL LOT SLOPE/HOUSE ON PROPERTY LINE REAR TO FRONT DRAINAGE

Type AZ Zero Lot Rear to Front Drainage

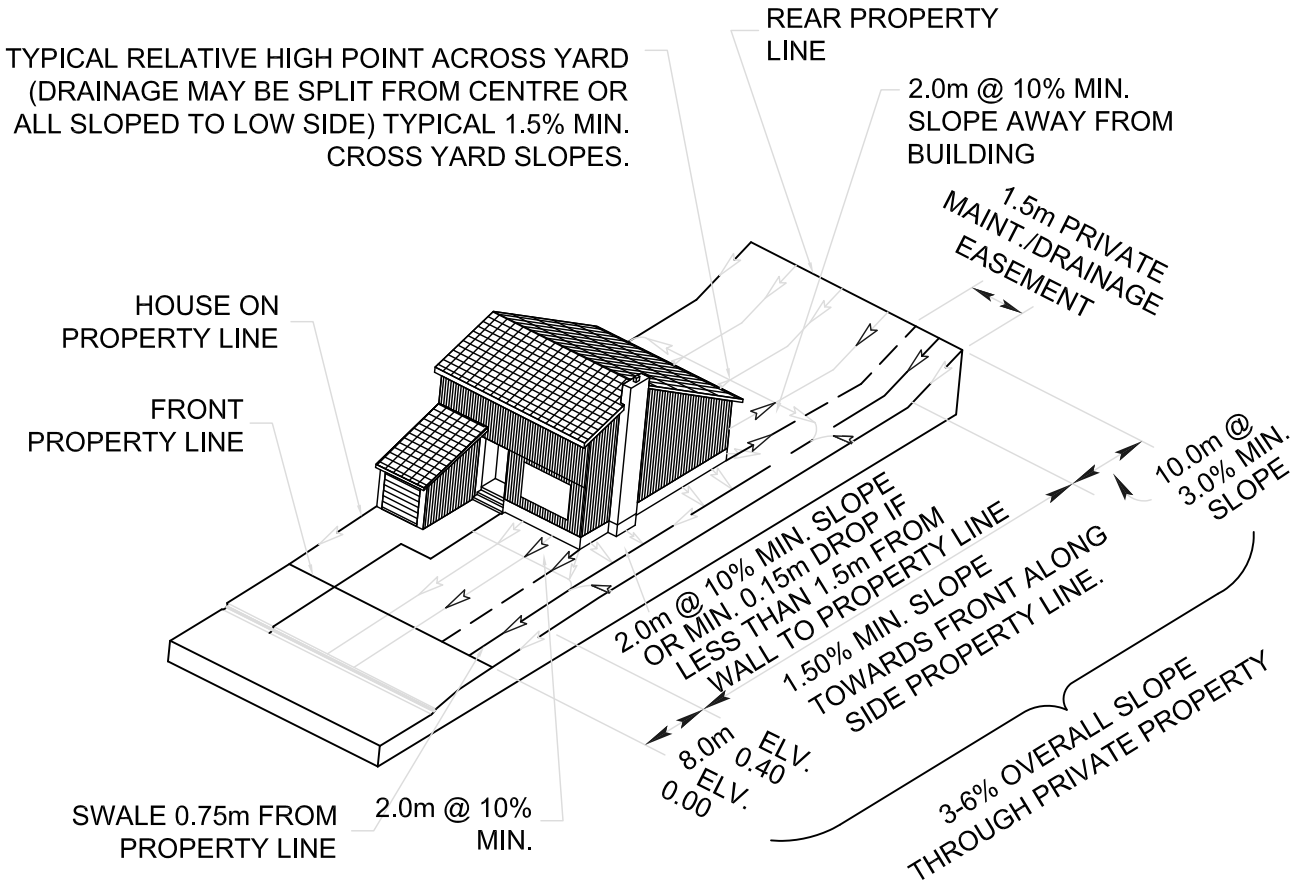
REVIEWED BY:

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
November 23, 2021	NTS	7.13



NOTE:

1. ALL ROOF LEADERS FROM THE DWELLING ARE CONNECTED TO THE STORM SEWER SERVICE.
2. NO ROOF LEADER DISCHARGE SHALL BE DIRECTED TO THE MAINTENANCE EASEMENT.

3-6% OVERALL LOT SLOPE/HOUSE ON PROPERTY LINE REAR TO FRONT DRAINAGE

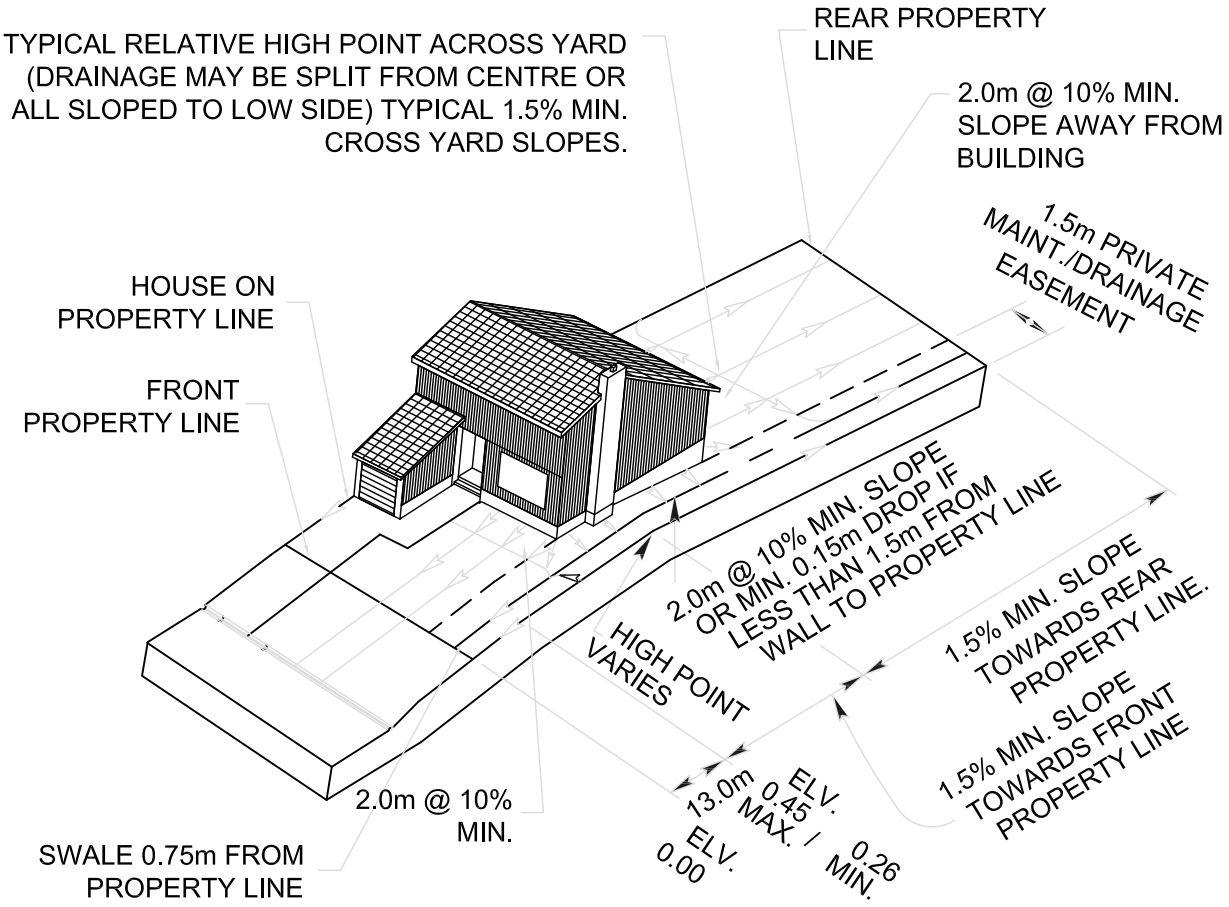
Type BZ Zero Lot Rear to Front Drainage

REVIEWED BY:

City of St. Albert Cultivate Life
ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
November 23, 2021	NTS	7.14



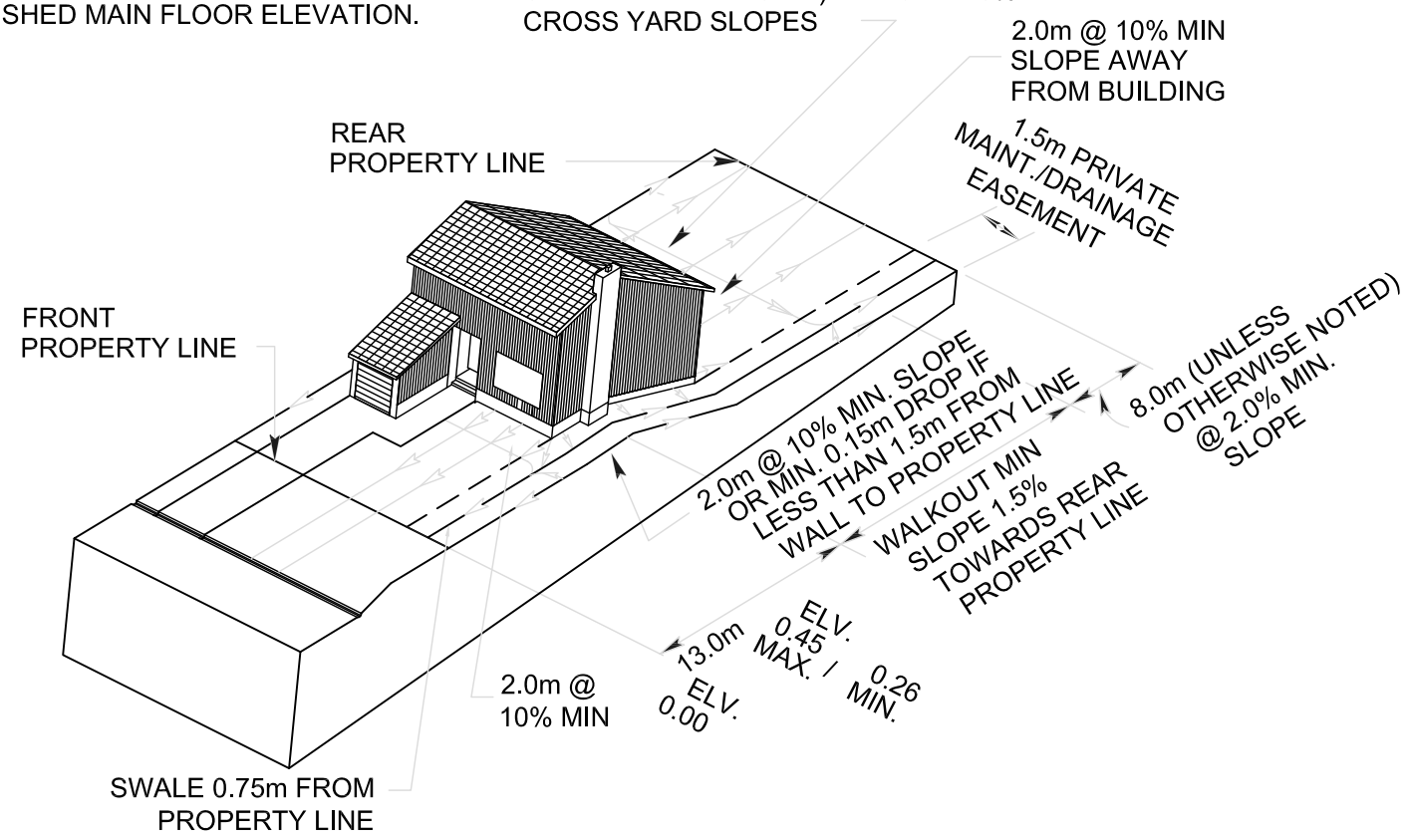
NOTE:

1. ALL ROOF LEADERS FROM THE DWELLING ARE CONNECTED TO THE STORM SEWER SERVICE.
2. NO ROOF LEADER DISCHARGE SHALL BE DIRECTED TO THE MAINTENANCE EASEMENT.

HOUSE ON PROPERTY LINE
STANDARD SPLIT DRAINAGE

Type DZ Zero Lot Standard Split Drainage			REVIEWED BY:
City of St. Albert Cultivate Life ENGINEERING SERVICES 5 ST. ANNE STREET, ST. ALBERT ALBERTA, T8N 3Z9, CANADA	DATE / DESCRIPTION / BY		DATE: November 23, 2021 / SCALE: NTS / DRAWING NO.: 7.15

NOTE:
ALL REAR-SERVICED ROOF LEADER STANDPIPES TO BE EXTENDED TO FINISHED MAIN FLOOR ELEVATION.



NOTE:

1. ALL ROOF LEADERS FROM THE DWELLING ARE CONNECTED TO THE STORM SEWER SERVICE.
2. NO ROOF LEADER DISCHARGE SHALL BE DIRECTED TO THE MAINTENANCE EASEMENT.

HOUSE ON PROPERTY LINE
WALKOUT SPLIT DRAINAGE

Type WZ Zero Lot Walkout Split Drainage

REVIEWED BY:

City of St. Albert Cultivate Life

ENGINEERING SERVICES
5 ST. ANNE STREET, ST. ALBERT
ALBERTA, T8N 3Z9, CANADA

DATE	DESCRIPTION	BY

DATE	SCALE	DRAWING NO.
November 23, 2021	NTS	7.16