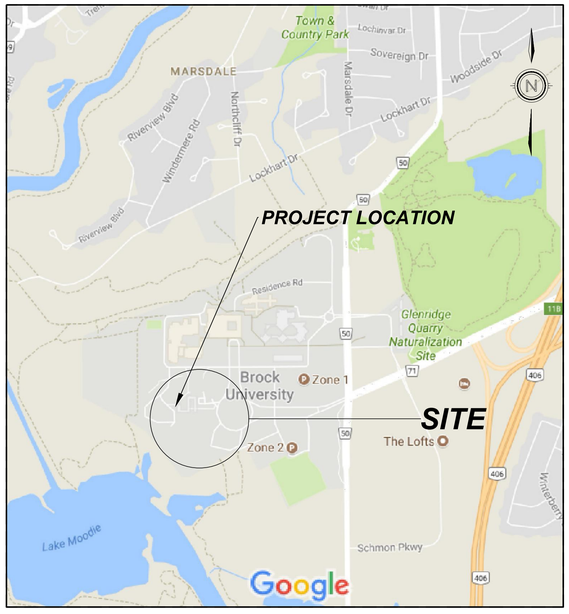
INVITATION TO TENDER DB18-13

CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
BROCK UNIVERSITY
IN THE CITY OF ST. CATHARINES

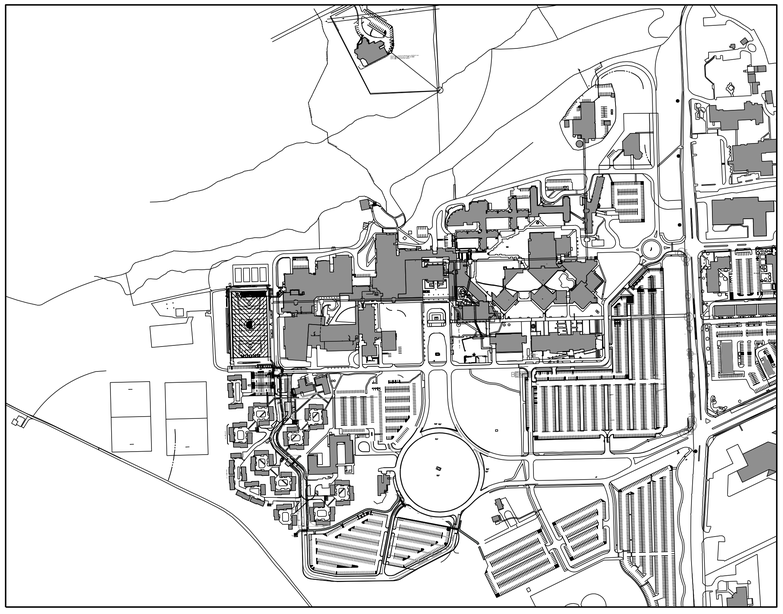
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Location Map (Not to Scale)



Site Map (Not to Scale)



Brock University

issue	issued for	date (yy/mm/dd)	initials
G	ISSUED FOR CONSTRUCTION	19/04/10	KGB
F	ISSUED FOR ADDENDUM #1	19/01/23	KGB
E	ISSUED FOR TENDER	19/01/07	KGB
D	REISSUED FOR TENDER READY	18/08/27	KGB
C	ISSUED FOR TENDER READY	18/04/30	KGB
B	ISSUED FOR 90% REVIEW	18/02/23	KGB
A	ISSUED FOR 60% REVIEW	17/12/21	KGB

seal

MISCELLANEOUS

- BH — BOREHOLE
- TH — TESTHOLE
- OBS WELL — OBSERVATION WELL
- ADVERT. SIGN — ADVERTISING SIGN
- BARRIER POST — BARRIER POST
- BENCH — BENCH
- BOLLARD — BOLLARD
- FLAGPOLE — FLAGPOLE
- GATE — GATE POST
- MB — MAILBOX
- PLANTER — PLANTER
- POLE — POLE
- POLE WELL — POLEWELL
- TREE GRATE — TREEGRATE
- TREE GUARD — TREEGUARD
- WASTE RECEPTICAL — WASTE RECEPTACLE
- BOULDER — BOULDER
- D.L. — DRIPLINE
- SHRUB — SHRUB – CONIFEROUS
- SHRUB — SHRUB – DECIDUOUS
- STUMP — STUMP
- 100mm — TREE – DECIDUOUS – 100mm
- 100mm — TREE – CONIFEROUS – 100mm

FENCE (OTHER THAN WOOD)
WOOD FENCE
EXISTING HANDRAIL
PROPOSED HANDRAIL
RAILWAY (SINGLE TRACK)
LPL — LEFT PROPERTY LINE (PROFILE)
RPL — RIGHT PROPERTY LINE (PROFILE)
LSW — LEFT SIDEWALK (PROFILE)
RSW — RIGHT SIDEWALK (PROFILE)
GUIDERAIL
PROPOSED GUIDERAIL
BANK
PL — PROPERTY LINE (For Traffic Signal legal approval drawing only)
EASEMENT
EXISTING DITCH
PROPOSED DITCH
DITCH ON PROFILE
CENTERLINE OF ROAD
GRANULAR SHOULDER

PAVEMENT MARKINGS

EX. DIRECTIONAL ARROWS
PROPOSED DIRECTIONAL ARROWS
EXISTING LINE MARKINGS
EXISTING 60cm STOP BAR
PROPOSED LINE MARKINGS
PROPOSED 60cm STOP BAR
PROPOSED YIELD LINE PAINTING

WATER SYSTEMS

- 11 1/4° BEND — EX. 11 1/4 DEGREE BEND
- 11 1/4° BEND — PROP. 11 1/4 DEGREE BEND
- 22 1/2° BEND — EX. 22 1/2 DEGREE BEND
- 22 1/2° BEND — PROP. 22 1/2 DEGREE BEND
- 45° BEND — EX. 45 DEGREE BEND
- 45° BEND — PROP. 45 DEGREE BEND
- 90° BEND — EX. 90 DEGREE BEND
- 90° BEND — PROP. 90 DEGREE BEND
- ANODE — EX. ANODE
- ANODE — PROP. ANODE
- BO — EX. BLOWOFF
- BO — PROP. BLOWOFF
- CROSS ___ x ___mm — EX. CROSS
- CROSS ___ x ___mm — PROP. CROSS
- CS — EX. CURBSTOP
- CS — PROP. CURBSTOP
- HYD — EX. HYDRANT
- HYD — PROP. HYDRANT
- HYD WV — EX. HYDRANT VALVE
- HYD WV — PROP. HYDRANT VALVE
- CAP — EX. WATERMAIN CAP
- CAP — PROP. WATERMAIN CAP
- PV — EX. PRESSURE VALVE
- PV — PROP. PRESSURE VALVE
- REDUCER ___ x ___ mm — EX. WATERMAIN REDUCER
- REDUCER ___x___mm — PROP. WATERMAIN REDUCER
- TEE ___ x ___mm — EX. WATERMAIN TEE
- TEE ___x___mm ___x___mm — PROP. WATERMAIN TEE
- TS&V — EX. WATERMAIN TAPPING SLEEVE AND VALVE
- TS&V — PROP. WATERMAIN TAPPING SLEEVE AND VALVE
- WV — EX. WATERMAIN VALVE
- WV — PROP. WATERMAIN VALVE
- WVC — EX. WATERMAIN VALVE CHAMBER
- WVC — PROP. WATERMAIN VALVE CHAMBER
- WATER WELL — EX. WATER WELL
- WATER WELL — PROP. WATER WELL
- WSS — EX. WATER SAMPLING STATION
- WSS — PROP. WATER SAMPLING STATION
- WATER METER — EX. WATER METER
- SPKR — EX. SPRINKLER

EXISTING IRRIGATION SYSTEM
EXISTING WATERMAIN
PROPOSED WATERMAIN
EXISTING WATER SERVICE LATERAL

WASTE WATER / SANITARY

- CAP — EX. SANITARY SEWER CAP
- CLEANOUT — EX. SANITARY SEWER LATERAL CLEANOUT
- CLEANOUT — PROP. SANITARY SEWER LATERAL CLEANOUT
- COMB MH — EX. MANHOLE COMBINED SEWER
- COMB MH — PROP. MANHOLE COMBINED SEWER
- FM V — EX. SANITARY FORCEMAIN VALVE
- FM V — PROP. SANITARY FORCEMAIN VALVE
- FM VC — EX. SANITARY FORCEMAIN VALVE CHAMBER
- FM VC — PROP. SANITARY FORCEMAIN VALVE CHAMBER
- PLUG — EX. SANITARY PLUG
- PLUG — PROP. SANITARY PLUG
- SAN MH — EX. SANITARY SEWER MANHOLE
- SAN MH — PROP. SANITARY SEWER MANHOLE
- UNK MH — EX. UNKNOWN MANHOLE

EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
SANITARY SEWER LATERAL

DRAINAGE SYSTEMS / STORM

- CB — EX. CATCH BASIN
- CB — PROP. CATCH BASIN
- CBMH — EX. CATCH BASIN MANHOLE
- CBMH — PROP. CATCH BASIN MANHOLE
- STM MH — EX. STORM MANHOLE
- STM MH — PROP. STORM MANHOLE
- CLAY — EX. CULVERT END – CLAY
- CONC — EX. CULVERT END – CONCRETE
- CSP — EX. CULVERT END – CSP
- PE — EX. CULVERT END – PE
- PVC — EX. CULVERT END – PVC
- DCB — EX. DOUBLE CATCH BASIN
- DCB — PROP. DOUBLE CATCH BASIN
- DICB — EX. DITCH INLET CATCH BASIN
- DICB — PROP. DITCH INLET CATCH BASIN
- RIP RAP — EX. RIPRAP LABEL

EXISTING STORM SEWER
PROPOSED STORM SEWER
STORM SEWER LATERAL
CULVERT

SURVEY POINTS

- BM — BENCHMARK
- TP — TURNING POINT
- VPI — VERTICAL POINT OF INTERSECTION
- HCM — HORIZONTAL CONTROL MONUMENT
- HVCM — HORIZONTAL VERTICAL CONTROL MONUMENT
- HCP — HORIZONTAL PROJECT CONTROL POINT
- HOT — HUB ON TANGENT
- NAIL — NAIL
- CC — CUT CROSS FOUND
- CM — CONCRETE MONUMENT FOUND
- CP — CONCRETE PIN FOUND
- IB — IRON BAR FOUND
- IP — IRON PIPE
- RB — ROCK BAR FOUND
- RIB — ROUND IRON BAR FOUND
- RP — ROCK POST FOUND
- RPL — ROCK PLUG FOUND
- SIB — STANDARD IRON BAR FOUND
- SSIB — SHORT STANDARD IRON BAR FOUND

EXISTING UTILITIES

- BBP — BROAD BAND NETWORK POLE
- B MH — BELL MANHOLE
- BP — BELL POLE
- BGP — BELL GUYPOLE
- B PED — BELL PEDESTAL
- PHONE BOOTH — PHONE BOOTH
- B JB — BELL JUNCTION BOX
- BCUM — BELL UNDERGROUND MARKER
- G PUMP — GAS PUMP
- GV — GAS VALVE
- GM — GAS METER
- G VENT — GAS VENT
- GAS MH — GAS MANHOLE
- GMUM — GAS MAIN MARKER
- GAS DRIP — GAS DRIP
- HV — HYDRO UNDERGROUND TRANSFORMER VAULT
- HP — HYDRO POLE
- HCUM — HYDRO UNDERGROUND MARKER
- PCUM — HYDRO UNDERGROUND POWER MARKER
- GW — HYDRO GUYWIRE
- HGP — HYDRO GUYPOLE
- B&HP — BELL AND HYDRO POLE
- H KIOSK — HYDRO KIOSK
- HT — HYDRO TOWER
- LS — LIGHT STANDARD
- H JB — HYDRO JUNCTION BOX
- H MH — HYDRO ELECTRIC MANHOLE
- HH — HYDRO HANDHOLE
- GND ROD — HYDRO GROUND ROD
- CATV PED — CABLE TV PEDESTAL
- CATV JB — CABLE TV JUNCTION BOX
- CATV — CABLE TV POLE
- FUEL VENT — FUEL OIL VENT

B — BELL CABLE (UNDERGROUND)
BC — BELL CONDUIT (UNDERGROUND)
AB — BELL (AERIAL)
G — GAS MAIN (UNDERGROUND)
H — HYDRO CABLE (UNDERGROUND)
AH — HYDRO CABLE (AERIAL)
GW — GUY WIRE (AERIAL)
TV — TELEVISION CABLE (UNDERGROUND)
AT — TELEVISION CABLE (AERIAL)
OL — OIL PIPE LINE

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

1 THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

2 PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
LEGEND SHEET

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : Ver :
REF. No.	DB18-13
DWG No.	LEGEND
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-LEGEND PAGE.dwg PLOTTED: Apr 10, 2019 - 8:20pm PLOTTED BY: joel.ackland

GENERAL NOTES:

THESE NOTES APPLY TO ALL DRAWINGS WITHIN THIS SET.

ALL CONSTRUCTION MATERIALS AND METHODOLOGIES SHALL BE IN ACCORDANCE WITH:
- *SPECIAL PROVISIONS - SUPPLEMENTARY GENERAL CONDITIONS (SPSGC)*
- *SPECIAL PROVISIONS - SUPPLEMENTARY CONTRACT ITEMS (SPSCI)*
- *NIAGARA PENINSULA STANDARD CONTRACT DOCUMENTS (NPSCD)*
- *ONTARIO PROVINCIAL STANDARDS FOR ROADS & PUBLIC WORKS (OPSS & OPSD)*
- *CITY OF ST. CATHRINES WATERMAIN STANDARDS*

IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THESE MATERIALS AND METHODOLOGIES ARE STRICTLY ADHERED TO.

IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY APPROVALS WHICH MAY BE REQUIRED PRIOR TO THE COMMENCEMENT OF CONSTRUCTION UNLESS DIRECTED OTHERWISE BY THE CONTRACT ADMINISTRATOR.

ANY WORKS COMPLETED IN SET-BACK AREAS, AND DISCHARGE TO CREEKS, STREAMS AND WATERCOURSES MAY BE SUBJECT TO FEDERAL AND PROVINCIAL APPROVALS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN SUCH APPROVALS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION IF REQUIRED FOR THE PROJECT.

THE POSITIONS OF POLE LINES, CONDUITS, WATERMAINS, SEWERS, AND OTHER UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF POSITION IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM. ALL EXISTING LEGAL/PROPERTY MONUMENTATION TO BE PROTECTED AND MAINTAINED BY THE CONTRACTOR. ALL MONUMENTATION REMOVED BY THE CONTRACTOR SHALL BE REPLACED BY A LICENSED ONTARIO LAND SURVEYOR AT NO COST TO THE OWNER.

REMOVE AND REINSTATE ALL STREET FURNITURE, SIGNS, MAILBOXES, GUIDE RAILS, CULVERTS, HEADWALLS, ETC., AS NECESSARY. REINSTATEMENT TO BE TO EXISTING CONDITION OR BETTER AND AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

CULVERTS, POLES, ETC. NOT REMOVED ARE TO BE PROTECTED. SHORE OR BRACE TO PREVENT DAMAGE (TYP. DENOTES TYPICAL).

ALL EXISTING TREES, SHRUBS AND PLANTINGS NOT IDENTIFIED FOR REMOVAL ARE TO BE PROTECTED. IF THEY ARE DAMAGED BY CONTRACTOR'S OPERATIONS, THEY SHALL BE REPLACED BY AND AT THE CONTRACTOR'S EXPENSE.

ALL GRANULAR MATERIAL SHALL BE COMPACTED IN 150mm LIFTS TO 100% S.P.M.D .D. AND ALL NATIVE BACKFILL SHALL BE COMPACTED TO 95% S.P.M.D.D.UNLESS OTHERWISE NOTED.

ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LINES AND GRADES ON THE CONTRACT DRAWINGS UNLESS OTHERWISE DIRECTED BY THE ENGINEER ON SITE. SUMPS OR TRAPS IN THE PIPING SHALL NOT BE PERMITTED UNLESS SHOWN ON THESE CONTRACT DRAWINGS.

THE CONTRACTOR SHALL PROVIDE ALL NECESSARY CONSTRUCTION LAYOUT INCLUDING BUT NOT LIMITED TO; TEMPORARY GEODETIC BENCHMARKS (REFERENCES TO THE PROVIDED BENCHMARK(S) EVERY 50m), LOCATION AND OFFSET STAKES INDICATING PROPOSED WATERMAIN ALIGNMENT AND ELEVATION AT EVERY 20m, AT EACH OFFSET SHOWN, AT EACH STRUCTURE AND AT EACH PROPOSED BEND. THE CONTRACTOR SHALL PROVIDE A LIST OF THE TEMPORARY BENCHMARKS, GRADE SHEETS AND ANY (ASSOCIATED) FIELD NOTES TO THE ENGINEER PRIOR TO CONSTRUCTION.

SUBSEQUENT TO PIPE INSTALLATION AND ON A REGULAR BASIS THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER THE AS-CONSTRUCTED ELEVATIONS AND OFFSETS OF THE STORM SEWERS AT EVERY 20m STATION NOTED, AT EACH OFFSET NOTED AND AT EACH STRUCTURE INSTALLED.

ALL ABANDONED PIPE TO BE FLUSHED CLEAN AND MECHANICALLY CAPPED IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.

PROPERTY LINES WHERE SHOWN ON THESE DRAWINGS ARE SHOWN ONLY FOR REFERENCE AND ARE NOT TO BE USED FOR LEGAL PURPOSES.

THE CONTRACTOR IS RESPONSIBLE FOR TRAFFIC CONTROL.

A. SIGNING SHALL, AS A MINIMUM BE IN ACCORDANCE WITH CURRENT MTO MANUAL UNIFORM TRAFFIC CONTROL. FLAGGING SHALL BE IN ACCORDANCE WITH 'CORRECT METHODS OF TRAFFIC CONTROL' ISSUED BY THE CONSTRUCTION SAFETY ASSOCIATION OF ONTARIO.

B. AT LEAST ONE LANE OF FLAGGED TRAFFIC MUST BE MAINTAINED AT ALL TIMES AND BOTH LANES SHALL BE FULLY OPEN TO TRAFFIC DURING NON-WORKING HOURS.

C. VILLAGE ROAD MUST BE ACCESSIBLE FOR EMERGENCY SERVICES ACCESS AT ALL TIMES DURING THE WORKS (ACCESS FROM UNIVERSITY ROAD)

D. VILLAGE ROAD / LOT S CARPARK ACCESSES MAY BE CLOSED TO THROUGH TRAFFIC FOR SHORT PERIODS DURING THE PHASE 1 WORKS AND DURING RESTORATION.

E. PRIOR TO CLOSING ANY RIGHT-OF-WAY, THE CONTRACTOR SHALL OBTAIN CLEARANCE FROM THE ENGINEER AND NOTIFY THE APPROPRIATE POLICE, FIRE DEPT., AMBULANCE AND SCHOOL BUS OPERATORS OF STREETS CLOSED, STREETS USED FOR DETOURS, AND THE DURATION OF ANY DETOUR.

BROCK UNIVERSITY AND STAFF DISCLAIMS ANY LIABILITY AS TO THE CURRENT ACCURACY OF THE DRAWINGS PROVIDED. IN USING THE INFORMATION SHOWN OR CONTAINED ON THESE DRAWINGS, THE USER AGREES IMPLICITLY AND EXPLICITLY THAT BROCK UNIVERSITY AND STAFF SHALL NOT BE LIABLE FOR SPECIAL, INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES ARISING FOR THE USE OF SUCH INFORMATION. THE USER SHALL DO AN IN-FIELD VERIFICATION OF THE INFORMATION SHOWN ON OR CONTAINED WITHIN THESE DRAWINGS.

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WATER MAINS:

ALL WATERMAIN WORK TO BE COMPLETED IN ACCORDANCE WITH CITY OF ST. CATHRINES CONSTRUCTION STANDARDS.

MINIMUM COVER OVER NEW PVC WATERMAIN TO BE 1.50m.

ALL DEFLECTIONS SHALL BE BY PIPE JOINTS ONLY AND SHALL NOT EXCEED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURED PVC BENDS TO BE USED AS SPECIFIED. ALL BENDS, VALVES AND FITTINGS MUST BE RESTRAINED USING MECHANICAL RESTRAINTS AND CONCRETE THRUST BLOCKS PER CONTRACT SPECIFICATIONS AND MEET THE REQUIREMENTS OF THE UNI-BELL PVC ASSOCIATION AS DESCRIBED IN UNI-B-13.

OPEN TRENCH WATERMAIN TO BE INSTALLED WITH A CONTINUOUS 8-GAUGE, TWU COPPER WIRE PLACED ALONG THE TOP OF THE WATERMAIN AND STRAPPED TO THE PIPE AT 3m INTERVALS USING FIBREGLASS TAPE OR PLASTIC TIE WRAPS. TRACER WIRE SHALL BE BROUGHT UP TO THE SURFACE ON THE OUTSIDE OF ALL HYDRANTS, VALVE BOXES AND SECONDARY VALVE BOXES. TRACER WIRE SHALL BE BROUGHT TO GRADE AT HYDRANTS INSIDE A MINIMUM 1.0m LENGTH OF 25mm DIAMETER PVC CONDUIT. A MIN 300mm LOOP OF TRACER WIRE SHALL BE INSERTED WITHIN THE TOP BARREL AND UNDER THE CAP OF ALL VALVE BOXES.

FOR DIRECTIONAL DRILLING INSTALLATIONS, CONTRACTOR TO INSTALL THREE (3) SEPARATE LENGTHS OF 12 AWG SOLID EHS-CCS HORIZONTAL DIRECTIONAL DRILL TRACER WIRE AS SUPPLIED BY COPPERHEAD, OR APPROVED EQUAL. ALL THREE TRACER WIRES SHALL BE INSTALLED WITH THE PIPE AND CONNECTED TO THE DIRECT BURIED TRACER WIRE AT BOTH ENDS.

ALL FITTINGS SUCH AS BENDS, TEES, ETC., TO BE OF MECHANICAL JOINT, CAST IRON METAL.

NEW HYDRANTS TO BE INSTALLED WHERE SHOWN. AS PER OPSD 1105.010. (INCLUDE IRRIGATION PIPEWORK) AFFECTED BY WORKS

ALL WATER SERVICES TO BE RELOCATED AT AGREEMENT OF BROCK UNIVERSITY.

WATER SERVICES/MAINSTOPS AND CURBSTOP SIZES SHALL BE AS PER THE PROJECT DOCUMENTS. MATERIAL SPECIFICATIONS SHALL BE PEXa PIPE, (AS PER PROJECT DOCUMENTS) AND SHALL BE INSTALLED AS SPECIFIED.

CS"" = EXACT LOCATION UNKNOWN. CURBSTOP TO BE LOCATED DURING CONSTRUCTION.

SEWERS:

SANITARY SERVICE LATERALS ARE NOT SHOWN. CONTRACTOR IS RESPONSIBLE FOR VERIFYING LOCATION AND DEPTH PRIOR TO CROSSING. CONTRACTOR IS RESPONSIBLE TO PROTECT AND MAINTAIN ALL LATERALS.

NEW MANHOLES TO HAVE WATERTIGHT CONNECTIONS & JOINTS. PRIOR TO BACKFILLING, CONTRACTOR WILL APPLY ONE CONTINUOUS COAT OF APPROVED ASPHALT WATERPROOFING MATERIAL, 400mm WIDE AND APPROXIMATELY 5mm THICK, ON THE OUTSIDE WALL OF MANHOLE, AT HORIZONTAL JOINT, BETWEEN EACH PRECAST CONCRETE SECTION.

CO"" = EXACT LOCATION UNKNOWN, CLEANOUT TO BE LOCATED DURING CONSTRUCTION

PUBLIC UTILITIES:

AS A MINIMUM, THE CONTRACTOR SHALL EXPOSE BY HAND EXCAVATION ALL BURIED UTILITIES (SEWER, WATER, GAS, PHONE, CABLE, POWER, ETC.) (SHOWN OR OTHERWISE) CROSSING THE EXISTING REGOIN WATERMAIN AND PROVIDE THEIR SIZE, LOCATION AND GEODETIC ELEVATION TAKEN AT BOTH SIDES OF THE TRENCH, TO THE ENGINEER FOR REVIEW. THIS UTILITY INFORMATION SHALL BE PROVIDED TO THE ENGINEER IN WRITING AFTER ALL UTILITY LOCATES HAVE BEEN OBTAINED AND ALL TEST PITS HAVE BEEN COMPLETED. THIS UTILITY INFORMATION SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW FOR EACH SECTION OF ROAD CONSTRUCTION. THE ENGINEER SHALL ADVISE THE CONTRACTOR OF ANY REQUIRED REVISIONS.

THE CONTRACTOR SHALL NOTE THAT BROCK UNIVERSITY/PUBLIC UTILITIES SHALL INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING, HYDRO, GAS, BELL, CABLE, FIBRE OPTIC, STORM, SANITARY SEWERS, WATERMAINS AND IRRIGATION PIPEWORK.

IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN THE NECESSARY CLEARANCES FROM BROCK UNIVERSITY/PUBLIC UTILITIES WHICH MAY BE IN DIRECT CONFLICT WITH THIS PROJECT.

ANY WORK REQUIRING EITHER RELOCATION/LOWERING OF BROCK UNIVERSITY/PUBLIC UTILITY (EXCEPT ENBRIDGE GAS) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE UTILITY, AND ANY RELOCATION WORKS WILL BE REQUIRED TO BE COMPLETE PRIOR TO THE NEW ROAD CONSTRUCTION & INSTALLATION OF THE NEW SEWER/WATER WORKS.

ENBRIDGE GAS HAVE UTILITIES REQUIRING RELOCATION FROM THE FOOTPRINT OF THE WIDENED VILLAGE ROAD SECTION (STN 0-280). THIS RELOACTION WORK WILL BE UNDERTAKEN IN EARLY TO MID MAY, DURING THIS PERIOD SUITABLE SEPARATION BETWEEN ENBRIDGE'S CONTRACTOR AND THE WORKS CONTRACTOR MUST BE MAINTAINED.

STORM SEWERS:

ALL EXISTING MANHOLES AND CATCH BASINS TO BE REMOVED.

ALL EXISTING STORM SEWERS ABANDONED UNDER ROADS SHALL BE CAPPED AND GROUTED.

ALL EXISTING STORM SEWERS ABANDONED UNDER NON-TRAFFICKED AREAS SHALL BE CAPPED.

CATCH BASIN CONNECTIONS SHALL BE 200mmØ MINIMUM.

WHERE EXISTING CATCH BASINS ARE REMOVED/REPLACED ANY EXISTING SEWER CONNECTIONS SHALL BE CAPPED AND ABANDONED IN NON-TRAFFICKED AREAS.

STORM SEWER PIPES LESS THAN 2.5m FROM EXISTING WATERMAIN AND LESS THAN 0.5m ABOVE THE EXISTING WATERMAIN SHALL BE CONSTRUCTED WITH IPEX 50 PSI PIPES AND TESTED TO WATERMAIN STANDARDS.

CATCH BASIN LEADS MUST HAVE 0.5m (MIN.) CLEARANCE ABOVE ANY EXISTING WATERMAINS, WHERE THIS IS NOT POSSIBLE, WATERMAIN STANDARD PIPE SHALL BE USED BETWEEN THE CATCH BASIN AND MAIN SEWER.

REQUIREMENTS FOR NIAGARA REGION:

WHEN WORKING CLOSE TO THE REGION'S WATERMAIN (600mmØ & 900mmØ) AND IF UNDERTAKING CHAMBER ADJUSTMENTS (LOWERING) NIAGARA REGION SHALL BE CONTACTED 72 HOURS IN ADVANCE OF ANY WORK BEING COMPLETED IN THE AREA OF THEIR WATERMAIN. THE CONTACT WILL BE JEFF CARL AT 905-684-5353 (DECEW WTP).

ENSURE THAT THERE IS A MINIMUM 1.5m HORIZONTAL SEPARATION BETWEEN THE NEW STORM SEWERS ALONG NEW SECTION OF VILLAGE ROAD AND THE EXISTING REGIONAL WATERMAIN. (900mmØ)

FOR CROSSINGS OVER THE EXISTING WATERMAIN WHERE MINIMUM SEPERATION OF 0.5m CANNOT BE MAINTAINED, THE REGION REQUIRES THE CONTRACTOR YO EXCAVATE UP TO THE TOP OF THE WATERMAIN (600mmØ), INSTALL A BOND BREAKER ON THE WATERMAIN PIPE AND THEN BACKFILL THE AREA WITH UNSHRINKABLE FILL. THIS WILL ENSURE THAT LOAD OF THE 450mmØ STORM SEWER IS NOT PLACED DIRECTLY ON THE WATERMAIN PIPE BUT RATHER ON THE BACK FILL AROUND IT. IF THE SEPARATION IS FOUND TO BE LESS THAN 150mm, THEN THE CONSULTANT/CONTRACTOR SHALL NOTIFY THE REGION'S W&WW ENGINEERING DEPARTMENT.

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	KGB
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

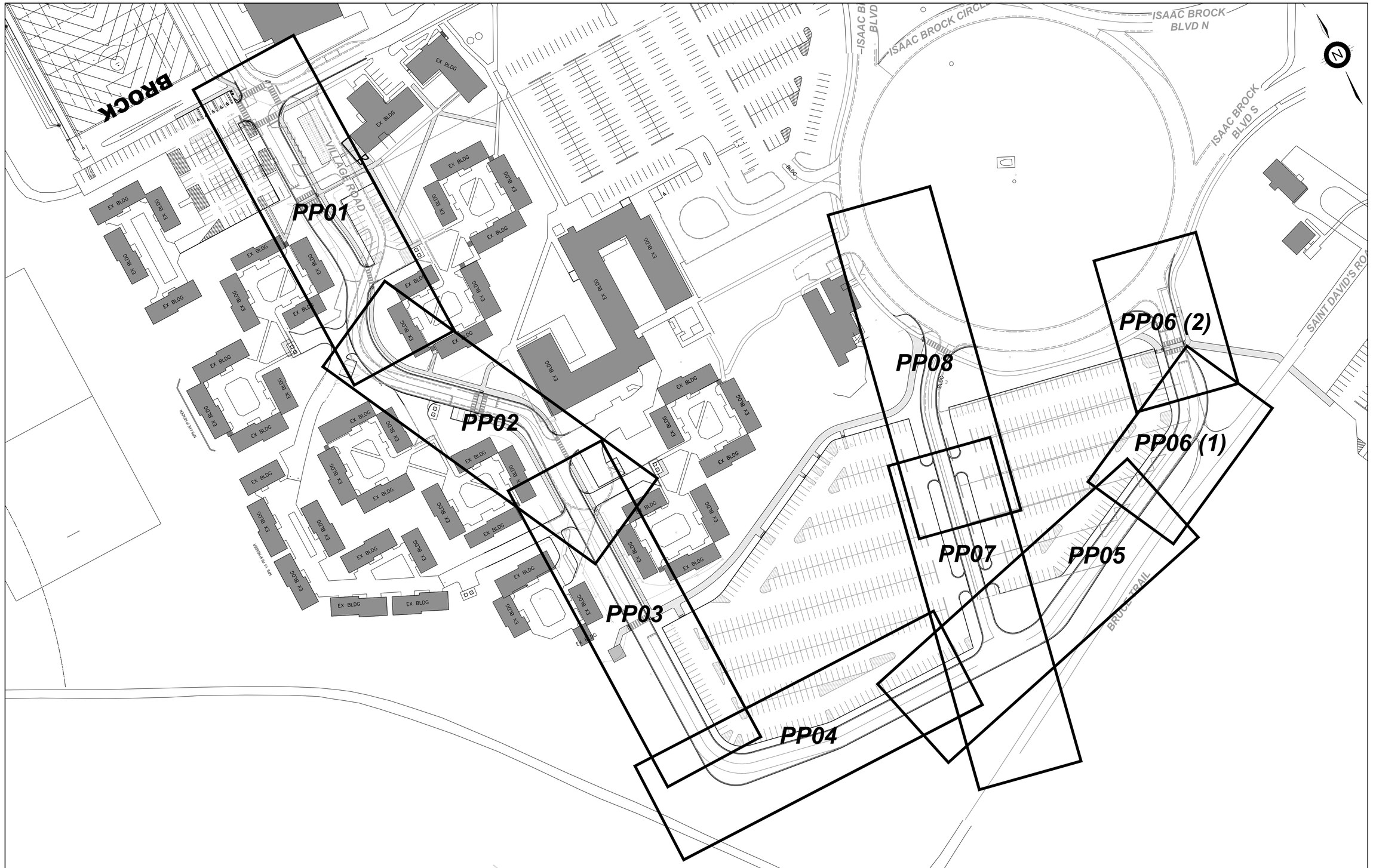
DRAFTING: JS
DESIGN: DR
CHECKED BY: KGB
APPROVED BY: KGB

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
CIVIL GENERAL NOTES

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor :
Ver :
REF. No. **DB18-13**
DWG No. **NOTES**
REV. **G**

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-NOTES AND DETAILS.dwg PLOTTED: Apr 10, 2019 - 8:21pm PLOTTED BY: joel.ockland



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

1 THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

2 PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

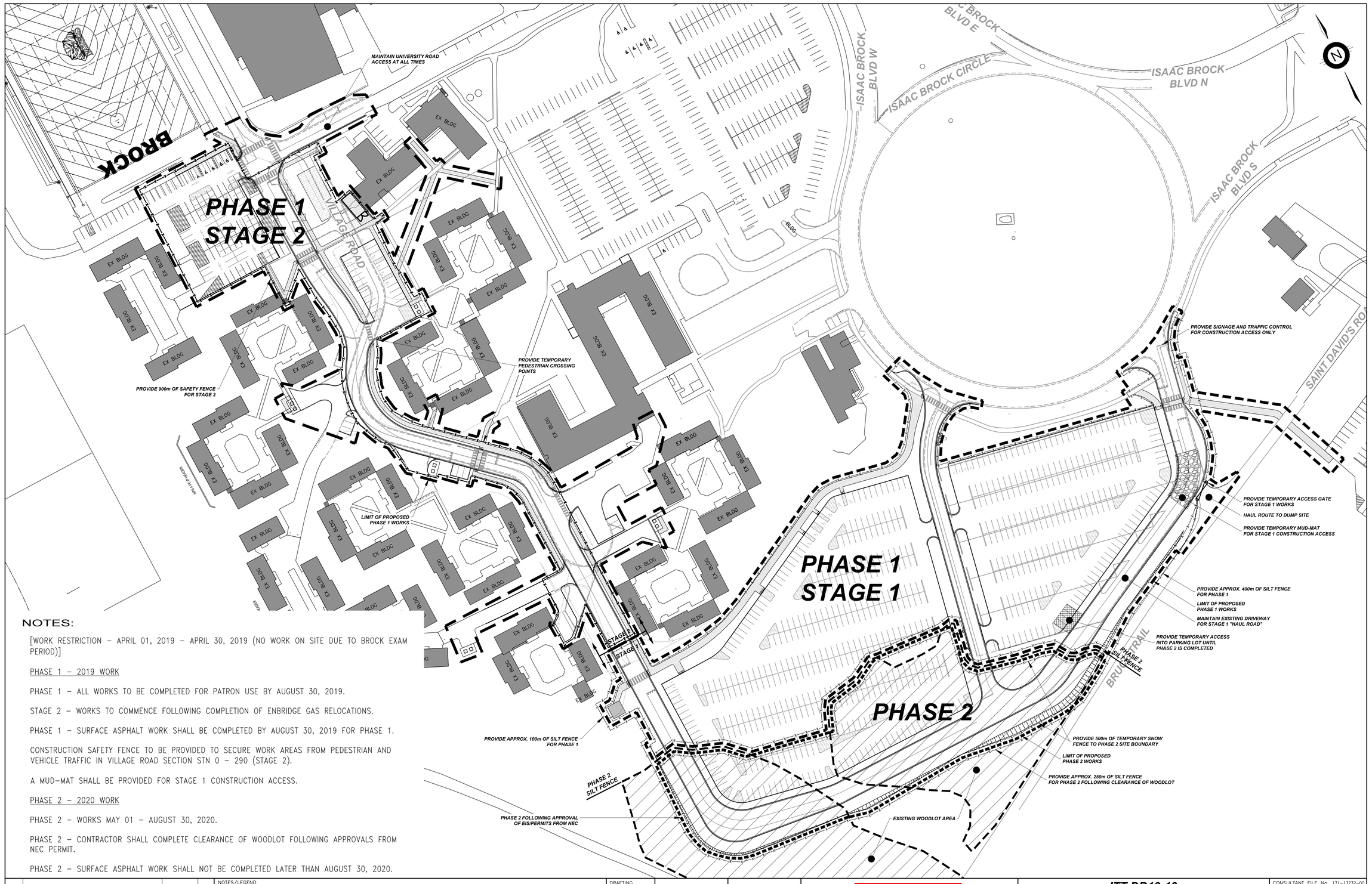
DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PROJECT KEY PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:750 Ver :
REF. No.	DB18-13
DWG No.	KP01
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PHASING PLAN.DWG PLOTTED: Apr 10, 2019 - 8:28pm PLOTTED BY: joel.ackland



NOTES:

[WORK RESTRICTION – APRIL 01, 2019 – APRIL 30, 2019 (NO WORK ON SITE DUE TO BROCK EXAM PERIOD)]

PHASE 1 – 2019 WORK

PHASE 1 – ALL WORKS TO BE COMPLETED FOR PATRON USE BY AUGUST 30, 2019.

STAGE 2 – WORKS TO COMMENCE FOLLOWING COMPLETION OF ENBRIDGE GAS RELOCATIONS.

PHASE 1 – SURFACE ASPHALT WORK SHALL BE COMPLETED BY AUGUST 30, 2019 FOR PHASE 1.

CONSTRUCTION SAFETY FENCE TO BE PROVIDED TO SECURE WORK AREAS FROM PEDESTRIAN AND VEHICLE TRAFFIC IN VILLAGE ROAD SECTION STN 0 – 290 (STAGE 2).

A MUD–MAT SHALL BE PROVIDED FOR STAGE 1 CONSTRUCTION ACCESS.

PHASE 2 – 2020 WORK

PHASE 2 – WORKS MAY 01 – AUGUST 30, 2020.

PHASE 2 – CONTRACTOR SHALL COMPLETE CLEARANCE OF WOODLOT FOLLOWING APPROVALS FROM NEC PERMIT.

PHASE 2 – SURFACE ASPHALT WORK SHALL NOT BE COMPLETED LATER THAN AUGUST 30, 2020.

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	RE/ISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

1 THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

2 PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

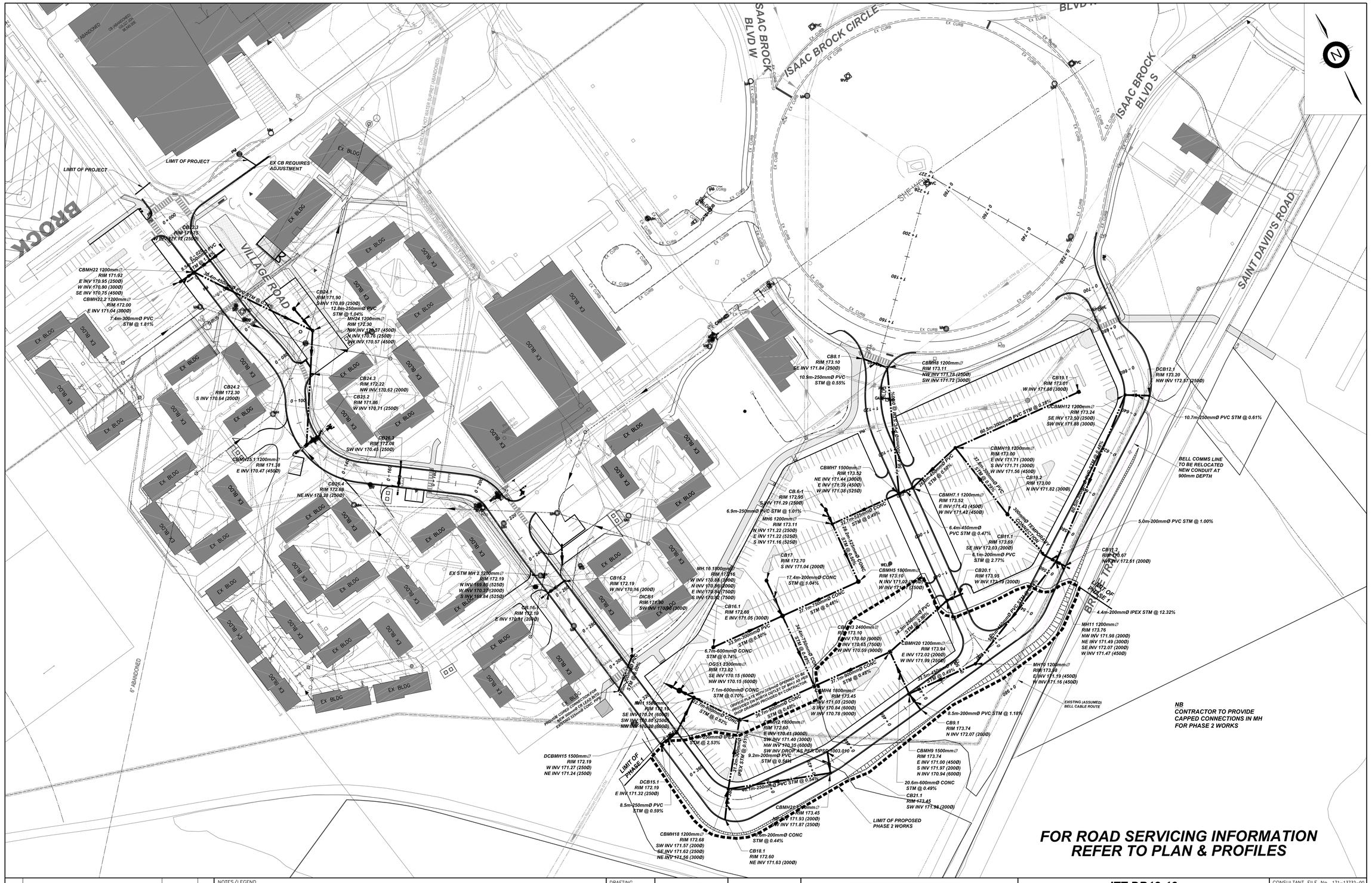
DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PROJECT PHASING PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:750 Ver :
REF. No.	DB18-13
DWG No.	PH01
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PHASING PLAN.DWG PLOTTED: Apr 10, 2019 – 8:29pm PLOTTED BY: joel.ackland



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

1. THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
2. PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

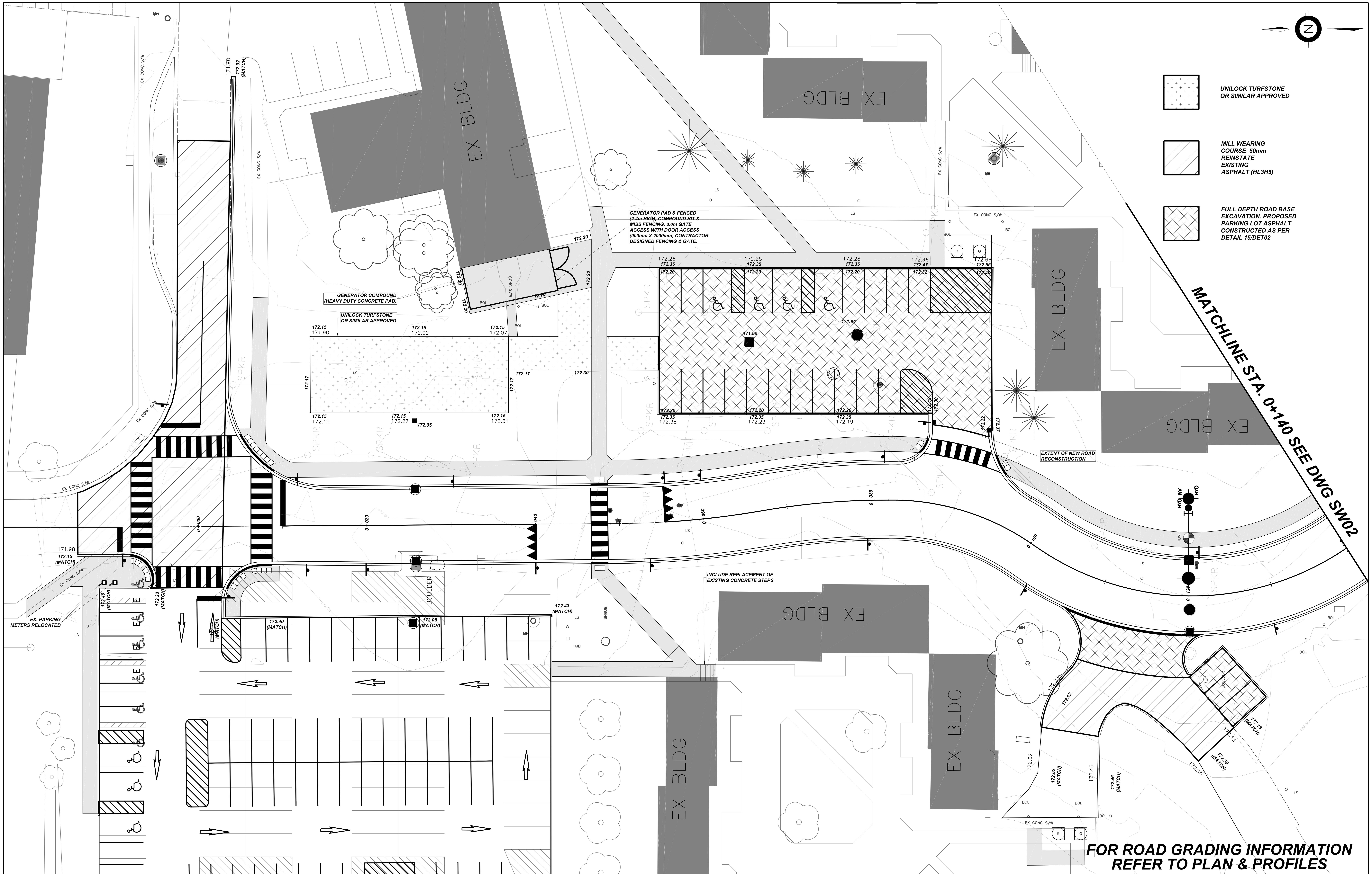
DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
SITE SERVICING PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:750 Ver :
REF. No.	DB18-13
DWG No.	SS01
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-SITE PLANS.dwg PLOTTED: Apr 10, 2019 - 8:31pm PLOTTED BY: joel.ackland



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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DRAFTING R.L.
DESIGN D.R.
CHECKED BY K.G.B.
APPROVED BY K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PARKING AREA SURFACE WORKS PLAN

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor : 1:200 Ver :
REF. No. DB18-13
DWG No. SW01
REV. G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-SITE PLANS.dwg PLOTTED: Apr 10, 2019 - 8:33pm PLOTTED BY: joel.ackland

MATCHLINE STA. 0+140 SEE DWG SW01

WEST TO EAST

SOUTH TO NORTH

LIMIT OF PHASE 1

LIMIT OF PROPOSED PHASE 2 WORKS

CONTRACTOR TO SLOPE BOUNDARY WITH WOODLOT AT 3:1 MAX SLOPE AT LOCATIONS WHERE NECESSARY

CONTRACTOR TO CONTSRUCT LOT S & RING ROAD TO BOUNDARY

PROVIDE TEMPORARY ACCESS INTO PARKING LOT UNTIL PHASE 2 IS COMPLETED

BRIDGE TRAIL

MILL WEARING COURSE 50mm REINSTATE EXISTING ASPHALT (HL3H5)

FULL DEPTH ROAD BASE EXCAVATION. PROPOSED PARKING LOT ASPHALT CONSTRUCTED AS PER DETAIL 15/DET02

FOR ROAD GRADING INFORMATION REFER TO PLAN & PROFILES

NO.	REVISION	DATE	INIT.
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NOTES/LEGEND

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DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PARKING AREA SURFACE WORKS PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:500 Ver :
REF. No.	DB18-13
DWG No.	SW02
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-SITE PLANS.dwg PLOTTED: Apr 10, 2019 - 8:34pm PLOTTED BY: joel.ackland

Alignment: L100

Description: Ring Road

L1 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+000.000	4775429.571	642165.963
End:	0+048.900	4775380.698	642167.592

L1 Tangent Data

Parameter	Value	Parameter	Value
Length:	48.9	Course:	S 01° 54' 33.0445" E

C1 Curve Point Data

Description	Station	Northing	Easting
PC:	0+048.900	4775380.698	642167.592
RP:		4775383.029	642270.701
PCC:	0+066.407	4775363.313	642169.467

C1 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	09° 43' 32.4518"	Type:	LEFT
Radius:	103.136		
Length:	17.507	Tangent:	8.774
Mid-Ord:	0.371	External:	0.373
Chord:	17.486	Course:	S 06° 09' 28.3813" E

C2 Curve Point Data

Description	Station	Northing	Easting
PCC:	0+066.407	4775363.313	642169.467
RP:		4775345.831	642085.553
PCC:	0+082.120	4775347.723	642171.248

C2 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	10° 30' 11.9834"	Type:	RIGHT
Radius:	85.717		
Length:	15.713	Tangent:	7.879
Mid-Ord:	0.36	External:	0.361
Chord:	15.691	Course:	S 06° 30' 59.8485" E

C3 Curve Point Data

Description	Station	Northing	Easting
PCC:	0+082.120	4775347.723	642171.248
RP:		4775346.675	642141.931
PCC:	0+100.523	4775330.316	642166.282

C3 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	35° 56' 31.3279"	Type:	RIGHT
Radius:	29.336		
Length:	18.402	Tangent:	9.515
Mid-Ord:	1.431	External:	1.505
Chord:	18.102	Course:	S 15° 55' 21.6035" W

C4 Curve Point Data

Description	Station	Northing	Easting
PCC:	0+100.523	4775330.316	642166.282
RP:		4775312.272	642193.141
PT:	0+146.894	4775288.143	642171.581

C4 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	82° 06' 38.7469"	Type:	LEFT
Radius:	32.358		
Length:	46.372	Tangent:	28.183
Mid-Ord:	7.958	External:	10.553
Chord:	42.504	Course:	S 07° 09' 43.7924" E

L2 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+146.894	4775288.143	642171.581
End:	0+195.281	4775255.903	642207.662

L2 Tangent Data

Parameter	Value	Parameter	Value
Length:	48.386	Course:	S 48° 13' 03.1658" E

C5 Curve Point Data

Description	Station	Northing	Easting
PC:	0+195.281	4775255.903	642207.662
RP:		4775243.426	642196.513
PT:	0+209.416	4775243.372	642213.246

C5 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	48° 24' 06.5915"	Type:	RIGHT
Radius:	16.733		
Length:	14.135	Tangent:	7.52
Mid-Ord:	1.471	External:	1.612
Chord:	13.719	Course:	S 24° 00' 59.8701" E

L3 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+209.416	4775243.372	642213.246
End:	0+233.874	4775218.914	642213.167

L3 Tangent Data

Parameter	Value	Parameter	Value
Length:	24.458	Course:	S 00° 11' 03.4257" W

Alignment: L100

Description: Ring Road

C6 Curve Point Data

Description	Station	Northing	Easting
PC:	0+365.256	4775087.585	642216.904
RP:		4775088.151	642236.796
PT:	0+392.221	4775068.599	642233.089

C6 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	77° 38' 06.5478"	Type:	LEFT
Radius:	19.9		
Length:	26.964	Tangent:	16.01
Mid-Ord:	4.395	External:	5.641
Chord:	24.948	Course:	S 40° 26' 51.1102" E

L4 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+392.221	4775068.599	642233.089
End:	0+426.467	4775062.221	642266.736

L4 Tangent Data

Parameter	Value	Parameter	Value
Length:	34.246	Course:	S 79° 15' 54.3840" E

C7 Curve Point Data

Description	Station	Northing	Easting
PC:	0+426.467	4775062.221	642266.736
RP:		4775099.524	642273.808
PT:	0+433.170	4775061.558	642273.397

C7 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	10° 06' 55.3379"	Type:	LEFT
Radius:	37.967		
Length:	6.703	Tangent:	3.36
Mid-Ord:	0.148	External:	0.148
Chord:	6.694	Course:	S 84° 19' 22.0531" E

L5 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+433.170	4775061.558	642273.397
End:	0+528.091	4775062.844	642368.31

L5 Tangent Data

Parameter	Value	Parameter	Value
Length:	94.921	Course:	N 89° 13' 25.8655" E

C8 Curve Point Data

Description	Station	Northing	Easting
PC:	0+528.091	4775062.844	642368.31
RP:		4775087.092	642367.981
PT:	0+539.305	4775065.537	642379.093

C8 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	26° 29' 41.7638"	Type:	LEFT
Radius:	24.25		
Length:	11.214	Tangent:	5.709
Mid-Ord:	0.645	External:	0.663
Chord:	11.114	Course:	N 75° 58' 34.9835" E

L6 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+539.305	4775065.537	642379.093
End:	0+636.234	4775109.95	642465.248

L6 Tangent Data

Parameter	Value	Parameter	Value
Length:	96.929	Course:	N 62° 43' 44.1015" E

C9 Curve Point Data

Description	Station	Northing	Easting
PC:	0+636.234	4775109.95	642465.248
RP:		4775133.302	642453.211
PT:	0+659.968	4775128.304	642479.002

C9 Circular Curve Data

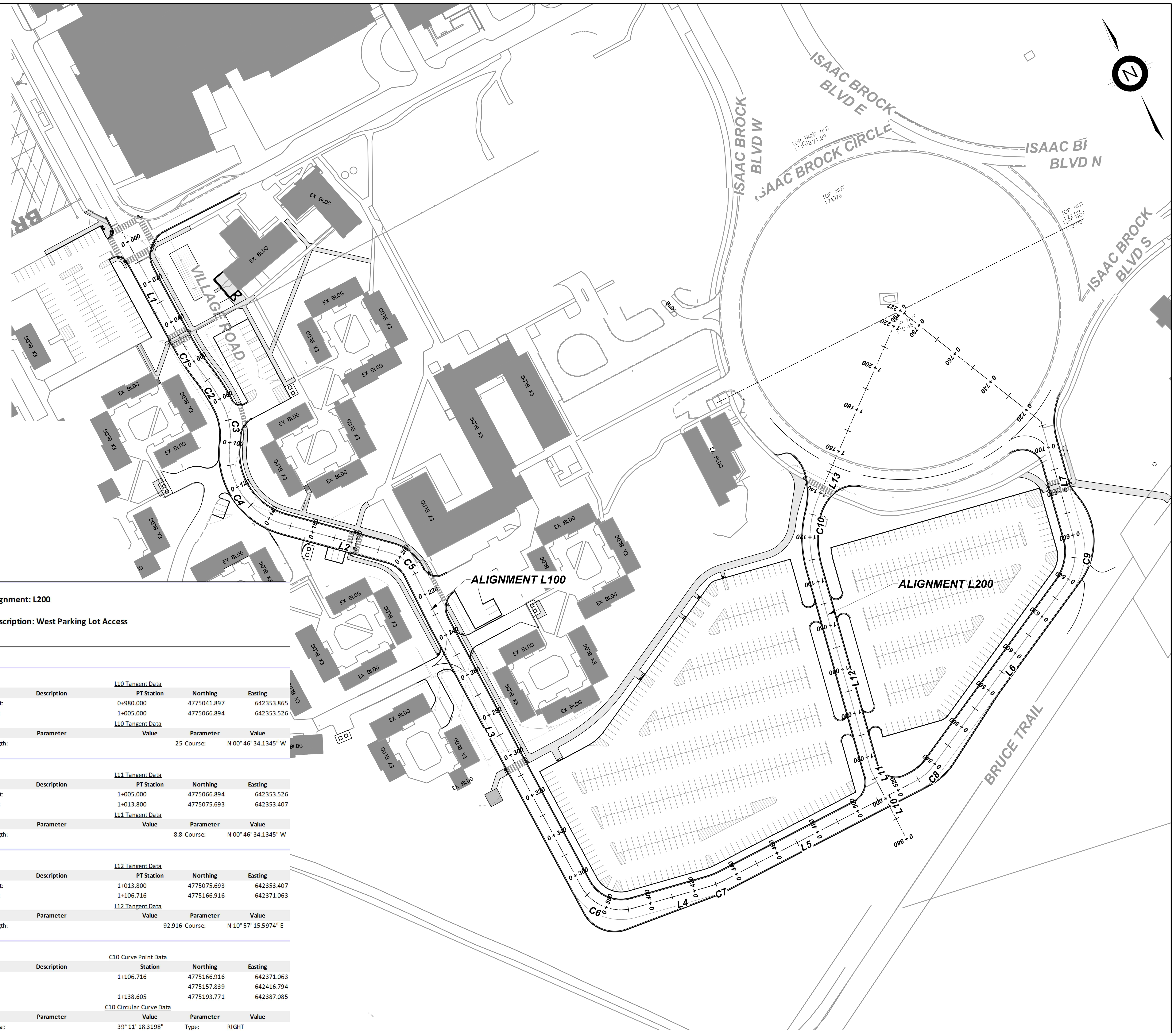
Parameter	Value	Parameter	Value
Delta:	51° 45' 42.1654"	Type:	LEFT
Radius:	26.271		
Length:	23.734	Tangent:	12.746
Mid-Ord:	2.635	External:	2.929
Chord:	22.935	Course:	N 36° 50' 53.0188" E

L7 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+659.968	4775128.304	642479.002
End:	0+711.827	4775179.216	642488.868

L7 Tangent Data

Parameter	Value	Parameter	Value
Length:	51.859	Course:	N 10° 58' 01.9361" E



Alignment: L200

Description: West Parking Lot Access

L10 Tangent Data

Description	PT Station	Northing	Easting
Start:	0+980.000	4775041.897	642353.865
End:	1+005.000	4775066.894	642353.526

L10 Tangent Data

Parameter	Value	Parameter	Value
Length:	25	Course:	N 00° 46' 34.1345" W

L11 Tangent Data

Description	PT Station	Northing	Easting
Start:	1+005.000	4775066.894	642353.526
End:	1+013.800	4775075.693	642353.407

L11 Tangent Data

Parameter	Value	Parameter	Value
Length:	8.8	Course:	N 00° 46' 34.1345" W

L12 Tangent Data

Description	PT Station	Northing	Easting
Start:	1+013.800	4775075.693	642353.407
End:	1+106.716	4775166.916	642371.063

L12 Tangent Data

Parameter	Value	Parameter	Value
Length:	92.916	Course:	N 10° 57' 15.5974" E

C10 Curve Point Data

Description	Station	Northing	Easting
PC:	1+106.716	4775166.916	642371.063
RP:		4775157.839	642416.794
PT:	1+138.605	4775193.771	642387.085

C10 Circular Curve Data

Parameter	Value	Parameter	Value
Delta:	39° 11' 18.3198"	Type:	RIGHT
Radius:	46.623		
Length:	31.889	Tangent:	16.596
Mid-Ord:	2.7	External:	2.866
Chord:	31.271	Course:	N 30° 49' 15.0747" E

L13 Tangent Data

Description	PT Station	Northing	Easting
Start:	1+138.605	4775193.771	642387.085
End:	1+148.788	4775200.26	642394.933

L13 Tangent Data

Parameter	Value	Parameter	Value
Length:	10.184	Course:	N 50° 24' 54.2346" E

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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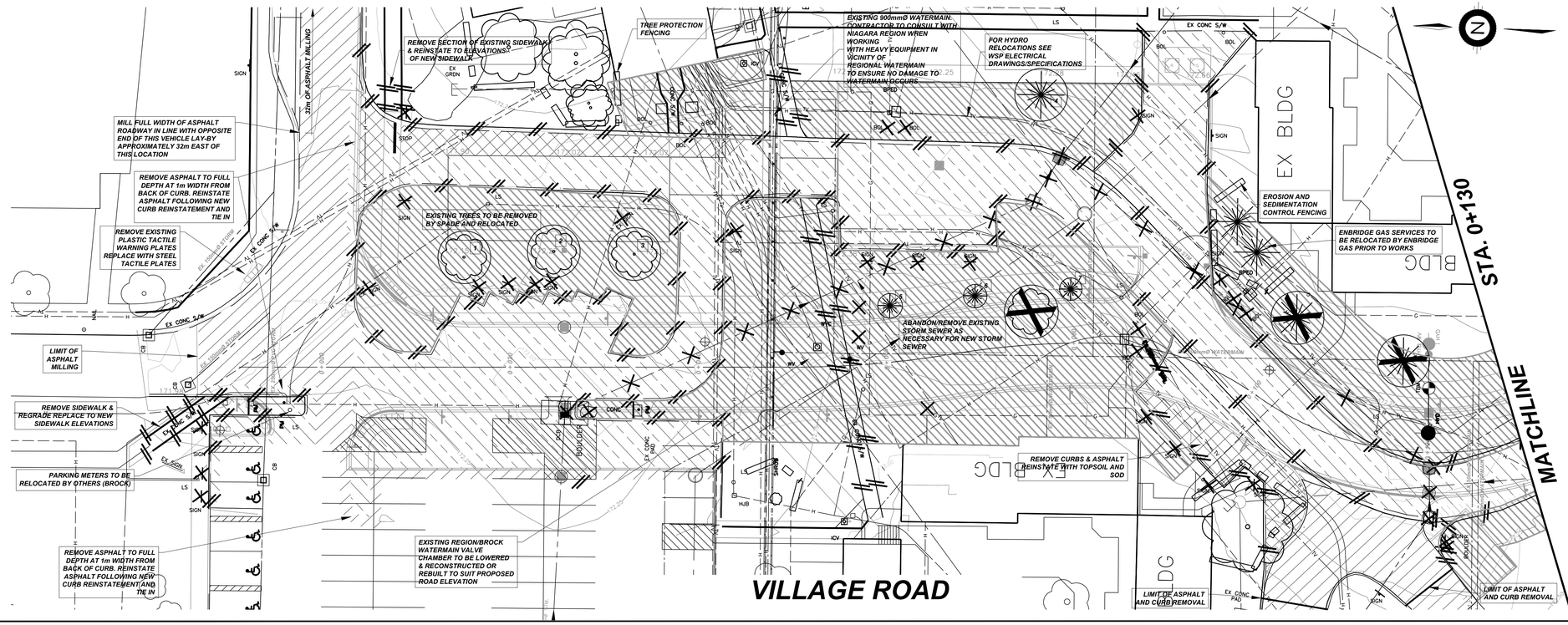
DRAFTING J.S.
DESIGN D.R.
CHECKED BY K.G.B.
APPROVED BY K.G.B.

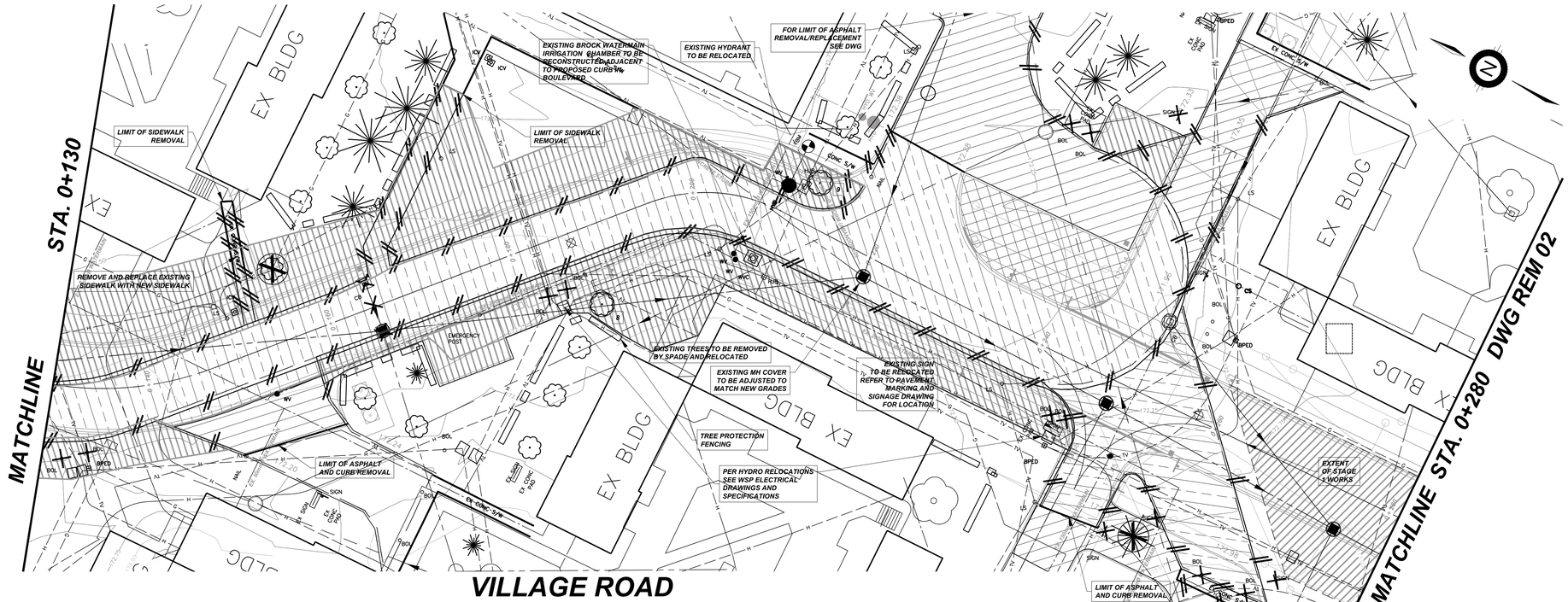
Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PROJECT ALIGNMENT PLAN

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor : 1:1000 Ver :
REF. No. DB18-13
DWG No. AL01
REV. G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PHASING PLAN.DWG PLOTTED: Apr 10, 2019 - 8:36pm PLOTTED BY: joel.ackland





NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
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C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

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3 FOR REMOVAL OF LIGHT STANDARDS SEE LIGHTING DRAWING

4 FOR RELOCATION OF ELECTRICAL UTILITIES SEE ELECTRICAL DRAWINGS

5 ALL HYDRANTS THAT REQUIRE RELOCATION SHALL BE MOVED BEYOND THE PROPOSED ROAD FOOTPRINT MAINTAINING RELATIVE LOCATION

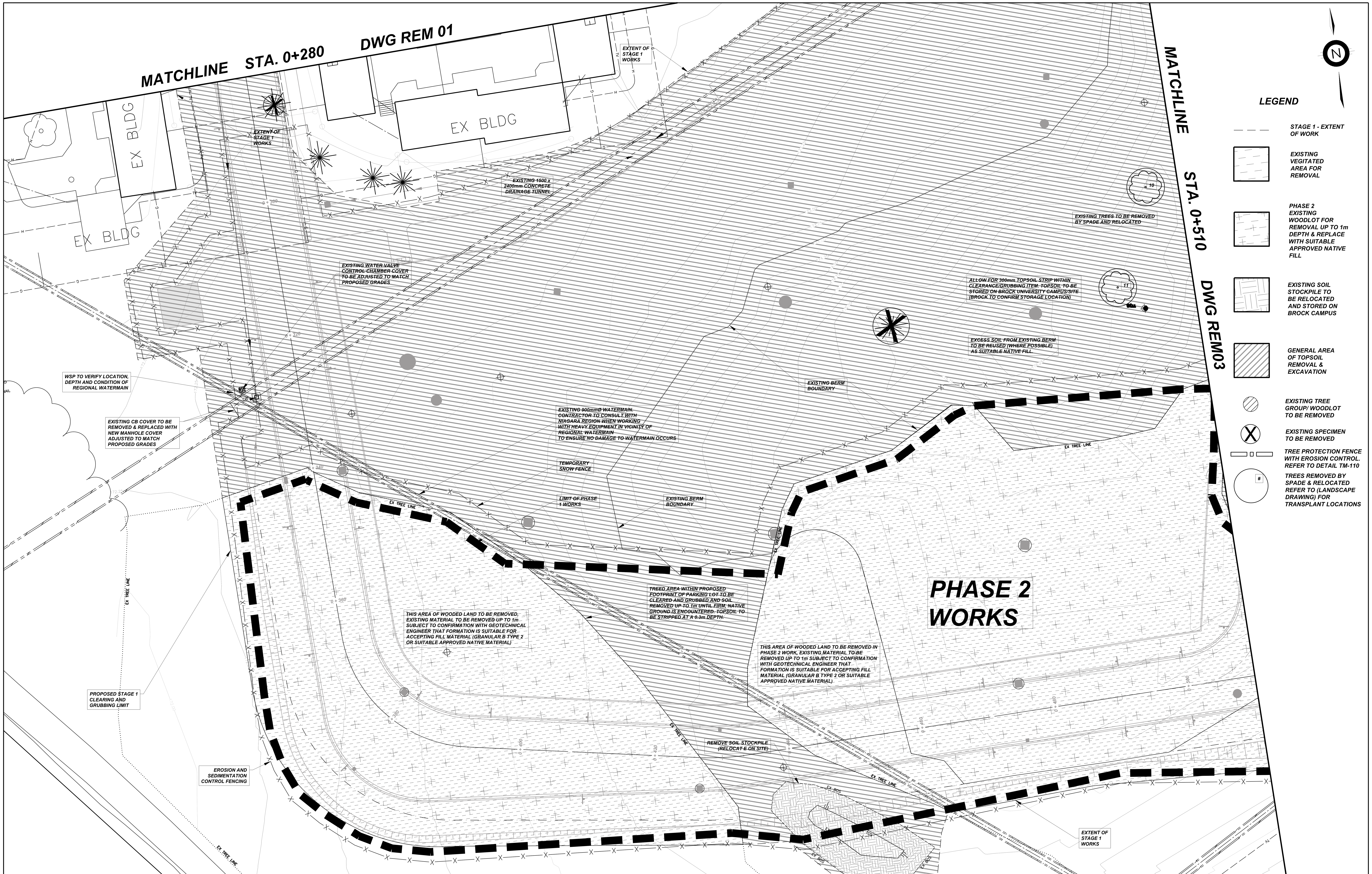
DRAFTING	B.H.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD
from STA. 0+000 to STA. 0+280
CITY OF ST. CATHARINES
REMOVALS PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:250 Ver :
REF. No.	DB18-13
DWG No.	REM01
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-REMOVALS.DWG PLOTTED: Apr 10, 2019 - 8:44pm PLOTTED BY: joel.ackland



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
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NOTES/LEGEND

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3. FOR REMOVAL OF LIGHT STANDARDS SEE LIGHTING DRAWING
4. FOR RELOCATION OF ELECTRICAL UTILITIES SEE ELECTRICAL DRAWINGS
5. ALL HYDRANTS THAT REQUIRE RELOCATION SHALL BE MOVED BEYOND THE PROPOSED ROAD FOOTPRINT MAINTAINING RELATIVE LOCATION

DRAFTING R.L.
DESIGN D.R.
CHECKED BY K.G.B.
APPROVED BY K.G.B.

Brock University

PROJECT / CONTRACT #
BROCK UNIVERSITY
VILLAGE ROAD/ PARKING ACCESS ROAD
PROPOSED PARKING LOT
CITY OF ST. CATHARINES
REMOVALS PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:250 Ver :
REF. No.	DB18-13
DWG No.	REM02
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-REMOVALS.DWG PLOTTED: Apr 10, 2019 - 8:45pm PLOTTED BY: joel.ackland

LEGEND

- STAGE 1 - EXTENT OF WORK
- EXISTING ASPHALT REMOVAL
- REINSTATE WITH TOPSOIL & SOD
- MILL WEARING COURSE REINSTATE EXISTING ASPHALT (HL3)
- EXISTING VEGITATED AREA FOR REMOVAL
- PHASE 2 EXISTING WOODLOT FOR REMOVAL UP TO 1m DEPTH & REPLACE WITH SUITABLE APPROVED NATIVE FILL
- GENERAL AREA OF TOPSOIL REMOVAL & EXCAVATION
- EXISTING TREE GROUP/ WOODLOT TO BE REMOVED
- EXISTING SPECIMEN TO BE REMOVED
- TREE PROTECTION FENCE WITH EROSION CONTROL. REFER TO DETAIL TM-110
- TREES REMOVED BY SPADE & RELOCATED REFER TO (LANDSCAPE DRAWING) FOR TRANSPLANT LOCATIONS

MATCHLINE DWG REM02

STA. 0+510

MATCHLINE DWG REM04

PHASE 2 WORKS

LIMIT OF CONSTRUCTION

GATE COMPLEX TO BE REMOVED

EXISTING BERM BOUNDARY

EXISTING 1375mm CONCRETE DRAINAGE CULVERT

REMOVE EXISTING STORM SEWER, PLUS PIPE AT CULVERT CONNECTION

1" POTABLE PLASTIC WATERMAIN TO BE PROTECTED DURING CONSTRUCTION

TEMPORARY SNOW FENCE

ALLOW FOR 300mm TOPSOIL STRIP WITHIN CLEARANCE/GRUBBING ITEM. TOPSOIL TO BE STORED ON BROCK UNIVERSITY CAMPUS/SITE (BROCK TO CONFIRM STORAGE LOCATION)

EXISTING MANHOLE COVER TO BE ADJUSTED TO MATCH PROPOSED GRADING AS NECESSARY

EXCESS SOIL FROM EXISTING BERM TO BE REUSED (WHERE POSSIBLE) AS SUITABLE NATIVE FILL.

REMOVE CATCHBASIN LEAD FROM EXISTING STORM MANHOLE. CAP AND SEAL PENETRATION AS SPECIFIED

PIPE AND CATCHBASIN TO BE REMOVED

ABANDON/REMOVE EXISTING STORMWATER SEWER/CATCHBASIN

LIMIT OF PHASE 1 WORKS

HYDRO ROAD TO BE USED AS ACCESS POINT INGRESS/EGRESS OF CONSTRUCTION VEHICLES CONTRACTOR TO PROVIDE FENCING FOR OTHERS.

EXISTING BROCK LIGHTING CABLES

EXISTING BELL CABLE TO BE RELOCATED DURING STAGE 1 NEW CONDUIT AT 900mm DEPTH

EXISTING 900mmØ WATERMAIN CONTRACTOR TO CONSULT WITH NIAGARA REGION WHEN WORKING WITH HEAVY EQUIPMENT IN VICINITY OF REGIONAL WATERMAIN TO ENSURE NO DAMAGE TO WATERMAIN OCCURS

EROSION AND SEDIMENTATION CONTROL FENCING

TEMPORARY FENCING TO PREVENT PEDESTRIAN ACCESS TO CONSTRUCTION SITE

EX. C-L FENCE

EX TREE LINE

NO.	REVISION	DATE	INIT.
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C	ISSUED AS TENDER READY	2018-04-27	JS
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NOTES/LEGEND

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4 FOR RELOCATION OF ELECTRICAL UTILITIES SEE ELECTRICAL DRAWINGS

5 ALL HYDRANTS THAT REQUIRE RELOCATION SHALL BE MOVED BEYOND THE PROPOSED ROAD FOOTPRINT MAINTAINING RELATIVE LOCATION

DRAFTING	B.H.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD/ PARKING ACCESS ROAD
EXISTING PARKING LOT S
CITY OF ST. CATHARINES
REMOVALS PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:250
	Ver :
REF. No.	DB18-13
DWG No.	REM03
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-REMOVALS.DWG PLOTTED: Apr 10, 2019 - 8:46pm PLOTTED BY: joel.ockland

REFER TO DWG REM03

ISAAC BROCK CIRCLE

LIMIT OF PHASE 1 WORKS

EXISTING BERM BOUNDARY

ALLOW FOR 300mm TOPSOIL STRIP WITHIN CLEARANCE/GRUBBING ITEM. TOPSOIL TO BE STORED ON BROCK UNIVERSITY CAMPUS/SITE (BROCK TO CONFIRM STORAGE LOCATION)

EXCESS SOIL FROM EXISTING BERM TO BE REUSED (WHERE POSSIBLE) AS SUITABLE NATIVE FILL

TEMPORARY SNOW FENCE

EX TREE LINE

EX C/L FENCE

CHILDCARE AREA

EXISTING CHILDCARE AREA FENCING TO BE MAINTAINED

EX BLDG

EX WOOD FENCE

EX CONC S/W

EX ASPH S/W

WOOD FENCE

AREA TO BE REGRADED SEE SITE PLAN DRAWING SW01

TEMPORARY SNOW FENCE

ICV

CB

SIGN

JERSEY BARRIER

MILL OUT EXISTING ASPHALT & REINSTATE FOR NEW CURB CONSTRUCTION

FOR LIGHT STANDARD REMOVALS SEE WSP ELECTRICAL DRAWINGS/SPECIFICATIONS

GATE COMPLEX TO BE REMOVED

REMOVE EXISTING STORM SEWER PLUG PIPE AT CULVERT CONNECTION

TEMPORARY SNOW FENCE

EXISTING SIDEWALKS TO BE RETAINED

1" POTABLE PLASTIC WATERMAIN PROTECT DURING CONSTRUCTION

HUB

DO

LS

REFER TO DWG REM03

PARKING ACCESS ROAD

ISAAC BROCK CIRCLE

LEGEND

- EXISTING TREE GROUP/ WOODLOT TO BE REMOVED
- EXISTING SPECIMEN TO BE REMOVED
- TREE PROTECTION FENCE WITH EROSION CONTROL. REFER TO DETAIL TM-110
- TREES REMOVED BY SPADE & RELOCATED REFER TO (LANDSCAPE DRAWING) FOR TRANSPLANT LOCATIONS
- EXISTING ASPHALT REMOVAL
- EXISTING WOODLOT FOR REMOVAL UP TO 1m DEPTH & REPLACE WITH SUITABLE APPROVED NATIVE FILL
- MILL WEARING COURSE REINSTATE EXISTING ASPHALT (HL3)
- REINSTATE WITH TOPSOIL & SOD
- GENERAL AREA OF TOPSOIL REMOVAL & EXCAVATION

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
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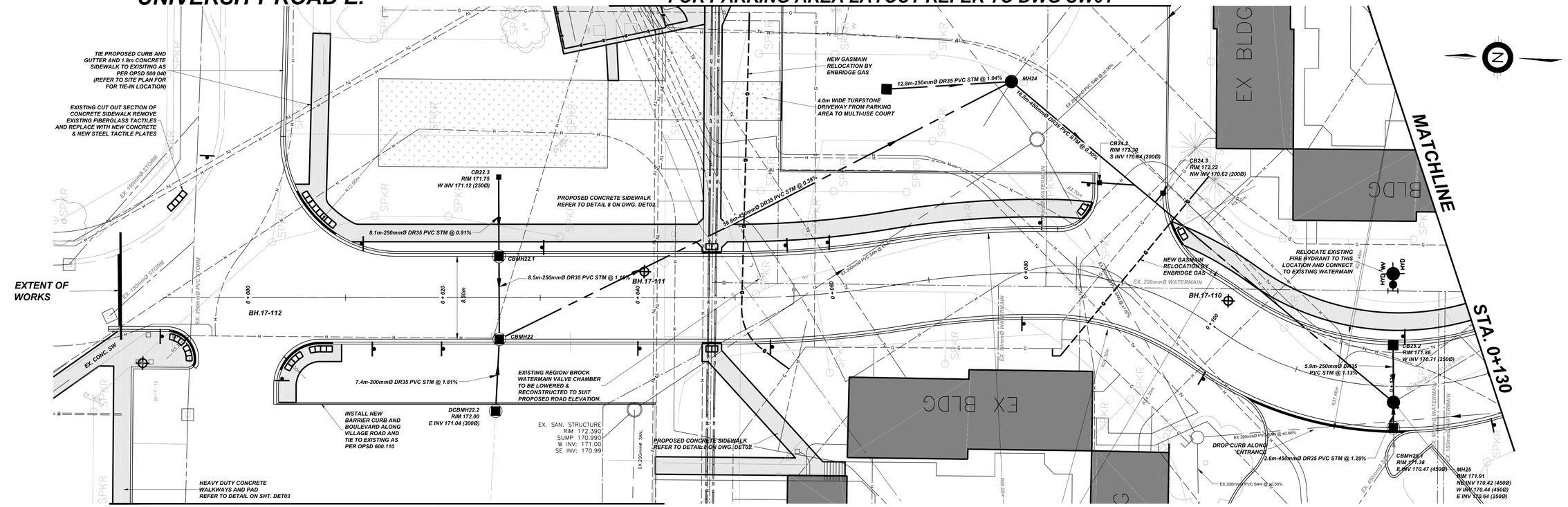
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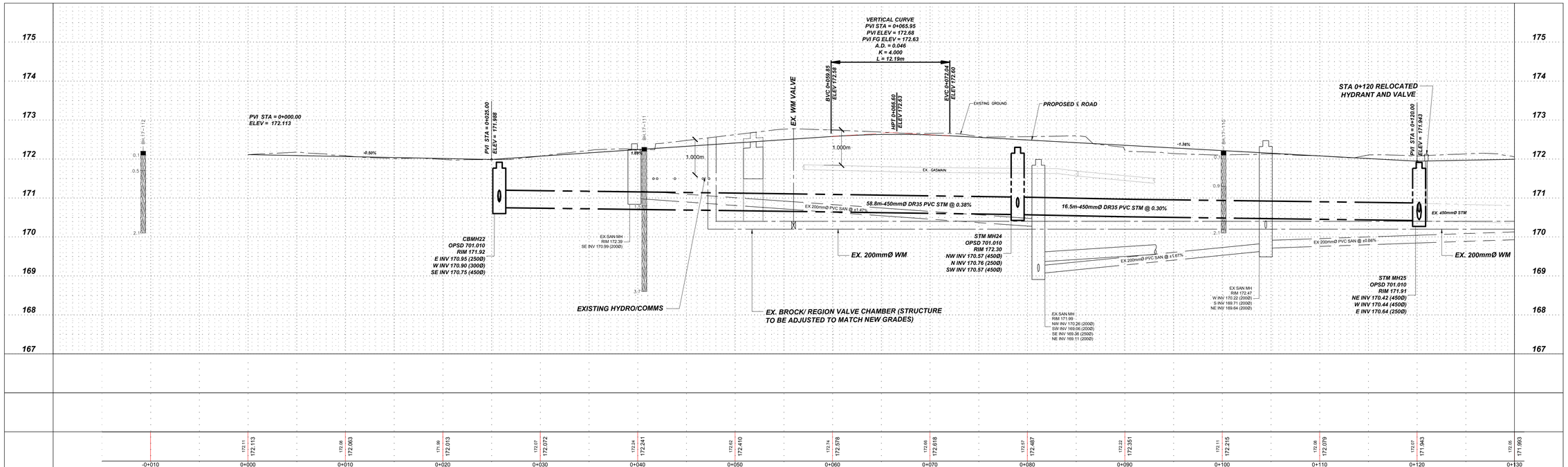
DRAFTING B.H.
DESIGN D.R.
CHECKED BY K.G.B.
APPROVED BY K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
INTERSECTION ISSAC BROCK CIRCLE AND PARKING ACCESS ROAD
CITY OF ST. CATHARINES
REMOVALS PLAN

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor : 1:250 Ver :
REF. No. DB18-13
DWG No. REM04
REV. G





NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
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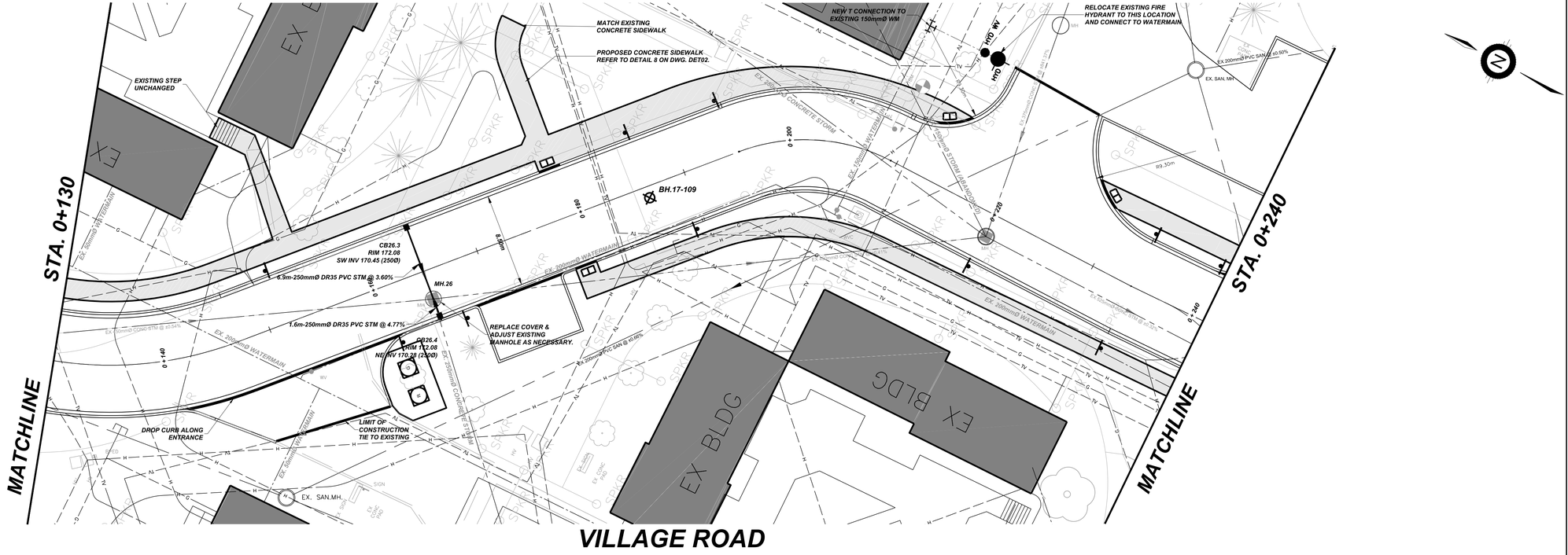
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DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

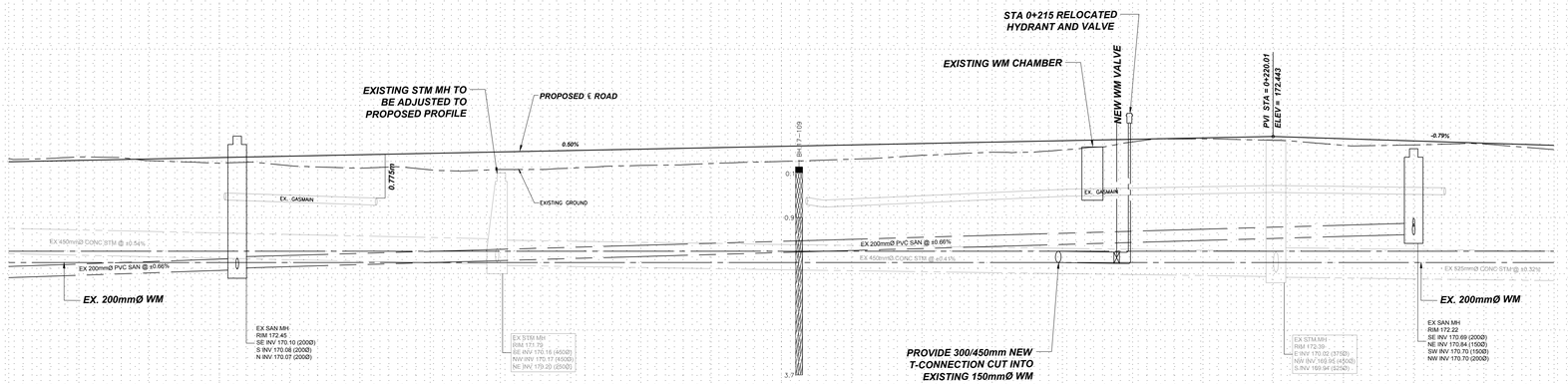
Brock University

ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD
from STA. 0+000 to STA. 0+130
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP01
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 8:51pm PLOTTED BY: joel.ockland





NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
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DRAFTING	RL
DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

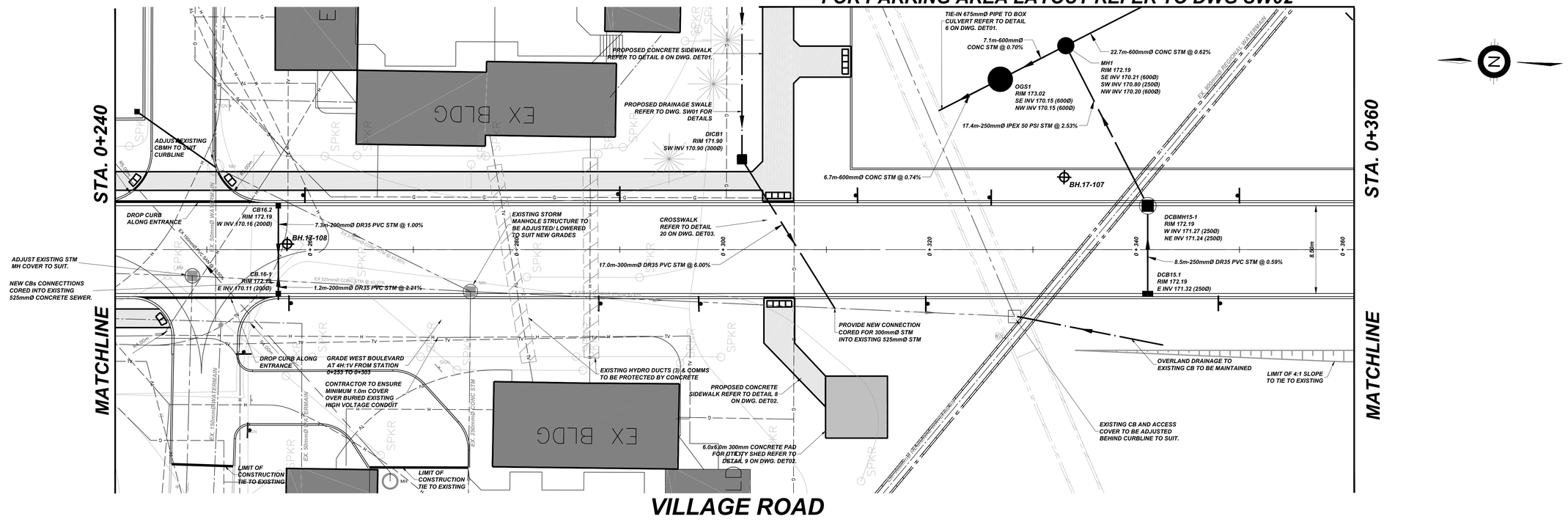
Brock University

ITT DB18-13
PLAN AND PROFILE
VILLAGE ROAD
from STA. 0+130 to STA. 0+240
CITY OF ST. CATHARINES
BROCK UNIVERSITY

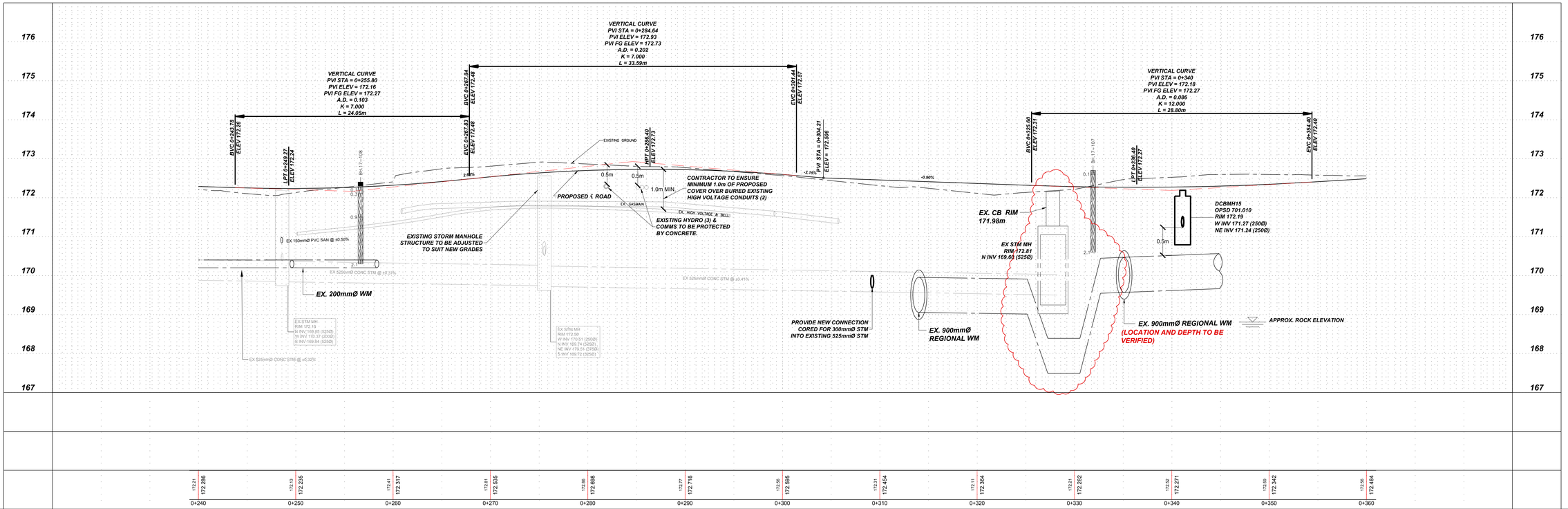
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DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP02
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 8:52pm PLOTTED BY: joel.ockland

FOR PARKING AREA LAYOUT REFER TO DWG SW02



VILLAGE ROAD



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
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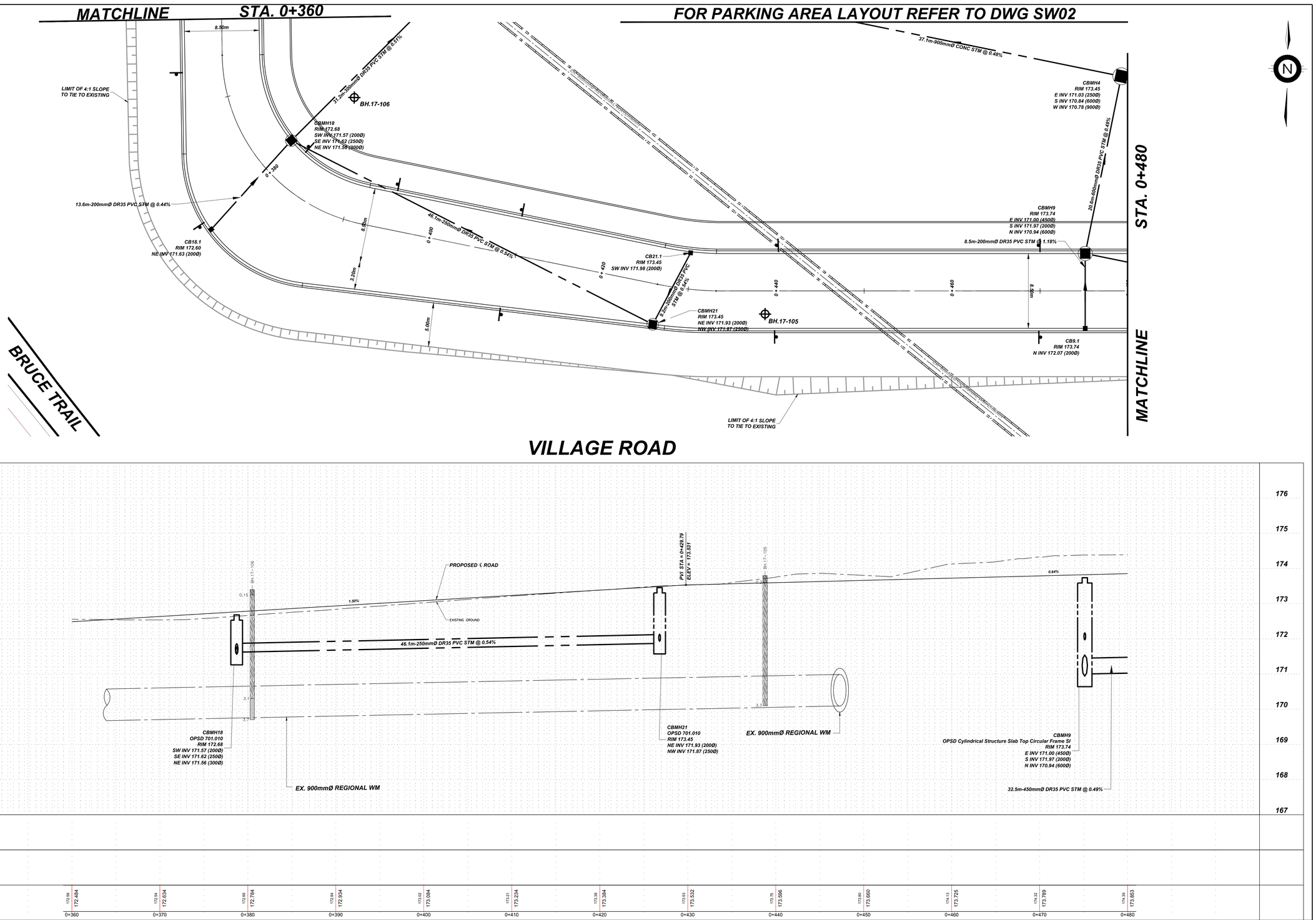
DRAFTING	RL
DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

Brock University

ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD
from STA. 0+240 to STA. 0+360
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP03
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 8:54pm PLOTTED BY: joel.ockland



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G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
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DRAFTING	RL
DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

Brock University

ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD
from STA. 0+360 to STA.0+480
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP04
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 8:55pm PLOTTED BY: joel.ackland

FOR PARKING AREA LAYOUT REFER TO DWG SW02

FOR PARKING AREA LAYOUT REFER TO DWG SW02

PARKING ROAD

STA. 0+480

STA. 0+600

MATCHLINE

MATCHLINE

EXISTING STREETLIGHT HYDRO CABLE LIGHTING TO BE RELOCATED SEE ELECTRICAL DWGS

32.5m-450mmØ DR35 PVC STM @ 0.49%

58.1m-450mmØ DR35 PVC STM @ 0.48%

5.0m-200mmØ DR35 PVC STM @ 1.00%

4.4m-200mmØ DR35 PVC STM @ 12.32%

80.5m-300mmØ DR35 PVC STM @ 0.48%

MH10

MH11

CB11.1
RIM 173.69
SE INV 172.03 (200Ø)

CB11.2
RIM 173.67
NW INV 172.61 (200Ø)

EX. 900mmØ REGIONAL WATERMAIN

RELOCATED BELL LINE IN NEW CONDUIT

LIMIT OF 4:1 SLOPE TO TIE TO EXISTING

WATERMAIN LOCATION AND DEPTH TO BE VERIFIED. MUST HAVE MINIMUM 0.5m O.D. TO O.D. VERTICAL SEPARATION

EXISTING BELL CABLE TO BE RELOCATED (APPROX. 250mm DEPTH) CONTRACTOR TO LOCATE BELL CABLE & PROVIDE RELOCATED ROUTE OUTSIDE EXTENT OF WORKS.

BRUCE TRAIL

WORKS AROUND THE EXISTING REGION 900mmØ WM TO AVOID USE OF ANY PERCUSSIVE EQUIPMENT AND HEAVY CONSTRUCTION PLANT LOADING ABOVE THE WATERMAIN

BH.17-103

BH.17-104

VILLAGE ROAD

PVI STA = 0+513.41
ELEV = 174.067

PROPOSED ℄ ROAD

EXISTING GROUND

-0.55%

0.5m

STM MH MH10
OPSD 701.010
RIM 173.98
E INV 171.19 (450Ø)
W INV 171.16 (450Ø)

STM MH11
OPSD 701.010
RIM 173.76
NW INV 171.98 (200Ø)
NE INV 171.49 (300Ø)
SE INV 172.07 (200Ø)
W INV 171.47 (450Ø)

EX 900mmØ DI WM

176 175 174 173 172 171 170 169 168 167

173.853 174.36 173.917 174.38 173.881 174.47 174.045 175.07 174.031 173.28 173.976 173.59 173.921 173.58 173.866 173.70 173.811 173.61 173.756 173.56 173.701 173.55 173.646 173.58

I80 0+490 0+500 0+510 0+520 0+530 0+540 0+550 0+560 0+570 0+580 0+590 0+6

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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DRAFTING	RL
DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

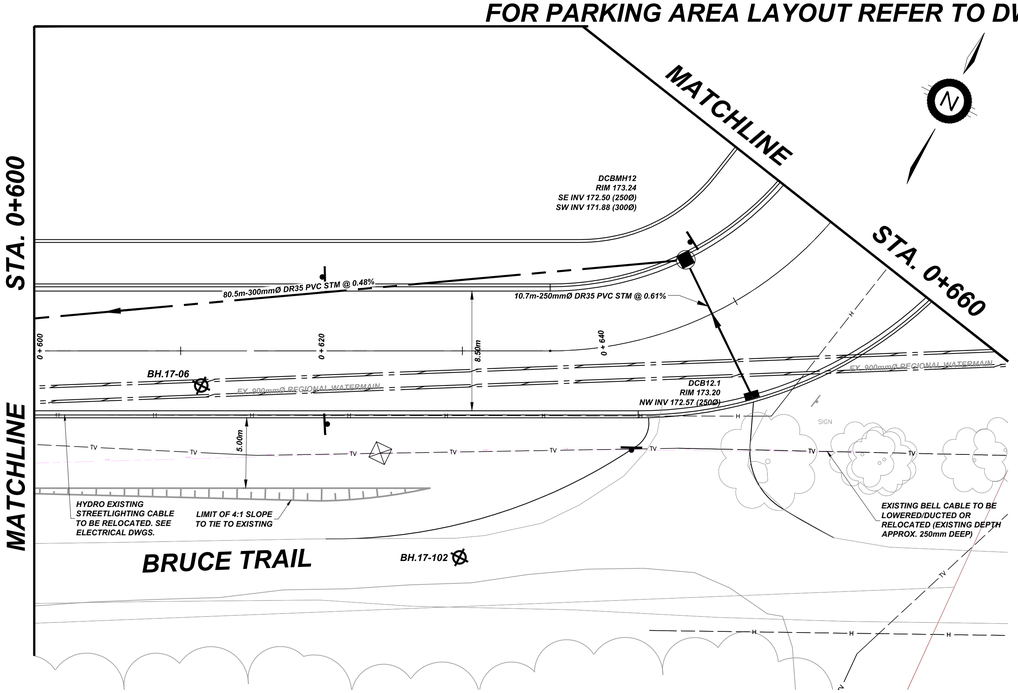
Brock University

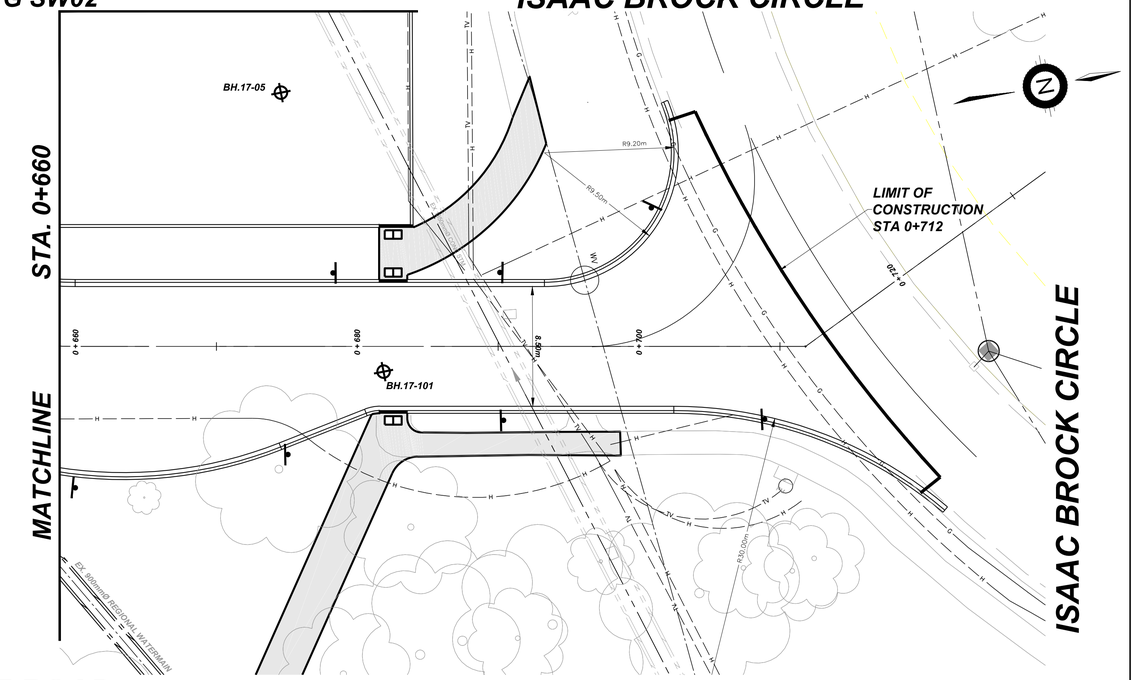
ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD
from STA. 0+480 to STA. 0+600
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP05
REV.	G

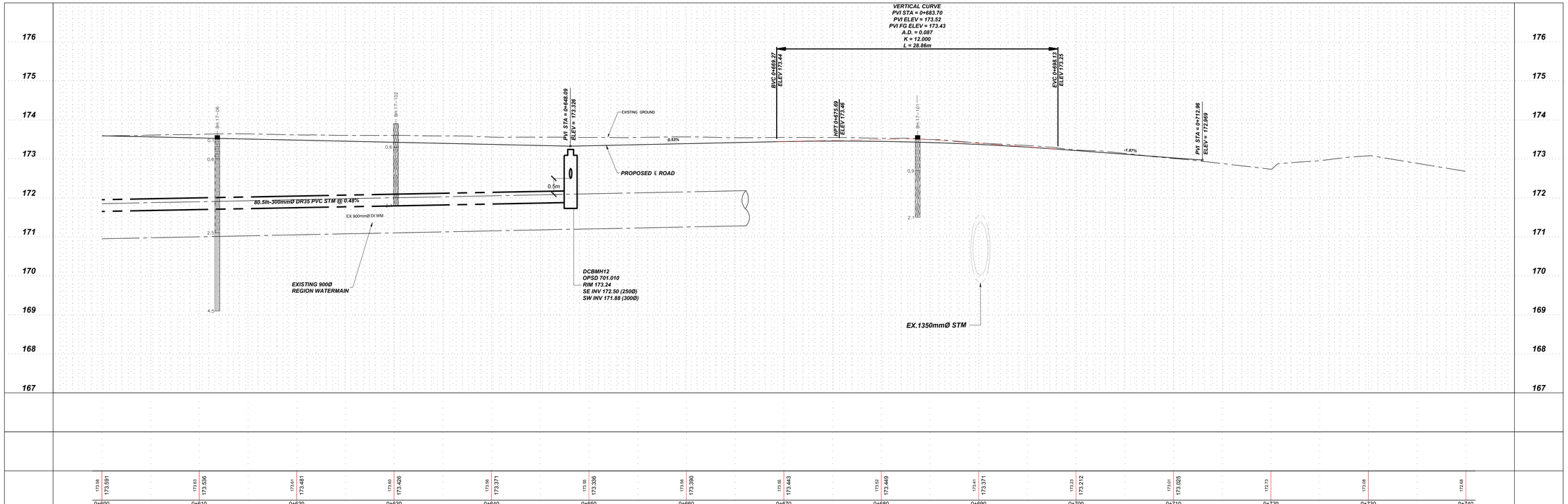
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FOR PARKING AREA LAYOUT REFER TO DWG SW02





VILLAGE ROAD



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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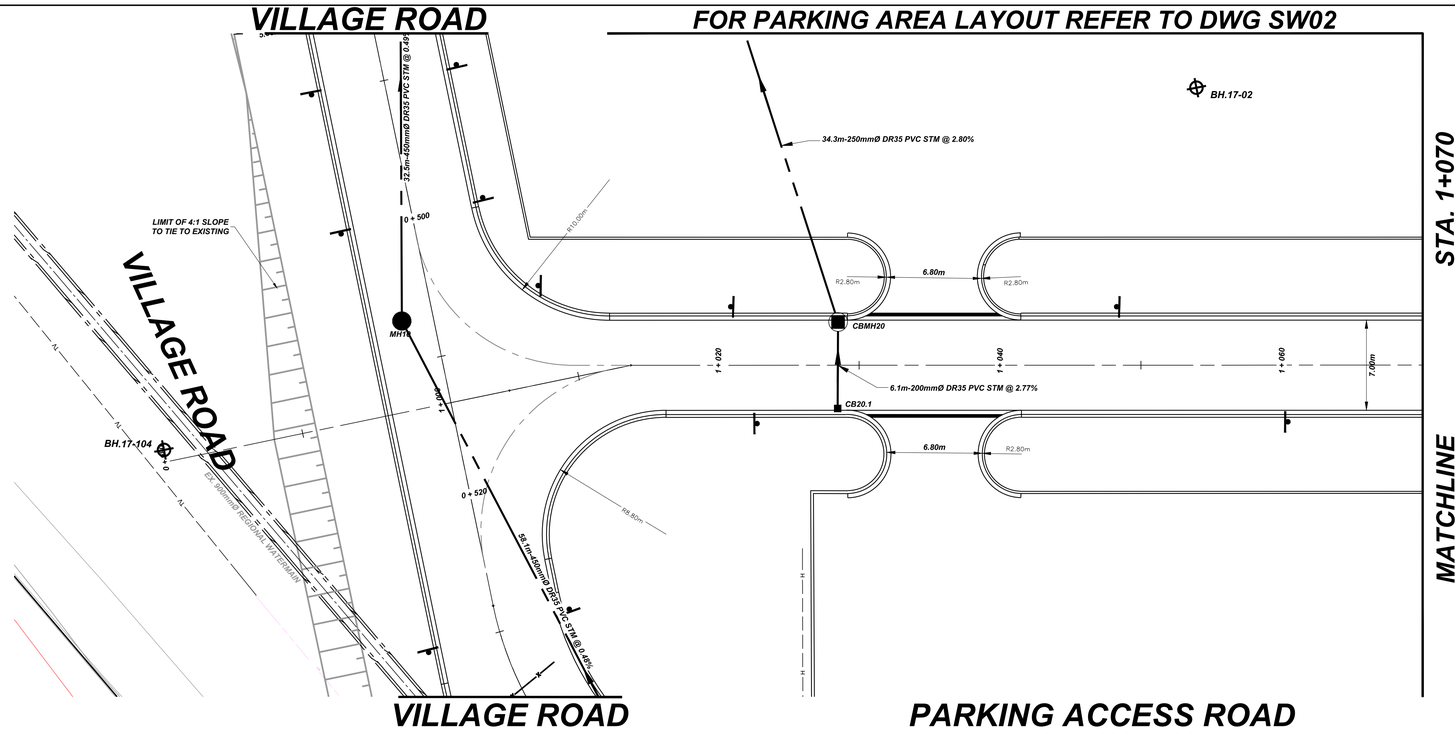
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DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

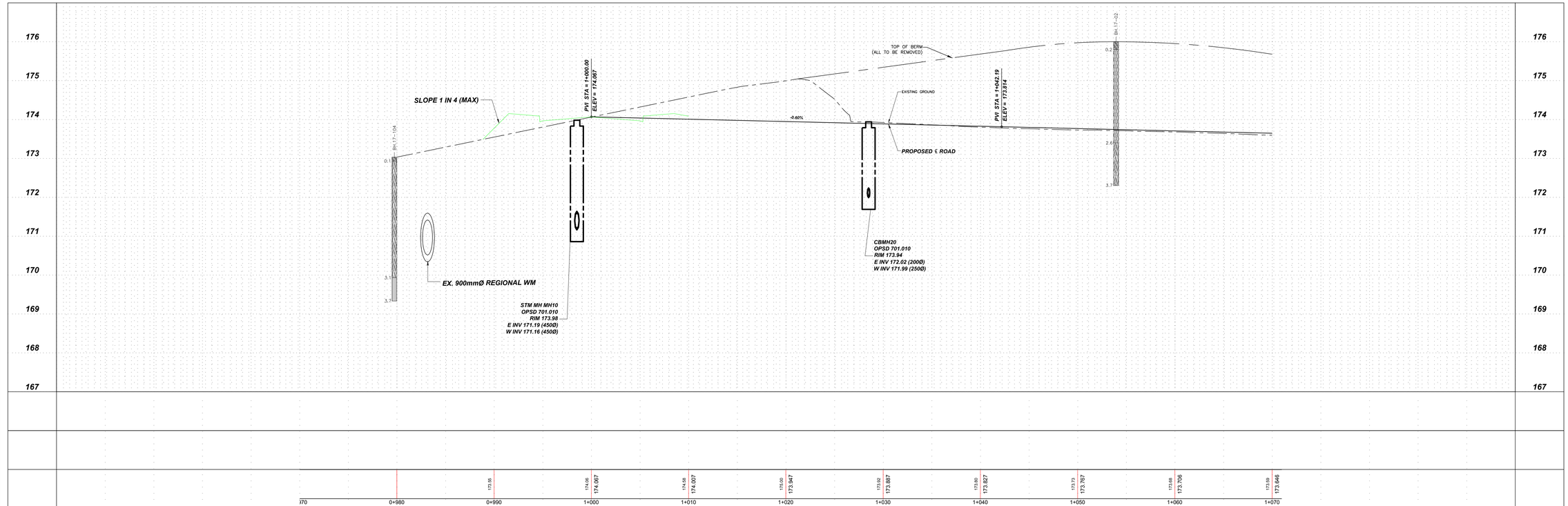
Brock University

ITT DB18-13
BROCK UNIVERSITY
VILLAGE ROAD
from STA. 0+600 to STA. 0+740
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP06
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 8:59pm PLOTTED BY: joel.ackland





NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
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A	ISSUED FOR 60% REVIEW	2017-12-21	RL

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DRAFTING	RL
DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

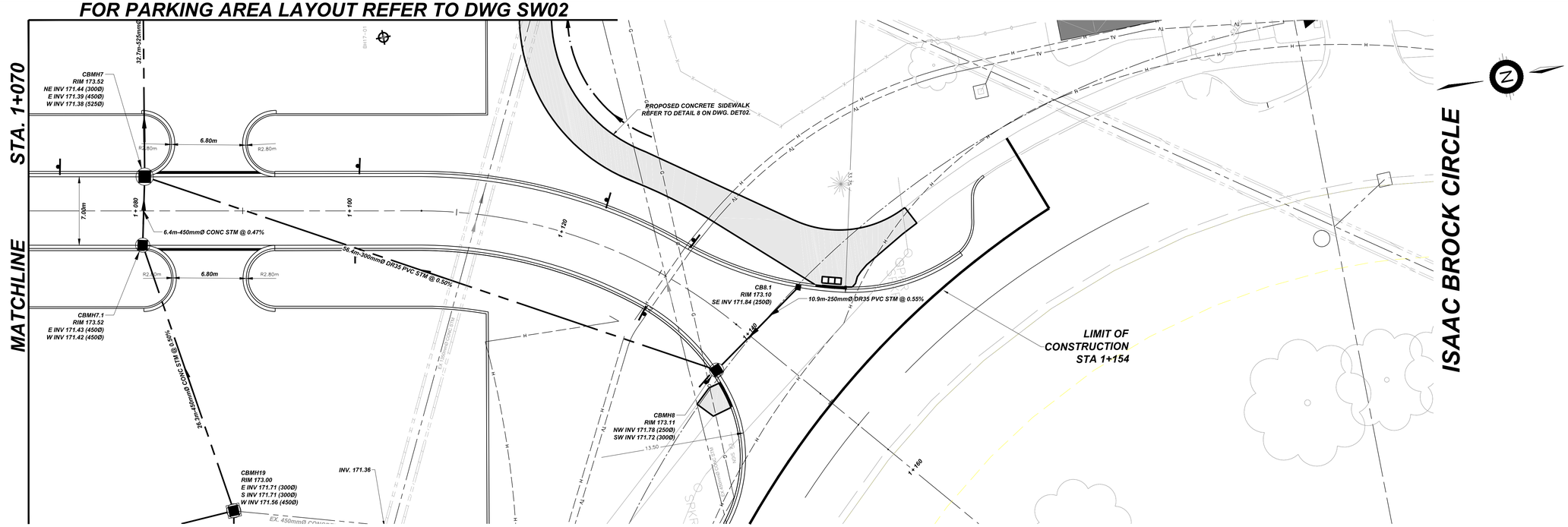
Brock University

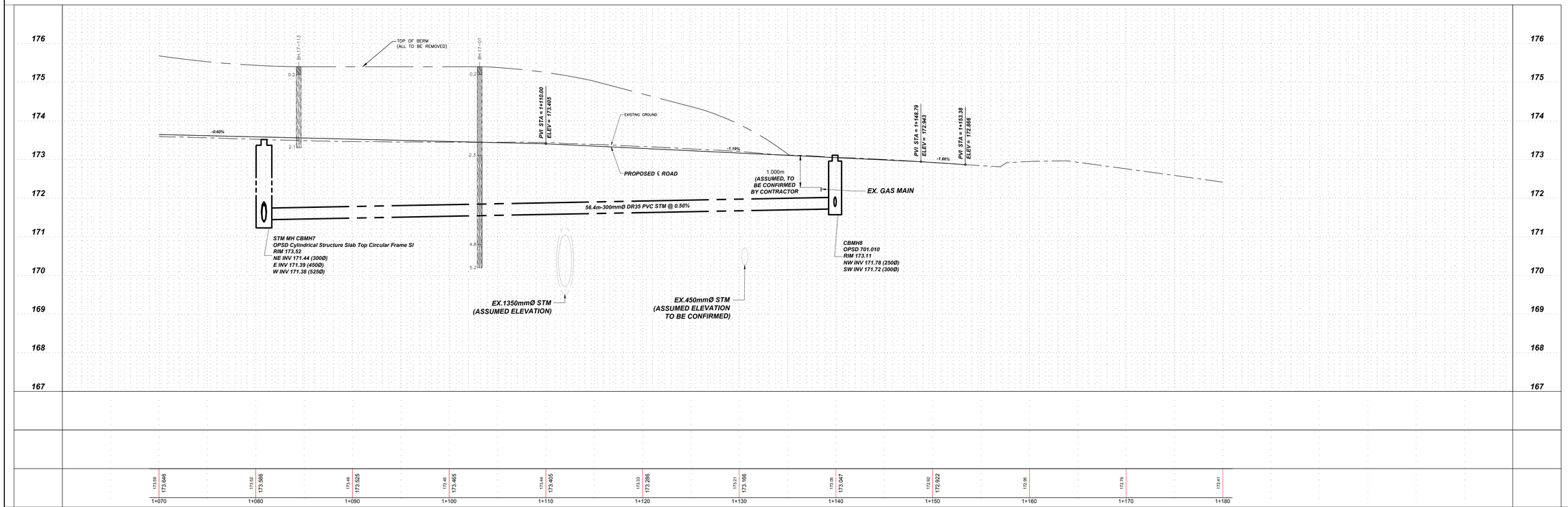
ITT DB18-13
BROCK UNIVERSITY
PARKING ACCESS ROAD
from STA. 1+000 to STA. 1+070
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP07
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 9:01pm PLOTTED BY: joel.ackland

FOR PARKING AREA LAYOUT REFER TO DWG SW02





NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
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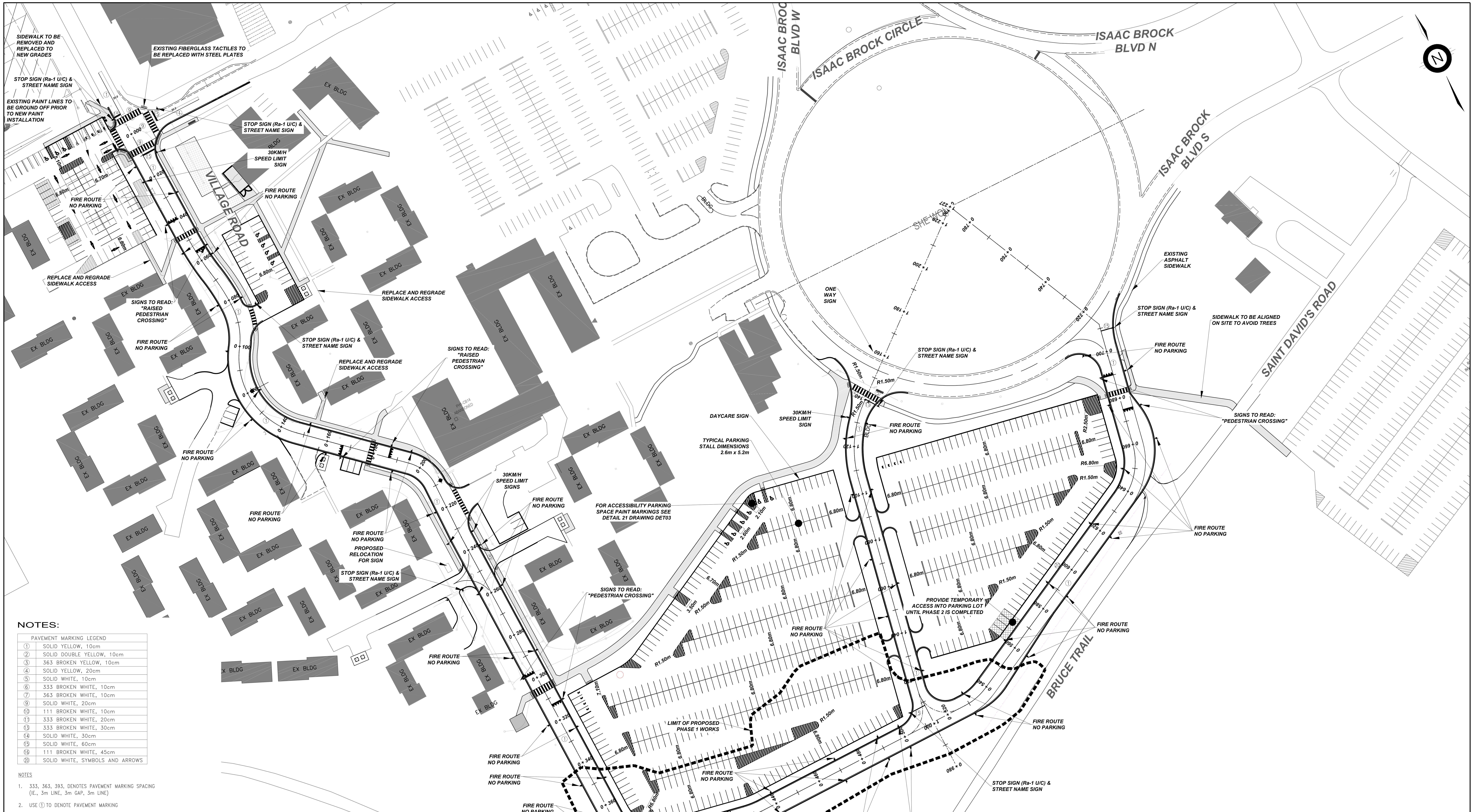
DRAFTING	RL
DESIGN	DR
CHECKED BY	KGB
APPROVED BY	KGB

Brock University

ITT DB18-13
BROCK UNIVERSITY
PARKING ACCESS ROAD
from STA. 1+070 to STA. 1+180
CITY OF ST. CATHARINES
PLAN AND PROFILE

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:200 Ver : 1:50
REF. No.	DB18-13
DWG No.	PP08
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-PLAN AND PROFILES.DWG PLOTTED: Apr 10, 2019 - 9:03pm PLOTTED BY: joel.ackland



NOTES:

PAVEMENT MARKING LEGEND	
①	SOLID YELLOW, 10cm
②	SOLID DOUBLE YELLOW, 10cm
③	363 BROKEN YELLOW, 10cm
④	SOLID YELLOW, 20cm
⑤	SOLID WHITE, 10cm
⑥	333 BROKEN WHITE, 10cm
⑦	363 BROKEN WHITE, 10cm
⑨	SOLID WHITE, 20cm
⑩	111 BROKEN WHITE, 10cm
⑪	333 BROKEN WHITE, 20cm
⑬	333 BROKEN WHITE, 30cm
⑭	SOLID WHITE, 30cm
⑮	SOLID WHITE, 60cm
⑯	111 BROKEN WHITE, 45cm
⑳	SOLID WHITE, SYMBOLS AND ARROWS

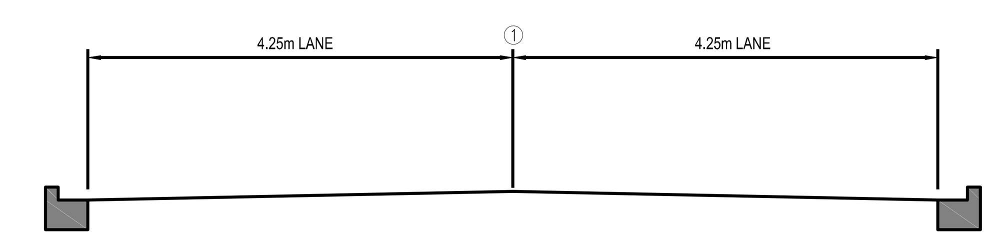
NOTES

1. 333, 363, 393, DENOTES PAVEMENT MARKING SPACING (IE., 3m LINE, 3m GAP, 3m LINE)
2. USE ① TO DENOTE PAVEMENT MARKING
3. USE ⟨1⟩ TO DENOTE PAVEMENT MARKING, DURABLE
4. USE ⚠1 TO DENOTE PAVEMENT MARKING, TEMPORARY-REMOVABLE
5. USE [1] TO DENOTE PAVEMENT MARKING, TEMPORARY

Rb-84a ← REGULATORY SIGNS (THE ORDER THEY ARE DISPLAYED INDICATES HOW THEY SHOULD BE MOUNTED, EG. Rb-84a ON TOP OF Rb-51
Rb-51
U/C ← REGULATORY SIGNS ARE TO BE MOUNTED IN THE GROUND ON A STEEL BOX SECTION

SIGNS SHOW ON A CONCRETE SURFACE ARE TO BE SLEEVED AND MOUNTED ON A STEEL BOX SECTION

NOTE:
LINE PAINTING FOR LOT S TO BE AGREED ON SITE



TYPICAL ROADWAY CROSS SECTION PAINT MARKINGS

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
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DRAFTING R.L.
DESIGN D.R.
CHECKED BY K.G.B.
APPROVED BY K.G.B.

Brock University

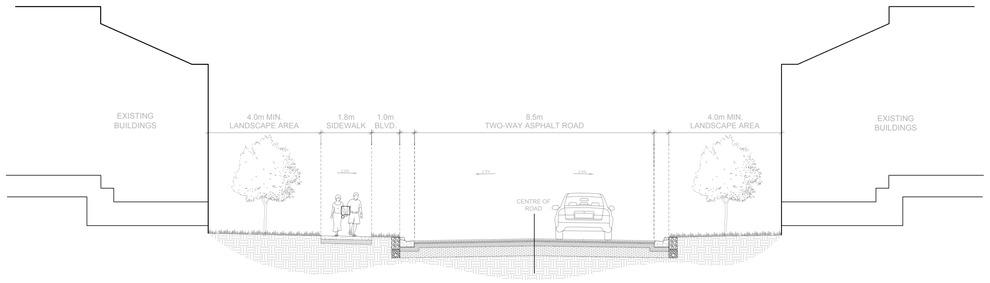
ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PAVEMENT MARKINGS AND SIGNAGE PLAN

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor : 1:750
Ver :
REF. No. DB18-13
DWG No. PM01
REV. G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-SITE PLANS.dwg PLOTTED: Apr 10, 2019 - 9:08pm PLOTTED BY: joel.ackland

PROPOSED RING ROAD NORTH

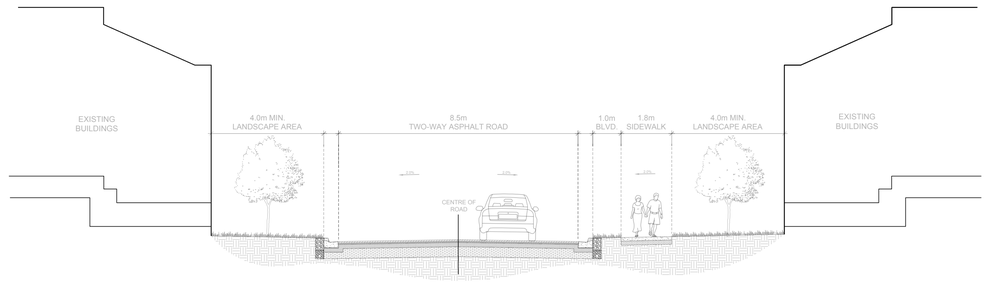
TYPICAL 8.5m TWO LANE ROAD WITH 1.8m SIDEWALK



X-SECTION AT PROPOSED VILLAGE ROAD NORTH

PROPOSED RING ROAD SOUTH

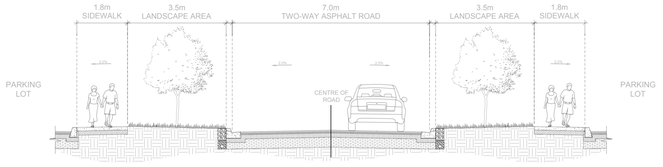
TYPICAL 8.5m TWO LANE ROAD WITH 1.8m SIDEWALK



X-SECTION AT PROPOSED VILLAGE ROAD SOUTH

PROPOSED WEST PARKING ROAD

TYPICAL 7.0m TWO LANE ROAD WITH TWO 1.8m SIDEWALKS



X-SECTION AT PROPOSED WEST PARKING ROAD

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
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DRAFTING R.L.
DESIGN D.R.
CHECKED BY K.G.B.
APPROVED BY K.G.B.

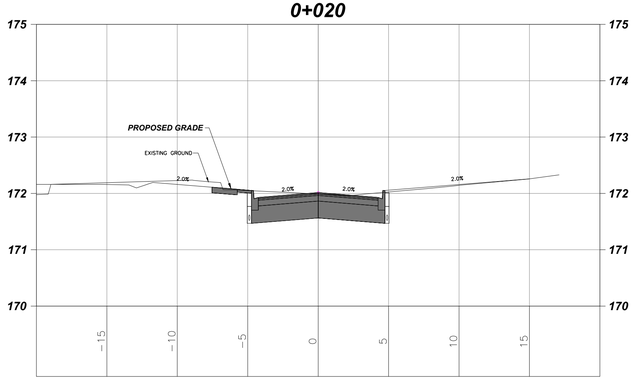
Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
TYPICAL X-SECTIONS

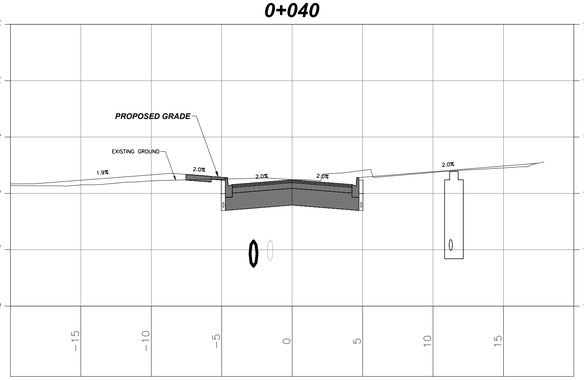
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REV. ***G***

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-SECTIONS.DWG PLOTTED: Apr 10, 2019 - 9:15pm PLOTTED BY: joel.ackland

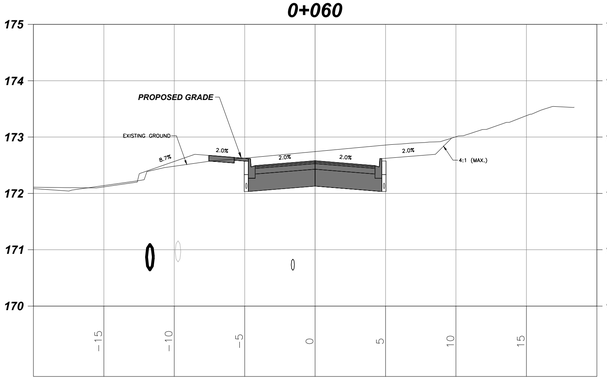
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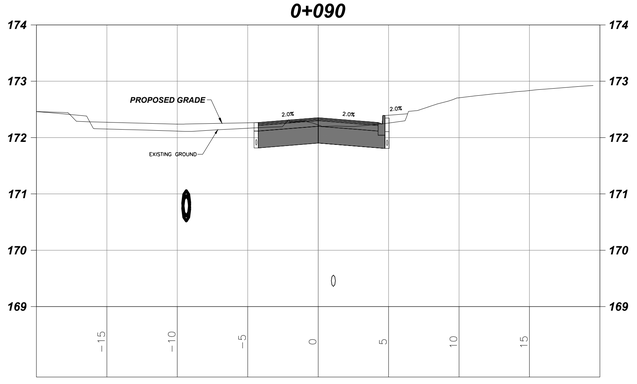
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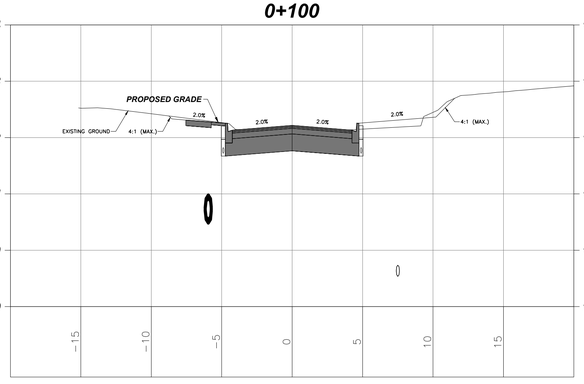
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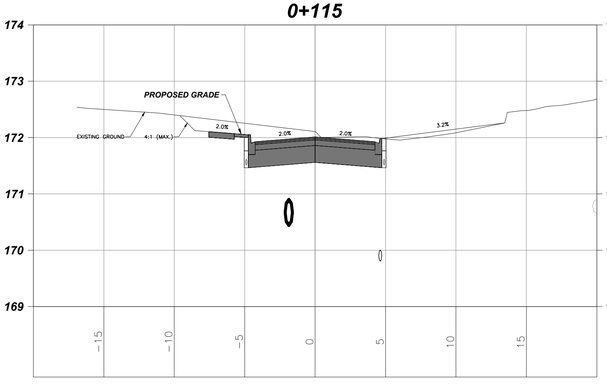
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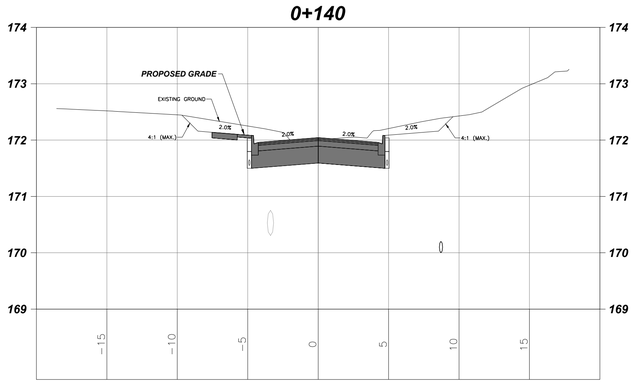
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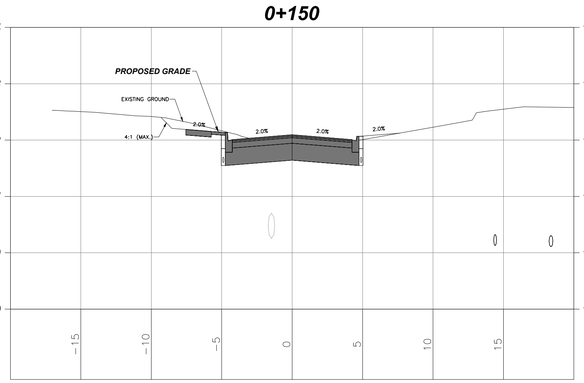
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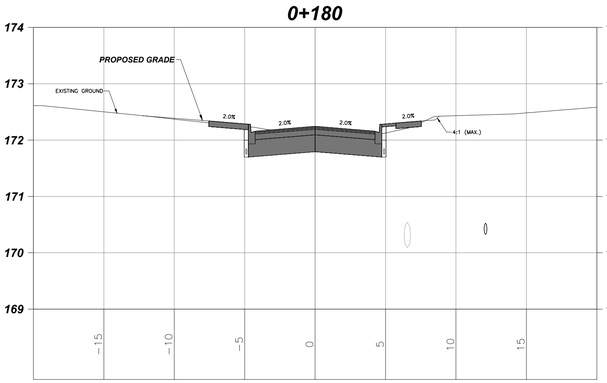
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NO.	REVISION	DATE	INIT.
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F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

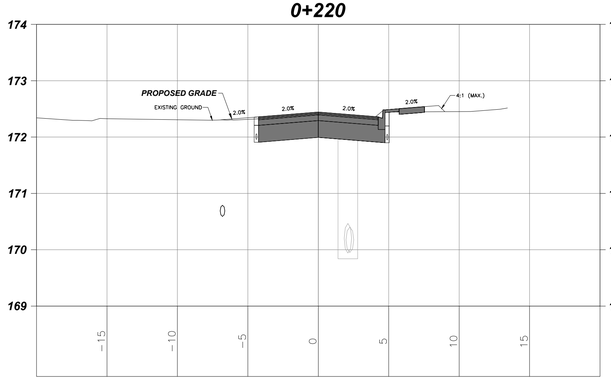
Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
X-SECTIONS - VILLAGE ROAD

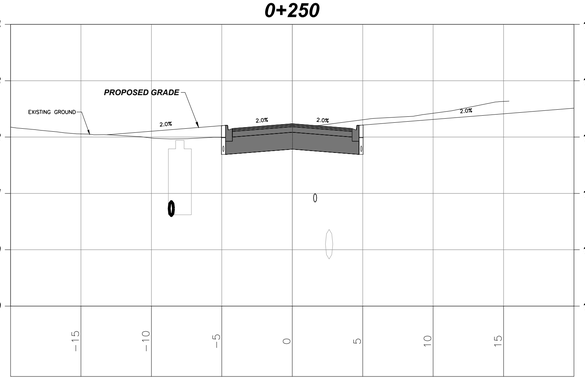
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DWG No.	XS01
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-SECTIONS.DWG PLOTTED: Apr 10, 2019 - 9:16pm PLOTTED BY: joel.ackland

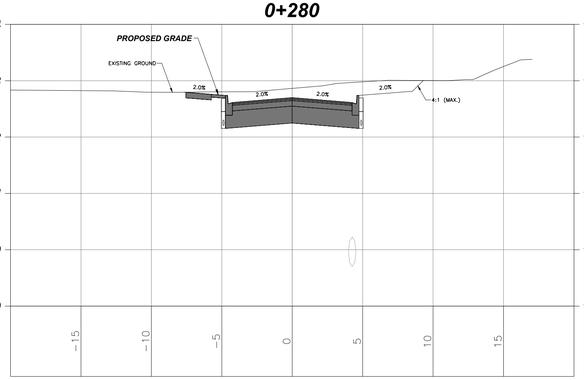
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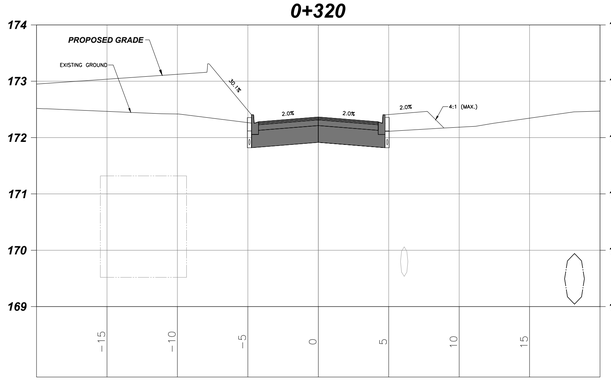
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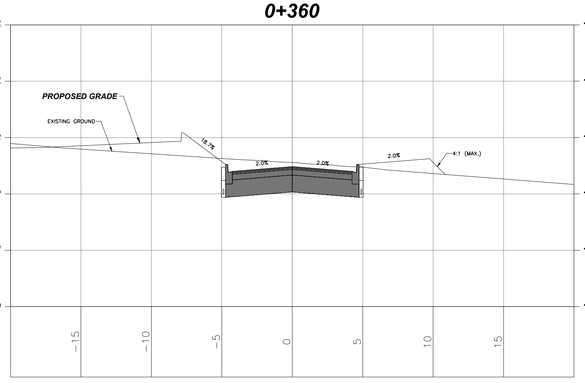
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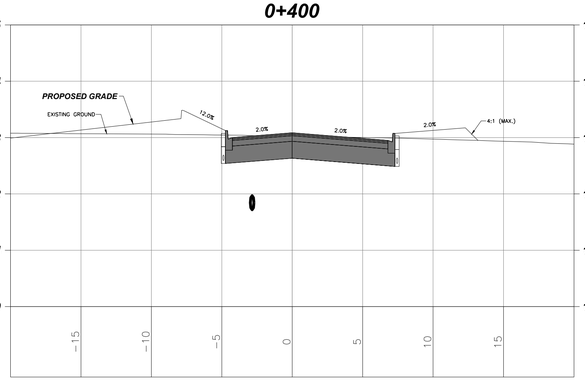
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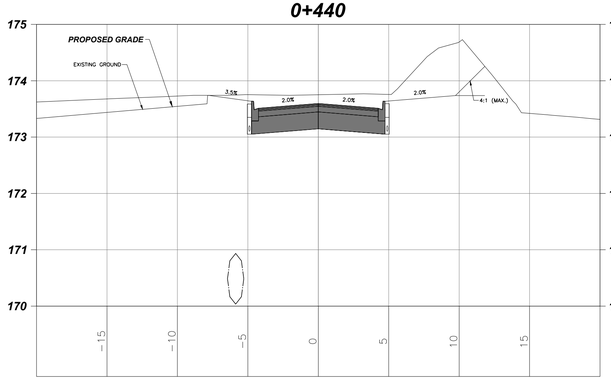
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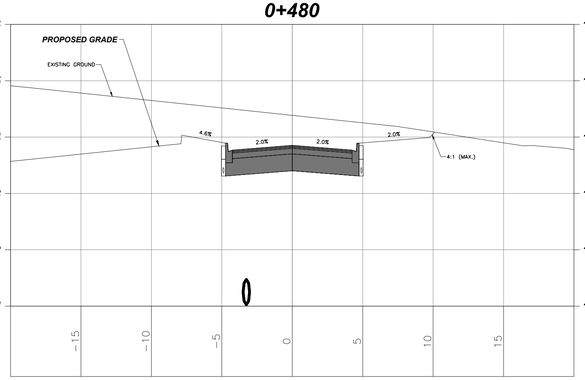
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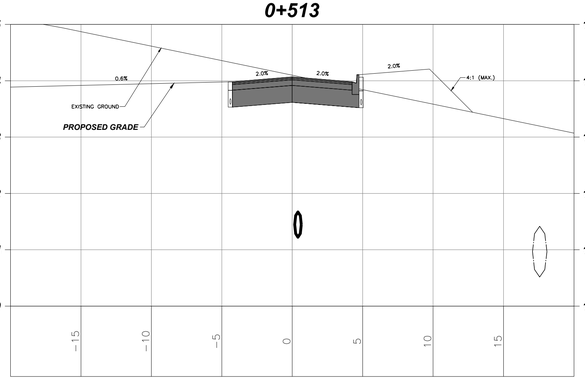
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NO.	REVISION	DATE	INIT.
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F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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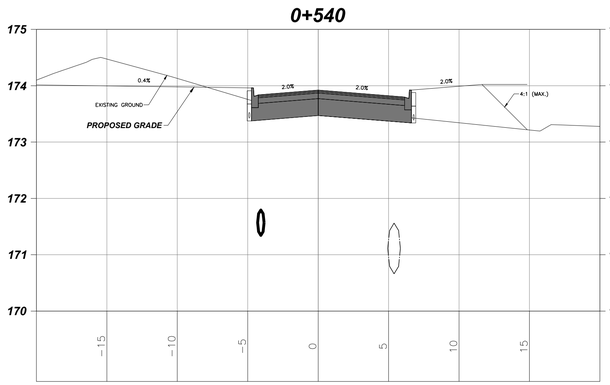
DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

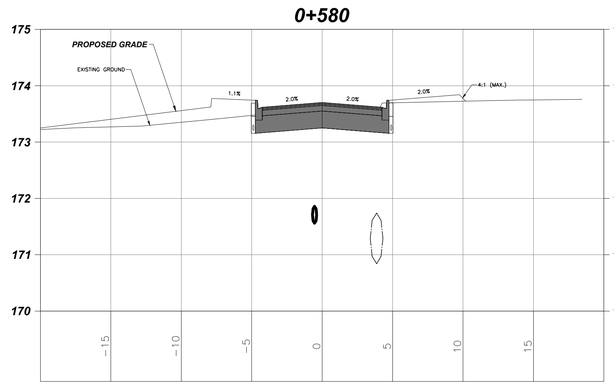
Brock University

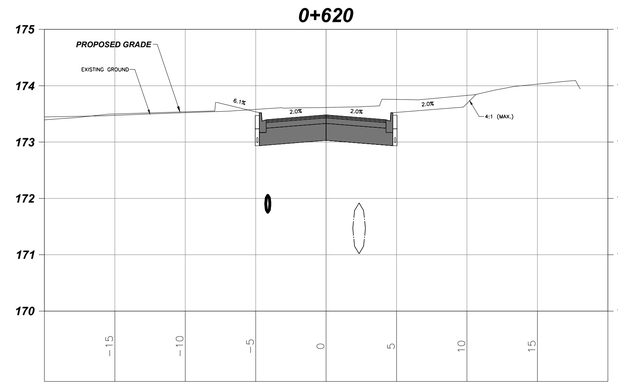
ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
X-SECTIONS - VILLAGE ROAD

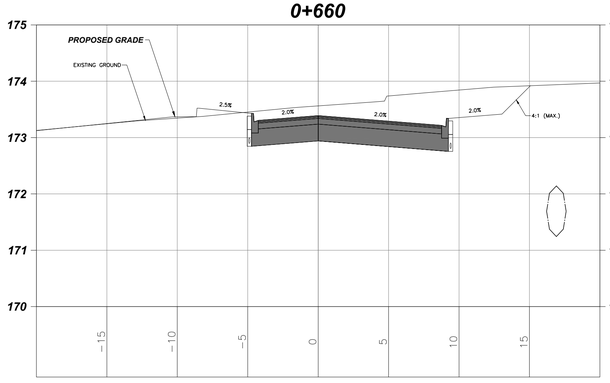
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DATE	2019-01-07
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DWG No.	XS02
REV.	G

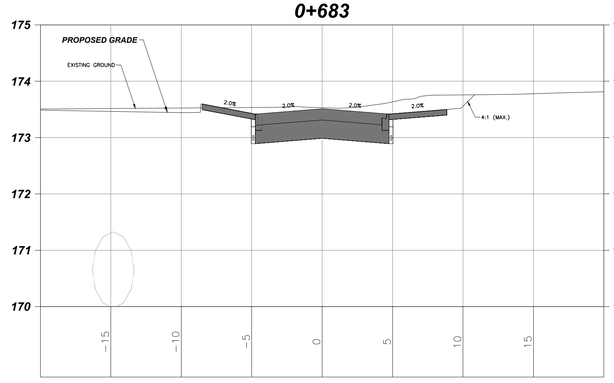
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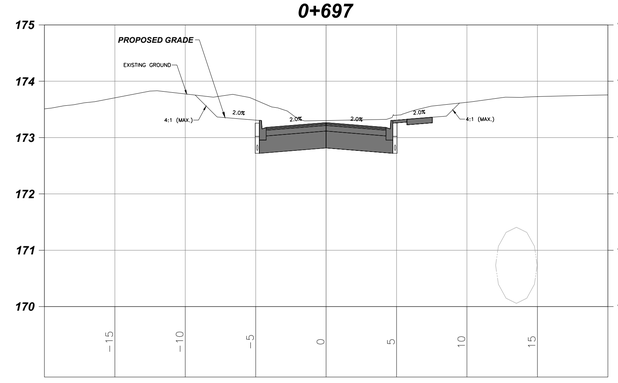












NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
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A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

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DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

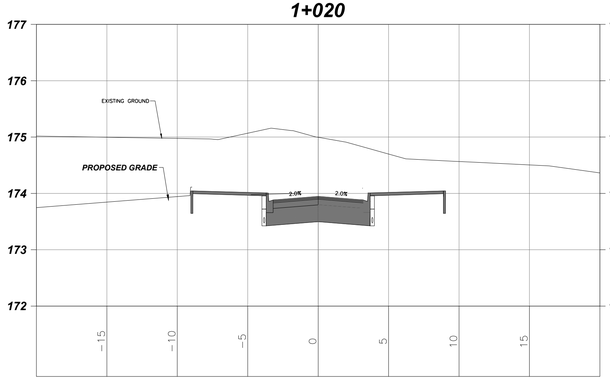
Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
X-SECTIONS - VILLAGE ROAD

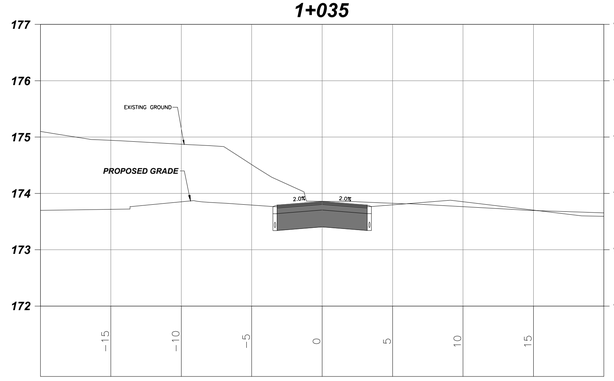
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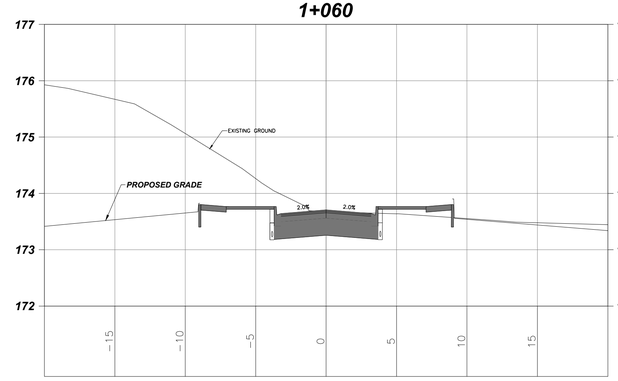
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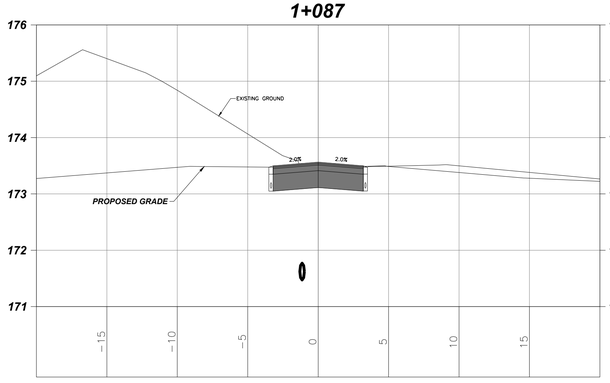
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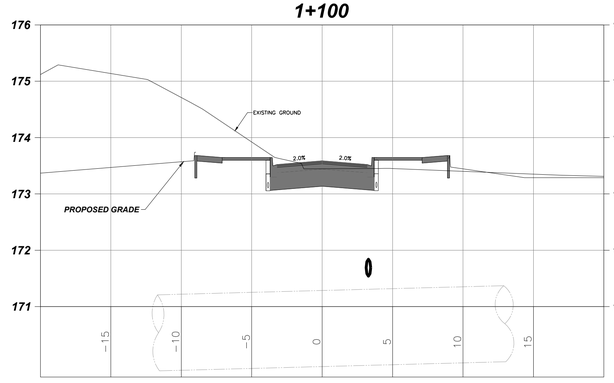
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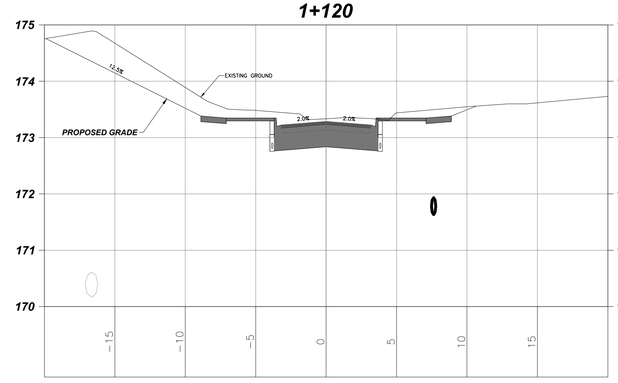
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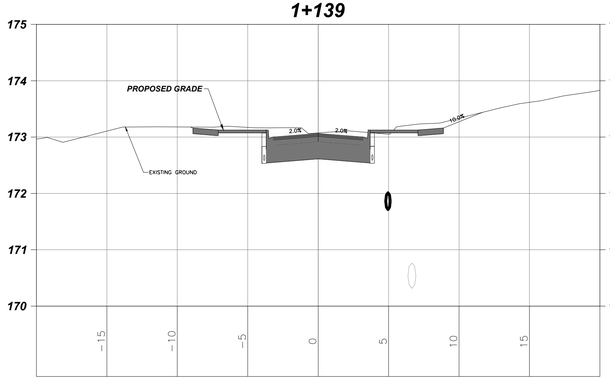
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1+120



1+139



NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED AS ADDENDUM #1	2019-01-23	KGB
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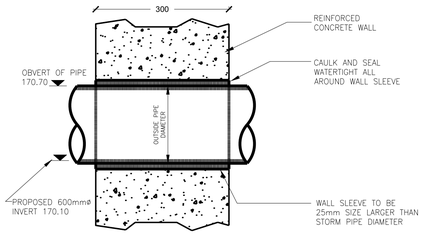
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DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
X-SECTIONS - PARKING ACCESS ROAD

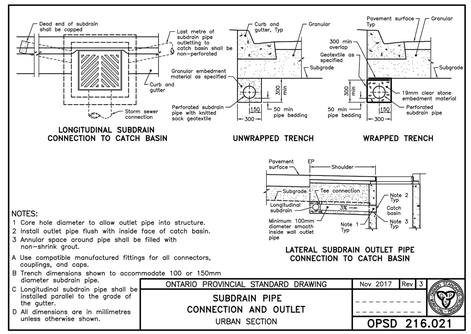
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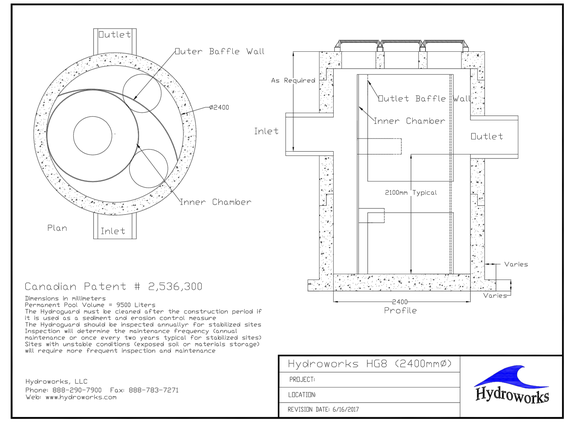
1 DET01 STORM PIPE CONNECTION TO CONCRETE CULVERT

NTS



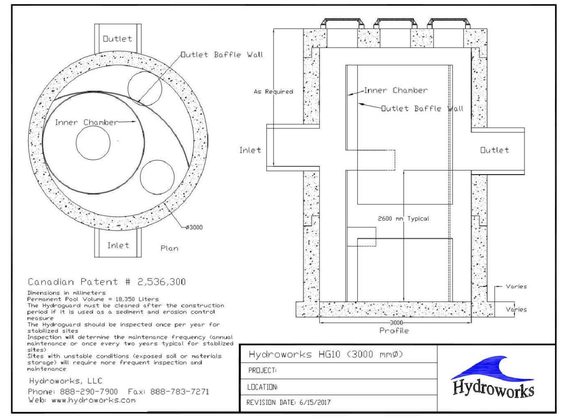
2 DET01 SUBDRAIN

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3 DET01 HYDROWORKS HG8 (2400mm)

Scale: NTS



4 DET01 HYDROWORKS HG10 (3000mm)

Scale: NTS

5 DET01 DROP STRUCTURE

Scale: NTS

6 DET01 CONNECTION TO CONCRETE CULVERT

Scale: NTS

7 DET01 EXISTING CULVERT AS-BUILT DETAIL

Scale: NTS

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019–04–10	KGB
F	ISSUED FOR ADDENDUM #1	2019–01–23	KGB
E	ISSUED FOR TENDER	2019–01–07	KGB
D	REISSUED AS TENDER READY	2018–08–27	JDKA
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B	ISSUED FOR 90% REVIEW	2018–02–23	RL
A	ISSUED FOR 60% REVIEW	2017–12–21	RL

NOTES/LEGEND

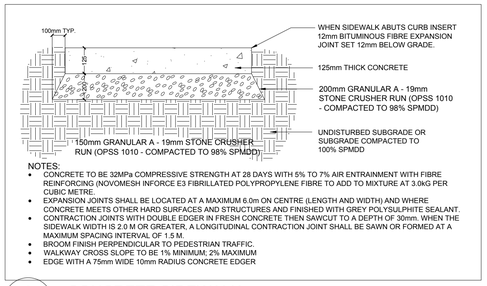
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DESIGN DR
CHECKED BY KGB
APPROVED BY KGB

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
CIVIL DETAILS

CONSULTANT FILE No. 171-13732-00
DATE 2018–01–07
SCALE Hor : AS SHOWN Ver :
REF. No. **DB18-13**
DWG No. **DET01**
REV. **G**

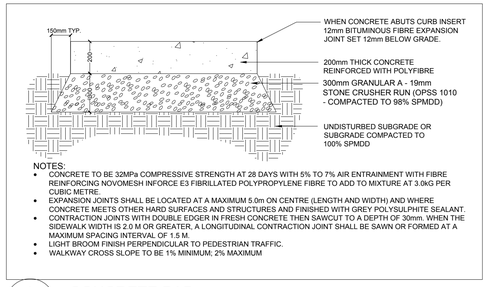
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NOTES:
- CONCRETE TO BE 32MPa COMPRESSIVE STRENGTH AT 28 DAYS WITH 5% TO 7% AIR ENTRAINMENT WITH FIBRE REINFORCING (NOVOMESH INFORCE E3 FIBRILLATED POLYPROPYLENE FIBRE TO ADD TO MIXTURE AT 3.0kG PER CUBIC METRE.
- EXPANSION JOINTS SHALL BE LOCATED AT A MAXIMUM 6.0m ON CENTRE (LENGTH AND WIDTH) AND WHERE CONCRETE MEETS OTHER HARD SURFACES AND STRUCTURES AND FINISHED WITH GREY POLYSULPHITE SEALANT.
- CONTRACTION JOINTS WITH DOUBLE EDGER IN FRESH CONCRETE THEN SAWCUT TO A DEPTH OF 30mm. WHEN THE SIDEWALK WIDTH IS 2.0 M OR GREATER, A LONGITUDINAL CONTRACTION JOINT SHALL BE SAWN OR FORMED AT A MAXIMUM SPACING INTERVAL OF 1.5 M.
- BROOM FINISH PERPENDICULAR TO PEDESTRIAN TRAFFIC.
- WALKWAY CROSS SLOPE TO BE 1% MINIMUM; 2% MAXIMUM
- EDGE WITH A 75mm WIDE 10mm RADIUS CONCRETE EDGER

8 DET02 CONCRETE SIDEWALK

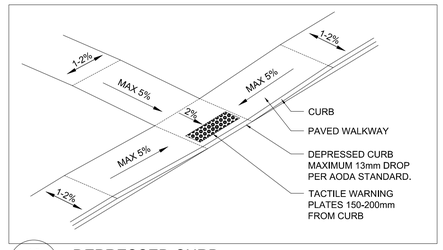
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NOTES:
- CONCRETE TO BE 32MPa COMPRESSIVE STRENGTH AT 28 DAYS WITH 5% TO 7% AIR ENTRAINMENT WITH FIBRE REINFORCING NOVOMESH INFORCE E3 FIBRILLATED POLYPROPYLENE FIBRE TO ADD TO MIXTURE AT 3.0kG PER CUBIC METRE.
- EXPANSION JOINTS SHALL BE LOCATED AT A MAXIMUM 5.0m ON CENTRE (LENGTH AND WIDTH) AND WHERE CONCRETE MEETS OTHER HARD SURFACES AND STRUCTURES AND FINISHED WITH GREY POLYSULPHITE SEALANT.
- CONTRACTION JOINTS WITH DOUBLE EDGER IN FRESH CONCRETE THEN SAWCUT TO A DEPTH OF 30mm. WHEN THE SIDEWALK WIDTH IS 2.0 M OR GREATER, A LONGITUDINAL CONTRACTION JOINT SHALL BE SAWN OR FORMED AT A MAXIMUM SPACING INTERVAL OF 1.5 M.
- LIGHT BROOM FINISH PERPENDICULAR TO PEDESTRIAN TRAFFIC.
- WALKWAY CROSS SLOPE TO BE 1% MINIMUM; 2% MAXIMUM

9 DET02 CONCRETE PAD

Scale: 1:200



10 DET02 DEPRESSED CURB

Scale: 1:200

DOME SIZE:
DOME HEIGHT TO BE 5mm HIGH
TOP OF DOME DIAMETER TO BE 15mm
BASE OF DOME DIAMETER TO BE 25mm

DOME SPACING:
BASE TO BASE SPACING OF 17mm

CONTRAST:
DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH ADJACENT WALKING SURFACES - EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT.

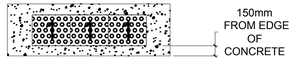
MANUFACTURER INFO:
DETECTABLE WARNING PLATES BY NEENAH FOUNDRY OR APPROVED EQUAL. CONTRACTOR TO PROVIDE SHOP DRAWINGS FROM MANUFACTURER / SUPPLIER PRIOR TO INSTALLATION.

MOUNTING INFO:
MOUNT PLATE ON POURED IN PLACE CONCRETE PER DETAIL AND MANUFACTURERS SPECIFICATIONS.

PLATE CHART

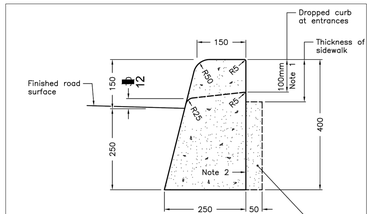
QUICK CONNECT PLATES (#1)			
DEPTH	WIDTH	CATALOG NO.	QUANTITY
24"	30"	00700721	SEE PLAN
RADIUS PLATES (#2)			
DEPTH	RADIUS	CATALOG NO.	QUANTITY
24"	10'	00700611	SEE PLAN

NOTES:
- WHERE CONCRETE PAD ABUTS EXISTING CONCRETE PAVING, DOWEL INTO EXISTING PAVING WITH 12mm REBAR.
- PLATES TO BE PLACED IN EXISTING CONCRETE NEED 150mm OF SPACE.



PLATES IN CONCRETE

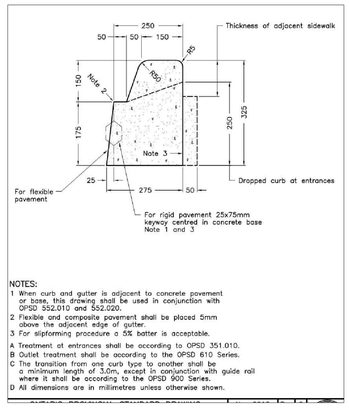
Scale: NTS



NOTES:
1 [redacted]
2 For slipforming procedure, a 5% batter is acceptable.
A Treatment at entrances shall be according to [redacted]
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

11 DET02 CONCRETE BARRIER CURB

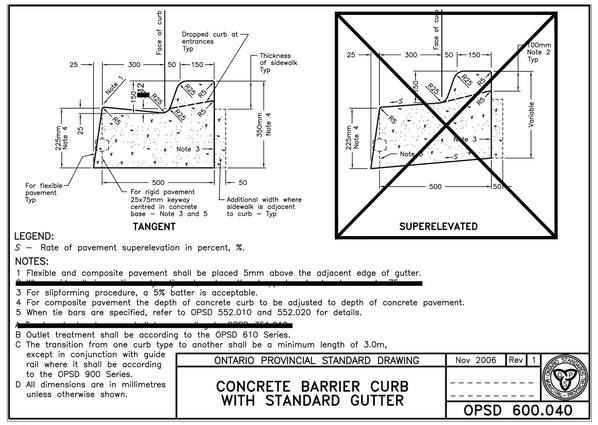
Scale: NTS



NOTES:
1 When curb and gutter is adjacent to concrete pavement or base, this drawing shall be used in conjunction with OPSD 552.010 and 552.020.
2 Flexible and composite pavement shall be placed 5mm above the adjacent edge of gutter.
3 For slipforming procedure a 5% batter is acceptable.
A Treatment at entrances shall be according to OPSD 351.010.
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

12 DET02 CONCRETE BARRIER CURB WITH NARROW GUTTER

Scale: NTS



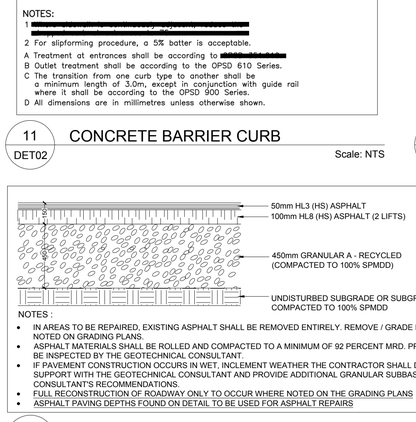
LEGEND:
S – Rate of pavement superelevation in percent, %.

NOTES:
1 Flexible and composite pavement shall be placed 5mm above the adjacent edge of gutter.
[redacted]
3 For slipforming procedure, a 5% batter is acceptable.
4 For composite pavement the depth of concrete curb to be adjusted to depth of concrete pavement.
5 When tie bars are specified, refer to OPSD 552.010 and 552.020 for details.
[redacted]
B Outlet treatment shall be according to the OPSD 610 Series.
C The transition from one curb type to another shall be a minimum length of 3.0m, except in conjunction with guide rail where it shall be according to the OPSD 900 Series.
D All dimensions are in millimetres unless otherwise shown.

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2006	Rev 1
CONCRETE BARRIER CURB WITH STANDARD GUTTER		
	OPSD 600.040	

13 DET02 CONCRETE BARRIER CURB WITH STANDARD GUTTER

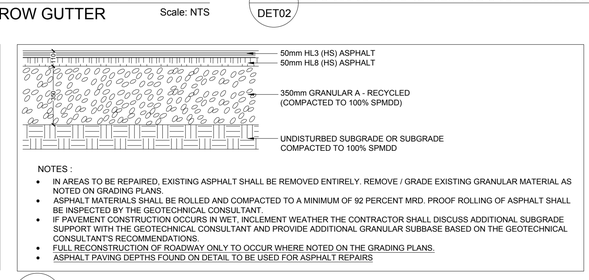
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NOTES :
- IN AREAS TO BE REPAIRED, EXISTING ASPHALT SHALL BE REMOVED ENTIRELY. REMOVE / GRADE EXISTING GRANULAR MATERIAL AS NOTED ON GRADING PLANS.
- ASPHALT MATERIALS SHALL BE ROLLED AND COMPACTED TO A MINIMUM OF 92 PERCENT MRD. PROOF ROLLING OF ASPHALT SHALL BE INSPECTED BY THE GEOTECHNICAL CONSULTANT.
- IF PAVEMENT CONSTRUCTION OCCURS IN WET, INCLEMENT WEATHER THE CONTRACTOR SHALL DISCUSS ADDITIONAL SUBGRADE SUPPORT WITH THE GEOTECHNICAL CONSULTANT AND PROVIDE ADDITIONAL GRANULAR SUBBASE BASED ON THE GEOTECHNICAL CONSULTANT'S RECOMMENDATIONS.
- FULL RECONSTRUCTION OF ROADWAY ONLY TO OCCUR WHERE NOTED ON THE GRADING PLANS
- ASPHALT PAVING DEPTHS FOUND ON DETAIL TO BE USED FOR ASPHALT REPAIRS

14 DET02 HEAVY DUTY ASPHALT (ROADS)

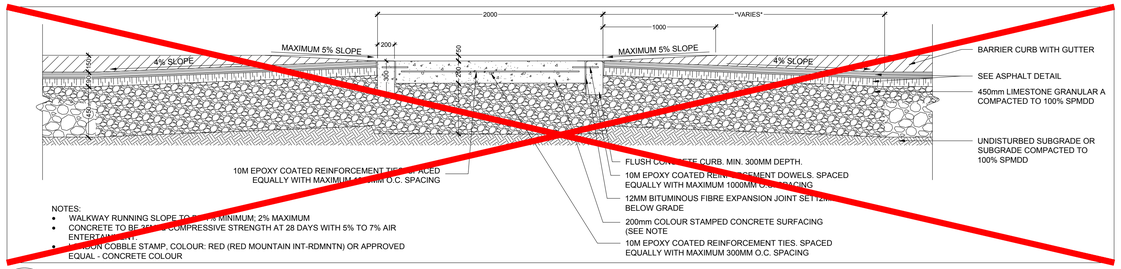
Scale: 1:200



NOTES :
- IN AREAS TO BE REPAIRED, EXISTING ASPHALT SHALL BE REMOVED ENTIRELY. REMOVE / GRADE EXISTING GRANULAR MATERIAL AS NOTED ON GRADING PLANS.
- ASPHALT MATERIALS SHALL BE ROLLED AND COMPACTED TO A MINIMUM OF 92 PERCENT MRD. PROOF ROLLING OF ASPHALT SHALL BE INSPECTED BY THE GEOTECHNICAL CONSULTANT.
- IF PAVEMENT CONSTRUCTION OCCURS IN WET, INCLEMENT WEATHER THE CONTRACTOR SHALL DISCUSS ADDITIONAL SUBGRADE SUPPORT WITH THE GEOTECHNICAL CONSULTANT AND PROVIDE ADDITIONAL GRANULAR SUBBASE BASED ON THE GEOTECHNICAL CONSULTANT'S RECOMMENDATIONS.
- FULL RECONSTRUCTION OF ROADWAY ONLY TO OCCUR WHERE NOTED ON THE GRADING PLANS.
- ASPHALT PAVING DEPTHS FOUND ON DETAIL TO BE USED FOR ASPHALT REPAIRS

15 DET02 MEDIUM DUTY ASPHALT (PARKING)

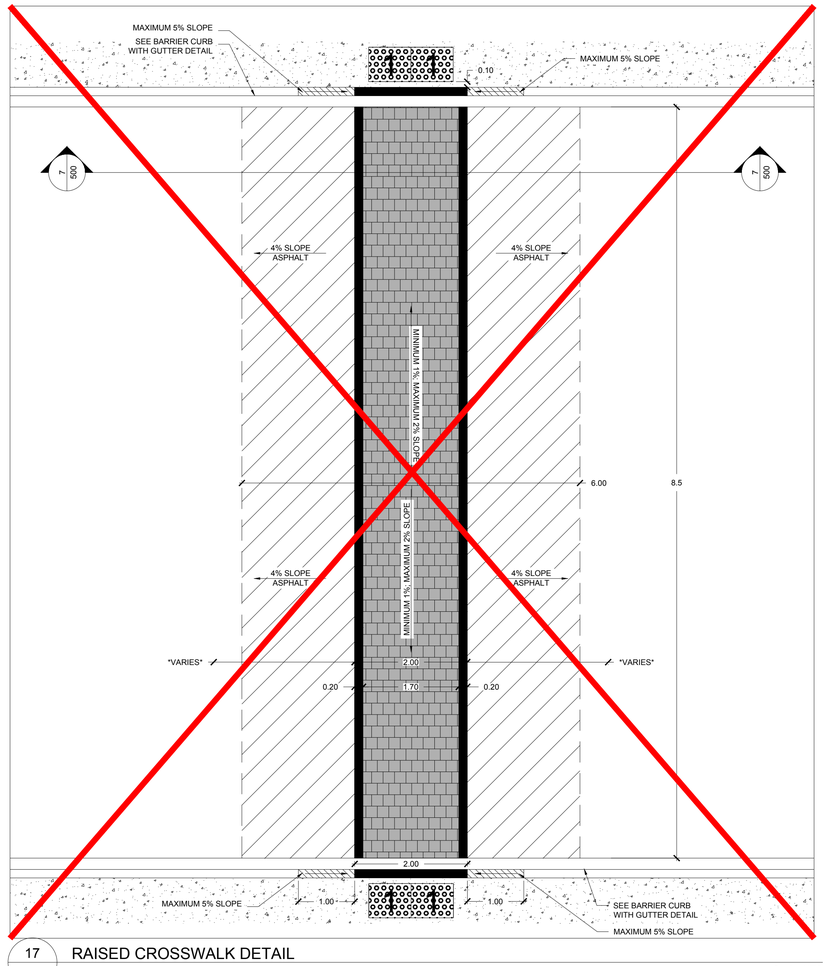
Scale: 1:200



NOTES:
- WALKWAY RUNNING SLOPE TO BE 1% MINIMUM; 2% MAXIMUM
- CONCRETE TO BE 32MPa COMPRESSIVE STRENGTH AT 28 DAYS WITH 5% TO 7% AIR ENTRAINMENT WITH [redacted]
- STAMPON COBBLE STAMP, COLOUR: RED (RED MOUNTAIN INT-RDMNTN) OR APPROVED EQUAL - CONCRETE COLOUR

16 DET02 RAISED CROSSWALK DETAIL

Scale: NTS



17 DET02 RAISED CROSSWALK DETAIL

Scale: NTS

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND

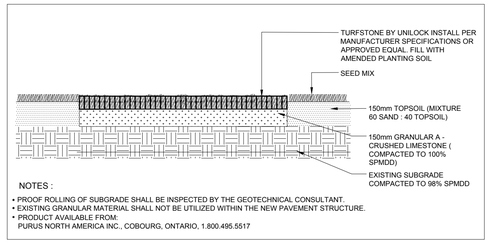
DRAFTING	P.R.
DESIGN	P.R.
CHECKED BY	A.G.
APPROVED BY	A.G.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
SURFACE DETAILS

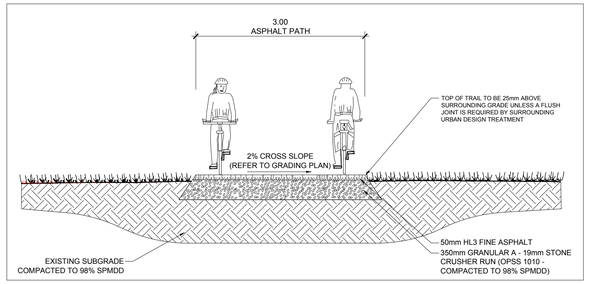
CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : AS SHOWN Ver :
REF. No.	DB18-13
DWG No.	DET02
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-NOTES AND DETAILS.dwg PLOTTED: Apr 10, 2019 - 9:33pm PLOTTED BY: joel.ackland



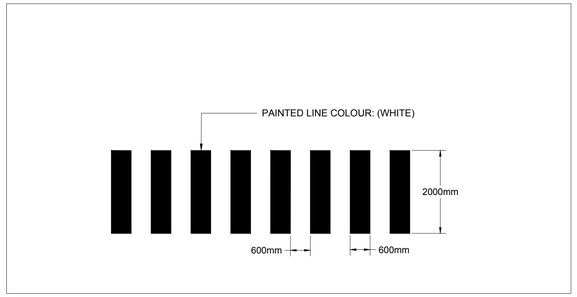
18 DET03 TURFSTONE CONCRETE GRID DETAIL

Scale: NTS



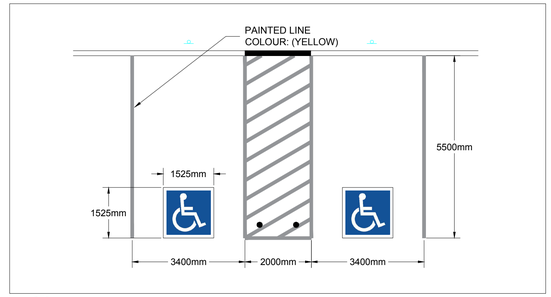
19 DET03 ASPHALT PATH

Scale: 1:200



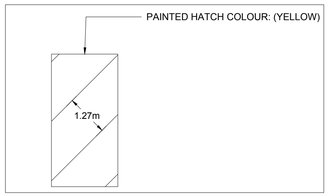
20 DET03 TYPICAL PAINTED CROSSWALK

Scale: NTS



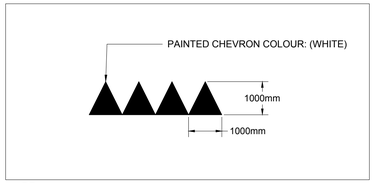
21 DET03 ACCESSIBLE PARKING LINE PAINT

Scale: NTS



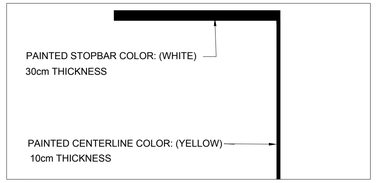
23 DET03 PAINTED HATCH PATTERN

Scale: NTS



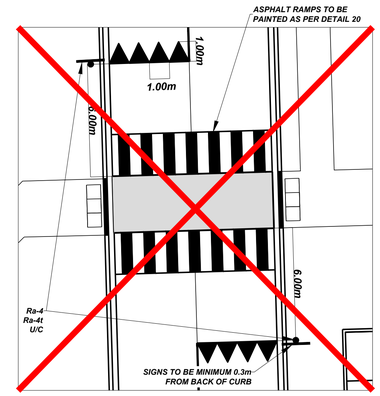
24 DET03 TYPICAL PAINTED CHEVRONS

Scale: NTS



25 DET03 TYPICAL PAINTED STOP BAR

Scale: NTS



26 DET03 TYPICAL RAISED PEDESTRIAN CROSSING PAINT MARKINGS

Scale: NTS

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
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NOTES/LEGEND

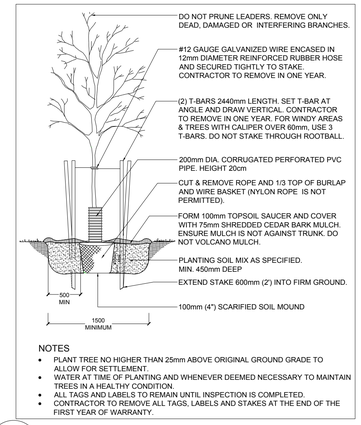
DRAFTING P.R.
DESIGN P.R.
CHECKED BY A.G.
APPROVED BY A.G.

Brock University

ITT DB18-13
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CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
SURFACING DETAILS

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor : AS SHOWN
Ver :
REF. No. ***DB18-13***
DWG No. ***DET03***
REV. ***G***

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-NOTES AND DETAILS.dwg PLOTTED: Apr 10, 2019 - 9:38pm PLOTTED BY: joel.ackland

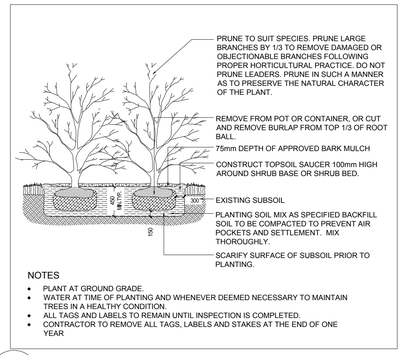


NOTES

- PLANT TREE NO HIGHER THAN 25mm ABOVE ORIGINAL GROUND GRADE TO ALLOW FOR SETTLEMENT.
- WATER AT TIME OF PLANTING AND WHENEVER DEEMED NECESSARY TO MAINTAIN TREES IN A HEALTHY CONDITION.
- ALL TAGS AND LABELS TO REMAIN UNTIL INSPECTION IS COMPLETED.
- CONTRACTOR TO REMOVE ALL TAGS, LABELS AND STAKES AT THE END OF THE FIRST YEAR OF WARRANTY.

27 DET04 TREE PLANTING DETAIL

Scale: 1:200

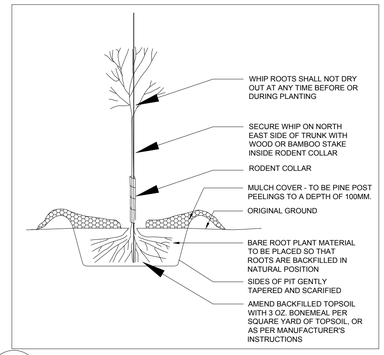


NOTES

- PLANT AT GROUND GRADE.
- WATER AT TIME OF PLANTING AND WHENEVER DEEMED NECESSARY TO MAINTAIN TREES IN A HEALTHY CONDITION.
- ALL TAGS AND LABELS TO REMAIN UNTIL INSPECTION IS COMPLETED.
- CONTRACTOR TO REMOVE ALL TAGS, LABELS AND STAKES AT THE END OF ONE YEAR

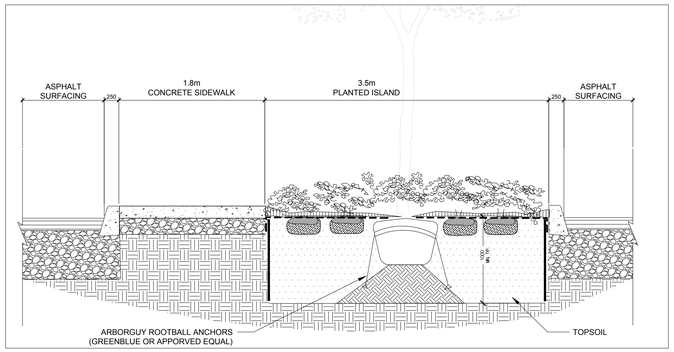
28 DET04 SHRUB PLANTING DETAIL

Scale: 1:200



29 DET04 WHIP PLANTING DETAIL

Scale: 1:200



30 DET04 PLANTED ISLAND DETAIL

Scale: NTS

TERRASEEDING:

TERRASEEDING SHALL BE APPLIED TO ALL AREAS DISTURBED BY THE CONSTRUCTION OPERATION THAT WILL NOT BE COVERED WITH ASPHALT OR MULCH/OTHER PATHWAY SURFACING.
AT TIME OF TERRASEEDING, ALL SURFACE AREAS MUST BE UNIFORMLY GRADED AND SHALL BE FREE OF EROSION, STONES GREATER THAN 50mm IN DIAMETER, WEEDS AND ANY OTHER UNWANTED VEGETATION. EXISTING SURFACE SOIL SHALL BE UNIFORMLY CULTIVATED TO A MINIMUM DEPTH 50mm TO PROVIDE A LOOSE AND FRIABLE SEEDBED TO ACCELERATE GERMINATION OF SEED.

THE BLOWER TRUCK SHALL BE EQUIPPED WITH A COMPUTER-CALIBRATED SEED INJECTION SYSTEM AND SHALL BE CAPABLE OF UNIFORMLY APPLYING COMPOSTED TOPSOIL AND SEED AT A RATE GREATER THAN 0.25 m3 PER MINUTE. COMPOSTED TOPSOIL SHALL BE PRE-MIXED AND CONSIST OF A MINIMUM 60% COMPOST MATERIAL.

NOTE:

- SEEDING SHALL BE PLACED ON 150mm OF TOPSOIL.
- ALL SEED TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS FOR MULCH, TACKIFIER, AND SPECIFIC SEEDING RATE AND TIMING OF APPLICATION.
- CONTRACTOR TO VERIFY SEEDING RATES RELATIVE TO SOIL TYPE PRIOR TO INSTALLATION OF SEED.
- ALL SEEDING ON SLOPES GREATER THAN 3 (HORIZONTAL) : 1 (VERTICAL) SHALL BE PROTECTED WITH 'SOIL GUARD FIBRE MATRIX' TO MANUFACTURER'S SPECIFICATIONS.

'WOODLAND SEED MIX' (OSC #8275)

5% Beardtongue (Penstemon digitalis)
3% Bebbs Sedge (Carex bebbii)
1% Flat Topped White Aster (Aster umbellatus)
10% Fox Sedge (Carex vulpinoidea)
5% Nodding/Fringed Sedge (Carex crinita)
35% Riverbank Wild Rye (Elymus riparius)
4% Showy Tick Trefoil (Desmodium canadense)
1% Spotted Joe Pye Weed (Eupatorium maculatum)
35% Virginia Wild Rye (Elymus virginicus)
1% White Avens (Geum canadense)

SEED AT RATE OF **"XXX"**KG/HA. SIMULTANEOUSLY SOW COVER CROP OF ANNUAL RYE GRASS FOR EROSION CONTROL AT A RATE OF 22KG/HA. ALL SEED MIXTURE MANUFACTURED BY 'ONTARIO SEED COMPANY (OSC)' OR APPROVED EQUAL.

ALL PACKING SLIPS MUST BE PROVIDED TO CLIENT PRIOR TO SEED PLACEMENT.

PLANT MATERIAL ORDER, DELIVERY AND INSPECTION:

- CONTRACTOR TO CHECK ALL QUANTITIES AND REPORT ANY DISCREPANCIES TO THE CONTRACT ADMINISTRATOR IN WRITING. THE QUANTITIES INDICATED ON THE PLAN SUPERCEDE THE TOTALS OF THE PLANT LIST.
- OBTAIN CONTRACT ADMINISTRATOR'S APPROVAL ON ALL PLANT MATERIAL AT SOURCE OR UPON DELIVERY, PRIOR TO COMMENCEMENT OF PLANTING WORK.
- APPROVAL OF PLANT MATERIAL PRIOR TO PLANTING SHALL NOT IMPAIR THE RIGHT OF THE CONTRACT ADMINISTRATOR TO REJECT PLANTS AFTER PLANTING, WHICH HAVE BEEN DAMAGED, OR WHICH IN ANY WAY DO NOT CONFORM TO THE SPECIFICATIONS.
- SUBSTITUTIONS OF SIZE, OR WITH OTHER PLANT MATERIAL WILL ONLY BE ALLOWED WITH THE WRITTEN APPROVAL OF THE CONTRACT ADMINISTRATOR.
- ALL MATERIAL MUST CONFORM TO THE SIZES SHOWN ON THE PLANT LIST, EXCEPT WHERE LARGER PLANT MATERIAL IS USED WHEN APPROVED BY THE CONTRACT ADMINISTRATOR. USE OF LARGER PLANTS WILL NOT INCREASE THE CONTRACT PRICE. UNDERSIZED MATERIAL WILL BE REJECTED.
- ALL SHRUBS AND TREES SHALL CONFORM TO THE PRESENT STANDARDS OF THE CANADIAN NURSERY TRADES ASSOCIATION FOR SIZE AND SPECIES.
- PLANTS ARE TO BE NURSERY GROWN UNDER PROPER CULTURAL CONDITIONS, IN PARTICULAR WITH RESPECT TO SPACING, PEST AND DISEASE CONTROL, AND BRANCH AND ROOT PRUNING.
- TREES ARE TO HAVE STRAIGHT STURDY TRUNKS.
- TREES SHALL BE WELL BRANCHED AND BALANCED WITH A STRONG CENTRAL LEADER.
- DECIDUOUS SHADE TREES SHALL BE FREE OF BRANCHES FROM GROUND LEVEL TO A HEIGHT OF 1.8M ABOVE THE GROUND.
- TREES WITH OPEN SCARS ARE NOT ACCEPTABLE.
- KEEP ALL ROOTS AND ROOTBALLS MOIST PRIOR TO PLANTING.

PLANT MATERIAL GUARANTEE AND FINAL INSPECTION:

- AT THE COMPLETION OF PLANTING OPERATIONS, REMOVE ALL SURPLUS MATERIAL FROM THE SITE AT NO EXTRA CHARGE TO THE PROJECT.
- MAKE GOOD ALL DAMAGE RESULTING FROM PLANTING OPERATIONS AT NO EXTRA CHARGE TO THE PROJECT.
- PLANT MATERIAL SHALL BE GUARANTEED FOR A MINIMUM OF TWO YEARS FROM THE ISSUE DATE OF THE CERTIFICATE OF COMPLETION.
- ALL PLANTS SHALL BE INSPECTED TWICE, ONCE HALFWAY THROUGH THE GUARANTEE PERIOD, AND AGAIN AT THE END OF THE GUARANTEE PERIOD. PLANTS WHICH, AT THAT TIME, ARE NOT IN HEALTHY VIGOROUS GROWING CONDITION, TO THE CONSULTANT'S APPROVAL, SHALL BE REPLACED AT NO EXTRA CHARGE TO THE PROJECT.
- CONTRACTOR TO CONTACT CONTRACT ADMINISTRATOR AND/OR APPROVAL AGENCY/MUNICIPALITY TO REVIEW PROJECT FOR GUARANTEE INSPECTIONS.

SODDING NOTES:

- ALL SOD SHALL BE GUARANTEED FOR 3 MONTHS FROM DATE OF SUBSTANTIAL PERFORMANCE.
- SODDING SHALL CONFORM TO LANDSCAPE ONTARIO'S 'GENERAL LANDSCAPE SPECIFICATIONS'.
- TOPSOIL SHALL BE EVENLY SPREAD OVER SUB-GRADE AND LOOSELY COMPACTED TO 150mm MINIMUM DEPTH.
- ALL STONES AND DEBRIS OVER 25mm DIA. SHALL BE REMOVED.
- TOPSOIL SHALL BE SUPPLEMENTED WITH A 10-6-4 FERTILIZER AND 20% SUPERPHOSPHATE APPLIED AT A RATE OF 5 KILOS PER 100 SQUARE METRES EACH, PRIOR TO PLACEMENT OF SOD.
- SOD SHALL BE PLACED WITH STAGGERED BUTT JOINTS, WATERED THOROUGHLY, AND ROLLED WHEN DRY.
- LAY SOD SECTIONS PERPENDICULAR ON SLOPES GREATER THAN 3:1 AND SECURE WITH WOODEN PEGS. WOODEN PEGS TO BE 17 X 17 X 300mm. PLACE PEGS 3 PER SQUARE METRE, 100mm BELOW TOP EDGE TO PREVENT SHIFTING OF SOD AND DRIVE PEGS FLUSH WITH TOP OF SOD SOIL. PROVIDE A MINIMUM OF 2 STAKES PER ROLL OF SOD.
- MAINTAIN SODDED AREA FROM THE TIME OF INSTALLATION UNTIL THIRTY (30) CALENDAR DAYS AFTER ALL SODDED AREAS HAVE BEEN INSPECTED BY THE CONTRACT ADMINISTRATOR AND A CERTIFICATE OF COMPLETION IS ISSUED. MINIMUM OF TWO CUTS.
- MAINTENANCE SHALL INCLUDE ALL NECESSARY MEASURES TO ESTABLISH AND MAINTAIN GRASS IN A HEALTHY, VIGOROUS GROWING CONDITION.
- MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING WORK:
  a. MOWING AT BI-WEEKLY INTERVALS TO MAINTAIN A MAXIMUM HEIGHT OF 60MM. HOWEVER SCHEDULE AND QUANTITY OF MOWING OCCURRENCES TO BE SUBMITTED AND APPROVED EACH MONTH BY CONTRACT ADMINISTRATOR. DO NOT CUT MORE THAN 1/3 OF THE GRASS HEIGHT AT ANY ONE MOWING. TRIM AND CLIP EDGES. REMOVE CLIPPINGS AFTER MOWING AND TRIMMING.
  b. WATERING WHEN REQUIRED IN SUFFICIENT QUANTITIES AND AT A FREQUENCY TO PREVENT SOD FROM DRYING OUT AND TO MAINTAIN SOIL UNDER SOD CONTINUOUSLY MOIST TO A DEPTH OF 75 TO 100MM.
  c. FERTILIZE SODDED AREAS ONE MONTH AFTER SODDING WITH 2:1:1 RATIO FERTILIZER. SPREAD EVENLY AT A RATE AS PER MANUFACTURER'S INSTRUCTIONS AND WATER IN WELL, WITH A MINIMUM OF 50CM INFILTRATION AS PREVIOUSLY MENTIONED.

TOPSOIL PLANTING BED PREPARATION:

- MIX TOPSOIL AS RECOMMENDED BY SOIL TEST RESULTS AND RECOMMENDATIONS OF SOIL TESTING AGENCY. IF TESTED NATIVE SOIL IS NOT SUFFICIENT FOR PLANTING SOIL MIX DO NOT USE.
- TOPSOIL SHALL NOT BE USED TO CONSTRUCT PERMANENT BERMS.
- ALL TOPSOIL SHOULD BE FREE OF SUBSOILS, CLAY, STONES, ROOTS, EXCESS WATER, FROST AND OTHER EXTRANEOUS MATTER.
- PREPARE PLANTING BEDS PRIOR TO ARRIVAL OF PLANT MATERIAL ON SITE.

EXCAVATE PER PLANTING DETAILS. THE FOREGOING PROPORTIONS ARE SUBJECT TO CHANGE UPON RECEIPT OF TOPSOIL ANALYSIS.
PREPARE PLANTING SOIL BY EVENLY MIXING:

- 5 PARTS NATIVE SOIL
- 1 PART SHARP SAND
- 2 PARTS $\frac{1}{4}$" SCREENED COMPOST
- 500g OF BONE MEAL PER CUBIC METRE.
- MIX THOROUGHLY

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	KGB
E	ISSUED FOR TENDER	2019-01-07	KGB
D	REISSUED AS TENDER READY	2018-08-27	JDKA
C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	JS
A	ISSUED FOR 60% REVIEW	2017-12-21	PR

NOTES/LEGEND

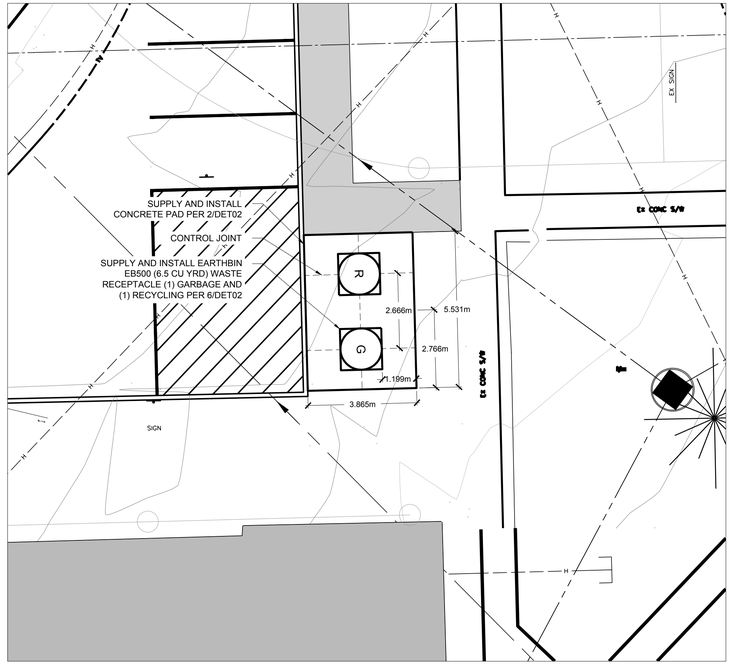
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DESIGN P.R.
CHECKED BY A.G.
APPROVED BY A.G.

Brock University

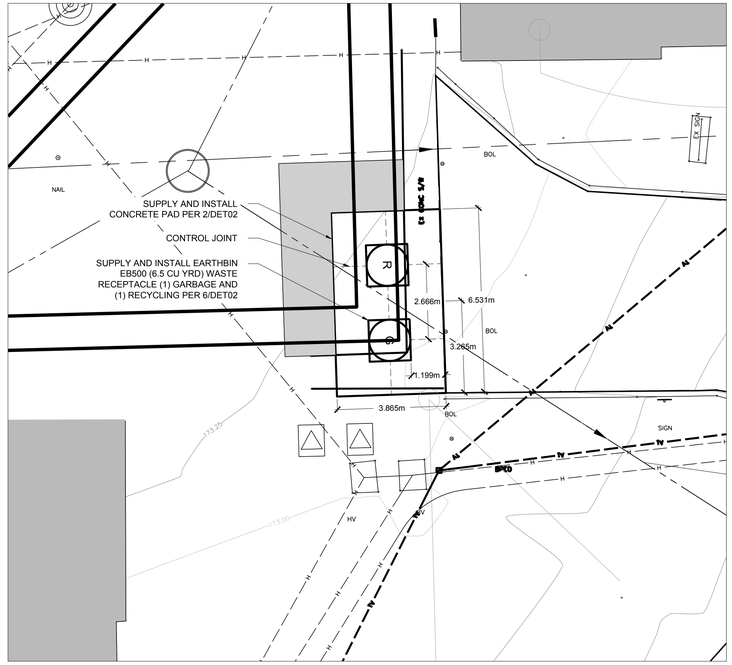
ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PLANTING DETAILS

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor : AS SHOWN Ver :
REF. No. ***DB18-13***
DWG No. ***DET04*** REV. ***G***

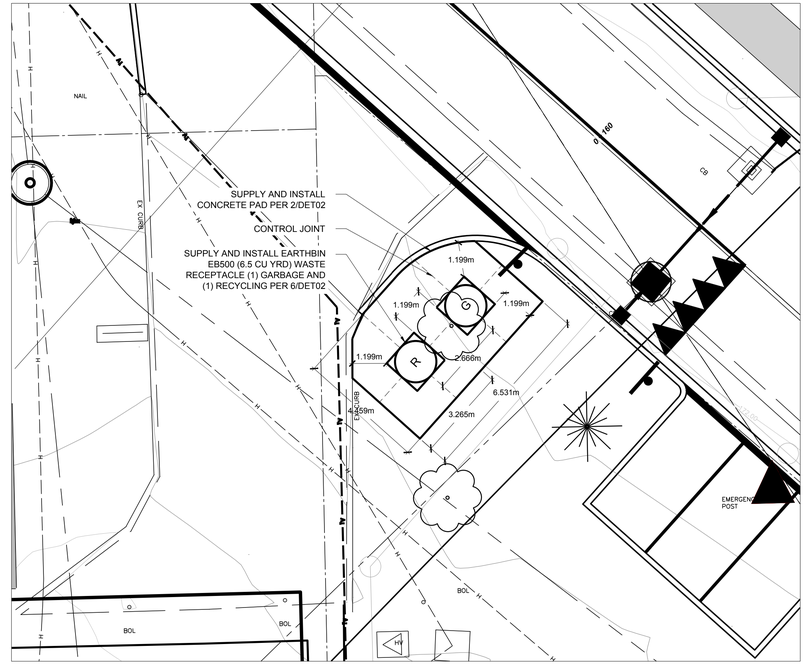
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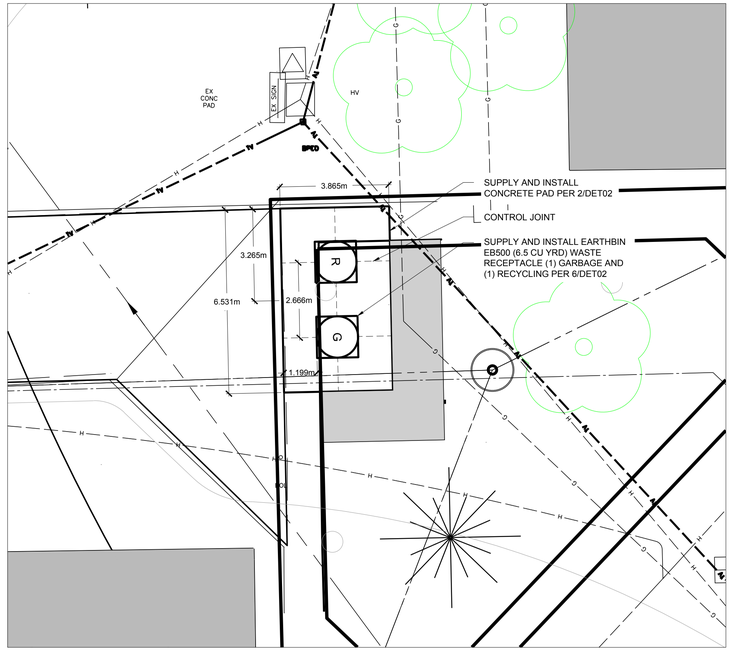
31 DET05 EARTHBIN EB500 (6.5 CU YRD) with CONCRETE PAD (SPORTS FIELDS) Scale: 1:100



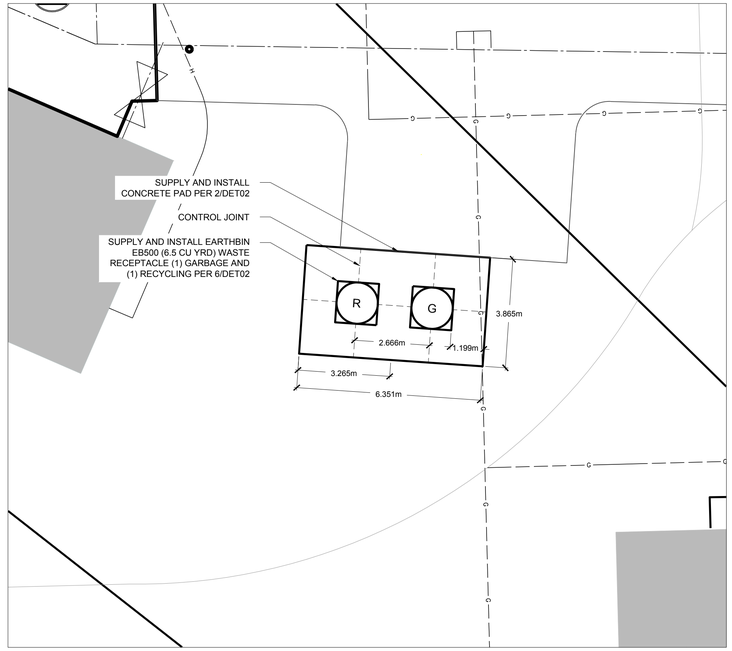
32 DET05 EARTHBIN EB500 (6.5 CU YRD) with CONCRETE PAD (VILLAGE RESIDENCE NORTH) Scale: 1:100



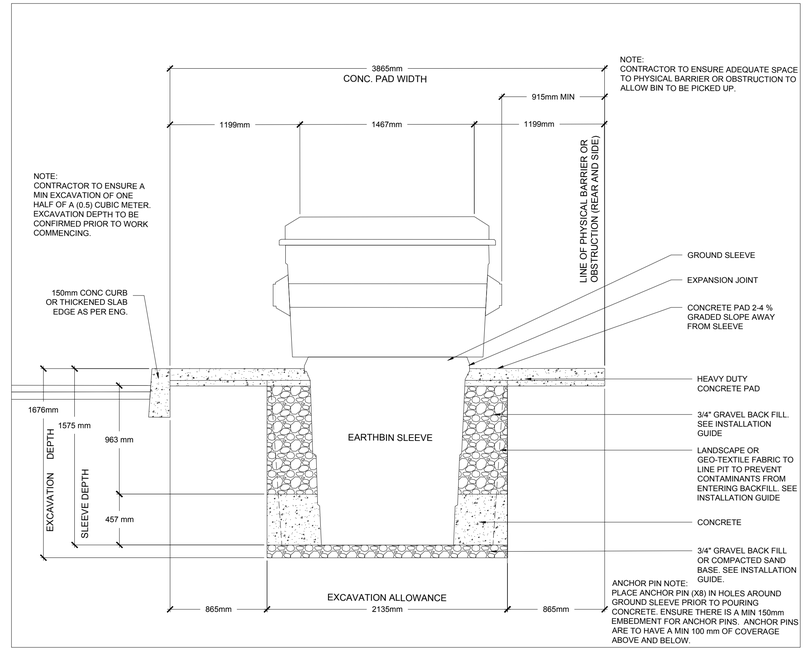
33 DET05 EARTHBIN EB500 (6.5 CU YRD) with CONCRETE PAD (VILLAGE RESIDENCE CENTRAL) Scale: 1:100



34 DET05 EARTHBIN EB500 (6.5 CU YRD) with CONCRETE PAD (CAFETERIA) Scale: 1:100



35 DET05 EARTHBIN EB500 (6.5 CU YRD) with CONCRETE PAD (VILLAGE RESIDENCE SOUTH) Scale: 1:100



36 DET05 EARTHBIN EB500 (6.5 CU YRD) with CONCRETE PAD SECTION DETAIL Scale: NTS

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A	ISSUED FOR 60% REVIEW	2017-12-21	PR

NOTES/LEGEND

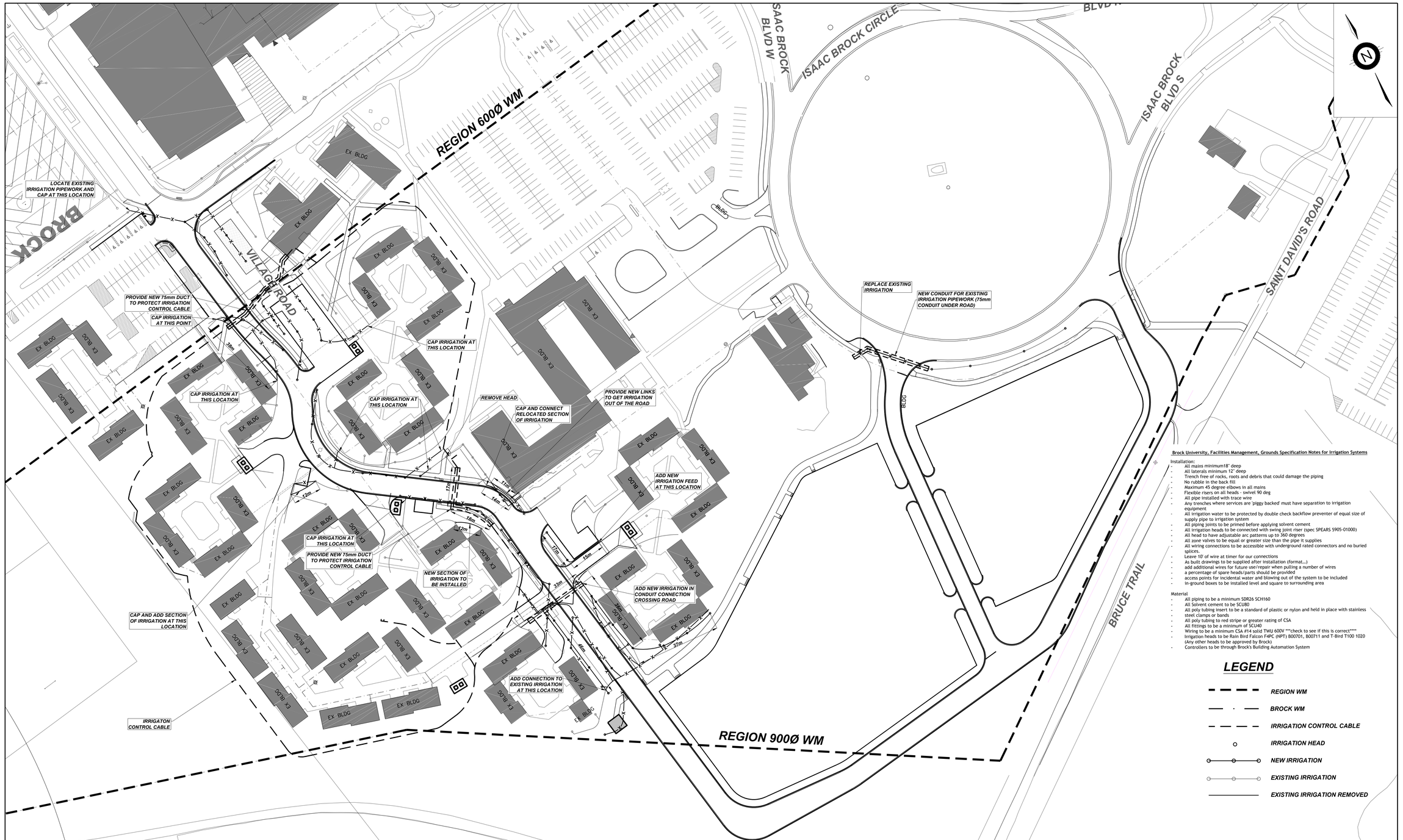
DRAFTING	P.R.
DESIGN	P.R.
CHECKED BY	A.G.
APPROVED BY	A.G.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
FURNISHING DETAILS

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : AS SHOWN Ver :
REF. No.	DB18-13
DWG No.	DET05
REV.	G

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\2.0 Civil\171-13732-00-C-NOTES AND DETAILS.dwg PLOTTED: Apr 10, 2019 - 9:50pm PLOTTED BY: joel.ackland



Brock University, Facilities Management, Grounds Specification Notes for Irrigation Systems

Installation:
- All mains minimum18" deep
- All laterals minimum 12" deep
- Trench free of rocks, roots and debris that could damage the piping
- No rubble in the back fill
- Maximum 45 degree elbows in all mains
- Flexible risers on all heads - swivel 90 deg
- All pipe installed with trace wire
- Any trenches where services are 'piggy backed' must have separation to irrigation equipment
- All irrigation water to be protected by double check backflow preventer of equal size of supply pipe to irrigation system
- All piping joints to be primed before applying solvent cement
- All irrigation heads to be connected with swing joint riser (spec SPEARS 5905-01000)
- All head to have adjustable arc patterns up to 360 degrees
- All zone valves to be equal or greater size than the pipe it supplies
- All wiring connections to be accessible with underground rated connectors and no buried splices.
- Leave 10' of wire at timer for our connections
- As built drawings to be supplied after installation (format....)
- add additional wires for future use/repair when pulling a number of wires
- a percentage of spare heads/parts should be provided
- access points for incidental water and blowing out of the system to be included
- in-ground boxes to be installed level and square to surrounding area

Material
- All piping to be a minimum SDR26 SCH160
- All Solvent cement to be SCU80
- All poly tubing insert to be a standard of plastic or nylon and held in place with stainless steel clamps or bands
- All poly tubing to red stripe or greater rating of CSA
- All fittings to be a minimum of SCU40
- Wiring to be a minimum CSA #14 solid TWU 600V ***check to see if this is correct****
- Irrigation heads to be Rain Bird Falcon F4PC (NPT) B00701, B00711 and T-Bird T100 1020 (Any other heads to be approved by Brock)
- Controllers to be through Brock's Building Automation System

LEGEND

- REGION WM
- BROCK WM
- IRRIGATION CONTROL CABLE
- IRRIGATION HEAD
- NEW IRRIGATION
- EXISTING IRRIGATION
- EXISTING IRRIGATION REMOVED

FOR ROAD SERVICING INFORMATION REFER TO PLAN & PROFILES

NO.	REVISION	DATE	INIT.
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C	ISSUED AS TENDER READY	2018-04-27	JS
B	ISSUED FOR 90% REVIEW	2018-02-23	RL
A	ISSUED FOR 60% REVIEW	2017-12-21	RL

NOTES/LEGEND
1 THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

2 PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

DRAFTING	R.L.
DESIGN	D.R.
CHECKED BY	K.G.B.
APPROVED BY	K.G.B.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
IRRIGATION PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:750 Ver :
REF. No.	DB18-13
DWG No.	IP01
REV.	G

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TREE PRESERVATION NOTES AND GUIDELINES

ESTABLISHMENT OF TREE PROTECTION ZONE (TPZ):

- TREE PRESERVATION MEASURES, INCLUDING THE ESTABLISHMENT OF TREE PROTECTION ZONE (TPZ) SHALL APPLY TO THE VEGETATION IDENTIFIED TO BE RETAINED AND PROTECTED. THE TREE PROTECTION ZONE SHALL CONSIST OF TREE PROTECTION FENCING AS PER CITY OF ##### STANDARD SD-90A AND SD-90C, PLACED AT THE DRIPLINE OF VEGETATION TO BE PRESERVED. REFER TO DETAILS ON THIS SHEET.
- NO GRADE CHANGES SHALL OCCUR WITHIN TREE PROTECTION ZONE. IN THE EVENT THAT GRADE CHANGES OCCUR EITHER AS A CUT OR FILL SITUATION, THE CONSULTING ARBORIST MUST BE NOTIFIED SO THAT PRECAUTIONS TO PRESERVE THE TREE CAN BE DETERMINED PRIOR TO THE PLACEMENT OF FILL OR EXCAVATION ACTIVITIES.
- EVERY PRECAUTION MUST BE TAKEN TO PREVENT DAMAGE TO TREES AND ROOT SYSTEMS FROM DAMAGE, COMPACTION AND CONTAMINATION RESULTING FROM THE CONSTRUCTION TO THE SATISFACTION OF THE CONSULTING ARBORIST.
- TREES THAT REQUIRE PRUNING TO PERMIT CONSTRUCTION ACTIVITIES WILL BE DONE SO IN ACCORDANCE WITH GOOD ARBORICULTURAL PRACTICES. IN THE EVENT THAT IT IS NECESSARY TO REMOVE ADDITIONAL LIMBS OR PORTIONS OF TREES, AFTER CONSTRUCTION HAS COMMENCED, TO ACCOMMODATE CONSTRUCTION, THE CONSULTING ARBORIST IS TO BE INFORMED AND UNDER THEIR DIRECTION THE REMOVAL IS TO BE EXECUTED CAREFULLY AND IN FULL ACCORDANCE WITH ARBORICULTURAL TECHNIQUES, BY A CERTIFIED ARBORIST.
- ANY DAMAGE TO TREES SUCH AS BROKEN LIMBS, DAMAGE TO ROOTS, OR WOUNDS TO THE MAIN TRUNK OR STEM SYSTEMS ARE TO BE REPORTED TO THE CONSULTING ARBORIST SO THAT THE DAMAGE CAN BE ASSESSED IMMEDIATELY AND MITIGATION CAN BE PROMPTLY IMPLEMENTED.

TREE PROTECTION ZONE:

APPLIES TO TREES LOCATED THE LIMIT OF GRADING OR NOTED OTHERWISE. THESE TREES ARE TO BE PRESERVED AND WILL HAVE SILT / TREE PROTECTION FENCING INSTALLED AT ALONG THE LIMIT OF GRADING / LIMIT OF WORK TO ESTABLISH THE TREE PROTECTION ZONE. ANY DAMAGE TO TREES SUCH AS BROKEN LIMBS, DAMAGE TO ROOTS, OR WOUNDS TO THE MAIN TRUNK OR STEM SYSTEMS ARE TO BE REPORTED TO THE CONSULTING ARBORIST SO THAT THE DAMAGE CAN BE ASSESSED IMMEDIATELY AND MITIGATION CAN BE PROMPTLY IMPLEMENTED. WITHIN A TREE PROTECTION ZONE THERE IS TO BE:

- NO CONSTRUCTION
- NO ALTERING OF GRADE BY ADDING FILL, EXCAVATING, TRENCHING, SCRAPING, DUMPING OR DISTURBANCE OF ANY KIND.
- NO STORAGE OF CONSTRUCTION MATERIALS, EQUIPMENT, SOIL, CONSTRUCTION WASTE OR DEBRIS WITHIN THE DRIP LINE
- NO MOVEMENT OF VEHICLES, EQUIPMENT
- NO PARKING OF VEHICLES OR MACHINERY
- NO DIGGING, BORING
- NO RIGGING CABLES SHALL BE WRAPPED AROUND OR INSTALLED IN TREES
- NO CONTAMINANTS WILL BE PLACED OVER ROOT SYSTEM
- NO CONTAMINANTS WILL BE DUMPED OR FLUSHED WHERE FEEDER ROOTS OF TREES EXIST

WORK WITHIN A TREE PROTECTION ZONE:

IF WORK MUST BE CONDUCTED WITHIN A TREE PROTECTION ZONE THE CONTRACTOR SHOULD MINIMIZE SOIL COMPACTION AND MECHANICAL ROOT DAMAGE BY UTILIZING ONE OF THE FOLLOWING FOUR METHODS:

1. APPLYING 150-300mm OF MULCH TO AREA. UPON COMPLETION REMOVE EXCESS MULCH LEAVING A 100mm DEPTH LAYER OF MULCH.
2. LAYING 20mm THICK PLYWOOD OR 100X100mm WOOD BEAMS OVER A 100+MM THICK LAYER OF WOOD CHIP MULCH. UPON COMPLETION REMOVE PLYWOOD AND LEAVE MULCH LAYER IN PLACE.
3. APPLYING 100-150mm DEPTH OF GRAVEL OVER A TAUT, STAKED GEOTEXTILE FABRIC. UPON COMPLETION REMOVE GRAVEL AND GEOTEXTILE.
4. PLACING COMMERCIAL LOGGING OR ROAD MATS ON TOP OF A MULCH LAYER. UPON COMPLETION REMOVE MATS. STONE, GEOTEXTILE, AND MULCH EXCEEDING 100mm THICK WILL BE REMOVED FROM THE TREE PRESERVATION AREA ONCE THE THREAT OF SOIL OR ROOT DAMAGE HAS PASSED.

TREE PRESERVATION AND PROTECTION RECOMMENDATIONS:

THE SURVIVAL RATES FOR TREES, WHICH ARE IN PROXIMITY TO CONSTRUCTION SITES ARE DEPENDENT ON THE RESULTANT CHANGES TO A VARIETY OF ENVIRONMENTAL AND ANTHROPOGENIC FACTORS. THESE CONSTRUCTION ACTIVITIES BRING ABOUT CHANGES TO A VARIETY OF ENVIRONMENTAL FEATURES INCLUDING THE EXISTING MICROCLIMATE INCLUDING WINDS, TEMPERATURE, SOIL MOISTURE, AMOUNT OF AVAILABLE SUNLIGHT, SOIL QUALITY, AND THE LEVEL OF THE WATER TABLE. INCREASED HUMAN ACTIVITIES MAY ALSO DAMAGE THE STRUCTURE AND / OR PHYSIOLOGICAL ACTIVITIES OF THE TREES. THE FULL EFFECTS OF THE DAMAGE MAY NOT APPEAR UNTIL SEVERAL YEARS AFTER ITS OCCURRENCE. THUS, IT IS ESSENTIAL THAT BOTH VEGETATIVE CLEARING AND PRESERVATION METHODS FOLLOW THE GUIDELINES BELOW AND THOSE GENERALLY ACCEPTED AS KEEPING WITH GOOD HORTICULTURAL AND CONSTRUCTION PRACTICES. THE GUIDELINES ARE SUBJECT TO ADJUSTMENTS DEEMED REASONABLE AND APPROPRIATE CONSIDERING THE PROXIMITY AND NUMBER OF TREES INVOLVED AND THE SITE-SPECIFIC SERVICING REQUIREMENT.

GENERAL RECOMMENDATIONS:

- ALL TREES WITHIN THE TREE PRESERVATION ZONE MUST BE LEFT STANDING. THE TREE REMOVALS MUST BE COORDINATED & CLEARED AS WORKS ARE WITHIN THE BIRD NESTING SEASON, **MARCH 31 TO SEPTEMBER 1**.
- ALL REMOVALS MUST BE FELLED INTO THE WORK AREA TO ENSURE THAT DAMAGE DOES NOT OCCUR TO THE TREES WITHIN THE TREE PRESERVATION ZONE.
- UPON COMPLETING OF THE TREE REMOVALS, ALL FELLED TREES ARE TO BE CHIPPED.
- TREE PROTECTION FENCING / SILT FENCE MUST BE INSTALLED AS PER THE CITY OF GUELPH STANDARD SILT FENCE DETAIL AND AS SHOWN ON THE APPROVED MUNICIPAL ENGINEERING PLAN. UPON INSTALLATION OF THE FENCING, THE CONTRACTOR WILL CONTACT THE CONSULTING ARBORIST TO REVIEW AN APPROVE THE FENCING AND ITS LOCATION PRIOR TO COMMENCEMENT OF ANY GRADING WORK.
- AREAS WITHIN THE TREE PRESERVATION ZONE ARE NOT TO BE USED FOR ANY TYPE OF STORAGE (E.G. STORAGE OF DEBRIS, CONSTRUCTION MATERIAL, SURPLUS SOILS, AND CONSTRUCTION EQUIPMENT). NO TRENCHING OR TUNNELLING FOR UNDERGROUND SERVICES SHALL BE LOCATED WITHIN THE TREE PROTECTION ZONE OR DRIPLINE OF TREES DESIGNATED FOR PRESERVATION WITHIN OR ADJACENT TO THE CONSTRUCTION ZONE.

ROOT PRUNING:

AT THE COMMENCEMENT OF CONSTRUCTION PRUNE ROOTS CLEANLY USING ACCEPTABLE ARBORICULTURAL PRACTICES AND IMMEDIATELY BACKFILL WITH APPROPRIATE MATERIAL. ROOTS OVER 2.5cm DIAMETER THAT ARE TO BE CUT SHOULD BE PRUNED RATHER THAN LEFT TORN OR CRUSHED. THE FOLLOWING ARE GENERAL METHODS OF ROOT PRUNING:

1. SOIL EXCAVATION USING SUPERSONIC AIR TOOLS, PRESSURIZED WATER OR HAND TOOLS, FOLLOWED BY SELECTIVE ROOT CUTTING
2. CUTTING THROUGH THE SOIL ALONG A PREDETERMINED LINE ON THE SURFACE USING TOOL SPECIFICALLY DESIGNED TO CUT ROOTS
3. MECHANICALLY EXCAVATING (e.g. BACKHOE) THE SOIL AND PRUNING WHAT IS LEFT OF THE EXPOSED ROOTS.
4. CUTS TO BE MADE WITH HAND PRUNING SHEARS, BY-PASS BLADE, PRUNING SAW. DO NOT USE ANVIL TYPE PRUNERS.

PRUNING PRACTICES:

- ALL LIMBS DAMAGED OR BROKEN DURING THE COURSE OF CONSTRUCTION SHOULD BE PRUNED CLEANLY, UTILIZING BY-PASS SECATEURS IN ACCORDANCE WITH APPROVED HORTICULTURAL PRACTICES. SHOULD THERE BE A POTENTIAL RISK OF TRANSFER OF DISEASE FROM INFECTED TO NON-INFECTED TREES, TOOLS MUST BE DISINFECTED AFTER PRUNING EACH TREE BY DIPPING IN METHYL HYDRATE. THIS PRACTICE IS PARTICULARLY IMPORTANT DURING PERIODS OF TREE STRESS AND WHEN PRUNING MANY MEMBERS OF THE SAME GENERA, WITHIN WHICH A DISEASE COULD BE SPREAD QUICKLY (I.E., VERTICILLIUM WILT ON MAPLES OR FIRE BLIGHT ON GENERA OF THE ROSACEA FAMILY).
- DURING EXCAVATION OPERATIONS IN WHICH THE ROOT AREA IS AFFECTED, THE CONTRACTOR IS TO PRUNE ALL EXPOSED ROOTS CLEANLY. PRUNED ROOT ENDS ARE TO BE NEATLY AND SQUARELY TRIMMED AND THE AREA IS TO BE BACKFILLED WITH CLEAN NATIVE FILL AS SOON AS POSSIBLE TO PREVENT DESICCATION AND PROMOTE ROOT GROWTH. THE EXPOSED ROOTS SHOULD NOT BE ALLOWED TO DRY OUT, AND THE CONTRACTOR SHALL DISCUSS WATERING OF THE ROOTS WITH THE CONSULTING ARBORIST SO THAT THE ROOTS SHALL MAINTAIN OPTIMUM SOIL MOISTURE DURING CONSTRUCTION AND BACKFILLING OPERATIONS, YET SO NOT TO INTERFERE WITH CONSTRUCTION OPERATIONS. BACKFILLING MUST BE WITH CLEAN UNCONTAMINATED TOPSOIL FROM AN APPROVED SOURCE. TEXTURE MUST BE COARSER THAN EXISTING SOILS, AND TO COME INTO CLEAN CONTACT WITH EXISTING SOILS (REMOVE AIR POCKETS, SOD, ETC.)
- ALL PRUNING CUTS SHOULD BE MADE TO A GROWING POINT SUCH AS A BUD, TWIG OR BRANCH, CUT JUST OUTSIDE THE BRANCH COLLAR (THE SWOLLEN AREA AT THE BASE OF THE BRANCH THAT SOMETIMES HAS A BARK RIDGE), AND PERPENDICULAR TO THE BRANCH BEING PRUNED RATHER THAN AS CLOSE TO THE TRUNK AS POSSIBLE. THIS MINIMIZES THE SITE OF THE WOUND. NO STUBS SHOULD BE LEFT. POOR CUT LOCATION, POOR CUT ANGLE AND TORN CUTS ARE NOT ACCEPTABLE.
- TREE ROOTS SHOULD NOT BE EXCAVATED WITHIN THE CRITICAL STRUCTURAL ROOTING AREA. THIS IS THE MINIMUM AREA OF THE ROOT SYSTEM NECESSARY TO MAINTAIN VITALITY OR STABILITY OF THE TREE. TYPICALLY THIS AREA EXTENDS TO THE DRIPLINE OF THE TREE. THE SEVERING OF ONE ROOT CAN CAUSE APPROXIMATELY 5-20% LOSS OF THE ROOT SYSTEM. A REDUCTION OF THIS AREA BY GREATER THAN 30% CAN POSE STABILITY CONCERNS FOR THE TREE.
- A SLOW RELEASE FERTILIZER EG: BONE MEAL OR APPROVED EQUAL TO BE APPLIED TO TREES WHERE ROOT PRUNING OR ROOT DAMAGE HAS OCCURRED. APPLY PER MANUFACTURER'S RECOMMENDATIONS
- EXTENSIVE PRUNING IS BEST COMPLETED BEFORE PLANTS BREAK DORMANCY. PRUNING SHOULD BE LIMITED TO THE REMOVAL OF NO MORE THAN ONE THIRD (1/3) OF THE TOTAL BUD AND LEAF BEARING BRANCHES. PRUNING SHOULD INCLUDE THE CAREFUL REMOVAL OF:
  - DEADWOOD,
  - BRANCHES THAT ARE WEAK, DAMAGED, DISEASED AND THOSE WHICH WILL INTERFERE WITH CONSTRUCTION ACTIVITY,
  - SECONDARY LEADERS OF CONIFERS,
  - TRUNK AND ROOT SUCKERS,
  - TRUNK WATERSPOUTS, AND
  - TIGHT V-SHAPED OR WEAK CROTCHES (INCLUDED UNIONS).

THE CONTRACTOR MUST IMMEDIATELY REPORT ANY DAMAGE TO TREES SUCH AS BROKEN LIMBS, DAMAGE TO ROOTS, OR WOUNDS TO THE MAIN TRUNK OR STEM SYSTEMS SO THAT THE DAMAGE CAN BE ASSESSED IMMEDIATELY.

THE TREE PROTECTION FENCING WILL BE MAINTAINED UNTIL ALL CONSTRUCTION IS COMPLETED, SOILS ARE STABILIZED AND ALL OF THE EQUIPMENT HAS BEEN REMOVED FROM THE SITE.

TREE INJURY:

TYPICALLY TREE ROOTS EXTEND 1.5 TO 3 TIMES BEYOND THE DRIPLINE OF THE TREE AND ARE WITHIN THE TOP 150mm OF THE SOIL. TYPES OF DAMAGE FROM CONSTRUCTION INCLUDE:

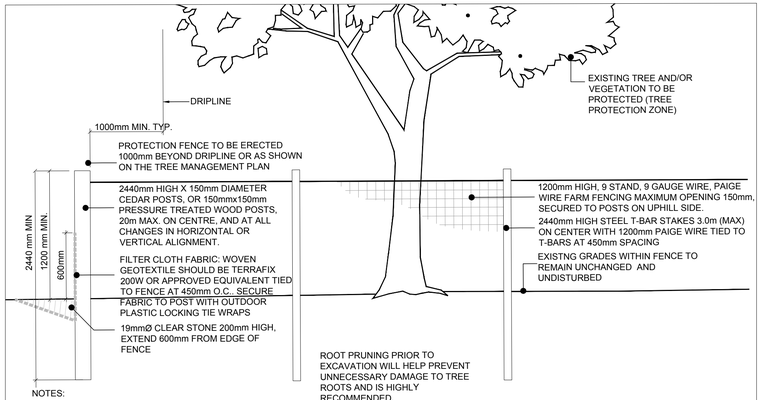
- PHYSICAL INJURY
- SOIL COMPACTION
- SEVERING OF ROOTS
- SMOTHERING OF ROOTS
- SPLIT OR BROKEN BRANCHES
- EXCESSIVE PRUNING

SOIL COMPACTION REDUCES PORE SPACE, OXYGEN AVAILABLE TO ROOTS INCREASES CARBON DIOXIDE ACCUMULATION, RESTRICTS ROOT GROWTH AND THE ABILITY TO ABSORB WATER AND NUTRIENTS, AS WELL AS IMPAIRS DRAINAGE.
SMOTHERING OF ROOTS: 90% OF FINE ABSORBING ROOTS ARE WITHIN THE UPPER 150-300mm OF THE SOIL. SMOTHERING WITH THE ADDITION OF SOIL CAN KILL THE ROOTS AND STRESS THE TREE. PHYSICAL INJURY, SPLIT OR BROKEN BRANCHES HINDER THE TREES ABILITY TO COMPARTMENTALIZE (CLOSE) WOUNDS PROPERLY.

TREE TRANSPLANTING AND WATERING REQUIREMENTS

TRANSPLANT PLANT MATERIAL TO FINAL PLANTING LOCATION AS INDICATED ON PLANTING PLAN OR APPROVED ALTERNATE LOCATION BY LANDSCAPE ARCHITECT/ARBORIST.

- TRANSPLANT SCHEDULE: THE OPTIMUM TIME FOR TRANSPLANTING TREES IS DURING THE COOLER MONTHS IN SPRING AND EARLY FALL.
- PLANT PIT PREPARATION: SPADE HOLE USING SAME SPADE SIZE THAT WILL BE USE TO EXTRACT THE TREE AND PLACE SPADED TREE DIRECTLY IN RECIPIENT SITE. THIS IS THE PREFERRED METHOD. ALTERNATELY PITS MAY BE EXCAVATED: REMOVE ALL DEBRIS, STONES, ETC., FROM PITS. PLACE PLANTING SOIL IN PIT AND THOROUGHLY FIRM TO A LEVEL UPON WHICH PLANT WILL REST AT PROPER ELEVATION.
- PIT SIZES:
  1. BALLS LESS THAN 900MM IN DIAMETER: 2 TIMES WIDTH OF BALL AND 225MM DEEPER THAN BALL.
  2. BALLS OVER 900MM DIAMETER: THE WIDTH OF THE BALL PLUS 900MM AND AT LEAST 225MM DEEPER THAN BALL.
  3. SLOPES: MEASURE PIT SIZES ON SLOPES FROM THE LOWER SIDE.
- PLANTING LAYOUT: PROVIDE STAKES AND STAKE OUT ALL TREE LOCATIONS AND PLANTING AREAS. OBTAIN LAYOUT APPROVAL FROM THE LANDSCAPE ARCHITECT/ARBORIST PRIOR TO COMMENCING WORK.
- SETTING PLANTS:
  1. ONE TO TWO DAYS PRIOR TO TRANSPLANTING, THE TREE SHOULD BE WATERED SO THAT THE SOIL IS SATURATED TO A MINIMUM 300MM DEPTH.
  2. SET PLANTS PLUMB AND AT A LEVEL SO THAT AFTER SETTLEMENT THEY BEAR THE SAME GROUND LEVEL RELATIONSHIP AS BEFORE THEY WERE DUG.
  3. PLACE SPADED TREE DIRECTLY INTO HOLE CUT WITH THE SAME SIZE OF TREE SPADE, NO BACKFILLING OR COMPACTING REQUIRED WITH THIS APPROACH. IF EXCAVATING, BACKFILL PITS TO 1/3 DEPTH OF BALL COMPACTING IN LAYERS NOT EXCEEDING 100MM. REMOVE BURLAP AND ADJUST TO AVOID AIR POCKETS. COMPLETE BACKFILL AND SETTLE WITH WATER.
  4. AFTER TRANSPLANTING, THE TREE SHOULD BE WATERED SO THAT THE SOIL IS SATURATED TO A MINIMUM 300MM DEPTH. AFTER THAT, THE TREE SHOULD BE WATERED REGULARLY TO MAINTAIN HEALTH. WHEN POSITIONED IN THE NEW PLANTING PIT, THE TREE SHOULD BE ABOUT 50-75MM ABOVE GRADE TO ALLOW FOR FUTURE SETTLEMENT.
- MULCHING: SPREAD 100MM SHREDDED BARK MULCH OVER FINISHED SURFACE OF EACH PLANT, PLANT BED OR HEDGE TRENCH - WATER PLANTS THOROUGHLY AFTER MULCHING.THE TRANSPLANTED TREE SHOULD BE MULCHED TO A DEPTH OF 100-150MM WITH SHREDDED CONIFEROUS BARK, WITH THE MULCH OFFSET A DISTANCE OF 150MM FROM THE TRUNK. THE MULCH SHOULD BE SPREAD AN AVERAGE OF 100MM PAST THE EDGE OF THE ROOT BALL.
- STAKING: SET TREE STAKES INTO SOLID GROUND BELOW BOTTOM OF PLANT BEFORE BACKFILLING. PLACE STAKES AT THE OUTER EDGE OF THE ROOTS OR BALL IN LINE WITH THE PREVAILING WIND AT A 10 DEGREE ANGLE FROM THE TREE TRUNK THE TRANSPLANTED TREE SHOULD BE STAKED UNTIL THE TREE ROOTS ARE RE-ESTABLISHED, WITH STAKES POSITIONED TO BUTTRESS AGAINST THE PREVAILING WIND.
- WRAPPING: WRAP ALL DECIDUOUS TREES WITHIN 4 DAYS AFTER TRANSPLANTING. WRAPPING MATERIAL FOR TREE TRUNKS SHALL BE NEW BURLAP, AT LEAST 270 G/M2 IN WEIGHT AND NOT LESS THAN 150 MM NOR MORE THAN 250 MM IN WIDTH, OR A HEAVY WATERPROOF CREPE PAPER NOT LESS THAN 100 MM NOR MORE THAN 150 MM WIDE. TREES SHOULD NOT BE TRANSPLANTED ON HOT AND WINDY DAYS. THE FOLIAGE SHOULD BE PROTECTED FROM WATER LOSS DURING THE PROCESS BY WRAPPING WITH TARP DURING TRANSPORTATION.
- SURFACE FINISH: FORM A SAUCER AS INDICATED ON DRAWINGS OR AS DIRECTED. GRADE SOIL TO FORM A BASIN ON LOWER SIDE OF SLOPE PLANTINGS, WHICH WILL CATCH AND RETAIN WATER. TOP DRESS ALL BASINS WITH COMMERCIAL FERTILIZER (10-6-4) SPREAD EVENLY AT THE RATE OF 1KG/SQUARE METRE OF PLANT PIT SURFACE. BREAK BASINS BEFORE GROUND FREEZES.
- PRUNING: PRUNE IMMEDIATELY AFTER PLANTING USING SHARP TOOLS APPROVED BY THE LANDSCAPE ARCHITECT. REMOVE APPROXIMATELY 1/3 OF THE WOOD OF DECIDUOUS PLANTS, MAINTAINING THE NATURAL HABIT OF THE PLANT. CUT NO LEADERS. PAINT ALL PRUNING CUTS 3/4 INCH IN DIAMETER OR OVER WITH ANTISEPTIC, WATERPROOF, ADHESIVE AND ELASTIC TREE WOUND PAINT CONTAINING NO KEROSENE, COAL TAR, CREOSOTE OR OTHER MATERIAL HARMFUL TO CAMBIUM OR LIVING TISSUE.
- GUYING: GUY WIRE TIGHTENERS SHALL BE GALVANIZED TURNBUCKLES OR AN ACCEPTABLE MANUFACTURED DEVICE WHICH TWISTS AND LOCKS GUY WIRES. CONNECT MULTI-STEM TREES WITH PROTECTED CONNECTING WIRES MAINTAINING EACH STEMS RELATIONSHIP TO ONE ANOTHER. MAINTAIN ALL GUYS UNTIL END OF GUARANTEE.
- FERTILIZING: TRANSPLANTED TREES WITH A SLOW RELEASE FERTILIZER EG: BONE MEAL OR APPROVED EQUAL. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
- WATERING: TRANSPLANTED TREES TO BE WATERED DAILY FOR THE FIRST WEEK, WEEKLY FOR THE DERATION OF THE GROWING SEASON. CONTRACTOR TO INSTALL SLOW RELEASE WATER BAGS (TREEGATER OR APPROVED EQUAL) ON EACH TREE TO FACILITATE EACH WATERING OCCURRENCE. NO DIRECT SPAY WATERING WILL BE PERMITTED.



NOTES:

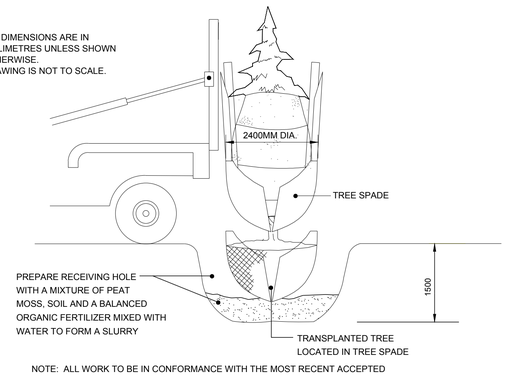
1. ATTACHMENT OF FENCE TO TREES WILL NOT BE PERMITTED.
2. ANY EXPOSED ROOTS ARE TO BE HAND PRUNED TO THE SATISFACTION OF THE PROJECT ARBORIST.
3. UNDER NO CIRCUMSTANCES SHALL ANY CONSTRUCTION MATERIALS, EQUIPMENT OR VEHICLES BE PLACED WITHIN THE TREE PROTECTION ZONE.
4. ALL TREE PROTECTION TO BE ERECTED PRIOR TO ANY CONSTRUCTION ACTIVITY AND IS TO REMAIN IN PLACE UNTIL ALL CONSTRUCTION HAS BEEN COMPLETED. OBTAIN WRITTEN APPROVAL FROM CONTRACT ADMINISTRATOR PRIOR TO REMOVAL OF FENCING.

1 TM-100 TREE PROTECTION FENCE

NTS

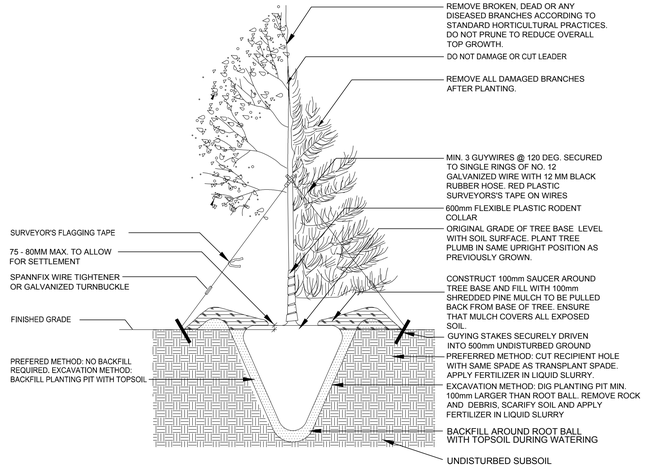
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS SHOWN OTHERWISE.
2. DRAWING IS NOT TO SCALE.



NOTE: ALL WORK TO BE IN CONFORMANCE WITH THE MOST RECENT ACCEPTED HORTICULTURAL PRACTICES, MUNICIPAL STANDARDS AND TO THE APPROVAL OF THE CONSULTANT.

- ACCURATELY CENTRE TREE SPADE FOR REMOVAL OF TREES
- AFTER LIFTING, ROOTS THAT ARE PROTRUDING SHOULD BE PROPERLY REMOVED USING CLEAN, SHARP PRUNING TOOLS
- THE TIME INTERVAL BETWEEN DIGGING AND PLANTING WILL BE KEPT TO A MINIMUM, PARTICULARLY ON HOT, DRY OR WINDY DAYS
- UNDER NO CIRCUMSTANCES WILL PLANTS REMAIN IN SPADES OVER NIGHT
- ALL DRAINAGE CORRECTION SHOULD BE COMPLETED PRIOR TO TRANSPLANTING
- PLANTING HOLES WILL BE DUG WITH THE SAME MACHINE THAT WILL DELIVER THE TREE
- FINAL PLANTING DEPTH SHOULD BE APPROX. 70-80mm HIGHER THAN ORIGINAL PLANTING DEPTH TO FACILITATE PROPER DRAINAGE
- BACKFILL SOIL TO BE SAME OF THAT OF ROOTBALL AND ORIGINAL PLANTING SITE
- ALL PLANT MATERIAL SHOULD BE WATERED AFTER PLANTING TO SUPPLY INITIAL MOISTURE TO ROOTS BUT ALSO TO SETTLE BACKFILL SOIL AND ELIMINATE AIR POCKETS
- ALL PLANT MATERIAL WILL BE MULCHED AT PLANTING
- ALL PLANT MATERIAL WILL BE FERTILIZED AT PLANTING, ESPECIALLY AT UPPER 300mm OF ROOTBALL AND WHERE OUTER ROOTS WERE SEVERED



NOTES
1) DETAIL TO BE READ IN CONJUNCTION WITH STANDARD TREE SPADE PLANTING NOTES ON DWG.
2) PLANT STOCK MOVED WHILE IN LEAF SHALL BE COVERED WHILE IN TRANSIT OR IN TEMPORARY STORAGE.
3) TAMP TOPSOIL WHEN BACKFILLING TO REMOVE AIR POCKETS

2 TM-100 TREE SPADING DETAIL

NTS

NO.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	KGB
F	ISSUED FOR ADDENDUM #1	2019-01-23	A.G.
E	ISSUED FOR TENDER	2019-01-07	A.G.
D	REISSUED AS TENDER READY	2018-08-27	A.G.
C	ISSUED AS TENDER READY	2018-04-27	A.G.
B	ISSUED FOR 90% REVIEW	2018-02-23	A.G.
A	ISSUED FOR 60% REVIEW	2017-12-21	A.G.

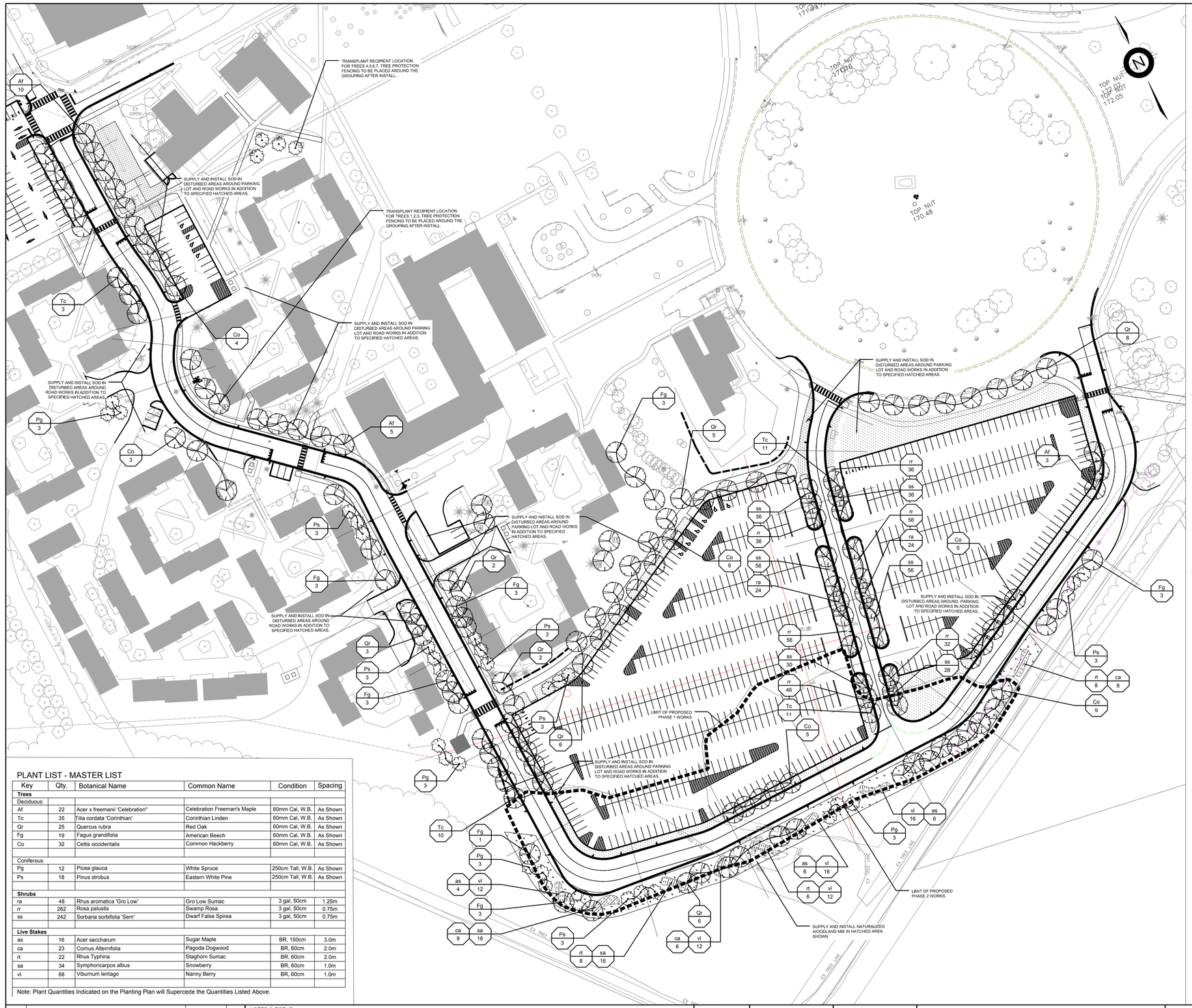
DRAFTING N.M.
DESIGN N.M./A.G.
CHECKED BY P.R.
APPROVED BY A.G.

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
TREE MANAGEMENT NOTES AND DETAILS

CONSULTANT FILE No. 171-13732-00
DATE 2019-01-07
SCALE Hor :
Ver :
REF. No. **DB18-13**
DWG No. **TM-100**
REV. **G**

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\3.0 Landscape\171-13732-00-C-LANDSCAPE_1_8346_0116.sv$.dwg PLOTTED: Apr 10, 2019 - 10:09pm PLOTTED BY: joel.ockland



TERRASEEDING:

TERRASEEDING SHALL BE APPLIED TO ALL AREAS DISTURBED BY THE CONSTRUCTION OPERATION THAT WILL NOT BE COVERED WITH ASPHALT OR MULCH/OTHER PATHWAY SURFACING.
AT TIME OF TERRASEEDING, ALL SURFACE AREAS MUST BE UNIFORMLY GRADED AND SHALL BE FREE OF EROSION, STONES GREATER THAN 50mm IN DIAMETER, WEEDS AND ANY OTHER UNWANTED VEGETATION. EXISTING SURFACE SOIL SHALL BE UNIFORMLY CULTIVATED TO A MINIMUM DEPTH 50mm TO PROVIDE A LOOSE AND FRIABLE SEEDBED TO ACCELERATE GERMINATION OF SEED.

THE BLOWER TRUCK SHALL BE EQUIPPED WITH A COMPUTER-CALIBRATED SEED INJECTION SYSTEM AND SHALL BE CAPABLE OF UNIFORMLY APPLYING COMPOSTED TOPSOIL AND SEED AT A RATE GREATER THAN 0.25 m3 PER MINUTE.
COMPOSTED TOPSOIL SHALL BE PRE-MIXED AND CONSIST OF A MINIMUM 60% COMPOST MATERIAL.

NOTE:

- SEEDING SHALL BE PLACED ON 150mm OF TOPSOIL.
- ALL SEED TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS FOR MULCH, TACKIFIER, AND SPECIFIC SEEDING RATE AND TIMING OF APPLICATION.
- CONTRACTOR TO VERIFY SEEDING RATES RELATIVE TO SOIL TYPE PRIOR TO INSTALLATION OF SEED.
- ALL SEEDING ON SLOPES GREATER THAN 3 (HORIZONTAL) : 1 (VERTICAL) SHALL BE PROTECTED WITH 'SOIL GUARD FIBRE MATRIX' TO MANUFACTURER'S SPECIFICATIONS.

'WOODLAND SEED MIX' (OSC #8275)

5% Beardtongue (Penstemon digitalis)
3% Bebbs Sedge (Carex bebbii)
1% Flat Topped White Aster (Aster umbellatus)
10% Fox Sedge (Carex vulpinoidea)
5% Nodding/Fringed Sedge (Carex crinita)
35% Riverbank Wild Rye (Elymus riparius)
4% Showy Tick Trefoil (Desmodium canadense)
1% Spotted Joe Pye Weed (Eupatorium maculatum)
35% Virginia Wild Rye (Elymus virginicus)
1% White Avens (Geum canadense)

'ECOLAWN' (OSC #8275)

35% Creeping Red Fescue
20% Ecostar Hard Fescue
35% Chewing Fescue
10% Pencnicl Rye

SEED AT RATE OF **"30"**KG/HA. SIMULTANEOUSLY SOW COVER CROP OF ANNUAL RYE GRASS FOR EROSION CONTROL AT A RATE OF 22KG/HA. ALL SEED MIXTURE MANUFACTURED BY 'ONTARIO SEED COMPANY (OSC)' OR APPROVED EQUAL.

ALL PACKING SLIPS MUST BE PROVIDED TO CLIENT PRIOR TO SEED PLACEMENT.

TOPSOIL PLANTING BED PREPARATION:

- MIX TOPSOIL AS RECOMMENDED BY SOIL TEST RESULTS AND RECOMMENDATIONS OF SOIL TESTING AGENCY.
- TOPSOIL SHALL NOT BE USED TO CONSTRUCT PERMANENT BERMS.
- ALL TOPSOIL SHOULD BE FREE OF SUBSOILS, CLAY, STONES, ROOTS, EXCESS WATER, FROST AND OTHER EXTRANEOUS MATTER.
- PREPARE PLANTING BEDS PRIOR TO ARRIVAL OF PLANT MATERIAL ON SITE.

EXCAVATE PER PLANTING DETAILS. THE FOREGOING PROPORTIONS ARE SUBJECT TO CHANGE UPON RECEIPT OF TOPSOIL ANALYSIS.
PREPARE PLANTING SOIL BY EVENLY MIXING:

- 5 PARTS NATIVE SOIL
- 1 PART SHARP SAND
- 2 PARTS ¼" SCREENED COMPOST
- 500g OF BONE MEAL PER CUBIC METRE.
- MIX THOROUGHLY

SODDING NOTES:

- ALL SOD SHALL BE GUARANTEED FOR 3 MONTHS FROM DATE OF SUBSTANTIAL PERFORMANCE.
- SODDING SHALL CONFORM TO LANDSCAPE ONTARIO'S 'GENERAL LANDSCAPE SPECIFICATIONS'.
- TOPSOIL SHALL BE EVENLY SPREAD OVER SUB-GRADE AND LOOSELY COMPACTED TO 150mm MINIMUM DEPTH.
- ALL STONES AND DEBRIS OVER 25mm DIA. SHALL BE REMOVED.
- TOPSOIL SHALL BE SUPPLEMENTED WITH A 10-6-4 FERTILIZER AND 20% SUPERPHOSPHATE APPLIED AT A RATE OF 5 KILOS PER 100 SQUARE METRES EACH, PRIOR TO PLACEMENT OF SOD.
- SOD SHALL BE PLACED WITH STAGGERED BUTT JOINTS, WATERED THOROUGHLY, AND ROLLED WHEN DRY.
- LAY SOD SECTIONS PERPENDICULAR ON SLOPES GREATER THAN 3:1 AND SECURE WITH WOODEN PEGS. WOODEN PEGS TO BE 17 X 17 X 300mm. PLACE PEGS 3 PER SQUARE METRE, 100mm BELOW TOP EDGE TO PREVENT SHIFTING OF SOD AND DRIVE PEGS FLUSH WITH TOP OF SOD SOIL. PROVIDE A MINIMUM OF 2 STAKES PER ROLL OF SOD.
- MAINTAIN SODDED AREA FROM THE TIME OF INSTALLATION UNTIL THIRTY (30) CALENDAR DAYS AFTER ALL SODDED AREAS HAVE BEEN INSPECTED BY THE CONTRACT ADMINISTRATOR AND A CERTIFICATE OF COMPLETION IS ISSUED. MINIMUM OF TWO CUTS.
- MAINTENANCE SHALL INCLUDE ALL NECESSARY MEASURES TO ESTABLISH AND MAINTAIN GRASS IN A HEALTHY, VIGOROUS GROWING CONDITION.
- MAINTENANCE SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING WORK:
  a. MOWING AT REGULAR INTERVALS TO MAINTAIN A MAXIMUM HEIGHT OF 60MM. DO NOT CUT MORE THAN 1/3 OF THE GRASS HEIGHT AT ANY ONE MOWING. TRIM AND CLIP EDGES. REMOVE CLIPPINGS AFTER MOWING AND TRIMMING.
  b. WATERING WHEN REQUIRED IN SUFFICIENT QUANTITIES AND AT A FREQUENCY TO PREVENT SOD FROM DRYING OUT AND TO MAINTAIN SOIL UNDER SOD CONTINUOUSLY MOIST TO A DEPTH OF 75 TO 100MM.
  c. FERTILIZE SODDED AREAS ONE MONTH AFTER SODDING WITH 2:1:1 RATIO FERTILIZER. SPREAD EVENLY AT A RATE AS PER MANUFACTURER'S INSTRUCTIONS AND WATER IN WELL, WITH A MINIMUM OF 50CM INFILTRATION AS PREVIOUSLY MENTIONED.

PLANT LIST - MASTER LIST

Key	Qty.	Botanical Name	Common Name	Condition	Spacing
Trees					
Deciduous					
Af	22	Acer x freemanii 'Celebration"	Celebration Freeman's Maple	60mm Cal, W.B.	As Shown
Tc	35	Tilia cordata 'Corinthian"	Corinthian Linden	60mm Cal, W.B.	As Shown
Qr	25	Quercus rubra	Red Oak	60mm Cal, W.B.	As Shown
Fg	19	Fagus grandifolia	American Beech	60mm Cal, W.B.	As Shown
Co	32	Celtis occidentalis	Common Hackberry	60mm Cal, W.B.	As Shown
Coniferous					
Pg	12	Picea glauca	White Spruce	250cm Tall, W.B.	As Shown
Ps	18	Pinus strobus	Eastern White Pine	250cm Tall, W.B.	As Shown
Shrubs					
ra	48	Rhus aromatica 'Gro Low'	Gro Low Sumac	3 gal, 50cm	1.25m
rr	262	Rosa palustis	Swamp Rosa	3 gal, 50cm	0.75m
ss	242	Sorbaria sorbifolia 'Sem'	Dwarf False Spirea	3 gal, 50cm	0.75m
Live Stakes					
as	16	Acer saccharum	Sugar Maple	BR, 150cm	3.0m
ca	23	Cornus Alternifolia	Pagoda Dogwood	BR, 60cm	2.0m
rt	22	Rhus Typhina	Staghorn Sumac	BR, 60cm	2.0m
sa	34	Symphoricarpos albus	Snowberry	BR, 60cm	1.0m
vl	68	Viburnum lentago	Nanny Berry	BR, 60cm	1.0m

Note: Plant Quantities Indicated on the Planting Plan will Supercede the Quantities Listed Above.

no.	REVISION	DATE	INIT.
G	ISSUED FOR CONSTRUCTION	2019-04-10	A.G.
F	ISSUED FOR ADDENDUM #1	2019-01-07	A.G.
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D	REISSUED AS TENDER READY	2018-08-27	A.G.
C	ISSUED AS TENDER READY	2018-04-27	A.G.
B	ISSUED FOR 90% REVIEW	2018-02-23	A.G.
A	ISSUED FOR 60% REVIEW	2017-12-21	A.G.

NOTES/LEGEND

- PROPOSED TREES REFER TO DETAIL 27 ON SHT. DET04
- PROPOSED SHRUBS REFER TO DETAIL 28 ON SHT. DET04
- PROPOSED SOD
- PROPOSED NATURALIZED WOODLAND MIX
- PROPOSED LIVE STAKES REFER TO DETAIL 27 ON SHT. DET04
- PROPOSED LAWN SEED
- TRANSPLANT RECIPIENT LOCATION REFER TO DETAIL TM-100

DRAFTING	N.M.
DESIGN	N.M./A.G.
CHECKED BY	P.R.
APPROVED BY	A.G.

Brock University

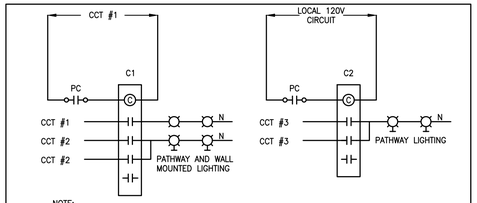
ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
PLANTING PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-01-07
SCALE	Hor : 1:750 m Ver :
REF. No.	**DB18-13**
DWG No.	**L-400**
REV.	**G**

DRAWING FILE: M:\2017\171-13732-00 Brock University-Niagara Region\6.0 Dwg (Large Project)\6.2 Detail design\3.0 Landscape\171-13732-00-C-LANDSCAPE_1_8346_0116.sv$.dwg PLOTTED: Apr 10, 2019 - 10:11pm PLOTTED BY: joel.ockland

PANEL EVA		400A	208/120V		3 PHASE	4 WIRE	
	WATTS	BREAKER	CIRCUIT	CIRCUIT	BREAKER	WATTS	C/W 400A MAIN BREAKER
EV CHARGING STATION	.	40A	1	2	40A	.	EV CHARGING STATION
.	.	2P	3	4	2P	.	.
EV CHARGING STATION	.	40A	5	6	40A	.	EV CHARGING STATION
.	.	2P	7	8	2P	.	.
EV CHARGING STATION	.	40A	9	10	40A	.	EV CHARGING STATION
.	.	2P	11	12	2P	.	.
EV CHARGING STATION	.	40A	13	14	40A	.	EV CHARGING STATION
.	.	2P	15	16	2P	.	.
EMERGENCY CALL STATIONS	.	15	17	18	.	.	.
.	.	.	19	20	.	.	.
.	.	.	21	22	.	.	.
.	.	.	23	24	.	.	.
.	.	.	25	26	.	.	.
.	.	.	27	28	.	.	.
.	.	.	29	30	.	.	.
TOTAL CONNECTED LOAD – KW							

∗ LOCK ON BREAKER ∗∗ GFI BREAKER ■ ARC FAULT BREAKER



NOTE:
MOUNT CONTACTOR ABOVE DWELILNG UNIT PANEL. MOUNT PHOTOCELL ON EAST EXTERIOR WALL 3m AFG C/W WIREGUARD.

C1 & C2 – EXTERIOR LIGHTING CONTACTOR EEMAC1, 120V COIL PROVIDE LAMACOID LEGEND PLATE "EXTERIOR LTG CONTACTOR"

PC – PHOTOCELL 120V, 2000W SEE SPECIFICATION

VILLAGE RESIDENCE EXTERIOR LIGHTING – CONTROL SCHEMATIC

SCALE : N.T.S.

FIXTURE SCHEDULE

FIXTURE TYPE	DESCRIPTION	WATTS
X	FLOOD LIGHT LED LUMINAIRE WITH ALUMINUM HOUSING, 347V ELECTRONIC DRIVER, 2,700 NOMINAL LUMENS, 5000K AND WIDE DISTRIBUTION. CONTRACTOR TO CONFIRM MOUNTING. OWNER TO CONFIRM COLOUR. STREETWORKS #UFLD-S-C70-E-9-66-XX-XX-7050 OR APPROVED EQUAL.	20
Y	POLE MOUNTED LED LUMINAIRE WITH ALUMINUM HOUSING, 347V ELECTRONIC DRIVER, 5"x5" SQUARE, 12FT ALUMINUM POLE AND 5000K. DISTRIBUTION PATTERN AND LUMENS TO MATCH EXISTING PATHWAY LIGHTING FIXTURES. FIXTURES ARE TO BE COVERED UNDER CASH ALLOWANCE. REFER TO SPECIFICATION.	–
Z1	POLE MOUNTED LED LUMINAIRE WITH ALUMINUM HOUSING, 347V ELECTRONIC DRIVER, 25FT ROUND ALUMINUM POLE, 14,000 NOMINAL LUMENS, 5700K AND TYPE IV MEDIUM LIGHT DISTRIBUTION. COLOUR BY OWNER. CREE #STR-LWY-4ME-HT-2-F-UH-BK-A-57K-DIM-R. LUMARK #NAV-AF-05-D-347-5WQ-7050-800-PER7=BK LITHONIA #DSX2-LED-P3-50K-T5M-347-PER7-DMG-DBLK, C/W #KMA8-DDBXD-U TAPERED ELLIPTICAL ARM ADAPTER	280
Z2	POLE MOUNTED LED LUMINAIRE WITH ALUMINUM HOUSING, 347V ELECTRONIC DRIVER, 40FT ROUND ALUMINUM POLE, 14,000 NOMINAL LUMENS, 5700K AND TYPE IV MEDIUM LIGHT DISTRIBUTION. COLOUR BY OWNER. CREE #STR-LWY-4ME-HT-2-F-HL-XX-A-57K. LUMARK #NAV-AF-05-D-347-5WQ-7050-800-PER7=BK LITHONIA #DSX2-LED-P3-50K-T5M-347-PER7-DMG-DBLK, C/W #KMA8-DDBXD-U TAPERED ELLIPTICAL ARM ADAPTER	280

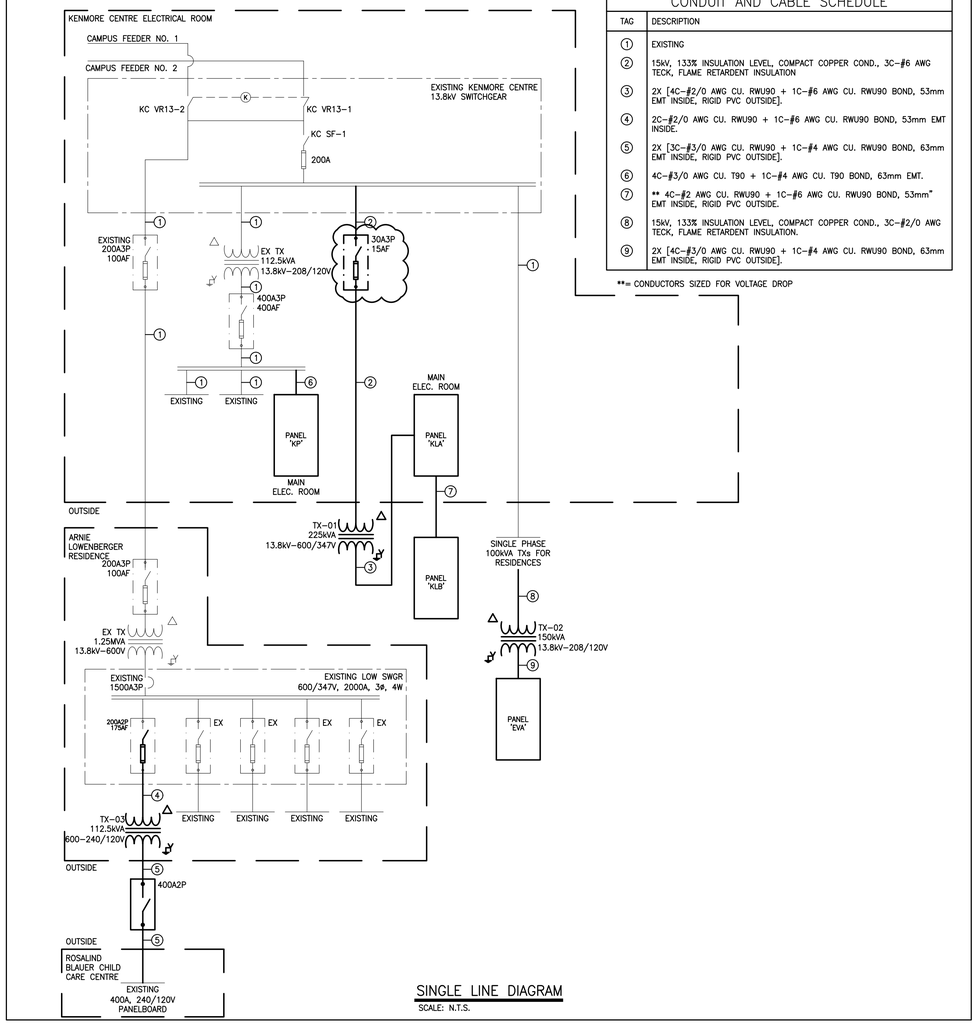
ELECTRICAL LEGEND

LIGHTING	
	POLE MOUNTED LIGHTING FIXTURE
POWER	
	ELECTRICAL PANEL, SURFACE/FLUSH MTD., SEE SCHEDULE FOR DETAILS
JB	JUNCTION BOX
TC	TIME SWITCH
URD	UNDERGROUND JUNCTION BOX (SEE DETAIL)
	TRANSFORMER
	GROUND ROD
COMMUNICATIONS	
	VIDEO SURVEILLANCE CAMERA
PS	PANIC STATION

THE ABOVE SYMBOLS ARE STANDARDS AND MAY APPLY TO THIS PROJECT, REFER TO THE DRAWINGS AND SPECIFICATIONS FOR FURTHER DETAILS ON USE AND APPLICATIONS

GENERAL REVISED NOTES

1. UNLESS OTHERWISE NOTED, CONTRACTOR IS TO PROVIDE ALL WIRING, CONDUIT AND MOUNTING HARDWARE TO COMPLETE THE WORKS AS INDICATED.
2. CONTRACTOR TO ARRANGE AND PAY FOR ALL PERMITS AND PROVIDE FINAL CERTIFICATE OF ELECTRICAL INSPECTION.
3. CONTRACTOR TO OBTAIN LOCATES PRIOR TO EXCAVATION/CONSTRUCTION.
4. CONTRACTOR TO PROVIDE COMPLETE INSTALLATION TO ALL EQUIPMENT.
5. CONTRACTOR TO COORDINATE WORK WITH OTHER TRADES/UTILITIES.
6. ALL WIRING TO BE COPPER TYPE, UNLESS SPECIFIED OTHERWISE.
7. DRAWINGS DO NOT SHOW THE EXACT ROUTE FOR CONDUIT/WIRING/RACEWAY AND IS INTENDED AS A GUIDE TO THE CONTRACTOR. CONTRACTOR TO FIELD ROUTE CONDUITS/WIRING/RACEWAY TO SUIT EXISTING CONDITIONS AND OTHER SERVICES.
8. 'EX' PRECEDING TAGS, LINES, ETC. INDICATED EXISTING EQUIPMENT, WIRING AND CONDUIT.
9. NEUTRAL CONDUCTORS SHALL NOT BE USED FOR MORE THAN ONE BRANCH CIRCUIT, FOR MORE THAN ONE MULTI-WIRE BRANCH CIRCUIT OR MORE THAN ONE SET OF UNGROUNDED FEEDER CONDUCTORS.
10. COORDINATE INSTALLATION OF UNDERGROUND CONDUITS WITH TREE PLANTING AND SIGN POST INSTALLATIONS TO AVOID DAMAGE TO CONDUIT AND WIRING.
11. CONTRACTOR TO ALLOW FOR CONSTRUCTION PHASING COORDINATION MEETING WITH OWNER IN APRIL 2019.
12. CONTRACTOR TO COORDINATE RESTORATION OF GRASS/SIDEWALK/ASPHALT WITH GENERAL CONTRACTOR.
13. CONTRACTOR TO SCHEDULE WORK SUCH THAT POWER IS RESTORED TO VILLAGE RESIDENCES NO LATER THAN AUGUST 3, 2019



SINGLE LINE DIAGRAM

SCALE: N.T.S.

CONDUIT AND CABLE SCHEDULE

TAG	DESCRIPTION
1	EXISTING
2	15kV, 133% INSULATION LEVEL, COMPACT COPPER COND., 3C–#6 AWG TECK, FLAME RETARDENT INSULATION
3	2X [4C–#2/0 AWG CU. RWU90 + 1C–#6 AWG CU. RWU90 BOND, 53mm EMT INSIDE, RIGID PVC OUTSIDE].
4	2C–#2/0 AWG CU. RWU90 + 1C–#6 AWG CU. RWU90 BOND, 53mm EMT INSIDE.
5	2X [3C–#3/0 AWG CU. RWU90 + 1C–#4 AWG CU. RWU90 BOND, 63mm EMT INSIDE, RIGID PVC OUTSIDE].
6	4C–#3/0 AWG CU. T90 + 1C–#4 AWG CU. T90 BOND, 63mm EMT.
7	** 4C–#2 AWG CU. RWU90 + 1C–#6 AWG CU. RWU90 BOND, 53mm" EMT INSIDE, RIGID PVC OUTSIDE.
8	15kV, 133% INSULATION LEVEL, COMPACT COPPER COND., 3C–#2/0 AWG TECK, FLAME RETARDENT INSULATION.
9	2X [4C–#3/0 AWG CU. RWU90 + 1C–#4 AWG CU. RWU90 BOND, 63mm EMT INSIDE, RIGID PVC OUTSIDE].

**= CONDUCTORS SIZED FOR VOLTAGE DROP

PANEL KLA		225A	600/347V		3 PHASE	4 WIRE	
	WATTS	BREAKER	CIRCUIT	CIRCUIT	BREAKER	WATTS	
PARKING/ROADWAY LIGHTING	.	20	1	2	20	.	PARKING/ROADWAY LIGHTING
PARKING/ROADWAY LIGHTING	.	20	3	4	.	.	.
.	.	.	5	6	.	.	.
.	.	.	7	8	.	.	.
.	.	.	9	10	.	.	.
.	.	.	11	12	.	.	.
.	.	.	13	14	.	.	.
.	.	.	15	16	.	.	.
.	.	.	17	18	.	.	.
.	.	.	19	20	.	.	.
.	.	.	21	22	.	.	.
.	.	.	23	24	.	.	.
PANEL KLB	.	100	25	26	.	.	.
.	.	A	27	28	.	.	.
.	.	3P	29	30	.	.	.
TOTAL CONNECTED LOAD – KW							

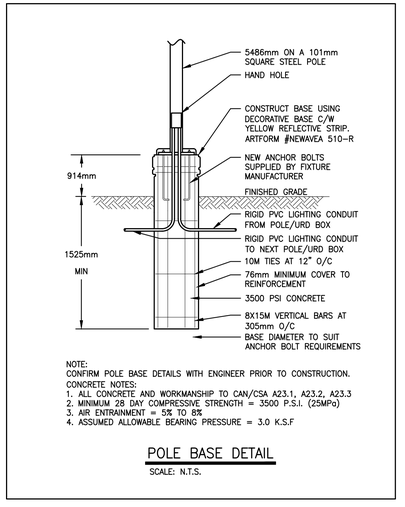
∗ LOCK ON BREAKER ∗∗ GFI BREAKER ■ ARC FAULT BREAKER

PANEL KLB		100A	600/347V		3 PHASE	4 WIRE	
	WATTS	BREAKER	CIRCUIT	CIRCUIT	BREAKER	WATTS	C/W 100A MAIN BREAKER
PARKING/ROADWAY LIGHTING	.	20	1	2	20	.	PARKING/ROADWAY LIGHTING
PARKING/ROADWAY LIGHTING	.	20	3	4	.	.	.
.	.	.	5	6	.	.	.
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.	.	.	27	28	.	.	.
.	.	.	29	30	.	.	.
TOTAL CONNECTED LOAD – KW							

∗ LOCK ON BREAKER ∗∗ GFI BREAKER ■ ARC FAULT BREAKER

KP		225A	208/120V		3 PHASE	4 WIRE	
	WATTS	BREAKER	CIRCUIT	CIRCUIT	BREAKER	WATTS	C/W 200A MAIN BREAKER
MULTIPURPOSE OUTLET	.	30A	1	2	30A	.	MULTIPURPOSE OUTLET
.	.	2P	3	4	2P	.	.
MULTIPURPOSE OUTLET	.	30A	5	6	.	.	.
.	.	2P	7	8	.	.	.
.	.	.	9	10	.	.	.
.	.	.	11	12	.	.	.
.	.	.	13	14	.	.	.
.	.	.	15	16	.	.	.
.	.	.	17	18	.	.	.
.	.	.	19	20	.	.	.
.	.	.	21	22	.	.	.
.	.	.	23	24	.	.	.
.	.	.	25	26	.	.	.
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TOTAL CONNECTED LOAD – KW							

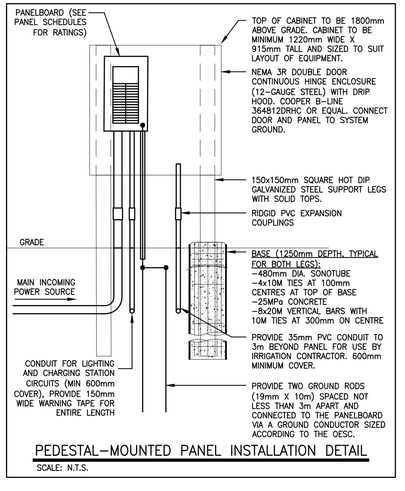
∗ LOCK ON BREAKER ∗∗ GFI BREAKER ■ ARC FAULT BREAKER



NOTE:
CONFIRM POLE BASE DETAILS WITH ENGINEER PRIOR TO CONSTRUCTION.
CONCRETE NOTES:
1. ALL CONCRETE AND WORKMANSHIP TO CAN/CSA A23.1, A23.2, A23.3
2. MINIMUM 28 DAY COMPRESSIVE STRENGTH = 3500 P.S.I. (25MPa)
3. AIR ENTRAINMENT = 5% TO 8%
4. ASSUMED ALLOWABLE BEARING PRESSURE = 3.0 K.S.F

POLE BASE DETAIL

SCALE: N.T.S.



PEDESTAL–MOUNTED PANEL INSTALLATION DETAIL

SCALE: N.T.S.

GENERAL DEMOLITION NOTES

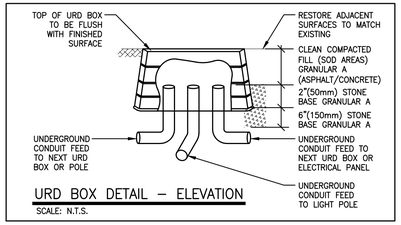
1. THIS DRAWING DOES NOT SHOW ALL HIDDEN OR CONCEALED WIRING, CONDUIT AND EQUIPMENT TO BE REMOVED. CONTRACTOR SHALL VISIT THE SITE AND MAKE THEIR OWN EVALUATION AND ESTIMATE OF THE EXTENT AND MAGNITUDE OF THE WORK INVOLVED.
2. COORDINATE AND OBTAIN APPROVAL FROM OWNER FOR ALL INTERRUPTIONS AND SHUTDOWNS.
3. ALL ABANDONED BREAKERS IN POWER PANELS TO BE IDENTIFIED AS 'SPARE' IN NEW PANEL LEGEND, UNLESS NOTED OTHERWISE.

LINE LEGEND

----------	EXISTING EQUIPMENT TO BE REMOVED.
————	EXISTING EQUIPMENT TO REMAIN.
————	NEW EQUIPMENT TO BE INSTALLED.
——UG/P——	UNDERGROUND PRIMARY
——UG/S——	UNDERGROUND SECONDARY
——UG/L——	UNDERGROUND LIGHTING
——UG/C——	UNDERGROUND COMMUNICATIONS

DRAWING LIST

DRAWING NO.	DRAWING TITLE
E1	LEGENDS, SCHEDULES AND DETAILS
E1-1	DETAILS
E2	TRENCHING DETAILS
E3-1	REVISED ELECTRICAL SITE PLAN – POWER
E3-2	REVISED ELECTRICAL SITE PLAN – COMMUNICATIONS
E3-3	REVISED ELECTRICAL SITE PLAN – LIGHTING
E4	SITE PLAN PHOTOMETRICS
ED1	ELECTRICAL DEMOLITION SITE PLAN



URD BOX DETAIL – ELEVATION

SCALE: N.T.S.

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2	ISSUED FOR CONSTRUCTION	2019-04-12	CB
1	ISSUED FOR ADDENDUM E2	2019-02-04	CB
0	ISSUED FOR TENDER	2019-01-07	CB

NOTES:
1. THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER, AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
2. PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION MUST COMPLY WITH THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT.

DRAFTING	CB
DESIGN	CB
CHECKED BY	MC
APPROVED BY	MC

LICENSED PROFESSIONAL ENGINEER C. J. BREDIN 100219748 2019-04-12 PROVINCE OF ONTARIO

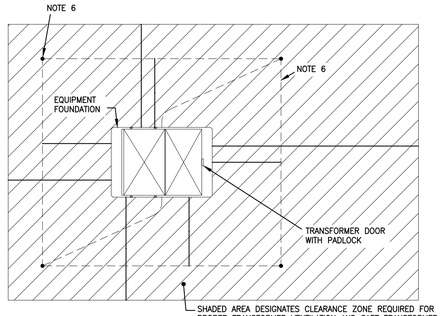
THIS REVISION ONLY

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
LEGENDS, SCHEDULES AND DETAILS

CONSULTANT FILE No.	171-13732-00
DATE	2019-04-12
SCALE	HOR : N.T.S. VER :
REF No.	DB18-13
DWG No.	E1
REV.	2

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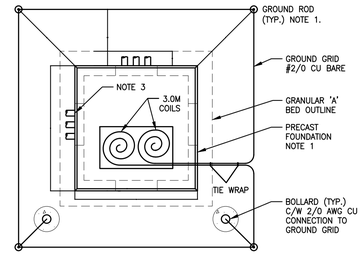


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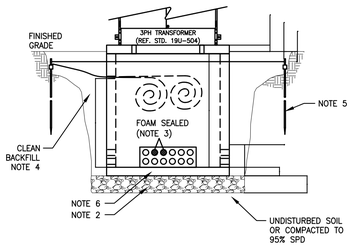
1. FOR ALL INSTANCES, A 3.0 METRE (10FT) CLEARANCE SHALL BE MAINTAINED FROM TREES, HYDRANTS, AND ABOVE GRADE UTILITY STRUCTURES.
2. ANY AND ALL OBJECTS WITHIN THE OBSTRUCTION FREE AREA, ARE SUBJECT TO REMOVAL WITHOUT ANY PRIOR NOTICE SHOULD OPERATIONAL OR EMERGENCY CONDITIONS EXIST.
3. ALECTRA UTILITIES CORPORATION SHALL NOT BE HELD RESPONSIBLE FOR ANY COSTS ASSOCIATED WITH THE REMOVAL OR RESULTING DAMAGE TO ANY OBJECTS WITHIN THE OBSTRUCTION FREE AREA (THE DEVELOPER/OWNER ASSUMES ALL RESPONSIBILITY FOR ENCROACHING WITHIN THE OBSTRUCTION FREE AREA).
4. CIVIL DRAWINGS TO BE REVIEWED TO ENSURE TRANSFORMER OR SWITCH PLACEMENT DOES NOT OVERLAP OR INTERFERE WITH DEEP SERVICES.
5. TRANSFORMERS SHALL BE A MINIMUM OF 3.0 METRES (10FT) FROM DOORS, WINDOWS OR VENTILATION INLETS/OUTLETS. TRANSFORMERS WITHIN THE 3.0 METRE (10FT) LIMIT SHALL BE PROTECTED BY AN INTERNAL CURRENT-LIMITING FUSE AND EQUIPPED WITH A PRESSURE RELIEF DEVICE OR REQUIRE A SUITABLE BARRIER (BLAST WALL) (OESC RULE 26-242).
6. GROUND ROD TO BE INSTALLED AT A MINIMUM DEPTH 300 MILLIMETRES (1FT) BELOW GRADE.
7. GROUND GRID LOOP CU WIRE TO BE INSTALLED AT A MINIMUM DEPTH 300 MILLIMETRES (1FT) BELOW GRADE AND 1.0 METRE (3FT) AWAY FROM TRANSFORMER FOUNDATION.

PAD MOUNTED TRANSFORMER CLEARANCES

SCALE: N.T.S.



PLAN VIEW



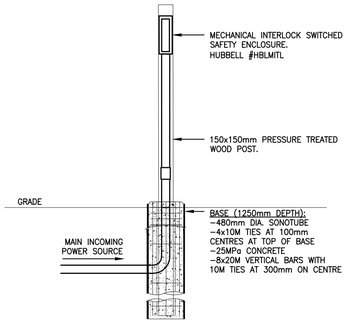
ELEVATION

NOTES:

1. THE FOUNDATION SHALL BE ORIENTED AS PER CONSTRUCTION DRAWING WITH TOP SURFACE HAVING A MAXIMUM 1% SLOPE.
2. GRANULAR 'A' BEDDING, FOUNDATION AND GROUND GRID INSTALLATION ARE ALL SUBJECT TO ALECTRA UTILITIES CORPORATION INSPECTION.
3. DUCTS AND GROUND WIRE ENTRY HOLES SEALED WITH FOAM OR EQUIVALENT.
4. PLACE CLEAN BACKFILL IN THOROUGHLY COMPACTED 300mm LAYERS.
5. REFER TO ALECTRA STD. 19U-362 (DETAIL 1) FOR GROUND ROD INSTALLATION.
6. FOUNDATION BASE TO BE SOLID TYPE, (NOT RING-TYPE).
7. ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

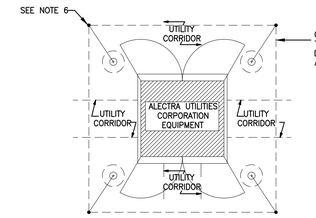
FOUNDATION AND GROUND GRID FOR THREE PHASE PAD-MOUNTED TRANSFORMER

SCALE: N.T.S.

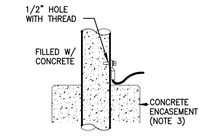


PEDESTAL-MOUNTED RECEPTACLE INSTALLATION DETAIL

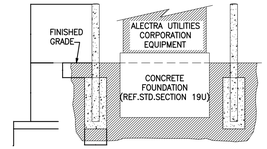
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PLAN VIEW



DETAIL 1
(GROUNDING)



ELEVATION

NOTES:

1. GUARD POSTS SHALL BE 150mm DIA. x 2.4m LONG x 6mm THICK STEEL PIPE FILLED WITH CONCRETE.
2. LOCATION AND NUMBER OF GUARD POSTS SHALL BE DETERMINED AND FINALIZED BY ALECTRA UTILITIES CORP. FIELD INSPECTORS TOGETHER WITH THE FOLLOWING CRITERIA:
   2.1. MUST ALLOW EQUIPMENT'S DOORS (INCLUDING SUB-COMPARTMENT'S DOORS) TO BE OPENDED THROUGH ITS FULL RANGE.
   2.2. MUST ALLOW ALECTRA UTILITIES CORP. PERSONNEL UNIMPEDED ACCESS TO THE EQUIPMENT AND PERMIT COMPLETE AND SAFE OPERATION OF THE EQUIPMENT.
   2.3. 500mm MINIMUM CLEARANCE BETWEEN THE GUARD POST'S CONCRETE ENCASEMENT AND THE UTILITY CORRIDOR.
   2.4. 100mm MINIMUM CLEARANCE BETWEEN THE GUARD POST'S CONCRETE ENCASEMENT AND THE GROUND GRID.
3. THE GUARD POSTS SHALL BE CONCRETE ENCASED IN 20MPa CONCRETE WITH 10mm PEA GRAVEL AGGREGATE.
4. WHERE GUARD POSTS ARE INSTALLED IN BACKFILL OR DISTURBED EARTH, ENSURE BACKFILL MATERIAL IS THOROUGHLY COMPACTER.
5. GUARD POSTS SHALL BE PAINTED WITH "SAFETY-YELLOW" (CITY'S STANDARD). FOR PROPER ADHESION OF PAINT, GUARD POSTS MUST BE CLEANED (FREE FROM DIRT, GREASE/OIL AND EXHAUST FUMES) AND PRIMED PRIOR TO PAINTING. PRETREATMENT PRIMER MUST BE COMPATIBLE WITH GALVANIZED COATING, SUCH AS MODIFIED ACRYLIC WATERBORNE PRIMERS, FOR HIGH ADHESION OF PAINT, BRUSH OR SWEEP BLAST THE POSTS IMMEDIATELY PRIOR TO PAINTING.
6. FOR GROUNDING DETAILS, REFER TO STD. DWG. 41U-110.
7. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE SPECIFIED.

TYPICAL GUARD POST INSTALLATION DETAIL

SCALE: N.T.S.

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1	ISSUED FOR CONSTRUCTION	2019-04-12	CB
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NOTES:

1. THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER, AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
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DRAFTING	CB
DESIGN	CB
CHECKED BY	MC
APPROVED BY	MC

LICENSED PROFESSIONAL ENGINEER — C. J. BREDIN — 100219748 — 2019-04-12 — PROVINCE OF ONTARIO

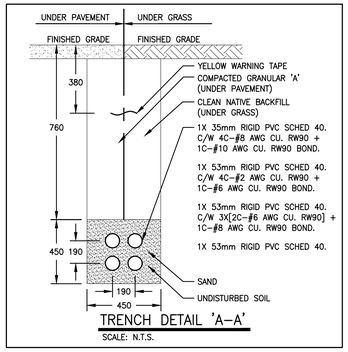
THIS REVISION ONLY

Brock University

ITT DB18-13
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CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
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DETAILS

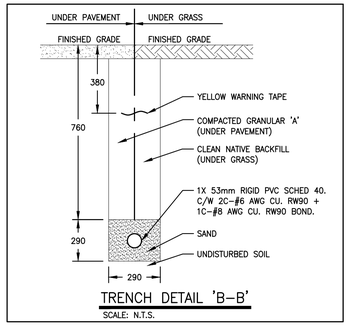
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DATE	2019-04-12
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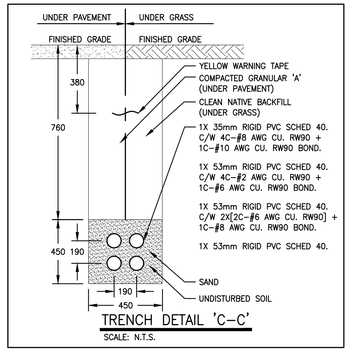
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SCALE: N.T.S.



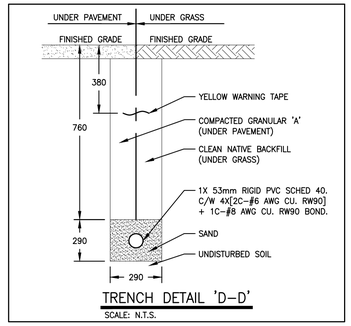
TRENCH DETAIL 'B–B'

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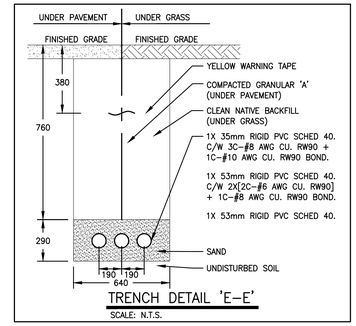
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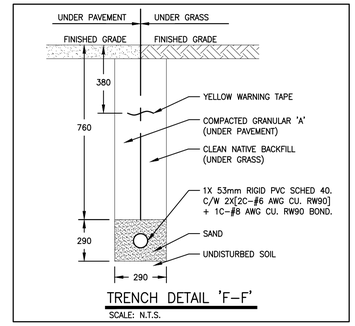
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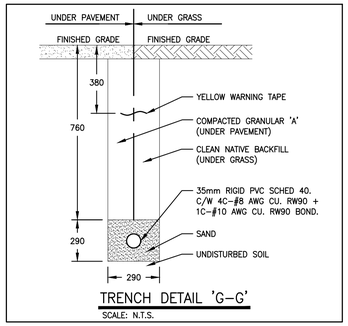
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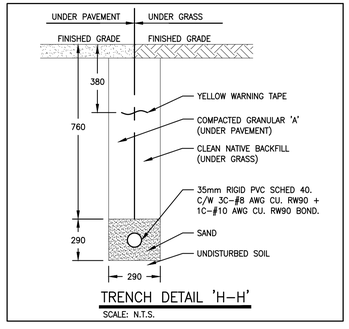
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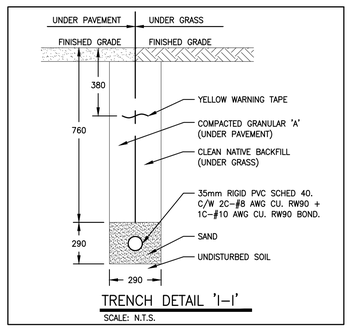
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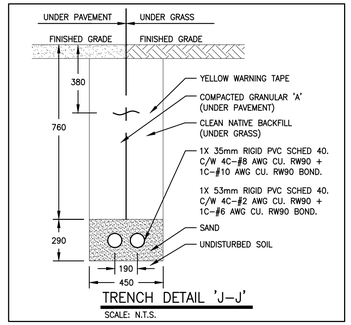
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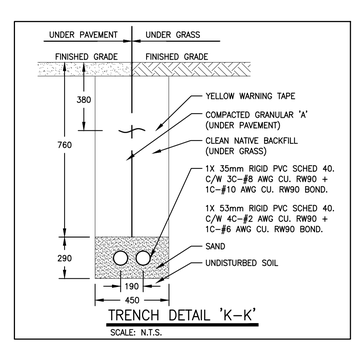
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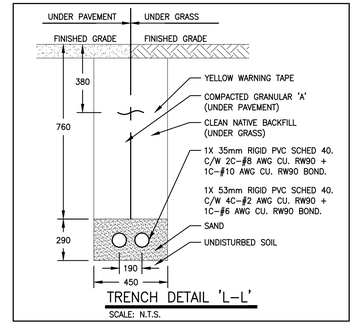
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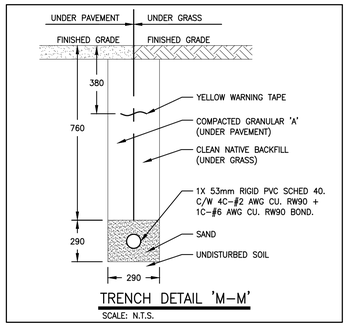
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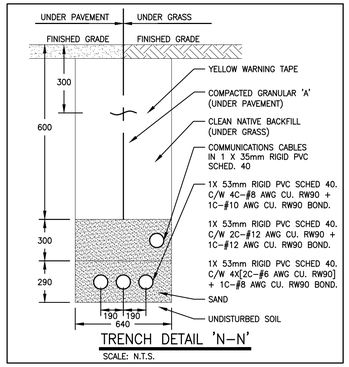
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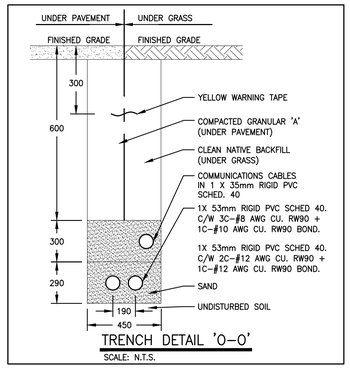
TRENCH DETAIL 'M–M'

SCALE: N.T.S.



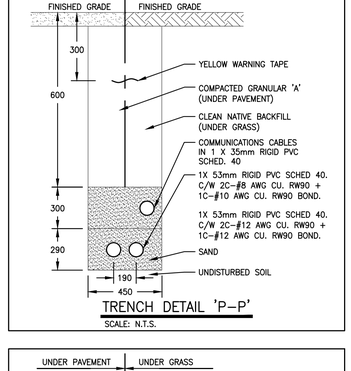
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SCALE: N.T.S.



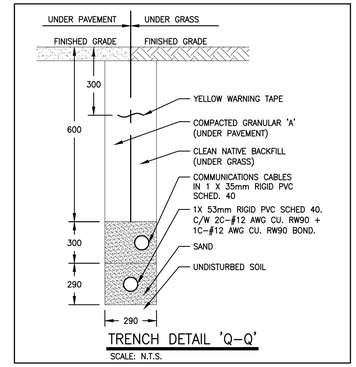
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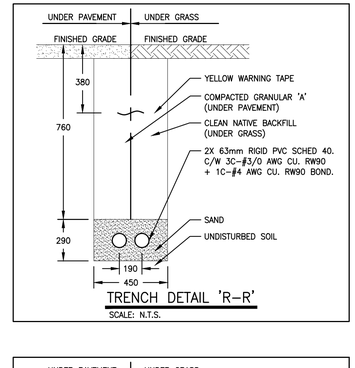
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SCALE: N.T.S.



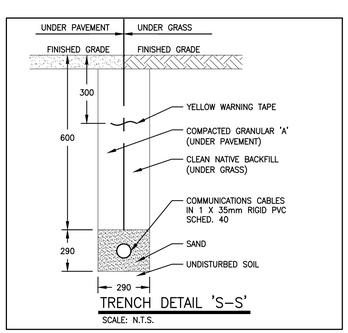
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SCALE: N.T.S.



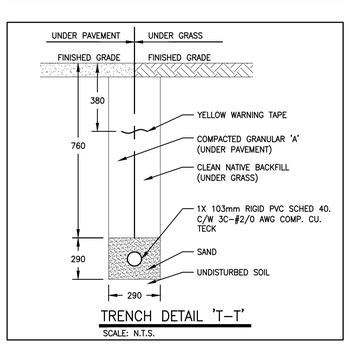
TRENCH DETAIL 'R–R'

SCALE: N.T.S.



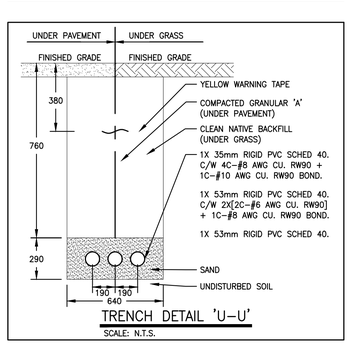
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SCALE: N.T.S.



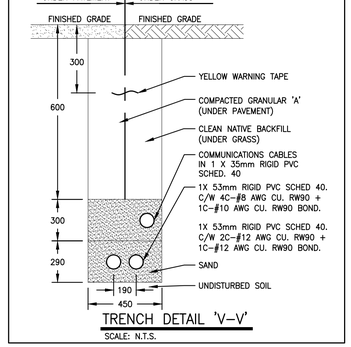
TRENCH DETAIL 'T–T'

SCALE: N.T.S.



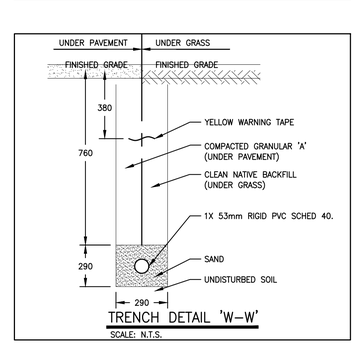
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SCALE: N.T.S.



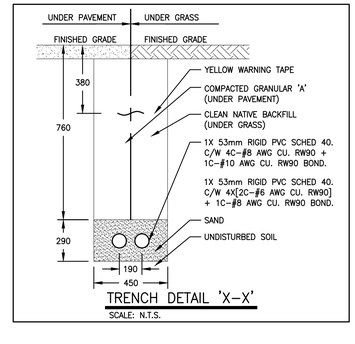
TRENCH DETAIL 'V–V'

SCALE: N.T.S.



TRENCH DETAIL 'W–W'

SCALE: N.T.S.



TRENCH DETAIL 'X–X'

SCALE: N.T.S.

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3	ISSUED FOR CONSTRUCTION	2019–04–12	CB
2	ISSUED FOR ADDENDUM E2	2019–02–04	CB
1	ISSUED FOR ADDENDUM E1	2019–01–23	CB
0	ISSUED FOR TENDER	2019–01–07	CB
#	REVISION	DATE	INIT.

NOTES:

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2. PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION MUST COMPLY WITH THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT.

DRAFTING	CB
DESIGN	CB
CHECKED BY	MC
APPROVED BY	MC

LICENSED PROFESSIONAL ENGINEER
C. J. BREDIN
100219748
2019-04-12
PROVINCE OF ONTARIO

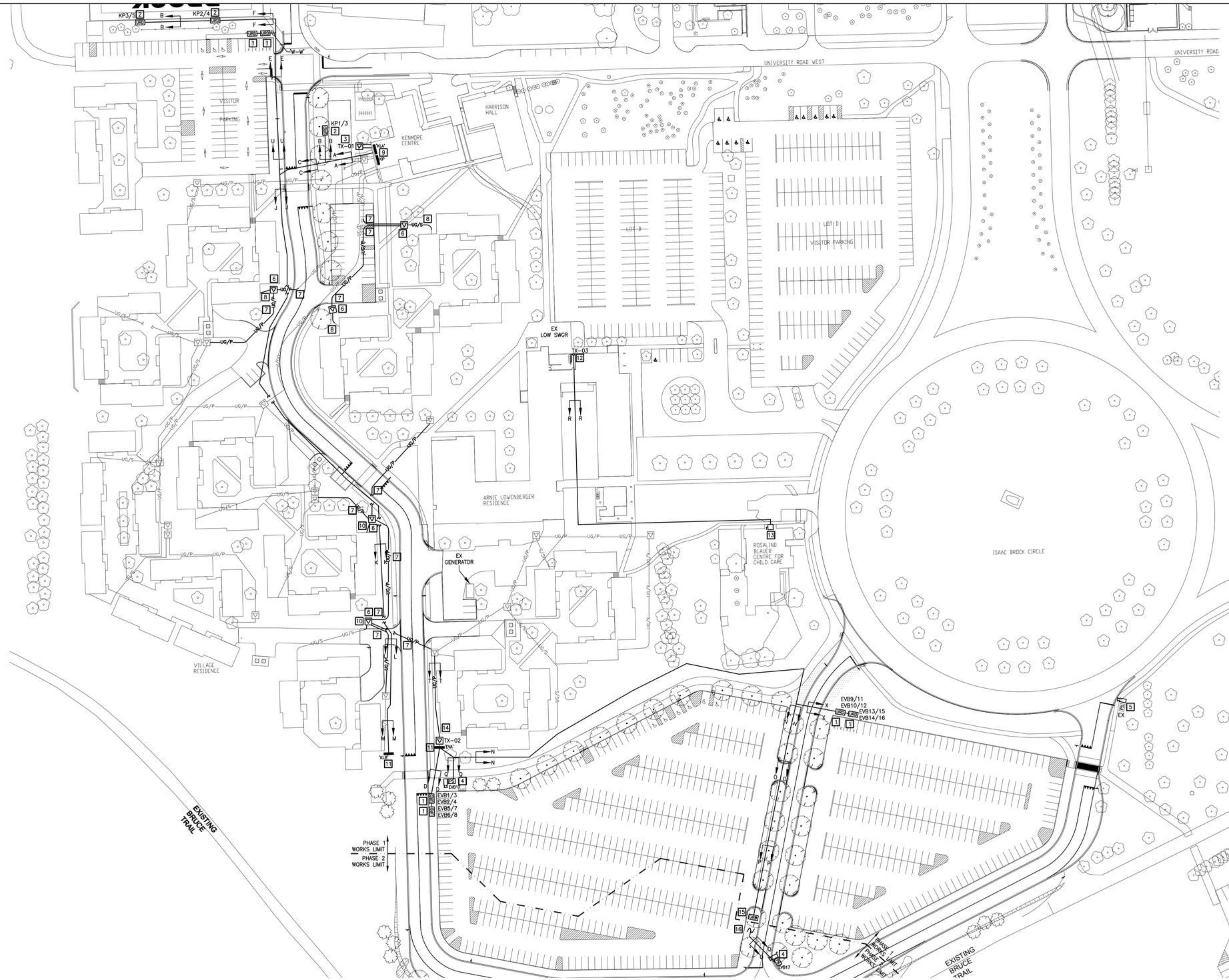
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Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
TRENCHING DETAILS

CONSULTANT FILE No.	171–13732–00
DATE	2019–04–12
SCALE	HOR : N.T.S. VER :
REF No.	DB18-13
DWG No.	E2
REV.	3

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REVISED NOTES

TAG	DESCRIPTION
1	PROVIDE URD BOX FOR FUTURE VEHICLE CHARGING STATION. REFER TO DETAIL ON DRAWING E1.
2	PROVIDE PEDESTAL–MOUNTED, MECHANICAL INTERLOCKED SAFETY SHROUD ENCLOSURE COMPLETE WITH 30A TWISTLOCK RECEPTACLE FOR FOOD TRUCK/MULTIPURPOSE USE, HUBBEL #HBLMITL.
3	PROVIDE ONE (1) 225kVA TRANSFORMER COMPLETE WITH TAMPERPROOF NEMA 3R ENCLOSURE ON EXISTING TRANSFORMER PAD TO FEED NEW 600/347V PANELBOARD 'KLA' IN KENMORE CENTRE ELECTRICAL ROOM. REFER TO SINGLE LINE DIAGRAM ON DRAWING E1.
4	PROVIDE GAI–TRONICS MODEL 234 STANCHION EMERGENCY CALL STATION COMPLETE WITH #M25–300 EMERGENCY TELEPHONE, #84503–201 PHONE PANEL LIGHT, #84503–008 CAMERA AND STROBE MAST, #GTC–530–001 LED BEACON AND LEXAN LENS. PROVIDE ONE (1) 15A1P BREAKER IN PANEL EV TO FEED EMERGENCY CALL STATIONS.
5	PROVIDE GAI–TRONICS CAMERA AND STROBE MAST #84503–008, #GTC–530–001 LED BEACON AND LEXAN LENS TO EXISTING MODEL 234 STANCHION EMERGENCY CALL STATION. COORDINATE MODIFICATIONS TO EXSITING INSTALLATION WITH EQUIPMENT SUPPLIER.
6	RELOCATE EXISTING 100kVA, 13.8kV–240/120V TRANSFORMER AS SHOWN. PROVIDE NEW PRIMARY TERMINATION KITS. PROVIDE NEW TRANSFORMER VAULT. PRIOR TO EXCAVATION, CONTRACTOR TO OBTAIN LOCATES OF ALL EXISTING UNDERGROUND SERVICES AT PROPOSED LOCATION OF RELOCATED TRANSFORMER. CONTRACTOR TO ALLOW FOR MANUAL EXCAVATION AND ADJUSTMENTS TO TRENCH DEPTH TO AVOID EXISTING UNDERGROUND SERVICES.
7	PROVIDE NEW PRIMARY CABLING AND EXTEND EXISTING PRIMARY CONDUITS TO NEW TRANSFORMER LOCATION AS SHOWN. PRIOR TO EXCAVATION, CONTRACTOR TO OBTAIN LOCATES OF ALL EXISTING UNDERGROUND SERVICES ALONG THE PROPOSED PATH OF THE NEW PRIMARY DUCTBANK. CONTRACTOR TO ALLOW FOR MANUAL EXCAVATION AND ADJUSTMENTS TO TRENCH DEPTH TO AVOID EXISTING UNDERGROUND SERVICES.
8	MEGGER TEST EXISTING SECONDARY CABLES AND INFORM OWNER/ENGINEER OF ANY DISCREPANCIES. SHORTEN EXISTING SECONDARY CONDUIT/CABLES TO NEW TRANSFORMER LOCATION AS SHOWN.
9	COORDINATE EXACT LOCATION OF NEW PANELBOARDS 'KP' AND 'KLA' AND ASSOCIATED DISCONNECT SWITCH IN KENMORE CENTRE MAIN ELECTRICAL ROOM WITH OWNER.
10	REWORK SECONDARY CONDUITS TO NEW TRANSFORMER LOCATION AS SHOWN. PROVIDE ADDITIONAL CONDUIT/WIRING AS REQUIRED. PRIOR TO EXCAVATION, CONTRACTOR TO OBTAIN LOCATES OF ALL EXISTING UNDERGROUND SERVICES ALONG THE PROPOSED PATH OF THE NEW SECONDARY DUCTBANK. CONTRACTOR TO ALLOW FOR MANUAL EXCAVATION AND ADJUSTMENTS TO TRENCH DEPTH TO AVOID EXISTING UNDERGROUND SERVICES.
11	REFER TO PEDESTAL–MOUNTED PANEL INSTALLATION DETAIL ON DRAWING E1.
12	COORDINATE FINAL LOCATION AND INSTALLATION OF 112.5kVA TRANSFORMER IN LOWENBERGER MAIN ELECTRICAL ROOM WITH OWNER'S ELECTRICAL SERVICES DEPARTMENT.
13	COORDINATE EXACT LOCATION DISCONNECT SWITCH IS TO BE INSTALLED IN ROSALIND BLAUER CHILD CARE CENTRE WITH OWNER'S ELECTRICAL SERVICES DEPARTMENT.
14	PROVIDE NEW 150kVA, 13.8kV–208/120V, 3ø, 4W PADMOUNT TRANSFORMER TX–03 COMPLETE WITH TAMPERPROOF NEMA 3R ENCLOSURE AS SHOWN TO FEED NEW PANELBOARD 'EVB'. CONTRACTOR TO OBTAIN LOCATES OF ALL EXISTING UNDERGROUND SERVICES AROUND PROPOSED AREA OF PADMOUNT TRANSFORMER.
15	PROVIDE IN–GROUND JUNCTION BOX C/W 12mm POLY PULL CORD. PROVIDE LABELING TO INDICATE THE PRESENCE OF MULTIPLE VOLTAGES (347V AND 120V).
16	PROVIDE CONDUIT/WIRING AS REQUIRED TO EXTEND CIRCUITS FROM IN–GROUND JUNCTION BOX AS SHOWN.

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3	ISSUED FOR CONSTRUCTION	2019–04–12	CB
2	ISSUED FOR ADDENDUM E2	2019–02–04	CB
1	ISSUED FOR ADDENDUM E1	2019–01–23	CB
0	ISSUED FOR TENDER	2019–01–07	CB

NOTES:

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3. ALL CONSTRUCTION MUST COMPLY WITH THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT.

DRAFTING	CB
DESIGN	CB
CHECKED BY	MC
APPROVED BY	MC

LICENSED PROFESSIONAL ENGINEER — C. J. BREDIN 100219748 — 2019-04-12 — PROVINCE OF ONTARIO

THIS REVISION ONLY

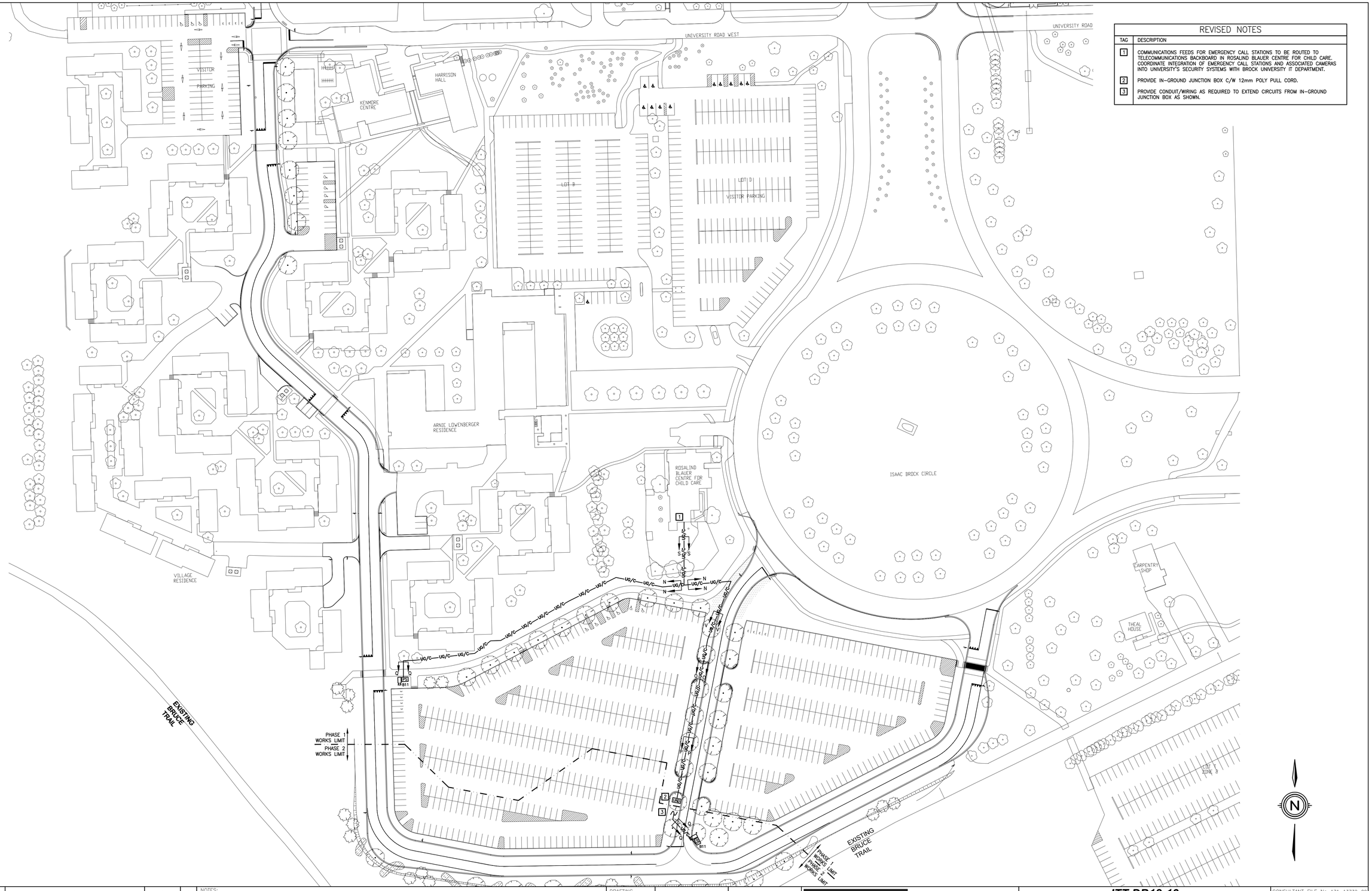
Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES

REVISED ELECTRICAL SITE PLAN - POWER

CONSULTANT FILE No.	171–13732–00
DATE	2019–04–12
SCALE	HOR : 1:750 VER :
REF No.	DB18-13
DWG No.	E3-1
REV.	3

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REVISED NOTES

TAG	DESCRIPTION
1	COMMUNICATIONS FEEDS FOR EMERGENCY CALL STATIONS TO BE ROUTED TO TELECOMMUNICATIONS BACKBOARD IN ROSALIND BLAUER CENTRE FOR CHILD CARE. COORDINATE INTEGRATION OF EMERGENCY CALL STATIONS AND ASSOCIATED CAMERAS INTO UNIVERSITY'S SECURITY SYSTEMS WITH BROCK UNIVERSITY IT DEPARTMENT.
2	PROVIDE IN-GROUND JUNCTION BOX C/W 12mm POLY PULL CORD.
3	PROVIDE CONDUIT/WIRING AS REQUIRED TO EXTEND CIRCUITS FROM IN-GROUND JUNCTION BOX AS SHOWN.

#	REVISION	DATE	INIT
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3	ISSUED FOR CONSTRUCTION	2019-04-12	CB
2	ISSUED FOR ADDENDUM E2	2019-02-04	CB
1	ISSUED FOR ADDENDUM E1	2019-01-23	CB
0	ISSUED FOR TENDER	2019-01-07	CB

NOTES:

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2. PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION MUST COMPLY WITH THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT.

DRAFTING	CB
DESIGN	CB
CHECKED BY	MC
APPROVED BY	MC

LICENSED PROFESSIONAL ENGINEER — C.J. BREDIN 100219748 — 2019-04-12 — PROVINCE OF ONTARIO

THIS REVISION ONLY

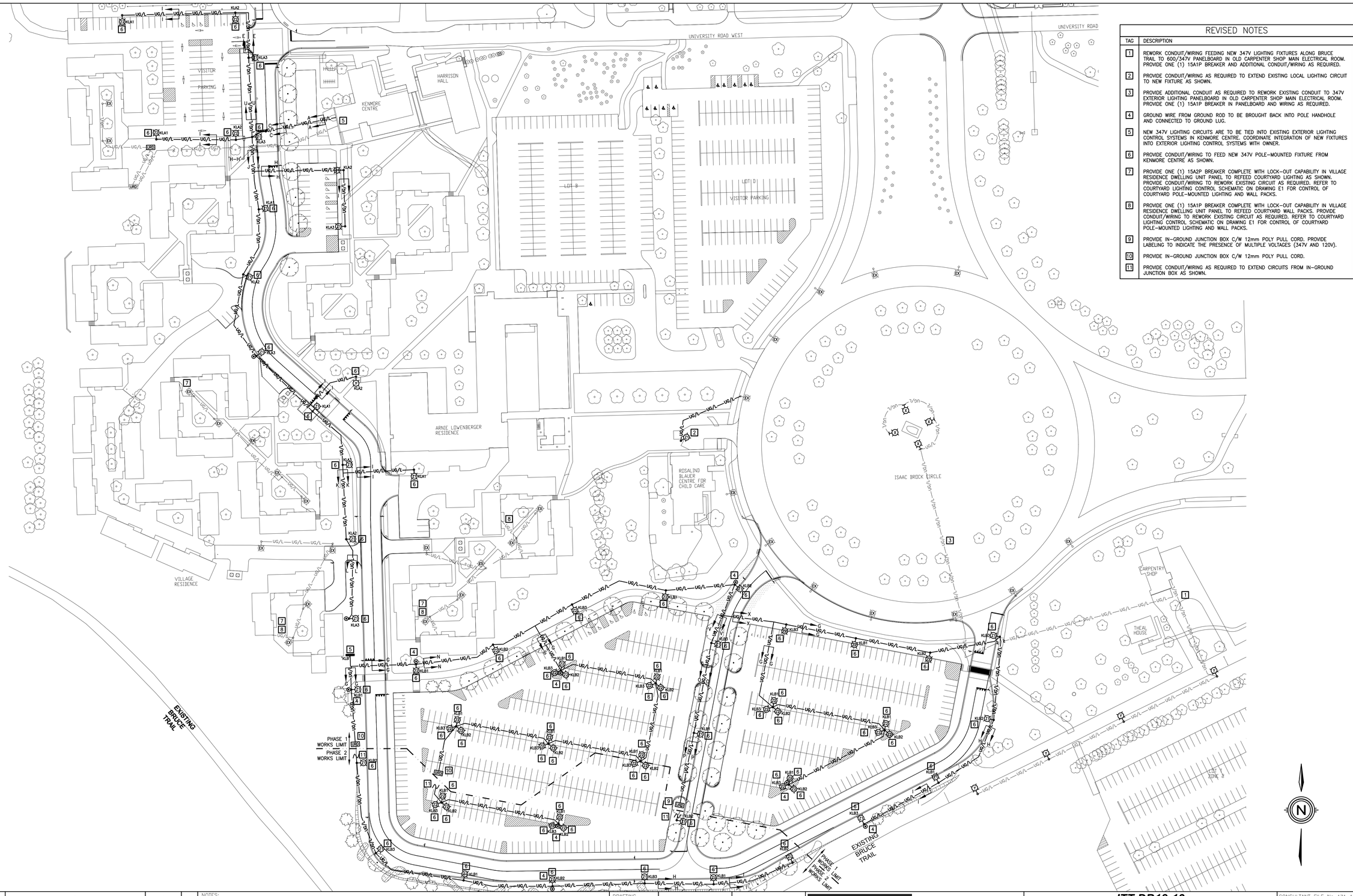
Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES

REVISED ELECTRICAL SITE PLAN - COMMUNICATIONS

CONSULTANT FILE No.	171-13732-00
DATE	2019-04-12
SCALE	HOR : 1:750 VER :
REF No.	DB18-13
DWG No.	E3-2
REV.	3

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REVISED NOTES

TAG	DESCRIPTION
1	REWORK CONDUIT/WIRING FEEDING NEW 347V LIGHTING FIXTURES ALONG BRUCE TRAIL TO 600/347V PANELBOARD IN OLD CARPENTER SHOP MAIN ELECTRICAL ROOM. PROVIDE ONE (1) 15A1P BREAKER AND ADDITIONAL CONDUIT/WIRING AS REQUIRED.
2	PROVIDE CONDUIT/WIRING AS REQUIRED TO EXTEND EXISTING LOCAL LIGHTING CIRCUIT TO NEW FIXTURE AS SHOWN.
3	PROVIDE ADDITIONAL CONDUIT AS REQUIRED TO REWORK EXISTING CONDUIT TO 347V EXTERIOR LIGHTING PANELBOARD IN OLD CARPENTER SHOP MAIN ELECTRICAL ROOM. PROVIDE ONE (1) 15A1P BREAKER IN PANELBOARD AND WIRING AS REQUIRED.
4	GROUND WIRE FROM GROUND ROD TO BE BROUGHT BACK INTO POLE HANDHOLE AND CONNECTED TO GROUND LUG.
5	NEW 347V LIGHTING CIRCUITS ARE TO BE TIED INTO EXISTING EXTERIOR LIGHTING CONTROL SYSTEMS IN KENMORE CENTRE. COORDINATE INTEGRATION OF NEW FIXTURES INTO EXTERIOR LIGHTING CONTROL SYSTEMS WITH OWNER.
6	PROVIDE CONDUIT/WIRING TO FEED NEW 347V POLE-MOUNTED FIXTURE FROM KENMORE CENTRE AS SHOWN.
7	PROVIDE ONE (1) 15A2P BREAKER COMPLETE WITH LOCK-OUT CAPABILITY IN VILLAGE RESIDENCE DWELLING UNIT PANEL TO REFEED COURTYARD LIGHTING AS SHOWN. PROVIDE CONDUIT/WIRING TO REWORK EXISTING CIRCUIT AS REQUIRED. REFER TO COURTYARD LIGHTING CONTROL SCHEMATIC ON DRAWING E1 FOR CONTROL OF COURTYARD POLE-MOUNTED LIGHTING AND WALL PACKS.
8	PROVIDE ONE (1) 15A1P BREAKER COMPLETE WITH LOCK-OUT CAPABILITY IN VILLAGE RESIDENCE DWELLING UNIT PANEL TO REFEED COURTYARD WALL PACKS. PROVIDE CONDUIT/WIRING TO REWORK EXISTING CIRCUIT AS REQUIRED. REFER TO COURTYARD LIGHTING CONTROL SCHEMATIC ON DRAWING E1 FOR CONTROL OF COURTYARD POLE-MOUNTED LIGHTING AND WALL PACKS.
9	PROVIDE IN-GROUND JUNCTION BOX C/W 12mm POLY PULL CORD. PROVIDE LABELING TO INDICATE THE PRESENCE OF MULTIPLE VOLTAGES (347V AND 120V).
10	PROVIDE IN-GROUND JUNCTION BOX C/W 12mm POLY PULL CORD.
11	PROVIDE CONDUIT/WIRING AS REQUIRED TO EXTEND CIRCUITS FROM IN-GROUND JUNCTION BOX AS SHOWN.

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3	ISSUED FOR CONSTRUCTION	2019-04-12	CB
2	ISSUED FOR ADDENDUM E2	2019-02-04	CB
1	ISSUED FOR ADDENDUM E1	2019-01-23	CB
0	ISSUED FOR TENDER	2019-01-07	CB

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DRAFTING	CB
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LICENSED PROFESSIONAL ENGINEER — C.J. BREDIN 100219748 2019-04-12 — PROVINCE OF ONTARIO

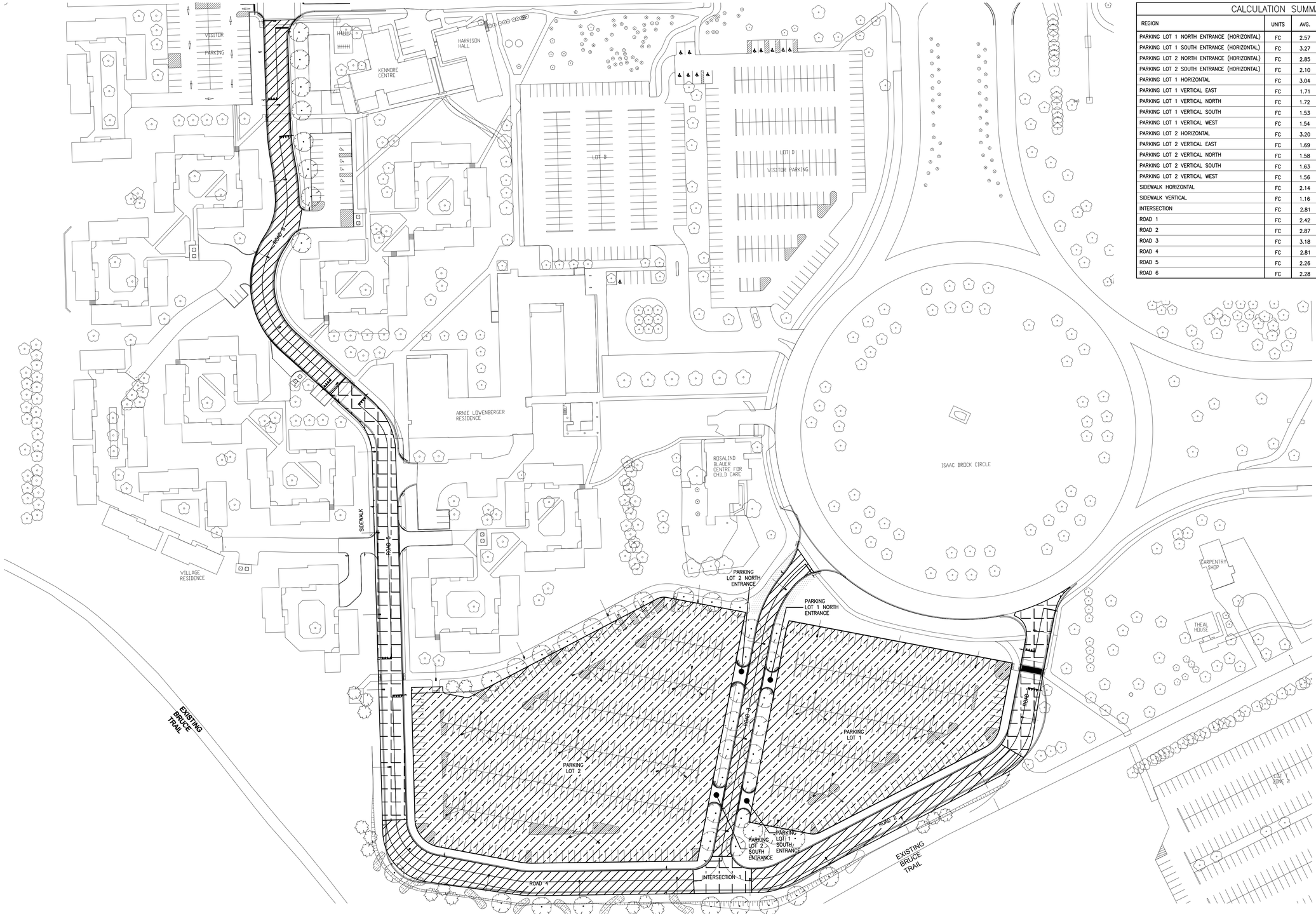
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Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
REVISED ELECTRICAL SITE PLAN - LIGHTING

CONSULTANT FILE No.	171-13732-00
DATE	2019-04-12
SCALE	HOR : 1:750 VER :
REF No.	DB18-13
DWG No.	E3-3
REV.	3

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CALCULATION SUMMARY

REGION	UNITS	AVG.	MAX	MIN	AVG/MIN	MAX/MIN
PARKING LOT 1 NORTH ENTRANCE (HORIZONTAL)	FC	2.57	N/A	N/A	N/A	N/A
PARKING LOT 1 SOUTH ENTRANCE (HORIZONTAL)	FC	3.27	N/A	N/A	N/A	N/A
PARKING LOT 2 NORTH ENTRANCE (HORIZONTAL)	FC	2.85	N/A	N/A	N/A	N/A
PARKING LOT 2 SOUTH ENTRANCE (HORIZONTAL)	FC	2.10	N/A	N/A	N/A	N/A
PARKING LOT 1 HORIZONTAL	FC	3.04	5.2	1.4	2.17	N/A
PARKING LOT 1 VERTICAL EAST	FC	1.71	4.3	0.4	N/A	N/A
PARKING LOT 1 VERTICAL NORTH	FC	1.72	5.0	0.5	N/A	N/A
PARKING LOT 1 VERTICAL SOUTH	FC	1.53	4.3	0.3	N/A	N/A
PARKING LOT 1 VERTICAL WEST	FC	1.54	4.3	0.2	N/A	N/A
PARKING LOT 2 HORIZONTAL	FC	3.20	5.2	1.2	2.67	N/A
PARKING LOT 2 VERTICAL EAST	FC	1.69	4.3	0.2	N/A	N/A
PARKING LOT 2 VERTICAL NORTH	FC	1.58	3.7	0.3	N/A	N/A
PARKING LOT 2 VERTICAL SOUTH	FC	1.63	4.0	0.2	N/A	N/A
PARKING LOT 2 VERTICAL WEST	FC	1.56	4.4	0.2	N/A	N/A
SIDEWALK HORIZONTAL	FC	2.14	3.9	0.9	2.38	4.33
SIDEWALK VERTICAL	FC	1.16	3.8	0.1	11.60	38.00
INTERSECTION	FC	2.81	4.1	1.8	1.56	N/A
ROAD 1	FC	2.42	3.9	0.4	6.05	N/A
ROAD 2	FC	2.87	4.6	1.4	2.05	3.29
ROAD 3	FC	3.18	5.0	0.5	6.36	N/A
ROAD 4	FC	2.81	5.3	0.9	3.12	N/A
ROAD 5	FC	2.26	4.1	0.8	2.83	N/A
ROAD 6	FC	2.28	3.8	0.7	3.26	N/A

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3	ISSUED FOR CONSTRUCTION	2019-04-12	CB
2	ISSUED FOR ADDENDUM E2	2019-02-04	CB
1	ISSUED FOR ADDENDUM E1	2019-01-23	CB
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LICENSED PROFESSIONAL ENGINEER
C. J. BREDIN
100219748
2019-04-12
PROVINCE OF ONTARIO

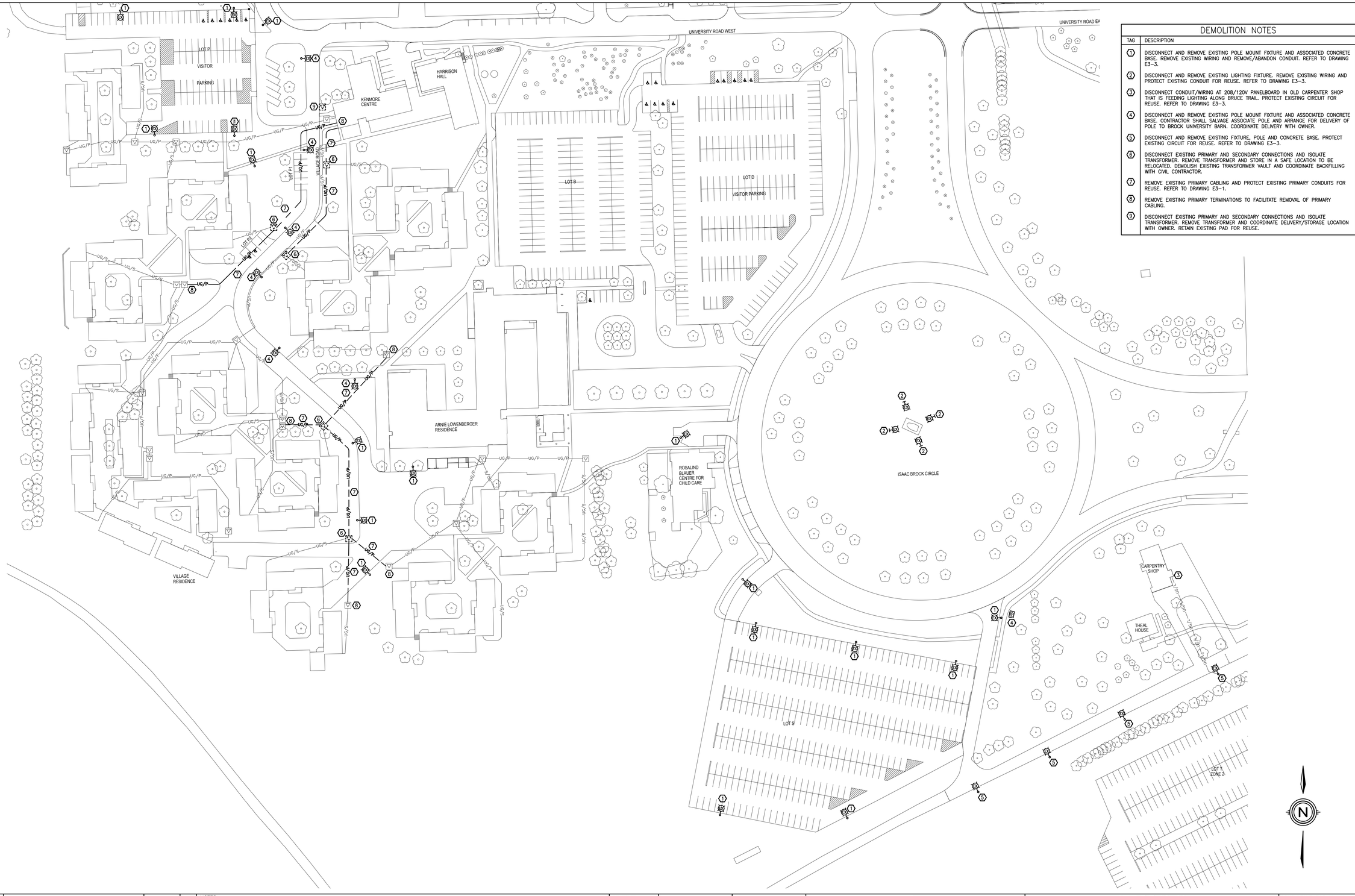
THIS REVISION ONLY

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
SITE PLAN PHOTOMETRICS

CONSULTANT FILE No.	171-13732-00
DATE	2019-04-12
SCALE	HOR : 1:750 VER :
REF No.	DB18-13
DWG No.	E4
REV.	3

DRAWING FILE: C:\Users\Chris.Bredin\AppData\Local\Temp\AcPublish_5776\171-13732 ELEC WORKING IFC.dwg PLOTTED: Apr 12, 2019 - 7:55am PLOTTED BY: chris.bredin



DEMOLITION NOTES

TAG	DESCRIPTION
1	DISCONNECT AND REMOVE EXISTING POLE MOUNT FIXTURE AND ASSOCIATED CONCRETE BASE. REMOVE EXISTING WIRING AND REMOVE/ABANDON CONDUIT. REFER TO DRAWING E3-3.
2	DISCONNECT AND REMOVE EXISTING LIGHTING FIXTURE. REMOVE EXISTING WIRING AND PROTECT EXISTING CONDUIT FOR REUSE. REFER TO DRAWING E3-3.
3	DISCONNECT CONDUIT/WIRING AT 208/120V PANELBOARD IN OLD CARPENTER SHOP THAT IS FEEDING LIGHTING ALONG BRUCE TRAIL. PROTECT EXISTING CIRCUIT FOR REUSE. REFER TO DRAWING E3-3.
4	DISCONNECT AND REMOVE EXISTING POLE MOUNT FIXTURE AND ASSOCIATED CONCRETE BASE. CONTRACTOR SHALL SALVAGE ASSOCIATE POLE AND ARRANGE FOR DELIVERY OF POLE TO BROCK UNIVERSITY BARN. COORDINATE DELIVERY WITH OWNER.
5	DISCONNECT AND REMOVE EXISTING FIXTURE, POLE AND CONCRETE BASE. PROTECT EXISTING CIRCUIT FOR REUSE. REFER TO DRAWING E3-3.
6	DISCONNECT EXISTING PRIMARY AND SECONDARY CONNECTIONS AND ISOLATE TRANSFORMER. REMOVE TRANSFORMER AND STORE IN A SAFE LOCATION TO BE RELOCATED. DEMOLISH EXISTING TRANSFORMER VAULT AND COORDINATE BACKFILLING WITH CIVIL CONTRACTOR.
7	REMOVE EXISTING PRIMARY CABLING AND PROTECT EXISTING PRIMARY CONDUITS FOR REUSE. REFER TO DRAWING E3-1.
8	REMOVE EXISTING PRIMARY TERMINATIONS TO FACILITATE REMOVAL OF PRIMARY CABLING.
9	DISCONNECT EXISTING PRIMARY AND SECONDARY CONNECTIONS AND ISOLATE TRANSFORMER. REMOVE TRANSFORMER AND COORDINATE DELIVERY/STORAGE LOCATION WITH OWNER. RETAIN EXISTING PAD FOR REUSE.

#	REVISION	DATE	INIT
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2	ISSUED FOR CONSTRUCTION	2019-04-12	CB
1	ISSUED FOR ADDENDUM E2	2019-02-04	CB
0	ISSUED FOR TENDER	2019-01-07	CB

NOTES:

1. THE POSITION OF POLE LINES, CONDUITS, WATERMAINS, SEWER, AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.
2. PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD. TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.
3. ALL CONSTRUCTION MUST COMPLY WITH THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT.

DRAFTING	CB
DESIGN	CB
CHECKED BY	MC
APPROVED BY	MC

LICENSED PROFESSIONAL ENGINEER
C. J. BREDIN
100219748
2019-04-12
PROVINCE OF ONTARIO

THIS REVISION ONLY

Brock University

ITT DB18-13
BROCK UNIVERSITY
CONSTRUCTION OF VILLAGE ROAD AND EXPANSION/REHAB OF PARKING LOT 'S'
CITY OF ST. CATHARINES
ELECTRICAL DEMOLITION SITE PLAN

CONSULTANT FILE No.	171-13732-00
DATE	2019-04-12
SCALE	HOR : 1:750 VER :
REF No.	*DB18-13*
DWG No.	*ED1*
REV.	*2*

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