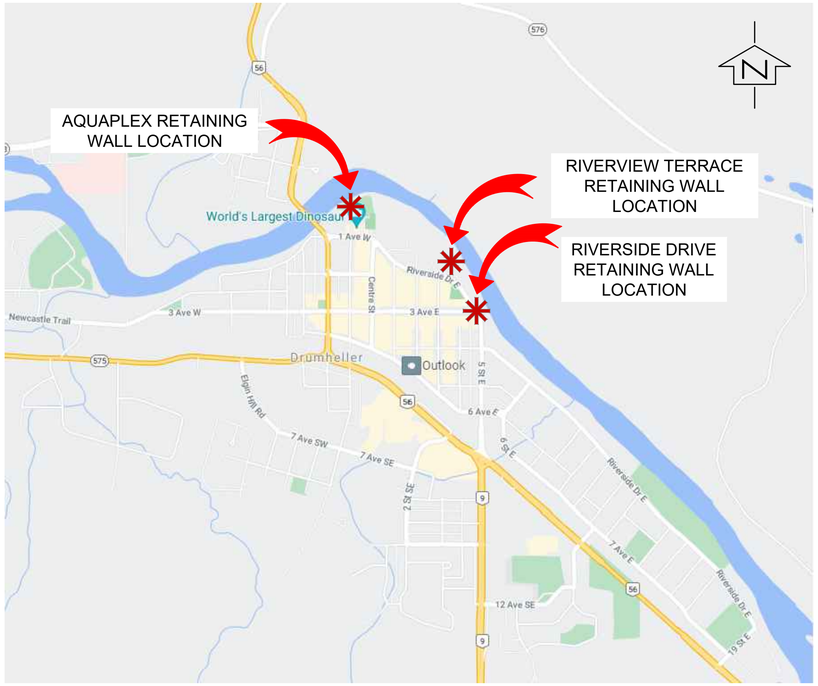
DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN

ISSUED FOR TENDER

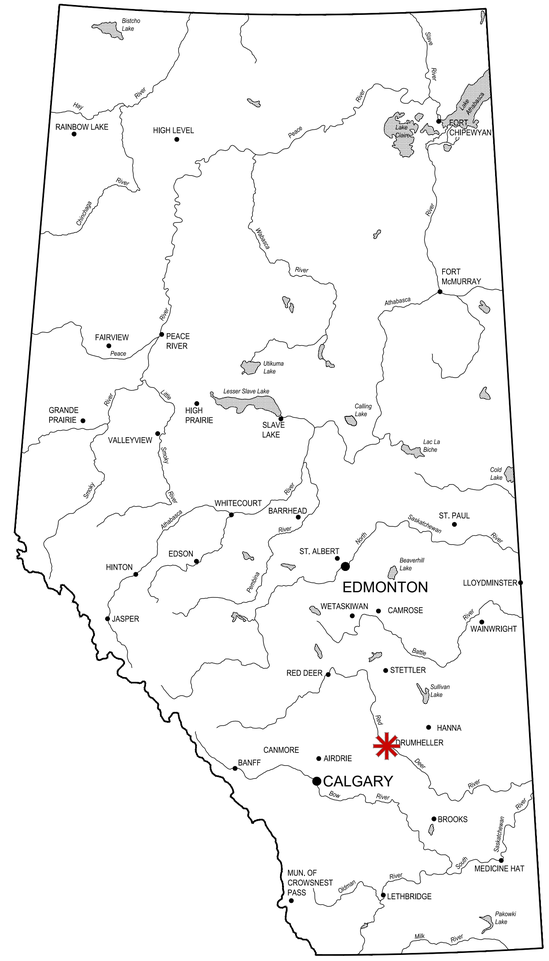
MARCH 20, 2023

DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN	
INDEX TO DRAWINGS	
DWG No.	**DRAWING TITLE**
GENERAL	
G–001	TITLE PAGE & LOCATION PLAN
GEOTECHNICAL	
B–001	CONSTRUCTION NOTES – 1
B–002	CONSTRUCTION NOTES – 2
B–003	CONSTRUCTION NOTES – 3
B–101	AQUAPLEX SITE PLAN
B–102	RIVERVIEW TERRACE SITE PLAN
B–103	RIVERSIDE DRIVE SITE PLAN
B–301	RETAINING WALL SECTIONS – 1
B–302	RETAINING WALL SECTIONS – 2
B–501	DETAILS



LOCATION PLAN

N.T.S.



REGIONAL PLAN

N.T.S.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: PROFESSIONAL ENGINEER ALBERTA ANDRES OSSOIO 19-72952 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 67046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
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 THREE (3) 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 26.9 m LONG WITH A MAXIMUM WALL HEIGHT OF 1.40 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 1.04 m. WALL #3 RUNS PARALLEL TO THE EXISTING RIVERSIDE DRIVE AND IS APPROXIMATELY 234.4 m LONG WITH A MAXIMUM WALL HEIGHT OF 2.17 m. 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 2020 DESIGN MANUAL. THESE THREE (3) WALLS ARE IDENTIFIED ON DRAWINGS B–101, B–102, AND B–103, RESPECTIVELY.

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

MATERIALS

MODULAR BLOCKS FOR THE THREE (3) WALLS ARE TO CONSIST OF BROWN 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 20 mm OR 40 mm DRAIN ROCK AND A REWORKED CLAY TILL MATERIAL WITH A MINIMUM FRICTION ANGLE OF 28 DEGREES AND A MAXIMUM HYDRAULIC CONDUCTIVITY OF $1x10^{-6}$ m/s. THIS MATERIAL IS TO BE UNIFORM AND NOT BLENDED WITH OTHER MATERIALS. THE RETAINED DIKE FILL SOILS OUTSIDE OF THE REINFORCED ZONE CAN 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 $1x10^{-6}$ m/s. A MINIMUM 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.

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 ≥97% STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).

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.

THE CONTRACTOR IS TO PROPOSE THE TYPE OF CONCRETE STAIN TO BE USED TO DYE THE LEDGESTONE BLOCKS A BROWN COLOUR. THIS PRODUCT IS TO BE APPROVED BY SWEETTECH PRIOR TO USE.

FOLLOWING COMPLETION OF THE WALLS, EXPOSED REDI–ROCK BLOCKS SHALL BE COATED WITH A SPRAY–ON, ANTI–GRAFFITI CLEAR COAT (RAINGUARD VANDLGUARD PERMANENT ANTI–GRAFFITI COATING OR APPROVED EQUIVALENT). SWEETTECH SHALL HAVE ADEQUATE OPPORTUNITY TO REVIEW THE PROPOSED ANTI–GRAFFITI CLEAR COAT TO ENSURE IT IS APPROPRIATE FOR USE IN CONJUNCTION WITH THE PROPOSED CONCRETE STAIN.

DIKE SIDE SLOPES WILL TYPICALLY BE COVERED WITH TOPSOIL AND SEEDING IN ACCORDANCE WITH SWEETTECH'S DOWNTOWN DIKE IFT DRAWING PACKAGE, HOWEVER BETWEEN THE GUARDRAIL AND TOP OF WALL, PLACE 20 mm DRAIN ROCK UNDERLAIN BY A SUITABLE ROOT BARRIER (i.e., POLYSPUN 300 OR APPROVED EQUIVALENT).

TECHNICAL REQUIREMENTS

PRIOR TO CONSTRUCTION OF THE RETAINING WALLS, THE CONTRACTOR SHALL CLEAR AND GRUB THE BACKFILL AREAS, REMOVING TOPSOIL, BRUSH, SOD, SUBSOIL, 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, ADEQUATELY MIXED WITH SUITABLE FILL SOILS, AND UTILIZED OUTSIDE THE GEOGRID AREA.

AS IT IS ANTICIPATED THAT FILL IS SITUATED BENEATH THE BASE BLOCK ELEVATION FOR EACH OF THE 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 TO PLACEMENT OF THE FOUNDATION LEVELLING PAD 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.

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.

REWORKED CLAY TILL FILL MATERIAL, SITUATED BEHIND THE DRAINAGE GRAVEL, WITHIN THE REINFORCED ZONE OF THE WALLS SHALL BE COMPACTED TO A MINIMUM OF 97% SPMDD AT A MOISTURE CONTENT NO GREATER THAN 2 PERCENTAGE POINTS WET AND NO LESS THAN 2 PERCENTAGE POINTS DRY OF OPTIMUM.

ZONE 1A IMPERVIOUS FILL (OR REWORKED CLAY TILL), PLACED OUTSIDE THE REINFORCED ZONE OF THE RETAINING WALLS, IS TO BE COMPACTED TO A MINIMUM OF 97% OF THE SPMDD AT A MOISTURE CONTENT NO GREATER THAN 2 PERCENTAGE POINTS WET AND NO LESS THAN 2 PERCENTAGE POINTS 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% SPMDD AT A MOISTURE CONTENT NO GREATER THAN 3 PERCENTAGE POINTS WET AND NO LESS THAN 1 PERCENTAGE POINTS DRY OF OPTIMUM. FOUNDATION LEVELLING PADS ARE TO HAVE A MINIMUM WIDTH OF 1.4 m. THE FIRST COURSE OF BLOCKS IS TO BE PLACED IN THE CENTER OF THE 1.4 m FOUNDATION LEVELLING PAD. WHERE UTILITY OR INFRASTRUCTURE CONFLICTS LIMIT THE FOUNDATION LEVELLING PAD WIDTH, SWEETTECH IS TO PROVIDE APPROVAL AND GUIDANCE TO THE CONTRACTOR.

TESTING/INSPECTION REQUIREMENTS

QUALITY ASSURANCE INSPECTION METHODS, FREQUENCY, AND VERIFICATION OF MATERIAL SPECIFICATIONS SHALL BE THE RESPONSIBILITY OF SWEETTECH. QUALITY CONTROL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

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 AND ENGINEER OF RECORD'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 COMPACTED 300 mm THICK LEVELLING PAD CONSTRUCTED OF ZONE 4A BASE GRAVEL AND COMPACTED TO A MINIMUM OF 98% SPMDD.

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.

IT IS RECOMMENDED TO STAIN THE LEDGESTONE BLOCKS FOLLOWING THE COMPLETION OF THE WALL, BUT BEFORE TOPSOIL PLACMENT.

FOLLOWING COMPLETION OF THE WALLS, EXPOSED REDI–ROCK BLOCKS SHALL BE COATED WITH A SPRAY–ON, ANTI–GRAFFITI CLEAR COAT (RAINGUARD VANDLGUARD PERMANENT ANTI–GRAFFITI COATING OR APPROVED EQUIVALENT).

THE TOTAL NUMBER OF BLOCKS ANTICIPATED TO BE REQUIRED FOR THE CONSTRUCTION OF EACH WALL ARE AS FOLLOWS. GRAVITY WALL SECTIONS ARE TO BE CONSTRUCTED UTILIZING REDI–ROCK 28 INCH POSITIVE CONNECTION BLOCKS.

RETAINING WALL LOCATION	ANTICIPATED BLOCK COUNTS			
	TOP	BOTTOM	MIDDLE	½ BLOCKS (TOP)
WALL #1 – AQUAPLEX	19	22	31	8
WALL #2 – RIVERVIEW TERRACE	20	17	11	0
WALL #3 – RIVERSIDE DRIVE	195	198	540	10

*ANTICIPATED BLOCK COUNTS ARE PROVIDED FOR INFORMATION PURSPOSE ONLY. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE NUMBER OF BLOCKS REQUIRED PRIOR TO CONSTRUCTION.

EXPOSED ENDS OF THE TOP 1/2 BLOCKS ARE TO BE FILLED WITH NON–SHRINK GROUT TO BE FLAT (I.E., NO VOIDS) AND ARE TO BE STAINED THE SAME COLOUR AS THE BLOCK FACING.

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 CAN 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.

THE MAXIMUM ASSESSED EXPOSED WALL HEIGHT FOR WALL #1, AT THE NORTHWEST CORNER OF THE AQUAPLEX BUILDING, IS 1.40 m, NOT INCLUDING BLOCK BURIAL. THE MAXIMUM ASSESSED EXPOSED WALL HEIGHT FOR WALL #2, LOCATED NEAR THE EAST PROPERTY LINE OF THE RIVERVIEW TERRACE CONDOMINIUM BUILDING, IS 1.04 m, NOT INCLUDING BLOCK BURIAL. THE MAXIMUM ASSESSED EXPOSED WALL HEIGHT FOR WALL #3, LOCATED ALONG RIVERSIDE DRIVE, IS 2.17 m, NOT INCLUDING BLOCK BURIAL. UNDER NO CIRCUMSTANCES ARE THESE WALL HEIGHTS TO BE INCREASED WITHOUT CONSULTING SWEETTECH.

ALL GRAVITY WALL SECTIONS ARE TO CONSIST OF 28" BROWN LEDGESTONE REDI–ROCK 28 INCH POSITIVE CONNECTION BLOCK UNITS FOR BOTH EXPOSED AND BURIED BLOCK COURSES. IN GRAVITY WALL SECTIONS, BEHIND THE DRAINAGE GRAVEL BLANKET, A MINIMUM OF 0.5 m OF REWORKED CLAY TILL IS TO BE PLACED AND COMPACTED AS OUTLINED ABOVE. OUTSIDE OF THIS SPECIFIED ZONE, FILL CAN CONSIST OF IMPERVIOUS ZONE 1A OR REWORKED CLAY TILL.

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.

AQUAPLEX AND RIVERVIEW TERRACE RETAINING WALLS (WALL #1 & WALL #2)		
EXPOSED WALL HEIGHT	GEOGRID TYPE	GEOGRID LENGTH* (MEASURED FROM BACK OF THE BLOCK)
< 0.5 m	N/A	GRAVITY
0.5 m – 1.40 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).

FOR WALLS #1 AND #2, 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.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: PROFESSIONAL ENGINEER ALBERTA ID 72080 — 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 69046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

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

Project No.	21.2311.002	Drawing No.	Rev.
Group	GEOTECHNICAL	B-001	0

RIVERSIDE DRIVE RETAINING WALL (WALL #3)		
EXPOSED WALL HEIGHT	GEOGRID TYPE	GEOGRID LENGTH* (MEASURED FROM BACK OF THE BLOCK)
< 0.5 m	N/A	GRAVITY
0.5 m – 2.17 m	MIRAGRID 20XT	EXTEND TO WITH IN 3.0 m ±0.5 m OF THE DESIGN SURFACE OF THE RIVER SIDE OF THE DIKE

*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).

GEOGRID LENGTHS FOR THE RIVERSIDE DRIVE RETAINING WALL (WALL #3) VARY BASED ON THE ELEVATION OF THE RESPECTIVE GEOGRID LAYER. GEOGRID STRIPS FOR WALL #3 ARE TO EXTEND TO WITHIN 3 m ±0.5 m OF THE DESIGN SURFACE OF THE RIVER SIDE OF THE DIKE. THE GEOGRID TYPE FOR WALL #3 IS TO BE MIRAGRID 20 XT GEOGRID MANUFACTURED BY MIRAFI INC. THE LONG TERM DESIGN STRENGTH (LTDS) FOR THIS GEOGRID IS 120.2 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 AND FILL MATERIAL.

THE CORE SLOT IN THE PCB SHALL NOT BE FILLED WITH 20mm or 40mm 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.

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

ALL THREE (3) RETAINING WALLS 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 (3) DRAINAGE PORTS EVENLY SPACED ALONG WALL #1 AT THE ELEVATION OF THE DRAINAGE PIPE. THESE DRAINAGE UNPERFORATED 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 CORRESPONDING TO THE EXPOSED FRONT OF WALL ELEVATION. THERE ARE TO BE FIVE (5) DRAINAGE PORTS INSTALLED EVENLY ALONG WALL #2, AT THE ELEVATION OF THE DRAINAGE PIPE. THESE DRAINAGE UNPERFORATED PORTS ARE TO BE CONNECTED TO THE 100 mm PERFORATED DRAINAGE PIPE. IT IS CRITICAL TO HAVE ONE (1) OF THE DRAINAGE PORTS LOCATED AT THE LOWEST POINT IN THE 100 mm PERFORATED DRAINAGE PIPE.
- AT WALL #3, THE 100 mm PERFORATED DRAINAGE PIPE IS TO BE INSTALLED WITH THE INVERT OF THE PIPE AT THE FINISHED FRONT OF WALL ELEVATION. DAYLIGHT THE DRAINAGE PIPE AT EITHER END OF THE WALL SECTION WHERE POSSIBLE. THERE ARE TO BE DRAINAGE PORTS SPACED EVERY 3.5 m ALONG WALL #3 AT THE ELEVATION OF THE DRAINAGE PIPE. THESE UNPERFORATED DRAINAGE PORTS ARE TO BE CONNECTED TO THE 100 mm PERFORATED DRAINAGE PIPE.
- 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.

THE DRAINAGE GRAVEL BLANKET IS TO BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING 230 mm AND SHOULD BE COMPACTED WITH A MINIMUM OF 4 PASSES UTILIZING VIBRATORY COMPACTION EQUIPMENT. THIS DRAINAGE BLANKET IS TO BE 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 IS TO CONSIST OF ZONE 1A IMPERVIOUS FILL OR REWORKED CLAY TILL FILL COMPACTED TO ≥97% SPMDD.

DURING CONSTRUCTION, AT THE END OF EACH WORKDAY, THE BACKFILL SURFACES 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.

AQUAPLEX SPECIFIC NOTES (WALL #1):

AN EXISTNG 300mm 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, SUB EXCAVATE THE BASE OF THE WESTERN HALF OF THE FOUNDATION LEVELLING PAD AREA (ABOVE THE PIPE) A MINIMUM OF 300 mm AND COMPACT THE UNDERLYING NATIVE MATERIAL WITH 6 PASSES OF A MINIMUM 200 kg PLATE TAMPER. SWEETTECH SHALL BE GIVEN THE OPPORTUNITY TO INSPECT THE PREPARED BASE OF THE SUB EXCAVATED REGION PRIOR TO PLACEMENT OF BACKFILL. BACKFILL THE SUB EXCAVATED REGION WITH REWORKED CLAY TILL UP TO THE UNDERSIDE OF FOUNDATION LEVELLING PAD ELEVATION IN LOOSE LIFTS NOT EXCEEDING 200 mm. COMPACT THE REWORKED CLAY TILL BACKFILL TO ≥98% SPMDD AT ±2 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT.

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 TO CONSTRUCTION. FOLLOWING THE INSTALLATION OF THE REWORKED CLAY TILL SUB EXCAVATION AREA AND 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.

RIVERVIEW TERRACE SPECIFIC NOTES (WALL #2):

REFER TO IBI GROUP'S LANDSCAPING PACKAGE FOR DETAILED INFORMATION REGARDING THE PATHWAYS/RAMPS IN FRONT OF THE WALL INCLUDING HANDRAILS, RAMP TIE–IN DETAILS, AND CONCRETE PATHWAYS.

RIVERSIDE DRIVE SPECIFIC NOTES (WALL #3):

THERE IS EXISTING UNDERGROUND INFRASTRUCTURE RUNNING BENEATH THE PROPOSED FOOTPRINT OF WALL #3 THAT IS INTENDED TO BE DECOMMISSIONED (I.E., STORMWATER PIPES, STORMWATER CATCHBASINS, AND AN ABANDONED WATER LINE). PRIOR TO COMMENCING CONSTRUCTION OF WALL #3, THE CONTRACTOR IS TO COMPLETELY REMOVE INFRASTRUCTURE INDICATED FOR REMOVAL/DECOMMISSIONING. FOLLOWING THE REQUIRED INFRASTRUCTURE REMOVALS, WITHIN 2 m HORIZONTALLY OF THE FRONT AND BACK OF THE WALL, IF THERE IS LESS THAN 1 m OF BACKFILL REQUIRED TO REACH THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD, BACKFILL THE EXCAVATION WITH REWORKED CLAY TILL IN LIFTS NOT EXCEEDING 200 mm IN UNCOMPACTED THICKNESS. REWORKED CLAY TILL BACKFILL IS TO BE COMPACTED TO A MINIMUM OF 98% SPMDD AT A MOISTURE CONTENT NO GREATER THAN 2 PERCENTAGE POINTS WET AND NO LESS THAN 2 PERCENTAGE POINTS DRY OF OPTIMUM. WITHIN 2 m HORIZONTALLY OF THE FRONT AND BACK OF THE WALL, IF THERE IS GREATER THAN 1 m OF BACKFILL REQUIRED TO REACH THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD, BACKFILL UP TO 1 m BELOW FOUNDATION LEVELLING PAD, WITH ZONE 4C GRAVEL FILL FOLLOWED BY REWORKED CLAY TILL FOR THE FINAL 1 m UP TO THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD. BACKFILL IS TO BE PLACED IN LIFTS NOT EXCEEDING 200 mm IN UNCOMPACTED THICKNESS AND COMPACTED TO A MINIMUM OF 98% SPMDD. OUTSIDE OF 2 m HORIZONTALLY OF THE FRONT AND BACK OF THE WALL, TRENCH BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH THE NOTE 3 ON DRAWING C–315 OF SWEETTECH'S DOWNTOWN DIKE IFT DRAWING PACKAGE.

NEW STORMWATER INFRASTRUCTURE IS PROPOSED BENEATH AND IN CLOSE PROXIMITY TO (IN FRONT OF) WALL #3. IT IS CRITICAL THAT THIS INFRASTRUCTURE BE COMPLETELY INSTALLED PRIOR TO COMMENCING WALL CONSTRUCTION SUCH THAT THERE IS NO DISTURBANCE IN FRONT OF THE WALL FOLLOWING INSTALLATION. WITHIN 2 m HORIZONTALLY OF THE FRONT AND BACK OF THE WALL, IF THERE IS LESS THAN 1 m OF VERTICAL SEPARATION BETWEEN THE NEW PIPE RUNNING BENEATH THE WALL AND THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD, BACKFILL OVER THE PIPE WITH REWORKED CLAY TILL IN LIFTS NOT EXCEEDING 200 mm IN UNCOMPACTED THICKNESS. REWORKED CLAY TILL BACKFILL IS TO BE COMPACTED TO A MINIMUM OF 98% SPMDD AT A MOISTURE CONTENT NO GREATER THAN 2 PERCENTAGE POINTS WET AND NO LESS THAN 2 PERCENTAGE POINTS DRY OF OPTIMUM. WITHIN 2 m HORIZONTALLY OF THE FRONT AND BACK OF THE WALL, IF THERE IS GREATER THAN 1 m OF VERTICAL SEPARATION BETWEEN THE NEW PIPE RUNNING BENEATH THE WALL AND THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD, BACKFILL OVER THE PIPE, UP TO 1 m BELOW FOUNDATION LEVELLING PAD, WITH ZONE 4C BASE GRAVEL FOLLOWED BY REWORKED CLAY TILL FOR THE FINAL 1 m UP TO THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD. BACKFILL OVER THE PIPE IN LIFTS NOT EXCEEDING 200 mm IN UNCOMPACTED THICKNESS AND COMPACTED TO A MINIMUM OF 98% SPMDD. OUTSIDE OF 2 m HORIZONTALLY OF THE FRONT AND BACK OF THE WALL, TRENCH BACKFILL SHALL BE COMPLETED IN ACCORDANCE WITH NOTE 2 ON DRAWING C–507 OF SWEETTECH'S DOWNTOWN DIKE IFT DRAWING PACKAGE.

THERE IS EXISTING SANITARY INFRASTRUCTURE RUNNING BENEATH AND IN CLOSE PROXIMITY TO (IN FRONT OF) WALL #3 THAT IS INTENDED TO REMAIN IN PLACE. AS THERE ARE NO COMPACTION REPORTS FROM THE TIME OF THE INSTALLATION OF THIS INFRASTRUCTURE, THE MATERIAL OVER THE PIPE MUST BE REMOVED TO A MINIMUM DEPTH OF 300 mm BELOW THE UNDERSIDE OF THE FOUNDATION LEVELLING PAD. THE EXPOSED SUB EXCAVATED SURFACE IS TO THEN BE COMPACTED WITH MINIMUM 6 PASSES OF A MINIMUM 200 kg PLATE TAMPER. SWEETTECH SHALL THEN BE GIVEN THE OPPORTUNITY TO INSPECT THE PREPARED BASE OF THE SUB EXCAVATED REGION FOR SOFT SPOTS PRIOR TO PLACEMENT OF BACKFILL. BACKFILL THE SUB EXCAVATED REGION WITH REWORKED CLAY TILL UP TO THE UNDERSIDE OF FOUNDATION LEVELLING PAD ELEVATION IN LOOSE LIFTS NOT EXCEEDING 200 mm. COMPACT THE REWORKED CLAY TILL BACKFILL TO 98% SPMDD AT ±2 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT.

PRIOR TO COMMENCING CONSTRUCTION OF WALL #3, THE CONTRACTOR IS TO HAVE THE EXISTING SANITARY PIPE CAMERA SCOPED AND MANHOLE INSPECTED TO DOCUMENT THE CONDITION OF THE INFRASTRUCTURE PRIOR TO CONSTRUCTION. FOLLOWING THE INSTALLATION OF THE FOUNDATION LEVELLING PAD, THE CONTRACTOR IS TO AGAIN CAMERA SCOPE THE EXISTING PIPE AND INSPECT THE MANHOLE TO CONFIRM THAT THE INFRASTRUCTURE HAS NOT BEEN DAMAGED 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.

IT IS SWEETTECH'S UNDERSTANDING THAT THE TOWN OF DRUMHELLER IS CURRENTLY EVALUATING REFURBISHMENT OPTIONS FOR THE EXISTING SANITARY LINE INCLUDING EITHER RELINING OR PIPE BURSTING THE EXISTING SANITARY LINE. BASED ON THE TOWN'S SELECTED METHOD OF REFURBISHMENT, SWEETTECH IS TO BE INFORMED 7 DAYS PRIOR TO THE DATE OF THE PR. SANITARY REPLACEMENT WORK AND SHALL BE GIVEN THE OPPORTUNITY TO INSPECT THE INSTALLATION ALLOWING FOR SWEETTECH TO DOCUMENT AND ADDRESS THE DEGREE OF DISTURBANCE THAT OCCURS WITHIN THE FOOTPRINT OF THE RETAINING WALL. IT IS HIGHLY RECOMMENDED THAT THE SANITARY LINE REFURBISHMENT WORKS BE COMPLETED PRIOR TO RETAINING WALL CONSTRUCTION. IF SANITARY LINE REFURBISHMENT WORKS ARE TO BE COMPLETED FOLLOWING RETAINING WALL/DIKE CONSTRUCTION SWEETTECH MUST BE CONSULTED.

IN ORDER TO MINIMIZE THE NUMBER OF BURIED BLOCKS REQUIRED, DUE TO THE VARIABLE TOPOGRAPHY ALONG RIVERSIDE DRIVE, THE FOUNDATION LEVELLING PAD FOR WALL #3 IS TO BE STEPPED AS DEPICTED ON B–302. COMMENCE STEPPED FOUNDATION CONSTRUCTION AT THE LOWEST FOUNDATION ELEVATION WORKING UPWARDS. ONCE THE FIRST BLOCK COURSE HAS BEEN PLACED AND BACKFILLED ON THE LOWEST FOUNDATION LEVELLING PAD ELEVATION, COMMENCE WITH THE CONSTRUCTION OF THE NEXT STEP IN THE FOUNDATION LEVELLING PAD SUCH THAT THE NEXT COURSE OF RETAINING WALL BLOCKS CAN BE INSTALLED LEVEL AT EACH OF THE FOUNDATION STEP LOCATIONS. SWEETTECH IS TO BE ONSITE TO INSPECT THE FOUNDATION STEPS PRIOR TO PLACEMENT OF SUBSEQUENT RETAINING WALL BLOCK COURSES.

AS A PORTION OF THE EXISTING RIVERSIDE DRIVE RUNS WITHIN/BENEATH THE FOOTPRINT OF THE PROPOSED RETAINING WALL, THE EXISTING ASPHALT, BASE GRAVELS, AND SUB–BASE GRAVELS ARE TO BE REMOVED PRIOR TO WALL CONSTRUCTION. IF BACKFILL IS REQUIRED TO ESTABLISH THE DESIGN SUBGRADE/UNDERSIDE OF FOUNDATION LEVELLING PAD ELEVATION, BACKFILL WITH REWORKED CLAY TILL IN LOOSE LIFTS NOT EXCEEDING 200 mm. COMPACT THE REWORKED CLAY TILL BACKFILL TO 98% SPMDD AT ±2 PERCENTAGE POINTS OF THE OPTIMUM MOISTURE CONTENT.

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	20.0 kN/m³
FOUNDATION LEVELING PAD GRANULAR MATERIAL	36°	0 kPa	20.5 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

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: PROFESSIONAL ENGINEER ALBERTA PERMIT TO PRACTICE ID 72362 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 69046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE
AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
CONSTRUCTION NOTES - 2

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

BEHIND ALL WALL SECTIONS, THE DIKE CREST IS DESIGNED TO BE CONSTRUCTED TO PROVIDE A MINIMUM 4 m TOP WIDTH (IN ADDITION TO THE REQUIRED SETBACK FROM THE RETAINING WALL FACE). THIS 4 m TOP WIDTH IS REQUIRED FOR ADAPTIVE EMERGENCY RESPONSE MANAGEMENT ALLOWING FOR EMERGENCY ADDITIONAL FILL PLACEMENT, 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 4 m DIKE CREST. ADAPTIVE FILL IS TO BE PLACED A MAXIMUM OF 1.5 m HIGH WITH SIDESLOPES 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 0.5 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. 1.40 m HIGH AQUAPLEX WALL	WALL #2: MAX 1.04 m HIGH RIVERVIEW TERRACE WALL	WALL #3: MAX 2.17 m HIGH RIVERSIDE DR. WALL	GRAVITY SECTION
OVERTURNING	2.00	26.05	37.11	97.35	2.94
DIRECT SLIDING	1.50	6.15	6.67	17.13	1.52
BEARING CAPACITY	2.00	5.08	6.22	3.26	4.50
SLIDING ALONG GEOGRID	1.50	6.65	7.39	78.06	N/A
GEOGRID STRENGTH	1.50	2.63	4.90	2.10	N/A
GEOGRID PULLOUT	1.50	1.50	1.50	2.18	N/A
GEOGRID CONNECTION	1.50	2.15	2.80	1.60	N/A
GLOBAL STABILITY	1.50	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.

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

EACH OF THE RETAINING WALLS DESIGNED WITHIN THIS DOCUMENT, MEET OR EXCEED ALL STABILITY FACTORS OF SAFETY SET BY INDUSTRY STANDARDS AND THE DRFMO'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).

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 ELEVATIONS OR 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 TO +100 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: PROFESSIONAL ENGINEER PROVINCE OF ALBERTA ID 72952 — 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 69046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE

AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
CONSTRUCTION NOTES - 3

Project No. 21.2311.002 | Drawing No. B-003 | Rev. 0
Group GEOTECHNICAL

SAVED 2023/03/20, 5:55 PM

M:\Projects\21.2311.002\CADD\Drawing Set\11_RETAINING WALL DESIGNS_ISSUED FOR TENDER\SITE_21.2311.002-RET.WALL.dwg, B-101, 2023/03/20 06:18 pm Griffin

LEGEND

- PROPERTY LINE
- 1:2 YEAR WATER LEVEL
- 685.5 PROPOSED MAJOR CONTOUR
- 685.5 PROPOSED MINOR CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION
- PROPOSED DOWNTOWN DIKE ℄
- PROPOSED EDGE OF PATHWAY
- PROPOSED TOP OF SLOPE
- PROPOSED FENCE
- PROPOSED STORM INFRASTRUCTURE
- EXISTING STORM INFRASTRUCTURE
- PROPOSED RIPRAP
- PROPOSED TWIN CATCH BASIN
- EXISTING CATCH BASIN
- EXISTING FACE OF CURB
- PROPOSED FACE OF CURB
- PROPOSED SUB-EXCAVATION

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

RED DEER RIVER

RED DEER RIVER 1:2 YEAR WATER LEVEL FROM NHC (2019)

PR. AREA TO BE SUB-CUT MIN. OF 300mm BELOW BTM. OF LEVELING PAD ELEVATION (SEE AQUAPLEX SPECIFIC NOTES DWG B-002)

FOR PR. STORM INFRASTRUCTURE DETAILS REFER TO DOWNTOWN DIKE – IFT DESIGN PACKAGE

PR. DOWNTOWN DIKE ℄ ALIGNMENT

PR. AQUAPLEX RETAINING WALL

FOR EX. STORM INFRASTRUCTURE DETAILS REFER TO DOWNTOWN DIKE – IFT DESIGN PACKAGE

CONTRACTOR TO REGRADE AS REQUIRED TO ENSURE POSITIVE DRAINAGE TO EX. CATCH BASIN

CONTRACTOR TO REGRADE AS REQUIRED TO ENSURE POSITIVE DRAINAGE TO PR. CATCH BASIN #1

EX. DRUMHELLER AQUAPLEX

EX. SKATE PARK

TW 84.45

BW 83.00 +/-

1.69 (m)

R=13 m

2.5H:1V

3H:1V

2% PR. PATH

3 m PR. PATH

5 m

679.5 680.0 680.5 681.0 681.5 682.0 682.5 683.0 683.5 684.0

1 2 3 4 5 6 7 8

NOTES:

1.* THE BOTTOM OF EXPOSED WALL FACE ELEVATION MAY BE ADJUSTED TO ENSURE POSITIVE DRAINAGE TO SA MANHOLE WITH STORM GRATE.
2. FOR AQUAPLEX RETAINING WALL SPECIFIC CONSTRUCTION NOTES REFER TO SECTION "AQUAPLEX SPECIFIC NOTES" ON DRAWING B-002.
3. A MIN. ½ BLOCK BURIAL MUST BE MAINTAINED.

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 DRFMO).
5. PROPERTY LINES (PROVIDED BY DRFMO).

5 0 5
SCALE:1:200 METRES

RETAINING WALL LAYOUT TABLE				
POINT #	NORTHING (m)	EASTING (m)	TW ELEVATION (m)	EXPOSED BW ELEVATION (m)
1	5704360.651	89623.695	683.074	683.000
2	5704361.230	89623.695	683.531	683.000
3	5704362.932	89623.784	683.988	683.000
4	5704365.718	89624.396	684.445	683.000
5	5704374.347	89635.411	684.445	683.000
6	5704374.411	89638.248	683.988	683.000
7	5704374.413	89641.087	683.531	683.000
8	5704374.414	89641.848	683.074	683.000

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: PROFESSIONAL ENGINEER ASSOCIATION OF ENGINEERS GEOLOGISTS ALBERTA ID 72952 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 69046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE

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

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

SAVED 2023/03/20, 5:55 PM

M:\Projects\21.2311.002\CADD\Drawing Set\11_RETAINING WALL DESIGNS_ISSUED FOR TENDER\SITE_21.2311.002-RET WALL.dwg, B-102, 2023/03/20 6:18 pm Griffin

LEGEND

- PROPERTY LINE
- 1:2 YEAR WATER LEVEL
- 685.5 PROPOSED MAJOR CONTOUR
- 685.5 PROPOSED MINOR CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION
- PROPOSED DOWNTOWN DIKE ℄
- PROPOSED EDGE OF PATHWAY
- PROPOSED TOP OF SLOPE
- PROPOSED FENCE
- PROPOSED STORM INFRASTRUCTURE
- EXISTING STORM INFRASTRUCTURE
- PROPOSED RIPRAP
- PROPOSED TWIN CATCH BASIN
- EXISTING CATCH BASIN
- EXISTING FACE OF CURB
- PROPOSED FACE OF CURB

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

RED DEER RIVER

RED DEER RIVER

RED DEER RIVER 1:2 YEAR WATER LEVEL FROM NHC (2019)

FOR EX. STORM INFRASTRUCTURE DETAILS REFER TO DOWNTOWN DIKE – IFT DESIGN PACKAGE

FOR PR. STORM INFRASTRUCTURE DETAILS REFER TO DOWNTOWN DIKE – IFT DESIGN PACKAGE

PR. DOWNTOWN DIKE ℄ ALIGNMENT

PR. RAMP LANDING @ 2% SLOPE AWAY FROM RETAINING WALL

PR. RIVERVIEW TERRACE RETAINING WALL

2.5H:1V

2.5H:1V

2.5H:1V

2.5H:1V

TW 684.03

BW 683.53

3 m PR. PATH

PR. FENCE SEE IBI LANDSCAPING DESIGN PACKAGE FOR DETAILS

PR. 6.86% RAMP TO TIE TO EX. PATH AT ELEV. 682.00

PR. BTM. OF RAMP ELEV. 683.02

PR. TOP OF RAMP ELEV. 682.97

PR. 6.46% RAMP TO TIE TO PR. LANDING AT ELEV. 683.02

PR. 8.13% RAMP TO TIE TO EX. CANTILEVERED RAMP AT ELEV. 683.41

MAINTAIN POSITIVE DRAINAGE AWAY FROM THE BUILDING

FOR PR. STORM INFRASTRUCTURE DETAILS REFER TO DOWNTOWN DIKE – IFT DESIGN PACKAGE

EX. PATH

RAMP DN

RIVERVIEW TERRACE CONDOMINIUM

RIVERSIDE DRIVE

NOTES:

1. FOR RIVERVIEW TERRACE RETAINING WALL SPECIFIC CONSTRUCTION NOTES REFER TO SECTION "RIVERVIEW TERRACE SPECIFIC NOTES" ON DRAWING B–002.
2. A MIN. ½ BLOCK BURIAL MUST BE MAINTAINED.

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 CANAB3–3TM114.
4. EX. GROUND CONTOURS FROM 2018 (PROVIDED BY DRFMO).
5. PROPERTY LINES (PROVIDED BY DRFMO).

5 0 5
SCALE:1:200 METRES

RETAINING WALL LAYOUT TABLE				
POINT #	NORTHING (m)	EASTING (m)	TW ELEVATION (m)	EXPOSED BW ELEVATION (m)
20	5704130.975	90140.862	684.030	684.010
21	5704136.538	90137.492	684.030	683.564
22	5704142.101	90134.123	684.030	683.123
23	5704146.605	90131.048	684.030	682.990
24	5704150.525	90128.188	684.030	684.010

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: PROFESSIONAL ENGINEER PROVINCE OF ALBERTA ID 72952 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 69046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE
AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
RIVERVIEW TERRACE SITE PLAN

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

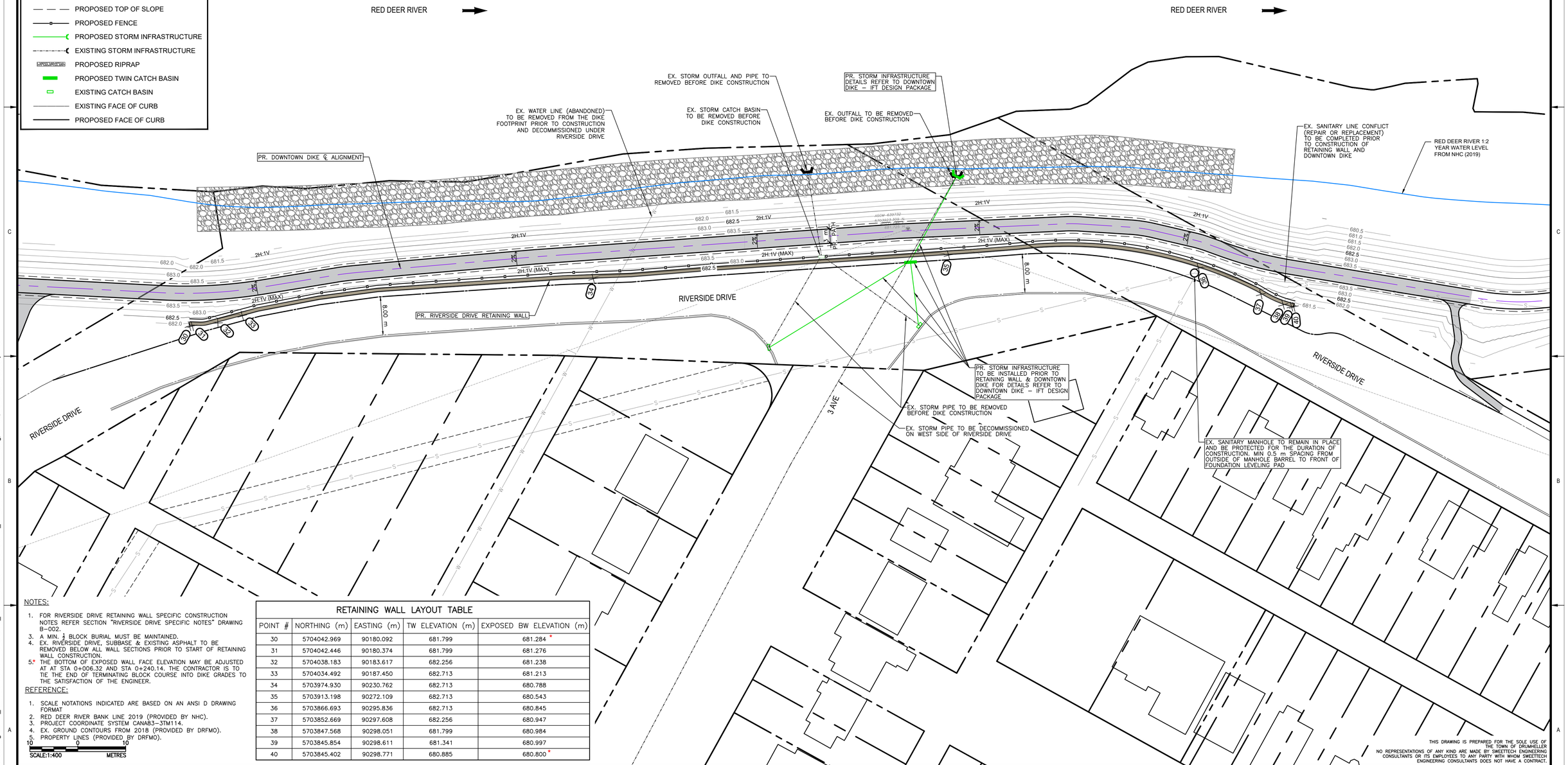
SAVED 2023/03/20, 5:55 PM

M:\Projects\21.2311.002\CADD\Drawing Set\11_RETAINING WALL DESIGN\5_ ISSUED FOR TENDER\SITE_21.2311.002-RET.WALL.dwg, B-103, 2023/03/20 06:19 pm Griffin

LEGEND

- PROPERTY LINE
- 1:2 YEAR WATER LEVEL
- 685.5 PROPOSED MAJOR CONTOUR
- 685.5 PROPOSED MINOR CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION
- PROPOSED DOWNTOWN DIKE ℄
- PROPOSED EDGE OF PATHWAY
- PROPOSED TOP OF SLOPE
- PROPOSED FENCE
- PROPOSED STORM INFRASTRUCTURE
- EXISTING STORM INFRASTRUCTURE
- PROPOSED RIPRAP
- PROPOSED TWIN CATCH BASIN
- EXISTING CATCH BASIN
- EXISTING FACE OF CURB
- PROPOSED FACE OF CURB

SURVEY CONTROL POINTS (NAD 83)			
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. FOR RIVERSIDE DRIVE RETAINING WALL SPECIFIC CONSTRUCTION NOTES REFER SECTION "RIVERSIDE DRIVE SPECIFIC NOTES" DRAWING B–002.
3. A MIN. ½ BLOCK BURIAL MUST BE MAINTAINED.
4. EX. RIVERSIDE DRIVE, SUBBASE & EXISTING ASPHALT TO BE REMOVED BELOW ALL WALL SECTIONS PRIOR TO START OF RETAINING WALL CONSTRUCTION.
5. * THE BOTTOM OF EXPOSED WALL FACE ELEVATION MAY BE ADJUSTED AT AT STA 0+006.32 AND STA 0+240.14. THE CONTRACTOR IS TO TIE THE END OF TERMINATING BLOCK COURSE INTO DIKE GRADES TO THE SATISFACTION OF THE ENGINEER.

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 CANAB3–3TM114.
4. EX. GROUND CONTOURS FROM 2018 (PROVIDED BY DRFMO).
5. PROPERTY LINES (PROVIDED BY DRFMO).

10 0 10
SCALE:1:400 METRES

RETAINING WALL LAYOUT TABLE				
POINT #	NORTHING (m)	EASTING (m)	TW ELEVATION (m)	EXPOSED BW ELEVATION (m)
30	5704042.969	90180.092	681.799	681.284 *
31	5704042.446	90180.374	681.799	681.276
32	5704038.183	90183.617	682.256	681.238
33	5704034.492	90187.450	682.713	681.213
34	5703974.930	90230.762	682.713	680.788
35	5703913.198	90272.109	682.713	680.543
36	5703866.693	90295.836	682.713	680.845
37	5703852.669	90297.608	682.256	680.947
38	5703847.568	90298.051	681.799	680.984
39	5703845.854	90298.611	681.341	680.997
40	5703845.402	90298.771	680.885	680.800 *

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

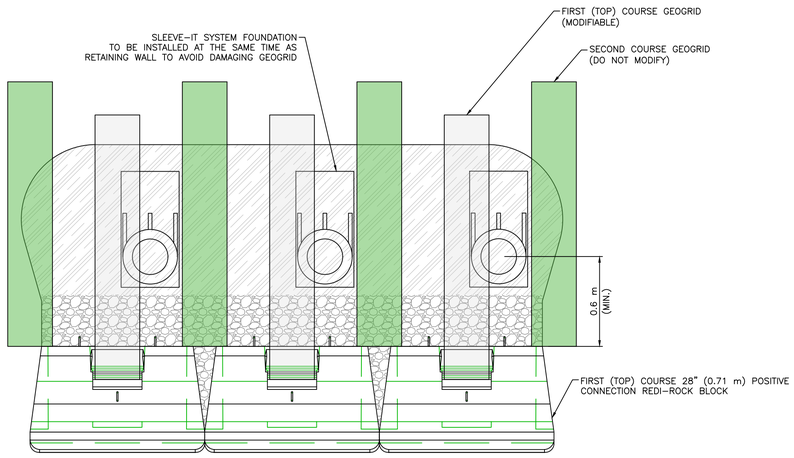
Seal: PROFESSIONAL ENGINEER ALBERTA ANDRES OSORIO ID 72982 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 67046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

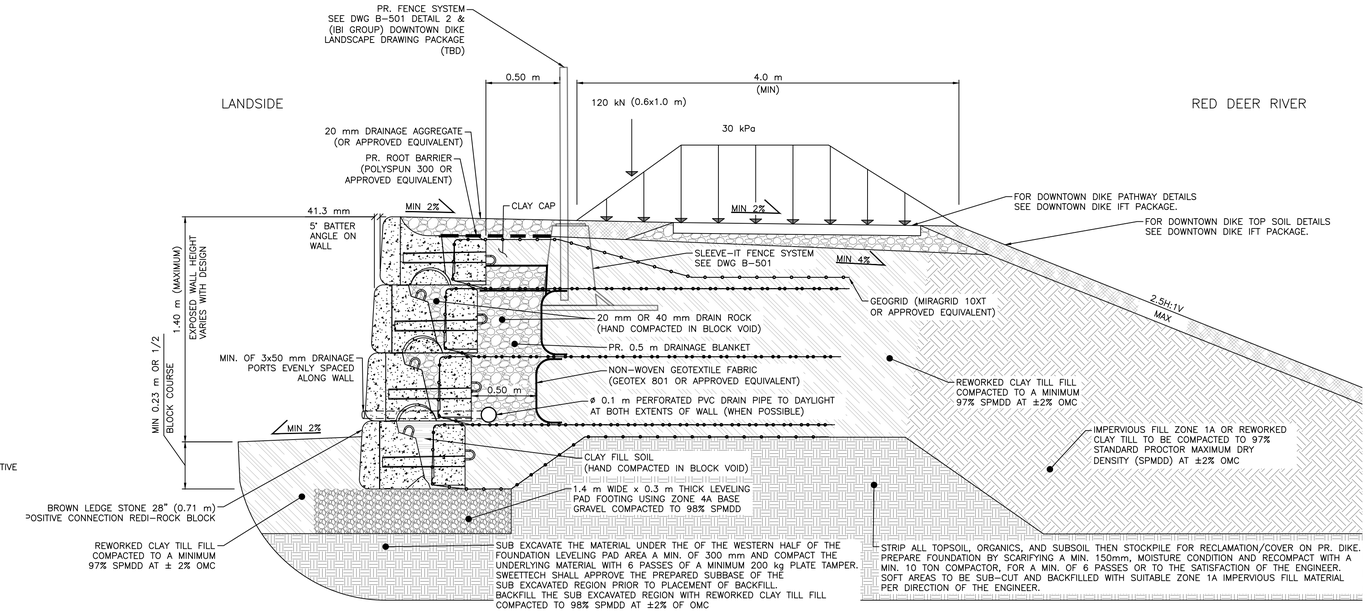
TOWN OF DRUMHELLER
DOWNTOWN DIKE
AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
RIVERSIDE DRIVE SITE PLAN

Project No. 21.2311.002
Group GEOTECHNICAL
Drawing No. B-103
Rev. 0



GEOGRID AND SLEEVE-IT SYSTEM PLACEMENT – PLAN VIEW

SCALE: N.T.S.



MAXIMUM AQUAPLEX REDI-ROCK RETAINING WALL SECTION

SCALE: N.T.S

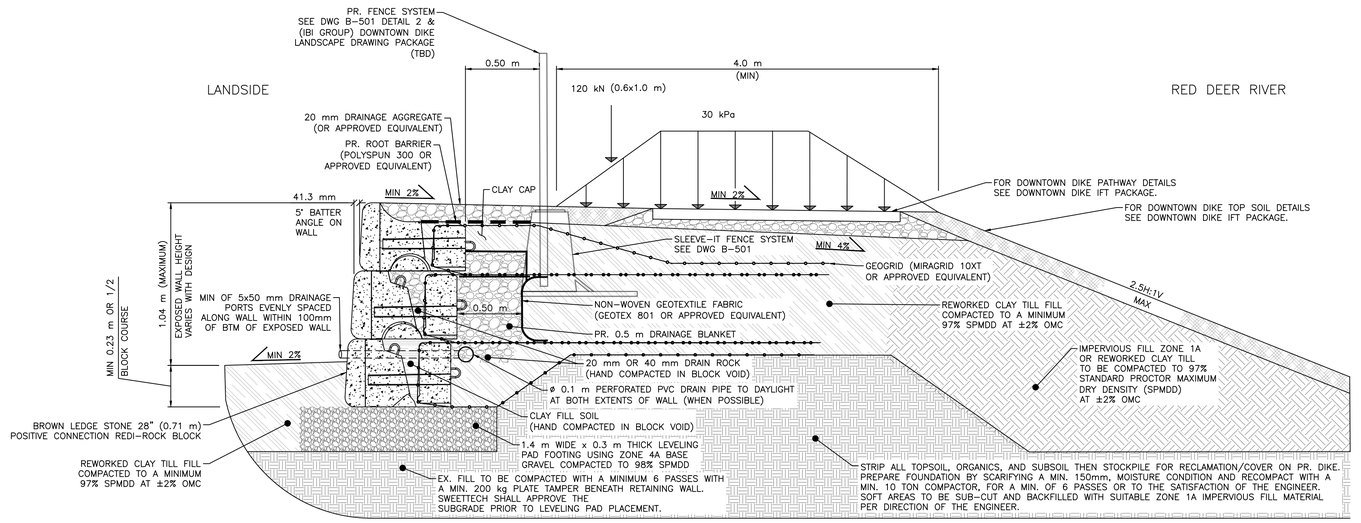
MAX EXPOSED WALL HEIGHT (m)	GEOGRID LENGTH (MIRAGRID 10XT OR APPROVED EQUIVALENT)
< 0.5 m	GRAVITY
0.5 to 1.40 m	3.00 m

NOTES:

1. ALL UNITS ARE IN METERS UNLESS OTHERWISE NOTED.
2. MOVE BLOCKS FORWARD DURING INSTALLATION TO ENGAGE SHEER KNOBS.
3. A MIN. ½ BLOCK BURIAL MUST BE MAINTAINED.
4. BLOCKS UNDER GROUND ELEVATION TO HAVE HOLLOW CORE HAND COMPACTED WITH CLAY FILL SOIL.
5. BLOCKS ABOVE GROUND ELEVATION TO HAVE HOLLOW CORE HAND COMPACTED WITH 20 mm OR 40 mm DRAIN ROCK.
6. MINIMUM 0.50 m OF 20 mm OR 40 mm DRAIN ROCK IS TO BE USED AS DRAINAGE BLANKET BEHIND RETAINING WALL.
7. REFER TO DWG B-002 SECTIONS "AQUAPLEX SPECIFIC NOTES" AND "RIVERVIEW TERRACE SPECIFIC NOTES" FOR DETAILED CONSTRUCTION NOTES FOR WALLS 1 & 2.
8. CONTRACTOR TO STAIN EXPOSED BLOCKS BROWN WITH STAINING PRODUCT APPROVED BY ENGINEER AFTER CONSTRUCTION BUT BEFORE TOPSOIL PLACEMENT.
9. CONTRACTOR TO APPLY ANTI-GRAFFITI COATING APPROVED BY ENGINEER TO THE WALL AFTER STAINING IS COMPLETE AND CURED.

REFERENCE:

1. LINE WORK FOR 28" POSITIVE CONNECTION BLOCKS PROVIDED BY REDI-ROCK.COM (MAY 04, 2021).
2. SCALE NOTATIONS INDICATED ARE BASED ON AN ANSI D DRAWING FORMAT.



MAXIMUM RIVERVIEW TERRACE REDI-ROCK RETAINING WALL SECTION

SCALE: N.T.S

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: PROFESSIONAL ENGINEER ASSOCIATION OF ALBERTA ID 72952 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 67046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

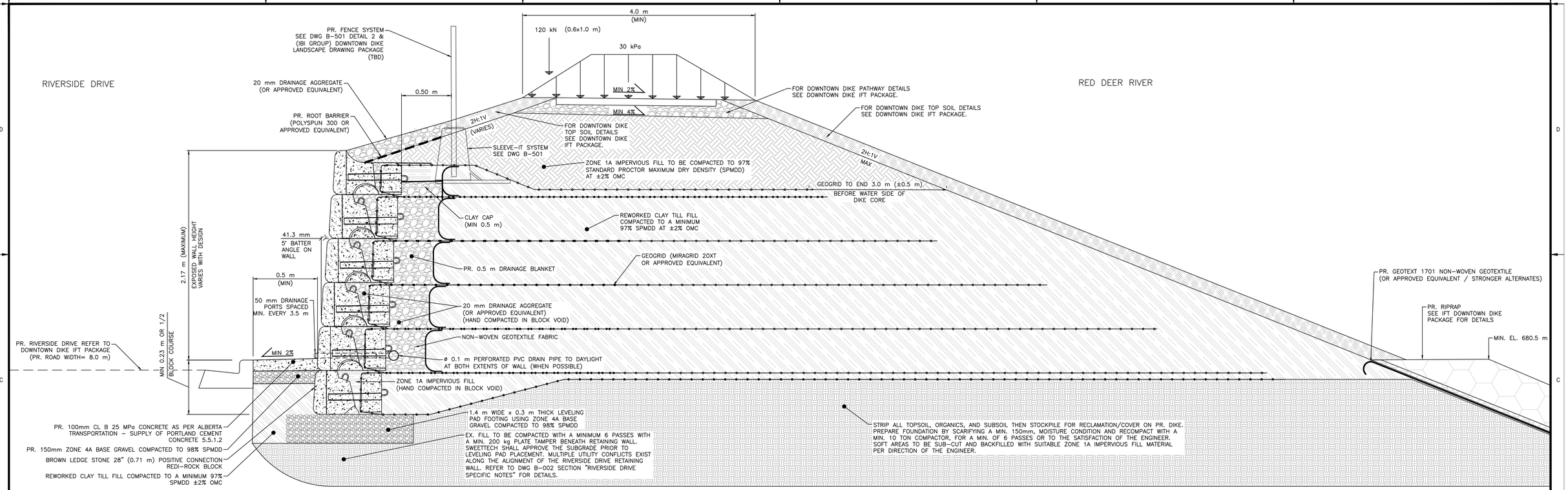
Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

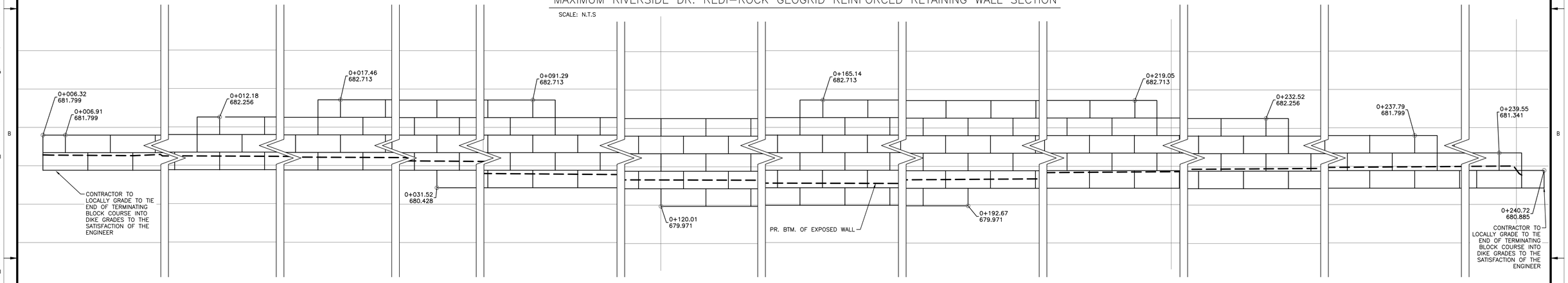
AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
RETAINING WALL SECTIONS - 1

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



MAXIMUM RIVERSIDE DR. REDI-ROCK GEOGRID REINFORCED RETAINING WALL SECTION

SCALE: N.T.S



NOTES:

1. SEE DWG B-002 SECTION "RIVERSIDE DRIVE SPECIFIC NOTES" FOR UTILITY CONFLICT NOTES AND CONSTRUCTION NOTES SPECIFIC TO THE RIVERSIDE DRIVE RETAINING WALL.
2. ALL UNITS ARE IN METERS UNLESS OTHERWISE NOTED.
3. MOVE BLOCKS FORWARD DURING INSTALLATION TO ENGAGE SHEER KNOBS.
4. BLOCKS UNDER GROUND ELEVATION TO HAVE HOLLOW CORE HAND COMPACTED WITH CLAY FILL SOIL.
5. BLOCKS ABOVE GROUND ELEVATION TO HAVE HOLLOW CORE HAND COMPACTED WITH 20 mm OR 40 mm DRAIN ROCK.
6. MINIMUM 0.50 m OF 20 mm OR 40 mm DRAIN ROCK IS TO BE USED AS DRAINAGE BLANKET BEHIND RETAINING WALL.
7. REFER TO B-001, B-002 & B-003 FOR DETAILED CONSTRUCTION NOTES.
8. A MIN. ½ BLOCK BURIAL MUST BE MAINTAINED.

REFERENCE:

1. LINE WORK FOR 28" POSITIVE CONNECTION BLOCKS PROVIDED BY REDI-ROCK.COM (MAY 04, 2021).
2. SCALE NOTATION INDICATED ARE BASED ON AN ANSI D DRAWING FORMAT.

ELEVATION VIEW – RIVERSIDE DRIVE RETAINING WALL

SCALE: H=1:50 V=1:50

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

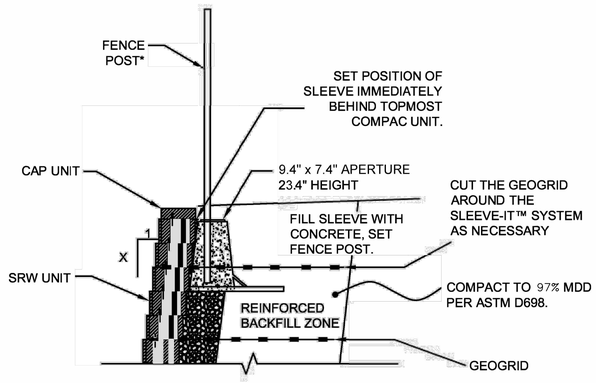
Seal: PROFESSIONAL ENGINEER ALBERTA ASSOCIATION OF PROFESSIONAL ENGINEERS, GEOLOGISTS AND GEOPHYSICISTS OF ALBERTA IQ 72982 2023-03-20

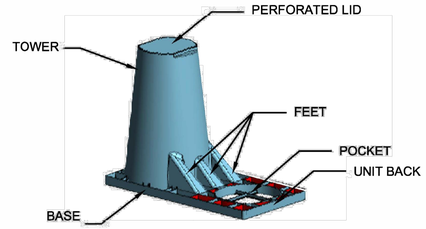
PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 67046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE
AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
RETAINING WALL SECTIONS - 2

Project No. 21.2311.002
Group GEOTECHNICAL
Drawing No. B-302
Rev. 0





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 0.5m 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 97% 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**

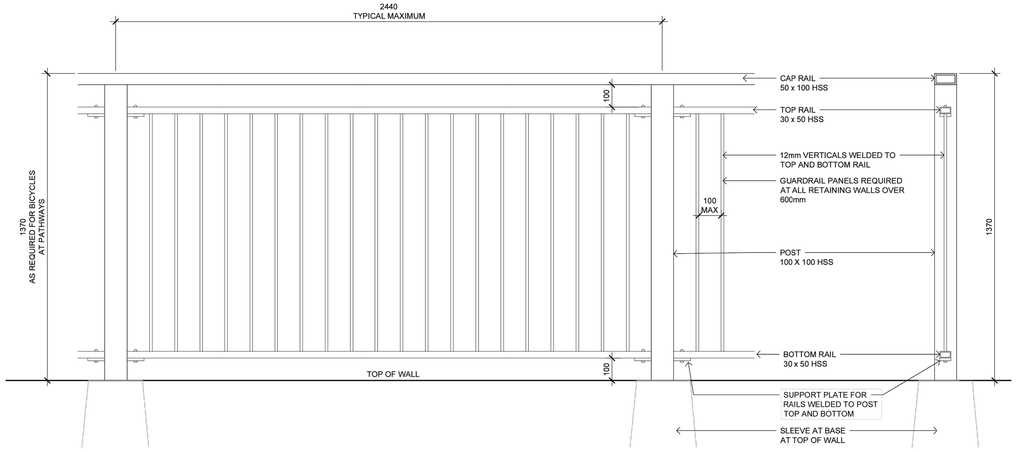
ALL material may be subject to site testing for compliance to the above specifications.

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

1 SLEEVE–IT FENCE POST INSTALLATION DETAIL
N.T.S.



NOTES:
- ALL STEEL, POWDER COAT FINISH, COLOUR BLACK.
- CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL METAL COMPONENTS.

2 PEDESTRIAN GUARDRAIL AT WALLS OVER 1.0m HT.
N.T.S.

NOTES:
- GUARDRAIL DETAIL FROM IBI GROUPS LANDSCAPING DRAWING PACKAGE.
- FOR FURTHER RAILING DETAILS REFER TO IBI GROUPS LANDSCAPING DESIGN PACKAGE.

REFERENCE:

1. SLEEVE–IT SYSTEM DETAIL PROVIDED BY STRATA SYSTEMS INC. MAY 5, 2021.
2. SCALE NOTATION INDICATED ARE BASED ON AN ANSI D DRAWING FORMAT.

DRUMHELLER VALLEY

SWEETTECH ENGINEERING CONSULTANTS

Seal: ASSOCIATION OF PROFESSIONAL ENGINEERS AND GEOSCIENTISTS OF ALBERTA ID 72962 — 2023-03-20

PERMIT TO PRACTICE
1963401 ALBERTA LTD.
RM SIGNATURE:
RM APEGA ID #: 67046
DATE: March 20, 2023
PERMIT NUMBER: P013638
The Association of Professional Engineers and Geoscientists of Alberta (APEGA)

Rev	Date	Des	Dwn	Chk	Description
0	2023-03-20	AO	KS	AO	ISSUED FOR TENDER

TOWN OF DRUMHELLER
DOWNTOWN DIKE
AQUAPLEX, RIVERVIEW TERRACE, AND RIVERSIDE DRIVE
REDI-ROCK RETAINING WALL DESIGN
DETAILS

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