

Juniper West Developments Ltd.
2049 Highland Place
Kamloops, BC
V2E 0A8

October 11, 2023
File: 1042

Attention: Mr. Doug Mackenzie

**Re: Geotechnical Summary Report – Trailside Phase 2 (Lots 1 to 46)
Coldwater Drive & Camas Court, Kamloops, BC**

This report provides geotechnical engineering comments and recommendations that relate to the construction works that were completed for the subdivision and provides a geotechnical summary and guidelines for residential building construction.

Telford Geotechnical Ltd. has conducted field reviews and materials testing during the earthworks, gabion wall construction, structural grading fills, utility installation and road construction. A reduced size set of the Grading Plan Drawings (354-422-05 Rev. 8, 354-422-06 Rev. 7, 354-422-07 Rev. 8 and 354-422-10 Rev. 7) are attached for reference. The subsurface soils encountered during the site works were generally consistent with our Geotechnical Investigation Report dated March 31, 2022. Bedrock could be encountered at shallow depths at the rear of lots 21 to 24.

A summary of the subdivision works, and geotechnical guidelines is summarized below:

1. The subdivision is underlain by natural deposits of glacial till and/or bedrock. The lots were constructed in a cut or fill depending on their location and the grading fills in the subdivision were compacted to a minimum of 95% Modified Proctor (ASTM D1557) maximum dry density (MPMDD).
2. A gabion wall was constructed in the rear yards of lots 10 to 16, 35 to 38 and 41 to 46. A building setback has been established behind the geogrid zone of the walls. Within the setback zone, no permanent structures, pools, fill slopes and/or retaining walls that exceed 0.5 m in height may be constructed above the existing site grades. A gabion wall was constructed on the south side of lots 1 to 6, 17 to 26 and 28-34 and no excavation is permitted within 2.0 m of the retaining walls unless approved by the Geotechnical Engineer of Record.
3. Permanent cut and fill slopes for the proposed development are recommended to not exceed 2H:1V. The permanent cut and fill slopes should be vegetated or armored with rock to reduce erosion and may require periodic maintenance.
4. The compacted fills, bedrock and natural soils as described in the reports are considered suitable for a minimum allowable bearing pressure of 100 kPa. It is recommended that the footings be constructed in accordance with Section 9.15 of the 2018 British Columbia Building Code (BCBC). The foundations should be located a minimum of 1200 mm below final grades for frost protection. The use of sulphate resistant concrete is recommended for all concrete in contact with the ground.

5. It is recommended that the floor slab be constructed in accordance with Section 9.16 of the 2018 BCBC.
6. A perimeter drain shall be provided for all below grade interior spaces in accordance with Section 9.14 of the 2018 BCBC. The perimeter drain should consist of a 100 mm perforated PVC pipe covered with a minimum of 150 mm of drain rock and a non-woven filter cloth cover. The perimeter drains for the buildings may daylight out of the rear slope where possible (see Appendix A for perimeter drain connection). The perimeter drains connected to the municipal storm system would require a backflow preventer in the event that the storm sewer surcharges.
7. The roof drains are to be connected to the municipal storm system or can be discharged onto splash pads for some of the lots as noted in Appendix A. The roof drains are to be directed towards landscape areas and not concentrated towards an adjacent property.
8. The areas surrounding the buildings should be sloped away with a minimum gradient of at least 2% to prevent ponding of water near the buildings. Water should not be allowed to discharge directly onto adjacent lots. The use of lawn drains connected to the municipal storm system may be required where adequate drainage cannot be achieved.

A summary table has been prepared "Appendix A - Summary of Expected Sub-Surface Conditions and Geotechnical Guidelines" and is attached to this letter. These guidelines have been provided to assist the future owners and builders with the residential house design, layout and construction. The Geotechnical Engineer of Record is solely responsible for the geotechnical aspects of the design and construction field reviews including modifications to these guidelines.

This report has been prepared exclusively for Juniper West Developments Ltd. and their designated representatives, for the support of the development. The report may be used by the City of Kamloops, the Planning and Development Approving Officer for subdivision approval and permitting, and for building permit approvals. The report is authorized to be reproduced for any covenants registered on the property. The report remains the property of TGL and any other unauthorized use of, or duplication of this report is prohibited.

Based on our evaluations it is our opinion that the land may be used safely for the intended use as described in the geotechnical reports.

If you would like further details or require clarification, please do not hesitate to contact the undersigned.

For:
Telford Geotechnical Ltd.

Bill Telford, M.Eng., P.Eng.
Geotechnical Engineer

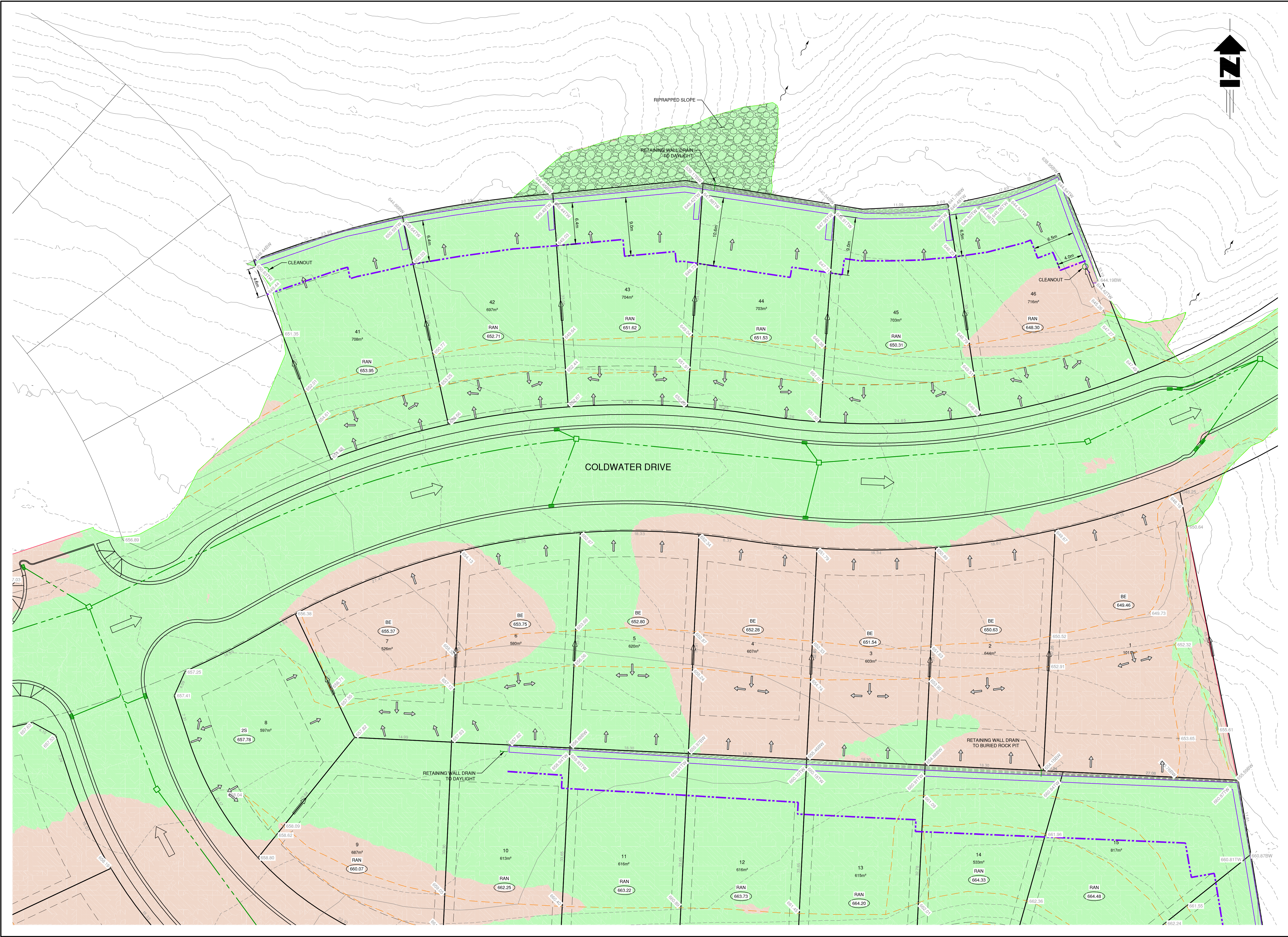
APPENDIX A -SUMMARY OF EXPECTED SUB-SURFACE CONDITIONS AND GEOTECHNICAL GUIDELINES

**JUNIPER WEST DEVELOPMENTS LTD.
TRAILSIDE PHASE 2 (LOTS 1 TO 46)**

Lot #	Assumed Building Type	Type of Slope	Expected Soil Conditions (2)	Expected Bearing Soil Preparation (3, 4)	Perimeter Drain Connection (6)	Roof Drainage Connection	Gabion Wall Setback (7)	Slope Constraints
1 to 6	Basement entry	Cut/Fill	Glacial till/Structural fill	Standard	Storm system	Storm system, or splash pads	Yes	Gabion wall in rear yard, no excavation within 2.0 m of wall
7	Basement entry	Cut/Fill	Glacial till/Structural fill	Standard	Storm system	Storm system, or splash pads	N/A	No major slopes
8 & 9	Slab-on-grade or walkout basement	Cut/Fill	Glacial till/Structural fill	Standard	Storm system/daylight	Storm system, or splash pads	N/A	No major slopes
10 to 15	Walkout basement	Fill	Structural fill	Standard	Storm system/daylight	Storm system	Yes	Gabion wall setback
16	Walkout basement	Cut/Fill	Glacial till/Structural fill	Standard	Storm system/daylight	Storm system, or splash pads	Yes	Gabion wall setback
17	Slab-on-grade	Cut	Glacial till	Standard	Storm system	Storm system, or splash pads	Yes	Gabion wall in rear yard, no excavation within 2.0 m of wall
18 to 26	Basement entry	Cut	Glacial till	Standard	Storm system	Storm system, or splash pads	Yes	Gabion wall in rear yard, no excavation within 2.0 m of wall
27	Basement entry	Cut/Fill	Glacial till/Structural fill	Standard	Storm system	Storm system, or splash pads	N/A	No major slopes
28 to 34	Basement entry	Cut/Fill	Glacial till/Structural fill	Standard	Storm system	Storm system, or splash pads	Yes	Gabion wall in rear yard, no excavation within 2.0 m of wall
35 to 38	Walkout basement	Fill	Structural fill	Standard	Storm system/daylight	Storm system	Yes	Gabion wall setback
39 & 40	Walkout basement	Fill	Structural fill	Standard	Storm system/daylight	Storm system, or splash pads	N/A	No major slopes
41 to 46	Walkout basement	Fill	Structural fill	Standard	Storm system/daylight	Storm system	Yes	Gabion wall setback

Notes:

- 1 The Geotechnical Engineer of Record (GER) is responsible for all geotechnical aspects including modifications to these guidelines.
- 2 The expected soil conditions are based on site observations and the soil conditions may vary from those indicated.
- 3 The structural fills in the subdivision were compacted to 95% Modified Proctor Maximum Dry Density (MPMDD).
- 4 The expected soil bearing preparation may require compaction of the subgrade to 95% MPMDD.
- 5 Sulphate resistant concrete is recommended for concrete in contact with the ground.
- 6 Backflow preventer are required for the buildings perimeter drains connected to the municipal storm system.
- 7 A gabion wall was constructed in the rear yards of lots 1 to 6, 10 to 26, 28 to 38 and 41 to 46. A building setback has been established behind the retaining wall.
- 8 In-ground swimming pools require geotechnical input regarding their placement and if a secondary liner system is required.



- AREAS CONSTRUCTED IN CUT
 - AREAS CONSTRUCTED IN FILL
- ABBREVIATIONS:
- #123.12 = GROUND ELEVATION
 - #123.12BW = BOTTOM OF EXPOSED WALL ELEVATION
 - #123.12TW = TOP OF WALL ELEVATION
 - RAN = RANCHER
 - 2S = TWO STOREY
 - BE = BASEMENT ENTRY
 - (123.12) DESIGN LOT ELEVATION AT FRONT YARD SETBACK
 - TOP OF 2:1 SLOPE CUT LINE
 - TOE OF 2:1 SLOPE FILL LINE
 - - - GRADE BREAK LINE
 - RETAINING WALL
 - GEOTECH SETBACK: REFER TO GEOTECH REPORT
 - OVERLAND FLOOD ROUTE
 - SIDE YARD DRAINAGE
 - LOT GRADING
 - ~ NATURAL GROUND DRAINAGE COURSE

NOTE: ALL PERMANENT SLOPES TO BE HYDROSEEDED ONCE COMPLETE.

No.	DATE	DESCRIPTION	BY	APPD
8	OCT 10/23	RE-ISSUED FOR GEOTECH SUMMARY ADDED SETBACK DIMENSIONS	LR	CC
7	AUG 18/23	ISSUED FOR GEOTECHNICAL SUMMARY	LR	CC
6	AUG 18/22	ISSUED FOR CONSTRUCTION	LR	CC
5	JUL 06/22	RE-ISSUED FOR MUNICIPAL APPROVAL ADDITIONAL LOTS	LR	CC
4	JUN 24/22	RE-ISSUED FOR MUNICIPAL APPROVAL	LR	CC
3	APR 14/22	ISSUED FOR MUNICIPAL APPROVAL	LR	CC
2	MAR 30/22	ISSUED FOR 90% REVIEW	LR	CC
1	MAR 21/22	ISSUED FOR I/A APPROVAL	LR	CC

ISSUES / REVISIONS

CONSULTANT SEAL



2079 Falcon Road ■ Kamloops BC ■ V2C 4J2
tel 250.828.0881 ■ info@true.ca



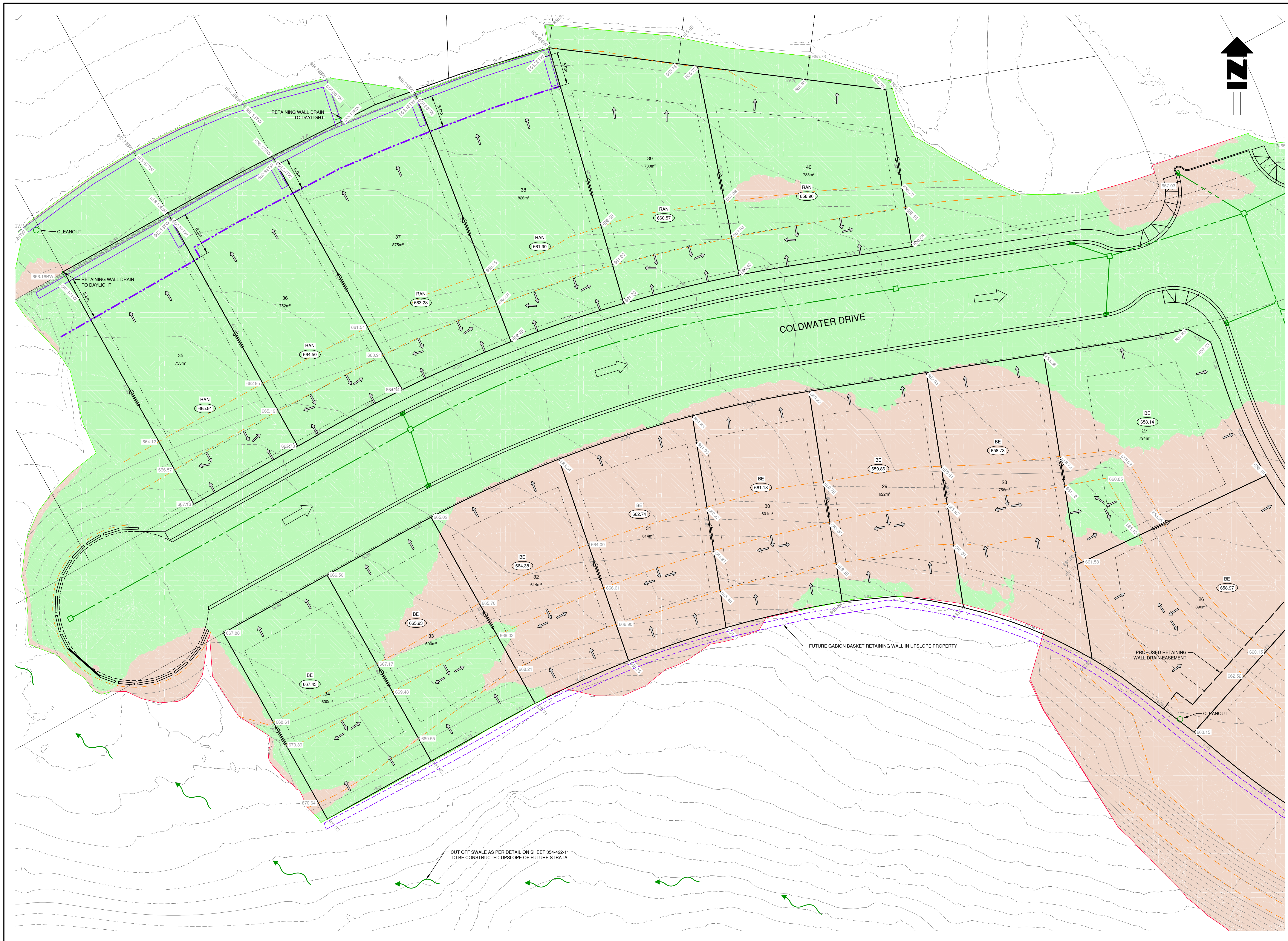
**TRAILSIDE
PHASE 2**

**SITE GRADING
PLAN
LOTS 1-8 & 41-46**

SCALE 0 1:250 10

DESIGN BY CC
DRAWN BY LR
DATE PLOT: October 10, 2023
PROJECT REFERENCE No. 354-421

DRAWING No. **354-422 05** SHEET 5 OF 8
ISSUE-REV 8



AREAS CONSTRUCTED IN CUT
AREAS CONSTRUCTED IN FILL

ABBREVIATIONS:
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123.12 = DESIGN LOT ELEVATION AT FRONT YARD SETBACK

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 --- = TOE OF 2:1 SLOPE FILL LINE
 --- = GRADE BREAK LINE
 --- = RETAINING WALL
 --- = GEOTECH SETBACK; REFER TO GEOTECH REPORT

--- = OVERLAND FLOOD ROUTE
 --- = SIDE YARD DRAINAGE
 --- = LOT GRADING
 --- = NATURAL GROUND DRAINAGE COURSE

NOTE: ALL PERMANENT SLOPES TO BE HYDROSEEDED ONCE COMPLETE.

No.	DATE	DESCRIPTION	BY	APPD
7	OCT 10/23	RE-ISSUED FOR GEOTECH SUMMARY ADDED SETBACK DIMENSIONS	LR	CC
6	AUG 16/23	ISSUED FOR GEOTECHNICAL SUMMARY	LR	CC
5	AUG 04/22	ISSUED FOR CONSTRUCTION	LR	CC
4	JUN 24/22	RE-ISSUED FOR MUNICIPAL APPROVAL	LR	CC
3	APR 14/22	RE-ISSUED FOR MUNICIPAL APPROVAL	LR	CC
2	MAR 30/22	ISSUED FOR 90% REVIEW	LR	CC
1	MAR 21/22	ISSUED FOR IHA APPROVAL	LR	CC

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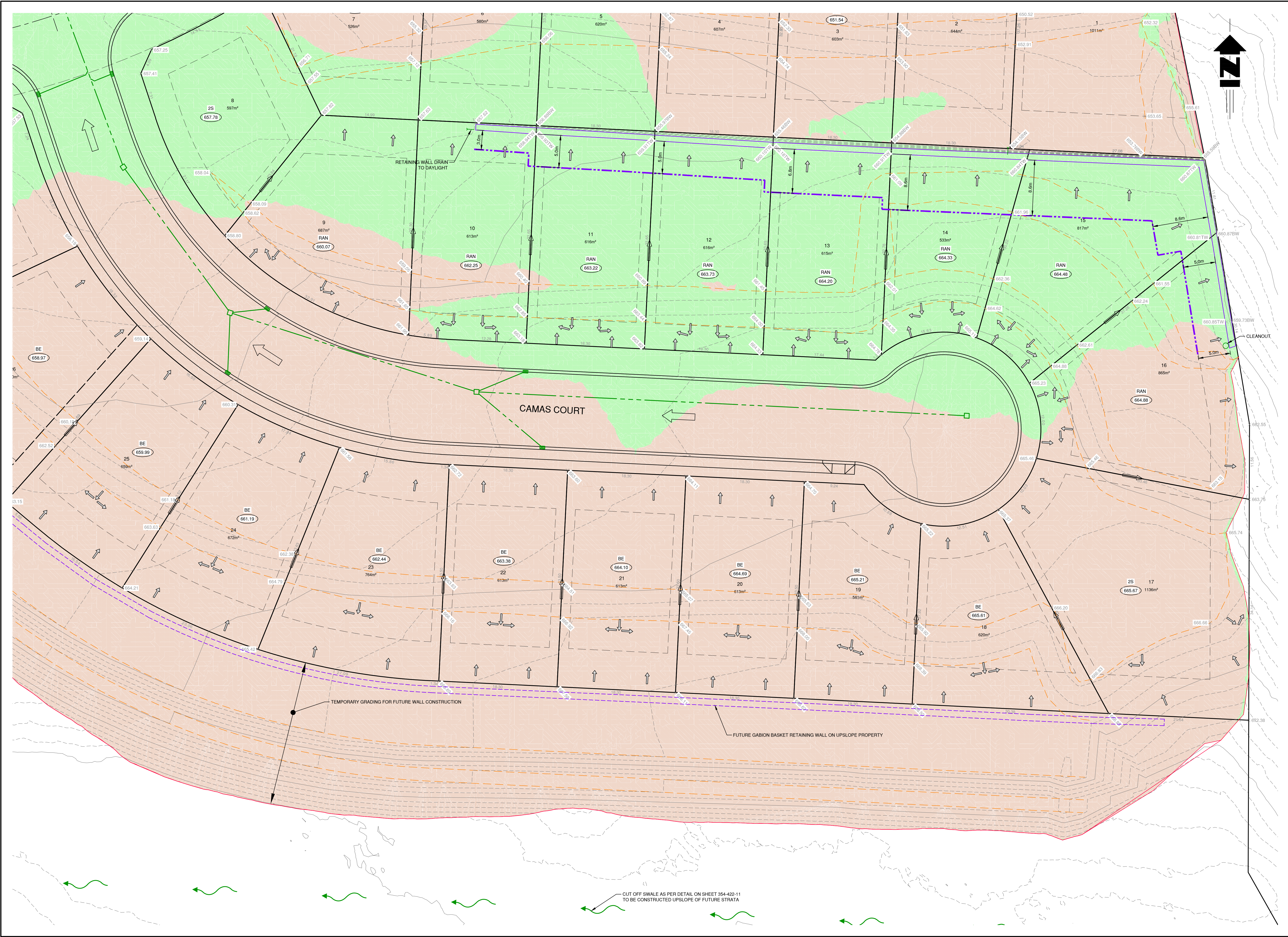
TRAILSIDE PHASE 2

**SITE GRADING PLAN
 LOTS 26 - 40**

SCALE 0 1:250 10

DESIGN BY CC
 DRAWN BY LR
 DATE PLOT: October 10, 2023
 PROJECT REFERENCE No. 354-421

DRAWING No. **354-422 06** SHEET 6 OF 7
 ISSUE-REV 7



LEGEND

- AREAS CONSTRUCTED IN CUT
- AREAS CONSTRUCTED IN FILL

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- - - = TOE OF 2:1 SLOPE FILL LINE
- - - = GRADE BREAK LINE
- - - = RETAINING WALL
- - - = GEOTECH SETBACK: REFER TO GEOTECH REPORT
- = OVERLAND FLOOD ROUTE
- = SIDE YARD DRAINAGE
- = LOT GRADING
- = NATURAL GROUND DRAINAGE COURSE

NOTE: ALL PERMANENT SLOPES TO BE HYDROSEEDED ONCE COMPLETE.

No.	DATE	DESCRIPTION	BY	APPD
8	OCT 1923	RE-ISSUED FOR GEOTECH SUMMARY ADDED SETBACK DIMENSIONS	LR	CC
7	AUG 1923	ISSUED FOR GEOTECH SUMMARY	LR	CC
6	APR 1123	RE-ISSUED FOR CONSTRUCTION ADJUSTED ROAD B CUL-DE-SAC	LR	CC
5	AUG 0422	ISSUED FOR CONSTRUCTION	LR	CC
4	JUN 2422	RE-ISSUED FOR MUNICIPAL APPROVAL	LR	CC
3	APR 1422	ISSUED FOR MUNICIPAL APPROVAL	LR	CC
2	MAR 3022	ISSUED FOR 90% REVIEW	LR	CC
1	MAR 2122	ISSUED FOR IHA APPROVAL	LR	CC

ISSUES / REVISIONS

No.	DATE	DESCRIPTION	BY	APPD

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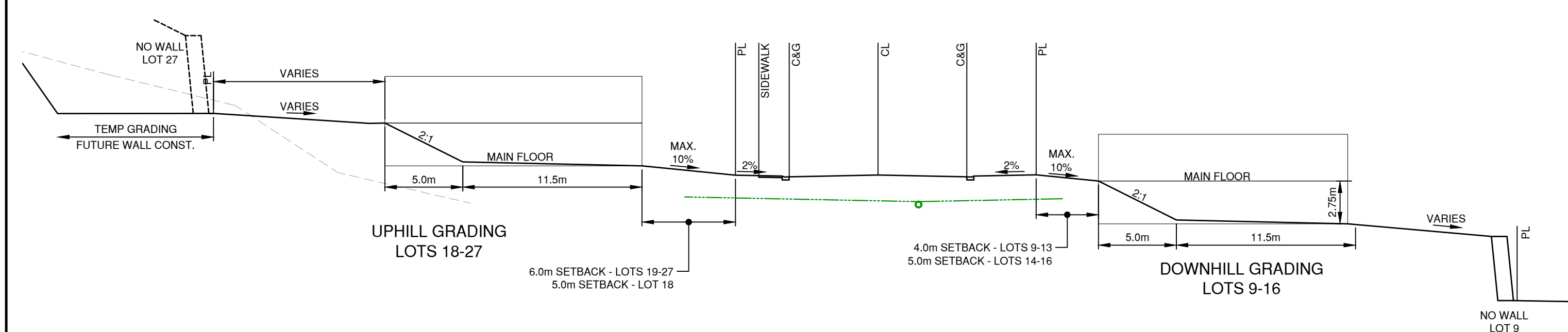
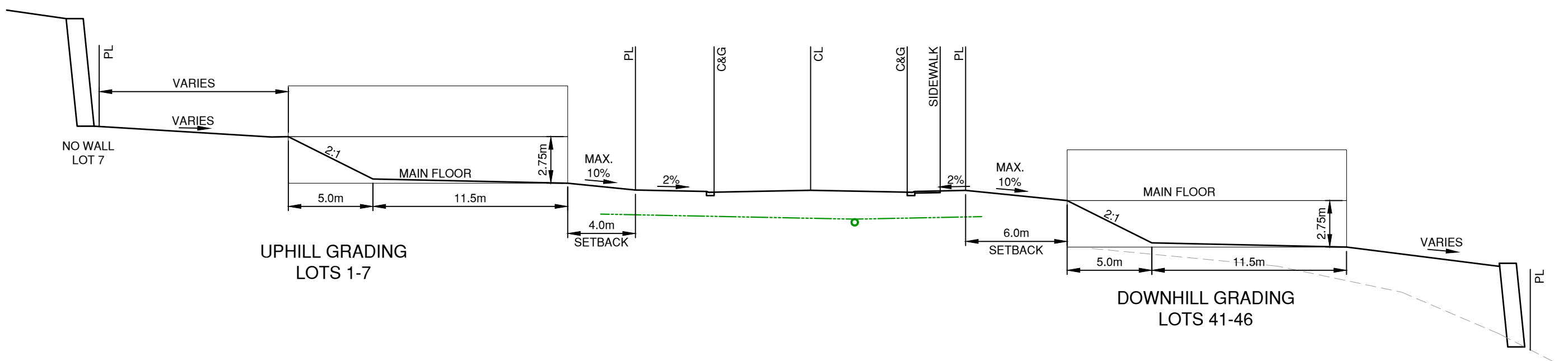
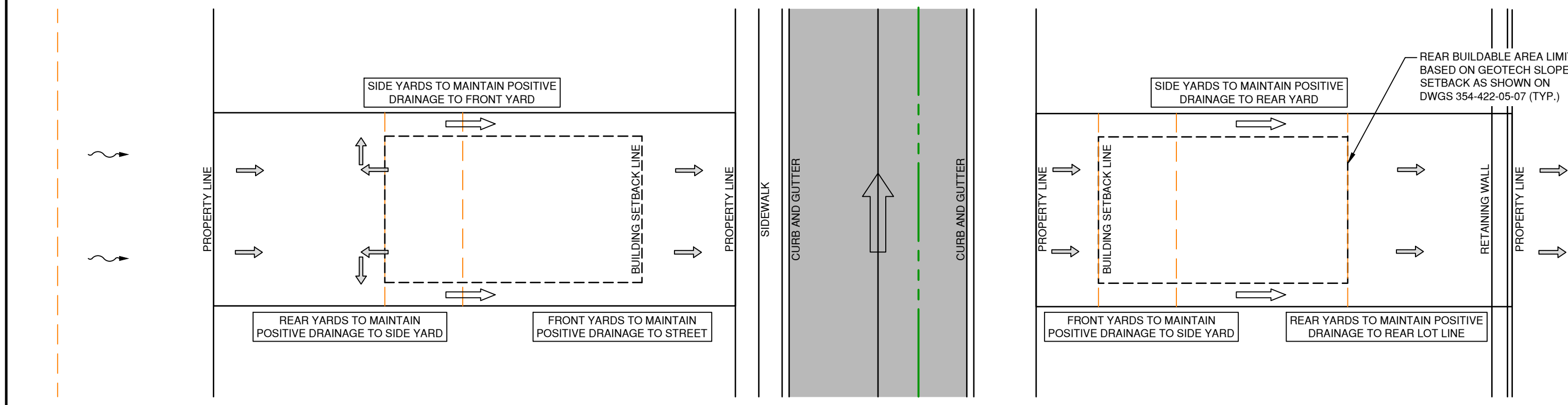
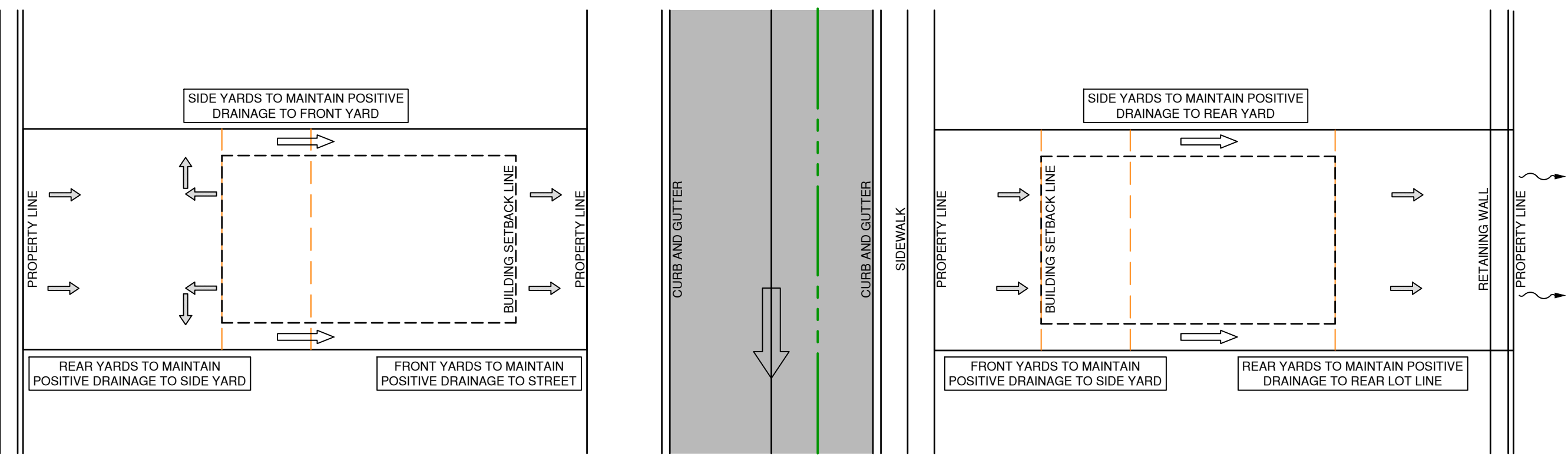
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TRAILSIDE PHASE 2

**SITE GRADING PLAN
LOTS 9-25**

SCALE 0 1:250 10

DESIGN BY CC
DRAWN BY LR
DATE PLOT: October 10, 2023
PROJECT REFERENCE No. 354-421
DRAWING No. 354-421 SHEET 7 OF 8
ISSUE-REV 8



TYPICAL COLDWATER LOT GRADING
NTS

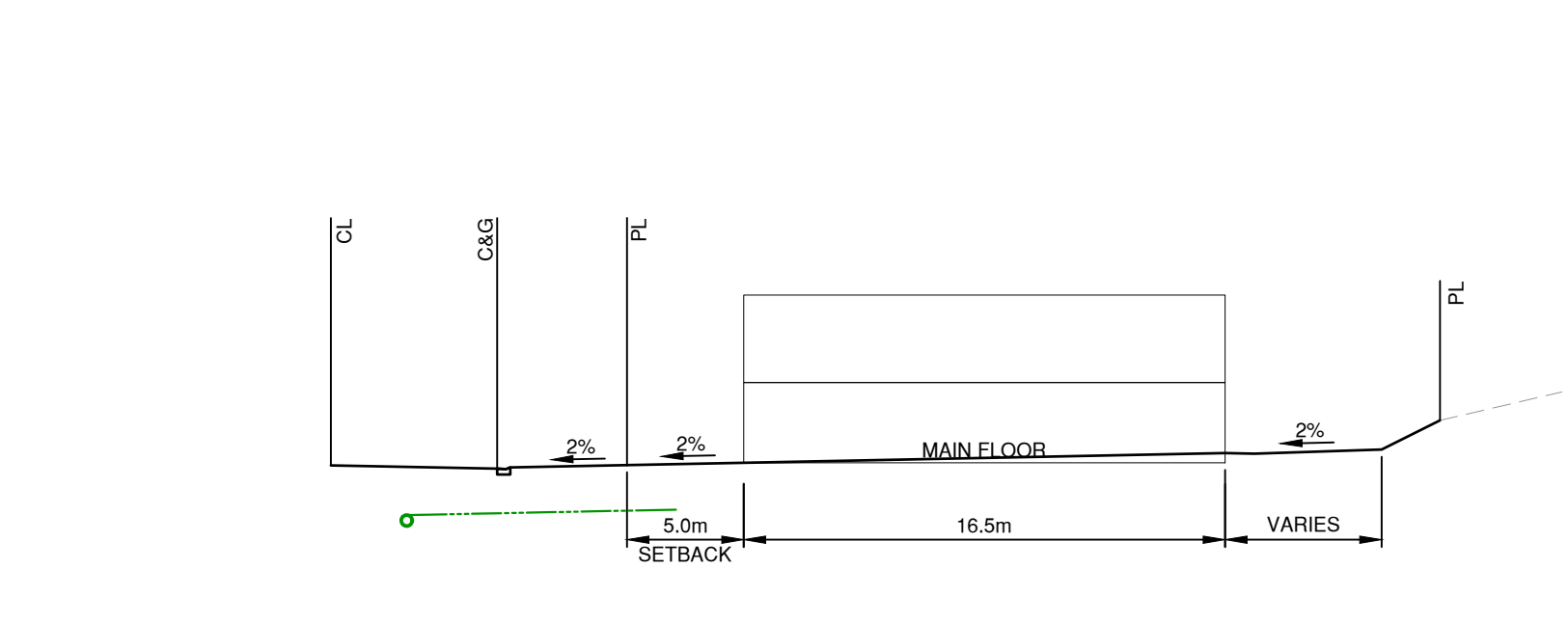
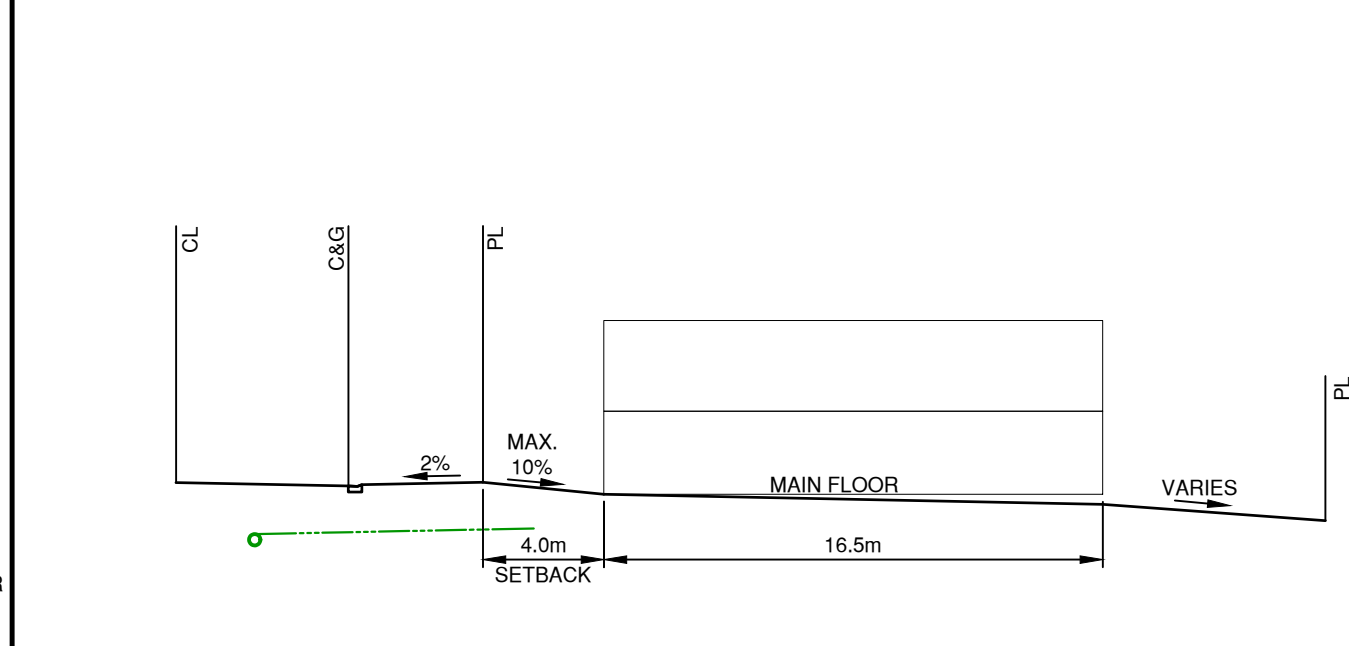
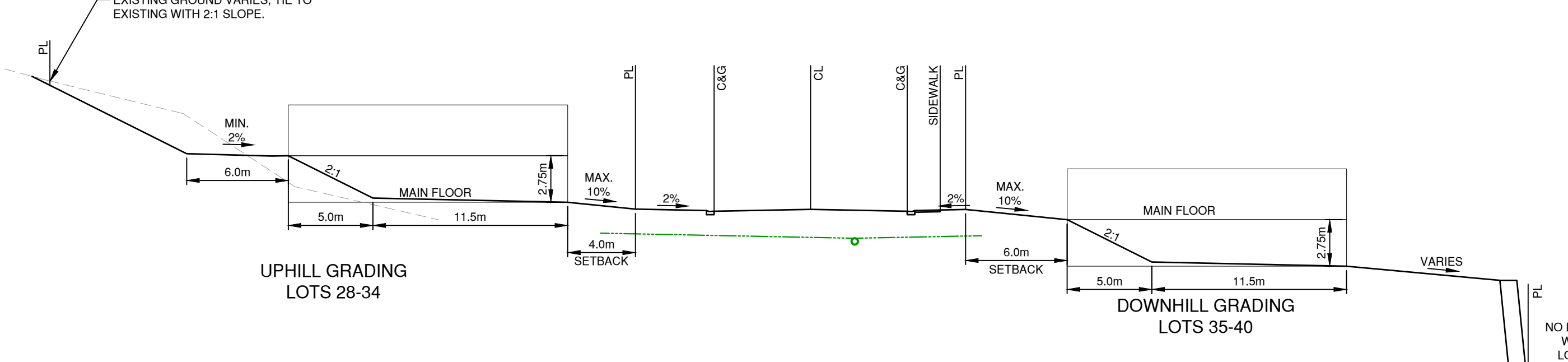
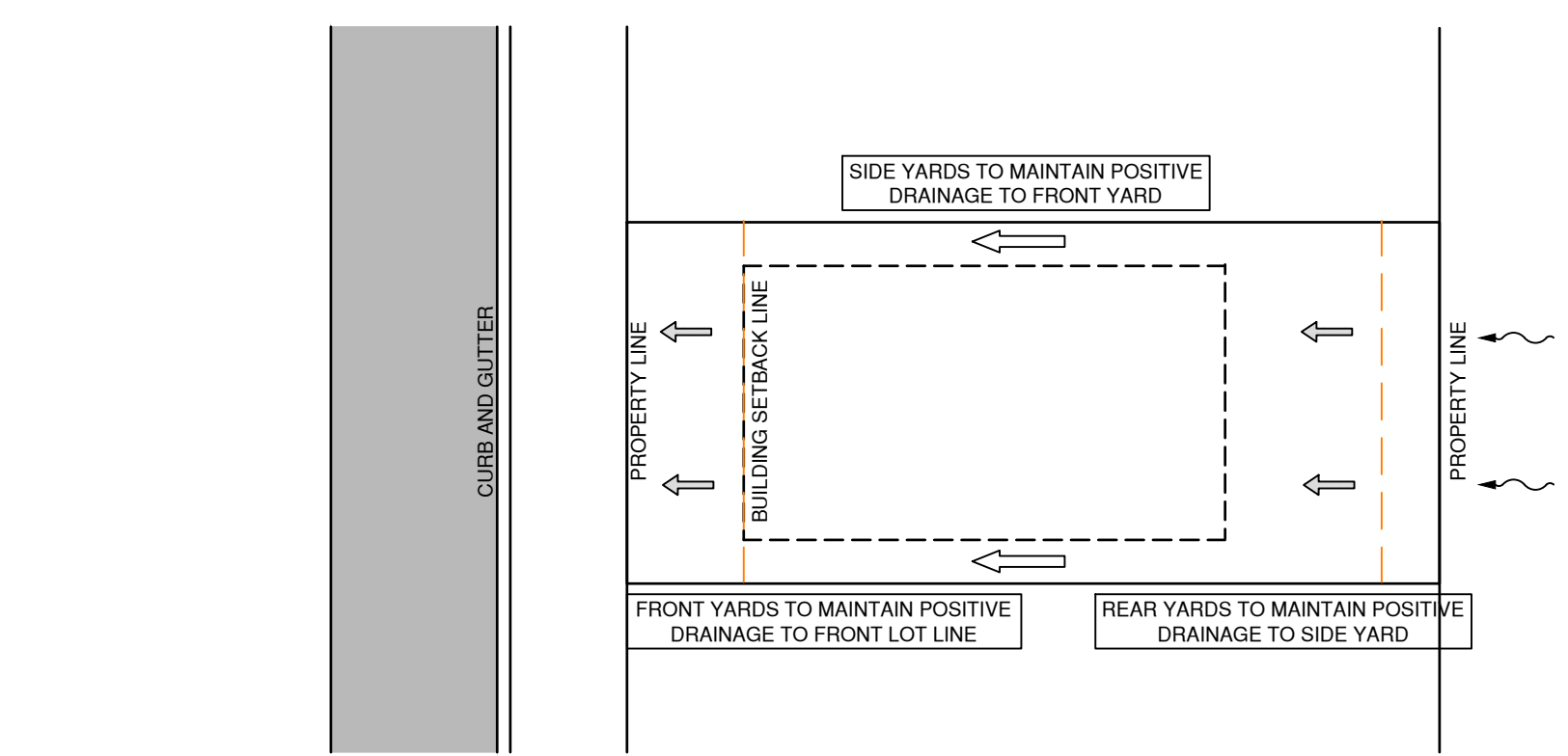
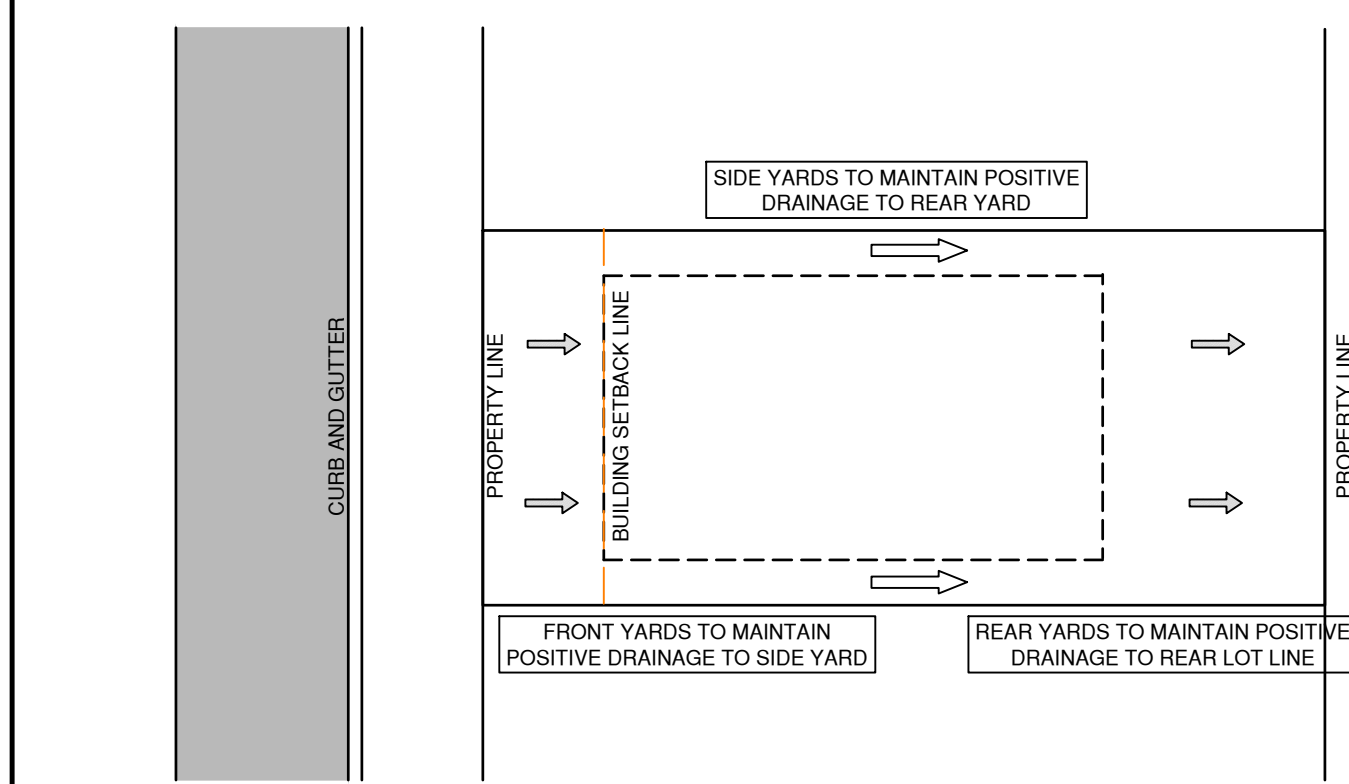
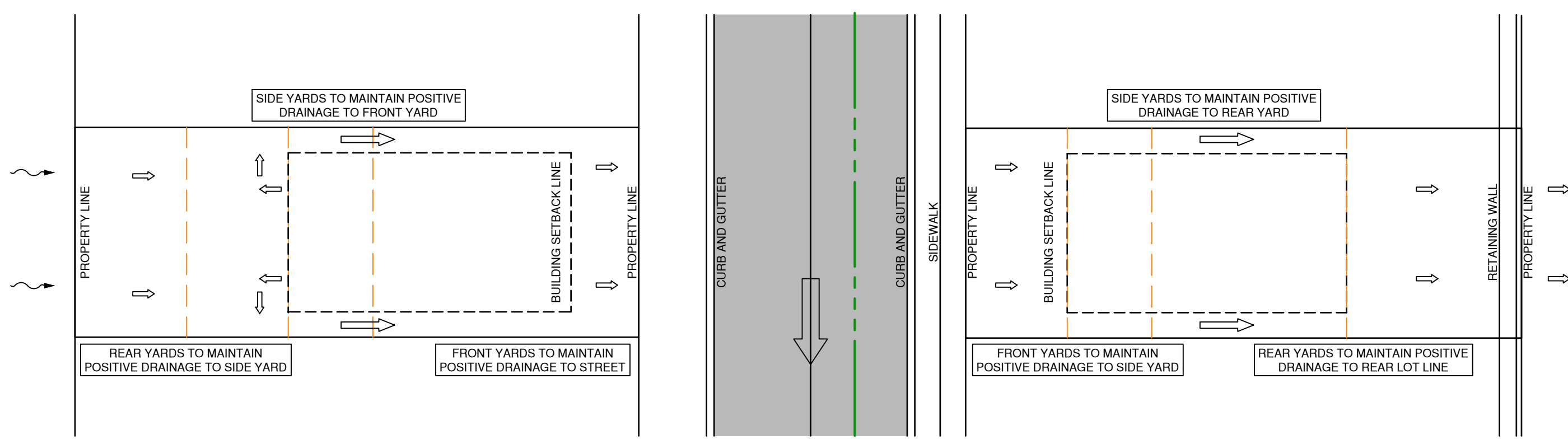
TYPICAL CAMAS COURT LOT GRADING
NTS

- NOTES:**
- FOUNDATION DRAINS TO CONNECT DIRECTLY TO MUNICIPAL STORM OR DAYLIGHT WITHIN PROPERTY AS DIRECTED BY GEOTECHNICAL ENGINEER.
 - FOUNDATION DRAINS REQUIRE A BACKWATER VALVE UPSTREAM OF THE ROOF DRAIN CONNECTION. ALL VALVES TO BE LOCATED ON PRIVATE PROPERTY.
 - REFER TO GEOTECHNICAL SUMMARY REPORT DATED AUGUST 16, 2023 FOR RAINWATER LEADER DISCHARGE LOCATIONS.
 - AREA SURROUNDING BUILDING TO BE SLOPED AWAY FROM BUILDING AT MIN. 2%.
 - LOT GRADING SHALL MANAGE RUNOFF INDEPENDENT OF ADJACENT LOTS. SIDE YARD SWALES TO BE EMPLOYED AS NECESSARY.
 - MINOR ADJUSTMENTS TO DESIGN ELEVATIONS TO BE APPROVED BY GEOTECHNICAL ENGINEER OF RECORD.
 - ALL RETAINING WALLS GREATER THAN 1.2m, REFER TO TELFORD GEOTECHNICAL DESIGN DRAWINGS.
 - PERMANENT SLOPES NOT TO EXCEED 2:1 UNLESS SPECIFIED IN THE SLOPE CONSTRAINT GUIDELINES PROVIDED IN THE GEOTECHNICAL REPORT.
 - ADJUSTMENT TO GEOTECHNICAL SETBACKS MAY BE POSSIBLE BASED ON REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT TITLED GEOTECHNICAL INVESTIGATION REPORT - COLDWATER DRIVE EXTENSION - TELFORD GEOTECHNICAL, DATED MARCH 31, 2023 AND GEOTECHNICAL SUMMARY REPORT DATED OCTOBER 11, 2023.
 - TOP OF CONCRETE TO BE 0.15m - 0.3m ABOVE DESIGN LOT ELEVATION AT FRONT YARD SETBACK
 - VEGETATED EROSION PROTECTION TO BE ESTABLISHED ON ALL PERMANENT/DISTURBED CUT/FILL SLOPES
- = OVERLAND FLOOD ROUTE
 = SIDE YARD DRAINAGE
 = LOT GRADING
 = NATURAL GROUND DRAINAGE COURSE

No.	DATE	DESCRIPTION	BY	APP
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2	MAR 30/22	ISSUED FOR 90% REVIEW	LR	CC
1	MAR 21/22	ISSUED FOR IHA APPROVAL	LR	CC

ISSUES / REVISIONS

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TYPICAL COLDWATER LOT GRADING
NTS

TYPICAL 2 STOREY LOT GRADING (LOT 8)
NTS

TYPICAL 2 STOREY LOT GRADING (LOT 17)
NTS

TRUE CONSULTING

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Tel 250.828.0881 • info@true.ca

JUNIPERWEST

TRAILSIDE PHASE 2

LOT GRADING DETAILS

SCALE	AS NOTED
DESIGN BY	CC
DRAWN BY	LR
DATE	PLOT: October 10, 2023
PROJECT REFERENCE No.	354-421
DRAWING No.	SHEET
354-422 10	10 OF -
	ISSUE-REV
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