

LITTLEHORN
ENGINEERING &
SURVEYING

CIVIL SITE AND GRADING PLANS FOR A SINGLE-FAMILY RESIDENCE

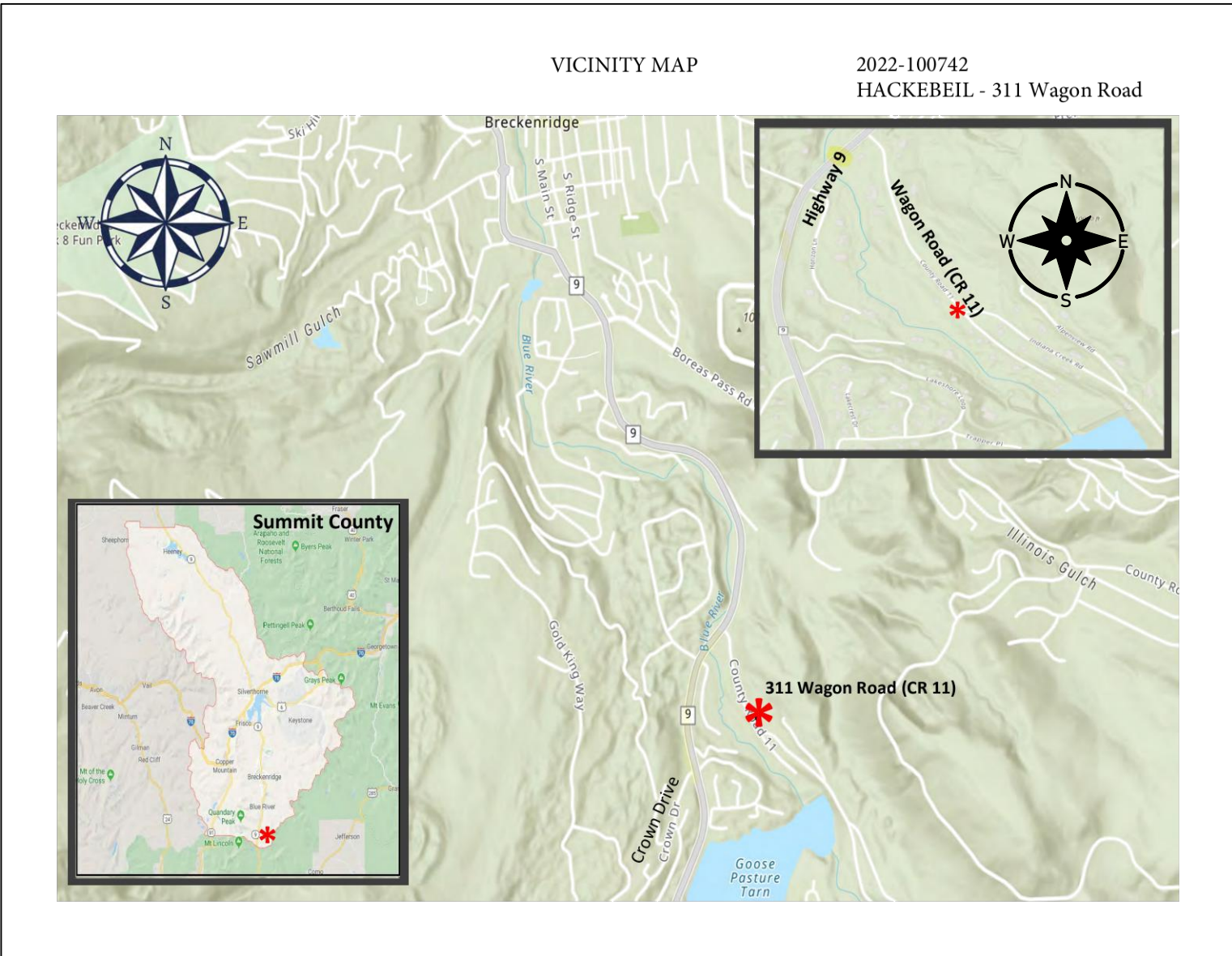
311 WAGON ROAD, TOWN OF BLUE RIVER, CO

A PERMIT IS REQUIRED FROM THE TOWN OF BLUE RIVER TO
EXCAVATE & INSTALL A DRIVEWAY AND EXCAVATE ON THIS SITE
AND FROM SUMMIT COUNTY FOR THE OWTS RELATED WORK

CONSTRUCTION NOTES - Construction notes shall govern ALL civil drawings

GENERAL CONSTRUCTION AND PROJECT NOTES

- PERMITS. IT IS THE OWNER'S AND CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT ALL RETAINING WALLS ARE INSTALLED APPROPRIATELY AND WITH THE PERMISSION OF THE COUNTY AND H.O.A. AND SOMETIMES THE FIRE DEPARTMENT (VERIFY). THE CONTRACTOR IS RESPONSIBLE FOR PROCUREMENT OF ALL NECESSARY PERMITS. COUNTY AND FIRE ACCESS REQUIREMENTS FOR DRIVEWAY STANDARDS MUST BE MET. IF SITE DISTURBANCE RESULTS IN MORE THAN 10 ACRES OF DISTURBANCE, A PERMIT FROM THE STATE OF COLORADO IS REQUIRED.
- GREAT CARE AND PROFICIENCY HAVE GONE INTO THE PREPARATION OF THESE PLANS AND BLUE PRINTS. HOWEVER, DUE TO THE IMPOSSIBILITY OF PROVIDING "ON-SITE" SUPERVISORY CONTROL OVER ACTUAL CONSTRUCTION AND BECAUSE OF GREAT VARIATIONS IN LOCAL BUILDING CODES, SOILS, GROUNDWATER, BUILDING CONDITIONS, AND WEATHER CONDITIONS, THE ENGINEER ASSUMES NO LIABILITY EXCEPT AS DESCRIBED IN THE CONTRACT FOR PROFESSIONAL SERVICES. THE ENGINEER HAS DESIGNED THE PROJECT FROM GENERALLY ACCEPTED ENGINEERING PRACTICES AS IS TYPICAL IN THE LOCAL AREA TO ASSURE THAT THE DESIGNED ITEMS ARE SOUND.
- DISCREPANCIES IN BUILDING PLANS OFTEN EXIST, THEREFORE THE HOME OWNER AND THE CONTRACTOR MUST INTERPRET THE BLUE PRINTS AND VERIFY PRIOR TO CONSTRUCTION COMMENCEMENT: SITE CONDITIONS, CONSTRUCTION SETBACKS, BUILDING LOCATION, DIMENSIONS, MATERIALS, COLORS, QUANTITIES, ELEVATIONS, AND FINISHES. ALL WORK SHALL COMPLY WITH APPLICABLE GOVERNING CODES, BUILDING DEPARTMENT ORDINANCES, LAWS, AND MANUFACTURERS' SPECIFICATIONS. ANY CHANGES OR ITEMS REQUIRED FOR CONSTRUCTION WHICH ARE NOT CLEAR SHALL BE REPORTED TO THE ENGINEER (A OTHER DESIGNERS/SURVEYORS) FOR APPROVAL.
- THESE PLANS ARE NOT AN INSTALLATION MANUAL AND DO NOT SHOW ALL DETAILS AND HAVE NOT AND CAN NOT CONSIDER EVERY CONCEIVABLE EVENT WHICH MAY OCCUR, AS THAT WOULD RENDER THE DESIGN AND FABRICATION OF THE PROJECT EXCESSIVELY EXPENSIVE. APPLICABLE INSTALLATION MANUALS AND CODES, AS LISTED IN THE SECTION LABELED "CODES", MUST BE REFERENCED AND USED FOR CONSTRUCTION. USE OF THESE DRAWINGS CONSTITUTES ACCEPTANCE OF RESPONSIBILITY FOR HAVING READ AND FULLY UNDERSTOOD THE CONSTRUCTION DRAWINGS AND THE ENGINEER'S LIABILITY. IF THE CLIENT OR CONTRACTOR HAS ANY QUESTIONS, PLEASE CONTACT THE ENGINEER PRIOR TO FABRICATION.
- LOCATE ALL BURIED UTILITIES PRIOR TO ANY CONSTRUCTION.
- A SOILS ENGINEER SHALL VERIFY ALL SOILS BEFORE & DURING PLACEMENT OF ANY APPURTENANCES, RETAINING WALLS, ASPHALT, OR CONCRETE.
- ALL MATERIALS SHALL BE PROTECTED WITH SUITABLE TEMPORARY WEATHER FACILITIES AS MAY BE REQUIRED TO PROTECT MATERIALS FROM DAMAGE DURING CONSTRUCTION.
- JOB-SITE SAFETY IS BEYOND THE SCOPE OF THESE DRAWINGS AND THE ABILITY OF THE ENGINEER TO MANAGE. THE OWNER AND CONTRACTORS BEAR ALL RESPONSIBILITY FOR THEIR OWN SAFETY AND THE SAFETY OF EMPLOYEES, WORKERS, AND PASSERSBY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL METHODS OF CONSTRUCTION, INCLUDING TEMPORARY BRACING OR SHORING AS REQUIRED AND CONSTRUCTION SEQUENCING. CONTRACTOR SHALL PROVIDE MATERIALS AND WORKMANSHIP IN ACCORDANCE WITH THE LINES AND DIMENSIONS OF THE CONTRACT DOCUMENTS AND SHALL PROVIDE FOR THE SAFETY OF THE WORKERS. SITE VISITS BY THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE.
- WEATHER PROTECTION AND SNOW REMOVAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND OWNER.
- DO NOT SCALE DRAWINGS. VERIFY LINES & DIMENSIONS ON STRUCTURAL DRAWINGS W/ ARCHITECTURAL DRAWINGS PRIOR TO ANY WORK. CALL ENGINEER FOR ANY DIMENSIONING QUESTIONS. DIMENSIONS ON DRAWINGS DO NOT ACCOUNT FOR FINISHES.
- SUBMIT ALL SHOP DRAWINGS TO THE ENGINEER. ENGINEER'S REVIEW OF SHOP DRAWINGS IS PROVIDED AS AN AID TO THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR REVIEW AND CORRECTNESS OF SHOP DRAWINGS. SHOP DRAWINGS DO NOT REPLACE CONTRACT DOCUMENTS. SHOP DRAWINGS (ONLY REVIEWED UPON CLIENT'S REQUEST) ARE SOMETIMES PROVIDED ON CULVERTS, FLARED END SECTIONS, GEODIR FABRICS, FILTER FABRICS, SLOPE NETTING, EROSION WATTLES, AND OTHER SITE RELATED WORK.
- OTHERS SUBMITTING ENGINEERED DESIGN AND LAYOUT SHALL BEAR RESPONSIBILITY FOR SUCH WORK. AS AN ENGINEER FOR THE DRIVEWAY ONLY, WE SHALL BE LISTED OR RECOGNIZED AS THE ENGINEER OF RECORD FOR THE ENTIRE PROJECT.
- THE CONTRACTOR SHALL NOTIFY ENGINEER OF DETAILS NOT SHOWN ON PLANS THAT ARE NECESSARY FOR THE WORK TO PROCEED.
- ALTERNATES PROVIDED FOR THE CONTRACTOR'S CONVENIENCE SHALL REQUIRE THE CONTRACTOR TO PROVIDE ALL CHANGES AND COORDINATE ALL DETAILS NECESSARY SHOULD THE CONTRACTOR CHOOSE AN ALTERNATE.
- DRIVEWAYS. DRIVEWAYS SHALL CONFORM TO THE REQUIREMENTS OF THE COUNTY OR MUNICIPALITY WHICH INCLUDE THE DIMENSIONS OF DRIVEWAY WIDTHS, OPENINGS, AND THE CENTERLINE CURVE RADII. FOR THE TOWN OF BLUE RIVER THIS IS MAX. 6.0% FOR THE FIRST 20 FEET, THEN UP TO 12% WITH TOWN APPROVAL THEREAFTER. PARKING AREAS SHALL HAVE A MAXIMUM GRADE OF 4%, AND A MINIMUM GRADE OF 1.0% TO FACILITATE DRAINAGE. ALL GRADES MUST SLOPE AWAY FROM STRUCTURE REGARDLESS OF WHAT IS SHOWN ON ANY GRADING PLAN. DRAINAGE FROM DRIVEWAYS SHALL BE DIVERTED TO ROADSIDE DITCHES OR OTHER APPROPRIATE DRAINAGE WAY.
- PLEASE NOTE THAT ANY TIME A DRIVEWAY IS CUT INTO THE HILL SIDE FROM THE DIRECTION OF THE PREVAILING WINDS, DRIFTING WILL OCCUR. THIS DRIFTING AND SNOW BUILD-UP MAY MAKE THE DRIVE IMPASSABLE IN THE WINTER.
- PARKING AND DRIVEWAY SURFACES: RECYCLED ASPHALT, PAVING, OR CONCRETE IS USUALLY RECOMMENDED TO FACILITATE SNOW REMOVAL. PAVING IS NOT REQUIRED FOR PARKING AREA AND DRIVES SERVING SINGLE-FAMILY UNITS, OR FOR DUPLEXES WHERE THE ROAD PROVIDING ACCESS IS NOT PAVED. WHERE ROADS ARE PAVED, PARKING AREAS AND DRIVES FOR DUPLEXES MUST BE PAVED. PARKING AREAS NOT PAVED SHALL BE COVERED WITH 1-2 INCHES OF DRIVEWAY GRAVEL OR 2 INCHES OF RECYCLED ASPHALT (OWNER TO SPECIFY). WHEN PAVING IS USED, VERIFY ALL UNDERLYING SOILS WITH GEOTECH.
- PARKING STANDARDS: PARKING SHALL CONFORM TO COUNTY AND ANY APPLICABLE HOA REQUIREMENTS. FIELD VERIFY THE NUMBER OF PARKING SPACES REQUIRED.
- WHENEVER ROADWAYS, DRIVEWAYS, PARKING AREA, BRIDGES, REC. PATHS OR OTHER TYPES OF CONSTRUCTION RESULT IN EARTH DISTURBANCE, REVEGETATION AND/OR LANDSCAPING IS REQUIRED. REVEGETATION AND/OR LANDSCAPING WORK SHALL BE IN ACCORDANCE WITH THE COUNTY LAND USE AND DEVELOPMENT CODE AND IN ACCORDANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AS PART OF PERMIT ISSUANCE.
- HISTORICAL FLOW QUANTITIES AND PATTERNS SHALL BE VERIFIED AND MAINTAINED. CHANGES TO SITE DRAINAGE CAN CAUSE ADVERSE EFFECTS TO NEIGHBORING PROPERTIES.
- SNOW STACK SPACE: SNOW STORAGE FOR DRIVEWAYS SHALL BE PROVIDED ON THE OWNER'S PROPERTY. USE OF THE RIGHT-OF-WAY FOR SNOW STORAGE BY PRIVATE INDIVIDUALS OR COMPANIES IS PROHIBITED (C.R.S. 43-5-303). SNOW STORAGE AREA IS SHOWN ON SITE PLAN.
- IF EARTH DISTURBANCE RESULTS IN CUT OR FILL SLOPES THAT CAN NOT BE TAPERED BACK INTO EXISTING GRADES AT THE GRADES SHOWN HEREIN, A RETAINAGE SYSTEM SHALL BE REQUIRED. IF THE PROPOSED RETAINING SYSTEM IS LESS THAN 4.0 FT IN HEIGHT, A DETAIL OF THE PROPOSED RETAINING SYSTEM MUST BE PROVIDED TO THE COUNTY FOR THEIR APPROVAL, PRIOR TO INSTALLATION.
- LOCATE BUILDINGS PER COUNTY REGULATIONS AND WHEN APPLICABLE, SUBDIVISION REGULATIONS. BOTH HAVE BUILDING SETBACKS AND STANDARDS AND BOTH SHALL BE CONSULTED PRIOR TO CONSTRUCTION.
- TREE CLEARING SHALL BE COMPLETED IN ACCORDANCE WITH FIRE REGULATIONS, SUBDIVISION REGULATIONS (WHEN APPLICABLE), AND COUNTY REGULATIONS.
- MINOR GRADE CHANGES MAY BE MADE ON-SITE TO MEET SITE CONDITIONS, HOWEVER, COUNTY AND HOA STANDARDS MUST BE MAINTAINED.
- EROSION CONTROL SYSTEMS ARE ILLUSTRATIVE AND SHALL BE VERIFIED BY OTHERS TO MEET ACTUAL CONSTRUCTION NEEDS.



VEHICLE CONSTRUCTION ENTRANCE

- WHEN CONSTRUCTION VEHICLES LEAVE ACTIVE CONSTRUCTION AREAS, SEDIMENT CONTROLS SHALL BE INSTALLED TO CONTROL SEDIMENT FROM LEAVING THE SITE. A TEMPORARY CONSTRUCTION ENTRANCE SHALL BE INSTALLED AND SHALL CONSIST OF A STONE PAD OR EQUIVALENT CONTROL MATS LOCATED WHERE VEHICLES WILL LEAVE THE CONSTRUCTION SITE. THE PAD SHALL CONSIST OF AT LEAST 6 INCHES OF LARGE GRAVEL OR RIP RAP. THE PAD/OR ROCK ENTRANCE SHOULD BE AT LEAST 25 FT LONG; HOWEVER, LONGER ENTRANCES MAY BE REQUIRED TO ADEQUATELY CLEAN TIRES. GEOTEXTILE FABRIC MAY BE NEEDED UNDER THE ROCK TO PREVENT MIGRATION OF MUD FROM THE UNDERLYING SOIL INTO THE STONE. IF TIRES ARE CLEANED WITH WATER, THE WASH WATER SHOULD BE DIRECTED TO A SUITABLE SETTLING AREA. WHEN REQUIRED, A PIPE OR CULVERT AND/OR SMALL BERM SHALL BE CONSTRUCTED AT THE ENTRANCE.
- MONITORING AND MAINTENANCE: VEHICLE CONSTRUCTION PADS SHALL BE INSPECTED BY THE CONTRACTOR AS NEEDED AND AFTER RAIN ACTIVITIES. ANY EVIDENCE OF EROSION PROBLEMS SHALL BE REPAIRED AS QUICKLY AS POSSIBLE. SEDIMENT SHALL BE REMOVED AS APPROVED AND DISPOSED OF OUTSIDE THE FLOODPLAIN, WETLANDS AND BUFFER AREAS IN AN APPROVED DISPOSAL SITE OR FILL AREA AND THEN STABILIZED. WHENEVER THE EXISTING ROCK (OR MATS) BECOME BURIED OR FILLED WITH MUD, THE PAD WILL REQUIRE TOP-DRESSING WITH ADDITIONAL ROCK, OR REMOVAL AND RE-INSTALLATION. AREAS USED FOR SEDIMENT TRAPPING ALSO NEED TO BE CLEANED ROUTINELY. IF CONDITIONS ON THE SITE ARE SUCH THAT THE MAJORITY OF THE MUD IS NOT REMOVED BY THE VEHICLES TRAVELING OVER THE GRAVEL, ADDITIONAL SEDIMENT TRACKING CONTROL MEASURES SHOULD BE ADDED TO PREVENT THE TRACKING OF MUD OR DIRT ONTO THE PUBLIC ROADWAY.

ELECTRICAL/PLUMBING/MECHANICAL SYSTEMS

- THESE SYSTEMS ARE NOT BE WITHIN THE SCOPE OF THESE PLANS THOUGH THESE SYSTEMS SHOULD BE ENGINEERED. THE ENGINEER CAN NOT ACCEPT ANY RESPONSIBILITY WITH REGARD TO THESE SYSTEMS. ALL DESIGN AND INSTALLATION DETAILS ARE THE RESPONSIBILITY OF THE OWNER, BUILDER AND THEIR CONTRACTORS. IF THE CLIENT CHOOSES, THESE SYSTEMS CAN BE PROFESSIONALLY ENGINEERED. FOLLOW MANUFACTURER'S AND BUILDING MUNICIPALITY MECHANICAL, PLUMBING, AND ELECTRICAL CODES WHEN INSTALLING THESE SYSTEMS.

HIGH DENSITY POLYETHYLENE PIPE (HDPE) - CULVERT PIPE

- CULVERTS SPECIFIED SHALL BE APPROVED HIGH DENSITY POLYETHYLENE PIPE (HDPE) OR CORRUGATED METAL TYPE PIPE (CMP), WHEN CULVERTS ARE INSTALLED IN THE COUNTY RIGHT OF WAY THE CONTRACTOR SHALL VERIFY THE CULVERT TYPE WITH THE COUNTY BEFORE INSTALLATION.
- ALL HDPE PIPE SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS: A) THICKNESS ASTM D751 & D1593, B) DENSITY ASTM D1505, C) TENSILE ASTM D438, D) PUNCTURE RESISTANCE ASTM F7510IC METHOD 2065, E) LOW TEMPERATURE BRITTLINESS ASTM D746, F) ENVIRONMENTAL STRESS CRACK RESISTANCE ASTM D5397.
- PIPE SHOULD BE STOCKPILED ON LEVEL GROUND AND IF STACKED, BLOCKING SHOULD BE PROVIDED TO PREVENT ROLLING. STACKED PIPE SHOULD BE PLACED TO PREVENT DEFORMING AND DAMAGE. ALL MATERIALS SHALL BE PROPERLY STORED.
- TRENCHING SHOULD BE COMPLETED IN EXISTING SOILS WITH SIDEWALLS REASONABLY VERTICAL TO THE TOP OF THE PIPE. FOR POSITIVE PROJECTION EMBANKMENT INSTALLATIONS, WHEN EXCAVATION DEPTHS OR SOIL CONDITIONS REQUIRE SHORING OR USE OF A TRENCH BOX, THE BOTTOM OF THE SHORING OR TRENCH BOX SHOULD BE PLACED NO LOWER THAN THE TOP OF THE PIPE. THE FOLLOWING TRENCH WIDTHS ARE RECOMMENDED TRENCH WIDTHS FOR MOST INSTALLATIONS TO PERMIT PROPER PLACEMENT AND COMPACTION OF BACKFILL MATERIAL IN THE HAUNCHES AND AROUND THE PIPE.

PIPE DIAMETER	TRENCH WIDTH
12"	31"
15"	34"
18"	39"
24"	48"
30"	66"

- EMBEDMENT MATERIALS ARE THOSE USED FOR BEDDING, HAUNCHING AND INITIAL BACKFILL. ALL EMBEDMENT MATERIALS SHOULD BE FREE FROM LUMPS OF FROZEN SOIL, DEBRIS, STICKS, WOOD, AND ICE WHEN PLACED. ADDITIONALLY, EMBEDMENT MATERIALS SHOULD BE PLACED AND COMPACTED AT OPTIMUM MOISTURE CONTENT. FOR THIS PROJECT WE RECOMMEND CLASS I, CLASS II, OR CLASS III FOR EMBEDMENT MATERIALS (CLASS I - ANGULAR CRUSHED STONE OR ROCK, DENSE OR OPEN GRADED WITH LITTLE OR NO FINES (1/4 INCH TO 1 1/2 INCHES IN SIZE); CLASS II - CLEAN, COARSE GRAINED MATERIALS, SUCH AS GRAVEL, COARSE SANDS AND GRAVEL/SAND MIXTURES (1 1/2 INCHES MAXIMUM IN SIZE); CLASS III - COARSE GRAINED MATERIALS WITH FINES INCLUDING SILTY OR CLAYEY GRAVELS OR SANDS. GRAVEL OR SAND MUST COMPRISE MORE THAN 50 PERCENT OF CLASS III MATERIALS (1 1/2 INCHES MAXIMUM SIZE).
- PIPE FOUNDATION: THE TRENCH BOTTOM SHALL BE FREE OF ICE, SNOW, AND DEBRIS AND BE CAPABLE OF SUPPORTING 2500 PSF.
- THOROUGHLY CLEAN THE BELL AND SPIGOT ENDS PER MANUFACTURER'S RECOMMENDATIONS.
- REMOVE SHIPPING COLLARS (WHERE PROVIDED) PRIOR TO LOWERING THE PIPE IN THE TRENCH. PROPERLY DISPOSE OF SHIPPING COLLARS OUTSIDE THE PIPE TRENCH. DO NOT INSTALL PIPE WITH SHIPPING COLLARS ON THE PIPE AND DO NOT DISPOSE OF SHIPPING COLLARS IN THE TRENCH.
- LUBRICANT SHOULD BE LIBERALLY APPLIED TO BOTH THE BELL AND SPIGOT ENDS OF THE PIPE. CARE SHOULD BE TAKEN TO ENSURE LUBRICANT IS APPLIED TO THE CHAMFERED LEADING EDGE OF THE BELL.
- ALIGN THE PIPE AND PUSH THE SPIGOT HOME ON GRADE. JOINTS SHOULD BE INSTALLED WITH BELLS FACING UPSTREAM FOR PROPER INSTALLATION. GENERALLY, PIPES SHOULD BE LAID STARTING AT THE DOWNSTREAM END AND WORKING UPSTREAM. SMALL DIAMETER PIPE (BELOW 24") CAN USUALLY BE INSTALLED BY PUSHING THE JOINT HOME BY HAND. LARGER DIAMETERS MAY NECESSITATE USING A BAR OR EQUIPMENT TO PUSH HOME. IF A BAR OR EQUIPMENT IS UTILIZED A WOOD BLOCK SHOULD BE USED TO PREVENT DAMAGE TO THE BELL. WHEN PUSHING THE JOINT HOME, MAKE SURE BEDDING MATERIAL IS NOT PULLED INTO THE BELL BY THE SPIGOT. MATERIAL SUCH AS SMALL STONES AND SAND PULLED INTO THE BELL AS THE PIPE IS JOINED CAN CAUSE LEAKS.
- MINIMUM COVER: CULVERTS ARE TYPICALLY PROVIDED WITH AT LEAST 12 INCHES (MEASURED FROM THE TOP OF THE PIPE TO THE GROUND SURFACE) OF SUITABLE COMPACTED SOIL COVER FOLLOWED BY DRIVEWAY GRAVEL OR ASPHALT (REF. PLAN). IF 12 INCHES CAN NOT BE MAINTAINED, CULVERT DISPLACEMENT MAY OCCUR.

SURVEY NOTES

- ANY BOUNDARY PINS OR CORNERS & TOPOGRAPHY IN QUESTION SHALL BE VERIFIED. IF CHANGES TO THE CIVIL DRAWINGS ARE REQUIRED, THE ENGINEER SHOULD BE NOTIFIED IMMEDIATELY AND PRIOR TO CONSTRUCTION IF POSSIBLE. FOR THIS PROJECT THE BOUNDARY AND TOPOGRAPHIC SURVEY WERE COMPLETED BY OTHERS.

- EXISTING CONTOURS: EXISTING CONTOURS ARE SHOWN. LITTLEHORN IS NOT RESPONSIBLE FOR DEFECTS IN THE TOPOGRAPHIC SURVEY WHEN THE SURVEY IS PERFORMED BY OTHERS.

GRADING AND MATERIAL SPECIFICATIONS

- A PRE-GRADING MEETING WITH THE SITE OWNER, PROJECT ENGINEER AND CONTRACTOR IS HIGHLY RECOMMENDED AND SHOULD BE PERFORMED TO FACILITATE PROJECT INSTALLATION.

- WHEN THE GRADING OPERATIONS ENCOUNTER REMAINS OF PREHISTORIC PEOPLE'S DWELLING SITES, REMAINS, OR ARTIFACTS OF HISTORICAL, PALEONTOLOGICAL OR ARCHAEOLOGICAL SIGNIFICANCE, THE OPERATIONS SHALL BE TEMPORARILY DISCONTINUED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND PROMPTLY CONTACT THE PROPER AUTHORITIES TO DETERMINE THE DISPOSITION THEREOF. IF REQUIRED BY STATE OR FEDERAL AUTHORITIES, THE CONTRACTOR SHALL PRESERVE THE AREA OF SIGNIFICANCE TO ALLOW AUTHORITIES TO EXCAVATE AND RECOVER THE ITEMS OF SIGNIFICANCE.

- AT ALL TIMES, PRECAUTIONS SHALL BE TAKEN FOR THE PROTECTION OF CULVERTS, EROSION CONTROL STRUCTURES, IRRIGATION CROSSINGS, MAIL BOXES, DRIVEWAY APPROACHES, VALVE BOXES, MANHOLES, SURVEY MONUMENTS, UNDERGROUND OR OVERHEAD UTILITY LINES AND ALL OTHER PUBLIC OR PRIVATE INSTALLATIONS THAT MAY BE ENCOUNTERED DURING CONSTRUCTION. ANY DAMAGE TO SUCH STRUCTURES SHALL BE REPAIRED, DOCUMENTED AND SUBMITTED TO THE APPROPRIATE AUTHORITY PRIOR TO ISSUANCE OF ANY CERTIFICATE OF COMPLETION FOR THE SITE.

- CLEARING AND GRUBBING: CLEARING AND GRUBBING CONSISTS OF REMOVING AND DISPOSING OF ALL VEGETATION AND DEBRIS WITHIN THE LIMITS OF THE APPROVED GRADING PLANS WHERE THE DRIVEWAY, SOIL TREATMENT AREA, HOUSE, WELL/WEEL LINES, AND WASTEWATER LINES ARE TO BE LOCATED. CLEARING AND GRUBBING SHALL BE PERFORMED ONLY WHERE NECESSARY. THE PRESERVATION OF ALL VEGETATION AND ANY OTHER TREES AND OBJECTS SHOULD REMAIN WHERE FEASIBLE AND AS OUTLINED AND WITHIN LOCAL FIRE DEPARTMENT RECOMMENDATIONS. STUMP HOLES AND OTHER HOLES FROM WHICH OBSTRUCTIONS ARE REMOVED, SHALL BE BACKFILLED WITH SUITABLE MATERIALS AND COMPACTED AS REQUIRED. MATERIALS AND DEBRIS SHALL BE DISPOSED OF IN ACCORDANCE WITH STATE AND COUNTY REGULATIONS. WITH OWNER'S AND COUNTIES PERMISSION, ROOTS MAY BE BURIED ON-SITE.

- TOPSOIL: ALL TOPSOIL, WHERE PHYSICALLY PRACTICABLE, SHALL BE SALVAGED. TOPSOIL SHALL CONSIST OF LOOSE FRIABLE LOAM REASONABLY FREE OF ADMIXTURES OF SUBSOIL, REFUSE, STUMPS, ROOTS, ROCKS, BRUSH, WEEDS, OR OTHER MATERIAL WHICH WOULD BE DETRIMENTAL TO THE PROPER DEVELOPMENT OF VEGETATIVE GROWTH. MATERIALS SELECTED FOR TOPSOIL AND LYING WITHIN THE LIMITS OF THE PROJECT SHALL BE EXCAVATED AND STOCKPILED AS REQUIRED AND WHERE PERMISSIBLE. TOPSOIL SHALL BE PLACED AND SPREAD AT LOCATIONS AND TO THE THICKNESS SHOWN ON THE PLANS AND SHALL BE KEYED TO THE UNDERLYING MATERIALS BY THE USE OF HARROWS, ROLLERS, OR OTHER EQUIPMENT SUITABLE FOR THE PURPOSE. FOR SITES THAT DON'T CONTAIN ENOUGH REUSABLE TOP SOIL, APPROVED TOP SOIL WILL HAVE TO BE IMPORTED TO THE SITE.

- GENERAL EXCAVATION AND EMBANKMENT: EXCAVATION AND EMBANKMENT GRADING CONSISTS OF EXCAVATION, DISPOSAL, SHAPING, OR COMPACTION OF ALL MATERIAL ENCOUNTERED WITHIN THE LIMITS OF THE GRADING PLANS INCLUDING EXCAVATION FOR DITCHES AND CHANNELS NECESSARY FOR THE CONSTRUCTION OF THE PROJECT IN ACCORDANCE WITH THE GRADING PLANS AND IN REASONABLY CLOSE CONFORMITY WITH THE LINES, GRADES, AND TYPICAL CROSS-SECTIONS SHOWN ON THE PLANS. THE EXCAVATION AND EMBANKMENTS SHALL BE FINISHED TO REASONABLY SMOOTH AND UNIFORM SURFACES. GRADING OPERATIONS SHALL BE CONDUCTED SO THAT MATERIAL OUTSIDE OF THE LIMITS OF SLOPES WILL NOT BE DISTURBED. PRIOR TO BEGINNING GRADING OPERATIONS IN ANY AREAS, ALL NECESSARY CLEARING AND GRUBBING AND TOPSOIL, IN THAT AREA SHALL HAVE BEEN PERFORMED IN ACCORDANCE WITH THE CLEARING AND GRUBBING AND TOPSOIL PROVISIONS. WHERE MATERIAL ENCOUNTERED WITHIN THE LIMITS OF GRADING ARE CONSIDERED UNSUITABLE FOR EMBANKMENT FOUNDATIONS, STREETS/ROADS, OR STRUCTURAL AREAS BY THE SOILS ENGINEER, SUCH MATERIAL SHALL BE EXCAVATED AND REPLACED WITH SUITABLE MATERIAL. SOME EXAMPLES OF UNSUITABLE MATERIAL INCLUDE SOILS WHICH CONTAIN SIGNIFICANT AMOUNTS OF ORGANIC MATERIAL AND/OR LARGE DIAMETER ROCKS, CONCRETE, OR ASPHALT. EXCESS UNSUITABLE EXCAVATED MATERIAL, INCLUDING ROCK AND BOULDER, THAT CANNOT BE USED IN EMBANKMENTS MAY BE PLACED IN NON-STRUCTURAL AREAS AS APPROVED BY THE SOILS ENGINEER.

- UTILITIES: WHEN UTILITY DEVICES ARE TO BE INSTALLED WITHIN THE COUNTY OR TOWN'S ROAD RIGHT-OF-WAY, THE COUNTY OR TOWN POLICY ON UTILITY USE OF COUNTY RIGHTS-OF-WAY SHALL APPLY. BEFORE BEGINNING ANY EXCAVATION, CALL FOR A UTILITY LOCATE.

- TRAFFIC CONTROL: APPROVED BARRICADES, WARNING SIGNS, AND FLAGMEN SHALL BE USED AS NECESSARY.

- DRIVEWAY SUBBASE: ALL MATERIAL SHALL BE OF SOUND PARTICLES AND SHALL BE FREE OF ORGANIC MATTER. COMPACTION OF MATERIAL SHALL BE VERIFIED BY THE ENGINEER BEFORE PLACEMENT OF CONCRETE, ASPHALT, TANKS, PIPES, OR OTHER STRUCTURES. SUBBASE AND BASECOURSE SHALL BE COMPACTED AS REQUIRED FOR STRUCTURAL FILL (SEE COMPACTION REQUIREMENTS). THE SUBBASE IS CONSIDERED THE NATIVE SOIL OR IMPORTED, APPROVED, STRUCTURAL FILL. IF SUBBASE DEPTHS EXCEED 12 INCHES, CONTACT THE ENGINEER FOR INSPECTION AND COMPACTION TESTING. THE SUBBASE SHALL BE FREE OF STICKS, ROCKS LARGER THAN 8 INCHES IN DIAMETER, SNOW, ICE, AND OTHER DEBRIS.

- SURFACE COURSE: INSTALL A THIN CRUSHED AGGREGATE SURFACE COURSE UNDER ALL PAVED AREAS. THE SURFACE COURSE IS USUALLY 1/2-INCH TO 2 INCHES IN DEPTH. SURFACE COURSE SHALL BE 1"-MINUS MATERIAL AND MUST BE A HARD ROCK CRUSHED AGGREGATE WITH:

SIEVE SIZE	% PASSING
1"	100
#4	5-15
#10	0-8
#200	0-4

- WATERING: WATER SHALL BE APPLIED TO THE TOPSOIL AT THE LOCATIONS AND IN THE AMOUNTS WHERE REQUIRED. WATER SHALL BE APPLIED IN A FINE SPRAY BY NOZZLES OR SPRAY BARS IN SUCH A MANNER THAT IT WILL NOT WASH OR ERODE THE TOPSOIL. AREA ALL WATER USED SHALL BE FREE OF ANY MINERAL SALTS OR CONTAMINATING MATERIAL WHICH MIGHT RESULT IN EXPANSION OF MATERIALS AFTER PLACEMENT. SPRINKLING EQUIPMENT SHALL BE OF A TYPE WHICH ENSURES UNIFORM AND CONTROLLED DISTRIBUTION OF WATER WITHOUT PONDING OR WASHING. DUST PALLIATIVES SHALL BE APPLIED ON PORTIONS OF THE PROJECT AND ON HAUL ROADS AT THE LOCATIONS AND IN THE AMOUNTS AS MAY BE NECESSARY AND AS APPROVED. DUST PALLIATIVES MAY CONSIST OF WATER OR OTHER SUBSTANCES APPROVED BY THE COUNTY DEPARTMENT OF HEALTH AND ENVIRONMENT. WATER USED IN LANDSCAPING SHALL BE PROVIDED FOR SEEDING, MULCHING, PLANTING, TRANSPLANTING, SODDING, AND SOIL STERILIZATION, AND ANY OTHER LANDSCAPING WORK AS REQUIRED.

- COMPACTION: FIELD DENSITY TESTS SHALL BE MADE BY THE SOILS ENGINEER AS SPECIFIED IN THE SOILS REPORT. WHEN A SOILS REPORT DOES NOT EXIST, CONTACT LITTLEHORN FOR TESTING REQUIREMENTS. WHEN TESTING IS NOT PERFORMED IN ROADWAYS, IN EXCAVATED TRENCH AREAS, AND AROUND TANKS AND THE HOUSE, SETTLEMENT IS LIKELY.

- SLOPE STANDARDS: CUT SLOPES (I.E., EXCAVATED SLOPES) SHALL BE NO STEEPER THAN TWO (2) HORIZONTAL TO ONE (1) VERTICAL UNLESS SPECIFICALLY IDENTIFIED OTHERWISE IN THESE PLANS. FILL SLOPES SHOULD NOT EXCEED TWO (2) HORIZONTAL TO ONE (1) VERTICAL OR AS SPECIFIED IN THE PLANS. ALL PERMANENT CUT AND FILL SLOPES SHALL BE CONSTRUCTED AT SLOPES WHICH ENSURE LONG TERM SLOPE STABILITY AND THAT WILL NOT CAUSE ACCELERATED EROSION. THE TOPS AND TOES OF CUT AND FILL SLOPES SHALL BE SET BACK FROM PROPERTY BOUNDARIES AS FAR AS NECESSARY FOR SAFETY OF THE ADJOINING PROPERTIES AND TO PREVENT DAMAGE RESULTING FROM WATER RUN-OFF OR EROSION OF THE SLOPE. THE TOPS AND TOES OF CUT AND FILL SLOPES SHALL BE SET BACK FROM STRUCTURES AS FAR AS IT IS NECESSARY FOR ADEQUACY OF FOUNDATION SUPPORT AND TO PREVENT DAMAGE AS A RESULT OF WATER RUN-OFF OR EROSION OF THE SLOPES. FOR SLOPES WHICH EXCEED 30%, TERRACES AT LEAST EIGHT (8) FEET IN WIDTH SHALL BE ESTABLISHED. AT LEAST A TWO (2) PERCENT GRADIENT SHALL BE MAINTAINED FROM BUILDING PADS TO DRAINAGE FACILITIES UNLESS OTHERWISE APPROVED.

- GUARANTEES: ALL CONSTRUCTION SHALL BE GUARANTEED BY THE CONSTRUCTION FIRM OR CONSTRUCTING INDIVIDUAL FOR A MINIMUM OF ONE YEAR TO MEET THE CONTINUAL STANDARDS TO WHICH IT WAS CONSTRUCTED. SUCH GUARANTEE MAY BE BY BOND, CASH DEPOSIT, PLEDGED SECURITIES, OR OTHER VALUABLE CONSIDERATIONS ACCEPTABLE BY THE OWNER.

PROPERTY INFORMATION
311 WAGON ROAD
BLUE RIVER, CO 80424
SPILLWAY SUB. #1, LOT 14

BUILDING ARCHITECT:
ROSE-VILLACORTE ARCHITECTURE, LLC
480 NORTH SAM HOUSTON PARKWAY EAST, SUITE 110
HOUSTON, TX 77060
OFFICE # (346) 498-3808

DRAWING PREPARED FOR:
LANDYN AND MICHELLE HACKEBEIL
405 FRONT STREET
COMFORT, TX 78013

CONTRACTOR:

TBD

DESIGN CRITERIA AND OTHER NOTES

- WIND LOADING ON RETAINING WALLS: $V_{ult} = 110$ MPH, EXPOSURE C (90 MPH V_{asd} OR NOMINAL WIND - 2018 IRC). PROVISIONS FOR DETENTION POND NOT REVIEWED OR REQUIRED. PER THE TOWN OF BLUE RIVER STANDARD ACCEPTED EROSION CONTROL METHODS ARE USED. LANDSCAPING DESIGN REQUIREMENTS AND SPECIFICATIONS NOT REVIEWED.

- SOIL CONDITIONS FOR GRADING DESIGN AND THESE CIVIL DRAWINGS ARE BASED UPON THE SOILS REPORT BY LITTLEHORN ENGINEERING, DATED JANUARY 5, 2022. POORLY GRADED SAND WITH SILT, GRAVEL, COBBLES AND BOULDERS. PASSIVE EQUIV. FLUID PRESSURE - 275 P.C.F. (DRAINED). EQUIV. FLUID UNIT SOIL WEIGHT - 46 P.C.F. (DRAINED). COEFFICIENT OF FRICTION - 0.35. ALLOWABLE BEARING PRESSURE - 2750 P.S.F. ON UNDISTURBED SOIL.

SOILS CONDITIONS SHALL BE VERIFIED BY
GEOTECH DURING CONSTRUCTION.
CONTACT ENGINEER FOR INSPECTION OF
ALL RETAINING WALLS, STRUCTURAL
FILLS, AND ROCK LINED SWALES.

CIVIL SHEET INDEX	
SHEET#	SHEET DESCRIPTION
C0	COVER SHEET & SITE CONSTRUCTION GENERAL NOTES
C1	PROPOSED <u>OVERALL</u> SITE PLAN WITH OVERALL DRIVEWAY AND PARKING AND SNOW REMOVAL
C1.1	PROPOSED SITE PLAN <u>DETAIL</u> WITH DRIVEWAY AND PARKING
C2	EROSION CONTROL PLAN
C3	SITE CONSTRUCTION DETAILS
C4	EROSION CONTROL SPECIFICATIONS & DETAILS
-	BUILDING HEIGHT ANALYSES IS BY OTHERS
-	
-	
-	
-	
6	SHEETS TOTAL WITH COVER PAGE (24x36 SHEETS)



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WWW.UCC2.ORG

CODES GOVERNING MATERIALS AND WORKMANSHIP*

IRC 2018	INTERNATIONAL RESIDENTIAL BUILDING CODE
ACI 308	REINFORCED CONCRETE DETAILING MANUAL
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
AWWA	AMERICAN WATER WORKS ASSOCIATION
BRBD	BLUE RIVER BUILDING DEPARTMENT (BUILDINGS & SITE RELATED WORK EXCEPT FOR OWTS)
SCCHD	SUMMIT COUNTY COUNTY ENVIRONMENTAL HEALTH DEPARTMENT (WASTEWATER SYSTEM & DRIVEWAY)
ASHSTO	BLUE RIVER COUNTY PLANNING DEPARTMENT (SETBACKS, ZONING, ETC.)
ASHSTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASSE	AMERICAN SOCIETY OF SANITARY ENGINEERS
MSDS	MATERIAL SAFETY DATA SHEETS

*ALL OF THE ABOVE CODES MAY NOT BE USED FOR CONSTRUCTION IN THE SPECIFIC PROJECT. WHEN APPLICABLE, THE CODE SHALL APPLY.

SOME ABBREVIATIONS USED IN THESE DRAWINGS

NOT ALL ABBREVIATIONS ARE USED IN THESE DRAWINGS. ABBREVIATIONS MAY OR MAY NOT CONTAIN PERIODS. THIS CHART IS FOR INFORMATION PURPOSES ONLY. CONTACT ENGINEER FOR ANY MISSING ABBREVIATIONS USED.

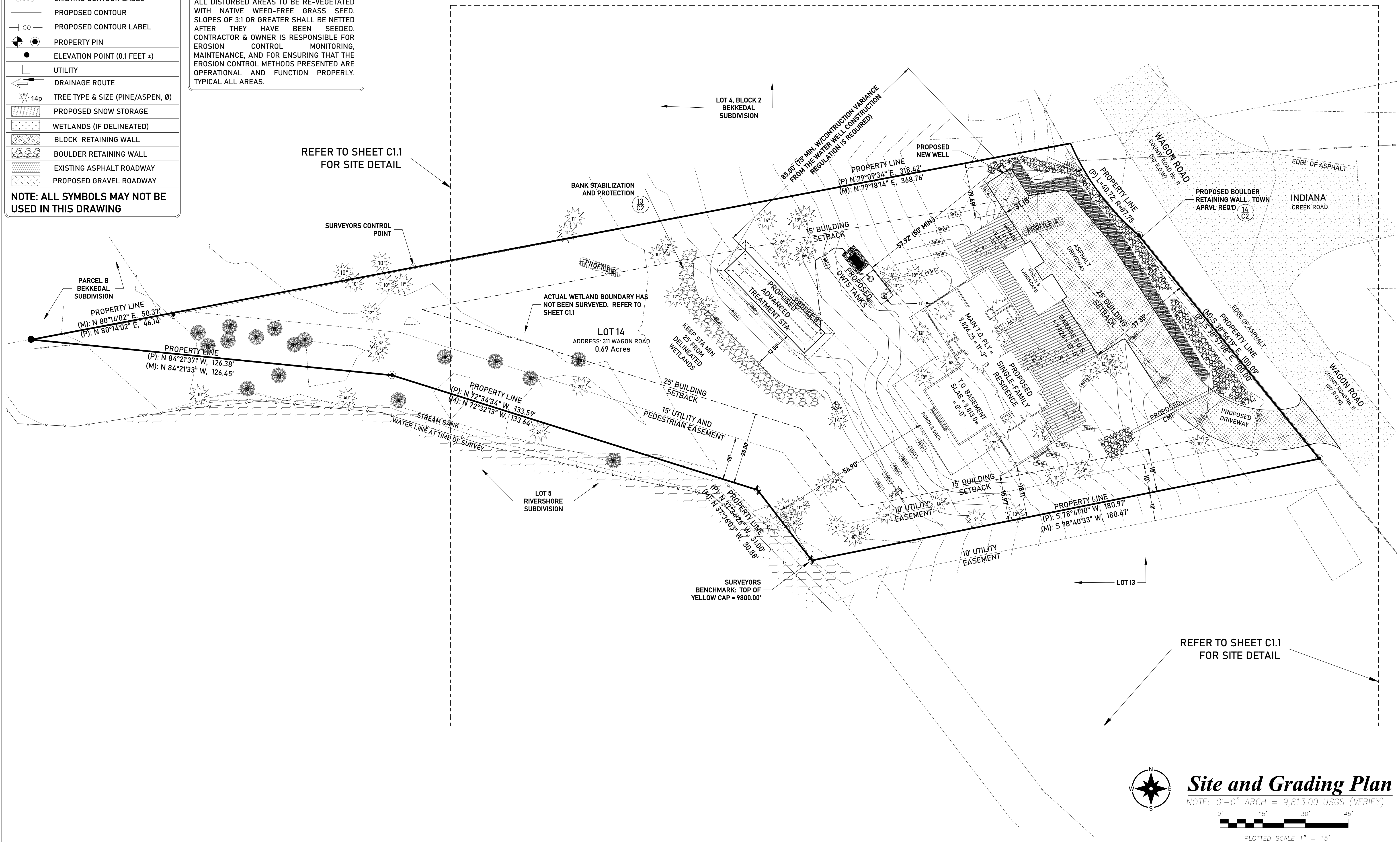
A.B.	ANCHOR BOLT	F6	FINISH GRADE	PLY.	PLYWOOD
ABV.	ABOVE	FIN.	FINISHED	P.S.F.	POUNDS PER SQUARE FOOT
ADD'L	ADDITIONAL	FLR.	FLOOR	P.S.I.	POUNDS PER SQUARE INCH
A.F.F.	ABOVE FINISHED FLOOR	FDN.	FOUNDATION	P.T.	PRESSURE TREATED
A.F.O.	ABOVE FINISHED GRADE	FNDR.	FOUNDATION	PWR.	POWER (CABINET)
ALUM.	ALUMINUM	F.O.C.	FACE OF CONCRETE	QTY.	QUANTITY
ALT.	ALTERNATE	F.O.M.	FACE OF MASONRY	QUA.	QUARRY
APPRX.	APPROXIMATE(LY)	F.O.S.	FACE OF STUD	RAD.	RADIUS
ARCH.	ARCHITECTURAL	F.O.W.	FACE OF WALL	REF.	REFERENCE OR REFER TO
AWG.	AMERICAN WIRE GAUGE	F.S.	FINISH SURFACE	REIN.	REINFORCEMENT(S)
AWN.	AWNING	FT.(	FOOT (FEET)	REQ'D.	REQUIRED
B.D.G.	BUILDING	FTG.	FOOTING	RGS.	RIGID GALVANIZED STEEL
BLK.	BLOCK	GA.	GAUGE	R.S.	ROUGH SAWN
BM.	BEAM	GAL.	GALVANIZE(D)	SCH(D).	SCHEDULE
B.O.F.	BOTTOM OF FOOTING	GEN.	GENERAL	SF	SQUARE FEET
BOT	BOTTOM OF TANK	G.F.I.	GROUND FAULT CIRCUIT INTER.	SHT.	SHEET
BRG.	BEARING	GPS	GLOBAL POSITIONING SYSTEM	SIM.	SIMILAR
CAB.	CABINET	GPD	GALLONS PER DAY	SPEC.	SPECIFICATIONS(S)
CANT.	CANTILEVER(ED)	GRND.	GROUND	SQ.	SQUARE
C.I.P.	CAST IN PLACE	HORZ.	HORIZONTAL	S.S.	STAINLESS STEEL
CEN.	CENTERLINE	H OR HT.	HEIGHT	STA	STATION
CLG.	CEILING	IN(T)	(INCHES)	STD.	STANDARD
CLR.	CLEAR	INSUL.	INSULATION	STL.	STEEL
COL.	COLUMN	INT.	INTERIOR	STRUC.	STRUCTURAL
COMP.	COMPOSITE	L.	LENGTH	T&B	TOP AND BOTTOM
CONC.	CONCRETE	L.B.(#	LAG BOLTS	T&G	TONGUE AND GROOVE
CONN.	CONNECTION(OR)	L.F.	LINEAR FEET (FOOT)	T.B.D.	TO BE DETERMINED
CONST.	CONSTRUCTION	L.	LONG(TUDINAL) OR LENGTH	TEMP.	TEMPORARY OR TEMPERED
CONT.	CONTINUOUS	MAS.	MASONRY	THK.	THICKNESS
CSMT.	CASEMENT	MAX.	MAXIMUM	THRU	THROUGH
DBL.	DOUBLE	M.B.	MACHINE BOLT	T.N.	TOE NAIL
DEPT.	DEPARTMENT	MECH.	MECHANICAL	T.O.C.	TOP OF CURB
DIA.(B)	DIAMETER	MFG.	MANUFACTURER	T.O.F.	TOP OF FOOTING
DIAG.	DIAGONAL	MFR.	MANUFACTURER	T.O.M.	TOP OF MOUND
DIM.	DIMENSION	MIL.	MILLIMETER	T.O.P.	TOP OF PLATE (PARAPET)
DTL.	DETAIL	MIN.	MINIMUM	T.O.S.	TOP OF SLAB
DWG.	DRAWING(S)	MISC.	MISCELLANEOUS	TOS	TOP OF SAND (LEACH FIELD)
DWL.	DOWELS	MTL.	METAL	T.O.R.	TOP OF RISER
EA.	EACH	N.I.C.	NOT IN CONTRACT	T.O.T.	TOP OF TANK
E.L.	ELEVATION	NO (#)	NUMBER	T.O.W.	TOP OF WALL
ELEC.	ELECTRICAL	N.T.S.	NOT TO SCALE	TRAN.	TRANSOM
ELEV.	ELEVATION OR ELEVATOR	ON CENTER	ON CENTER	TYP.	TYPICAL
ENG.	ENGINEER	OPENG.	OPENING	U.G.	UNDER GROUND
EOA	EDGE OF ASPHALT	P/C	PRECAST CONCRETE	U.N.O.	UNLESS NOTED OTHERWISE
ENG.	ENGINEER	P/C	POINT OF CURVATURE	V.I.F.	VERIFY IN FIELD
EXT.	EXTERIOR	PERF.	PERFORATED	VERT.	VERTICAL
EXP.	EXPANSION	PLT.	PLATE	W/	WITH
EXIST.(E)	EXISTING	PL	PLATE	WD.	WOOD
EXT.	EXTERIOR	POB	POINT OF BEGINNING	W.P.	WEATHERPROOF
FAB.	FABRICATION(OR)	POI	POINT OF INTERSECTION	WT.	WEIGHT
F.D.	FLOOR DRAIN	PT	POINT OF TANGENT	W.W.M.	WOVEN WIRE MESH
F.F.	FINISH FLOOR				

THESE PLANS ARE
THE PROPERTY

LEGEND	
3	RETAINING WALL HEIGHT (ABOVE GRADE HEIGHT WITHOUT KEY)
—SS—	PROPOSED SEWER LINE
—W—	PROPOSED WATER LINE
—○—	PROPOSED SILT FENCE
	PROPOSED STRAW WATTLE
— — —	EXISTING CONTOUR
—100—	EXISTING CONTOUR LABEL
— — —	PROPOSED CONTOUR
—100—	PROPOSED CONTOUR LABEL
	PROPERTY PIN
	ELEVATION POINT (0.1 FEET ±)
	UTILITY
	DRAINAGE ROUTE
14p	TREE TYPE & SIZE (PINE/ASPEN, Ø)
	PROPOSED SNOW STORAGE
	WETLANDS (IF DELINEATED)
	BLOCK RETAINING WALL
	BOULDER RETAINING WALL
	EXISTING ASPHALT ROADWAY
	PROPOSED GRAVEL ROADWAY
NOTE: ALL SYMBOLS MAY NOT BE USED IN THIS DRAWING	

ALL DISTURBED AREAS TO BE RE-VEGETATED WITH NATIVE WEED-FREE GRASS SEED. SLOPES OF 3:1 OR GREATER SHALL BE NETTED AFTER THEY HAVE BEEN SEEDDED. CONTRACTOR & OWNER IS RESPONSIBLE FOR EROSION CONTROL MONITORING, MAINTENANCE, AND FOR ENSURING THAT THE EROSION CONTROL METHODS PRESENTED ARE OPERATIONAL AND FUNCTION PROPERLY. TYPICAL ALL AREAS.

NOTE: ENTRANCE INTO THE RESIDENTIAL GARAGES MAY REQUIRE A 3-POINT TURN.



311 WAGON ROAD
TOWN OF BLUE RIVER, CO
SPILLWAY SUB#1, LOT 14

SURVEYING
N" 351 HIGHWAY 285, SUITE #201
FAIRPLAY, COLORADO 80440
MAIN OFFICE 719.836.7120
SILVER CLIFF PHONE 719.783.3757

LII LEHURN ENGINEERING & SURVEYING

"PEACE OF MIND THROUGH HOLISTIC DESIGN" 351 HIGHWAY 285, SUITE 110

PROJECT NO.	2022-100742
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CLIENT
LANDYN AND
MICHELLE
HACKEBEIL

DATE
04.10.2023

REVISION:

 -

 -

C1

LEGEND

3

RETAINING WALL HEIGHT (ABOVE GRADE HEIGHT WITHOUT KEY)

SS

PROPOSED SEWER LINE

W

PROPOSED WATER LINE

PROPOSED SILT FENCE

PROPOSED STRAW WATTLE

EXISTING CONTOUR

EXISTING CONTOUR LABEL

PROPOSED CONTOUR

PROPOSED CONTOUR LABEL

PROPERTY PIN

ELEVATION POINT (0.1 FEET ±)

UTILITY

DRAINAGE ROUTE

TREE TYPE & SIZE (PINE/ASPEN, Ø)

PROPOSED SNOW STORAGE

WETLANDS (IF DELINEATED)

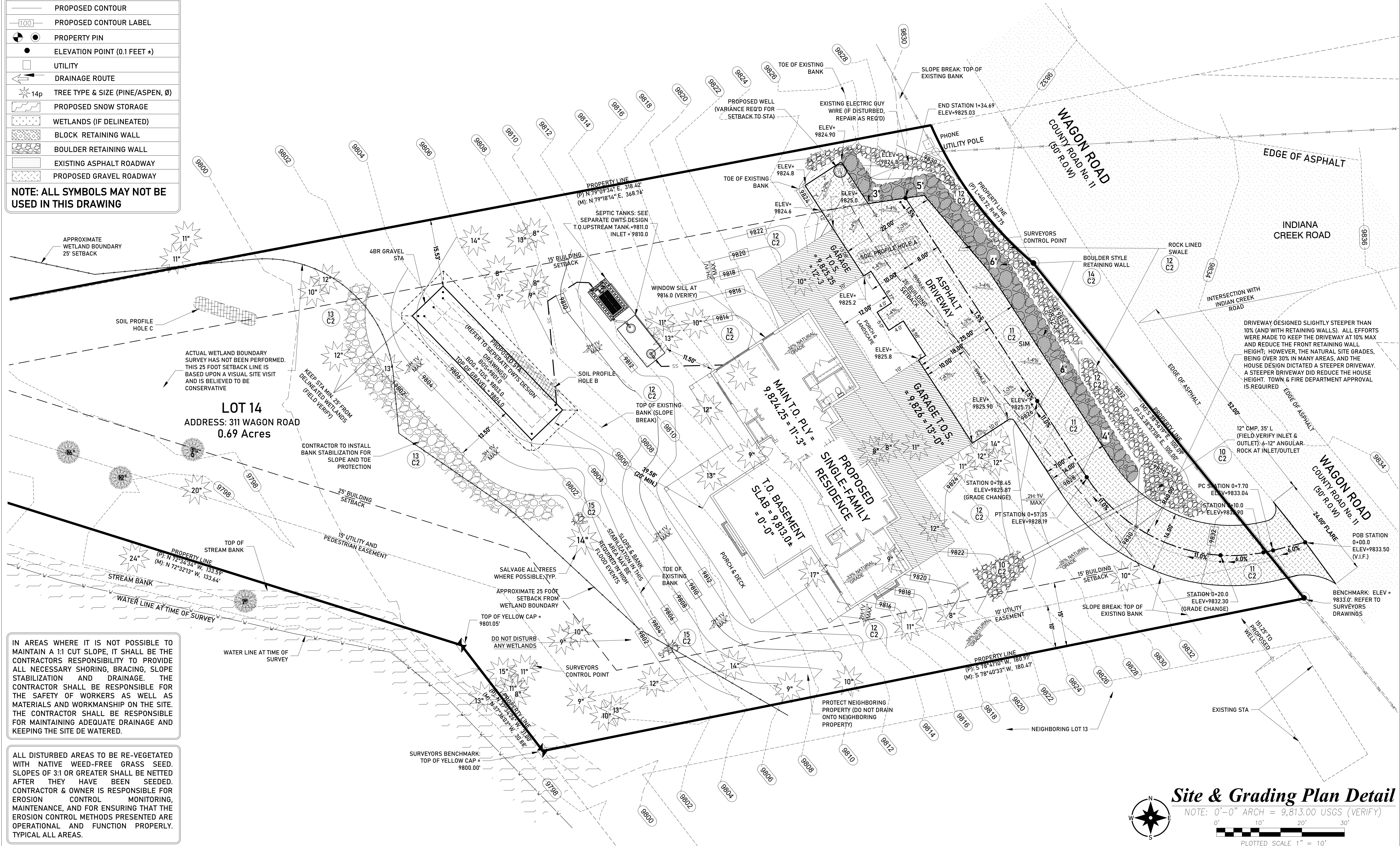
BLOCK RETAINING WALL

BOULDER RETAINING WALL

EXISTING ASPHALT ROADWAY

PROPOSED GRAVEL ROADWAY

NOTE: ALL SYMBOLS MAY NOT BE USED IN THIS DRAWING



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PROFESSIONAL ENGINEER

04.10.2023

SITE & GRADING PLAN DETAIL

311 WAGON ROAD
TOWN OF BLUE RIVER, CO
SPILLWAY SUB#1, LOT 14

LITTLEHORN ENGINEERING & SURVEYING

"PEACE OF MIND THROUGH HOLISTIC DESIGN"

351 HIGHWAY 285, SUITE #201
FAIRPLAY, COLORADO 80440
MAIN OFFICE 719.836.7120
SILVER CLIFF PHONE 719.783.3757

PROJECT NO.
2022-100742

CLIENT
LANDYNN AND MICHELLE HACKEBEIL

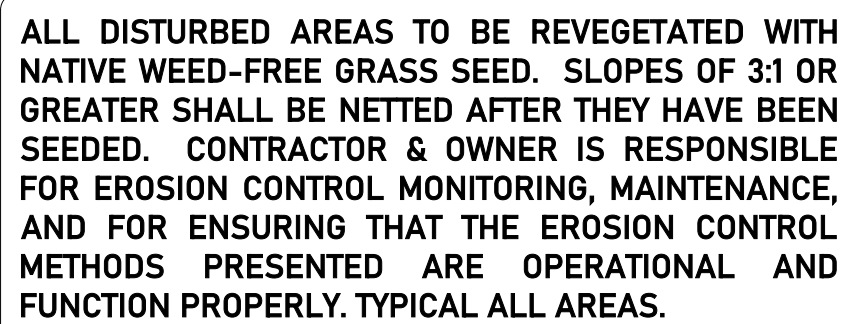
DATE
04.10.2023

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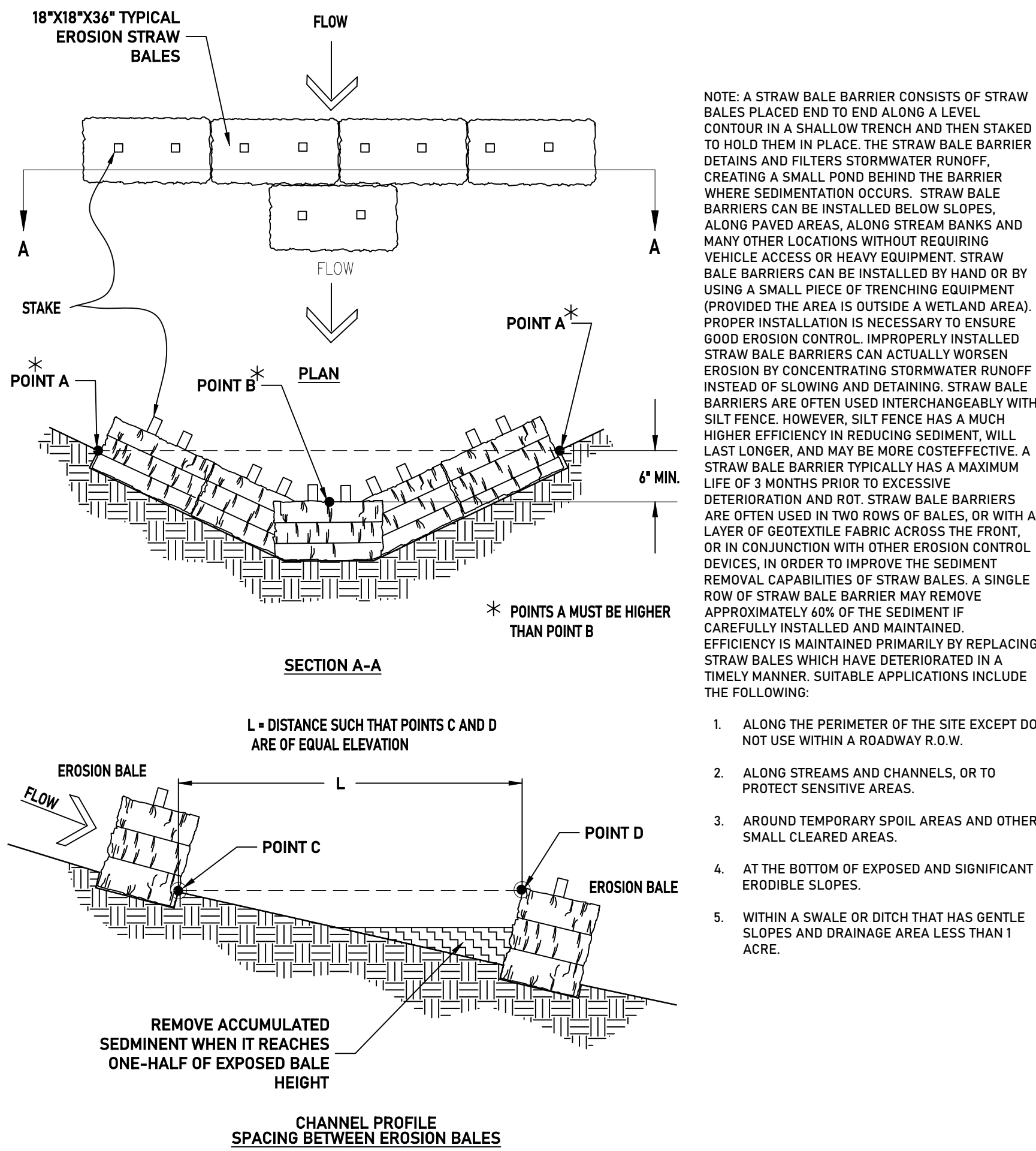
C1.1

SURVEYING
N" 351 HIGHWAY 285, SUITE #201
FAIRPLAY, COLORADO 80440
MAIN OFFICE 719.836.7120
SILVER CLIFF PHONE 719.783.3757

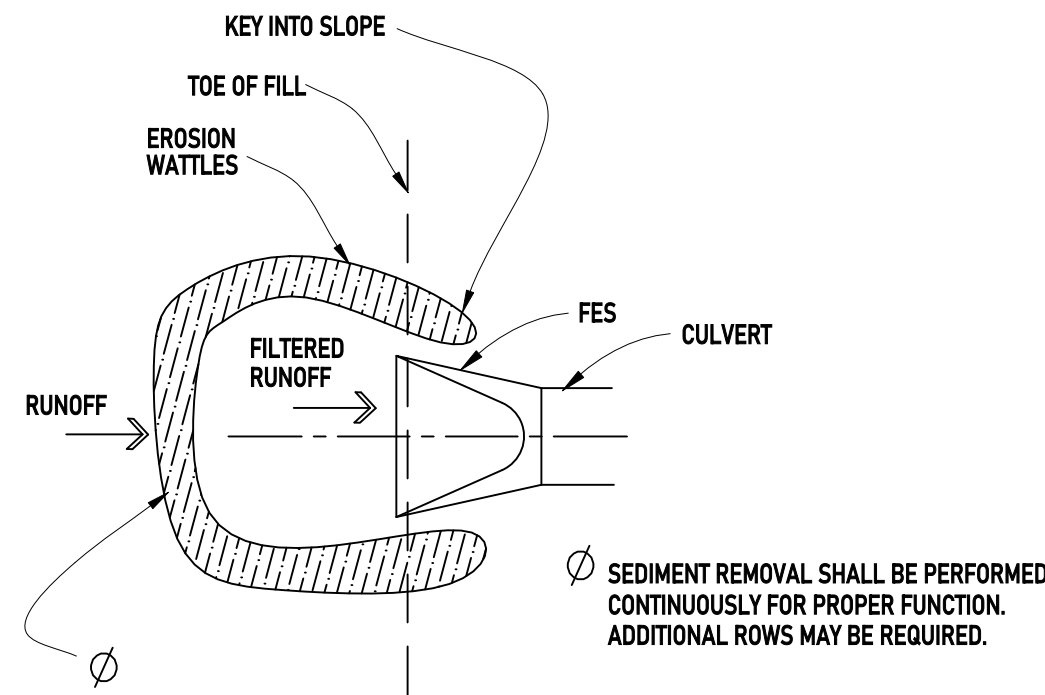
C3



PLOTTED SCALE 1" = 10'



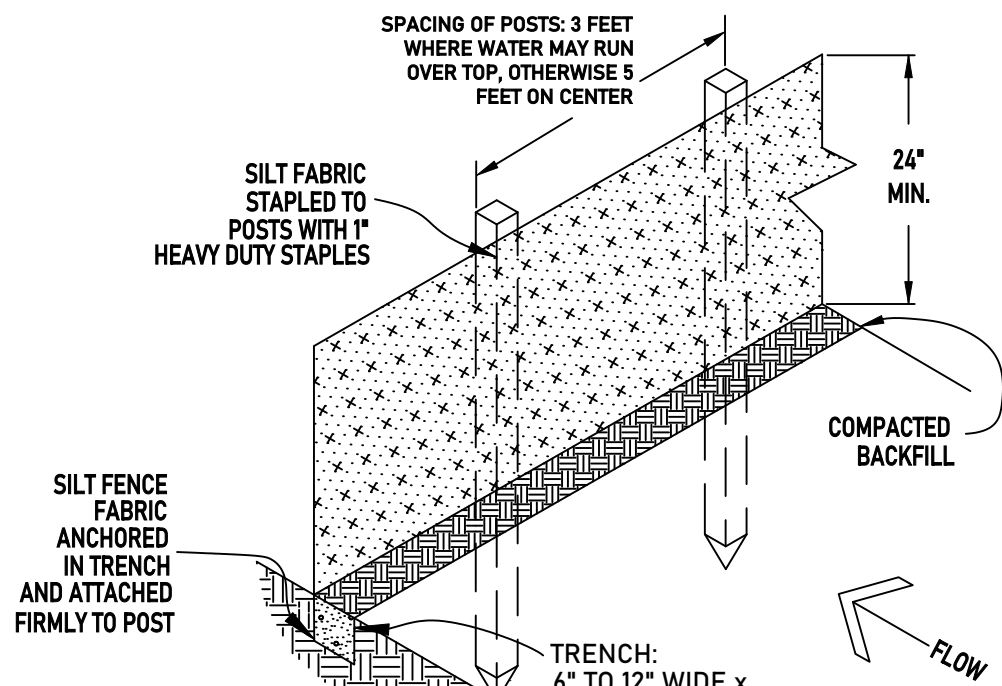
40 STRAW BALE DETAILS



41 CULVERT INLET PROTECTION

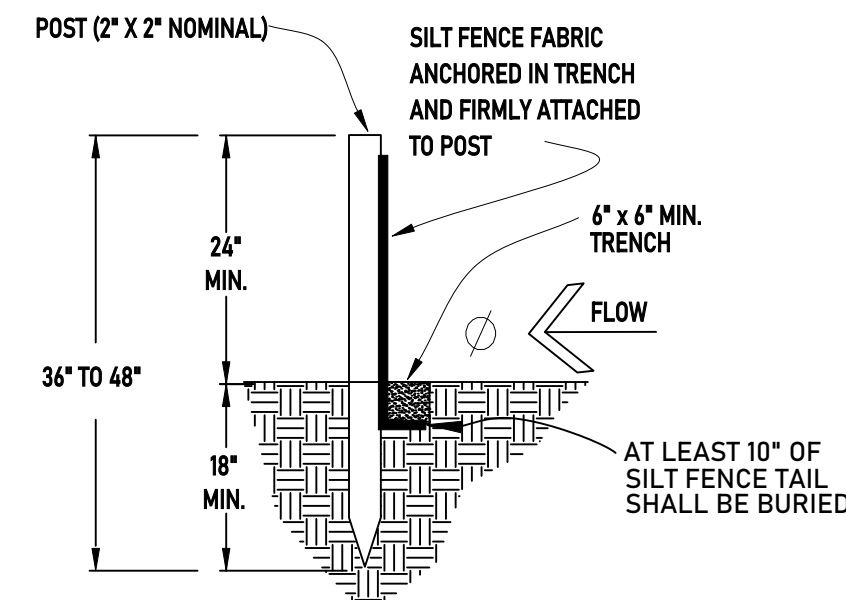
OUTLET PROTECTION IS SIMILAR EXCEPT USE TWO ROWS - APPROX. 3-5 FEET APART.

THIS STRAW WATTLE IS TO BE INSTALLED AFTER THE CULVERT IS INSTALLED

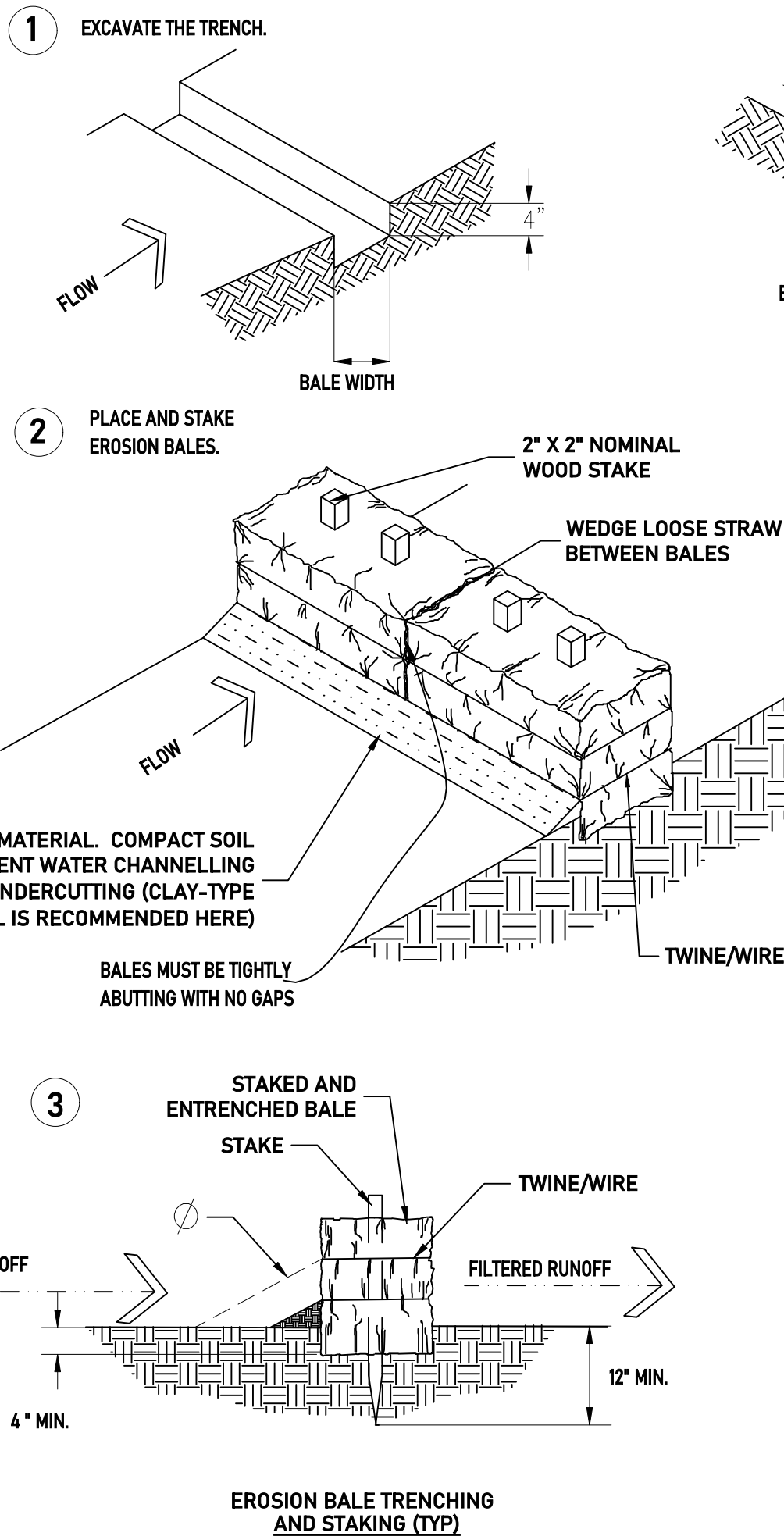


1. SILT FENCE MAY BE SUBSTITUTED IN LIEU OF STRAW WATTLES.
2. WHERE SILT FENCING IS SPECIFIED IN THE PLAN, STRAW WATTLES MAY NOT BE SUBSTITUTED.
3. WHERE JOINTS IN SILT FENCE ARE REQUIRED, POSTS SHALL BE JOINED TOGETHER, THEN ROTATED 180 DEGREES AND DRIVEN INTO THE GROUND. POSTS SHALL OVERLAP AT JOINTS SUCH THAT NO GAPS IN FENCING EXIST.
4. CREATE J-HOOKS AT ENDS OF SILT FENCE.

42 SILT FENCE DETAIL

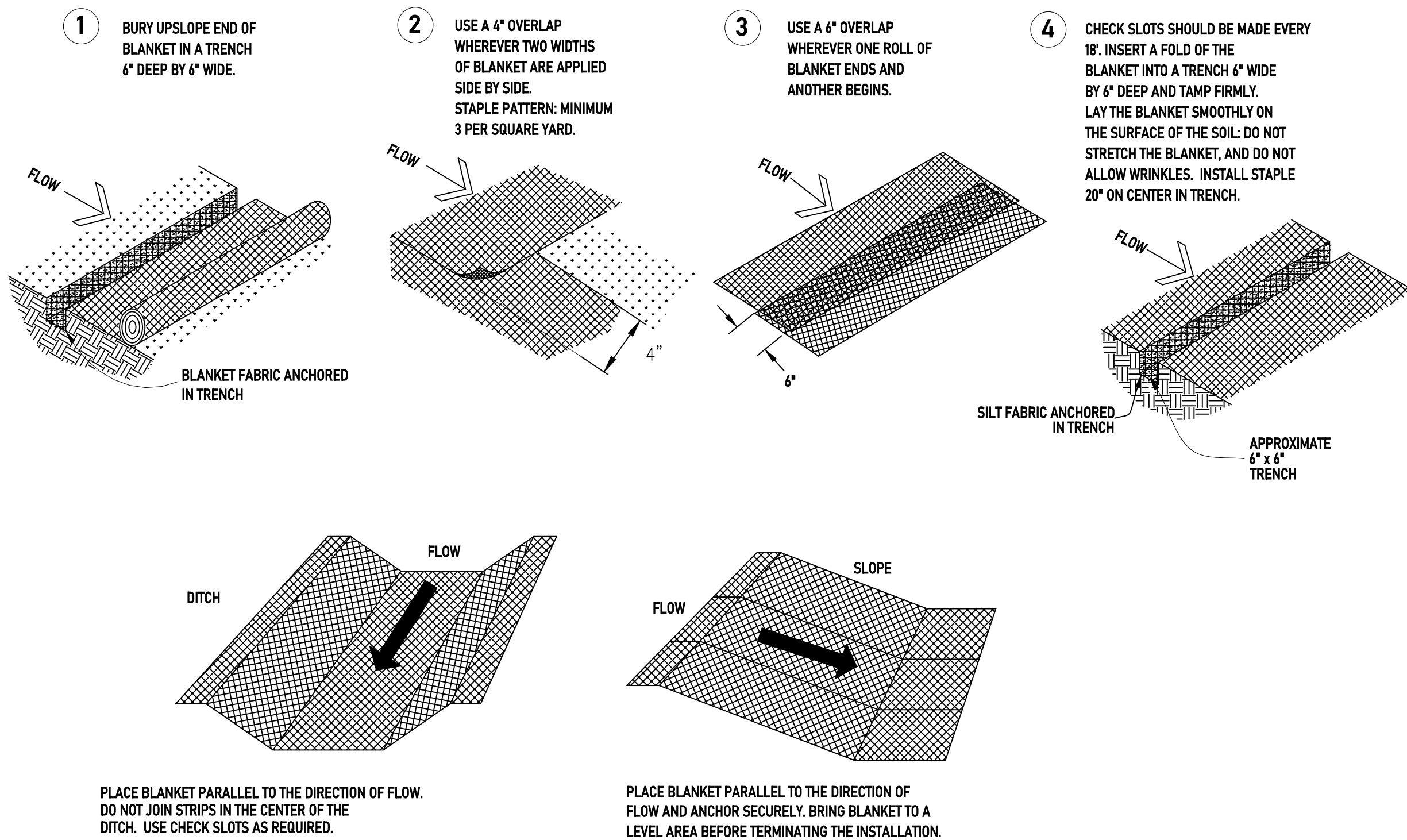


ALL DISTURBED AREAS TO BE REVEGETATED WITH NATIVE WEED-FREE GRASS SEED. SLOPES OF 3:1 OR GREATER SHALL BE NETTED AFTER THEY HAVE BEEN SEEDED. CONTRACTOR & OWNER IS RESPONSIBLE FOR EROSION CONTROL MONITORING, MAINTENANCE, AND FOR ENSURING THAT THE EROSION CONTROL METHODS PRESENTED ARE OPERATIONAL AND FUNCTION PROPERLY. TYPICAL ALL AREAS.



43 EROSION LOG DETAILS

ONE (1) YEAR AFTER PROJECT COMPLETION (WHEN THE CERTIFICATE OF OCCUPANCY IS OBTAINED AND DELIVERED TO THE HOME OWNER), THE CONTRACTOR SHALL VISIT THE SITE AND PERFORM ROUTINE MAINTENANCE REQUIREMENTS AND ASSUMING THE RE-VEGETATION PROCESS IS COMPLETE, ALL TEMPORARY EROSION PRODUCTS (SEE ITEM 4 ON THIS SHEET) CAN BE REMOVED



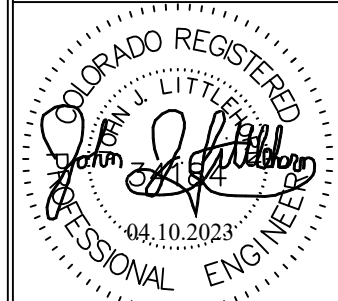
44 SOIL RETENTION BLANKETS

SLOPES GREATER THAN 3:1, INSTALL EXCEL S-2 DOUBLE NET, TEMPORARY EROSION CONTROL BLANKET

EROSION CONTROL:

1. THE CONTRACTOR AND OWNER SHALL PROVIDE ALL SUPERVISION, LABOR, MATERIALS, TOOLS, EQUIPMENT AND RELATED ITEMS REQUIRED FOR PREPARING GROUND, PROVIDING FOR SOWING OF SEEDS AND FERTILIZING, MULCHING WITH STRAW, WATERING WEED CONTROL, AND OTHER MANAGEMENT PRACTICES REQUIRED FOR EROSION CONTROL AND TO OBTAIN A GRASS COVER. AREAS REQUIRING SEEDING FOR EROSION CONTROL WILL INCLUDE THE LEVEE AND ROADWAY SHOULDER, DRAINAGE DITCHES, CUTFALL CHANNEL, ALL BORROW AREAS, AND ALL AREAS DISTURBED BY CONSTRUCTION, INCLUDING THE WORKING EASEMENT.
2. SEEDING. SEED SHALL COMPLY WITH U.S. DEPARTMENT OF AGRICULTURE RULES AND REGULATIONS UNDER THE FEDERAL SEED ACT. BAGS OF FERTILIZER SHALL BE FULLY LABELED COMPLYING WITH APPLICABLE STATE FERTILIZER LAWS AND SHALL BEAR THE NAME, TRADE NAME, TRADEMARK, AND WARRANTY OF PRODUCER. CONTRACTOR SHALL INSPECT AND MAKE SURE THAT ALL WORK IS IN COMPLIANCE AS REQUIRED WITH REGARD TO THE SEED BED PREPARATION, FERTILIZER APPLICATION RATE, PLANTING SEED RATE, PLANTING SEED UNIFORMITY, AND APPLICATION OF MULCH.
3. HYDRO SEEDING MULCH. HYDRO SEEDING MULCH FIBER (IF USED) SHALL BE PRODUCED FROM A NATURAL OR RECYCLED STRAW FIBER; THESE MATERIALS SHOULD BE FREE FROM PLASTIC MATERIALS OR OTHER NON BIO-DEGRADABLE SUBSTANCES. FIBER SHALL BE OF SUCH CHARACTER THAT THE FIBER WILL DISPERSE INTO UNIFORM SLURRY WHEN MIXED WITH WATER. IT IS IMPERATIVE THAT THE MULCH BE APPLIED AT THE SPECIFIED RATE; TOO WET OF A MIXTURE WILL CAUSE THE FIBERS TO BE BURIED. WATER CONTENT OF THE FIBER NOT EXCEED 14 PERCENT OF THE DRY MASS FIBER. THE PERCENTAGE OF MOISTURE CONTENT OF THE FIBER SHALL BE CLEARLY MARKED ON THE PACKAGE. FIBER SHALL BE COLORED GREEN TO CONTRAST THE AREA ON WHICH THE FIBER IS BEING APPLIED, AND SHALL NOT STAIN CONCRETE OR OTHER SURFACES IN WHICH IT COMES INTO CONTACT WITH. FIBER AND OTHER MULCH INGREDIENTS SHALL BE FREE FROM GROWTH OR GERMINATION INHIBITING INGREDIENTS.
4. MAINTENANCE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING AREAS DURING PLANTING PERIOD AND UNTIL OTHER WORK UNDER CONTRACT HAS BEEN COMPLETED. MAINTENANCE SHALL CONSIST OF PROTECTION, REPLANTING, MAINTAINING EXISTING GRADES, AND REPAIR OF EROSION DAMAGE. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING GRADES OF SLOPES AFTER COMMENCEMENT OF PLANTING OPERATIONS AND DURING MAINTENANCE PERIOD. PROMPTLY REPAIR ANY DAMAGE TO FINISHED SURFACE GRADES. PROMPTLY REPAIR DAMAGE IN THE EVENT EROSION OCCURS FROM RAINFALL OR OTHER CAUSES. CORRECT RUTS, RIDGES, TRACTS AND OTHER SURFACE IRREGULARITIES AND REPLANT AREAS WHERE REQUIRED PRIOR TO ACCEPTANCE. ALWAYS INSPECT EROSION CONTROL METHODS ON THE SITE WEEKLY, IF NOT DAILY. IF THE PROPOSED SYSTEM IS NOT FUNCTIONING WELL, CONTACT THE ENGINEER IMMEDIATELY. SILT FENCES SHOULD ALWAYS BE INSPECTED BEFORE AND AFTER STORMS. SILT FENCE IS TYPICALLY DESIGNED ONLY TO PERFORM FOR A PERIOD OF WEEKS. REMOVE EXCESS SEDIMENT PERIODICALLY, AT A MINIMUM WHEN THE SEDIMENT REACHES ONE-FOURTH OF THE SILT FENCE HEIGHT. EROSION CONTROL FENCES CAN BE REMOVED ONCE THE AREA HAS BEEN SUCCESSFULLY REVEGETATED SUCCESSFULLY AND THE CONSTRUCTION IS COMPLETE.
5. WATERING. APPLY WATER AFTER COMPACTION AND SEEDING. APPLY WATER USING PORTABLE PIPE OR HOSE LINES WITH ROTATING SPRINKLERS WITHIN 24 HOURS AFTER SEEDING. SPRINKLING MAY BE DONE WITH WATER TRUCKS AND HOSES IN CERTAIN LOCATIONS WHERE IT IS IMPRACTICAL TO USE PORTABLE LINES OR HOSES. SUPERVISE SPRINKLING TO PREVENT RUNOFF OF WATER. THE CONTRACTOR SHALL FURNISH ALL PUMPS, HOSES, PIPE LINES, WATER TRUCKS AND SPRINKLING EQUIPMENT REQUIRED. WATER AS REQUIRED TO ACHIEVE ACCEPTABLE GRASS COVERAGE. DO NOT WATER AT RATES EXCEEDING 2,000 GAL/AC/HR. TO PREVENT RUNOFF.
6. WEEDING. KEEP ALL SEEDED AREAS RELATIVELY FREE FROM WEEDS AND UNDESIRABLE GRASSES, USING APPROVED METHODS, MATERIALS AND TIMING.
7. SILT FENCE. FENCE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG DRIVEN 16" MINIMUM INTO GROUND. WOOD POSTS SHALL BE 1 1/2" X 1 1/2" (MINIMUM) SQUARE CUT, OR 1 3/4" (MINIMUM) DIAMETER ROUND AND SHALL BE OF SOUND QUALITY. HARDWOOD STEEL POSTS WILL BE STANDARD FOR U SECTION WEIGHING NOT LESS THAN 1.00 POUND PER LINEAR FOOT. GEOTEXTILE SHALL BE FASTENED SECURE POST WITH WIRE TIES OR STAPLES AT TOP AND MID-SECTION AND SHALL MEET THE FOLLOWING REQUIREMENTS FOR GEOTEXTILE CLASS F: TENSILE STRENGTH 50 LBS/N (MIN) TEST: MSMT 509; TENSILE MODULUS 20 LBS/N (MIN) TEST: MSMT 509; FLOW RATE: 3 GAL/FT2/MINUTE (MAX) TEST: MSMT 322; FILTERING EFFICIENCY 75% (MIN) TEST: MSMT 322. WHERE ENDS OF GEOTEXTILE FABRIC COME TOGETHER, THEY SHALL BE OVERLAPPED, FOLDED AND STAPLED TO PREVENT SEDIMENT BYPASS. SILT FENCE SHALL BE INSPECTED AFTER EACH RAINFALL EVENT AND MAINTAINED WHEN BULGES OCCUR OR WHEN SEDIMENT ACCUMULATION REACHED 50% OF THE FABRIC HEIGHT.
8. SILT FENCE INSTALLATION: 1. SECURE FILTER FABRIC TO THE GROUND BY INSTALLING WOODEN POSTS TO A DEPTH OF 12 INCHES AND EXCAVATE A TRENCH 6" DEEP ALONG THE LINE OF THE POST AND UPSLOPE FROM THE TRENCH. BURY LOWER EIGHT INCHES OF FILTER FABRIC INTO THIS TRENCH AND COMPACT THE BACKFILL. SOIL. 2. POSTS SHOULD BE SPACED A MAXIMUM OF 5 FEET APART. FOR SHALLOW CHANNEL FLOW APPLICATIONS, THE POSTS SHOULD BE SPACED A MAXIMUM OF THREE FEET APART AND REINFORCED WITH WIRE MESH. THE BASE OF THE FENCE SHOULD BE SECURED. 3. SILT FENCES INSTALLED ACROSS SWALES MUST HAVE THE BOTTOM OF THE ENDS OF THE FENCE AT A HIGHER ELEVATION THAN THE TOP CENTER OF THE FENCE. 4. SILT FENCES SHOULD BE INSTALLED ALONG THE CONTOUR AT LEAST FIVE FEET BELOW THE BASE OF GENTLE SLOPES IN AREAS WHERE UPGRADATION DISTURBANCE IS OCCURRING. 5. SILT FENCES SHOULD REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED. 6. IN AREAS PRONE TO ROCKFALL, INSTALL A WIRE MESH FENCE UPHILL 10 FEET TO CAPTURE ROCKS THAT MAY DAMAGE THE FENCE. 7. WHEN EQUIPMENT IS WORKING NEAR SENSITIVE AREAS OR WHEN SUBSTANTIAL MOVEMENT OF FILL IS TAKING PLACE, IT MAY BE NECESSARY TO REINFORCE THE SILT FENCE WITH WIRE MESH.
9. EXPOSED SOIL SHALL BE PROTECTED FROM EROSION BY TEMPORARY AND/OR PERMANENT MEASURES, AS APPROVED.
10. PROTECTION OF DOWN SLOPES - BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED TO MINIMIZE DAMAGE TO THE FACE OF CUTS AND FILLS. DOWN SLOPES SHALL BE PROTECTED FROM SURFACE WATER RUNOFF FROM ABOVE BY DIKES, SWALES OR CUT-OFF DITCHES, OR OTHER MEASURES, AS NEEDED.
11. BUILDING SITE RUNOFF. RUNOFF FROM BUILDINGS, ROADS, DRIVEWAYS AND THE TOTAL SITE AREA SHALL BE CONTROLLED BY BERMS, SWALES, DITCHES, STRUCTURES, VEGETATIVE FILTER STRIPS AND/OR CATCH BASINS TO ADEQUATELY REDUCE THE ESCAPE OF SEDIMENT FROM THE SITE.
12. SEDIMENT AND DEBRIS CONTROL FACILITIES. TEMPORARY AND PERMANENT SEDIMENT AND DEBRIS CONTROL FACILITIES SHALL BE INSTALLED WHENEVER AND WHEREVER NECESSARY TO PROTECT THE PROJECT AND DOWNSTREAM PROPERTIES FROM EROSION AND SEDIMENT/DEBRIS DISCHARGE.
13. VEGETATIVE REMOVAL. WHERE VEGETATION IS TO BE REMOVED AND REPLACED WITHIN THE BUILDING AND ACCESS ENVELOPES, VEGETATION REMOVAL SHALL BE LIMITED TO THE NECESSARY AREA AND AS MINIMAL AS POSSIBLE.
14. TOPSOIL. TO PROMOTE RE-GROWTH OF VEGETATION, THE TOPSOIL SHALL BE STOCKPILED AND REAPPLIED UPON COMPLETION OF GRADING ON SLOPES OF LESS THAN 5:1 (20%). SOIL STOCKPILES AND EXPOSED SOIL SHALL BE PROTECTED FROM EROSION AT ALL TIMES. TEMPORARY VEGETATION SUFFICIENT TO STABILIZE THE SOIL AS PERMANENT VEGETATION COVER IS MATURING SHALL BE ESTABLISHED ON ALL DISTURBED AREAS AS NEEDED AND AS EACH STAGE OF GRADING IS COMPLETED.
15. WINTER OPERATIONS - OCTOBER 1 TO MAY 15. GRADING PROJECTS THAT ARE STARTED BUT NOT COMPLETED BY OCTOBER 15TH OF EACH YEAR ARE TO BE "WINTERIZED" BY INSTALLATION OF PLANNED EROSION AND SEDIMENT CONTROL MEASURES, WHICH SHALL BE MAINTAINED IN GOOD REPAIR THROUGH THE WINTER AND UNTIL THE PROJECT IS COMPLETED.
16. ALL PLANNED EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO START OF GRADING OPERATIONS, UNLESS APPROVAL FOR PHASED CONTROL MEASURE INSTALLATION IS REQUESTED OF AND GRANTED BY THE ENGINEER AND OTHER APPLICABLE AUTHORITY PRIOR TO GRADING OR CONSTRUCTION PERMIT ISSUANCE.
17. EXTRA EROSION CONTROL MATERIALS OF STRAW, PLASTIC, NETTING, ETC. SHALL BE KEPT ON THE SITE AT ALL TIMES TO BE INSTALLED IMMEDIATELY BY THE PERMITTEE IN THE EVENT OF HEAVY RAINFALL, WIND, RUN-OFF OR OTHER ACT WHICH MIGHT CAUSE EROSION AND SEDIMENT DISCHARGE.
18. ALL MAJOR CUT AND FILL SLOPES WITHIN THE ACCESS AND BUILDING ENVELOPE WITHOUT ESTABLISHED VEGETATION SHALL BE ADEQUATELY PROTECTED BY MULCHING OR OTHER METHODS APPROVED BY THE ENGINEER AND COUNTY.
19. ALL EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING PLANTINGS AND MULCHING, SHALL BE CLOSELY MONITORED AND RUNOFF PROBLEMS CORRECTED PROMPTLY.
20. MULCHING SHALL BE ANCHORED BY PUNCHING OR TACKING INTO THE SOIL, OR BY THE USE OF NETTING. A MINIMUM OF 1000 LBS. OF STRAW, OR EQUIVALENT, PER EACH 10,000 SQUARE FEET OF SLOPE SURFACE WILL BE REQUIRED TO BE ANCHORED. AN ADDITIONAL AMOUNT MAY BE REQUIRED BY THE ENGINEER. ALL EROSION AND/OR SLIPPAGE OF BANKS SHALL BE REPAIRED BY THE PERMITTEE AT HIS EXPENSE.
21. IT IS RECOMMENDED THAT WITHIN TEN (10) WORKING DAYS AFTER SEEDING, FERTILIZING AND/OR MULCHING, THE PERMITTEE WILL COMMENCE WATERING OF THE SEEDED AREAS OR SLOPES AND SHALL CONTINUE UNTIL THE RAINS COME AND/OR THE GROUND COVER IS FULLY DEVELOPED AND/OR SELF-SUFFICIENT. ALL CONTROL MEASURES INCLUDING BERMS, DIVERSION CATCH BASINS, SEDIMENT TRAPS, ETC. SHALL BE INSTALLED PRIOR TO SEEDING AND MULCHING.
22. DUST - DUST FROM GRADING OPERATIONS MUST BE CONTROLLED. DUST CONTROL SHALL CONSIST OF APPLYING WATER OR OTHER DUST PALLIATIVES, OR COVERING SMALL STOCKPILES OR AREAS, AS NECESSARY TO PREVENT OR ALLEVATE DUST NUISANCE GENERATED BY CONSTRUCTION ACTIVITIES. PERIODIC STREET SWEEPING MAY ALSO BE REQUIRED BY THE MUNICIPALITY.
23. SEDIMENT TRACKING CONTROL. SEDIMENT SHALL BE PREVENTED OR CONTROLLED FROM BEING TRACKED OFF-SITE BY VEHICLES LEAVING THE CONSTRUCTION AREA USING APPROPRIATE BEST MANAGEMENT PRACTICES SUCH AS STABILIZED CONSTRUCTION ENTRANCES/EXITS, STABILIZED CONSTRUCTION ROADWAYS, AND ENTRANCE/EXIT TIRE WASHES.
24. PRIOR TO COMPLETION AND FINAL ACCEPTANCE OF THE PROJECT, ALL EROSION CONTROL MEASURES MUST BE IN PLACE AND ALL EXPOSED BARE SOIL SHALL BE MULCHED, FERTILIZED AND OTHERWISE PREPARED SO THAT IT IS PLANTED TO A PERMANENT VEGETATIVE COVER. NATIVE OR NATURALIZED VEGETATION SHOULD BE USED. ALL ON-SITE EROSION CONTROL FACILITIES SHALL BE PROPERLY MAINTAINED BY THE OWNERS FOR THE LIFE OF THE PROJECT SO THAT THEY DO NOT BECOME NUISANCES WITH STAGNANT WATER, HEAVY ALGAE GROWTH, INSECT BREEDING, ODORS, DISCARDED DEBRIS, AND/OR SAFETY HAZARDS. VEGETATIVE MAINTENANCE REQUIRED MAY INCLUDE MOWING, FERTILIZATION, IRRIGATION AND/OR RESEEDING.
25. THE FOLLOWING REFERENCES PROVIDE ADDITIONAL IMPORTANT INFORMATION AND GUIDANCE ON EROSION CONTROL. A) TOWN OF BLUE RIVER, COLORADO. B) DENVER REGIONAL COUNCIL OF GOVERNMENTS. C) URBAN DRAINAGE AND FLOOD CONTROL DISTRICT OF DENVER, COLORADO.

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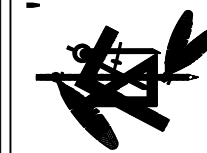


EROSION DETAILS & SPECIFICATIONS

311 WAGON ROAD
TOWN OF BLUE RIVER, CO
SPILLWAY SUB#1, LOT 14

LITTLEHORN ENGINEERING & SURVEYING

351 HIGHWAY 285, SUITE #201
FAIRPLAY, COLORADO 80440
MAIN OFFICE 719.836.7120
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PROJECT NO.
2022-100742

CLIENT
LANDYN AND
MICHELLE
HACKEBEIL

DATE
04.10.2023

REVISION:
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