

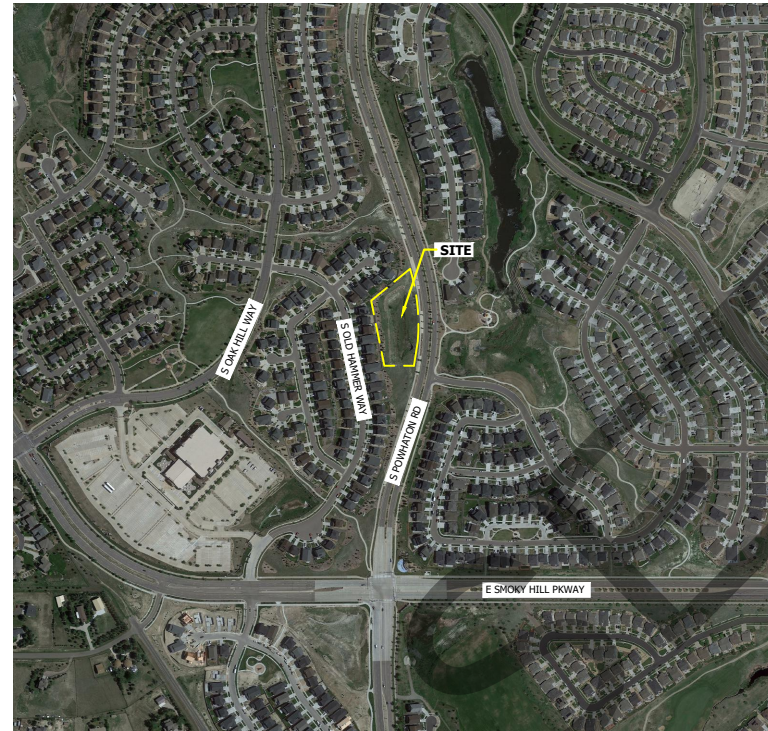
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Serenity Ridge Slope Repairs

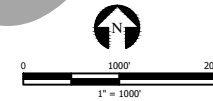
Filing No. 2, in Township 5 South, Range 65 West, 6th Principal Meridian City of Aurora, County of Arapahoe, State of Colorado.

Summary of Estimated Quantities	
Excavation and Export of existing Unsuitable material. Includes temporary shoring of excavation as needed.	3,200 C.Y.
Install Top Soil Layer	500 C.Y.
Import and Placement of Class I Structural Fill	1,340 C.Y.
Install Class C Filter Material	1,360 C.Y.
Install 6-in diameter Perforated Pipe	610 L.F.
Install 6-in diameter Solid Wall Pipe	60 L.F.
Install 6-in diameter clean-out	2
Install Filter Fabric	1,700 S.F.
Install Erosion Control Mats	17,780 S.F.

1. The contractor shall provide unit costs for each plan set bid item.
2. Contractor to verify quantities prior to bid submittal. Engineer should be notified of any discrepancies immediately.
3. See notes and detail sheets for additional information regarding construction requirements and plan set quantities.



VICINITY MAP



SHEET INDEX	
SHEET NO.	SHEET TITLE
1	COVER SHEET
2	GENERAL NOTES
3	SPECIFICATIONS
4	SPECIFICATIONS (TABLES)
5	REPAIR PLAN - NEW CONSTRUCTION
6	FINAL GRADING PLAN
7	TYPICAL SLOPE SECTION
8	MISC. DETAILS

Referenced Documents - For Information Only
Serenity Ridge Arterials Interim (overlot) Grading Plans; Continuing in Construction Plan Sequence: Roadway Improvement Plans, Drainage Report Maps, Aurora, Colorado, dated March 17, 2005, by Nolte Associates, Inc.
Serenity Ridge Filing No. 2 Construction Plans; A Parcel of Land Situated in the Eastern Portion of Section 28 and the Western Portion of Section 28 in Township 5 South, Range 65 West, 6th Principal Meridian City of Aurora, County of Arapahoe, State of Colorado, dated April 14, 2014, by J3 Engineering Consultants.
Serenity Ridge Filing No. 2 Preliminary Drainage Map, dated February 28, 2014, by J3 Engineering Consultants.
Serenity Ridge Stormwater Management and Erosion Control Plans, City of Aurora, Colorado, dated October 28, 2003, by J3 Engineering Consultants.
Final Drainage Report for Serenity Ridge Subdivision Filing No. 1, dated March 2004, by J3 Engineering Consultants.
Serenity Ridge Master Drainage Report, dated November 2003, by Nolte Associates, Inc.
Serenity Ridge Subdivision Filing No. 2; BEING A PART OF THE SOUTHWEST ONE-QUARTER OF SECTION 28 AND THE EAST ONE-HALF OF SECTION 29, TOWNSHIP 5 SOUTH, RANGE 65 WEST, 6TH PRINCIPAL MERIDIAN CITY OF AURORA, COUNTY OF ARAPAHOE, STATE OF COLORADO, dated March 28, 2014, by Mollenhauer.
Serenity Ridge Framework Development Plan Aurora, Colorado, dated January 13, 2004, by Norris Dullea.
Plot Plan, Lot 17, Block 3, 7260 Old Hammer Way, dated July 13, 2017, by B & J Surveying
Plot Plan, Lot 18, Block 3, 7270 Old Hammer Way, dated February 9, 2017, by B & J Surveying
Plot Plan, Lot 19, Block 3, 7280 Old Hammer Way, dated February 9, 2017, by B & J Surveying
Plot Plan, Lot 20, Block 3, 7290 Old Hammer Way, dated April 10, 2017, by B & J Surveying
Plot Plan, Lot 21, Block 3, 7300 Old Hammer Way, dated April 14, 2017, by B & J Surveying
Plot Plan, Lot 22, Block 3, 7310 Old Hammer Way, dated August 24, 2017, by B & J Surveying



Serenity Ridge Slope Repairs
SLOPE REPAIRS
COVER SHEET

PROJECT NO:	23.086	PROJECT NAME:	Serenity Ridge Repairs	CHECKED BY:	ADB	REV. DATE:	--
DRAWN BY:	JAI/MSR	DWG DATE:	11.10.23				

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Serenity Ridge Slope Repairs

Filing No. 2, in Township 5 South, Range 65 West, 6th Principal Meridian City of Aurora, County of Arapahoe, State of Colorado.

GENERAL NOTES

- PERMITS - THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED TO COMPLETE THE WORK.**
- EXISTING UTILITIES** - THE CONTRACTOR IS RESPONSIBLE FOR FIELD LOCATING OF ALL UTILITIES WITHIN THE CONSTRUCTION AREA.
- EXISTING FACILITIES** - EXISTING FACILITIES NOT INDICATED FOR REMOVAL SHALL BE PROTECTED OR REMOVED AND REPLACED IN KIND, AS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY CONFLICT.
- EXISTING RETAINING WALLS** - THE CONTRACTOR SHALL PROTECT THE EXISTING RETAINING WALLS. PORTIONS OF THE RETAINING WALL DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND AS APPROVED BY THE ENGINEER.
- SURVEY INFORMATION** - TOPOGRAPHIC MAPPING SHOWN ON THE DRAWINGS WAS PREPARED BY CMT TECHNICAL SERVICES (DRONE SURVEY, PERFORMED JULY 19, 2021) AND THE FARNSWORTH GROUP (FIELD SURVEY, PERFORMED AUGUST 4, 2021). FEATURES AND TOPOGRAPHY MAY VARY. THE CONTRACTORS SHALL VERIFY SITE CONDITIONS BEFORE THE START OF WORK.
- GEOTECHNICAL INFORMATION** - BASED ON SUBSURFACE INFORMATION INCLUDED IN THE GEOTECHNICAL EVALUATION "SERENITY RIDGE HOA, AURORA, COLORADO," BY CESARE INC., DATED DECEMBER 21, 2021.
- REFERENCE STANDARDS** - EXCEPT WHERE OTHERWISE PROVIDED FOR IN THESE PLANS AND SPECIFICATIONS, CURRENT CITY OF AURORA STANDARDS, ROADWAY DESIGN AND CONSTRUCTION SPECIFICATIONS AND CITY OF AURORA STORM DRAINAGE DESIGN AND TECHNICAL CRITERIA, LATEST EDITION, SHALL APPLY.
- QUANTITIES AND BID TABULATION** - ALL ESTIMATES AND/OR QUANTITIES SHALL BE VERIFIED BY THE CONTRACTOR, WHO SHALL BE RESPONSIBLE FOR DETERMINING ALL QUANTITIES AND PROVIDING THE WORK AND MATERIALS AS SHOWN ON THESE PLANS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM AN INDEPENDENT TAKE-OFF OF ALL QUANTITIES, TO NOTIFY THE OWNER AND ENGINEER OF ANY DISCREPANCIES (INCLUDING UNLISTED ITEMS), AND TO SUBMIT AN ADD-ALTERNATE BID IDENTIFYING THE DISCREPANCIES PRIOR FINAL EXECUTION OF THE CONSTRUCTION CONTRACT.
- WATERWAY/STREAM WORK** - ANY WORK THAT WILL TAKE PLACE IN AND AROUND A STREAM OR DRAINAGEWAY MAY BE SUBJECT TO PERIODIC FLOODING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF SURFACE AND SUBSURFACE WATER FLOWS DURING THE COURSE OF THE WORK. ANY DAMAGE TO THE WORK RESULTING FROM SURFACE FLOWS, BASE FLOWS, OR FLOOD FLOWS SHALL BE CORRECTED BY THE CONTRACTOR AT THE CONTRACTOR'S SOLE COST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND SATISFYING THE REQUIREMENTS OF ANY APPLICABLE PERMITS PERTAINING TO WATER AND EROSION CONTROL.
- STABLE EXCAVATION AND DEMOLITION LIABILITY** - THE CONTRACTOR IS SOLELY RESPONSIBLE FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES AND FOR SATISFYING ALL APPLICABLE OSHA, FEDERAL, STATE, AND LOCAL REGULATIONS. TEMPORARY EXCAVATIONS SHALL PROVIDE, AT A MINIMUM, THE TRENCH DIMENSIONS AND CLEARANCES SHOWN IN THE DRAWINGS OR AS APPROVED BY THE ENGINEER. ANY SUCH APPROVALS BY THE ENGINEER WILL NOT RELIEVE THE CONTRACTOR FROM SOLE RESPONSIBILITY FOR PROVIDING STABLE EXCAVATIONS AND TEMPORARY SLOPES. THIS EFFORT SHALL BE REFLECTED IN THE CONTRACTOR'S SCHEDULE AND BASE BID AS NECESSARY.
- LIMITS OF WORK** - THE LIMITS OF CONSTRUCTION (LOC) FOR THIS PROJECT ARE SHOWN IN THE CONSTRUCTION PLANS. THE CONTRACTOR SHALL LIMIT ALL CONSTRUCTION ACTIVITIES AND DISTURBANCES TO LIMITS OF CONSTRUCTION OR AS ALLOWED BY THE MUNICIPAL INSPECTOR IF REQUIRED.
- DEWATERING** - IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE APPLICABILITY, MEANS, AND METHODS OF ANY DEWATERING ACTIVITIES REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN AND COMPLY WITH THE APPROPRIATE PERMITS. THIS EFFORT SHALL BE REFLECTED IN THE CONTRACTOR'S SCHEDULE AND BASE BID AS NECESSARY.

CITY OF AURORA CONSTRUCTION PLANS GENERAL NOTES:

- ALL WATER DISTRIBUTION, SANITARY SEWER, AND STORM DRAINAGE CONSTRUCTION WILL CONFORM TO CITY OF AURORA "PUBLIC UTILITY IMPROVEMENTS RULES AND REGULATIONS REGARDING STANDARDS AND SPECIFICATIONS," LATEST REVISION.
- IF REQUIRED, THE CONTRACTOR SHALL NOTIFY THE CITY PUBLIC IMPROVEMENT INSPECTIONS DIVISION, 303-739-7350, 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ACTUAL CONSTRUCTION. FOR INFORMATION, CONTACT UTILITY NOTIFICATION OF COLORADO, 1-800-922-1987.
- THE CONTRACTOR SHALL HAVE ONE SIGNED COPY OF THE PLANS (APPROVED BY THE CITY OF AURORA), AT THE JOB SITE AT ALL TIMES, AND A COPY OF ANY PERMITS AND EXTENSION AGREEMENTS NEEDED AT THE JOB SITE AT ALL TIMES.
- THE OWNER/CONTRACTOR MUST OBTAIN AN C.D.P.S STORM WATER DISCHARGE PERMIT FROM THE COLORADO DEPARTMENT OF HEALTH, IF REQUIRED.

CITY OF AURORA STORMWATER MANAGEMENT STANDARD STATEMENT AND NOTES

"PURSUANT TO SECTIONS 138-440 AND 138-442 OF THE AURORA MUNICIPAL CODE, THE PERMITTEE SHALL LOCATE, INSTALL, AND MAINTAIN ALL BEST MANAGEMENT PRACTICES, INCLUDING, BUT NOT LIMITED TO, EROSION CONTROLS, SEDIMENT CONTROLS, DRAINAGE CONTROLS, AND WATER QUALITY BMP'S AS INDICATED IN THE APPROVED STORMWATER MANAGEMENT PLAN (SWMP). THE FOLLOWING NOTES ARE A REQUIREMENTS AND SHALL BE INCLUDED ON THE SWMP DESIGN DRAWINGS DEVELOPED FOR THIS PROJECT AND SUBMITTED FOR APPROVAL BY THE CITY. BMP INSTALLATIONS SHALL BE INSTALLED PER THE COA STANDARD DETAIL IN EFFECT AT THE TIME OF INSTALLATION OR PER THE APPROVED SWMP DESIGN DRAWING, A COA APPROVED VARIANCE, OR A COA APPROVED DESIGN DRAWING PLAN AMENDMENT."

- THE PERMITTEE SHALL BE RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO ADJACENT WATERWAYS, WETLANDS, STORM SEWERS, STORM SEWER APPURTENANCES, OTHER PROPERTIES, ETC., RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
- ADDITIONAL EROSION AND SEDIMENT CONTROL BMPS MAY BE REQUIRED DURING AND AFTER CONSTRUCTION AND SHALL BE EXECUTED AND COMPLETED BY THE PERMITTEE. THE PERMITTEE SHALL PLAN, INSTALL, AND MAINTAIN ALL EROSION, AND SEDIMENT CONTROL MEASURES, INCLUDING DRAINAGE AND WATER QUALITY BMPS AS INDICATED ON THIS PLAN AND AS NECESSARY TO REDUCE THE DISCHARGE OF POLLUTANTS TO THE MAXIMUM EXTENT PRACTICABLE ADVERSE IMPACTS, EROSION AND SEDIMENT DEPOSITION ONTO PAVED SECTIONS, INTO STORM SEWERS, STORM SEWER APPURTENANCES, RECEIVING WATERS, OR OFF THE PROJECT SITE.
- THE PERMITTEE SHALL TAKE APPROPRIATE PREVENTIVE MEASURES TO MINIMIZE TO THE MAXIMUM EXTENT PRACTICABLE DIRT AND MUD FROM BEING TRACKED OR DEPOSITED ON TO PAVED SECTIONS VIA MULTIPLE BMPS. SEDIMENT, MUD, AND CONSTRUCTION DEBRIS THAT MAY BE TRACKED, DEPOSITED, OR ACCUMULATED ON PAVED SECTIONS, IN THE FLOW LINES, PRIVATE PROPERTY, AND/OR PUBLIC RIGHTS OF WAY OF THE CITY AS A RESULT OF THIS CONSTRUCTION PROJECT SHALL BE CLEANED UP BY THE PERMITTEE.
- AREAS REACHING SUBSTANTIAL COMPLETION OF GRADING AND TOPSOIL PLACEMENT OPERATIONS MUST BE DRILL SEEDED AND CRIMP MULCHED WITHIN 14 DAYS OF SUBSTANTIAL COMPLETION OF GRADING AND TOPSOIL OPERATIONS. IF AN INCOMPLETE AREA IS TO REMAIN INACTIVE FOR LONGER THAN 30 DAYS, IT MUST BE DRILL SEEDED AND CRIMP MULCHED OR OTHERWISE LANDSCAPED WITHIN 14 DAYS FROM THE SUSPENSION OR COMPLETION OF LAND DISTURBANCE ACTIVITIES.
- THE DISCHARGE OF CEMENT, CONCRETE, OR MORTAR FROM READY MIX DELIVERY TRUCKS, PUMP TRUCKS, BATCH PLANTS OR SMALL MECHANICAL MIXERS DIRECTLY ONTO PAVED SURFACES OR DISTURBED GROUND HAVING NO CONTAINMENT IS PROHIBITED. THE DISPOSAL OF ANY LIQUID WASTES OR WASH WATER FROM ANY OPERATIONS SUCH AS PAINTING, DRYWALL, OR TILE INSTALLATIONS DIRECTLY ONTO PAVED SURFACES OR THE ADJACENT WATERWAYS, WETLANDS, STORM SEWERS, STORM SEWER APPURTENANCES, OTHER PROPERTIES, ETC., ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING OR ABRASIVE WATER JET CUTTING ARE TO TAKE PLACE.
- IT SHALL BE THE RESPONSIBILITY OF THE PERMITTEE TO RESOLVE CONSTRUCTION PROBLEMS DUE TO CHANGING CONDITIONS OR DESIGN ERRORS THEY MAY ENCOUNTER DURING THE PROGRESS OF ANY PORTION OF THE WORK. IF CONDITIONS IN THE FIELD REQUIRE CHANGES AND THE PROPOSED MODIFICATIONS TO THE APPROVED PLANS INVOLVE SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK, THE CONTRACTOR, THROUGH THE ENGINEER OF RECORD, SHALL BE RESPONSIBLE TO REVISE PLANS AND SUBMIT THEM TO THE CITY OF AURORA STANDARD DETAIL DESIGNS, CITY OF AURORA APPROVED VARIANCES, OR AN APPROVED DESIGN DRAWING AMENDMENT SHALL BE REMOVED AND THE CONTROLS, FEATURE AND/OR IMPROVEMENTS SHALL BE RECONSTRUCTED.
- SECONDARY CONTAINMENT FEATURES SHALL BE IN PLACE FOR ANY BULK FUEL STORAGE, MIXERS, GENERATORS, OR ANY OTHER SPILL OR LEAK SOURCE THAT REMAINS ONSITE FOR A PERIOD LONGER THAN 7 CALENDAR DAYS. A RECOVERY OR SALVAGE DRUM SHALL BE KEPT ONSITE FOR STORAGE OF CONTAMINATED SOILS.

SUPPLEMENTAL STORMWATER MANAGEMENT NOTES

- ALL STORM SEWER SHALL HAVE INLET PROTECTION PER COA REQUIREMENTS.
- TOPSOIL STRIPPING, STOCKPILING, AND RE-SPREADING IN AREAS PROPOSED TO BE REVEGETATED IS MANDATORY PRACTICE WITHIN COA.
- MAXIMUM STOCKPILE HEIGHT TO BE EQUAL OR LESS THAN 10 FEET. IF STOCKPILE IS TO REMAIN EXPOSED GREATER THAN 7 DAYS, TEMPORARY SEEDING WILL BE REQUIRED FOR STABILIZATION.
- THE CONTRACTOR TO PREPARE EXPORT ROUTE PLAN, NECESSARY BMPS AND SWMP PLAN. CONTRACTOR TO COORDINATE WITH THE CITY OF AURORA TO OBTAIN THE NECESSARY PERMIT.
- PLACE SPOILS FROM TRENCHING ON THE UPHILL SIDE OF THE TRENCH.
- SANITARY FACILITIES SHALL NOT BE PLACED (OR TEMPORARILY PLACED) WITHIN 50 FEET OF ANY STATE WATERS, DRAINAGE WAYS, STORM INLETS, RECEIVING WATERS, AREAS OF HIGH TRAFFIC, AND AREAS SUSCEPTIBLE TO FLOODING.
- DISTURB THE MINIMAL AMOUNT NECESSARY TO INSTALL THE VEHICLE TRACKING PAD. PLACE DOWNSTREAM BMPS PRIOR TO DISTURBANCE, AS ABLE. INSTALL THE SEDIMENT BASIN AND SEDIMENT TRAPS AS QUICKLY AS POSSIBLE.
- MAXIMUM ALLOWABLE DISTURBED AREA AT ANY TIME NOT TO EXCEED 1 ACRE OR SUBMIT SWMP TO THE CITY OF AURORA FOR APPROVAL.



Serenity Ridge Slope Repairs
GENERAL NOTES

PROJECT NO:	23.086	PROJECT NAME:	Serenity Ridge Repairs
DRAWN BY:	JAI/MSR	CHECKED BY:	ADB
DWG DATE:	11.10.23	REV. DATE:	--

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Serenity Ridge Slope Repairs

Filing No. 2, in Township 5 South, Range 65 West, 6th Principal Meridian City of Aurora, County of Arapahoe, State of Colorado.

1.0 GENERAL

- 1.1 THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR MEANS AND METHODS.
- 1.2 THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE SAFETY ISSUES AS MANDATED BY FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS.
- 1.3 DIMENSIONS OF THE NEW CONSTRUCTION SHALL BE ADJUSTED AS NECESSARY TO FIT THE EXISTING CONDITIONS. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY DEVIATIONS FROM THE DIMENSIONS OR CONDITIONS SHOWN ON THESE DRAWINGS.
- 1.4 THESE DRAWINGS AND SPECIFICATIONS APPLY TO THE PROJECT IDENTIFIED IN THE TITLE BLOCK ONLY AND SHALL NOT BE USED FOR ANY OTHER PURPOSE.
- 1.5 THE CONTRACTOR AND ITS SUBCONTRACTORS SHALL IMMEDIATELY BRING FORWARD TO THE ENGINEER ANY CONDITION IDENTIFIED AT ANY TIME THAT COULD AFFECT THE FINAL WORK.
- 1.6 THE OWNER IS RESPONSIBLE FOR PROVIDING QUALITY CONTROL PROGRAMS TO CONFIRM THE CONSTRUCTION IS PERFORMED IN ACCORDANCE WITH THE NOTES, DRAWINGS, AND THE PLANS AND SPECIFICATIONS.
- 1.7 DIMENSIONS FOR LAYOUT AND CONSTRUCTION ARE NOT TO BE SCALED FROM ANY DRAWING. IF PERTINENT DIMENSIONS ARE NOT SHOWN, CONTACT THE ENGINEER FOR CLARIFICATION.
- 1.8 THE CONTRACTOR SHALL NOTIFY CMT TECHNICAL SERVICES PRIOR TO CONSTRUCTION TO COORDINATE SITE OBSERVATIONS.
- 1.9 ENGINEER'S APPROVAL MUST BE SECURED FOR ALL SUBSTITUTIONS.
- 2.0 PRIOR TO APPROVAL OF CIVIL PLANS, THE OWNER MUST SUBMIT A STORM WATER INSPECTIONS AND MAINTENANCE PLAN, WHICH INCLUDES A STORM WATER INSPECTION AND MAINTENANCE AGREEMENT, TO COVER INSPECTION AND MAINTENANCE FOR ANY PERMANENT STORM WATER BEST MANAGEMENT PRACTICES. THE CURRENT TEMPLATE CAN BE OBTAINED THROUGH THE CITY OF AURORA OFFICE OF DEVELOPMENT ASSISTANCE.

2.0 EXCAVATION AND GRADING

- 2.1 THE ALIGNMENTS AND EXCAVATION LINES SHOWN ON THE DRAWINGS ARE SUBJECT TO CHANGES AS MAY BE FOUND NECESSARY BY THE ENGINEER TO ADAPT TO THE CONDITIONS ENCOUNTERED DURING THE EXCAVATION.
- 2.2 THE EXCAVATION SHALL CONFORM AS CLOSELY AS POSSIBLE TO THE LINES AND GRADES SHOWN IN THE PLANS, ACCURATE TRIMMING OF THE SLOPES OF THE EXCAVATION WILL NOT BE REQUIRED. REMOVE ALL LANDSLIDE MATERIAL AN OTHER UNSUITABLE MATERIALS STATED IN NOTE 2.3.
- 2.3 SATISFACTORY MATERIALS CONSIST OF MATERIALS CLASSIFIED BY ASTM D2487 AS GW, GP, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM, SC, SW-SC, OR SP-SM WITH STONES LESS THAN 3 INCHES IN DIAMETER. MATERIALS WHICH DO NOT COMPLY WITH THE REQUIREMENTS FOR SATISFACTORY MATERIALS ARE UNSATISFACTORY. UNSATISFACTORY MATERIALS ALSO INCLUDE TRASH, REFUSE, AND MATERIALS WHICH OTHERWISE CLASSIFY AS SATISFACTORY WHICH CONTAINS ROOTS, ORGANICS, OR FROZEN MATERIALS.
- 2.4 VOIDS, CAVITIES, DEPRESSIONS OR OTHER SURFACE IRREGULARITIES CREATED BY REMOVAL UNSATISFACTORY MATERIALS SHALL BE FILLED WITH STRUCTURAL FILL AND COMPACTED IN ACCORDANCE WITH SECTION 3.1 STRUCTURAL FILL.
- 2.5 SCARIFY THE UPPER 6 INCHES AND COMPACT ONSITE MATERIAL AT THE BASE OF THE EXCAVATION TO A MINIMUM OF 95% MAXIMUM DRY DENSITY AND +/-2% OF OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D698.
- 2.6 FOUNDATION MATERIALS SHALL BE OBSERVED BY THE ENGINEER OR ENGINEER'S REPRESENTATIVE PRIOR TO PLACEMENT OF NEW FILL MATERIALS TO VERIFY THAT THE ASSUMPTIONS OF THE DESIGN ARE MET. THE CONTRACTOR SHALL COORDINATE WITH CMT TECHNICAL SERVICES TO SCHEDULE OBSERVATION(S).
- 2.7 MAINTAIN GROUNDWATER AT LEAST 3 FEET BELOW THE BASE OF THE EXCAVATION.

3.0 PLACEMENT AND SPECIFICATIONS OF FILLS

ALL TOPSOIL, FROZEN MATERIAL, AND SOIL CONTAINING ORGANIC MATERIAL SHALL BE REMOVED FROM THE BASE OF THE EXCAVATION PRIOR TO PLACEMENT OF FILTER SAND OR FILTER FABRIC. ALL FILTER SAND, DRAINAGE AGGREGATE, STRUCTURAL FILL, AND TOPSOIL SHOULD BE FREE OF FROZEN AND ORGANIC MATERIAL.

3.1 STRUCTURAL FILL

- 3.1.1 STRUCTURAL FILL SHALL MEET THE GRADATION AND PLASTICITY REQUIREMENTS FOR CDOT CLASS 1 FILL AS SHOWN IN TABLE 1.
- 3.1.2 STRUCTURAL FILL SHALL BE SHOWN TO MEET A MINIMUM 34 DEGREE FRICTION ANGLE PRIOR TO USE BY DIRECT SHEAR TESTING IN ACCORDANCE WITH ASTM 3080 OR OTHER SHEAR STRENGTH TESTING METHOD AS APPROVED BY CMT, INC.
- 3.1.4 THE FILL MATERIAL SHALL BE PLACED IN 8 INCH MAXIMUM, LOOSE LIFTS WITHIN 3% OF OPTIMUM MOISTURE CONTENT FOR SAND MATERIAL (AASHTO CLASSIFICATION A-1, A-2-4, A-2-5,A-3, A-4, AND A-5), AND WITHIN +/- 2% OF OPTIMUM MOISTURE CONTENT FOR CLAY MATERIAL (AASHTO CLASSIFICATION A-2-6, A-2-7, A-6, AND A-7), AND SHALL BE COMPACTED TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DRY DENSITY ACCORDING TO ASTM D698.

3.2 TOP SOIL

- 3.2.1 COMPACT TOP SOIL WITH A MINIMUM OF 4 PASSES WITH A D8 DOZER OR EQUIVALENT.

3.3 FILTER SAND

- 3.3.1 FILTER SAND SHALL MEET THE SPECIFICATIONS FOR CDOT CLASS C FILTER MATERIAL AS SHOWN IN TABLE 3, BE COMPOSED OF HARD DURABLE CRUSHED METAMORPHIC OR IGNEOUS ROCK, FREE OF FRIABLE OR SOLUBLE MATERIALS, AND CONTAIN NO MORE THAN 3%, BY WEIGHT, NON-PLASTIC MATERIAL PASSING THE NO. 200 STANDARD US SIEVE. CRUSHED/RECYCLED CONCRETE OR OTHER CEMENTITIOUS MATERIALS SHALL NOT BE USED AS FILTER SAND.
- 3.3.2 HANDLE ALL FILTER SAND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF PARTICLE SIZES DURING STOCKPILING AND PLACEMENT. LIMIT DROP HEIGHT TO NO GREATER THAN 3 FEET.
- 3.3.3 STOCKPILE FILTER SAND IN SUCH A MANNER AS TO PREVENT CONTAMINATION.
- 3.3.4 PLACE FILTER SAND IN 6 INCH LOOSE LIFTS MAX.
- 3.3.5 COMPACT FILTER SAND WITH VIBRATORY EQUIPMENT TO BETWEEN 70% TO 75% OF RELATIVE DENSITY AS DETERMINED BY ASTM D4254 AND ASTM D4253.
- 3.3.6 FILTER SAND SHALL BE SHOWN TO HAVE NO MORE THAN 5% BY WEIGHT PASSING THE NO. 200 US STANDARD SIEVE AFTER PLACEMENT.
- 3.3.7 MAINTAIN FILTER SAND 1 FOOT ABOVE STRUCTURAL FILL UNTIL PLACEMENT OF FILTER SAND TO FINAL ELEVATION.
- 3.3.8 THE ENGINEER SHALL OBSERVE THE PLACEMENT OF ALL FILTER SAND.

3.4 TOP SOIL

- 3.4.1 ONSITE MATERIAL, FREE OF TRASH AND OTHER DEBRIS, IS SUITABLE FOR USE AS TOPSOIL PLACED AS SHOWN ON THE DRAWINGS.

4.0 DRAIN

4.1 FILTER FABRIC

- 4.1.1 FILTER FABRIC SHALL MEET CRITERIA FOR CDOT CLASS 3 SUBSURFACE DRAINAGE FOR GREATER THAN 15% FINES, US 120NW/US670 OR OTHER APPROVED EQUIVALENT.
- 4.1.2 DAMAGED GEOTEXTILES SHALL BE REPLACED OR PATCHED. PATCHES SHALL EXTEND BEYOND THE DAMAGED AREA A MINIMUM OF 1 FOOT IN ALL DIRECTIONS.
- 4.1.3 THE FILTER FABRIC SHALL BE PLACED AS LOOSELY AS POSSIBLE WITH NO WRINKLES, FOLDS, AND WITH NO VOID SPACES BETWEEN THE GEOTEXTILE AND THE GROUND SURFACE.
- 4.1.4 OVERLAP SUCCESSIVE SHEETS OF GEOTEXTILE A MINIMUM OF 1 FOOT.
- 4.1.5 PLACE A MINIMUM OF 1 FOOT OF FILTER SAND OVER GEOTEXTILE PRIOR TO COMPACTING.
- 4.1.6 THE ENGINEER SHALL OBSERVE PLACEMENT OF ALL FILTER FABRIC.

4.2 DRAIN PIPES

- 4.2.1 PERFORATED DRAINAGE COLLECTION PIPE SHALL BE 6 INCH, HDPE OR PVC, PERFORATED OR SLOTTED PIPE. SLOT OR PERFORATION SIZE SHALL BE NO GREATER THAN 3MM IN WIDTH OR 4.75 MM IN DIAMETER. IF HDPE PIPE IS SELECTED, IT SHALL BE PROFILE WALL (CORRUGATED EXTERIOR WITH A SMOOTH INTERIOR) PIPE AND MEET AASHTO M252 SPECIFICATIONS. COLLECTION PIPE SHALL RUN THE ENTIRE LENGTH OF THE IMPROVEMENTS.
- 4.2.2 TRANSITION TO SOLID WALL PIPE FOR CLEAN OUTS AT ELBOWS AS SHOWN IN THE DRAWINGS. ELBOWS CONNECTING PERFORATED DRAIN PIPE TO CLEAN OUT SWEEPS SHALL NOT BE GREATER THAN 22.5 DEGREES. TRANSITION TO SOLID WALLED OUTFALL PIPE 1 FOOT MIN BEFORE TRANSITION FROM FILTER SAND/DRAINAGE AGGREGATE TO STRUCTURAL FILL LAYERS AS SHOWN ON PLANS.
- 4.2.3 PROVIDE FILTER SOCK FOR ALL PERFORATED PIPE. FILTER SOCK SHALL BE CDOT CLASS 3 FILTER MATERIAL. FILTER SOCK SHALL BE PLACED AROUND THE PIPE OVER THE ENTIRE LENGTH OF THE DRAIN AND OUTFALL. FILTER SOCK SHALL MEET SPECIFICATIONS FOR CDOT SUBSURFACE DRAINAGE, CLASS 3 (<3% FINES) FILTER FABRIC.
- 4.2.4 FOLLOW ALL MANUFACTURES RECOMMENDATIONS FOR PIPE PLACEMENT.
- 4.2.5 COMPACTION AROUND DRAIN PIPES SHALL NOT BE COMPLETED BY TAMPING WITH THE BUCKET OF AN EXCAVATOR OR WHEEL ROLLING PARALLEL OR TRANSVERSE TO THE PIPE. PROVIDE MINIMUM COVER AS RECOMMENDED BY THE MANUFACTURE OVER THE PIPE PRIOR TO TRAVERSING WITH EQUIPMENT.
- 4.2.6 PLACE AND COMPACT ALL MATERIAL UNDER HAUNCHES OF PIPES TO ENSURE A UNIFORM BEDDING AND THAT NO VOIDS ARE FORMED DURING CONSTRUCTION.
- 4.2.7 PLACE ALL PIPES IN SUCH A MANNER AS TO PREVENT DAMAGE OR DISTORTION DURING INSTALLATION.
- 4.2.8 PLACE ALL PIPES TO THE LINES AND GRADES SHOWN IN THE PLANS.
- 4.2.9 PLACE PERFORATIONS DOWNWARD.
- 4.2.10 FIT OUTFALL WITH WIRE MESH ANIMAL GUARD SUCH AS STANDARD METAL GRATE FOR 6-IN. CMP OR PVC PIPE BY AGRI DRAIN OR APPROVED ALTERNATE.
- 4.2.11 PROVIDE CONCRETE SWALE FROM END OF OUTFALL TO EXTERIOR FACE OF CAP BLOCK ON EXISTING RETAINING WALL.

- 4.2.12 CLEANOUT COVERS SHALL BE GALVANIZED 12 IN CORRUGATED METAL PIPE CENTERED OVER CLEANOUT SWEEPS AND EMBEDDED AS SHOWN ON THE PLANS. PLACE CLEAN SAND IN VOID BETWEEN CLEANOUT SWEEP AND CLEANOUT COVER, TAMP SAND UNIFORMLY AROUND CIRCUMFERENCE OF VOID TO ENSURE THAT SAND DOES NOT BRIDGE AND FORM VOIDS DURING PLACEMENT.
- 4.2.13 FIT CLEANOUT COVERS WITH LOCKING METAL LID.
- 4.2.14 THE ENGINEER SHALL OBSERVE PREPARED PIPE SUBGRADE PRIOR TO PLACEMENT OF PIPE.
- 4.2.15 THE ENGINEER SHALL OBSERVE THE PLACEMENT OF ALL DRAIN PIPE.

5.0 SEED AND SOD

- 5.1 THE CONTRACTOR SHALL PROVIDE SEED AND VEGETATION TO MATCH EXISTING OR AS APPROVED BY THE OWNER.
- 5.2 THE CONTRACTOR SHALL MAKE REPAIRS TO ALL LANSCAPING AND VEGETATION DISTURBED IN PERFORMANCE OF THE WORK INCLUDING AREAS USED FOR STOCKPILING MATERIALS, HAUL ROADS, OR OTHER ANCILLARY ACTIVITIES.

5.2 EROSION CONTROL MEASURES

EROSION CONTROL MAY CONSIST OF FLEXOMAT STANDARD, LENO WEAVE, CURLEX II, OR ALTERNATIVE WITH APPROVAL OF THE ENGINEER. THE COST OF EROSION CONTROL OPTIONS SHALL BE INCLUDED IN THE CONTRACTORS SCHEDULE AND BASE BID.

6.0 REQUIRED SUBMITTALS

- 6.1 EXCAVATION PLAN, INCLUDING REQUIRED SHORING AND/OR TEMPORARY SLOPE STABILIZATION AS NECESSARY, 5 BUSINESS DAYS PRIOR TO NOTICE TO PROCEED.
- 6.2 DEWATERING PLAN (IF REQUIRED) 5 BUSINESS DAYS PRIOR TO NOTICE TO PROCEED.
- 6.3 FILTER FABRIC - SUBMIT RESULTS OF TESTS TO SHOW MATERIAL CONFORMANCE WITH SPECIFICATIONS IN TABLE 4. FILTER FABRIC.
- 6.3 PLASTIC PIPE - SUBMIT MANUFACTURES BROCHURES AND INFORMATION FOR PERFORATED AND NON-PERFORATED PLASTIC PIPES.
- 6.4 FOR CLASS C FILTER MATERIAL, SUBMIT THE RESULTS OF REQUIRED TESTING FOR APPROVAL PRIOR TO HAULING MATERIAL TO THE SITE:
 - 6.4.1 GRADATION - ASTM C136
 - 6.4.2 RELATIVE DENSITY - ASTM D4253 AND ASTM D4254
 - 6.4.3 PLASTICITY INDEX - ASTM D4318
- 6.5 FOR CLASS B SUBMIT THE RESULTS OF REQUIRED TESTING FOR APPROVAL PRIOR TO HAULING MATERIAL TO THE SITE:
 - 6.5.1 GRADATION - ASTM C136
 - 6.5.2 RELATIVE DENSITY - ASTM D4253 AND ASTM D4254
 - 6.5.3 PLASTICITY INDEX - ASTM D4318
- 6.6 FOR STRUCTURAL FILL SUBMIT THE RESULTS OF REQUIRED TESTING FOR APPROVAL PRIOR TO HAULING MATERIAL TO THE SITE:
 - 6.6.1 GRADATION - ASTM C136
 - 6.6.2 PLASTICITY INDEX - ASTM D4318
 - 6.6.3 DIRECT SHEAR (ASTM D3080) OR OTHER APPROVED STRENGTH TEST
 - 6.6.4 STANDARD PROCTOR - ASTM D698
- 6.7 MATERIALS FOR EROSION CONTROL MATS - SUBMIT MANUFACTURES BROCHURES AND INFORMATION FOR EROSION CONTROL MEASURES
- 6.8 SUBMIT SEED/SOD AND LANDSCAPING PLAN WITH PROPOSED MATERIALS, SEED MIX, AND PLANT SPECIES.

7.0 REQUIRED TESTING

TESTING SHALL BE DONE DONE IN ACCORDANCE WITH THE CITY OF AURORA ROADWAY DESIGN AND CONSTRUCTION SPECIFICATIONS, CURRENT VERSION.

MOISTURE/DENSITY TESTING: IF ASTM D 2922 IS USED, ASTM D1556 SHALL BE USED TO VERIFY THE THE RESULTS OF ASTM D2922 ONCE DAILY AND AT THE DISCRETION OF THE ENGINEER THEREAFTER. IN THE EVENT OF A DISCREPANCY OF 1.0 PCF OR GREATER IN THE RESULTS BETWEEN ASTM D2922 AND ASTM D1556, THE RESULTS OBTAINED BY USE OF THE NUCLEAR DEVICE SHALL BE DISCONTINUED UNTIL THE CAUSE OF THE DISCREPANCY IS DETERMINED.

7.1 BASE OF EXCAVATION - MOISTURE CONTENT AND DRY DENSITY IN ACCORDANCE WITH ASTM D1556 OR ASTM D2922.

7.2 FILTER SAND - MOISTURE CONTENT AND DRY DENSITY IN ACCORDANCE WITH ASTM D1556 OR ASTM D2922.

GRADATION IN ACCORDANCE WITH ASTM C136 AFTER PLACEMENT AND COMPACTION OF FIRST LIFT THEREAFTER AS DETERMINED BY THE ENGINEER.



Serenity Ridge Slope Repairs SPECIFICATIONS

PROJECT NO:	23.086	Serenity Ridge Repairs	CHECKED BY:	ADB
PROJECT NAME:			DRAWN BY:	JAI/MSR
DWG DATE:	11.10.23		REV. DATE:	--

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Serenity Ridge Slope Repairs

Filing No. 2, in Township 5 South, Range 65 West, 6th Principal Meridian City of Aurora, County of Arapahoe, State of Colorado.

TABLE 1. CDOT CLASS 1 STRUCTURAL BACKFILL	
GRADATION	
SIEVE SIZE	PERCENT PASSING
2 INCH	100
NO. 4	30 TO 100
NO. 50	10 TO 60
NO. 200	5 TO 20
ATTERBERG LIMITS	
LIQUID LIMIT:	LESS THAN 35%
PLASTICITY INDEX:	LESS THAN 6%

TABLE 2. DRAINAGE AGGREGATE CDOT CLASS B FILTER MATERIAL	
GRADATION	
SIEVE SIZE	PERCENT PASSING
1.5 INCH	100
NO. 4	20 TO 60
NO. 16	10 TO 30
NO. 50	0 TO 10
NO. 200	0 TO 3

TABLE 3. FILTER MATERIAL CDOT CLASS C FILTER MATERIAL	
GRADATION	
SIEVE SIZE	PERCENT PASSING
¾ INCH	100
NO. 4	60 TO 100
NO. 50	10 TO 30
NO. 100	0 TO 10
NO. 200	0 TO 3

TABLE 4. FILTER FABRIC					
WOVEN GEOTEXTILE			NON-WOVEN		
PROPERTY	TEST METHOD	UNITS	PROPERTY	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D4632	400 X 315 LBS	WEIGHT	ASTM D5261	152.55 G/M ²
ELONGATION AT BREAK	ASTM D4632	15%	GRAB TENSILE STRENGTH	ASTM D4632	120 LBS
WIDE WIDTH TENSILE STRENGTH	ASTM D4595	3,000 X 2,760 LB/FT	ELONGATION AT BREAK	ASTM D4632	50%
CBR PUNCTURE	ASTM D6241	1,150 LBS	MULLEN BURST	ASTM D3786	225 PSI
TRAPEZOIDAL TEAR	ASTM D4533	150 X 165 LBS	PIN PUNCTURE	ASTM D4833	65 LBS
APPARENT OPENING SIZE	ASTM D4751	NO. 40 US SIEVE	CBR PUNCTURE	ASTM D6241	340 LBS
PERMITIVITY	ASTM D4491	0.9 SEC ⁻¹	TRAPEZOIDAL TEAR	ASTM D4533	50 LBS
PERMEABILITY	ASTM D4491	0.07 CM/SEC	APPARENT OPENING SIZE	ASTM D4751	NO. 70 US SIEVE
WATER FLOW RATE	ASTM D4491	70 GAL/MIN/FT ²	PERMITIVITY	ASTM D4491	1.7 SEC ⁻¹
PERCENT OPEN AREA	CW-02215	1%	WATER FLOW RATE	ASTM D4491	135 G/MIN/FT ²
UV RESISTANCE AT 500 HRS	ASTM D4355	90%	UV RESISTANCE AT 500 HRS	ASTM D4355	70%

TABLE 5. REQUIRED OBSERVATIONS	
OPERATION	FREQUENCY OF OBSERVATION
BASE OF EXCAVATION	AFTER COMPACTION PRIOR TO PLACEMENT OF FILTER SAND OR FILTER FABRIC
FILTER PLACEMENT	FULL TIME
FILTER FABRIC PLACEMENT	FULL TIME
DRAIN AGGREGATE PLACEMENT	FULL TIME
PIPE PLACEMENT	FULL TIME
STRUCTURAL FILL PLACEMENT	FULL TIME
EROSION CONTROL PLACEMENT	PART TIME



Serenity Ridge Slope Repairs
SPECIFICATIONS
(TABLES)

PROJECT NO:	23.086	PROJECT NAME:	Serenity Ridge Repairs	CHECKED BY:	ADB	REV. DATE:	--
DRAWN BY:	JAI/MSR	DWG DATE:	11.10.23				

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LEGEND:

- MAJOR CONTOURS
- MINOR CONTOURS
- - - PROPOSED CUT LIMITS
- === EXISTING STRUCTURE
- === DRAIN
- - - TRENCH DRAIN
- X - FENCE



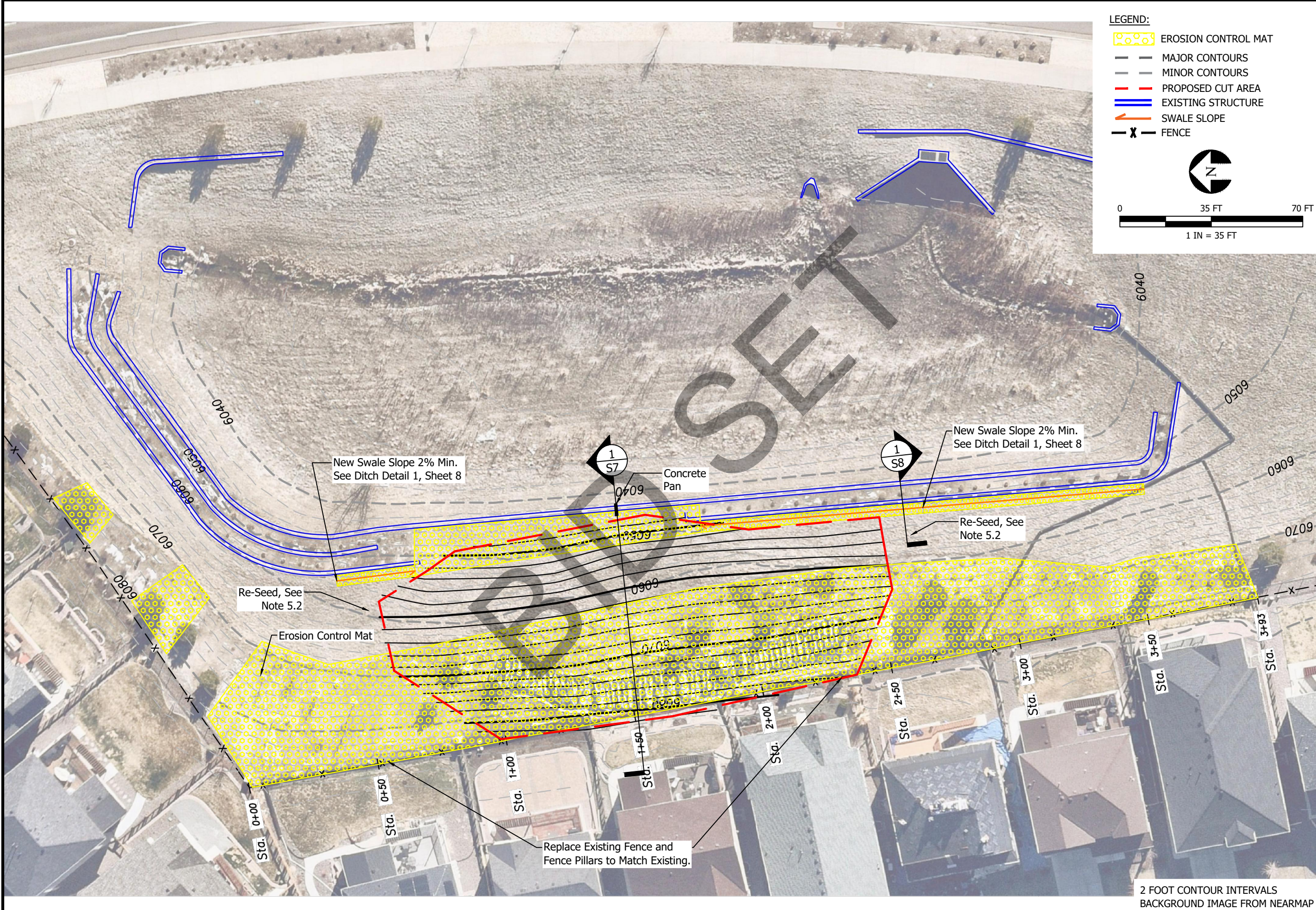
Serenity Ridge Slope Repairs
REPAIR PLAN
NEW CONSTRUCTION

PROJECT NO:	23.086
PROJECT NAME:	Serenity Ridge Repairs
DRAWN BY:	JAI/MSR
DWG DATE:	11.10.23
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2 FOOT CONTOUR INTERVALS
BACKGROUND IMAGE FROM NEARMAP

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LEGEND:

- EROSION CONTROL MAT
- MAJOR CONTOURS
- MINOR CONTOURS
- PROPOSED CUT AREA
- EXISTING STRUCTURE
- SWALE SLOPE
- FENCE

0 35 FT 70 FT

 1 IN = 35 FT

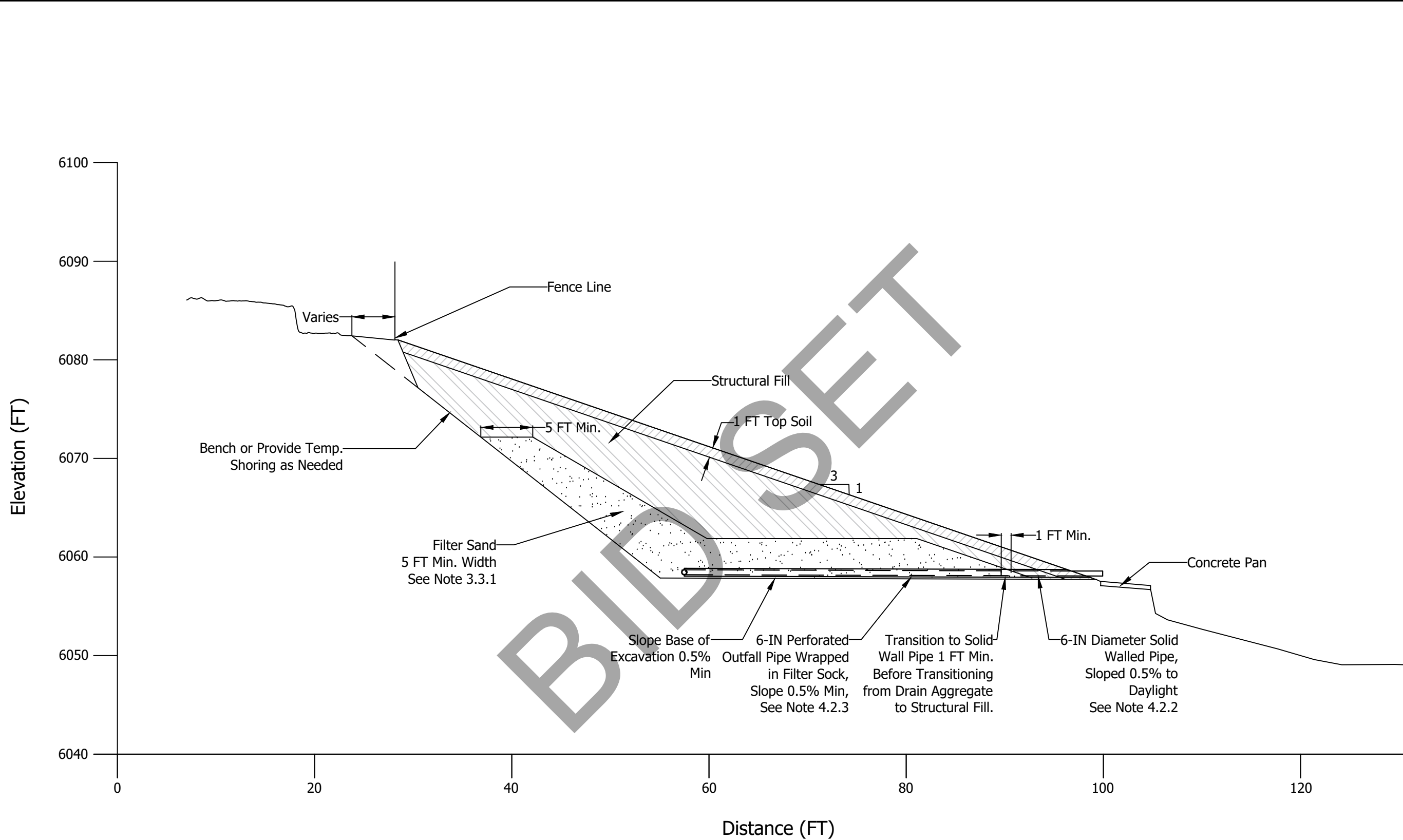


Serenity Ridge Slope Repairs
FINAL GRADING PLAN

PROJECT NO:	23.086		
PROJECT NAME:	Serenity Ridge Repairs		
DRAWN BY:	JAI/MSR	CHECKED BY:	ADB
DWG DATE:	11.10.23	REV. DATE:	--

2 FOOT CONTOUR INTERVALS
BACKGROUND IMAGE FROM NEARMAP

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1
S7 **Slope Section**
Scale 1 IN = 10 FT

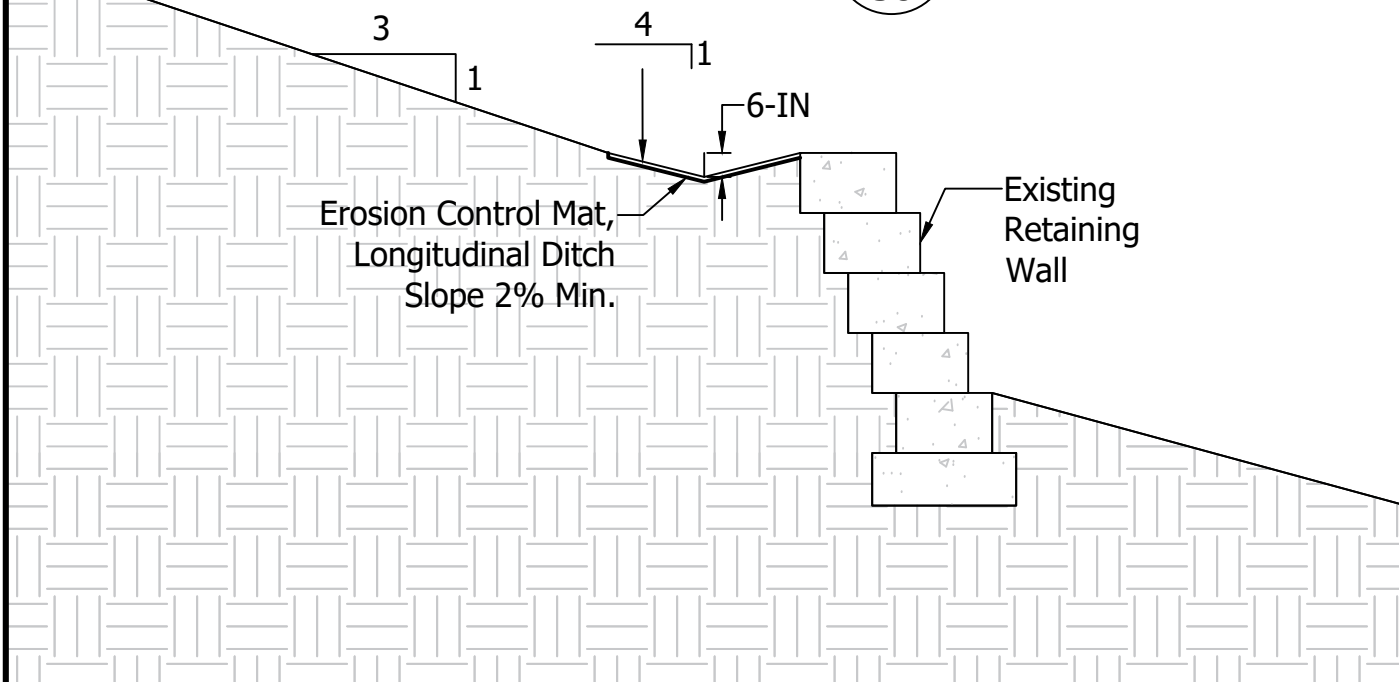


Serenity Ridge Slope Repairs
TYPICAL SLOPE SECTION

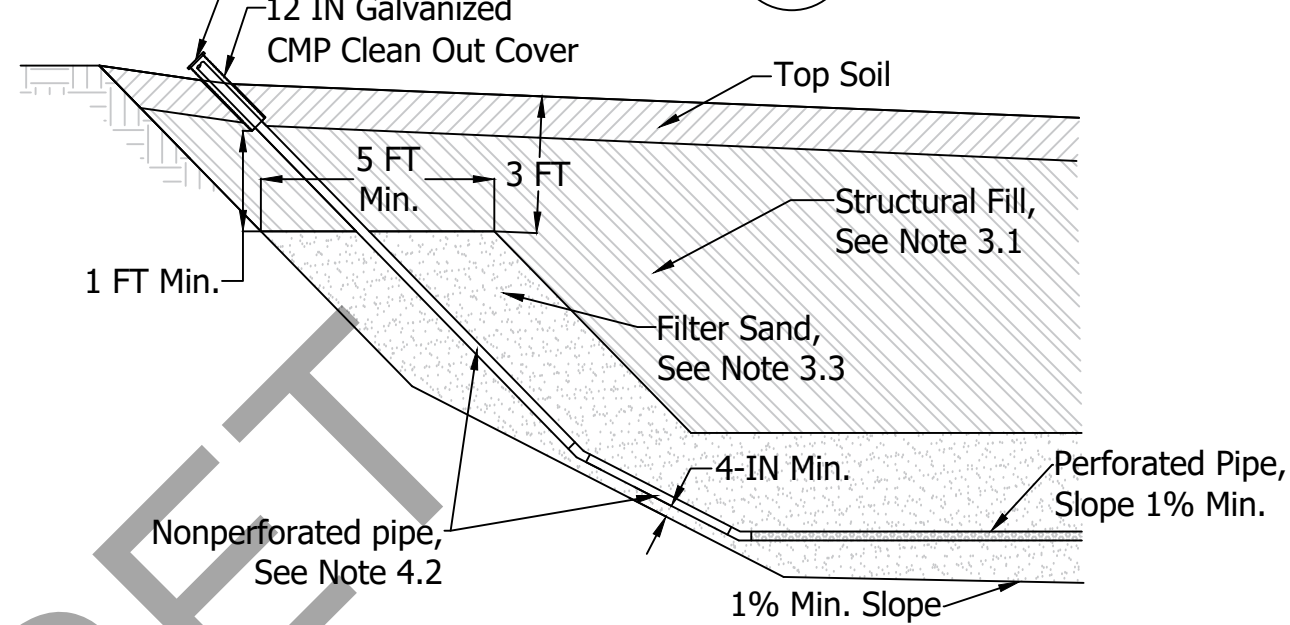
PROJECT NO:	23.086
PROJECT NAME:	Serenity Ridge Repairs
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1 Ditch Detail
S8 Scale 1 IN = 4 FT

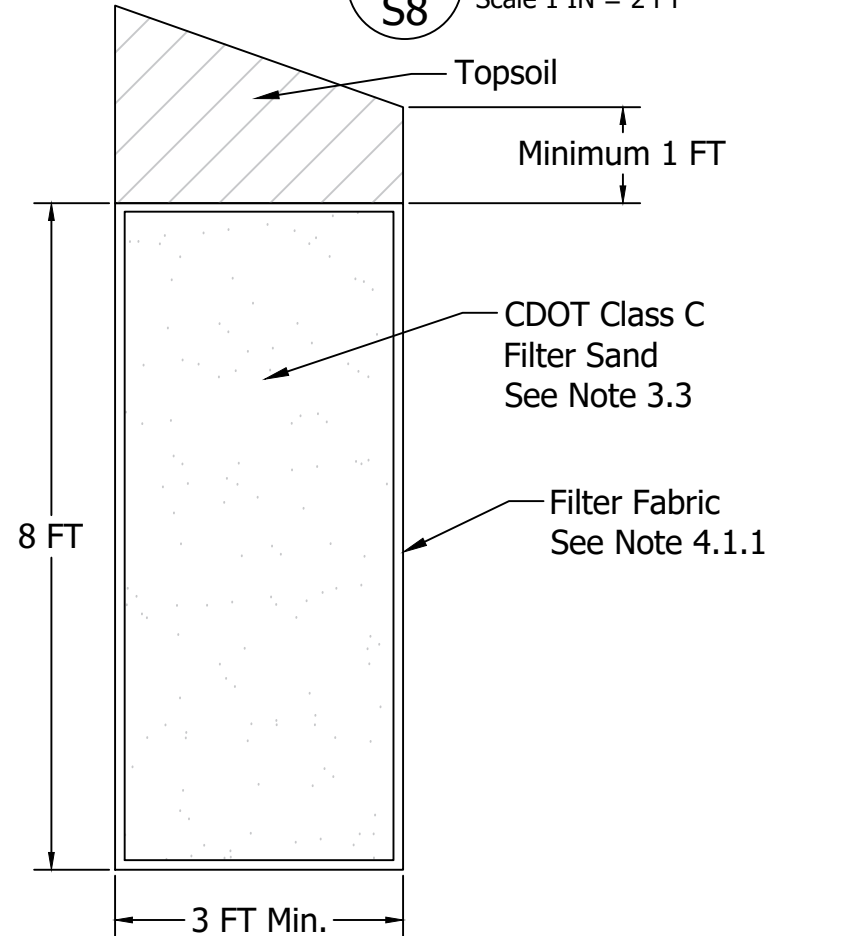


2 Cleanout Detail
S8 Scale 3/16 IN = 1 FT

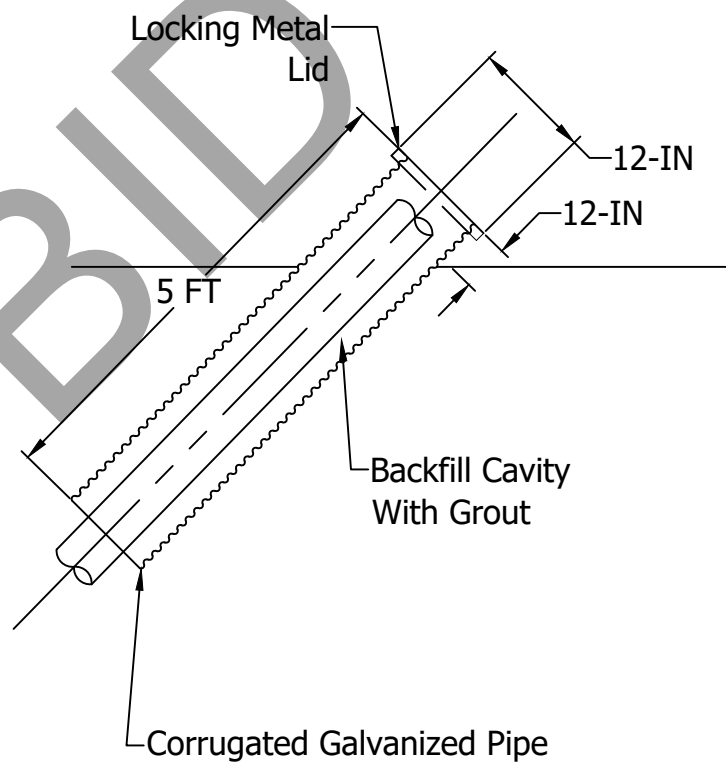


Notes: 1. Pipe bends for clean out shall be no greater than 22.5 degrees.

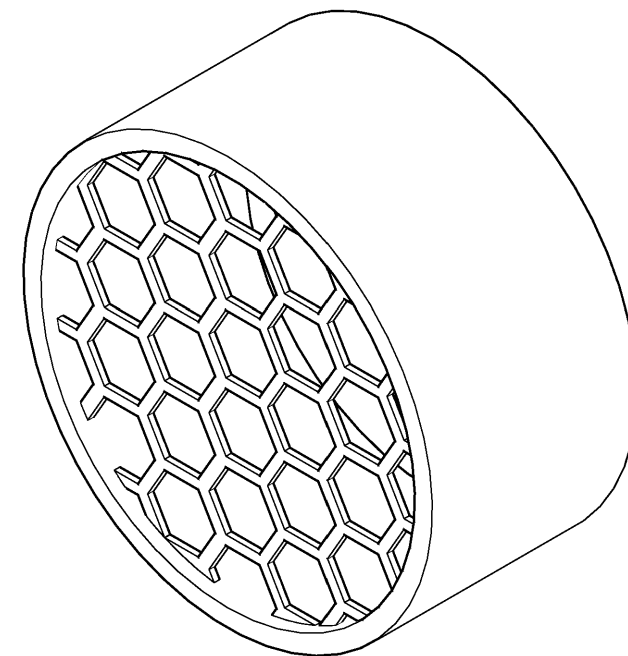
3 Trench Detail
S8 Scale 1 IN = 2 FT



4 Additional Cleanout Detail
S8 Scale 1 IN = 4 FT



5 Animal Guard Detail
S8



Standard Metal Grate for 6-IN CMP or PVC Pipe by Agri Drain or Approved Alternate.

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