DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN

ISSUED FOR TENDER

APRIL 5, 2022

DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN	
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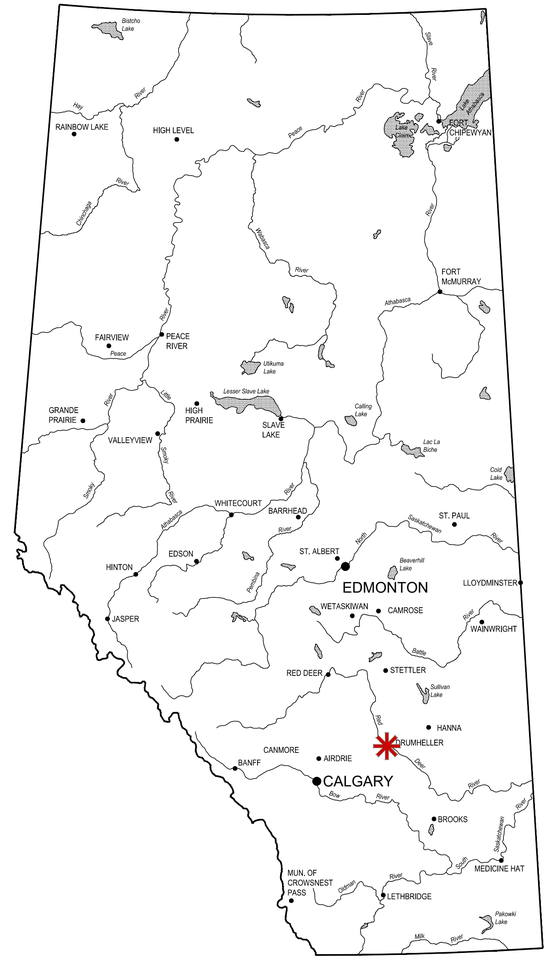

REGIONAL PLAN

N.T.S.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal:

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
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TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1
AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
TITLE PAGE & LOCATION PLAN

Project No. 21.2311.002
Group GENERAL
Drawing No. G-001
Rev. 0

INTRODUCTION

THE FOLLOWING REDI–ROCK REINFORCED RETAINING WALL DESIGN APPLIES TO TWO INDIVIDUAL RETAINING STRUCTURES TO BE CONSTRUCTED ALONG THE PROPOSED DRUMHELLER DOWNTOWN DIKE ALIGNMENT. WALL #1 IS SITUATED ON THE NORTHWEST CORNER OF THE AQUAPLEX BUILDING AND IS APPROXIMATELY 27 m LONG WITH A MAXIMUM WALL HEIGHT OF 1.65 m. WALL #2 IS SITUATED ALONG THE EAST PROPERTY LINE OF THE RIVERVIEW TERRACE CONDOMINIUM BUILDING AND IS APPROXIMATELY 23.4 m LONG WITH A MAXIMUM WALL HEIGHT OF 1.13 m. BOTH OF THESE WALL SYSTEMS HAVE BEEN DESIGNED TO MEET THE NATIONAL CONCRETE AND MASONRY ASSOCIATION DESIGN GUIDELINES AS WELL AS THE DESIGN GUIDELINES ESTABLISHED BY AASHTO 2013 DESIGN MANUAL. THESE TWO WALLS ARE IDENTIFIED ON DRAWINGS B–101 AND B–102, RESPECTIVELY.

MATERIALS

MODULAR BLOCKS FOR WALLS #1 AND WALLS #2 ARE TO CONSIST OF LEDGESTONE REDI–ROCK 28 INCH POSITIVE CONNECTION BLOCK (PCB) UNITS, WEIGHTING APPROXIMATELY 660 kg PER BLOCK. REDI–ROCK 28" PCB DIMENSIONS ARE 1172 mm (46 1/8 ") X 711 mm (28") X 457 mm (18") (LXWXD).

BACKFILL MATERIALS WITHIN THE REINFORCED ZONE FOR THESE WALLS IS TO CONSIST OF A REWORKED CLAY TILL MATERIAL WITH A MINIMUM FRICTION ANGLE OF 28 DEGREES AND A MAXIMUM HYDRAULIC CONDUCTIVITY OF $2X10^{-6}$ m/s. THIS MATERIAL IS TO BE UNIFORM AND NOT BLENDED WITH OTHER MATERIALS. THE RETAINED DIKE FILL SOILS OUTSIDE OF THE REINFORCED ZONE WILL CONSIST OF ZONE 1A IMPERVIOUS FILL THAT IS TO BE MIXED BEFORE PLACEMENT ACCORDING TO PROJECT SPECIFICATIONS AND IS TO HAVE A MAXIMUM HYDRAULIC CONDUCTIVITY OF $4X10^{-6}$ m/s. A FRICTION ANGLE OF 25 DEGREES AND AN APPROXIMATE BULK UNIT WEIGHT OF 17.5 kN/m^3 WAS UTILIZED FOR THE RETAINED DIKE FILL SOILS, OUTSIDE THE REINFORCED ZONE.

A MINIMUM 500 mm WIDE BLANKET OF 20 mm OR 40 mm DRAIN ROCK IS TO BE PLACED BEHIND ALL WALL SECTIONS AND IS TO BE USED TO FILL VERTICAL CORE SLOTS AND WEDGES BETWEEN ADJACENT BLOCKS. THIS MATERIAL IS TO BE WRAPPED IN A NON–WOVEN GEOTEXTILE FABRIC (GOETEX 801 OR APPROVED EQUIVALENT). BACKFILL MATERIALS SHALL BE APPROVED BY SWEETTECH ENGINEERING CONSULTANTS (SWEETTECH) AND SHALL MEET OR EXCEED THE MATERIAL PARAMETERS ESTABLISHED BY THE DESIGN ENGINEER.

A CLAY CAP AND PLUG LOCATED ABOVE AND BELOW THE DRAINAGE GRAVEL IS TO CONSIST OF ZONE 1A IMPERVIOUS FILL OR REWORKED CLAY TILL FILL COMPACTED TO ≥98% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).

FOLLOWING COMPLETION OF THE WALLS, EXPOSED REDI–ROCK BLOCKS SHALL BE COATED WITH A SPRAY–ON, ANTI–GRAFFITI CLEAR COAT.

ALL RETAINED SOILS SHALL BE FREE OF EXCESS MOISTURE, ROOTS, MULCH, SOD, SNOW, FROZEN LUMPS, ORGANIC AND DELETERIOUS MATERIALS. ALL ROCK PARTICLES AND HARD EARTH CLODS SHALL BE LESS THAN 80 mm IN THE LONGEST DIMENSION. BACKFILL MATERIALS THAT DO NOT MEET THESE CRITERIA SHALL BE CONSIDERED UNSUITABLE AND SHALL BE REMOVED.

TECHNICAL REQUIREMENTS

PRIOR TO CONSTRUCTION OF THE RETAINING WALLS, THE CONTRACTOR SHALL CLEAR AND GRUB THE BACKFILL AREAS, REMOVING TOPSOIL, BRUSH, SOD, OR OTHER ORGANIC AND/OR DELETERIOUS MATERIAL. ANY UNSUITABLE SOIL AT THE FOUNDATION ELEVATION SHALL BE OVER EXCAVATED, REPLACED, AND COMPACTED WITH A REWORKED CLAY TILL FILL MATERIAL CORRESPONDING TO THE PROJECT SPECIFICATIONS. THE EXISTING DIKE SOILS ARE PREDOMINANTLY UNSUITABLE FOR PLACEMENT WITHIN THE REINFORCED ZONE. THESE SOILS ARE TO BE EXCAVATED FROM THE REINFORCED ZONE FOOTPRINT AND UTILIZED OUTSIDE THE GEOGRID AREA.

FOUNDATION SOILS FOR THESE TWO WALLS SHALL BE INSPECTED BY SWEETTECH PRIOR TO PLACEMENT OF THE BASE/FOUNDATION GRAVEL. SWEETTECH WILL CONFIRM THAT THE SITE HAS BEEN PROPERLY PREPARED AND THAT THE DESIGN PARAMETERS ARE APPROPRIATE FOR THE ACTUAL IN–SITU SOIL CONDITIONS. PRIOR TO CONSTRUCTION OF THE RETAINING WALLS, AS MUCH AS PRACTICABLE, AVOID DISTURBING THE FOUNDATION SOILS FOR THE WALL AS A RESULT OF OTHER CONSTRUCTION ACTIVITIES. AS IT IS ANTICIPATED THAT FILL IS SITUATED BENEATH THE BASE BLOCK ELEVATION FOR BOTH RETAINING WALLS, THE FOUNDATION SOILS ARE TO BE HYDRATED AND COMPACTED WITH A MINIMUM OF 6 PASSES WITH A MINIMUM 200 KG PLATE TAMPER AND INSPECTED BY SWEETTECH PRIOR PLACEMENT OF THE BASE/FOUNDATION GRAVEL.

BACKFILL SOILS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 300 mm IN UNCOMPACTED THICKNESS FOR HEAVY COMPACTION EQUIPMENT. FOR ZONES WHERE COMPACTION IS ACCOMPLISHED WITH HAND OPERATED EQUIPMENT THE FILL SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 200 mm IN UNCOMPACTED THICKNESS. ONLY HAND OPERATED EQUIPMENT SHALL BE ALLOWED WITHIN 1.0 m OF THE BACK OF THE RETAINING WALL BLOCKS. DRAINAGE GRAVEL BACKFILL IS TO BE PLACED ACCORDING TO THE LIFT THICKNESS SPECIFIED ABOVE AND IS TO BE COMPACTED WITH A MINIMUM OF 4 PASSES UTILIZING VIBRATORY COMPACTION EQUIPMENT.

FILL MATERIAL SITUATED BEHIND THE DRAINAGE GRAVEL, WITHIN THE REINFORCED ZONE OF THE WALLS, AND BEHIND THE DRAINAGE GRAVEL BLANKET FOR GRAVITY PORTIONS OF THE WALLS, SHALL BE COMPACTED TO A MINIMUM OF 98% OF THE SPMDD AS DETERMINED IN ACCORDANCE WITH ASTM D698 (STANDARD PROCTOR) AT A MOISTURE CONTENT NO GREATER THAN 2 PERCENTAGE POINTS WET AND NO LESS THAN 2 PERCENTAGE POINT DRY OF OPTIMUM.

ZONE 1A IMPERVIOUS FILL, PLACED OUTSIDE THE REINFORCED ZONE OF THE RETAINING WALLS, IS TO BE COMPACTED TO A MINIMUM OF 98% OF THE SPMDD AS DETERMINED IN ACCORDANCE WITH ASTM D698 (STANDARD PROCTOR) AT A MOISTURE CONTENT NO GREATER THAN 3 PERCENTAGE POINTS WET AND NO LESS THAN 1 PERCENTAGE POINT DRY OF OPTIMUM.

FOUNDATION LEVELLING PADS FOR EACH OF THE WALLS ARE TO BE CONSTRUCTED UTILIZING ZONE 4A BASE GRAVEL AT A MINIMUM COMPACTED THICKNESS OF 300 mm. THE FOUNDATION LEVELLING PADS ARE TO BE TESTED FOR COMPACTION PRIOR TO PLACING THE FIRST BLOCK COURSE. FOUNDATION LEVELLING PADS SHALL BE COMPACTED TO A MINIMUM OF 98% OF THE SPMDD AND ARE TO HAVE A MINIMUM WIDTH OF 1.3 m.

A COMPLETE SET OF APPROVED CONSTRUCTION DRAWINGS AND CONTRACT SPECIFICATIONS SHALL BE ON–SITE AT ALL TIMES DURING CONSTRUCTION OF THE WALLS.

TESTING/INSPECTION REQUIREMENTS

INSPECTION METHODS, FREQUENCY, AND VERIFICATION OF MATERIAL SPECIFICATIONS SHALL BE THE RESPONSIBILITY OF SWEETTECH.

SWEETTECH SHALL VERIFY THAT THE BACKFILL SOIL MATERIAL IS ADEQUATE AND MEETS ALL OTHER REQUIREMENTS (PREVIOUSLY OUTLINED IN "MATERIALS") PRIOR TO PROCEEDING WITH CONSTRUCTION.

THE CONTRACTOR AND THEIR ASSOCIATED SUBCONSULTANTS WILL BE REPSONSIBLE FOR QUALITY CONTROL TESTING THROUGHOUT CONSTRUCTION. THE REINFORCED ZONE IS TO BE TESTED AFTER APPROXIMATELY 20%, 50%, AND 80% OF THE WALL HAS BEEN BACKFILLED. FOR THE GRAVITY PORTIONS OF THE WALLS, THE REWORKED CLAY TILL BACKFILL MATERIAL SITUATED BEHIND THE DRAINAGE GRAVEL BLANKET IS TO BE TESTED ONCE 50% OF THE BACKFILL MATERIAL HAS BEEN PLACED. COMPACTION TESTING ON THE BACKFILL MATERIAL SHALL BE COMPLETED THROUGHOUT CONSTRUCTION AS SPECIFIED ABOVE AND AT ROUGHLY 7 m LATERAL SPACING ALONG THE WALL. COMPACTION TESTING IS ALSO REQUIRED ON THE FOUNDATION LEVELLING PAD, COMPLETED AT ROUGHLY 7 m LATERAL SPACING ALONG THE WALL ALIGNMENT. QUALITY CONTROL TESTING RESULTS SHALL BE SUBMITTED TO SWEETTECH FOR REVIEW WITHIN 48 HOURS OF TESTING. SWEETTECH AND THE OWNER'S SELECTED TESTING AGENCY WILL BE RESPONSIBLE FOR QUALITY ASSURANCE LABORATORY TESTING ENSURING THE REQUIRED MATERIAL PARAMETERS (FRICTION ANGLE, HYDRAULIC CONDUCTIVITY, PLASTICITY, AND DISPERSIVITY) ARE MAINTAINED ON ALL FILL SOILS ARRIVING OR CURRENTLY ON SITE.

THE OWNER'S SELECTED TESTING AGENCY WILL BE RESPONSIBLE FOR ALL QUALTITY ASSURANCE TESTING AND MAY INTERMITTENTLY CONDUCT COMPACTION TESTING THROUGHOUT CONSTRUCTION, AS REQUESTED BY SWEETTECH.

BLOCK PLACEMENT (GENERAL NOTES)

BASE BLOCKS ARE TO BE PLACED ON A MINIMUM 300 mm THICK LEVELLING PAD CONSTRUCTED OF ZONE 4A BASE GRAVEL AND COMPACTED TO A MINIMUM OF 98% OF SPMDD.

AN EXISITNG 300 mm DIAMETER PVC STORM PIPE HAS BEEN IDENTIFIED RUNNING BENEATH THE FOUNDATION LEVELLING PAD OF WALL #1. AS THERE ARE NO COMPACTION REPORTS FROM THE TIME OF THE INSTALLATION OF THIS PIPE, THE MATERIAL OVER THE PIPE MUST BE REMOVED TO THE DEPTH OF THE PIPE AND REPLACED WITH A SUITABLE ENGINEERED FILL AS DIRECTED BY SWEETTECH. IN THE INSTANCE THAT REMOVAL OF THIS FILL IS NOT A FEASIBLE OPTION, SWEETTECH WILL PROVIDE ALTERNATIVE SOLUTIONS TO THE CONTRACTOR.

PRIOR TO COMMENCING CONSTRUCTION OF WALL #1, THE CONTRACTOR IS TO HAVE THE EXISITNG PIPE CAMERA SCOPED TO DOCUMENT THE CONDITION OF THE PIPE PRIOR CONSTRUCTION. FOLLOWING THE INSTALLATION OF THE FOUNDATION LEVELLING PAD, THE CONTRACTOR IS TO AGAIN CAMERA SCOPE THE EXISTING PIPE TO CONFIRM THAT THE PIPE HAS NOT BEEN DAMAGE DUE TO LEVELLING PAD COMPACTION. SWEETTECH MUST BE PRESENT DURING THE TWO (2) CAMERA SCOPING INVESTIGATIONS. THE CONTRACTOR IS TO RECTIFY ANY OBSERVED DAMAGE TO THE SATISFACTION OF SWEETTECH PRIOR TO PROCEEDING WITH THE REMAINING WALL CONSTRUCTION.

ALL BLOCKS MUST BE CLEANED OF ALL LOOSE DEBRIS PRIOR TO PLACEMENT OF ADDITIONAL BLOCK COURSES.

AREAS WHERE A HARD SURFACE, SUCH AS CONCRETE OR ASPHALT, WILL BE CONSTRUCTED IMMEDIATELY IN FRONT OF A WALL, A 10 mm FIBER–BOARD SHOULD BE LEFT BETWEEN THE SURFACE AND THE FACE OF THE WALL TO ALLOW FOR SEASONAL MOVEMENT WITHOUT IMPEDANCE.

FOLLOWING COMPLETION OF THE WALLS, EXPOSED REDI–ROCK BLOCKS SHALL BE COATED WITH A SPRAY–ON, ANTI–GRAFFITI CLEAR COAT.

28" PCB PLACEMENT

A MINIMUM OF 1/2 A BLOCK COURSE IS TO BE BURIED FOR ALL WALL SECTIONS. FOR WALL SECTIONS WITH AN EXPOSED WALL HEIGHT LESS THAN 0.5 m, A GRAVITY SYSTEM WILL BE UTILIZED. BLOCKS ARE TO BE DRY STACKED AND PUSHED FORWARD TO MAINTAIN A SETBACK OF 41.3 mm (5 DEGREES) FOR ALL BLOCK COURSES. IT IS IMPERATIVE THAT BOTH SIDES OF ALL BURIED BLOCK BE BACKFILLED AND COMPACTED AT THE SAME TIME, PRIOR TO PLACEMENT OF ADDITIONAL BLOCK COURSES. ONCE PLACED, NO EXCAVATION IN FRONT OF THE WALLS IS ALLOWED THROUGHOUT THE STRUCTURES' LIFETIME.

ALL GRAVITY WALL SECTIONS ARE TO CONSIST OF 28" LEDGESTONE REDI–ROCK BLOCK UNITS FOR BOTH EXPOSED AND BURIED BLOCK COURSES.

ALL WALL SECTIONS GREATER THAN 0.5 m IN EXPOSED HEIGHT ARE TO BE REINFORCED ACCORDING TO THE TABLE BELOW. IT IS CRITICAL THAT THE PROVIDED SETBACK DISTANCE FROM THE FACE OF THE REDI–ROCK WALL TO ANY SITE FURNISHINGS OR OTHER APPURTENANCES BE ADHERED TO.

THE MAXIMUM ASSESSED EXPOSED WALL HEIGHT FOR WALL #1, AT THE NORTHWEST CORNER OF THE AQUAPLEX BUILDING, IS 1.65 m, NOT INCLUDING BLOCK BURIAL. THE MAXIMUM ASSESSED EXPOSED WALL HEIGHT FOR WALL #2, LOCATED ALONG THE EAST PROPERTY LINE OF THE RIVERVIEW TERRACE CONDOMINIUM BUILDING, IS 1.13 m, NOT INCLUDING BLOCK BURIAL. UNDER NO CIRCUMSTANCES ARE THESE WALL HEIGHTS TO BE INCREASED WITHOUT CONSULTING SWEETTECH.

WALL #1: AQUAPLEX RETAINING WALL		
EXPOSED WALL HEIGHT	GEOGRID TYPE	GEOGRID LENGTH* (MEASURED FROM BACK OF THE BLOCK)
< 0.5 m	N/A	GRAVITY
0.5 m – 1.65 m	MIRAGRID 10XT	3.3 m

*THE ACTUAL CUT LENGTH OF A GIVEN 12–INCH WIDE GEOGRID STRIP IS TWO (2) TIMES THE DESIGN LENGTH (FROM THE TABLE ABOVE) PLUS THE ADDITIONAL GEOGRID REQUIRED TO WRAP THOUGH THE PCB UNIT (0.9 m FOR REDI–ROCK 28" PCB).

WALL #2: RIVERVIEW TERRACE RETAINING WALL		
EXPOSED WALL HEIGHT	GEOGRID TYPE	GEOGRID LENGTH* (MEASURED FROM BACK OF THE BLOCK)
0 m – 1.13 m	MIRAGRID 10XT	3.0 m

*THE ACTUAL CUT LENGTH OF A GIVEN 12–INCH WIDE GEOGRID STRIP IS TWO (2) TIMES THE DESIGN LENGTH (FROM THE TABLE ABOVE) PLUS THE ADDITIONAL GEOGRID REQUIRED TO WRAP THOUGH THE PCB UNIT (0.9 m FOR REDI–ROCK 28" PCB).

ALL GEOGRID IS TO BE MIRAGRID 10 XT GEOGRID MANUFACTURED BY MIRAFI INC. THE LONG TERM DESIGN STRENGTH (LTDS) FOR THIS GEOGRID IS 83.3 kN/m. ALTERNATE GEOGRID PRODUCTS WITH AN EQUIVALENT OR HIGHER LONG TERM DESIGN STRENGTH MAY BE UTILIZED ONCE APPROVAL HAS BEEN PROVIDED BY SWEETTECH. ALTERNATE GEOGRID PRODUCTS MUST BE SUBMITTED AND APPROVED 7 DAYS IN ADVANCE OF BEING SHIPPED TO SITE.

PER THE REDI–ROCK PCB MANUFACTURER'S SPECIFICATIONS, IT IS CRITICAL THAT ONLY FACTORY CUT, 12–INCH WIDE, STRIPS OF MIRAFI GEOGRID (CERTIFIED BY TENCATE MIRAFI FOR WIDTH AND STRENGTH) ARE USED IN THE INSTALLATION OF PCB WALL SECTIONS. FIELD CUTTING STRIPS OF GEOGRID FROM LARGER ROLLS CAN SIGNIFICANTLY DEGRADE THE CAPACITY OF THE WALL SYSTEM AND IS NOT PERMITTED.

GEOGRID SHALL BE PLACED AT THE LOCATIONS AND ELEVATIONS SHOWN ON THE DRAWINGS.

ALL GEOGRID LAYERS ARE TO BE SPACED EVERY BLOCK COURSE BEGINNING FROM THE ABSOLUTE BASE BLOCK COURSE TO THE TOP BLOCK COURSE.

BLOCKS SHALL BE INSPECTED FOR ANY CONCRETE FLASHING OR SHARP EDGES IN THE SLOT AND GROOVE THROUGH THE BLOCK. ANY FLASHING SHOULD BE REMOVED, AND SHARP EDGES SHALL BE GRINDED SMOOTH TO MITIGATE AGAINST POTENTIAL DAMAGE TO THE GEOGRID REINFORCEMENT.

GEOGRID REINFORCEMENT SHALL BE CONTINUOUS THROUGHOUT THEIR EMBEDMENT LENGTH(S). NO SPLICING IS ALLOWED AT ANY TIME.

GEOGRIDS SHALL BE CUT NEXT TO THE MACHINE DIRECTION BAR.

GEOGRID SHALL BE ROLLED OUT WITH THE MACHINE DIRECTION PERPENDICULAR TO THE WALL FACE, BEING FED THROUGH THE VERTICAL CORE SLOT IN THE PCBS, AND PULLED TAUT UNTIL THE DEFINED GEOGRID LENGTH IS REACHED (MEASURED FROM THE BACK OF THE BLOCK).

ONCE BACKFILL MATERIALS HAVE BEEN PROPERLY PLACED AND COMPACTED TO THE ELEVATION OF THE TOP OF THE PCB, THE TOP LENGTH OF THE GEOGRID STRIP CAN BE UNFURLED FROM THE VERTICAL CORE SLOT IN THE PCB TO THE DEFINED GEOGRID LENGTH (MEASURED FROM THE BACK OF THE BLOCK). THE GEOGRID STRIP SHALL THEN BE PULLED TIGHT AND PINNED INTO THE BACKFILL MATERIAL TO MAINTAIN TENSION THROUGHOUT THE PLACEMENT OF THE ADDITIONAL BLOCK COURSES.

THE CORE SLOT IN THE PCB SHALL NOT BE FILLED WITH 20 mm OR 40 mm DRAIN ROCK UNTIL THE TOP LENGTH OF GEOGRID HAS BEEN EXTENDED AND PINNED INTO PLACE. CARE SHOULD BE TAKEN TO ENSURE THAT THE GEOGRID REMAIN FLAT AGAINST THE BACK OF THE VERTICAL CORE SLOT IN THE PCB TO PREVENT ANY STONES FROM BECOMING LODGED BETWEEN THE GEOGRID AND THE CONCRETE BLOCK.

TRACKED CONSTRUCTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY ON THE GEOGRID.

A MINIMUM BACKFILL THICKNESS OF 150 mm IS REQUIRED FOR OPERATION OF TRACKED VEHICLES OVER THE GEOGRID. TURNING OF TRACKED VEHICLES SHOULD BE KEPT TO A MINIMUM TO PREVENT TRACKS FROM DISPLACING THE FILL AND/OR THE GEOGRID.

NO VIBRATORY PACKING EQUIPMENT SHALL BE OPERATED ON TOP OF THE REDI–ROCK BLOCKS.

RUBBER–TIRED VEHICLES MAY PASS OVER THE GEOGRID REINFORCEMENT AT SPEEDS LESS THAN 8 km/h, PER MANUFACTURER'S SPECIFICATIONS. SUDDEN BRAKING AND SHARP TURNING SHALL BE AVOIDED.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

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PROFESSIONAL ENGINEERS AND GEOSCIENTISTS ALBERTA
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TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1

AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
CONSTRUCTION NOTES - 1

Project No.	Drawing No.	Rev.
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Group: GEOTECHNICAL		

THE REINFORCEMENT IS TO ACHIEVE 50% LATERAL COVERAGE.

IT IS CRUCIAL THAT THE GEOGRID IS PROPERLY TENSIONED AND PINNED INTO THE REWORKED CLAY TILL BACKFILL. THE REWORKED CLAY TILL BACKFILL SOIL WITHIN THE REINFORCED ZONE IS TO BE PLACED AND COMPACTED FROM THE BACK OF THE DRAINAGE GRAVEL BLANKET, BEHIND THE WALL BLOCKS, EXTENDING TO THE PINNED END OF THE GEOGRID STRIPS TO ASSIST IN FURTHER TENSIONING THE GEOGRID.

NO CHANGES TO THE GEOGRID LAYOUT, INCLUDING BUT NOT LIMITED TO LENGTH, GEOGRID TYPE, OR ELEVATION SHALL BE MADE WITHOUT THE WRITTEN CONSENT OF SWEETTECH.

GUARDRAIL SYSTEM

A GUARDRAIL SYSTEM IS REQUIRED FOR BOTH WALL #1 AND #2. WHERE A GUARDRAIL SYSTEM IS PROPOSED BEHIND THE RETAINING WALLS, A PRODUCT CALLED "SLEEVE-IT" POST FOUNDATION SYSTEM WILL BE USED (SEE DETAILS ON DWG B-501). THIS PRODUCT MEETS ALL ALBERTA BUILDING CODE SPECIFICATIONS AND IS DESIGNED TO REDUCE THE DEGREE OF LOAD TRANSFER TO THE WALL IF THE GUARDRAIL IS IMPACTED. THIS SYSTEM WILL NOT BE DEEMED LOAD BEARING.

THE GUARDRAIL IS PROPOSED TO BE INSTALLED A MINIMUM OF 0.6 m AWAY FROM THE WALL, MEASURED FROM THE BACK OF TOP BLOCK COURSE, AND AS SUCH THE "SLEEVE-IT" SYSTEM CAN BE INSTALLED DURING WALL CONSTRUCTION. THE TOP COURSE OF GEOGRID LAYERS CAN BE MODIFIED TO ALLOW FOR THE SLEEVE-IT SYSTEM TO BE INSTALLED, HOWEVER, THE GRID LENGTH CANNOT BE REDUCED.

THE USE OF THE "SLEEVE-IT" GUARDRAIL SYSTEM IS LIMITED TO THE FOLLOWING APPLICATIONS WITHOUT CONSIDERATION OF WIND LOADS:

- 2.4 m HIGH AND UNDER CHAIN LINK FENCES
- 1.8 m HIGH AND UNDER WOOD FENCES WITH GAPS BETWEEN THE BOARDS
- 1.8 m HIGH AND UNDER BALLUSTRADED PVC, STEEL, ALUMINUM, OR WROUGHT IRON FENCES.

ALL OTHER FENCE SYSTEMS WILL NEED TO BE APPROVED BY SWEETTECH AT LEAST 7 DAYS BEFORE UTILIZATION.

GUARDRAIL BOARDS ARE TO BE SPACED WITH A MINIMUM OF 9.5 mm BETWEEN EACH BOARD TO REDUCE WIND LOAD ON THE GUARDRAIL SYSTEM. NO OTHER POST FOUNDATION SYSTEM IS TO BE USED WITHOUT APPROVAL FROM SWEETTECH.

DRAINAGE

WALL #1 AND #2 ARE SITUATED ON THE LAND SIDE OF THE DRUMHELLER DOWNTOWN DIKE ALONG THE RED DEER RIVER. THE DIKE CORE CRESTS AT THESE WALL SECTIONS ARE DESIGNED TO SLOPE AWAY FROM THE WALL FACES AT MINIMUM OF 4% TO DIRECT SURFACE WATER RUNOFF AWAY FROM THE WALL AND TOWARD THE RIVER SIDE OF THE DIKE. IN FRONT OF ALL WALL SECTIONS, GRADES ARE TO EXTEND AWAY FROM THE BOTTOM OF THE WALL AT A MINIMUM GRADE OF 2%. POSITIVE DRAINAGE AWAY FROM THE WALL SHOULD BE MAINTAINED TO MINIMIZE WATER INFILTRATION INTO THE BACKFILL AREA. A 100 mm PERFORATED DRAINAGE PIPE AND 50 mm DRAINAGE PORTS ARE TO BE PLACED BEHIND AND THROUGH ALL SECTIONS AS SPECIFIED BELOW.

- AT WALL #1, THE 100 mm PERFORATED DRAINAGE PIPE IS TO BE INSTALLED LEVEL AND THE INVERT OF THE PIPE IS TO BE INSTALLED AT THE FINISHED FRONT OF WALL ELEVATION. DAYLIGHT THE DRAINAGE PIPE AT EITHER END OF THE WALL SECTION. THERE ARE TO BE THREE DRAINAGE PORTS EVENLY SPACED ALONG WALL #1 AT THE ELEVATION OF THE DRAINAGE PIPE. THESE DRAINAGE PORTS ARE TO BE CONNECTED TO THE 100 mm PERFORATED DRAINAGE PIPE.
- AT WALL #2, THE 100 mm PERFORATED DRAINAGE PIPE IS TO BE INSTALLED LEVEL AT ELEVATION 683.75 m DAYLIGHTING AT THE NORTHWEST END OF THE WALL. THERE ARE TO BE THREE DRAINAGE PORTS INSTALLED EVENLY ALONG WALL #2, WITHIN 150 mm OF THE FRONT OF WALL FINISHED ELEVATION.
- IF DRAINAGE PORTS ARE TO BE INSTALLED DURING REDI-ROCK BLOCK FABRICATION, THE CONTRACTOR IS TO VERIFY DRAINAGE PORT POSITIONING WITH SWEETTECH PRIOR TO PROCEEDING WITH FABRICATION.

THE 100 mm PERFORATED DRAINAGE PIPE SHALL BE CONSTRUCTED OF RIGID PVC PIPE IN ACCORDANCE WITH CAN/CSA-B1800 SERIES AND ASTM D3034 (INCLUDING FITTINGS) WITH 2 ROWS OF 16 mm (5/8") DIAMETER HOLES POSITIONED 120° RADIALLY FROM EACHOTHER ON THE PIPE. THE HOLES ARE TO BE SPACED AT 127 mm (5") ALONG THE PIPE. INSTALL THE PERFORATED PIPE SUCH THAT PERFORATIONS ARE ORIENTED DOWNWARDS, WITH PERFORATIONS EVENLY SPACED AT 60°OFF-VERTICAL.

AT THE END OF EACH WORKDAY, THE BACKFILL SURFACE SHALL BE HAND COMPACTED AND SLOPED/GRADED TO MINIMIZE PONDING OF WATER AND SATURATION OF THE BACKFILL. THE MANAGEMENT AND MITIGATION OF BOTH SURFACE DRAINAGE WATER AND SEEPAGE OF GROUNDWATER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

THE DRAINAGE GRAVEL BLANKET IS TO BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 200 mm AND SHOULD BE COMPACTED WITH A MINIMUM OF 4 PASSES UTILIZING VIBRATORY COMPACTION EQUIPMENT. THIS DRAINAGE BLANKET IS TO BE A MINIMUM OF 500 mm WIDE AND WRAPPED IN A NON-WOVEN GEOTEXTILE FILTER FABRIC (GEOTEX 801 OR APPROVED EQUIVALENT).

A CLAY CAP AND PLUG LOCATED ABOVE AND BELOW THE DRAINAGE GRAVEL FOR ALL WALL SECTIONS (GEOGRID REINFORCED AND GRAVITY) IS TO CONSIST OF ZONE 1A IMPERVIOUS FILL OR REWORKED CLAY TILL FILL COMPACTED TO ≥98% SPMDD.

DESIGN PARAMETERS

DESIGN OF THE RETAINING STRUCTURES IS BASED ON THE FOLLOWING PARAMETERS.

MATERIAL TYPE	EFFECTIVE FRICTION ANGLE	EFFECTIVE COHESION	UNIT WEIGHT
REWORKED CLAY TILL FILL (REINFORCED ZONE)	28°	0 kPa	19.5 kN/m³
FOUNDATION LEVELING PAD GRANULAR MATERIAL	36°	0 kPa	20.0 kN/m³
UNDERLYING FILL MATERIAL (FOUNDATION SOIL)	27°	0 kPa	18.0 kN/m³
NEW DIKE FILL (OUTSIDE OF REINFORCED ZONE)	25°	0 kPa	17.5 kN/m³

BEHIND ALL WALL SECTIONS, THE DIKE CREST IS DESIGNED TO BE CONSTRUCTED TO PROVIDE A MINIMUM 6 m TOP WIDTH (IN ADDITION TO THE REQUIRED SETBACK FROM THE RETAINING WALL FACE). THIS 6 m TOP WIDTH IS REQUIRED FOR ADAPTIVE EMERGENCY RESPONSE MANAGEMENT ALLOWING FOR EMERGENCY DIKE RAISES, IF REQUIRED.

ALL WALL SECTIONS WERE DESIGNED BASED ON THE FOLLOWING "WORST CASE SCENARIO" DESCRIBED THROUGH THE COMBINATION OF THE FOLLOWING LOADING CONDITIONS:

- A 30 kPa TRAPEZOIDAL DISTRIBUTED LOAD FOR EMERGENCY ADAPTIVE FILL PLACED OVER THE 6 m DIKE CREST. ADAPTIVE FILL IS TO BE PLACED A MAXIMUM OF 1.5 m HIGH WITH SIDE SLOPES OF 1H:1V AND IS ASSUMED TO HAVE A BULK UNIT WEIGHT OF 19 kN/m^3.
- A 120 kN POINT LOAD APPLIED OVER AN IDEALIZED 0.6 X 1.0 m TIRE CONTACT PATCH, FOR ONE SIDE OF THE TRIAXIAL BELLY DUMP TRUCK (CLOSEST TO THE RETAINING WALL BLOCKS), BASED ON THE MAXIMUM ALLOWABLE AXLE WEIGHT PER THE ALBERTA GOVERNMENT.
- THE PHREATIC SURFACES WERE ASSUMED TO BE AT THE 1850 cms FLOOD ELEVATION BEHIND THE RETAINING WALLS AND APPROXIMATELY 0.5 m BELOW GRADE IN FRONT OF THE RETAINING WALLS.

SEISMIC IMPACTS WERE NOT CONSIDERED IN THE DESIGNS OF THESE WALL SECTIONS AS THE SEISMIC HAZARD OF THE DRUMHELLER AREA IS ANTICIPATED AS LOW BY THE GEOLOGICAL SURVEY OF CANADA.

THE RESISTANCE TYPE OF THE REWORKED CLAY TILL ON THE FRONT FACE OF THE WALLS WAS ASSUMED TO BE "AT REST" FOR THE DESIGN OF THE REINFORCED WALL SECTIONS AND "PASSIVE" RESISTANCE WAS UTILIZED FOR THE BURIED BLOCK COURSE WHERE THE GRAVITY WALL SECTIONS WILL BE CONSTRUCTED.

ALL SURCHARGE LOADS WERE POSITIONED A MINIMUM OF 0.8 m BACK FROM THE BACK OF THE TOP BLOCK COURSE. THE FENCE SYSTEM DESCRIBED ABOVE IS TO BE POSITIONED 0.6 m SET-BACK FROM THE BACK OF THE TOP BLOCK COURSE TO ENSURE THAT VEHICULAR AND EMERGENCY ADAPTIVE FILL SOIL SURCHARGE LOADS ARE NOT POSITIONED WITHIN 0.8 m OF THE BACK OF THE BLOCK.

FACTORS OF SAFETY

FACTOR OF SAFETY	MIN. REQUIRED	WALL #1: MAX. 1.52 m HIGH AQUAPLEX WALL	WALL #2: MAX 1.08 m HIGH RIVERVIEW TERRACE WALL	WALL #1 & #2 0.5 m HIGH GRAVITY SECTION
OVERTURNING	2.00	19.36	41.64	2.94
DIRECT SLIDING	1.50	3.83	5.76	1.52
BEARING CAPACITY	2.00	2.56	3.60	4.50
SLIDING ALONG GEOGRID	1.50	4.63	7.86	N/A
GEOGRID STRENGTH	1.50	2.04	2.92	N/A
GEOGRID PULLOUT	1.50	1.50	1.61	N/A
GEOGRID CONNECTION	1.50	2.01	2.87	N/A
GLOBAL STABILITY	1.50	SATISFACTORY*	SATISFACTORY*	SATISFACTORY*

*STABILITY ANALYSIS FOR THE DIKE WAS COMPLETED AS PART OF SWEETTECH'S 2021 GEOTECHNICAL INVESTIGATION PROGRAM. REFER TO SWEETTECH'S FINAL DRFM DIKE D – GEOTECHNICAL INVESTIGATION REPORT DATED SEPTEMBER 17, 2021.

EACH OF THE RETAINING WALLS DESIGNED WITHIN THIS DOCUMENT, MEET OR EXCEED ALL STABILITY FACTORS OF SAFETY SET BY INDUSTRY STANDARDS AND THE DRFM'S APRIL 21, 2021, DRAFT GEOTECHNICAL DESIGN BASIS MEMO FOR THE DRUMHELLER DIKE SYSTEMS. THE RETAINING WALLS HAVE BEEN DESIGNED USING THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS DESIGN CODE (AASHTO).

THESE FACTORS OF SAFETY WERE DETERMINED WITH THE ADDITION OF THE LOADING CONDITIONS SPECIFIED IN DESIGN PARAMETERS SECTION OF THIS DESIGN.

SPECIAL PROVISIONS

DESIGN OF THESE WALLS WAS BASED ON THE PROVIDED TOPOGRAPHIC DATA AND DIMENSIONS GIVEN ON PLAN VIEW DRAWINGS. IF DURING CONSTRUCTION, MODIFICATIONS TO THESE DESIGNS ARE PROPOSED, SWEETTECH IS TO BE NOTIFIED SO THAT PROPER DESIGN ALTERATIONS CAN BE MADE PRIOR TO CONSTRUCTION.

FOR BACKFILL MATERIALS WITHIN THE REINFORCED ZONE FOR THESE WALLS, A DEVIATION, MEASURED NORMAL TO THE FINISHED SURFACE, OF +/-50 mm WILL BE PERMITTED BETWEEN THE FINISHED SURFACES AND THE LINES, GRADES, SLOPES, AND ELEVATIONS SPECIFIED IN THE CONTRACT DOCUMENTS, EXCLUDING THE TOP OF THE DIKE. FOR THE TOP OF DIKE, A DEVIATION MEASURED NORMAL TO THE FINISHED SURFACE, OF 0 mm TO +50 mm WILL BE PERMITTED BETWEEN THE FINISHED SURFACE AND THE LINES, GRADES, SLOPES, AND ELEVATIONS SPECIFIED IN THE DESIGN OR AS ESTABLISHED BY SWEETTECH. FOR THE FOUNDATION LEVELLING PAD AND DRAINAGE GRAVEL BLANKET, A TOLERANCE OF +/-25 mm OF THE SPECIFIED THICKNESS WILL BE PERMITTED. GEOGRID REINFORCEMENTS ARE BE INSTALLED AT LENGTHS NO LESS THAN SPECIFIED IN THIS PACKAGE.

SWEETTECH ASSUMES NO LIABILITY FOR THE INTERPRETATION OR VERIFICATION OF SUBSURFACE CONDITIONS FOR SUITABILITY OF SOIL, DESIGN PARAMETERS, OR THE INTERPRETATION OF SUBSURFACE GROUNDWATER CONDITIONS WHICH WERE APPLICABLE PRIOR TO CONSTRUCTION. SWEETTECH IS TO PROVIDE ALL INSPECTIONS OF THE SUBSURFACE CONDITIONS, VERIFYING DESIGN PARAMETERS, SUBGRADE CONDITIONS AND ALLOWABLE BEARING CAPACITIES ALONG THE RETAINING WALLS ALIGNMENT.

SWEETTECH IS RESPONSIBLE FOR REVIEWING AND VERIFYING THAT THE ACTUAL SITE CONDITIONS AND PARAMETERS ARE AS ASSUMED WITHIN THIS DESIGN PACKAGE. SWEETTECH SHALL BE ON-SITE TO ASSURE CONSTRUCTION IS IN ACCORDANCE WITH THESE NOTES AND DRAWINGS.

ONLY HAND OPERATED COMPACTION EQUIPMENT IS PERMITTED WITHIN 1.0 m OF THE BACK OF THE RETAINING WALL BLOCKS. SWEETTECH ASSUMES NO LIABILITY FOR DAMAGES OR DEFORMATIONS TO THIS WALL CAUSED BY EXCESSIVE LOADING DURING COMPACTION.

IF ANY GROUNDWATER IS ENCOUNTERED DURING CONSTRUCTION, SWEETTECH SHALL BE NOTIFIED IMMEDIATELY.

ANY REVISIONS TO DESIGN PARAMETERS OR STRUCTURE GEOMETRY SHALL REQUIRE DESIGN MODIFICATIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. SWEETTECH MUST BE NOTIFIED PRIOR TO CONSTRUCTION.

THIS DESIGN IS ONLY VALID FOR THE PROPOSED WALLS AS SHOWN ON THE SITE PLANS.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal:

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 63946
DATE: April 5, 2022
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

PROFESSIONAL ENGINEER ANDRES OSORIO ID 72962 ALBERTA
2022-04-05

Rev	Date	Des	Dwn	Chk	Description
0	22-04-05	AO	KS	ES	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1
AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
CONSTRUCTION NOTES - 2

Project No. 21.2311.002 | Drawing No. B-002 | Rev. 0
Group GEOTECHNICAL

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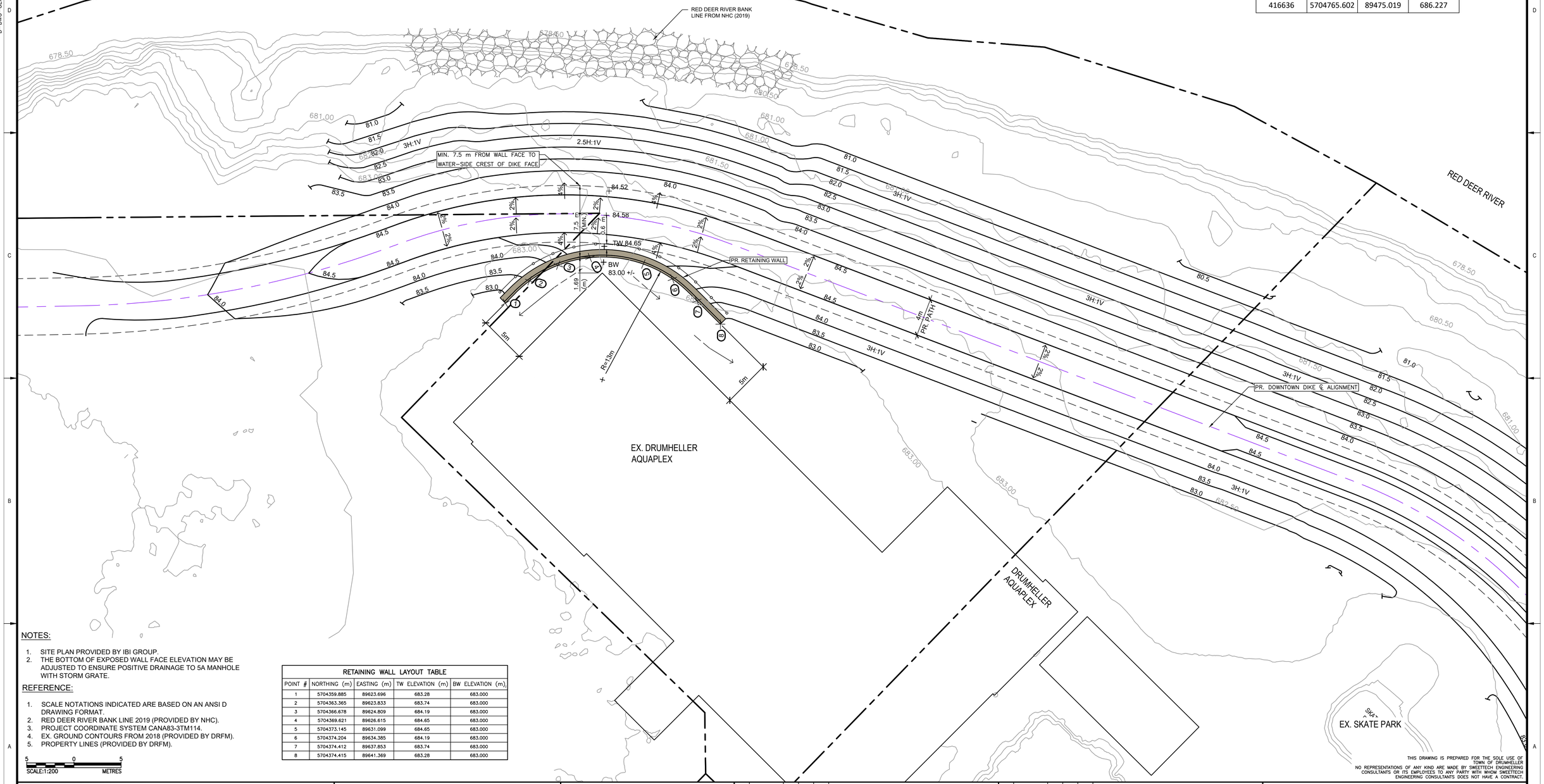
LEGEND

- PROPERTY LINE
- RIVER BANK LINE
- 85.5 EXISTING CONTOUR
- 85.5 PROPOSED CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION

RED DEER RIVER

RED DEER RIVER

SURVEY CONTROL POINTS			
ASCM	NORTHING	EASTING	ELEVATION
417469	5703757.371	90303.534	684.371
639732	5703923.309	90272.646	681.725
333930	5704070.443	90098.89	681.449
371419	5704120.994	89897.383	682.345
416636	5704765.602	89475.019	686.227



NOTES:

1. SITE PLAN PROVIDED BY IBI GROUP.
2. THE BOTTOM OF EXPOSED WALL FACE ELEVATION MAY BE ADJUSTED TO ENSURE POSITIVE DRAINAGE TO 5A MANHOLE WITH STORM GRATE.

REFERENCE:

1. SCALE NOTATIONS INDICATED ARE BASED ON AN ANSI D DRAWING FORMAT.
2. RED DEER RIVER BANK LINE 2019 (PROVIDED BY NHC).
3. PROJECT COORDINATE SYSTEM CANA83-3TM114.
4. EX. GROUND CONTOURS FROM 2018 (PROVIDED BY DRFM).
5. PROPERTY LINES (PROVIDED BY DRFM).

5 0 5
SCALE:1:200 METRES

RETAINING WALL LAYOUT TABLE				
POINT #	NORTHING (m)	EASTING (m)	TW ELEVATION (m)	BW ELEVATION (m)
1	5704359.885	89623.696	683.28	683.000
2	5704363.365	89623.833	683.74	683.000
3	5704366.678	89624.809	684.19	683.000
4	5704369.621	89626.615	684.65	683.000
5	5704373.145	89631.099	684.65	683.000
6	5704374.204	89634.385	684.19	683.000
7	5704374.412	89637.853	683.74	683.000
8	5704374.415	89641.369	683.28	683.000

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal:

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 67046
DATE: April 5, 2022
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

PROFESSIONAL ENGINEER ALBERTA ID 72062
2022-04-05

Rev	Date	Des	Dwn	Chk	Description
0	22-04-05	AO	KS	ES	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1

AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
AQUAPLEX SITE PLAN

Project No.	21.2311.002	Drawing No.	Rev.
Group	GEOTECHNICAL	B-101	0

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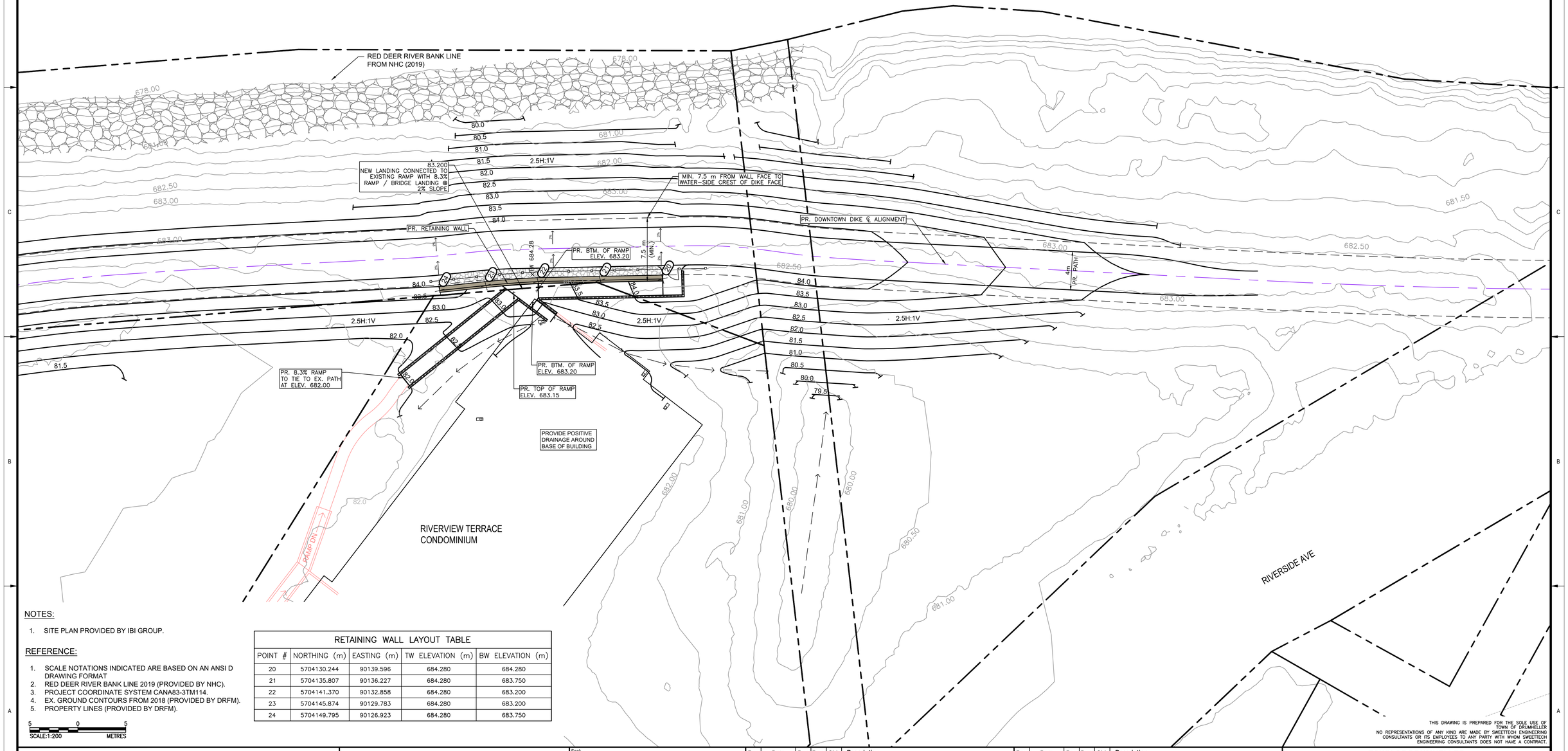
LEGEND

- PROPERTY LINE
- RIVER BANK LINE
- 85.5 EXISTING CONTOUR
- 85.5 PROPOSED CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION

SURVEY CONTROL POINTS			
ASCM	NORTHING	EASTING	ELEVATION
417469	5703757.371	90303.534	684.371
639732	5703923.309	90272.646	681.725
333930	5704070.443	90098.89	681.449
371419	5704120.994	89897.383	682.345
416636	5704765.602	89475.019	686.227



NOTES:

1. SITE PLAN PROVIDED BY IBI GROUP.

REFERENCE:

1. SCALE NOTATIONS INDICATED ARE BASED ON AN ANSI D DRAWING FORMAT
2. RED DEER RIVER BANK LINE 2019 (PROVIDED BY NHC).
3. PROJECT COORDINATE SYSTEM CANA83-3TM114.
4. EX. GROUND CONTOURS FROM 2018 (PROVIDED BY DRFM).
5. PROPERTY LINES (PROVIDED BY DRFM).

RETAINING WALL LAYOUT TABLE				
POINT #	NORTHING (m)	EASTING (m)	TW ELEVATION (m)	BW ELEVATION (m)
20	5704130.244	90139.596	684.280	684.280
21	5704135.807	90136.227	684.280	683.750
22	5704141.370	90132.858	684.280	683.200
23	5704145.874	90129.783	684.280	683.200
24	5704149.795	90126.923	684.280	683.750

5 0 5
SCALE:1:200 METRES

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal:

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 63046
DATE: April 5, 2022
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

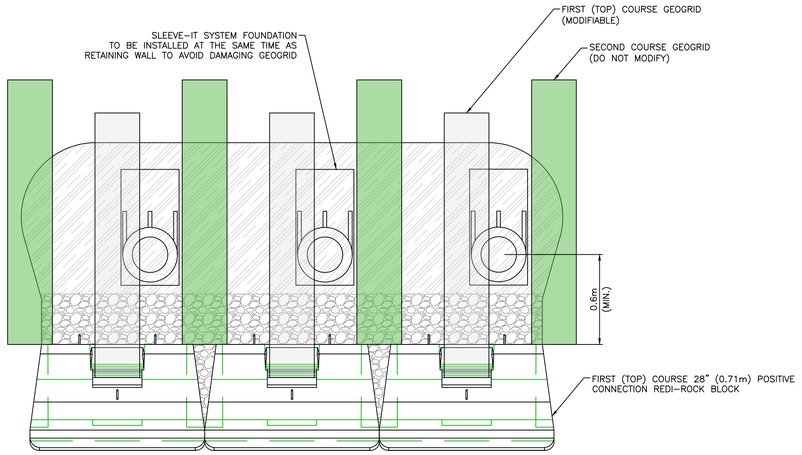
PROFESSIONAL ENGINEER ANDREW OSBORNE ID 72062
2022-04-05

Rev	Date	Des	Dwn	Chk	Description
0	22-04-05	AO	KS	ES	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1

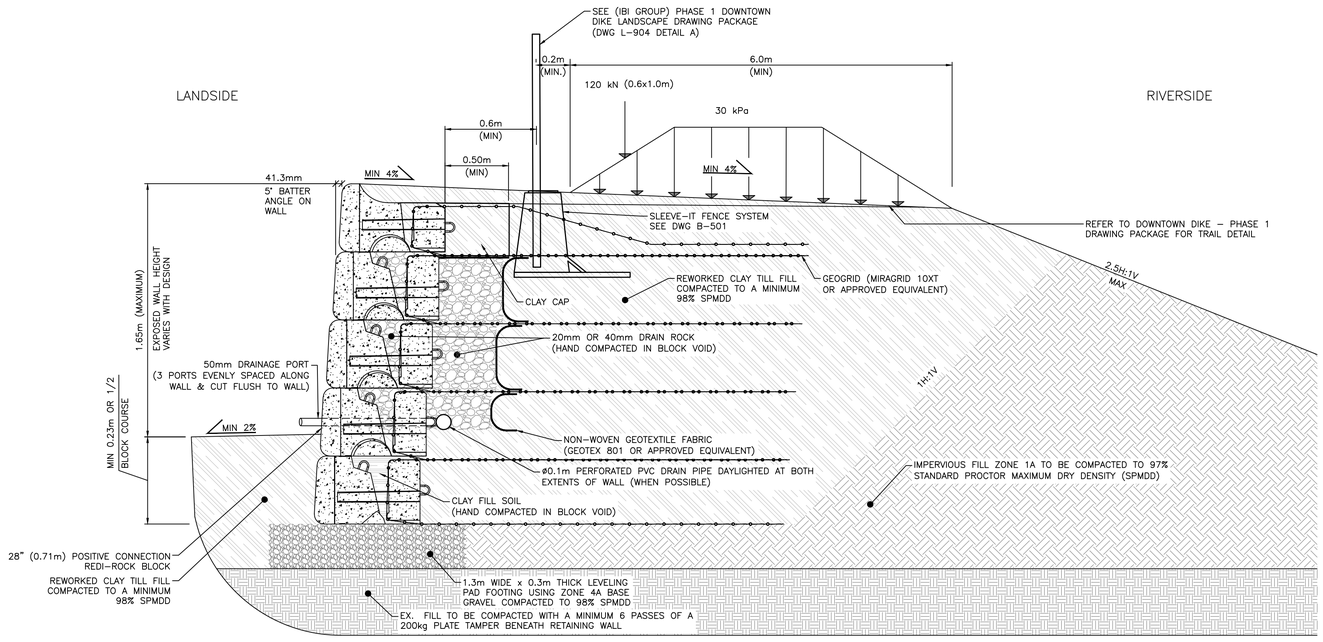
AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
RIVERVIEW TERRACE SITE PLAN

Project No.	Drawing No.	Rev.
21.2311.002	B-102	0
Group: GEOTECHNICAL		



GEOGRID AND SLEEVE-IT SYSTEM
PLACEMENT – PLAN VIEW

SCALE: N.T.S.



MAXIMUM REDI-ROCK GEOGRID REINFORCED RETAINING WALL SECTION

SCALE: N.T.S

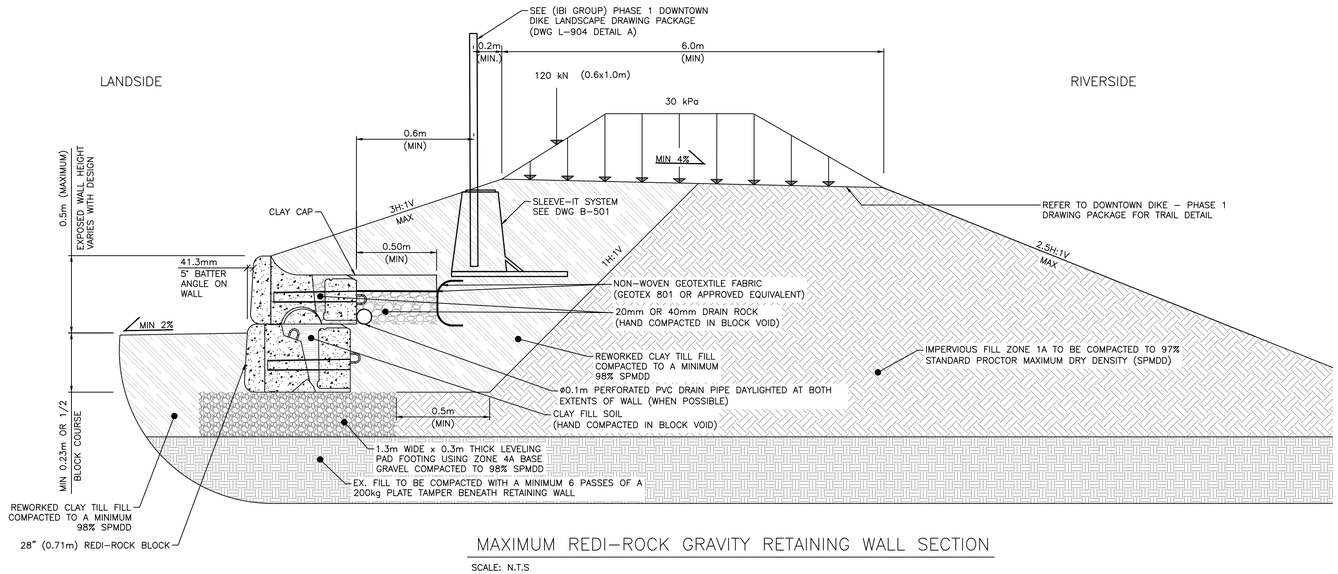
MAX EXPOSED WALL HEIGHT (m)	GEOGRID LENGTH (MIRAGRID 10XT OR APPROVED EQUIVALENT)
< 0.5 m	GRAVITY
0.5 to 1.13 m	3.00 m
1.13 to 1.65 m	3.30 m

NOTES:

1. ALL UNITS ARE IN METERS UNLESS OTHERWISE NOTED.
2. MOVE BLOCKS FORWARD DURING INSTALLATION TO ENGAGE SHEER KNOBS.
3. BLOCKS UNDER GROUND ELEVATION TO HAVE HOLLOW CORE HAND COMPACTED WITH CLAY FILL SOIL.
4. BLOCKS ABOVE GROUND ELEVATION TO HAVE HOLLOW CORE HAND COMPACTED WITH 20mm OR 40mm DRAIN ROCK.
5. MINIMUM 0.50m OF 20mm OR 40mm DRAIN ROCK IS TO BE USED AS DRAINAGE BLANKET BEHIND RETAINING WALL.
6. REFER TO B-001 AND B-002 FOR DETAILED CONSTRUCTION NOTES.

REFERENCE:

1. LINE WORK FOR 28" POSITIVE CONNECTION BLOCKS PROVIDED BY REDI-ROCK.COM (MAY 04, 2021).



MAXIMUM REDI-ROCK GRAVITY RETAINING WALL SECTION

SCALE: N.T.S

SCALE NOTATIONS INDICATED ARE BASED ON
AN ANSI D DRAWING FORMAT

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal:

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 69046
DATE: April 5, 2022
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF ALBERTA
ID 72962
PROFESSIONAL ENGINEER
2022-04-05

Rev	Date	Des	Dwn	Chk	Description
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Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1

AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
RETAINING WALL SECTIONS

Project No. 21.2311.002
Group GEOTECHNICAL
Drawing No. B-301
Rev. 0

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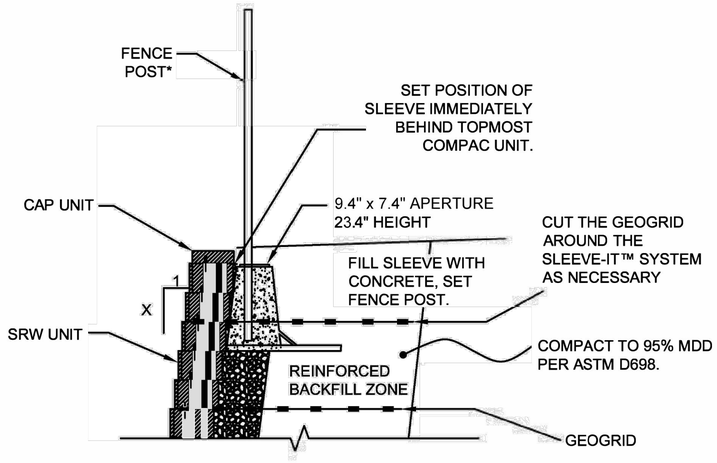

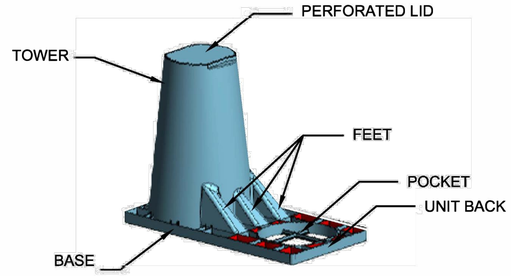

DETAIL OF FENCE POST INSTALLATION USING SLEEVE-IT™
N.T.S.

ASSEMBLY & INSTALLATION

1. General - The Sleeve-It™ post foundation system shall be purchased and installed by the retaining wall contractor to facilitate future fence post installation. Contractor shall verify proper spacing requirements prior to installation.

2. Assembly & Installation - Refer to instructions provided with units for specific information related to the assembly of the Sleeve-It™ system and the correct installation procedure. When the segmental retaining wall has been constructed to two feet from top not including the capstone:

Step 1: Prepare a level area approximately 24" wide x 36" deep behind the wall face. The prepared area should be 24" below the proposed top of wall (not including the cap stone).

Step 2: Place the Sleeve-It unit on the level surface in an upright position with the front edge of the unit ~~flush against the back of the wall.~~ Multiple units should be spaced in accordance with fence specifications.

SET BACK A MINIMUM OF 0.6m FROM THE BACK OF THE FIRST (TOP) BLOCK COURSE.

Step 3: Encapsulate and stabilize the Sleeve-It unit by placing and compacting sufficient backfill material layers as required. if geogrid is required, slit the geogrid perpendicular to the wall face just enough to fit around the base of the unit while ensuring that the geogrid remains properly attached to the wall. Continue the backfilling process until the material reaches the top of the tower. Do not remove perforated liduntil ready to place post. Do not step on perforated lid, as this could cause serious bodily injury.

Step 4: Punch the perforated lid using a mallet or hammer to expose the inside of the Sleeve-It unit. Detached lids can be left inside the unit or discarded prior to pouring the infill material.

Step 5: Place post through the exposed area and rest on the flat ground surface area inside the Sleeve-It cavity. Ensure that the post is upright and level and hold in place while carefully pouring infill material such as concrete through the exposed cavity. Follow guidelines as specified by infill supplier. Concrete is highly recommended as infill material.

Important Note: Backfill soil as prescribed by retaining wall manufacturer. Backfill material above and surrounding the Sleeve-It™ system must be compacted to a minimum of 98% of the material's maximum dry density as determined by **ASTM D-698** (Standard Proctor). Backfill and compaction within three feet of the wall face should be performed with hand operated equipment as recommended by the National Concrete Masonry Association (NCMA) SRW guidelines.
Repeat Above Steps for next Sleeve-It™ unit.

Fence posts shall extend a minimum distance of 18" into the sleeve to ensure proper engagement with the Sleeve-It™ system. All posts must be on the "inboard" side of the vertical portion of the cantilever base. Fill cavity completely with concrete. When concrete cures, topsoil or other surficial cover may be placed over the Sleeve-It™ system to create final, finished appearance.

The Sleeve-It™ product shall be evenly spaced no farther apart than 8 feet on centers in any case. Use of the Sleeve-It™ system is limited to the following fencing applications without consideration of wind load:
- 8-foot high and under chain link fences
- 6-foot high and under wood fence with gaps between boards
- 6-foot hight and under ballustraded PVC, steel, aluminum or wrought iron fences.

For other fencing systems specifically not meeting these criteria, contact Strata Systems Inc., to determine suitability. **1 (800) 680-7750 or email strata@geogrid.com**

ALL material may be subject to site testing for compliance to the above specifications.

SLEEVE-IT by STRATA

FOR MORE INFORMATION CONTACT:
STRATA SYSTEMS INC.,
1-800-680-7750
OR
strata@geogrid.com

DATE: 3/15/2018 | SCALE: NTS | DWG NO. SLEEVE-IT™ SECTION

REFERENCE:

1. SLEEVE-IT SYSTEM DETAIL PROVIDED BY STRATA SYSTEMS INC. MAY 5, 2021.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal:
PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 63046
DATE: April 5, 2022
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The Association of Professional Engineers and Geoscientists of Alberta (APEGA)
PROFESSIONAL ENGINEER ANDRES OSPINA ID 72862 PROVINCE OF ALBERTA
2022-04-05

Rev	Date	Des	Dwn	Chk	Description
0	22-04-05	AO	KS	ES	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE - PHASE 1
AQUAPLEX AND RIVERVIEW TERRACE
REDI-ROCK RETAINING WALL DESIGN
SLEEVE-IT SYSTEM DETAIL

Project No. 21.2311.002 | Drawing No. B-501 | Rev. 0
Group GEOTECHNICAL