

TECHNICAL SPECIFICATIONS

1. GENERAL

- THE CONTRACT ADMINISTRATOR WILL PROVIDE INITIAL SURVEY CONTROL AS WELL AS THE FINAL LOCATION, LIMITS AND GRADES OF THE CLAY LINER, GABIONS, CONCRETE STRUCTURES AND DRAIN PIPES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SUBSEQUENT SURVEY LAYOUT REQUIRED DURING CONSTRUCTION, AS WELL AS CLEARANCE FOR SITE UTILITIES, SOIL SAMPLING AND TESTING AND IN-SITU COMPACTION TESTS DURING THE CONSTRUCTION, AS REQUESTED BY THE CONTRACT ADMINISTRATOR. THE SURVEYING WILL BE INCIDENTAL TO THE WORK AND THERE WILL BE NO SEPARATE PAYMENT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR CARE OF ALL WATER FROM SEEPAGE, RUNOFF, AND ANY OTHER SOURCES DURING CONSTRUCTION TO KEEP THE WORK AREA DRY AND ACCESSIBLE. THIS SHALL INCLUDE PLACEMENT OF TEMPORARY COFFERDAMS (E.G. SAND BAG DYKES, CLAY BERMS, ETC.) AND PUMPING OR WATER DIVERSION AROUND THE WORK AREAS. ALL WORK ASSOCIATED WITH CARE OF WATER SHALL BE IN ACCORDANCE WITH STANDARD APPLICABLE ENVIRONMENTAL PROTECTION REQUIREMENTS. CARE OF WATER WILL BE INCIDENTAL TO THE WORK AND NO SEPARATE PAYMENT WILL BE MADE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY EROSION CONTROL DURING CONSTRUCTION TO SATISFY THE RELEVANT AND APPLICABLE ENVIRONMENTAL PROTECTION REQUIREMENTS. AN OVERALL WORK PLAN FOR THE CONSTRUCTION SHALL BE SUBMITTED TO AND ACCEPTED BY THE CONTRACT ADMINISTRATOR ONE WEEK PRIOR TO START OF THE CONSTRUCTION. THE WORK PLAN SHALL INCLUDE REFERENCE TO ACTIVITIES ASSOCIATED WITH CARE OF WATER, ENVIRONMENTAL PROTECTION, AND EROSION AND SEDIMENT CONTROL.

2. EXCAVATION

- ROUGH GRADING / EXCAVATION OF THE POND BASE TO THE PRE-CONSTRUCTION GRADES SHOWN ON THE DRAWINGS WILL HAVE BEEN COMPLETED PRIOR TO THE START OF THIS WORK.
- EXCAVATION UNDER THIS CONTRACT SHALL BE PERFORMED IN THE AREAS OF THE CONCRETE STRUCTURES, RETAINING WALLS, GABIONS, AND DRAIN PIPE TO THE MINIMUM LINES AND GRADES AS SHOWN ON THE DRAWINGS AND AS REQUIRED FOR STRUCTURE INSTALLATION.
- ALL EXCAVATED MATERIAL SUITABLE FOR SALVAGE AND REUSE AS CLAY FILL SHALL BE STOCKPILED ON SITE FOR SUBSEQUENT PLACEMENT. ALL EXCAVATED MATERIAL UNSUITABLE FOR REUSE SHALL BE HAULED TO THE DISPOSAL SITE WITHIN KILDONAN PARK, AS IDENTIFIED BY THE CONTRACT ADMINISTRATOR.
- THE CONTRACTOR SHALL SHAPE ALL DISPOSAL MATERIAL TO NEAT LINES AND GRADED TO PROMOTE RUNOFF WHILE NOT INTERFERING WITH EXISTING LAND USE OR DRAINAGE.

3. SUBGRADE PREPARATION

- SUBGRADE PREPARATION FOR THIS CONTRACT SHALL BE PERFORMED BELOW THE AREAS OF THE GABIONS, DRAIN PIPE, CURBS / WALLS, AND CONCRETE STRUCTURES. SUBGRADE PREPARATION IS NOT NECESSARY BELOW THE ISLAND FILL OR GENERAL POND LINER AREAS.
- THE SUBGRADE PREPARATION SHALL CONSIST OF THE EXCAVATION AND DISPOSAL OF ANY REMAINING DELETERIOUS MATERIAL SUCH AS VEGETATIVE MATTER, ROOT MASS, SURFICIAL BLACK ORGANIC TOPSOIL, PEAT, SOFT / WET MATERIAL, ETC. AS DETERMINED BY THE CONTRACT ADMINISTRATOR. ALL MATERIAL FOR DISPOSAL SHALL BE HAULED TO THE DISPOSAL SITE WITHIN KILDONAN PARK, AS IDENTIFIED BY THE CONTRACT ADMINISTRATOR.
- THE SUBGRADE SHALL THEN BE COMPACTED TO A MINIMUM OF 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY (SPMDD).

4. CLAY LINER AND CLAY FILL

- CLAY MATERIAL FOR THE POND LINER AND BACKFILL SHALL CONSIST OF AN INTERMEDIATE TO HIGH PLASTICITY AND LOW PERMEABILITY FILL, AS APPROVED BY THE CONTRACT ADMINISTRATOR, SALVAGED FROM THE ON-SITE EXCAVATION OR SUPPLIED FROM OFF SITE.
- FOR THE CLAY LINER AREAS WITHIN THE POND AND OUTSIDE THE LIMITS OF THE GABIONS, DRAIN PIPE AND CONCRETE STRUCTURES, THE IN-SITU CLAY MATERIAL SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 200 MM AND RECOMPACTED TO FORM A LOW PERMEABILITY LAYER FOR CONTAINMENT OF THE POND WATER.
- IN THE AREAS BELOW THE GABION, DRAIN PIPE AND CONCRETE STRUCTURES, CLAY FILL FOR THE LINER SHALL BE PLACED OVER TOP OF THE PREPARED SUBGRADE. THE CLAY LINER BELOW THESE STRUCTURE AREAS SHALL BE LOCALLY THICKENED TO ENSURE THAT THE MATERIAL WILL BE HOMOGENEOUS AND WELL COMPACTED TO A MINIMUM 200mm. THICK FOR CONTAINMENT OF POND WATER.
- ALL CLAY MATERIAL SHALL BE PLACED IN LIFTS NOT EXCEEDING 200 MM IN THICKNESS, CONDITIONED AS NECESSARY (WETTING OR DRYING) AND COMPACTED TO A MINIMUM OF 98% OF THE STANDARD PROCTOR DRY DENSITY.
- PRIOR TO PLACEMENT OF CLAY FILL OVER THE COMPACTED SUBGRADE AND AT AREAS WHERE MORE THAN ONE LIFT THICKNESS IS REQUIRED, THE COMPACTED SURFACE SHALL BE SCARIFIED TO A DEPTH OF 50 MM PRIOR TO PLACING SUCCESSIVE LIFTS TO ENSURE ADEQUATE BONDING.

5. GABIONS

- ALL MATERIAL AND CONSTRUCTION METHODS FOR SUPPLYING AND PLACING THE GABIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND APPROVED BY THE CONTRACT ADMINISTRATOR.
- THE GABION BASKETS SHALL BE GALVANIZED AND PVC COATED WITH MESH TYPE 8X10 (NOMINAL MESH OPENING 83 MM), AS MANUFACTURED BY MAGGAFERRI INC.
- THE GABIONS SHALL BE CONNECTED TOGETHER USING EITHER APPROVED LACING WIRE WITH SINGLE AND DOUBLE LOOPS OR STAINLESS STEEL FASTENERS AT A MAXIMUM SPACING OF 150 MM, AS APPROVED BY THE CONTRACT ADMINISTRATOR.
- THE BACKFILL MATERIAL WITHIN THE GABIONS SHALL CONSIST OF CRUSHED LIMESTONE VARYING BETWEEN 100 AND 200 MM IN DIAMETER. THE LIMESTONE SHALL CONSIST OF A CLEAN FREE DRAINING, SOUND, DENSE AND DURABLE CRUSHED ROCK, FREE FROM ORGANICS, ROOTS, CLAY AND ANY OTHER MATERIAL THAT WOULD DETRACT FROM THE STRENGTH AND DRAINAGE CHARACTERISTICS OF CLEAN ROCKFILL. IT SHALL BE DURABLE WHITE CRYSTALLINE MATERIAL. SOFTER BUFF TO YELLOW DOLOMITE OR DOLOSTONE WILL NOT BE ACCEPTED. THE MAXIMUM LA ABRASION LOSS SHALL BE 32% (ASTM C131).

- PRIOR TO PLACING THE BASKETS, THE SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH THIS SPECIFICATION AND LEVELLED TO RECEIVE THE BASKETS.
- THE GABIONS SHALL BE SEPARATED FROM THE SUBGRADE SOILS OR BACKFILL WITH NON-WOVEN GEOTEXTILE WHICH SHALL MEET THE REQUIREMENTS OF THE CITY OF WINNIPEG SPECIFICATION CW 3130. ACCEPTABLE PRODUCTS SHALL BE PROPEX 4553, LAYFIELD LP8, MIRAFT 180N, OR APPROVED EQUIVALENT.
- INDIVIDUAL BASKETS SHALL BE ALIGNED IN ACCORDANCE WITH THE TYPICAL LAYOUT SHOWN ON DWG G01.

6. DRAIN LINE

- THE DRAIN LINE SHALL BE 762mm (30") OUTER DIAMETER DR11 HDPE PIPE TO CONNECT THE NEW INLET AND OUTLET STRUCTURES AND BE INSTALLED ALONG THE POND BOTTOM AS SHOWN IN DRAWINGS G01 AND G02.
- THE SUBGRADE AND CLAY BACKFILL SHALL BE PREPARED AND COMPACTED IN ACCORDANCE WITH THE SPECIFICATION FOR CLAY LINER AND CLAY FILL.
- THE ALIGNMENT OF THE DRAIN PIPE SHALL BE LOCATED BY THE CONTRACT ADMINISTRATOR IN THE FIELD.

7. DRAINAGE SYSTEM FOR CONCRETE RETAINING WALL / CURB STRUCTURES

- THE DRAINAGE SYSTEM BEHIND THE CONCRETE RETAINING STRUCTURES WILL CONSIST OF FREE DRAINING GRANULAR FILL AND A PERFORATED WEeping TILE PIPE, IN CONFORMANCE WITH THE CITY OF WINNIPEG SPECIFICATION CW 3120, INSTALLED AS SHOWN ON THE DRAWINGS.
- THE GRANULAR FILL SHALL CONSIST OF 20 MM TO 40 MM (3/4" TO 1 1/2") NATURAL GRAVEL AND MEET ALL THE REQUIREMENTS AS SPECIFIED IN CW 3120 FOR DRAINAGE MATERIALS.
- THE GRANULAR FILL SHALL BE SEPARATED FROM THE SUBGRADE SOILS OR CLAY BACKFILL WITH NON-WOVEN GEOTEXTILE, WHICH SHALL MEET THE REQUIREMENTS OF CW 3130. ACCEPTABLE PRODUCTS SHALL BE PROPEX 4553, LAYFIELD LP8, MIRAFT 180N, OR APPROVED EQUIVALENT.
- THE WEeping TILE PIPE SHALL CONSIST OF 150 MM-DIAMETER PERFORATED HDPE DRAIN PIPE AND SHALL MEET THE DRAINAGE PIPE REQUIREMENTS AS PER CW 3120.
- THE WEeping TILE PIPE SHALL DRAIN THE WATER TO A SUMP AND PUMP (SEE DWG C01).

8. DOWNSTREAM CHANNEL CLEANOUT

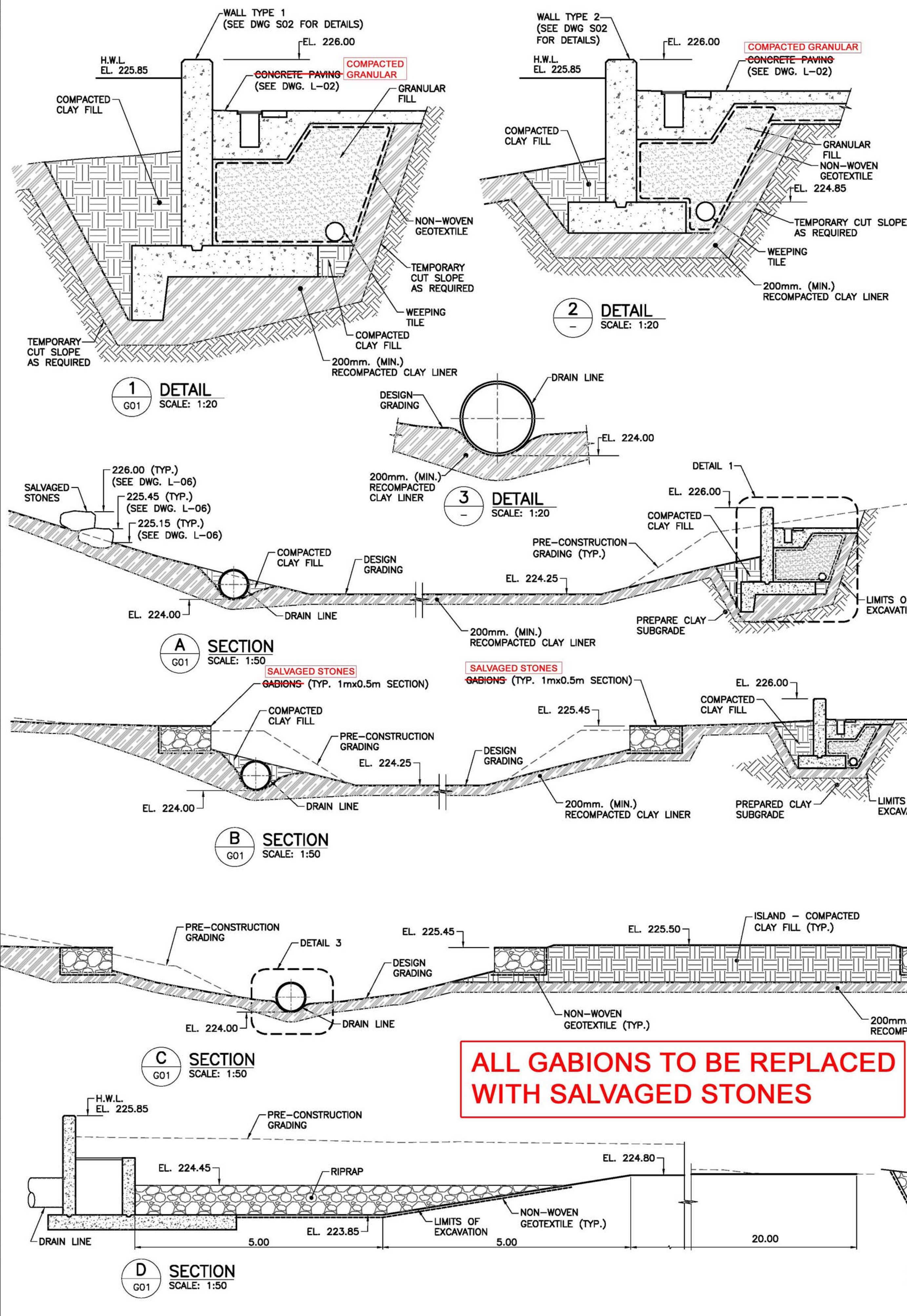
- DOWNSTREAM CHANNEL CLEANOUT SHALL CONSIST OF SOIL EXCAVATIONS WITHIN THE CHANNEL AND RIPRAP PLACEMENT AS SHOWN ON DWGS G01 AND G02.
- THE CHANNEL EXCAVATIONS SHALL BE PERFORMED AS SHOWN ON THE DRAWINGS AND UNDER THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
- THE RIPRAP SHALL RANGE IN SIZE FROM 50 TO 300 MM IN DIAMETER, WITH AT LEAST 50% BEING LARGER THAN 200 MM AND LESS THAN 5% FINER THAN 5 MM BY WEIGHT. THE RIPRAP SHALL CONSIST OF A CLEAN FREE DRAINING MATERIAL AND SHALL BE DURABLE, COMPRISED OF EITHER LIMESTONE, GRANITE, OR OTHER QUALITY DENSE ROCK. SHOULD THE CONTRACTOR CHOOSE TO USE LIMESTONE, IT SHALL BE DURABLE WHITE CRYSTALLINE LIMESTONE. SOFTER BUFF TO YELLOW DOLOMITE OR DOLOSTONE WILL NOT BE ACCEPTED. ROCK SAMPLES SHALL BE SUBMITTED TO THE CONTRACT ADMINISTRATOR FOR APPROVAL A MINIMUM OF FIVE (5) DAYS PRIOR TO THEIR USE. NO ROCKFILL WILL BE PERMITTED WITHOUT PROVING THE SOURCE AND SUPPLIER. INSPECTION OF THE SOURCE WILL BE PERFORMED BY THE CONTRACT ADMINISTRATOR PRIOR TO WRITTEN ACCEPTANCE.
- THIS CHANNEL CLEANOUT SHALL BE COMPLETED WITHIN THE LIMITS OF THE EXISTING LIMESTONE BLOCKS ALONG THE SIDES OF THE CHANNEL UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.

9. WELL DISCHARGE TREATMENT

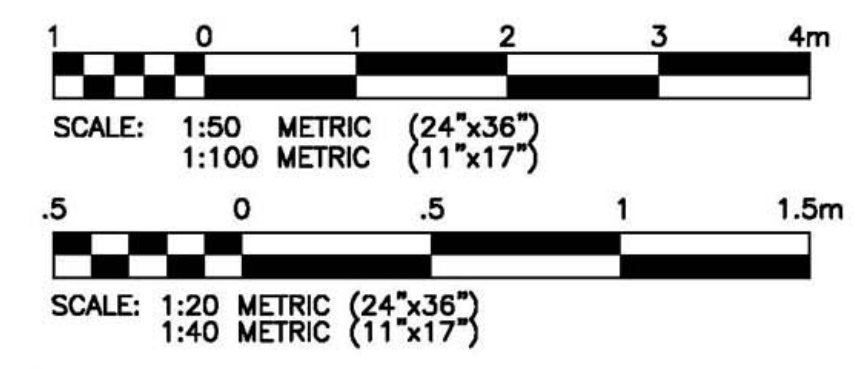
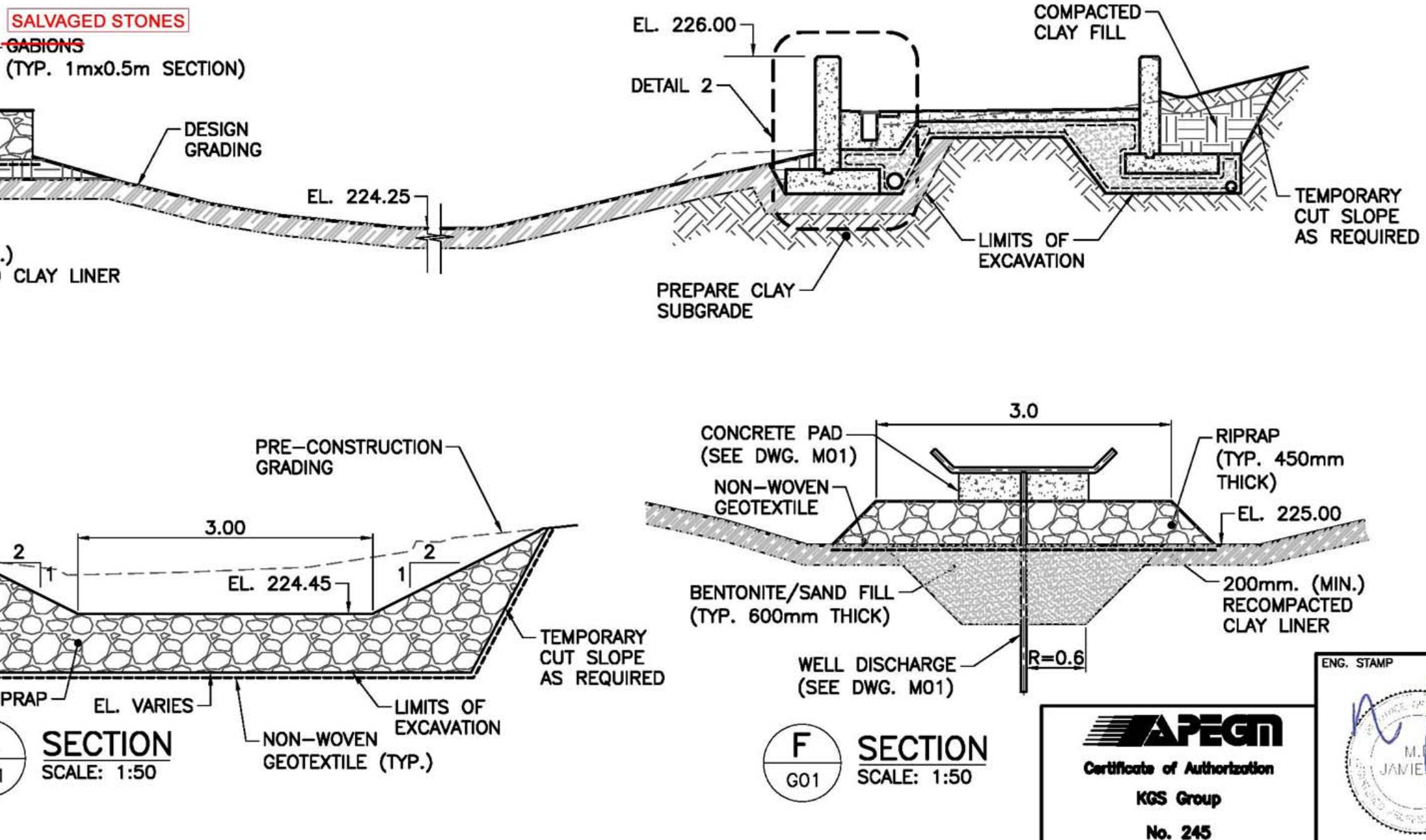
- EROSION PROTECTION AT THE WELL DISCHARGE AREA SHALL CONSIST OF RIPRAP BLANKET OVER GEOTEXTILE AND BENTONITE/SAND FILL AS SHOWN ON DWGS G01 AND G02.
- THE RIPRAP REQUIREMENTS SHALL BE CONSISTENT WITH THOSE SPECIFIED IN ITEM 8.
- THE BENTONITE/SAND FILL MATERIAL SHALL CONSIST OF A MIXTURE OF BENTONITE AND SAND WITH 1 PART BENTONITE TO 3.5 PARTS SAND BY VOLUME. THE BENTONITE SHALL BE POWDERED MATERIAL WITH SODIUM MONTMORILLONITE AS THE PRIMARY MINERAL. THE MATERIAL SHALL BE MIXED DRY IN A MANNER SUBJECT TO THE ACCEPTANCE BY THE CONTRACTOR ADMINISTRATOR.
- THE SAND BENTONITE FILL SHALL BE PLACED TO THE DIMENSIONS SHOWN AND IN CONTACT WITH THE WELL DISCHARGE LINE TO PROTECT AGAINST SEEPAGE.

NOTES:

- ALL UNITS ARE IN METERS UNLESS SPECIFIED OTHERWISE. ELEVATIONS ARE IN METERS ABOVE MEAN SEA LEVEL (MSL).
- THE PRE-CONSTRUCTION TOPOGRAPHY OUTSIDE THE LIMITS OF THE POND WAS BASED ON KGS GROUP SURVEY, APRIL 30, 2012. THE PRE-CONSTRUCTION TOPOGRAPHY WITHIN THE LIMITS OF THE POND WAS BASED ON KGS GROUP SURVEY, APRIL 8, 2014.



ALL GABIONS TO BE REPLACED WITH SALVAGED STONES



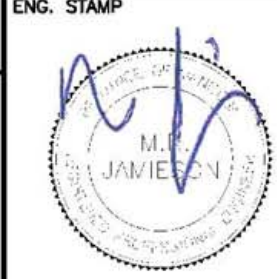
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REVISIONS / ISSUE	

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PROJECT: **PEGUIS PAVILION POND RENOVATIONS & LANDSCAPING**

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