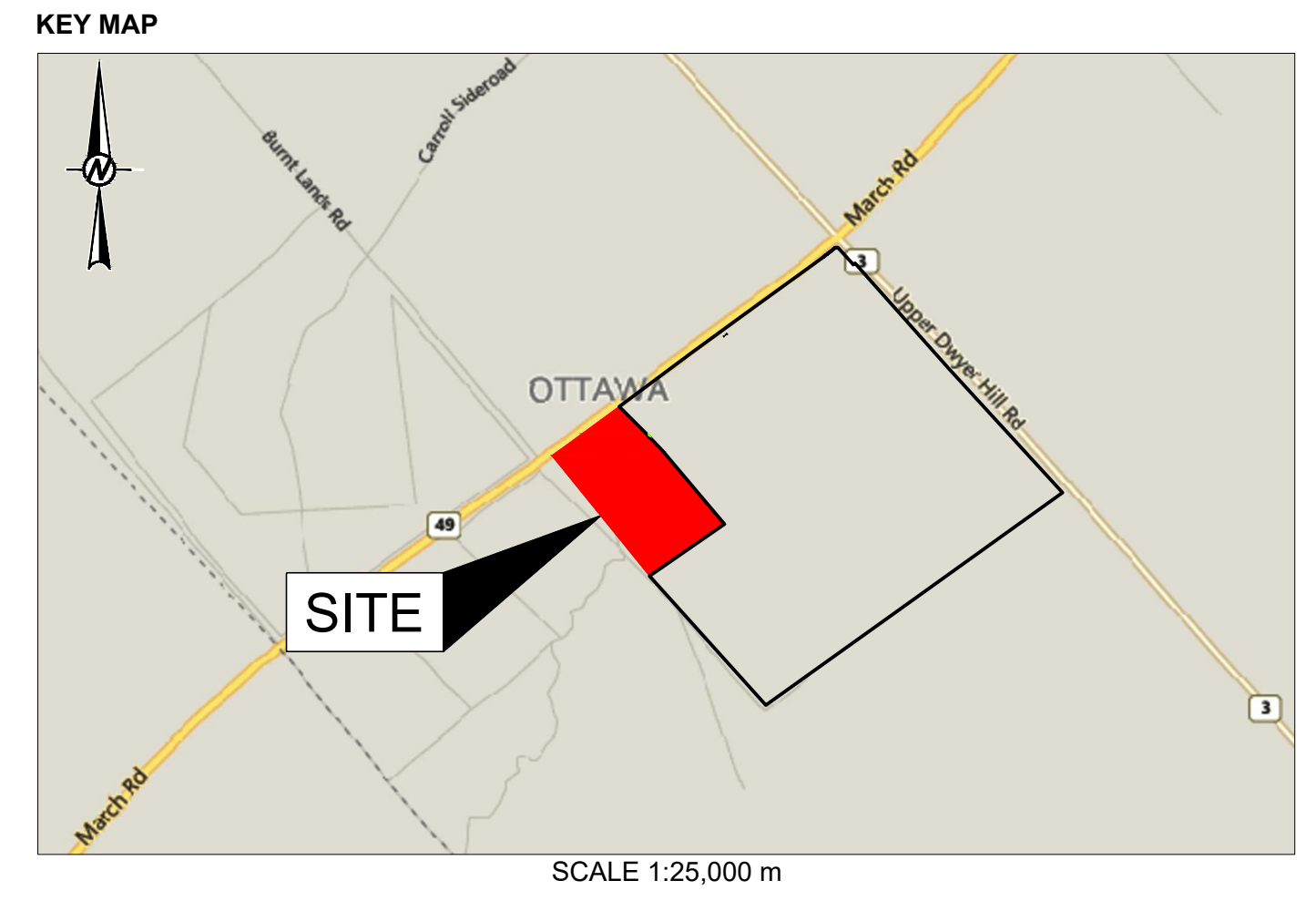


EXISTING FEATURES - GENERAL
SCALE 1:2 mm



WEST CARLETON QUARRY EXTENSION
PART OF LOT 15, CONCESSION 11
FORMER GEOGRAPHIC TOWNSHIP OF HUNTLEY,
CITY OF OTTAWA

APPLICANT:
THOMAS CAVANAGH CONSTRUCTION LIMITED
9094 CAVANAGH ROAD
ASHTON, ONTARIO
K0A 1B0

QUARRY LICENSE NO. 626555

- NOTE(S)**
1. LICENCED AREA, WEST CARLETON QUARRY EXTENSION 18.2 HECTARES.
 2. AREA OF OPERATION, WEST CARLETON QUARRY EXTENSION 16.5 HECTARES.
 3. THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES AND FORESTRY IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' QUARRY BELOW WATER UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.
 4. THIS PLAN WAS PREPARED USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS.
 5. LOT, CONCESSION AND BOUNDARY LINES ON THIS PLAN ARE APPROXIMATE.
 6. THIS IS NOT A LEGAL SURVEY DRAWING IN ACCORDANCE WITH THE PROVINCE OF ONTARIO SURVEYORS ACT 1987. THIS DRAWING WAS PRODUCED USING STANDARD PHOTOGRAMMETRIC PRACTICES.

- LEGEND**
- BOUNDARY OF AREA TO BE LICENCED
 - LIMIT OF EXTRACTION
 - 120-METRE SURROUND
 - ⊕ BOREHOLE / MONITORING WELL
 - ▲ PRIVATE WELL (AS PER MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS WATER WELL INFORMATION SYSTEM)
 - CON 12, LOT 15
CON 12, LOT 14
 - LOTS AND CONCESSION LINES
 - ME[725r] LAND ZONING BY-LAW
 - H BUILDING; S-SILO, H-HOUSE, G-GARAGE, B-BARN, S-SHED, O-OFFICE, SC-SCALE HOUSE, A-AUTO
 - - - PAGE WIRE FENCE/GATE
 - UTILITY POLE
 - ▲ PRIMARY ENTRANCE
 - ▲ PRIMARY EXIT

- REFERENCE(S)**
1. KEY PLAN: Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.
 2. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2016.
 3. CITY OF OTTAWA 2012 TOPO LIDAR TILES.
 4. MAPPING AND GROUND CONTROL FOR THE SITE PLAN COMES FROM LAND INFORMATION ONTARIO (LIO) DATA AVAILABLE FROM THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, CITY OF OTTAWA 2012 TOPO LIDAR TILES AND A GROUND SURVEY CONDUCTED BY CAVANAGH IN NOVEMBER 2019. THE BACKGROUND AERIAL IMAGE ON PLAN 1 OF 5 (EXISTING FEATURES - GENERAL) IS FROM THE CITY OF OTTAWA 2017 AERIAL MAPPING AND WAS EXPORTED FROM GEOOTAWA.
 5. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28.

EXISTING FEATURES - GENERAL (PAGE 1 OF 5)
NOTE: THE NUMBERS BELOW REFER TO AGGREGATE RESOURCES OF ONTARIO: SITE PLAN STANDARDS (AUGUST 2020)
16 EXISTING ZONING
THE EXISTING ZONING OF LAND ON AND WITHIN 120 METRES OF THE SITE IS SHOWN ON THIS PLAN (PAGE 1 OF 5).

CLIENT
THOMAS CAVANAGH CONSTRUCTION LIMITED

PROJECT
WEST CARLETON QUARRY EXTENSION

TITLE
EXISTING FEATURES - GENERAL

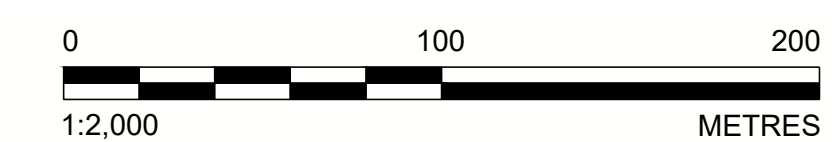
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DESIGNED		---	
PREPARED		JM	
REVIEWED		JPAO	
APPROVED		KAM	
PROJECT NO.	1899975	CONTROL	0009
REV.	0	FIGURE	1 OF 5

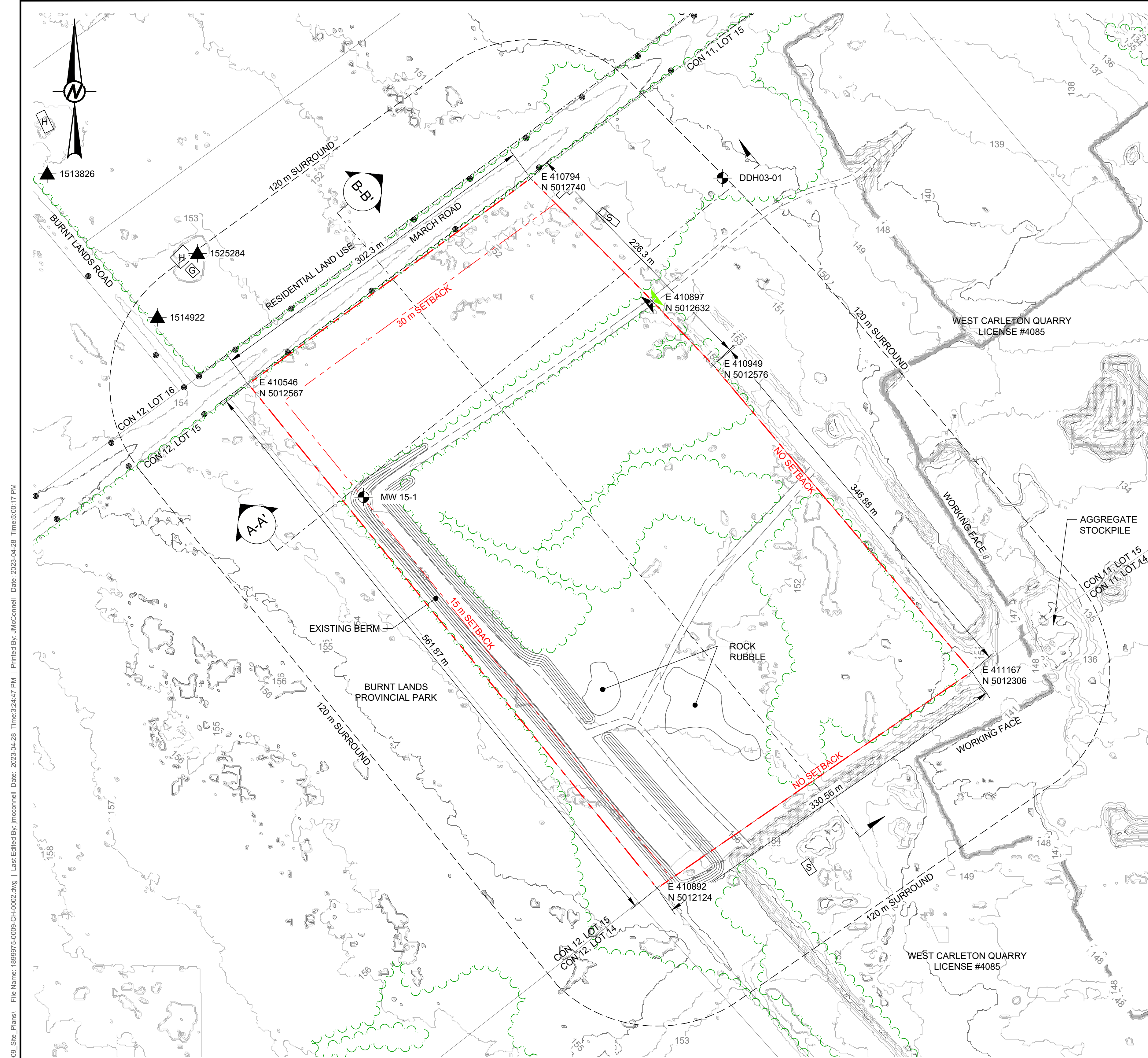
LAND USE / ZONING	CITY OF OTTAWA
BY-LAW NO.	2008-250 CONSOLIDATION
EP3	ENVIRONMENTAL PROTECTION ZONE SUBZONE 3
ME[725r]	MINERAL EXTRACTION ZONE RURAL EXCEPTION 725

AMENDMENTS	DATE	APPROVAL DATE
SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES AND FORESTRY.		
SIGNATURE		DATE

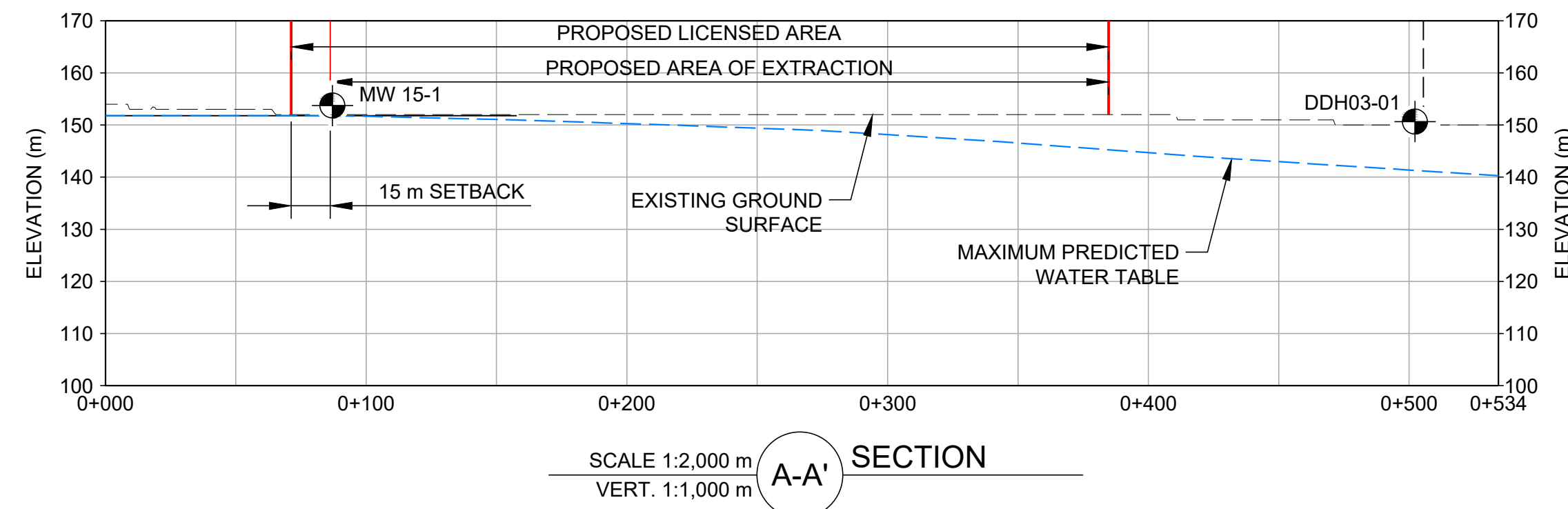
SIGNATURE OF APPLICANT/LICENSSEE _____ DATE _____

PREPARED UNDER THE DIRECTION OF: JAIME OXTOBEE _____ DATE _____

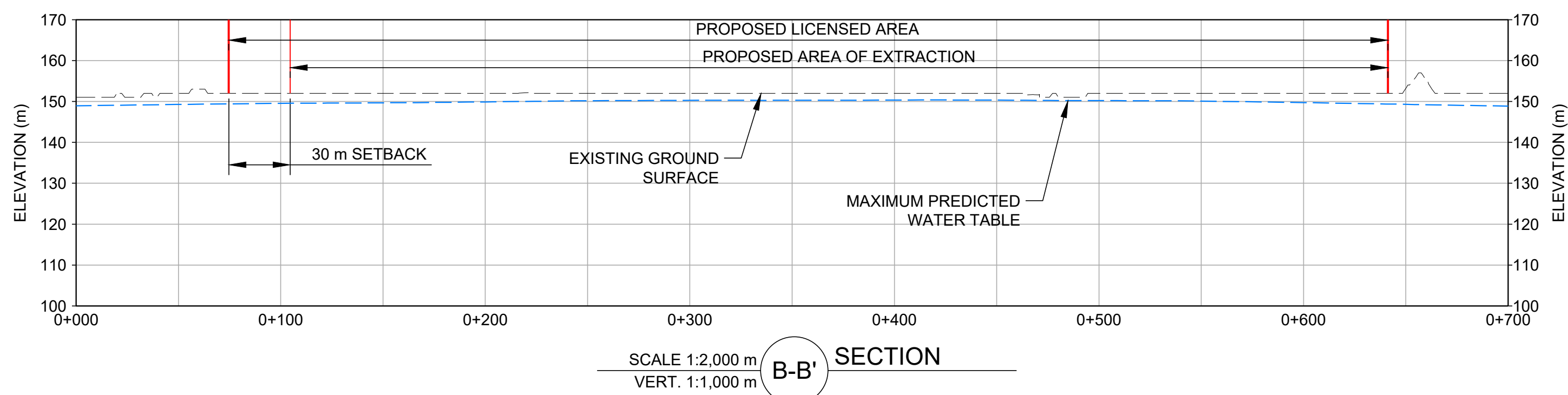




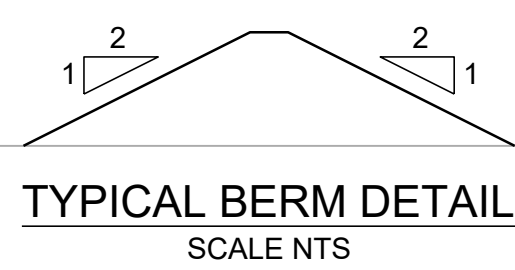
EXISTING FEATURES - SITE
SCALE 1:2,000 m



SCALE 1:2,000 m
VERT. 1:1,000 m
A-A' SECTION



SCALE 1:2,000 m
VERT. 1:1,000 m
B-B' SECTION



TYPICAL BERM DETAIL
SCALE NTS

EXISTING FEATURES - SITE (PAGE 2 OF 5)
NOTE: THE NUMBERS BELOW REFER TO AGGREGATE RESOURCES OF ONTARIO: SITE PLAN STANDARDS (AUGUST 2020)

17 EXISTING LAND USE
TO THE EAST AND SOUTH OF THE SITE, THE EXISTING LAND USE IS AGGREGATE EXTRACTION (CAVANAGH'S WEST CARLETON QUARRY LICENSE NUMBER 4085). TO THE NORTH OF THE SITE BEYOND MARCH ROAD THE LAND USE IS RESIDENTIAL AND THE BURNT LANDS PROVINCIAL PARK IS LOCATED TO THE WEST OF THE SITE. THE EXISTING LAND USE ON THE SITE IS VACANT. **THE SITE IS CURRENTLY DESIGNATED AS AN AREA OF NATURAL AND SCIENTIFIC INTEREST - BURNT LANDS ALVAR.**

18 MAXIMUM PREDICTED WATER TABLE
BASED ON THE AVAILABLE GROUNDWATER ELEVATION DATA, THE MAXIMUM PREDICTED WATER TABLE WITHIN THE SITE IS 151.8 MASL ON THE WEST SIDE (AS MEASURED AT MW15-1). BASED ON THE GROUNDWATER ELEVATION DATA MEASURED AT DD03-01 LOCATED JUST EAST OF THE SITE, THE WATER TABLE SLOPES DOWN MOVING FROM WEST TO EAST, AND THE MAXIMUM PREDICTED WATER TABLE ON THE EAST SIDE OF THE SITE IS APPROXIMATELY 143 MASL. BECAUSE THE HORIZONTAL GROUNDWATER FLOW DIRECTION IS FROM WEST TO EAST ACROSS THE SITE, THE GROUNDWATER ELEVATIONS ARE GENERALLY CONSISTENT IN THE NORTH-SOUTH DIRECTION. THE MAXIMUM PREDICTED WATER TABLE IS SHOWN ON THE EXISTING FEATURES CROSS-SECTIONS ON THIS PLAN (PAGE 2 OF 5).

19 LOCATION OF EXISTING ENTRANCES TO AND EXITS FROM THE SITE
THERE ARE CURRENTLY NO EXTERNAL ENTRANCES/EXITS FOR THE SITE. THE SITE IS ACCESSED THROUGH THE ENTRANCES/EXITS ASSOCIATED WITH THE EXISTING WEST CARLETON QUARRY (LICENSE NUMBER 4085). THE CURRENT INTERNAL ENTRANCE/EXIT POINT FOR THE SITE IS SHOWN ON THIS PLAN (PAGE 2 OF 5).

20 SIGNIFICANT NATURAL FEATURES ON AND WITHIN 120 METRES OF SITE
BASED ON BACKGROUND REVIEW AND FIELD SURVEYS, FOUR ENDANGERED OR THREATENED SPECIES AND/OR THEIR HABITAT WERE IDENTIFIED ON-SITE AND/OR WITHIN 120 METRES FROM THE SITE: EASTERN WHIP-POOR-WILL, LITTLE BROWN MYOTIS, EASTERN SMALL-FOOTED MYOTIS, AND BLANDING'S TURTLE. OF THESE SPECIES, ONLY EASTERN WHIP-POOR-WILL WAS DETERMINED TO HAVE HABITAT THAT OCCURS ON THE SITE (APPROXIMATELY 2.2 HECTARES).

THE WOODLANDS IN THE NORTHERN PORTION OF THE SITE ARE CONSIDERED SIGNIFICANT. THE BURNT LANDS ALVAR AREA OF NATURAL AND SCIENTIFIC INTEREST IS LOCATED ON-SITE AND WITHIN 120 METRES OF THE SITE BOUNDARY.

21 SIGNIFICANT HUMAN-MADE FEATURES ON AND WITHIN 120 METRES OF SITE
THERE ARE NO SIGNIFICANT HUMAN-MADE FEATURES ON THE SITE. SIGNIFICANT HUMAN-MADE FEATURES WITHIN 120 METRES OF THE SITE INCLUDE THE EXISTING WEST CARLETON QUARRY (LICENSE NUMBER 4085) LOCATED TO THE EAST AND SOUTH OF THE SITE, MARCH ROAD TO THE NORTH OF THE SITE, ONE PRIVATE RESIDENCE LOCATED NORTH OF THE INTERSECTION OF MARCH ROAD AND BURNT LANDS ROAD AND ONE PORTABLE TRAILER OWNED BY CAVANAGH LOCATED ON THE SOUTH SIDE OF MARCH ROAD JUST EAST OF THE SITE ON THE EXISTING WEST CARLETON QUARRY PROPERTY.

22 THE LOCATION AND USE OF ALL BUILDINGS AND STRUCTURES EXISTING ON AND WITHIN 120 METRES OF THE SITE
THERE ARE CURRENTLY NO EXISTING PERMANENT BUILDINGS OR STRUCTURES LOCATED ON THE SITE. WITHIN 120 METRES OF THE SITE THERE IS ONE HOUSE LOCATED ON BURNT LANDS ROAD TO THE NORTH OF THE SITE AND ONE PORTABLE TRAILER OWNED BY CAVANAGH LOCATED ON THE SOUTHSIDE OF MARCH ROAD JUST EAST OF THE SITE ON THE EXISTING WEST CARLETON QUARRY PROPERTY.

23 SITE TOPOGRAPHY
THE EXISTING SITE TOPOGRAPHY, ILLUSTRATED BY A ONE-METRE CONTOUR INTERVAL, EXPRESSED IN METRES ABOVE SEA LEVEL IS PRESENTED ON THIS PLAN (PAGE 2 OF 5).

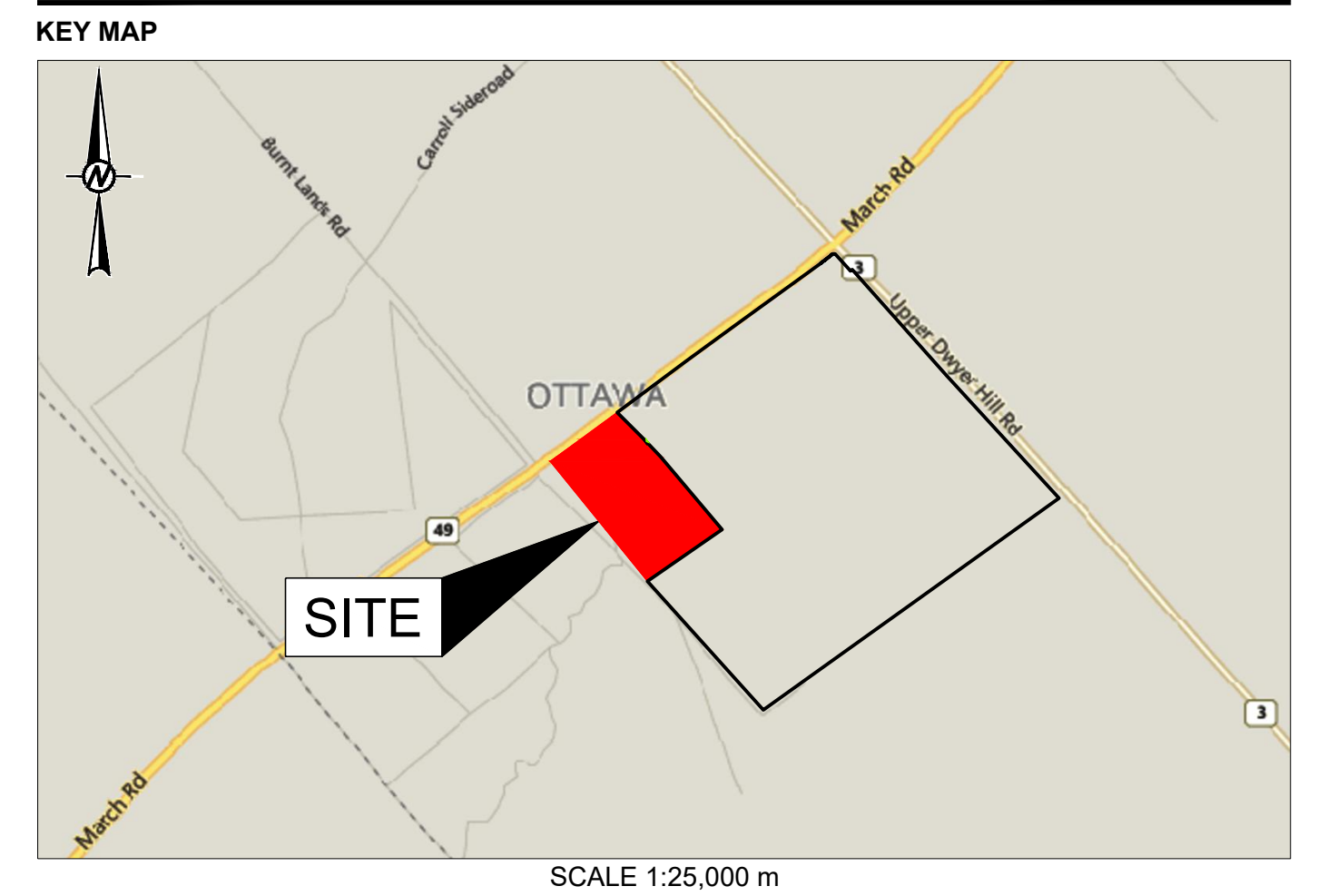
24 EXISTING SURFACE WATER AND DRAINAGE FACILITIES ON AND WITHIN 120 METRES OF THE SITE
SURFACE WATER FEATURES ON THE SITE ARE LIMITED TO DITCHES ALONG ACCESS ROADS, AND MINOR PONDING IN DISTURBED AREAS AND LOW-LYING AREAS. WATER POOLS AND/OR FLOWS THROUGH THESE FEATURES DURING FRESHET, BUT BASED ON SITE OBSERVATIONS, THESE FEATURES TYPICALLY DRY UP WITH NO FLOW BY THE END OF APRIL OR EARLY MAY. BASED ON TOPOGRAPHY AND SITE OBSERVATIONS, WHEN PRESENT, DRAINAGE FROM THE SITE FLOWS TOWARDS THE EXISTING WEST CARLETON QUARRY AND IS HANDLED AS PART OF THE ONGOING WATER MANAGEMENT FOR THE WEST CARLETON QUARRY.

WITHIN 120 METRES OF THE SITE, SHALLOW ROADSIDE DITCHES EXIST ALONG THE NORTH AND SOUTH SIDES OF MARCH ROAD.

25 LOCATION OF EXISTING TREE COVER
THE EXISTING ON-SITE AND OFF-SITE TREE COVER IS SHOWN ON THIS PLAN (PAGE 2 OF 5). THE NORTHERN HALF OF THE SITE AND THE SOUTHEAST PORTION OF THE SITE ARE TREE COVERED. THE OFF-SITE LANDS TO THE WEST AND NORTH OF THE SITE ARE TREE COVERED.

26 LOCATION/TYPE OF EXISTING FENCING
EXISTING LOCATIONS FOR FENCING AROUND THE SITE ARE SHOWN ON THIS PLAN (PAGE 2 OF 5). PAGE WIRE FENCING EXISTS ON THE NORTHERN LICENSE BOUNDARY ADJACENT TO MARCH ROAD. THERE IS NO FENCING PRESENT ON THE EASTERN AND SOUTHERN BOUNDARIES OF THE SITE, WHICH ARE SHARED BOUNDARIES WITH THE EXISTING WEST CARLETON QUARRY, AND NO FENCING IS PRESENT ALONG THE WESTERN BOUNDARY OF THE SITE.

EXISTING FEATURES CROSS-SECTIONS
69 LOCATION OF CROSS-SECTIONS
REFER TO DRAWING (THIS PLAN) FOR LOCATION OF EXISTING FEATURES CROSS-SECTIONS.
70 HORIZONTAL AND VERTICAL SCALES
APPROPRIATE HORIZONTAL AND VERTICAL SCALES ARE MARKED ON THE CROSS-SECTIONS.
71 EXISTING FEATURES CROSS-SECTIONS
TWO EXISTING FEATURES CROSS-SECTIONS ARE PROVIDED ON THE EXISTING FEATURES PLAN (PAGE 2 OF 5).
72 MAXIMUM PREDICTED WATER TABLE
THE MAXIMUM PREDICTED WATER TABLE IS IDENTIFIED ON THE EXISTING FEATURE CROSS-SECTIONS (PAGE 2 OF 5).
73 TYPICAL BERM DESIGN
A CROSS-SECTION OF A TYPICAL BERM DESIGN IS SHOWN ADJACENT TO THE EXISTING FEATURE CROSS-SECTIONS (PAGE 2 OF 5).



WEST CARLETON QUARRY EXTENSION
PART OF LOT 15, CONCESSION 11
FORMER GEOGRAPHIC TOWNSHIP OF HUNTLEY,
CITY OF OTTAWA

APPLICANT:
THOMAS CAVANAGH CONSTRUCTION LIMITED
9094 CAVANAGH ROAD
ASHTON, ONTARIO
K0A 1B0

QUARRY LICENSE NO. 626555

NOTE(S)

- LICENCED AREA, WEST CARLETON QUARRY EXTENSION 18.2 HECTARES.
- AREA OF OPERATION, WEST CARLETON QUARRY EXTENSION 16.5 HECTARES.
- THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES AND FORESTRY IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' QUARRY BELOW WATER UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.
- THIS PLAN WAS PREPARED USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS.
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- THIS IS NOT A LEGAL SURVEY DRAWING IN ACCORDANCE WITH THE PROVINCE OF ONTARIO SURVEYORS ACT 1987. THIS DRAWING WAS PRODUCED USING STANDARD PHOTOGRAMMETRIC PRACTICES.

LEGEND

- BOUNDARY OF AREA TO BE LICENCED
- LIMIT OF EXTRACTION
- 120-METRE SURROUND
- BOREHOLE / MONITORING WELL
- PRIVATE WELL (AS PER MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS WATER WELL INFORMATION SYSTEM)
- CON 12, LOT 15
- CON 12, LOT 14
- LOTS AND CONCESSION LINES
- BUILDING; S-SILO, H-HOUSE, G-GARAGE, B-BARN, S-SHED, O-OFFICE, SC-SCALE HOUSE, A-AUTO
- PAGE WIRE FENCE/GATE
- UTILITY POLE
- ROADSIDE DITCH
- WOODED AREA
- CONTOURS/INDEX CONTOURS
- CROSS-SECTIONS
- PRIMARY ENTRANCE
- PRIMARY EXIT

REFERENCE(S)

- KEY PLAN: Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.
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- CITY OF OTTAWA 2012 TOPO LIDAR TILES.
- MAPPING AND GROUND CONTROL FOR THE SITE PLAN COMES FROM LAND INFORMATION ONTARIO (LIO) DATA AVAILABLE FROM THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, CITY OF OTTAWA 2012 TOPO LIDAR TILES AND A GROUND SURVEY CONDUCTED BY CAVANAGH IN NOVEMBER 2019.
- PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28.

CLIENT
THOMAS CAVANAGH CONSTRUCTION LIMITED

PROJECT
WEST CARLETON QUARRY EXTENSION

TITLE
EXISTING FEATURES - SITE

APPLICANT	YYYY-MM-DD	2021-02-17
	DESIGNED	---
	PREPARED	JM
	REVIEWED	JPAO
	APPROVED	KAM

PROJECT NO. 1899975 CONTROL 0009 REV. 0 FIGURE 2 OF 5

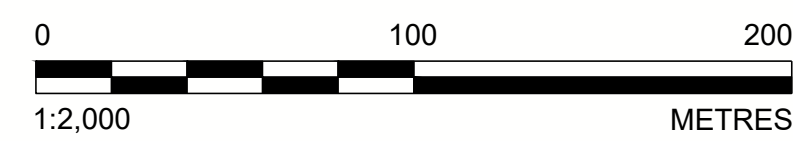
SIGNATURE OF APPLICANT/LICENSEE _____ DATE _____

PREPARED UNDER THE DIRECTION OF:
JAIME OXTOBEE _____ DATE _____

AMENDMENTS	DATE	APPROVAL DATE

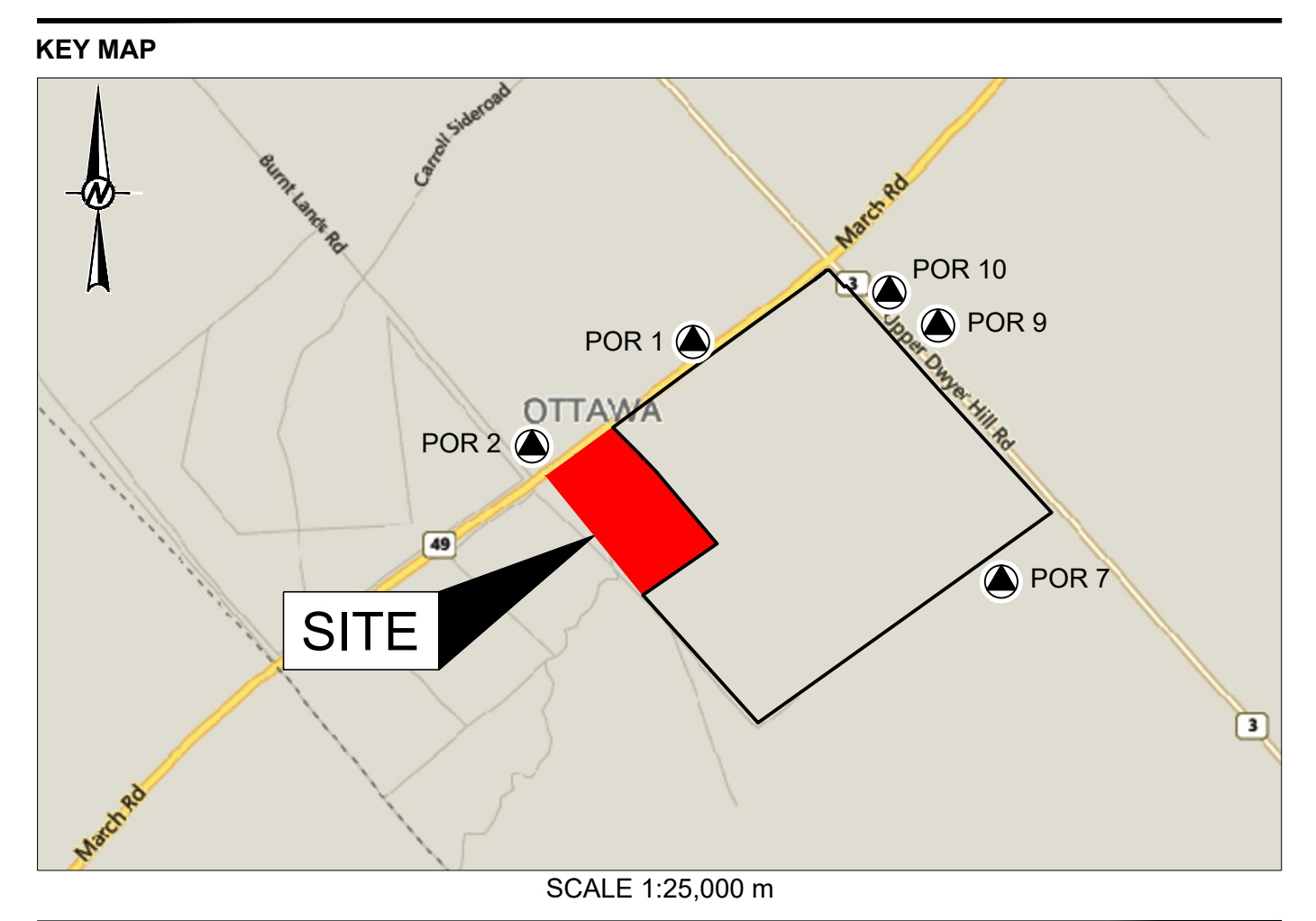
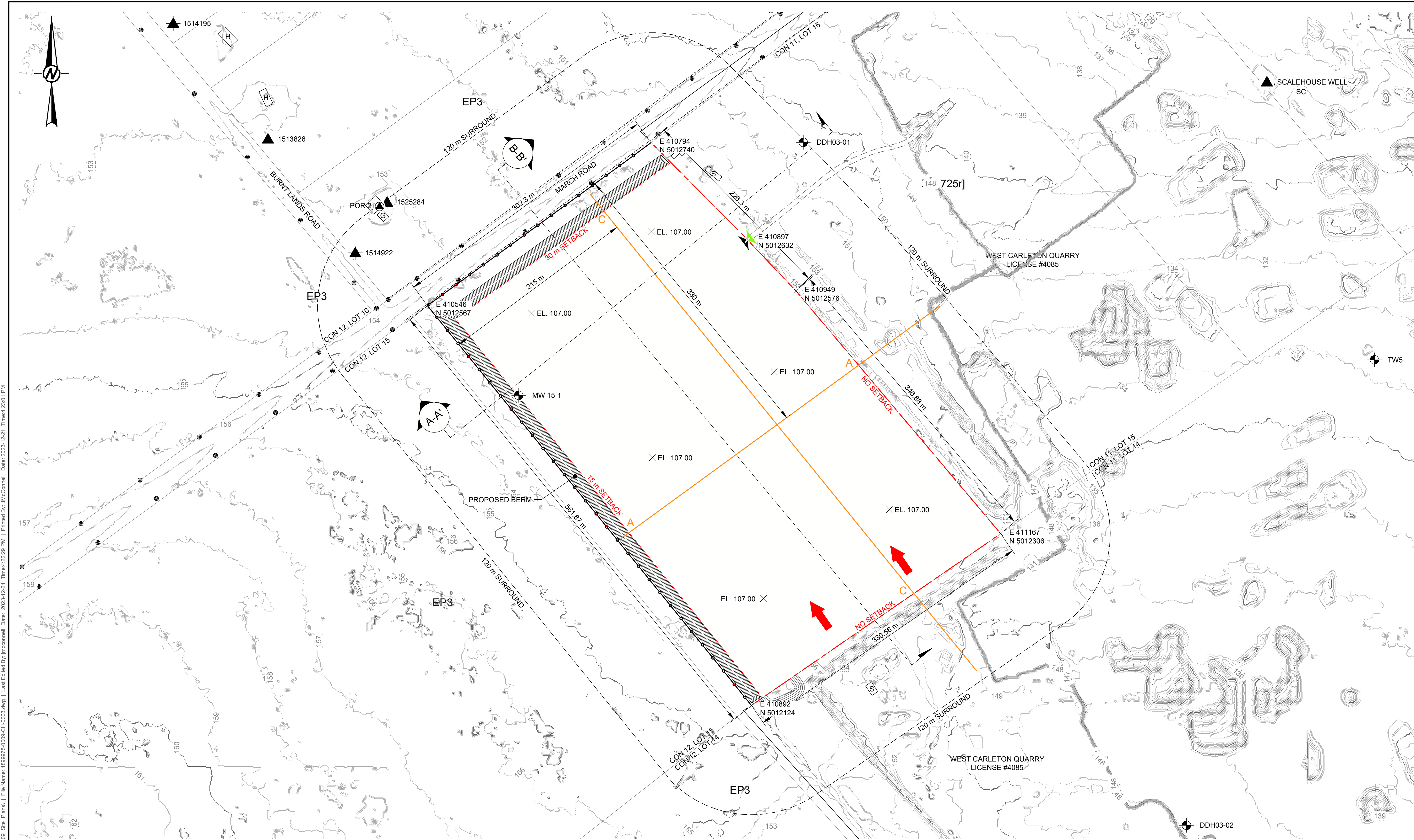
SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES AND FORESTRY.

SIGNATURE _____ DATE _____



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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3/24" X 36" TO A4/24" X 36"



WEST CARLETON QUARRY EXTENSION
 PART OF LOT 15, CONCESSION 11
 FORMER GEOGRAPHIC TOWNSHIP OF HUNTLEY,
 CITY OF OTTAWA

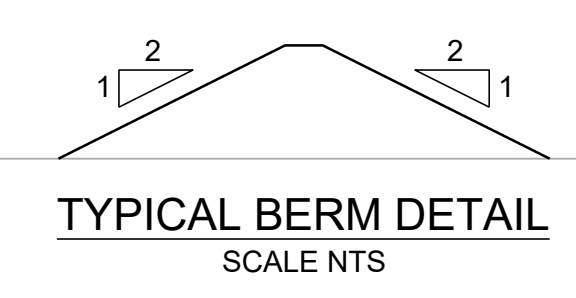
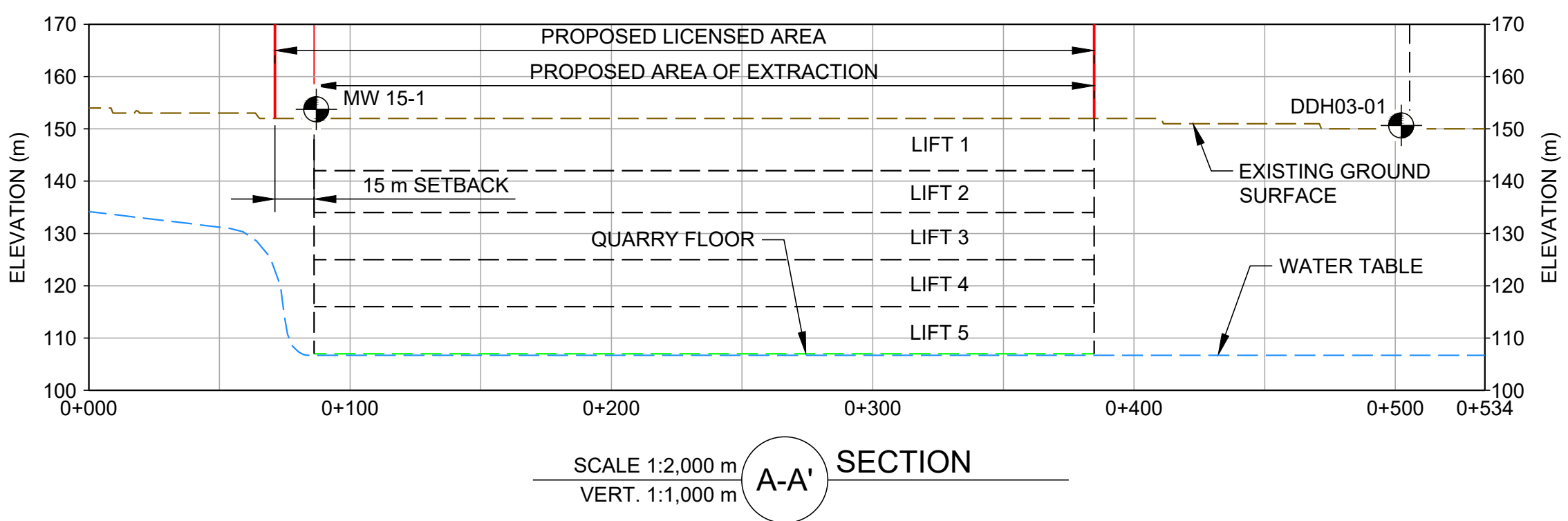
APPLICANT:
 THOMAS CAVANAGH CONSTRUCTION LIMITED
 9094 CAVANAGH ROAD
 ASHTON, ONTARIO
 K0A 1B0

QUARRY LICENSE NO. 626555

- NOTE(S)**
- LICENCED AREA, WEST CARLETON QUARRY EXTENSION 18.2 HECTARES.
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- LEGEND**
- BOUNDARY OF AREA TO BE LICENCED
 - LIMIT OF EXTRACTION
 - 120-METRE SURROUND
 - BOREHOLE / MONITORING WELL
 - ▲ PRIVATE WELL (AS PER MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS WATER WELL INFORMATION SYSTEM)
 - CON 12, LOT 15
CON 12, LOT 14
 - LOTS AND CONCESSION LINES
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 - PAGE WIRE FENCE/GATE
 - UTILITY POLE
 - ROADSIDE DITCH
 - WOODED AREA
 - 137 CONTOURS/INDEX CONTOURS
 - A-A' CROSS-SECTIONS
 - ▲ PRIMARY ENTRANCE
 - ▲ PRIMARY EXIT
 - ➔ GENERAL DIRECTION OF EXCAVATION FOR LIFTS 1 AND 2
 - × EL. 107.00 PROPOSED QUARRY FLOOR SPOT ELEVATION, mASL
 - ▲ POINTS OF RECEPTION (PORs)
 - TURTLE EXCLUSION FENCING

OPERATIONS PLAN
SCALE 1:2,000 m



OPERATIONS PLAN - DRAWING (PAGE 3 OF 5)

OPERATIONS CROSS-SECTIONS

NOTE: THE NUMBERS BELOW REFER TO AGGREGATE RESOURCES OF ONTARIO: SITE PLAN STANDARDS (AUGUST 2020)

69 LOCATION OF CROSS-SECTIONS
REFER TO DRAWING (THIS PLAN) FOR LOCATION OF OPERATIONS CROSS-SECTIONS.

70 HORIZONTAL AND VERTICAL SCALES
APPROPRIATE HORIZONTAL AND VERTICAL SCALES ARE MARKED ON THE CROSS-SECTIONS.

71 OPERATIONS CROSS-SECTIONS
TWO OPERATIONS CROSS-SECTIONS ARE PROVIDED ON THE OPERATIONS PLAN (PAGE 3 OF 5).

72 PREDICTED WATER TABLE UNDER OPERATIONAL CONDITIONS
DURING OPERATIONS, THE WATER TABLE WITHIN THE DEWATERED SITE AND THE ADJACENT WEST CARLETON QUARRY WILL BE SLIGHTLY BELOW THE QUARRY FLOOR. THE PREDICTED WATER TABLE DURING OPERATIONS IS SHOWN ON THE CROSS-SECTIONS ON THIS PLAN (PAGE 3 OF 5).

73 TYPICAL BERM DESIGN
A CROSS-SECTION OF A TYPICAL BERM DESIGN IS SHOWN ADJACENT TO THE OPERATIONS CROSS-SECTIONS (PAGE 3 OF 5).

SIGNATURE OF APPLICANT/LICENSEE _____ DATE _____

PREPARED UNDER THE DIRECTION OF: JAIME OXTOBEE _____ DATE _____

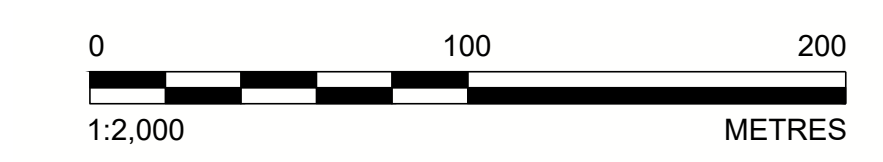
THOMAS CAVANAGH CONSTRUCTION LIMITED

AMENDMENTS	DATE	APPROVAL DATE

SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES AND FORESTRY.

SIGNATURE _____ DATE _____

ITEM/OPERATIONAL STANDARD	VARIATION TO OPERATIONAL STANDARDS	RATIONALE
SETBACKS/ 0.13 (1) 10	NO SETBACK ALONG THE EASTERN AND SOUTHERN EDGES OF THE SITE WHERE COMMON BOUNDARIES EXIST WITH THE ADJACENT QUARRY (LICENSE #4085)	REDUCTION OF SETBACK ALONG COMMON BOUNDARY TO ALLOW FOR CONTINUOUS EXTRACTION OF THE EXISTING QUARRY (LICENSE #4085) AND THIS LICENSE.
STOCKPILES OF AGGREGATE, TOPSOIL, OVERBURDEN AND PROCESSING PLANTS/ 0.13 (1) 13	STOCKPILES OF AGGREGATE, TOPSOIL AND OVERBURDEN AND PROCESSING PLANTS MAY BE LOCATED WITHIN 30 METRES OF THE COMMON BOUNDARY BETWEEN THE SITE AND THE EXISTING QUARRY (LICENSE #4085) EXCEPT WHERE WITHIN 90 METRES OF MARCH ROAD.	THIS WILL ALLOW FOR STOCKPILES AND PROCESSING WITHIN 30 M OF COMMON BOUNDARY AREAS.
TRANSFER OF MATERIAL/ 0.13 (1) 17 AND 0.13 (1) 18	TOPSOIL AND/OR OVERBURDEN AND/OR AGGREGATE MAY BE TRANSFERRED BETWEEN THIS LICENSE AND EXISTING LICENSE #4085.	THIS WILL ALLOW STRIPPED MATERIAL FROM SITE PREPARATION TO BE USED FOR BERM CONSTRUCTION AND/OR PROGRESSIVE REHABILITATION.
FENCING/ 0.13 (6)	NO FENCING ALONG THE EASTERN AND SOUTHERN BOUNDARIES OF THE SITE WHERE COMMON BOUNDARIES EXIST WITH THE ADJACENT QUARRY LICENSE #4085. NO FENCING ALONG THE WESTERN SITE BOUNDARY WHERE THERE IS AN EXISTING BERM.	FENCING ALONG THE COMMON BOUNDARY WOULD INTERFERE IN THE OPERATION OF THE SITE. THE BERM CURRENTLY PRESENT ALONG THE WESTERN BOUNDARY IS HIGH ENOUGH TO IMPED ACCESS TO THE SITE.



- REFERENCE(S)**
- KEY PLAN: Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community.
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 - CITY OF OTTAWA 2012 TOPO LIDAR TILES.
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 - PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28.

CLIENT
THOMAS CAVANAGH CONSTRUCTION LIMITED

PROJECT
WEST CARLETON QUARRY EXTENSION

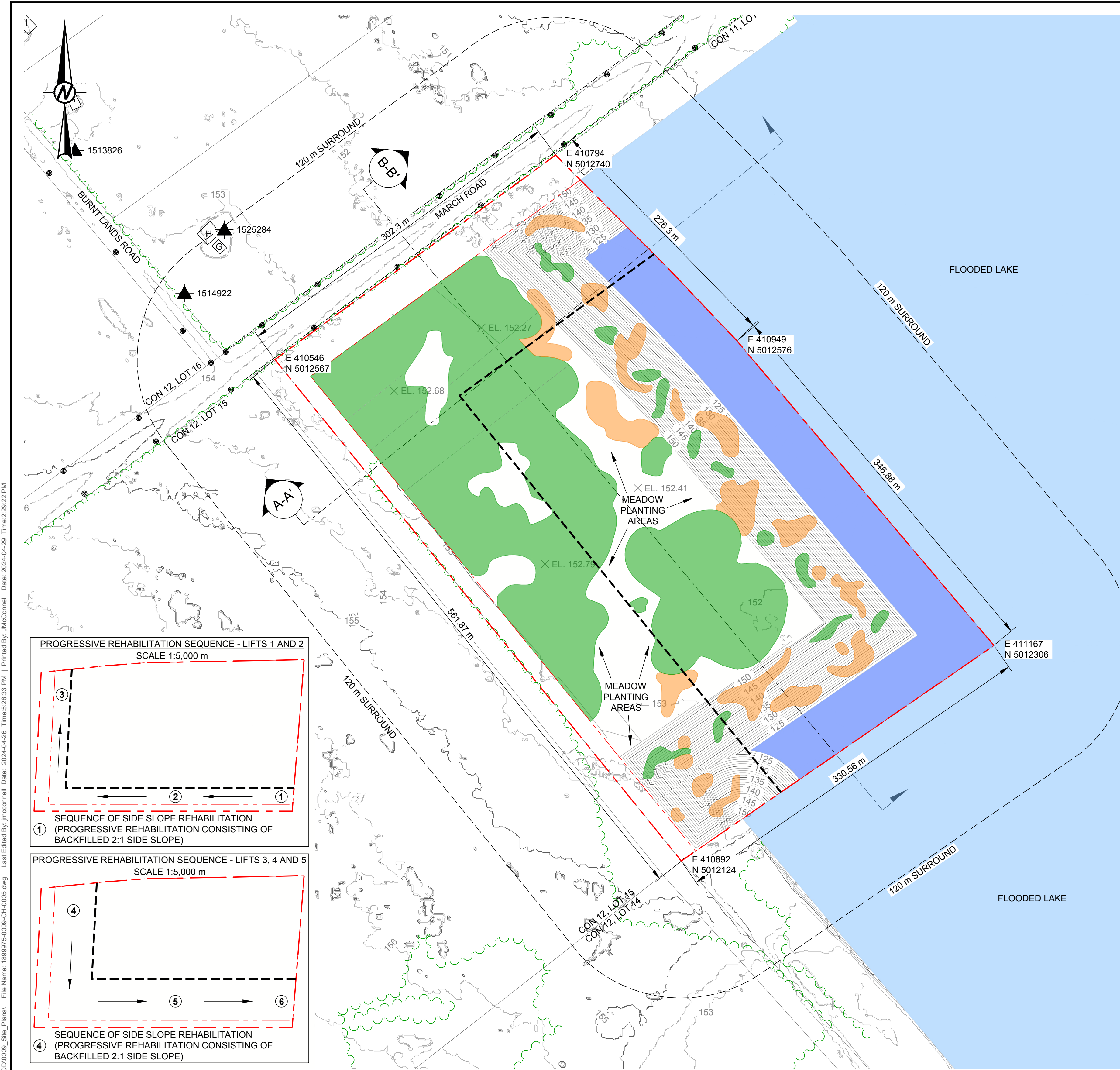
TITLE
OPERATIONS PLAN

APPLICANT	YYYY-MM-DD	2021-02-17
DESIGNED	JPAO	
PREPARED	JM	
REVIEWED	JPAO	
APPROVED	KAM	

PROJECT NO. 1899975 CONTROL 0009 REV. 0 FIGURE 3 OF 5

THOMAS CAVANAGH CONSTRUCTION LIMITED

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REHABILITATION PLAN - (PAGE 5 OF 5)

NOTE: THE NUMBERS BELOW REFER TO AGGREGATE RESOURCES OF ONTARIO. SITE PLAN STANDARDS (AUGUST 2020)

59 PROPOSED REHABILITATION OF THE SITE
 THE PROPOSED FINAL REHABILITATION OF THE SITE INVOLVES BACKFILLING TO EXISTING GROUND SURFACE, TO THE EAST AND SOUTH OF THE SITE. THE EXISTING WEST CARLETON QUARRY LICENSE NUMBER 4085 WILL BE REHABILITATED AS A LAKE. ALONG THESE SLOPES, TYPICAL 2:1 HORIZONTAL VERTICAL SLOPES WILL BE CONSTRUCTED. THE MAJORITY OF THE BOUNDARIES WITH SELECTED AREAS HAVING SHALLOW SLOPES AT THE LAKE LEVEL (I.E. 5:1 HORIZONTAL VERTICAL) TO CREATE SHALLOW LITTORAL ZONES FOR INCREASED HABITAT DIVERSITY. THE REHABILITATION OF THE EXTENSION LANDS WILL ALSO INCLUDE MEADOW AREAS AND UPLAND FOREST AREAS.

60 SEQUENCE AND DIRECTION OF PROGRESSIVE REHABILITATION
 PROGRESSIVE REHABILITATION WILL BE COMPLETED IN DIRECT CORRELATION TO THE DEVELOPMENT OF THE QUARRY AS THE EXTRACTION LIMITS ARE REACHED AND ENOUGH AREA IS AVAILABLE TO ENSURE THAT THE PRODUCTION STOCKING AND PROCESSING OF AGGREGATE MATERIALS WILL NOT INTERFERE WITH PROGRESSIVE REHABILITATION. THE LICENSE HOLDER HAS COMMITTED TO FOCUSING ON DEPLETING THE RESOURCE WITHIN THE EXTENSION LANDS AS QUICKLY AS POSSIBLE BASED ON MARKET DEMAND AND WILL EXTRACT WITHIN THE EXTENSION LANDS PRIOR TO WITHIN THE EXISTING WEST CARLETON QUARRY WHENEVER POSSIBLE.

61 USE OF OVERBURDEN IN PROGRESSIVE AND FINAL REHABILITATION
 OVERBURDEN WILL BE USED IN REHABILITATION TO COVER THE BACKFILLED PORTIONS OF THE REHABILITATED QUARRY AND THE ABOVE WATER SLOPES APPROACHING THE ADJACENT QUARRY LAKE. ALL TOPSOIL OR OVERBURDEN STRIPPED IN THE OPERATION OF THE SITE WILL BE USED IN THE REHABILITATION OF THE SITE.

62 PROPOSED IMPORTATION OF MATERIAL TO FACILITATE REHABILITATION
 ALL TOPSOIL AND OVERBURDEN STRIPPED IN THE OPERATION OF THE SITE WILL BE USED IN THE REHABILITATION OF THE SITE AS THERE WILL BE INSUFFICIENT QUANTITIES OF NATIVE TOPSOIL AND/OR OVERBURDEN AVAILABLE FOR THE PROPOSED REHABILITATION. SOIL AND OVERBURDEN MAY BE IMPORTED TO ESTABLISH THE FINAL REHABILITATION CONTOURS OUTLINED IN THIS PLAN (PAGE 5 OF 5).

63 VEGETATION TO BE ESTABLISHED DURING PROGRESSIVE AND FINAL REHABILITATION
 REHABILITATION ON THE PROPOSED EXTENSION LANDS WILL INVOLVE BACKFILLING THE SITE SUCH THAT THE MAJORITY OF THE SITE WILL BE LEVEL WITH THE EASTERN AND SOUTHERN EDGES SLOPING DOWN TO THE EXISTING LAKE LEVEL. THE REHABILITATION OF THE SITE WILL BE COMPLETED WITHIN THE EXISTING WEST CARLETON QUARRY LICENSE NUMBER 4085. IT IS RECOMMENDED THAT NO TOPSOIL BE ADDED TO THE FINAL LAYERS OF FILL. USE OF MINERAL SOILS ONLY WILL REDUCE THE CHANCE OF UNDESIRABLE SEED IMPORTATION. IN THE REHABILITATION AREA, THE PROPOSED REHABILITATION PLAN CALLS FOR THE INCLUSION OF A RANGE OF HABITATS AT THE TOE OF THE SLOPES, EXTENDING INTO THE LAKE FEATURE IN THE EXISTING WEST CARLETON QUARRY LICENSE NUMBER 4085. WILL BE SHALLOW SHORELINE TREATMENTS (WETLANDS) TO CREATE MORE DIVERSE AQUATIC HABITAT. THE VEGETATION WITHIN THE SHALLOW SHORELINE TREATMENTS WILL CONSIST OF NATIVE WETLAND HERBACEOUS EMERGENT SPECIES, SUCH AS CATTAILS (TYPHA SPP.) AND SHALLOW THICKET SWAMPS, PLANTED WITH NATIVE SHRUBS SUCH AS WILLOWS (SALIX SPP.) AND DOGWOOD (CORNUS SERICEA). SPECIES REQUESTED BY THE ALGONQUINS OF ONTARIO SHALL ALSO BE INCLUDED, INCLUDING PUSSY WILLOW (SALIX DISCOLOR), RED-OBER DOGWOOD (CORNUS STOLONIFERA) AND MEADOWSWEEP (SPHRAEA ALBA). SHALLOW EMERGENT MARSH VEGETATION WILL BE PLANTED IN WATER+1.5 METRES AND EXTEND 4 METRES FROM THE SHOULDER AND WILL BE INTERSPERSED WITH COVER CROPS (E.G. BUCKWHEAT AND ROOT WALS).
 IN ADDITION, BASKING LOGS, WOODY DEBRIS AND NESTING PLATFORMS WILL BE INSTALLED FOR WILDLIFE HABITAT, SUCH AS TURTLES, WATERFOWL, AND FISH. A CONCEPTUALIZATION OF THE SHALLOW SHORELINE TREATMENTS IS SHOWN ON DETAIL 1. INCLUDED IN THIS PLAN. NODAL PLANTINGS WILL ALSO BE COMPLETED WITHIN SELECTED AREAS AROUND THE LAKE AND WILL INCLUDE EDGE, SUBMERGENT AND EMERGENT SPECIES SUCH AS RED-OBER WOOD, SLENDER WILLOW AND HERBACEOUS PLANTS SUCH AS WATER PLANTAIN, LAKE SEDGE, SWAMP MILKWEEED, SOFT TURTLE RUSH AND COMMON CATTAIL. CONSIDERATION WILL BE GIVEN TO INCLUDING BLACK ASH (FRAXINUS NIGRA) IN SUITABLE LOCATIONS WITHIN BOTH THE SWAMP THICKET AND TRANSITION AREA. IN THE WETLAND AREAS, NODS OF HERBACEOUS AND WOODY WETLAND SPECIES WILL BE PLANTED WITH A TARGET DIVERSITY OF 10% COVER. A TARGET DIVERSITY OF 10% COVER IS FEASIBLE. IMPORTED SALVAGED WETLAND SOILS MAY BE BENEFICIAL FOR THESE AREAS TO CARRY NATIVE SEED BANK AND PROVIDE RICH SUBSTRATES. THESE SOILS WILL ASSIST IN ESTABLISHING WETLAND VEGETATION BETWEEN THE PLANTED NODS. CAREFUL CONSIDERATION OF SOURCE SOILS WOULD BE REQUIRED IF SUCH IMPORTATION WAS CONTEMPLATED.

64 QUARRY SLOPING
 IN MOST CASES 2:1 HORIZONTAL VERTICAL SLOPES WILL BE CONSTRUCTED ON THE EAST AND SOUTH SIDES OF THE QUARRY WHERE THE ADJACENT QUARRY EXTRACTION WILL BE REHABILITATED AS A LAKE. SELECTED AREAS DESIGNATED FOR SHALLOW SHORELINE TREATMENTS (LITTORAL ZONES) AT THE LAKE LEVEL WILL BE SLOPED ACCORDINGLY (APPROXIMATELY 5:1 HORIZONTAL VERTICAL). A CONCEPTUALIZATION OF THE SHALLOW SHORELINE TREATMENTS IS SHOWN ON DETAIL 1. INCLUDED ON THIS PLAN (PAGE 5 OF 5).

65 ANY BUILDINGS OR STRUCTURES TO REMAIN ON SITE
 THERE ARE NO BUILDINGS OR STRUCTURES ON SITE. INTERNAL HAUL ROADS WILL BE REMOVED.

66 FINAL SURFACE WATER DRAINAGE
 SURFACE DRAINAGE FROM THE SITE WILL BE REINSTATED TO APPROXIMATE PREDEVELOPMENT CONDITIONS WITHIN THE BACKFILLED PORTION OF THE SITE, BASED ON TOPOGRAPHY AND SITE OBSERVATIONS, UNDER EXISTING CONDITIONS DRAINAGE FROM THE SITE FLOWS TOWARDS THE EXISTING ADJACENT QUARRY LICENSE NUMBER 4085. FOLLOWING REHABILITATION OF THE SITE, SURFACE WATER WILL CONTINUE TO DRAIN TOWARDS THE ADJACENT QUARRY.

67 FINAL ELEVATIONS OF REHABILITATED AREAS
 THE FINAL ELEVATIONS OF THE REHABILITATED AREAS OF THE SITE EXPRESSED AS METRES ABOVE SEA LEVEL ARE SHOWN ON THE DRAWING ON REHABILITATION PLAN (PAGE 5 OF 5)

68 LOCATION OF CROSS-SECTIONS
 REFER TO DRAWING (THIS PLAN) FOR LOCATION OF REHABILITATION CROSS-SECTIONS.

69 HORIZONTAL AND VERTICAL SCALES
 APPROPRIATE HORIZONTAL AND VERTICAL SCALES ARE MARKED ON THE CROSS-SECTIONS.

70 REHABILITATION CROSS-SECTIONS
 TWO REHABILITATION CROSS-SECTIONS ARE PROVIDED ON THE REHABILITATION PLAN (PAGE 5 OF 5).

71 PREDICTED WATER TABLE UNDER REHABILITATED CONDITIONS
 THE GROUNDWATER TABLE WITHIN THE BACKFILLED PORTION OF THE SITE IS EXPECTED TO BE BETWEEN 144 MASL AND 149 MASL AND WILL SLOPE DOWN TO APPROXIMATELY 126 MASL TO 128 MASL AT THE EDGE OF THE LAKE (I.E. APPROXIMATELY EQUAL TO THE REHABILITATED LAKE LEVEL). THE PREDICTED WATER TABLE DURING REHABILITATION IS SHOWN ON THIS PLAN (PAGE 5 OF 5).

72 TYPICAL BERM DESIGN
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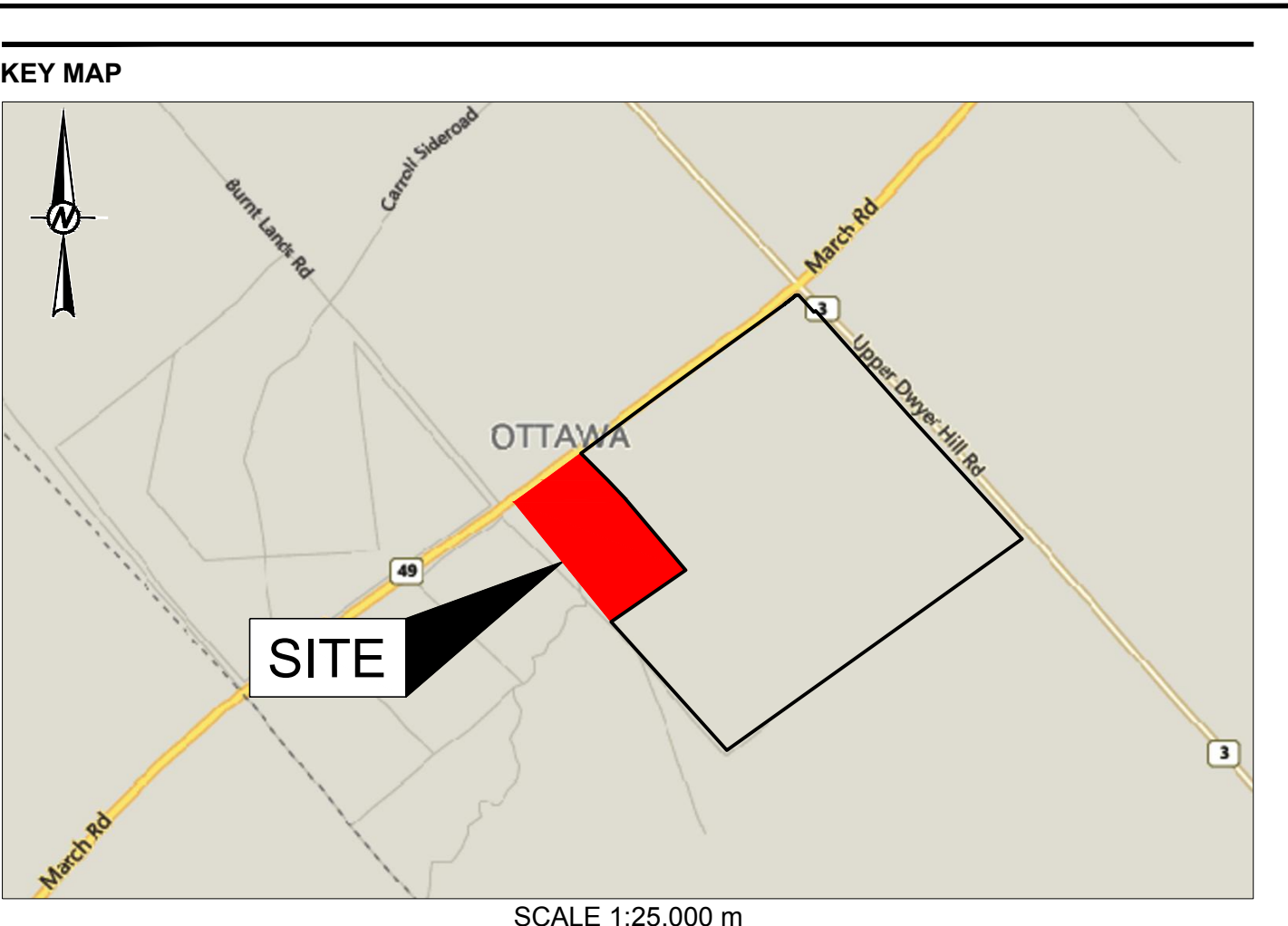
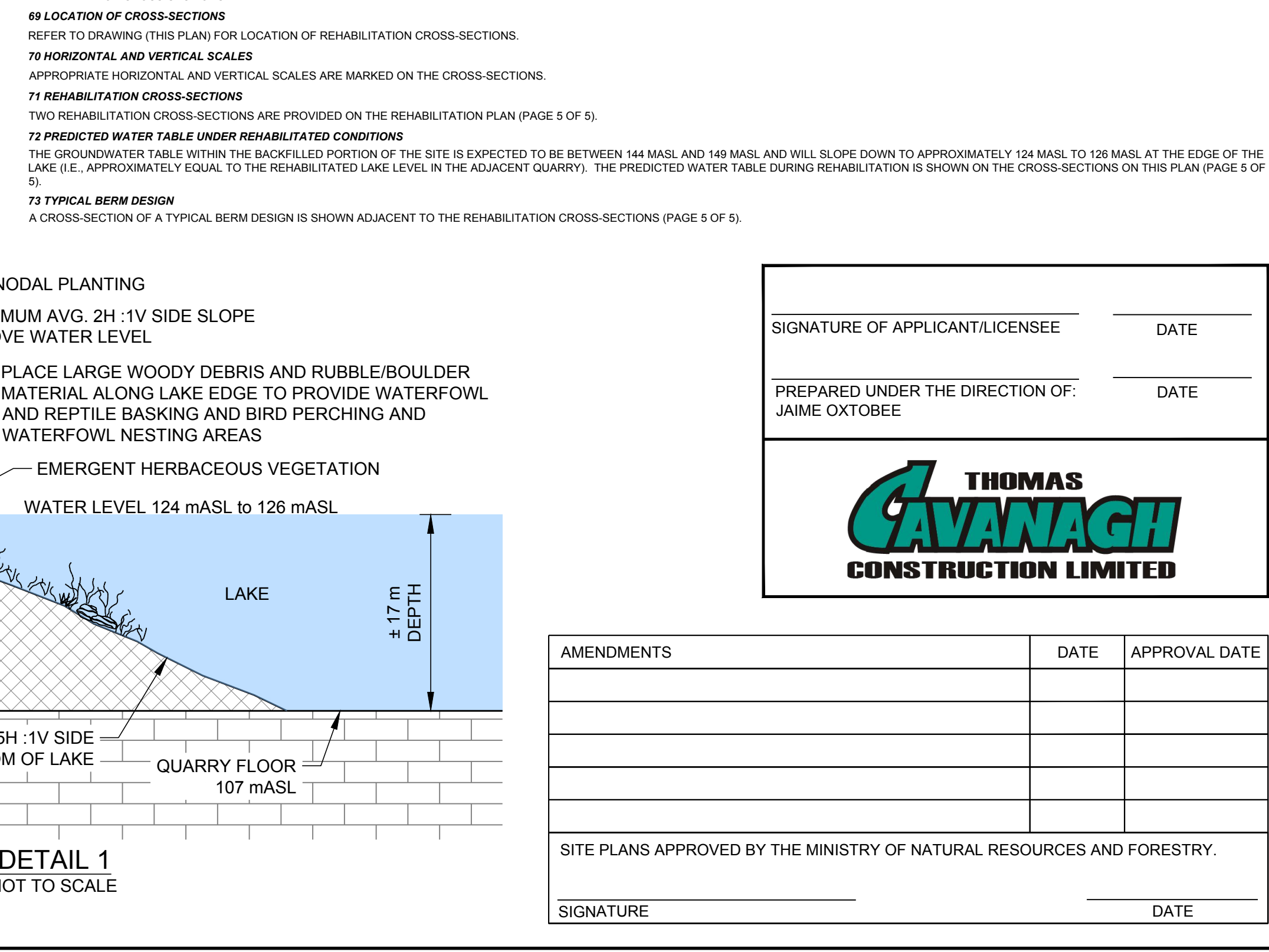
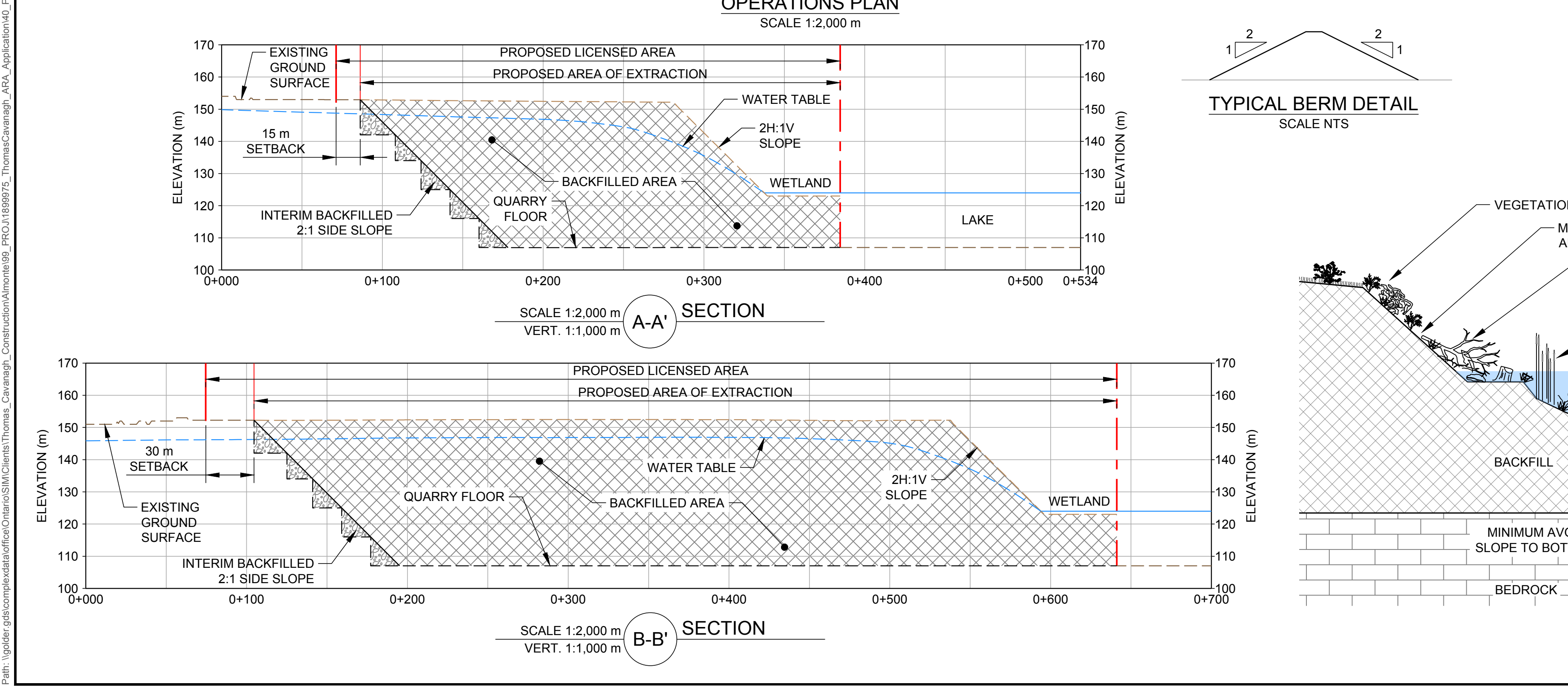
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WEST CARLETON QUARRY EXTENSION
 PART OF LOT 15, CONCESSION 11
 FORMER GEOGRAPHIC TOWNSHIP OF HUNTLEY,
 CITY OF OTTAWA

APPLICANT:
 THOMAS CAVANAGH CONSTRUCTION LIMITED
 9094 CAVANAGH ROAD
 ASHTON, ONTARIO
 K0A 1B0

QUARRY LICENSE NO. 626555

- NOTES**
- LICENCED AREA, WEST CARLETON QUARRY EXTENSION 18.2 HECTARES.
 - AREA OF OPERATION, WEST CARLETON QUARRY EXTENSION 16.5 HECTARES.
 - THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES AND FORESTRY IN CONJUNCTION WITH AN APPLICATION FOR A CLASS 'A' QUARRY BELOW WATER UNDER THE AGGREGATE RESOURCES ACT AND REGULATIONS.
 - THIS PLAN WAS PREPARED USING PHOTOGRAMMETRIC METHODS FROM AERIAL PHOTOGRAPHS.
 - LOT CONCESSION AND BOUNDARY LINES ON THIS PLAN ARE APPROXIMATE.
 - THIS IS NOT A LEGAL SURVEY DRAWING IN ACCORDANCE WITH THE PROVINCE OF ONTARIO SURVEYS ACT 1987. THIS DRAWING WAS PRODUCED USING STANDARD PHOTOGRAMMETRIC PRACTICES.

- LEGEND**
- BOUNDARY OF AREA TO BE LICENCED
 - LIMIT OF EXTRACTION
 - 120-METRE SURROUND
 - BOREHOLE / MONITORING WELL
 - PRIVATE WELL (AS PER MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS WATER WELL INFORMATION SYSTEM)
 - CON 12, LOT 15
 - CON 12, LOT 14
 - LOTS AND CONCESSION LINES
 - BUILDING, S-SILO, H-HOUSE, G-GARAGE, B-BARN, S-SHED, O-OFFICE, SC-SCALE HOUSE, A-AUTO
 - PAGE WIRE FENCE/GATE
 - UTILITY POLE
 - ROADSIDE DITCH
 - WOODED AREA
 - COUNTOURS/INDEX CONTOURS
 - CROSS-SECTIONS
 - PROPOSED SPOT ELEVATION, mASL
 - MIXED FOREST/NODAL TREE PLANTINGS
 - UPLAND THICKET/SHRUB NODAL PLANTINGS
 - SHALLOW SHORELINE TREATMENTS (SEE DETAIL 1)
 - APPROXIMATE LIMIT OF PROGRESSIVE REHABILITATION, INTERIM 2:1 SIDE SLOPE (SEE NOTES AND CROSS-SECTION ON THIS PAGE)

- REFERENCE(S)**
- KEY PLAN; Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, Mapnyndia, © OpenStreetMap contributors, and the GIS User Community
 - LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD. UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2016.
 - CITY OF OTTAWA 2012 TOPO LIDAR TILES.
 - MAPPING AND GROUND CONTROL FOR THE SITE PLAN COMES FROM LAND INFORMATION ONTARIO (LIO) DATA AVAILABLE FROM THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, CITY OF OTTAWA 2012 TOPO LIDAR TILES AND A GROUND SURVEY CONDUCTED BY CAVANAGH IN NOVEMBER 2019.
 - PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: MTM ZONE 9, VERTICAL DATUM: CGVD28.

CLIENT
THOMAS CAVANAGH CONSTRUCTION LIMITED

PROJECT
WEST CARLETON QUARRY EXTENSION

TITLE
REHABILITATION PLAN

APPLICANT
THOMAS CAVANAGH CONSTRUCTION LIMITED

AMENDMENTS	DATE	APPROVAL DATE

SIGNATURE _____ DATE _____

PREPARED UNDER THE DIRECTION OF:
JAIME OXTOBEE DATE _____

THOMAS CAVANAGH CONSTRUCTION LIMITED

SITE PLANS APPROVED BY THE MINISTRY OF NATURAL RESOURCES AND FORESTRY.

SIGNATURE _____ DATE _____

PROJECT NO. 1899975 CONTROL 0009 REV. 0 FIGURE 5 OF 5