TOWN OF GREEN MOUNTAIN FALLS
PLANNING COMMISSION MEETING
Tuesday, Oct 9, 2018- 6:30 PM at Town Hall

AGENDA

1. CALLTO ORDER/ROLL CALL, welcome guests
2. ADDITIONS, DELETIONS, CORRECTIONS TO THE AGENDA
3. APPROVE MINUTES of Sep 25, 2018
4. PUBLIC INPUT- For any items **not** on the Agenda
5. NEW BUSINESS
   a. 11150 Belvidere Deck Replacement- Gregory Williamson- Contractor ACC Home Improvement
6. OLD BUSINESS
   a. New FIRE STATION- Gary Florence
      Review Grading Plan, Drainage Report, Erosion Control Plan, Final Plat
   b. 2019 CAPITAL IMPROVEMENTS PROGRAM (CIP)
      Prioritize Projects for 2019 Town Budget consideration
   c. Frequently Asked Questions (FAQ) for Town Website
      GMF Submittal requirements for Building Permits and other Permits (Cactus)
   d. GMF COMPREHENSIVE PLAN - Megan Moore, Logan Simpson Company
      1. Overall Process and Schedule
      2. Preliminary Vision and Supporting Themes
      3. Preliminary Conditions Assessment by Theme
      4. Citizen Survey- Coordination and Logistics
      5. Next Steps
7. ADJOURN

TOWN OF GREEN MOUNTAIN FALLS
PLANNING COMMISSION MEETING
Tuesday, September 25, 2018 – 6:30 P.M.

MEETING MINUTES

PC Members Present
Vice Chairman Dick Bratton
Commissioner Greg Williamson
Commissioner Rocco Blasi
Chairman Eric Caldwell

PC Members Absent
Commissioner Gerald Irwin

Board of Trustees Members
Mayor Jane Newberry

Secretary
Katharine Guthrie

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1. Call to Order/Roll Call
Chairman Eric Caldwell called the meeting to order at 6:36 pm.

2. Additions, Deletions, or Corrections to the Agenda
M/S: Caldwell/Williamson
Motion: Move to accept the agenda as submitted.
Vote: Motion carried. All yea.

3. Approve Minutes of September 11, 2018
M/S: Bratton/Caldwell
Motion: Move to approve the minutes as submitted.
Vote: Motion carried. All yea.

4. Public Input
None

5. New Business
A. Review draft 2018-2024 Capital Improvements Plan (CIP)
Projects for 2019 need to be reviewed and prioritized and added to agenda for next meeting of the Planning Commission (10/9/2018)

B. Frequently Asked Questions (FAQ) for Town website and staff—Building Permits
Include: List of projects that do not require a permit
Clarification of permitting process (perhaps a flow chart)
What projects require a plan review and the process to obtain a plan review
Chairman Caldwell volunteered to work on this project.

5. Old Business

A. 10565 Foster—Cabin Renovation, Bob Vanmaarth, Contractor. Request to place a new septic system on Town Property (Flagpole Park) Tabled from meeting on 9/11/18.
M/S: Bratton/Caldwell
Motion: Move that we deny the request for a revocable permit on town property.
Vote: Motion carries.
Resolution: Contractor was able to place the new septic system on his own property so there is no need to place it on town property.

B. GMF Comprehensive Plan
1. Progress Report—GMF Project Manager
Marshal is not to enforce Building Permits. Marshal is authorized to enforce municipal codes specific to GMF. Unpermitted work needs to be reported to Regional Building. Regional Building also enforces contractors licensing. GMF Business Licenses is a joint responsibility of Town Clerk working with the Marshal.
2. Next Steps
2007 Plan Audit—Logan Simpson to do an analysis of the 2007 Comprehensive Plan and how it operates today.
Citizen Survey—Online, Paper, and to be added to GMF facebook page
Logan Simpson is drafting the Overall Vision and will create a second Citizen Survey around the Vision
Joint Town Meeting #2—Visioning (to be scheduled)

6. Correspondence

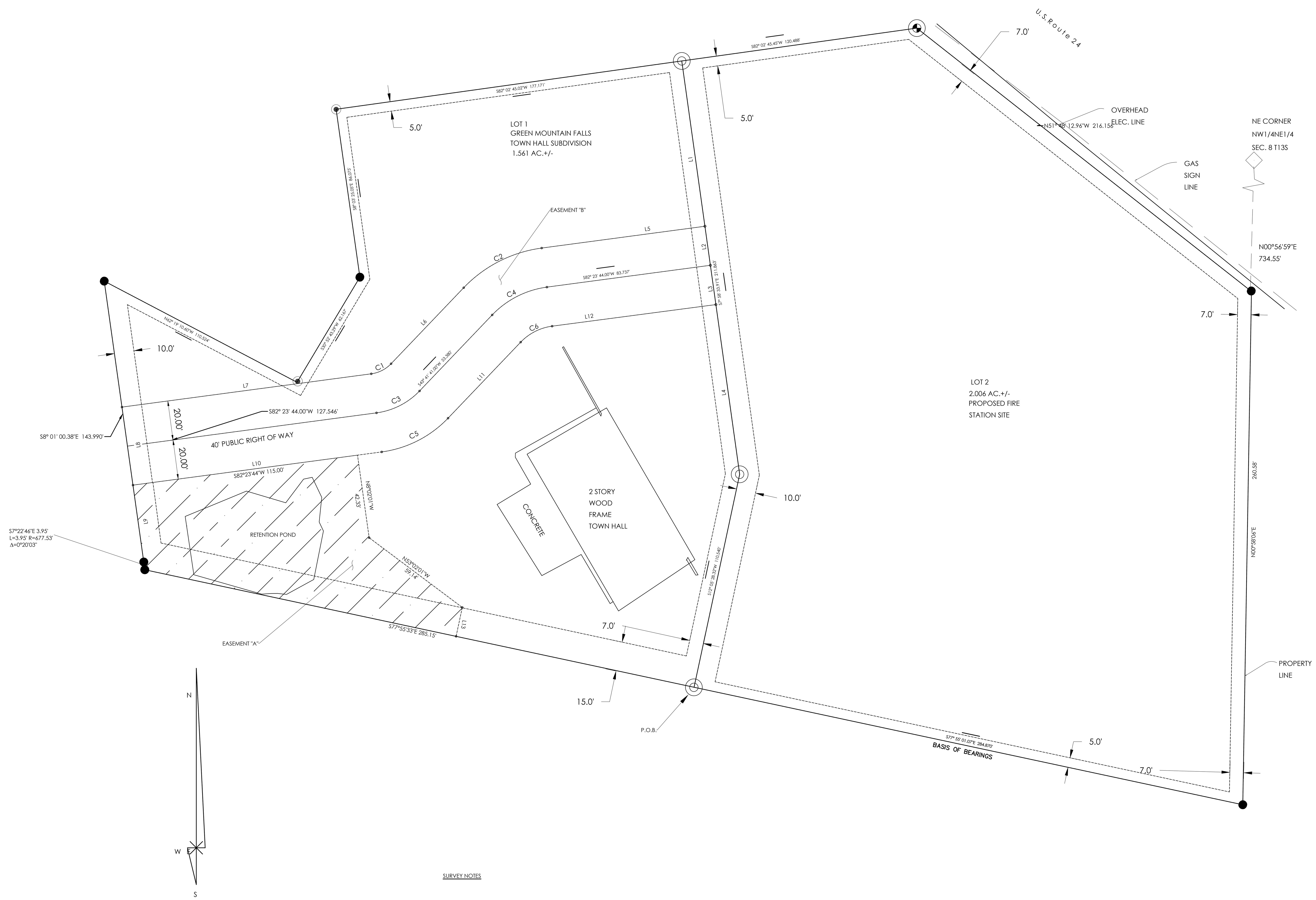
None

Adjourned: 7:34

____
Eric Caldwell-Chairman

ATTEST:

____
Katharine Guthrie-Secretary



30 0 30 60 90

GRAPHIC SCALE - FEET

BASIS OF BEARINGS: Assumed S77°55'00"E, along the south boundary of Lot 2, monumented as shown.

LEGEND:

- FOUND PLASTIC CAPPED REBAR STAMPED PLS 26965, APPARENT ORIGINAL MONUMENT
- FOUND ALUMINUM CAPPED REBAR STAMPED PLS 28658, APPARENT ORIGINAL MONUMNET
- FOUND1/2" REBAR, APPARENT ORIGINAL MONUMENT
- SET ALUMINUM CAPPED, 1/2" REBAR STAMPED PLS 25971
- FOUND ALUMINUM CAPPED REBAR, ILLEGIBLE, POSITIONED AS PER MONUMENT RECORDS

CURVE TABLE				
CURVE	LENGTH	RADIUS	BEARING	CHORD
C1	11.48	17.00	N63°02'43"E	11.27
C2	45.26	67.00	N63°02'43"E	44.40
C3	24.99	37.00	N63°02'43"E	24.52
C4	31.75	47.00	N63°02'43"E	31.15
C5	38.50	57.00	N63°02'43"E	37.77
C6	18.24	27.00	N63°02'43"E	17.89

LINE TABLE		
LINE	LENGTH	BEARING
L1	84.73	S07°58'34"E
L2	20.00	S07°58'34"E
L3	20.14	S07°58'34"E
L4	87.00	S07°58'34"E
L5	83.61	S82°23'44"W
L6	53.38	S43°41'41"W
L7	127.70	S82°23'44"W
L8	40.00	S08°01'25"E
L9	39.41	S08°01'00"E
L10	115.01	N82°23'44"E
L11	53.38	N43°41'41"E
L12	83.87	N82°29'26"E
L13	15.01	S12°04'29"W

SURVEY NOTES

1. HORIZONTAL CONTROL INFORMATION: PROVIDED BY WARREN D. WARD, SEE ALTA/ACSM LAND TITLE SURVEY MIDDLE PARK MEDICAL CENTER, DATED 07/15/10. ARE PROVIDED BY THE FOLLOWING POINTS:

SET 12" SPIKE NEAR NORTH END OF GUARD RAIL - SOUTH SIDE OF ENTRANCE TO CHURCH	N 1271530.06	E 2880485.13	Z 7756.36500
FOUND PLASTIC CAPPED REBAR - NW CORNER LOT 2	N 1271256.88	E 2881893.68	Z 7825.00000
FOUND PLASTIC CAPPED REBAR - SE CORNER LOT 2	N 1270517.22	E 2880507.86	Z 7756.65000

2. THE LOCATION OF EXISTING UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BERORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UTILITIES.

90% BID DRAWINGS

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GREEN MOUNTAIN FALLS FIRE DISTRICT

Fire Station Project Two Carsell Way

Green Mountain Falls, El Paso County, CO

REVISIONS

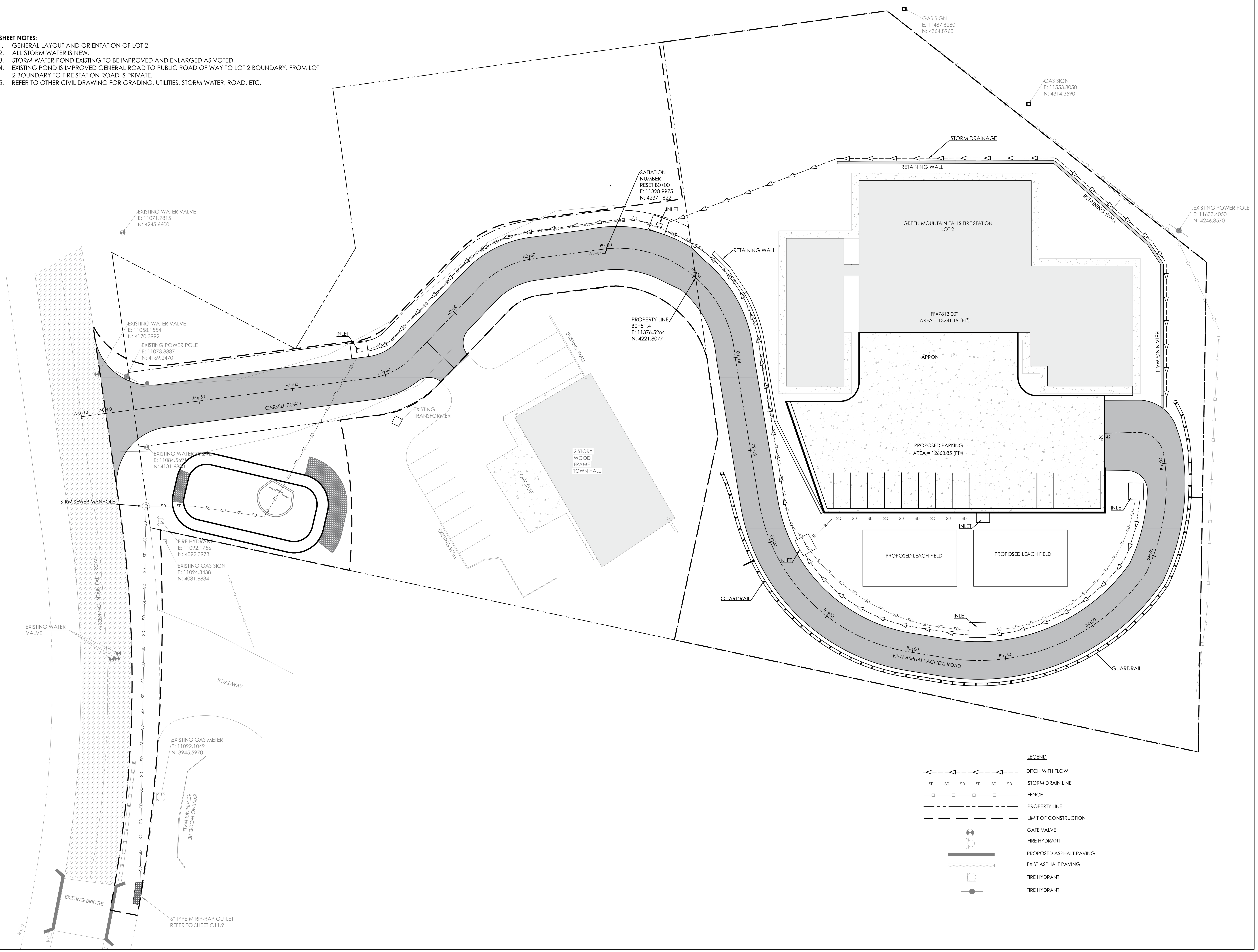
1. 75% CD SET 30 AUG 2018
2. 90% BID SET 30 SEP 2018

DATE: 30-SEP-18
DRAWN BY: H.A
CHECK BY: T.E.F

BOUNDARY SURVEY & TOPO PLAN

C1.0

SHEET NOTES:
1. GENERAL LAYOUT AND ORIENTATION OF LOT 2.
2. ALL STORM WATER IS NEW.
3. STORM WATER POND EXISTING TO BE IMPROVED AND ENLARGED AS VOTED.
4. EXISTING POND IS IMPROVED GENERAL ROAD TO PUBLIC ROAD OF WAY TO LOT 2 BOUNDARY. FROM LOT 2 BOUNDARY TO FIRE STATION ROAD IS PRIVATE.
5. REFER TO OTHER CIVIL DRAWING FOR GRADING, UTILITIES, STORM WATER, ROAD, ETC.



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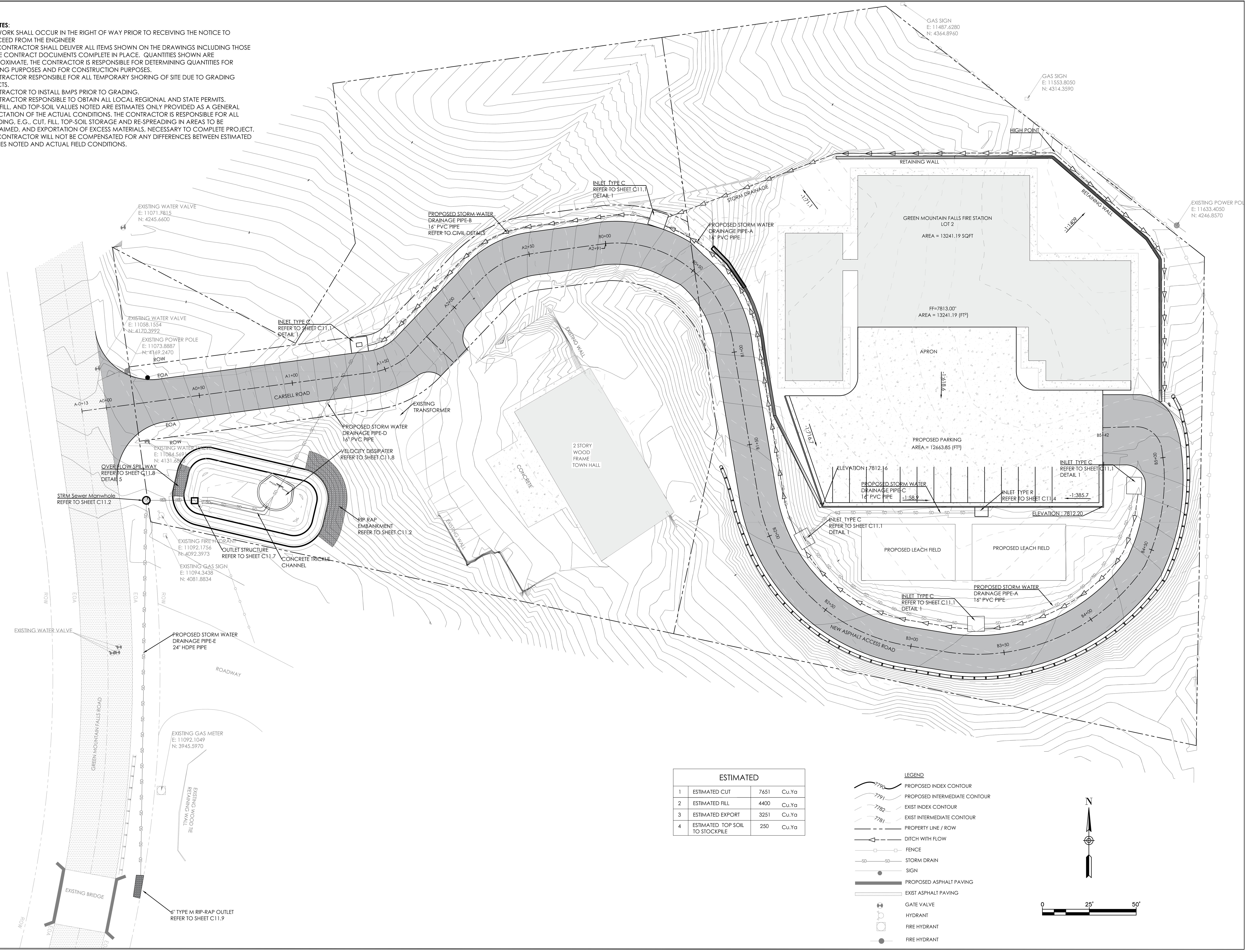
GENERAL OVERVIEW CIVIL SITE PLAN

C 2.0

SHEET NOTES:

1. NO WORK SHALL OCCUR IN THE RIGHT OF WAY PRIOR TO RECEIVING THE NOTICE TO PROCEED FROM THE ENGINEER
2. THE CONTRACTOR SHALL DELIVER ALL ITEMS SHOWN ON THE DRAWINGS INCLUDING THOSE IN THE CONTRACT DOCUMENTS COMPLETE IN PLACE. QUANTITIES SHOWN ARE APPROXIMATE, THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING QUANTITIES FOR BIDDING PURPOSES AND FOR CONSTRUCTION PURPOSES.
3. CONTRACTOR RESPONSIBLE FOR ALL TEMPORARY SHORING OF SITE DUE TO GRADING EFFECTS.
4. CONTRACTOR TO INSTALL BMPS PRIOR TO GRADING.
5. CONTRACTOR RESPONSIBLE TO OBTAIN ALL LOCAL REGIONAL AND STATE PERMITS.
6. CUT, FILL, AND TOP-SOIL VALUES NOTED ARE ESTIMATES ONLY PROVIDED AS A GENERAL EXPECTATION OF THE ACTUAL CONDITIONS. THE CONTRACTOR IS RESPONSIBLE FOR ALL GRADING, E.G., CUT, FILL, TOP-SOIL STORAGE AND RE-SPREADING IN AREAS TO BE RECLAIMED, AND EXPORTATION OF EXCESS MATERIALS, NECESSARY TO COMPLETE PROJECT. THE CONTRACTOR WILL NOT BE COMPENSATED FOR ANY DIFFERENCES BETWEEN ESTIMATED VALUES NOTED AND ACTUAL FIELD CONDITIONS.



ESTIMATED			
1	ESTIMATED CUT	7651	Cu.Yd
2	ESTIMATED FILL	4400	Cu.Yd
3	ESTIMATED EXPORT	3251	Cu.Yd
4	ESTIMATED TOP SOIL TO STOCKPILE	250	Cu.Yd

LEGEND

- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- EXIST INDEX CONTOUR
- EXIST INTERMEDIATE CONTOUR
- PROPERTY LINE / ROW
- DITCH WITH FLOW
- FENCE
- STORM DRAIN
- SIGN
- PROPOSED ASPHALT PAVING
- EXIST ASPHALT PAVING
- GATE VALVE
- HYDRANT
- FIRE HYDRANT
- FIRE HYDRANT

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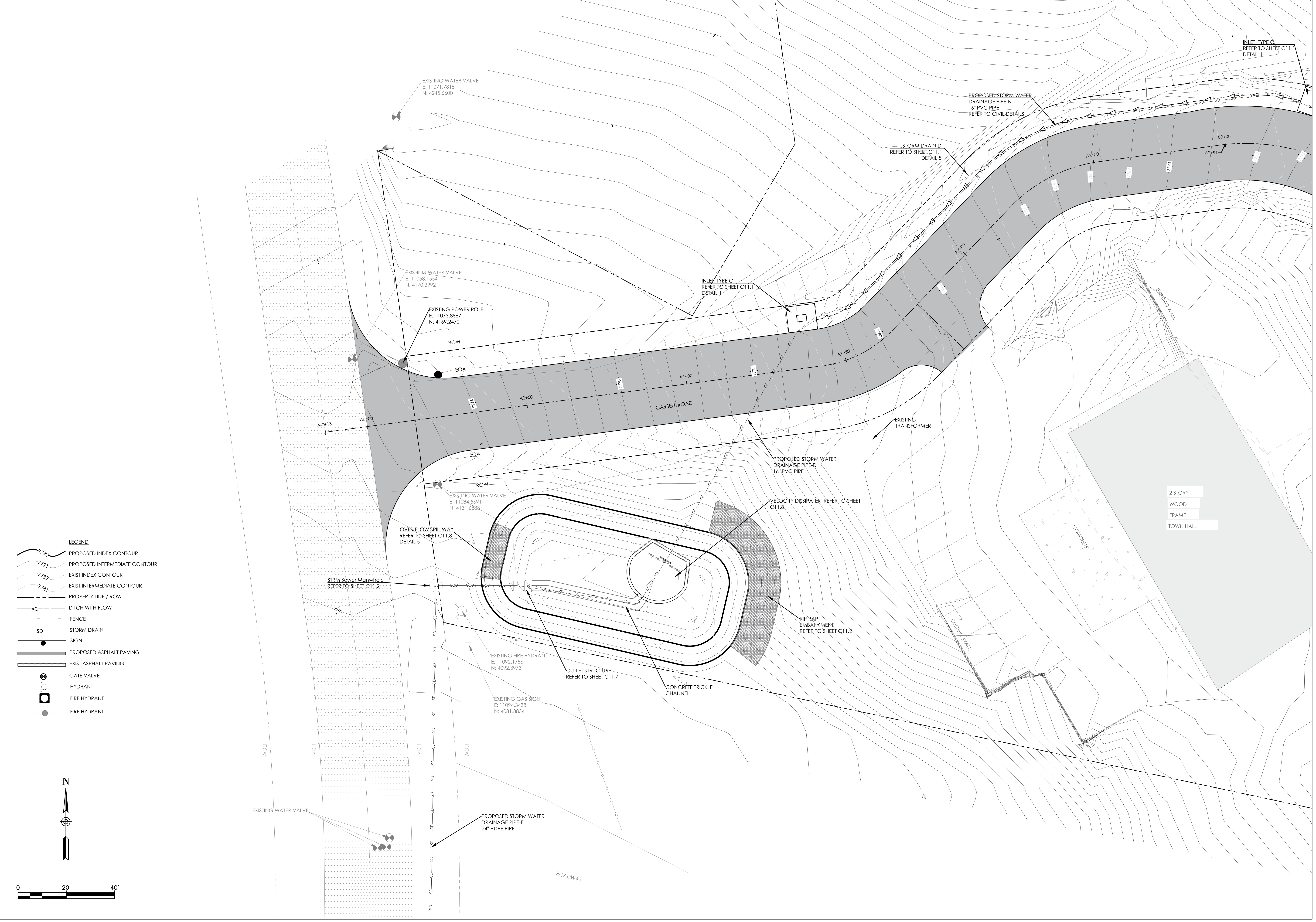
COLORADO 811

DATE: 30-SEP-18
DRAWN BY: H.A
CHECK BY: T.E.F

GRADING AND DRAINAGE PLAN

C 3.0

SHEET NOTES:
1. NO WORK OUTSIDE OF RIGHT OF WAY.
2. OPEN CUT THROUGH PROPERTY ACCESS OWNER; STEEL PLATE CUT TO MAINTAIN ACCESS.
3. PROVIDE PROPOSE SIGNAGE PER LATERAL EDITION OF MUTCD.



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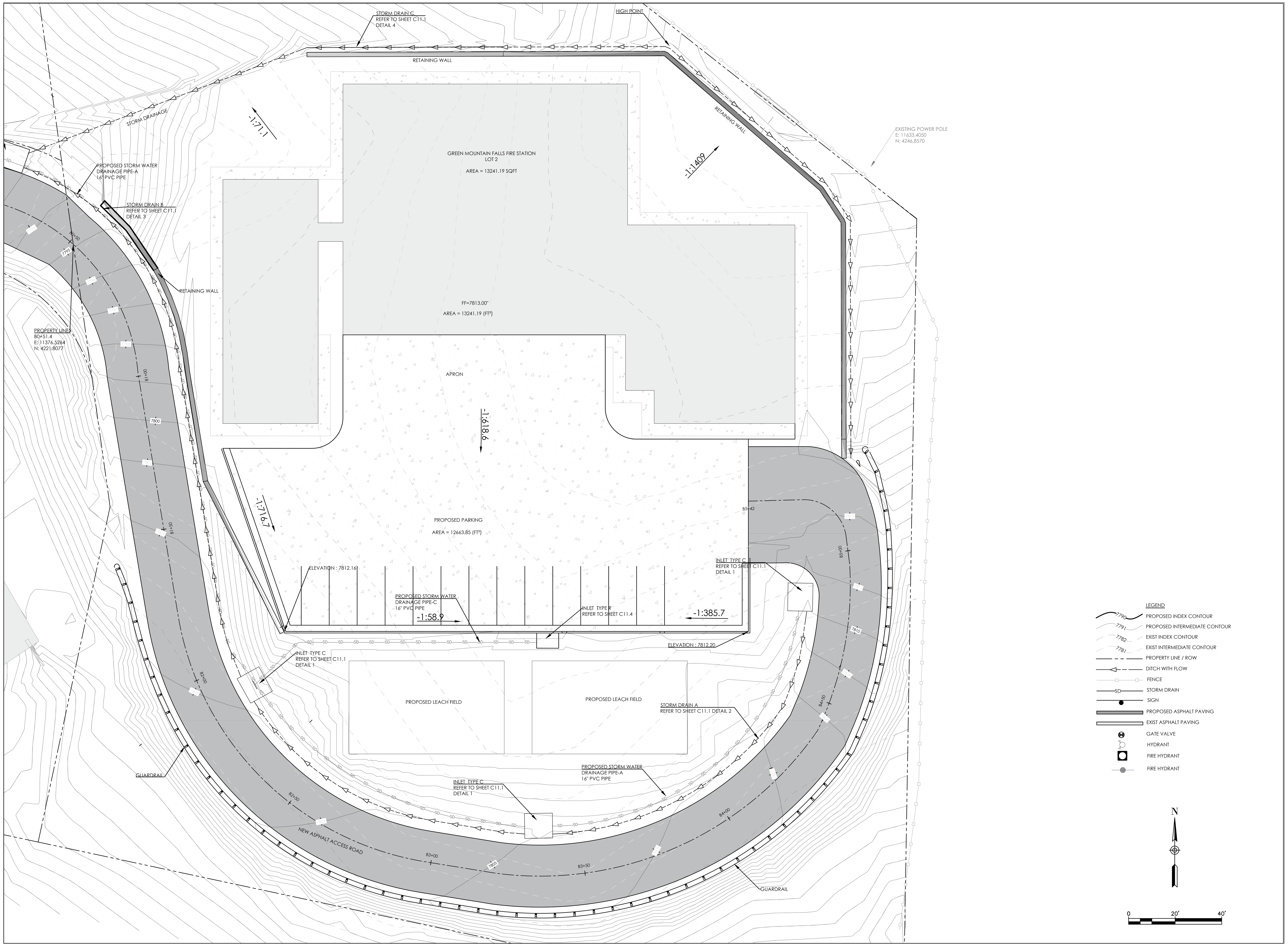
GRADING AND DRAINAGE PLAN

C 3.1



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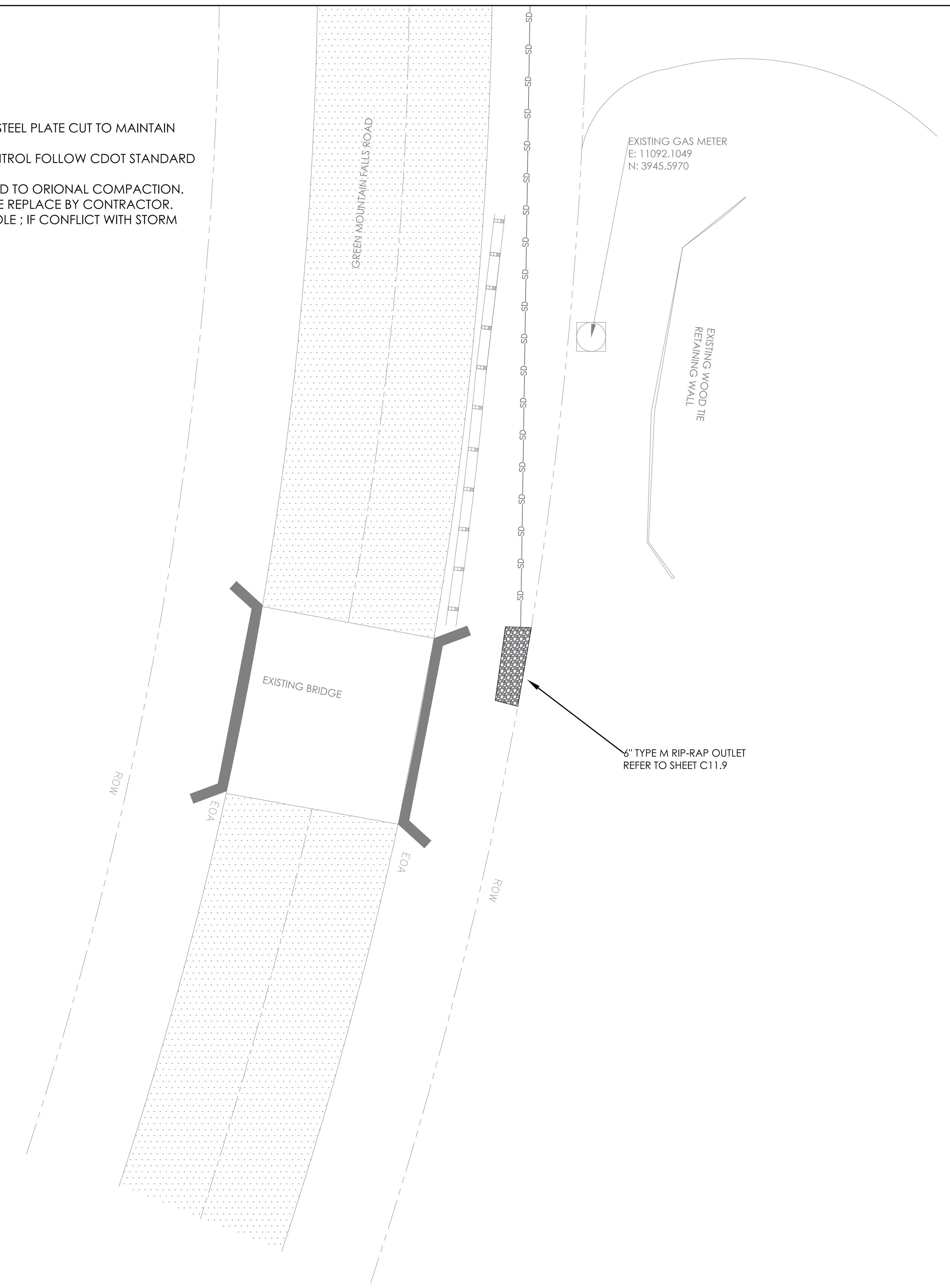
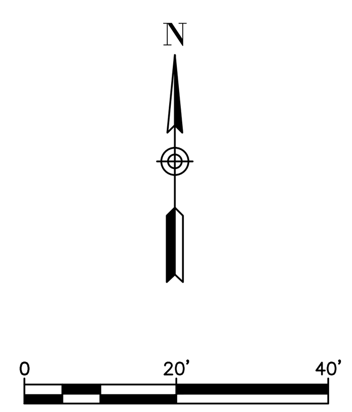
GRADING AND DRAINAGE PLAN

C 3.2

SHEET NOTES:

1. NO WORK OUTSIDE OF RIGHT OF WAY.
2. OPEN CUT THROUGH PROPERTY ACCESS OWNER; STEEL PLATE CUT TO MAINTAIN ACCESS.
3. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL FOLLOW CDOT STANDARD AND M.U.T.C.D
4. CONTRACTOR TO RESTORE ALL DISTURBED GROUND TO ORIONAL COMPACTION.
5. DAMAGE TREES AND OTHER PLANT MATERIAL TO BE REPLACE BY CONTRACTOR.
6. CONTRACTOR TO LOCATED ALL UTILITIES BY POTHOLE ; IF CONFLICT WITH STORM PIPING CONTRACTOR TO NOTIFY ENGINEER.





LEGEND

- PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- EXIST INDEX CONTOUR
- EXIST INTERMEDIATE CONTOUR
- PROPERTY LINE / ROW
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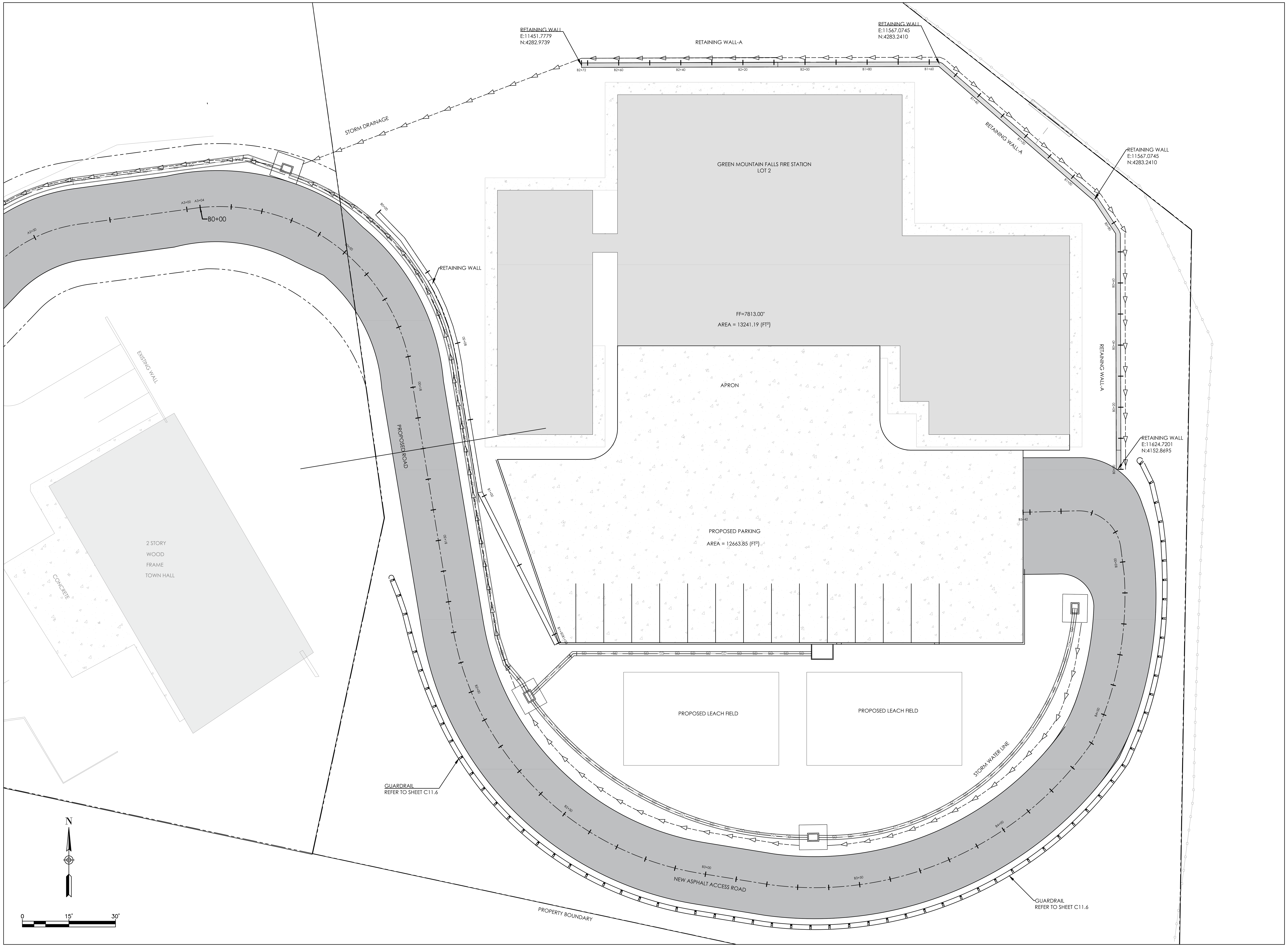
GRADING AND DRAINAGE PLAN

C 3.3



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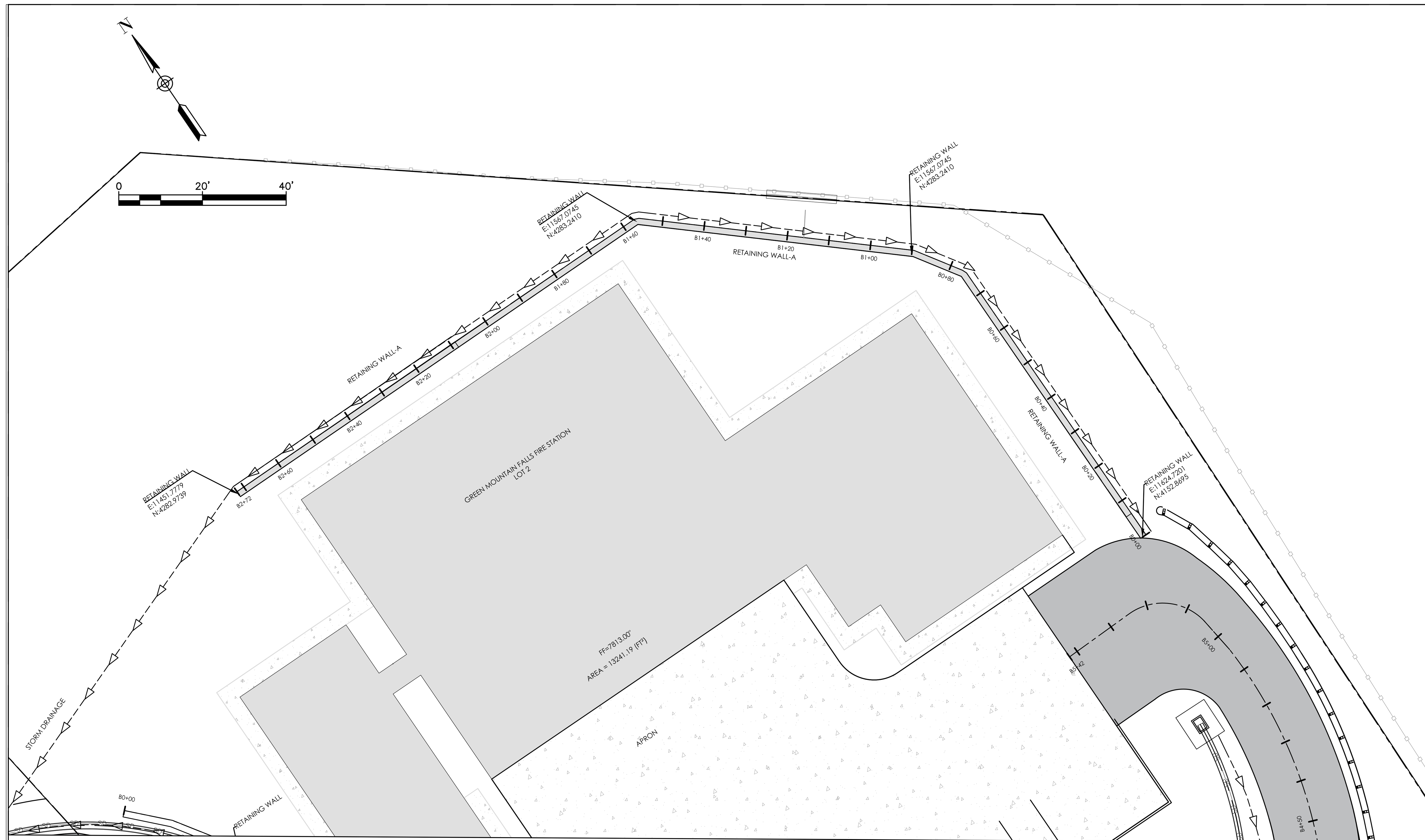
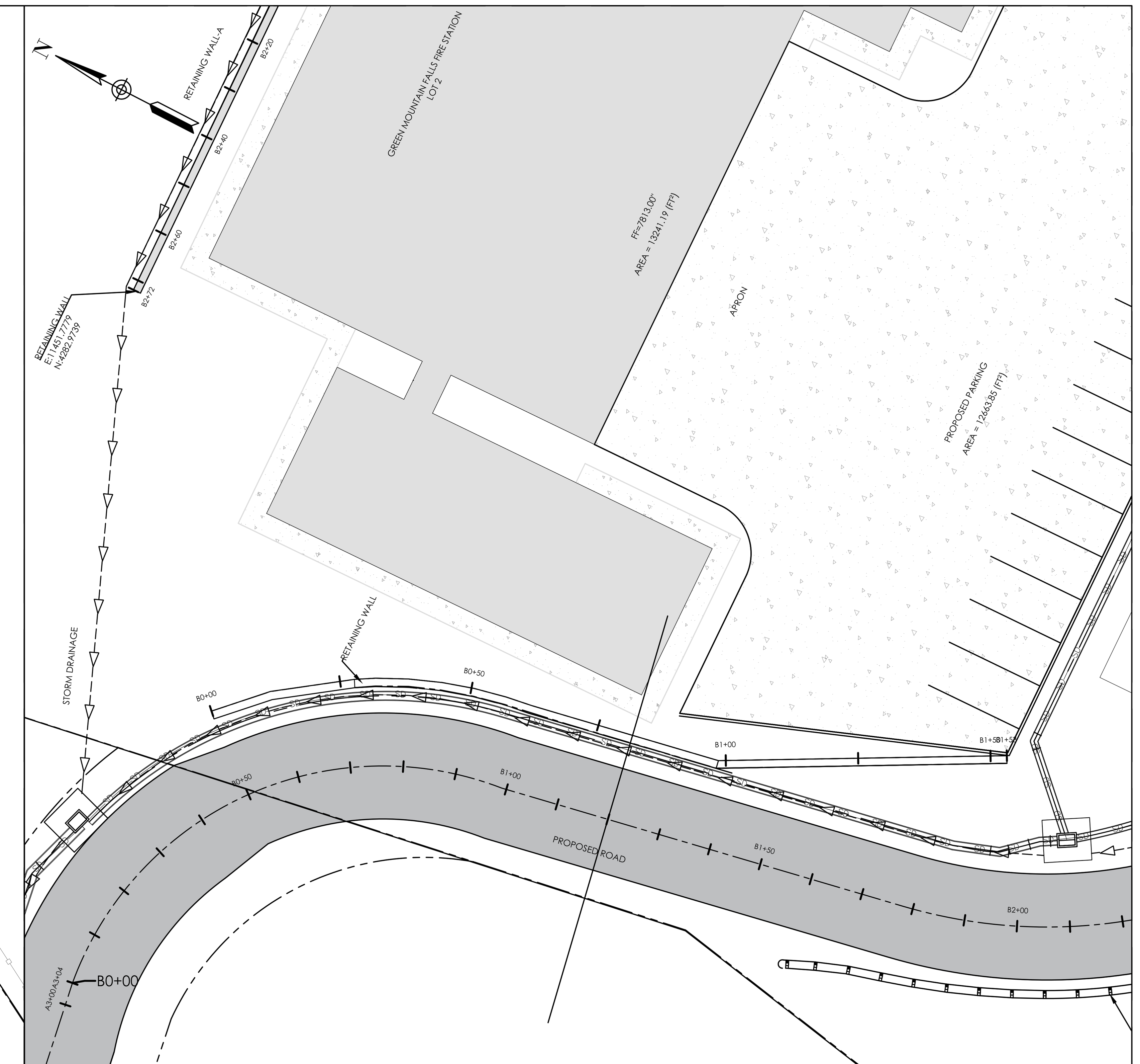
RETAINING WALLS PLAN

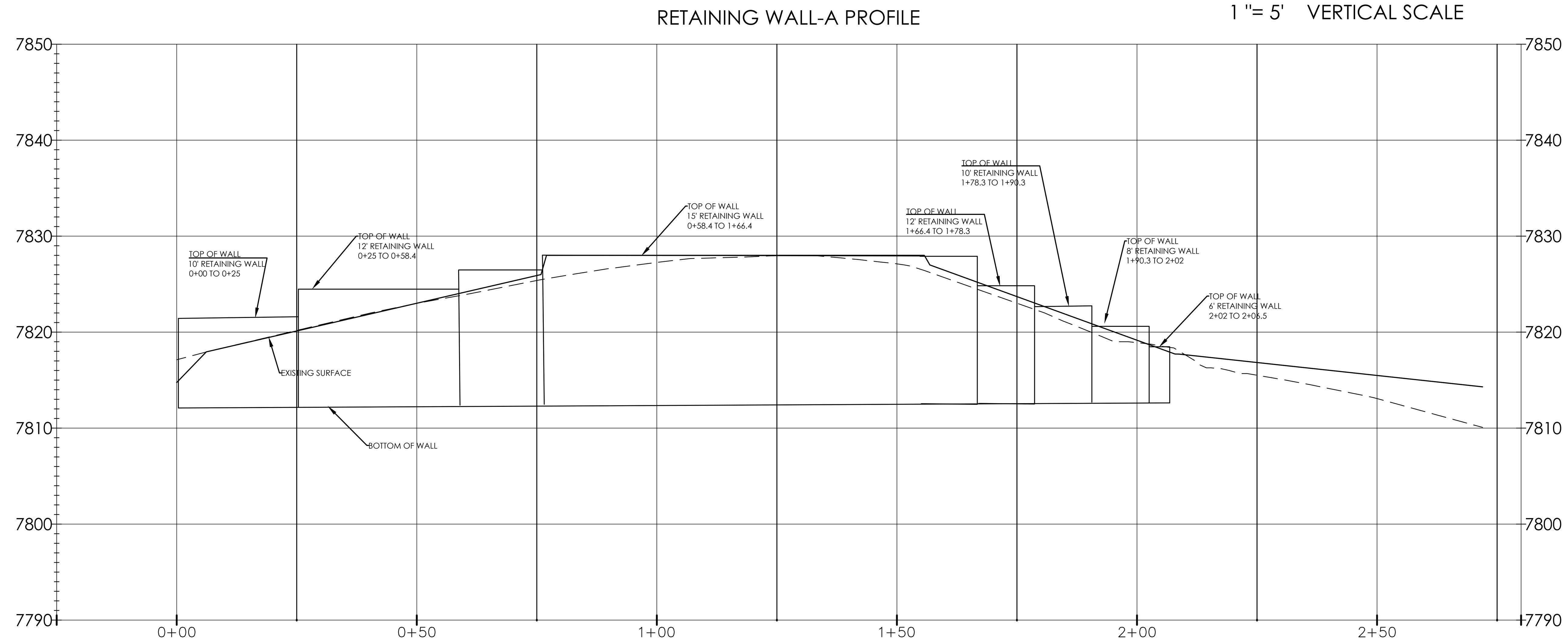
C 4.0





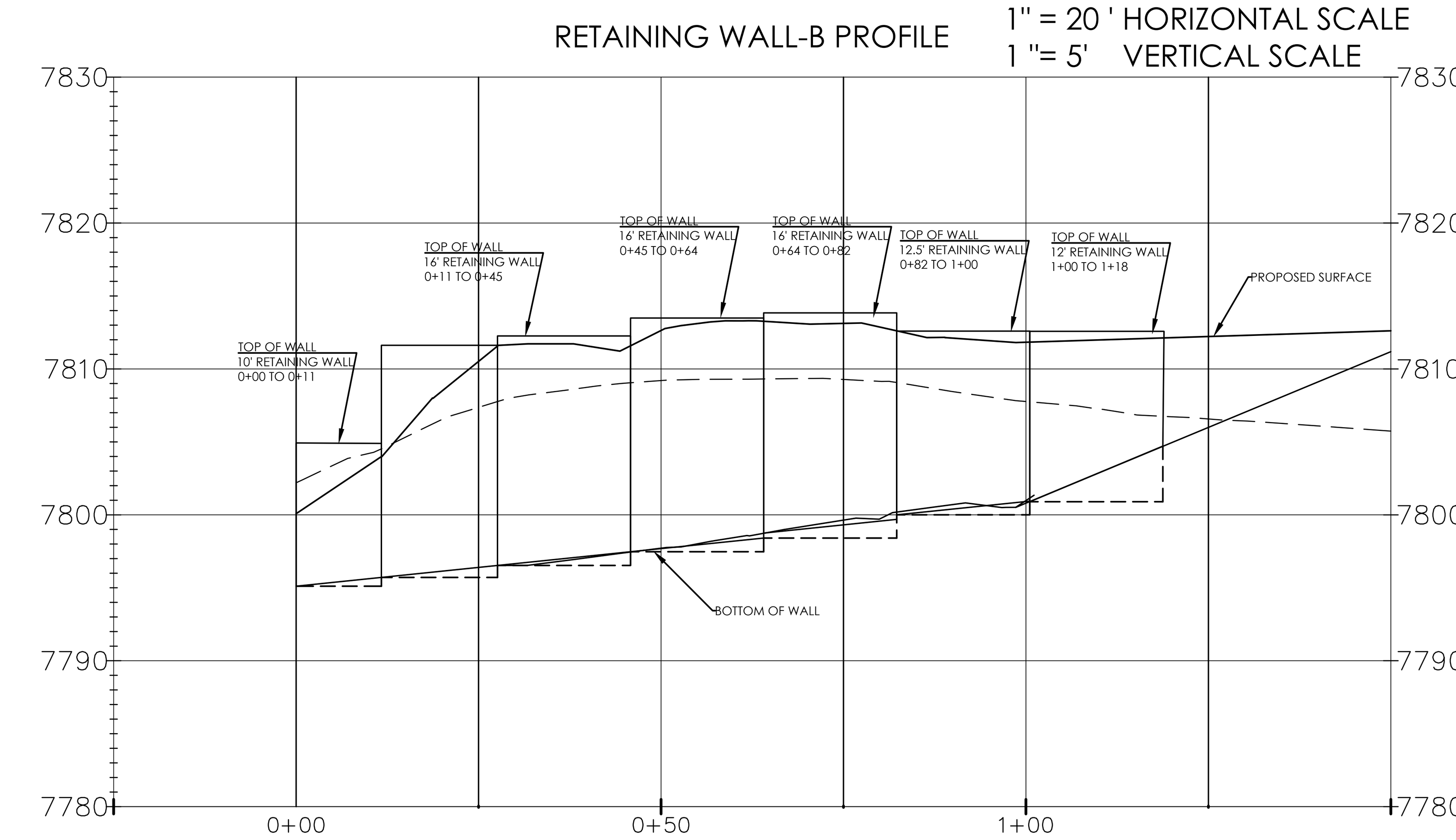
RETAINING WALL-A PROFILE

1" = 20 ' HORIZONTAL SCALE
1 "= 5' VERTICAL SCALE



RETAINING WALL-B PROFILE

1" = 20 ' HORIZONTAL SCALE
1 "= 5' VERTICAL SCALE



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RETAINING WALLS
PLAN& PROFILE

C 4.1

MAINTENANCE & FINAL STABILIZATION:

1. INSPECTION & MAINTENANCE: THE EROSION CONTROL MEASURES SHALL BE OBSERVED DAILY DURING CONSTRUCTION BY THE IDENTIFIED ADMINISTER AND AFTER EACH RAIN EVENT, HEAVY PRECIPITATION EVENT, I.E., SNOW THAT RESULTS IN RUNOFF, OR ANY QUICK SNOW MELT RUNOFF EVENT. ALL INSPECTIONS ARE TO BE DOCUMENTED IN A WRITTEN LOG AND SHALL INCLUDE (AS A MINIMUM) THE DATE OF INSPECTION, ANY INCIDENCES OF NON-COMPLIANCE, SIGNED CERTIFICATION THAT THE SITE IS IN COMPLIANCE WITH THE SWMP, AND ANY NOTES, DRAWINGS, MAPS, ETC. PERTAINING TO REPAIRS. COPIES OF ALL DOCUMENTATION SHALL BE DISTRIBUTED TO OWNER (AND OTHER AUTHORITIES HAVING JURISDICTION UPON REQUEST) ON A REGULAR BASIS AND AT A MINIMUM OF SEVEN (7) DAY INTERVALS.

2. SLIT FENCING SHALL BE CHECKED FOR UNDERMINING AND BYPASS AND REPAIRED OR EXPANDED AS NEEDED.
3. SEDIMENT SHALL BE REMOVED FROM INLET FILTERS AND SILT FENCING BEFORE ONE-HALF OF THE DESIGN DEPTH HAS BEEN REACHED.
4. SEDIMENT IN THE PUBLIC RIGHT-OF-WAY SHALL BE REMOVED IMMEDIATELY.
5. TEMPORARY VEGETATION OR BARE SOIL AREAS SHALL BE CHECKED REGULARLY AND SAID AREAS THAT ARE DAMAGED OR LOST SHALL BE RESEEDED.
6. ONCE STABILIZATION HAS OCCURRED, THE CONTRACTOR IS RESPONSIBLE FOR AND SHALL INSPECT ALL BMPS EVERY FOURTEEN (14) DAYS AT A MINIMUM AND AFTER SIGNIFICANT PRECIPITATION OR SNOWMELT EVENTS.
7. INSTALLATIONS AND MODIFICATIONS AS REQUIRED BY THE COMMUNITY WILL BE IMPLEMENTED WITHIN 48 HOURS OF NOTIFICATION.
8. CONTRACTOR SHALL REMOVE TEMPORARY EROSION CONTROL MEASURES AND REPAIR AREAS AS REQUIRED AFTER VEGETATION IS ESTABLISHED AND ACCEPTED BY OWNER AND CITY.
   9.FINAL STABILIZATION AND LONG-TERM STORM WATER QUALITY: FINAL STABILIZATION IS DEFINED WHEN ALL SOIL DISTURBED AREAS AND ACTIVITIES AT THE SITE HAVE BEEN COMPLETED, AND UNIFORM VEGETATIVE COVER HAVE BEEN ESTABLISHED WITH THE DENSITY OF AT LEAST 70% OF THE PRE-DISTURBANCE LEVELS OR EQUIVALENT PERMANENT, AND PHYSICAL EROSION METHODS HAVE BEEN EMPLOYED. FINAL STABILIZATION WILL BE ACHIEVED USING NATIVE SEEDING, SOD, PERMANENT BMPS, AND OTHER METHODS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL STABILIZATION REGARDLESS OF ACCEPTANCE BY OWNER OF THE CONTRACTOR ITEMS.

STRUCTURAL BMP'S:

A. VEHICLE TRACKING CONTROL ("VTC"): A STABILIZED CONSTRUCTION ENTRANCE WILL BE PROVIDED AT THE ENTRANCE TO THE SITE AS CONSTRUCTION ACTIVITIES PROGRESS. THE CONSTRUCTION ACCESS AND PARKING WILL BE GRADED AND COVERED WITH CRUSHED STONE BASE COURSE DURING CONSTRUCTION. THE VTC WILL BE RELOCATED AS NEEDED TO FACILITATE CONSTRUCTION. ROUTINE INSPECTION AND MAINTENANCE WILL BE REQUIRED TO AID IN THE EFFECTIVENESS OF THE BMP AND LIMIT OFF-SITE MIGRATION OF SEDIMENT.

B. SILT FENCING ("SF"): SILT FENCING SHALL BE INSTALLED WITH RESPECT TO PROPOSED DRAINAGE PATTERNS. SF SHALL BE CONSTRUCTED ALONG THE PORTIONS OF THE SITE AS SHOWN ON THE PLAN ON THE DOWNHILL PORTIONS OF THE SITE AND ALONG ANY DRAINAGE AREAS SUBJECT (OR POTENTIALLY SUBJECT) TO EROSION. THE SF SHALL BE INSTALLED AT THE DOWNHILL SIDE OF ALL EXISTING SLOPES ACROSS THE SITE AND AT ALL POINT DISCHARGE AREAS WHETHER SHOWN OF NOT. SF MUST AND SHALL BE INSPECTED AND MAINTAINED PER REGULATIONS AND AS NEEDED THROUGHOUT THE CONSTRUCTION PROCESS TO AID WITH THE EFFECTIVENESS OF THIS BMP AND LIMIT THE PROPENSITY OF OFF-SITE SEDIMENT MIGRATION. COLLECTED SEDIMENT SHALL BE REMOVED AS REQUIRED TO ENSURE THE INTEGRITY OF THE BMP. THE TEMPORARY SF SHALL REMAIN IN PLACE WITH REQUIRED INSPECTION AND MAINTENANCE THEREOF UNTIL THE STORM WATER STRUCTURES ARE COMPLETE AND THE AREA HAS BE STABILIZED BY EVIDENT OF VEGETATIVE GROUND COVER BEING ESTABLISHED. THE CONTRACTOR IS TO PROVIDE ADDITION SF AS NEEDED AND WITHOUT COST TO THE OWNER TO MAINTAIN THE BASIS OF INTENT OF THE SF WHETHER OR NOT IT IS SHOWN ON THE DRAWINGS.

C. INLET PROTECTION ("IP"): THE INLET PROTECTION WILL BE INSTALLED AS THE STORM SEWER STRUCTURES ARE CONSTRUCTED. EACH INLET ON THE PROPOSED STORM SEWER SYSTEM WILL HAVE A TEMPORARY INLET SEDIMENT TRAP CONSTRUCTED IN SUCH A MANNER THAT IS CIRCUMSCRIBES THE INLET. IN PAVED AND NON-PAVED AREAS, INCLUDING GRAVEL IMPROVED AREAS, THIS TRAP IS TO CONSIST OF WIRE MESH ROCK SOCKS TO ACT AS A FILTER OF STORM WATER RUNOFF AND TO ALLOW ANY SILT TO SETTLE OUT. IP PROTECTION SHALL AND MUST BE INSPECTED AND MAINTAINED PER REGULATIONS AND AS NEEDED FOR THE DURATION OF THE CONSTRUCTION PROCESS TO AID WITH THE EFFECTIVENESS OF THIS BMP AND TO LIMIT THE PROPENSITY OF OFF-SITE SEDIMENT MIGRATION. ALL COLLECTED SEDIMENT SHALL BE PROPERLY REMOVED AS REQUIRED BY THE CONTRACTOR.

D. OUTLET PROTECTION ("OP"): THE STORM SEWER OUTLETS SHALL BE PROTECTED WITH RIPRAP. PLACING RIPRAP AT PIPE OUTFALLS REDUCE IS DESIGNED TO REDUCE THE EXIT VELOCITY AND REDUCE SOURING EFFECTS OF THE STORM WATER DISCHARGE. THE RIPRAP SHALL BE LEFT IN PLACE AS PART OF THE PERMANENT STORM WATER MANAGEMENT AND STABILIZATION PLAN.

E. OVER LOT GRADING MEASURES ("OGM"): ALL OPEN AREAS INCLUDING STOCKPILES SHALL BE TREATED WITHIN FOURTEEN (14) DAYS OF COMPLETION OF OVER-LOT GRADING. ALL OVER-LOT GRADING IN THE NON-IRRIGATED AREAS SHALL HAVE THE SURFACE ROUGHENED AND SHALL BE PERMANENTLY LANDSCAPED OR TEMPORARY SEEDED UNTIL THE PLANED FINAL INSTALLATIONS ARE COMPLETED. AT THE COMPLETION OF THE MASS GRADING, ALL EXPOSED SOIL AREAS SHALL HAVE THE SURFACE ROUGHENED AND PLANTED WITH A RE-VEGETATION SEED MIX APPROPRIATE FOR THE AREA OR A MIX AS DIRECTED BY THE COUNTY OR CITY. VEGETATION IS TO BE MAINTAINED THROUGH THE CONSTRUCTION PERIOD AND UNTIL SAID VEGETATION BECOMES ESTABLISHED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE, THIS MAY INCLUDE, BUT NOT LIMITED TO RE-SEEDING AS REQUIRED TO ENSURE ADEQUATE RE-VEGETATION DENSITY, MAINTAINING AND CLEANING UP ANY EROSION ISSUES, ETC. AREAS THAT WILL RECEIVE FINAL LANDSCAPING, THE CONTRACTOR ONLY NEEDS TO MAINTAIN UNTIL FINAL LANDSCAPING IS INSTALLED. ALTERNATIVELY, ROUGH-CUT DRIVEWAYS OR PROPOSED PAVED AREAS ARE TO BE COVERED WITH A LAYER OF AGGREGATE, ROAD BASE OR ASPHALT PAVING.

F. DUST CONTROL MEASURES ("DCM"): ALL DISTURBED AREAS (REGARDLESS AS TO THE LIMITS OF SAID DISTURBED AREA) THAT ARE NOT YET READY TO BE SEEDED, LANDSCAPED, PAVED, OR OTHERWISE STABILIZED SHALL BE WATERED, OR RIPPED AS NECESSARY TO PRECLUDE VISIBLE DUST EMISSIONS.

G. PHASE MEASURES ("PM"): PM'S ARE DEFINED AS ITEMS THAT ARE SCHEDULED TO BE IMPLEMENTED ACCORDING TO THE CONSTRUCTION SCHEDULE. AS WORK PROGRESS, IMPLEMENTATION OF INDIVIDUAL BMPS IS TO COINCIDE WITH THE CONSTRUCTION AND ORCHESTRATED AS APPROPRIATE TO ENSURE PROPER IMPLEMENTATION OF BMPS, THEREBY MINIMIZING THE EXPOSURE OF UNPROTECTED AREAS. SF, IP (EXISTING INLETS), AND GRAVELING OF THE CONSTRUCTION ENTRANCE SHALL BE PERFORMED PRIOR TO THE START OF ANY GRADING. ADDITIONAL IP WILL BE INSTALLED AS THE STORM SEWER STRUCTURES ARE CONSTRUCTED. THE RIPRAP PROTECTION SHALL BE INSTALLED AS THE STORM SEWER OUTFALLS OR CULVERTS ARE CONSTRUCTED. THE STRUCTURAL BMPS THAT DO NOT BECOME PART OF THE PERMANENT STORM WATER MANAGEMENT PLAN ARE TO BE REMOVED, AS THE PAVING, LANDSCAPING, AND OTHER PERMANENT GROUNDCOVER INSTALLATIONS ARE COMPLETED AND ESTABLISHED. WITH RESPECT TO OVER-LOT SEEDING, ESTABLISHMENT OF SUCH RE-VEGETATION MAY BE 12 MONTHS OF LONGER. FUGITIVE DUST EMISSIONS RESULTING FROM GRADING ACTIVITIES AND/OR WIND SHALL BE CONTROLLED USING THE BEST AVAILABLE CONTROL TECHNOLOGY AS DEFINED BY THE CDPHE AT THE TIME OF GRADING. THE GRAVELING IS TO BE MAINTAINED AND EXTENDED CONSTRUCTION PROGRESSES ESPECIALLY AROUND THE BUILDING SITE. THE STRUCTURAL BMPS ARE TO BE REMOVED, AS THE PERMANENT LANDSCAPING INSTALLATIONS ARE COMPLETED. NOTE THE EROSION AND SEDIMENT CONTROL PLAN MAY BE MODIFIED BY THE CONTRACTOR OR OWNER'S ENGINEER OR ITS AUTHORIZED REPRESENTATIVE AS FIELD CONDITIONS WARRANT.

H. SEEDING & MULCHING: ALL SEEDS FURNISHED SHALL BE FREE FROM NOXIOUS SEEDS SUCH AS RUSSIAN OR CANADIAN THISTLE, COURSE FESCUE, EUROPEAN BINDWEED, JOHNSON GRASS, KNAPWEED, LEAFY SURGE, OTHER SPECIES AS DEFINED BY THE LOCAL JURISDICTION. REFER TO COLORADO'S WEED LIST WEBSITE AT WWW.CWMA.ORG/NXWDID.HTM. THE SEED MUST BE FRESH, WITHOUT MOLD, AND OF HIGH QUALITY. THE COUNTY OR CITY MAY HAVE A PREFERRED SEED MIX, IN WHICH CASE THAT MIX SHALL BE USED WITHOUT EXCEPTIONS TO THE NEED TO ENSURE THE MIX IS VOID OF IDENTIFIED NOXIOUS WEEDS AS NOTED ABOVE. THE FORMULA USED TO DETERMINE THE QUALITY OF THE PURE LIVE SEED ("PLS") SHALL BE "(POUNDS OF SEED) X (PURITY) X (GERMINATION) = POUNDS OF PURE LIVE SEED OR PLS". SEEDING RECOMMENDATIONS ARE AS NOTED, BUT MAY BE MODIFIED WITH THE OWNER'S APPROVAL TO MAKE THE BEST USE OF EXISTING CLEARINGS AND GRUBBINGS. ALL SEEDS SHALL BE DRILLED, BROADCASTED OR HYDRO-SEEDED. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED IF PERMANENT VEGETATION IS NOT IMMEDIATELY INSTALLED. AFTER SEEDING HAS BEEN COMPLETED, STRAW AT A RATE OF 4,000 LB PER ACRE SHALL BE APPLIED UNIFORMLY (CLEAN STRAW), CRIMPED IN WITH A CRIMPER OR OTHER APPROVED EQUIPMENT OR OTHERWISE ATTACHED. A HYDRAULICALLY APPLIED TRACIFER OR NETTING TO ATTACH MULCH, PER MANUFACTURER'S INSTALLATION INSTRUCTIONS, MAY BE USED WITH THE OWNER'S APPROVAL. THE SEEDED AREA SHALL BE CRIMPED MULCHED AND THE MULCH ATTACHED WITHIN TWENTY-FOUR (24) HOURS AFTER SEEDING. AREAS NOT MULCHED AND ATTACHED WITHIN THE DEFINED TWENTY-FOUR (24) HOUR AFTER SEEDING SHALL BE RE-SEEDED WITH THE SPECIFIED MIX AT THE CONTRACTOR'S EXPENSE, PRIOR TO MULCHING AND ATTACHING. ON STEEP SLOPES OR OTHER SPECIFIED AREAS AS SHOWN HEREIN, WHICH ARE DESIGNATED AS AREAS, PER THE OWNER'S ENGINEER, AS DIFFICULT TO MULCH AND ATTACH BY CONVENTIONAL METHODS; BURLAP OR OTHER BLANKETING MATERIALS SHALL BE USED AND PROPERLY ANCHORED AND SECURED.AREAS STEEPER THEN $\frac{1}{3}$ SHALL BE PROTECTED WITH APPROVED RECP.

I. PERMANENT STABILIZATION MEASURES ("PSM"): RIPRAP FOR STORM DRAIN OUTFALLS AND ROCK CHECK DAMS SHALL BECOME PART OF THE PERMANENT STORM WATER MANAGEMENT PLAN AND WILL NOT BE REMOVED. PERMANENT LANDSCAPING WILL INCLUDE BUT NOT LIMITED TO; SEEDING, INSTALLATION OF SOD OR OTHER VEGETATION COVER TO OPEN AREAS AS SHOWN. NATIVE PERENNIAL SEEDING SHALL BE ESTABLISHED IN NON-IRRIGATED AREAS AND OTHER VEGETATIVE COVER SHALL BE ESTABLISHED IN IRRIGATED OPEN AREAS (IF ANY). ALL PERMANENT STABILIZATION MEASURES WILL BE SPECIFIED HEREIN.

STORM WATER MANAGEMENT CONTROLS:

1. NON STRUCTURAL BMPS WILL BE IMPLEMENTED TO THE MAXIMUM EXTENT POSSIBLE. THE UTILIZATION OF NON-STRUCTURAL BMPS WILL BE AN ONGOING PROCESS DIRECTED AT PREVENTING EROSION. THE NON-STRUCTURAL BMPS WILL RECEIVE CONTINUOUS EMPHASIS THROUGHOUT THE CONSTRUCTION PROCESS BECAUSE SAID BMPS WILL AVERT PROBLEMS BEFORE THEY OCCUR AND REDUCE THE PROPENSITY FOR STRUCTURAL BMPS. NON-STRUCTURAL BMPS WILL CONSIST PRIMARILY OF THE PRESERVATION OF EXISTING MATURE VEGETATION AND TREES, PLANNING, AND SCHEDULING OF CONSTRUCTION ACTIVITIES AIMED AT ACHIEVING A GOAL OF MINIMIZING EROSION. FURTHERMORE, CONSTRUCTION PERSONNEL WILL BE INSTRUCTED AND SUPERVISED IN CONSTRUCTION METHODS CONSISTENT WITH EROSION PREVENTION PRACTICES.

2. PLANNED STRUCTURAL BMPS FOR EROSION AND SEDIMENT CONTROL ARE SHOWN ON THE EROSION AND SEDIMENTATION CONTROL PLAN. IMPLEMENTING THESE METHODS SHOULD MINIMIZE NUISANCE SILT AND SEDIMENTATION EXITING THE SITE AND PREVENT CLOGGING EXISTING DOWNSTREAM STORM WATER CONVEYANCE SYSTEMS.

3. APPLICATION OF THESE BMPS FOR STORM WATER MANAGEMENT IS FOR THE CONSTRUCTION PERIODS AND IS CONSIDERED TEMPORARY IN NATURE. POST-DEVELOPMENT STORM WATER MANAGEMENT IS PROVIDED THROUGH VEGETATED LANDSCAPED AREAS, GRASSED SWALES, RIPRAP PROTECTION AND THE STORM WATER COLLECTION SYSTEM.

4. OTHER POTENTIAL POLLUTION SOURCES SUCH AS VEHICLE FUELING, STORAGE, FERTILIZERS OR CHEMICALS, VEHICLE WASHING, WASTE DISPOSAL, HAUL-ROADS, LOADING AND UNLOADING AREAS, MASONRY AND CONCRETE WASHOUT, ETC. ARE LOCATED WITHIN THE STABILIZED CONSTRUCTION AREAS AS SHOWN ON THE PLANS. NON-STORM WATER COMPONENTS OF THE DISCHARGE, SUCH AS SPRINGS MAY BE FOUND ON THE SITE. IF CONSTRUCTION DEWATERING OCCURS ON SITE, A SEPARATE GROUND WATER DISCHARGE PERMIT WILL BE REQUIRED AND ADHERED TO.

5. SIGNIFICANT OFF-SITE RUNOFF FLOWS ARE NOT ANTICIPATED WITH THIS PROJECT. HISTORIC ON-SITE FLOWS ARE GENERALLY CONVEYED TO THE SOUTH AND TO THE EAST. DEVELOPED ON-SITE FLOWS WILL BE CONTAINED WITHIN THE PROPOSED STORM WATER NETWORK FOR CONVEYANCE TO THE ONSITE DETENTION AND WATER QUALITY FACILITIES. STORM WATER IS DISCHARGED FROM THIS SITE TO THE NATURAL MAJOR DRAINAGE WAY WITH THE ULTIMATE OUTFALL TO THE NORTH SAINT CHARLES RIVER.

STORM WATER MANAGEMENT PLAN (SWMP)

GENERAL REQUIREMENTS:
1. THE STORM WATER MANAGEMENT PLANT IS TO BE RETAINED AND MAINTAINED ON-SITE ALONG WITH ANY OTHER EROSION CONTROL DOCUMENTATION INCLUDING BUT NOT LIMITED TO UPDATED PLANS, MAINTENANCE RECORDS, AND REPORTS ALONG WITH THE REFERENCED LANDSCAPE PLAN. A SWMP ADMINISTRATOR WILL BE DESIGNATED BY THE CONTRACTOR AND IS RESPONSIBLE FOR DEVELOPING, IMPLEMENTING, MAINTAINING, AND REVISING THE SWMP. THE SWMP ADMINISTRATOR IS THE CONTACT FOR ALL SWMP-RELATED ISSUES AND IS RESPONSIBLE FOR ITS ACCURACY, COMPLETENESS, AND IMPLEMENTATION. THE FOLLOWING PERSON HAS BEEN DESIGNATED AS THE SWMP ADMINISTRATOR FOR THIS PROJECT:

NAME: ______________________________
TITLE: ______________________________
CONTACT INFO: ______________________________

2. GREEN MOUNTAIN/CHIPITA PARK FIRE PROTECTION DISTRICT ADMINISTRATIVE AND STORAGE FACILITY, THE "PROJECT" IS LOCATED WITHIN THE COMMUNITY OF GREEN MOUNTAIN FALLS, COLORADO, AT APPROXIMATELY LATITUDE AND LONGITUDE. THE PROJECT GENERALLY CONSISTS OF SITE GRADING, LINEAR IMPROVEMENTS FOR A WATER SERVICE,ROAD IMPROVEMENTS SEPTIC SYSTEM, STORM WATER SEWER, STORM DRAINAGE SYSTEM, CONSTRUCTION OF AN ACCESS DRIVEWAY, AND CONSTRUCTION OF A FIRE STATION. THE ANTICIPATED DISTURBED AREA IS ESTIMATED AT APPROXIMATELY 2 ACRES. THE TOTAL SITE AREA IS 2 ACRES. NO AREA GREATER THAN 40 ACRES SHALL BE DISTURBED AT ANY GIVEN TIME. NO CONSTRUCTION ACTIVITIES SHALL OCCUR OFF-SITE OR OUTSIDE OF THE CONSTRUCTION LIMITS SHOWN ON THE PLANS. THE ESTIMATED SEQUENCE OF CONSTRUCTION IS AS FOLLOWS:

PHASE	ESTIMATED	ACTUAL
CONSTRUCTION START		
SITE RESTORATION		

3. THE PRESENT SITE CONSISTS OF THE UNDEVELOPED LAND AND IS APPROXIMATELY 90% COVERED WITH VEGETATIVE GROUND COVER, I.E., NATIVE GRASSES. EXISTING SOIL CONSISTS OF SOIL TYPE(S) CL, SC, SP-SC AND CH ACCORDING TO NRCS STANDARDS. THE ESTIMATED HISTORICAL AND DEVELOPED 100 YEAR RUNOFF COEFFICIENTS ARE NOT EXPECTED TO BE SIGNIFICANTLY ALTERED WITH THIS PROJECT. SEE SUBSURFACE GEOTECH REPORT.

4. OTHER POTENTIAL POLLUTION SOURCES SUCH AS VEHICLE FUELING, STORAGE, FERTILIZERS OR CHEMICALS, VEHICLE WASHING, WASTE DISPOSAL, HAUL-ROADS, LOADING AND UNLOADING AREAS, MASONRY AND CONCRETE WASHOUT, ETC. ARE LOCATED WITHIN THE STABILIZED CONSTRUCTION AREAS AS SHOWN ON THE PLANS. IF CONSTRUCTION DEWATERING OCCURS ON SITE, A SEPARATE GROUND WATER DISCHARGE PERMIT WILL BE REQUIRED AND ADHERED TO.

5. SIGNIFICANT OFF-SITE RUNOFF FLOWS ARE NOT ANTICIPATED WITH THIS PROJECT. HISTORIC ON-SITE FLOWS ARE GENERALLY CONVEYED TO THE WEST AND SOUTH AND TO THE EAST AND SOUTH. DEVELOPED ON-SITE FLOWS WILL BE CONTAINED WITHIN THE PROPOSED STORM WATER NETWORK FOR CONVEYANCE TO THE ONSITE DETENTION AND WATER QUALITY FACILITIES.

NOTES:
1. THE CONTRACTOR SHALL CLEAR AND GRUB THE PROPOSED AREA OF DISTURBANCE PRIOR TO EXCAVATION. THE PROPOSED AREA OF DISTURBANCE IS APPROXIMATELY 2 ACRES.
2. THE SITE GENERALLY CONSISTS OF 2 TO 4 INCHES OF TOPSOIL, THE CONTRACTOR SHALL REMOVE AND STOCKPILE EXISTING TOPSOIL FOR USE WITH NATIVE SEEDING OPERATIONS. APPROXIMATELY 1,950CY OF TOPSOIL EXISTS ONSITE
3. CONTACT THE ENGINEER FOR THE GEOTECHNICAL SUBSURFACE REPORT
4. SEEDING SHALL CONFORM TO THE LATEST EDITION OF THE DENVER URBAN DRAINAGE DESIGN MANUAL. NATIVE SEED MIX SHALL SATISFY EL PAYO COUNTY AND/OR REGIONAL REQUIREMENTS
5. SURFACE ROUGHING SHALL BE PROVIDED PROMPTLY AFTER COMPLETION OF FINISH GRADE, PRIOR TO SEEDING, PRIOR TO RAIN EVENTS AND AS DIRECTED BY THE ENGINEER .
6. NO WORK ON COMMENCE IN PUBLIC R.O.W WITH SECURING ALL LOCAL, REGIONAL PERMITS.
7. INSTALL SEDIMENT LOGS IN ALL EXISTING NATURAL DRAINAGE SWALES THAT ARE IMPACTED OR COULD BE IMPACTED BY CONSTRUCTION EFFECTS.

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Project Management
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BOULDER, COLORADO 80302
T : 303.652.3200
WWW. fdi-one.com

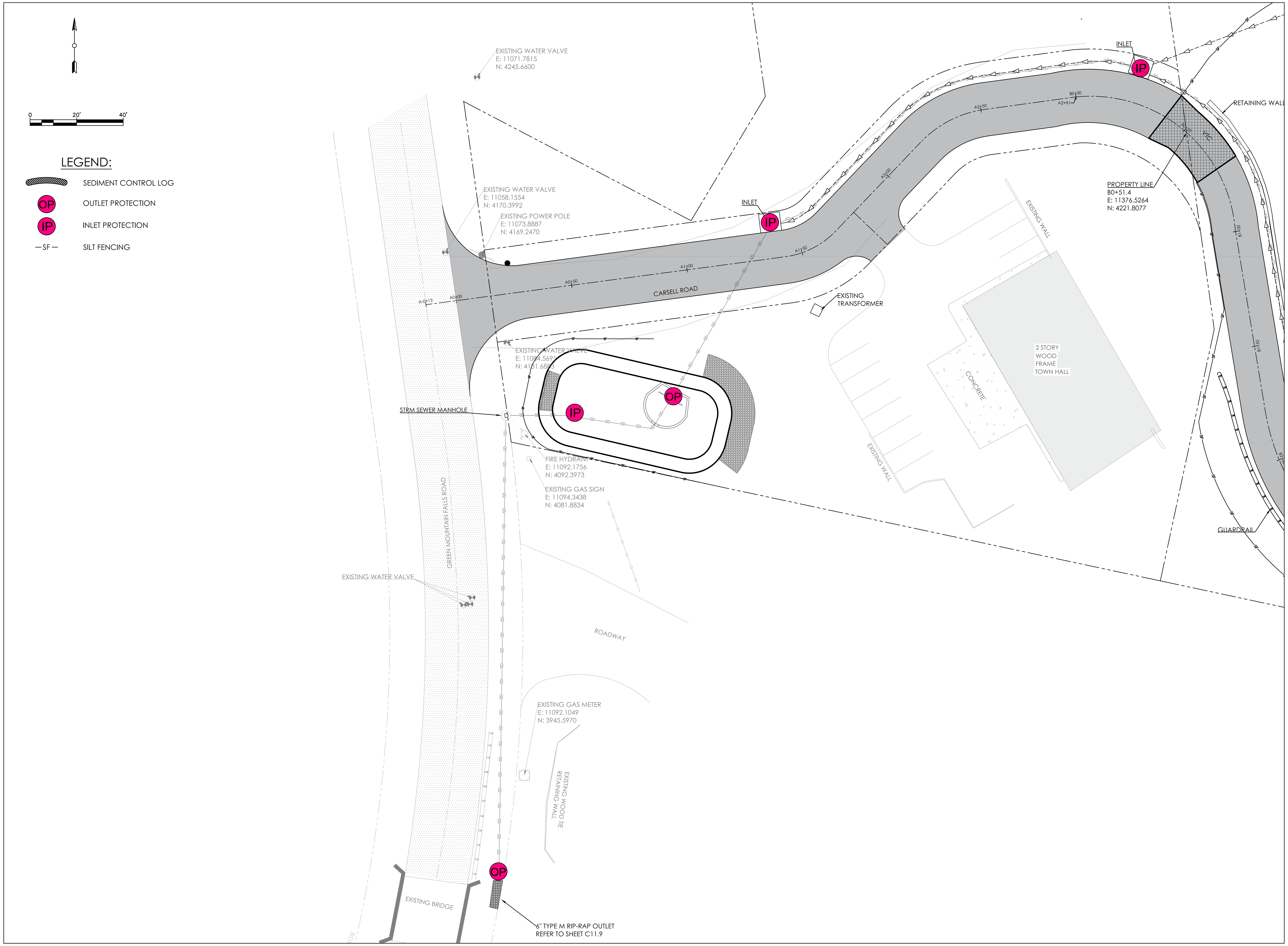
GREEN MOUNTAIN FALLS FIRE DISTRICT
Fire Station Project Two Carsell Way
Green Mountain Falls, El Paso County, CO

REVISIONS
1. 75% CD SET 30 AUG 2018
2. 90% BID SET 30 SEP 2018

DATE: 30-SEP-18
DRAWN BY: H.A
CHECK BY: T.E.F

EROSION CONTROL GENERAL NOTES

C 5.0



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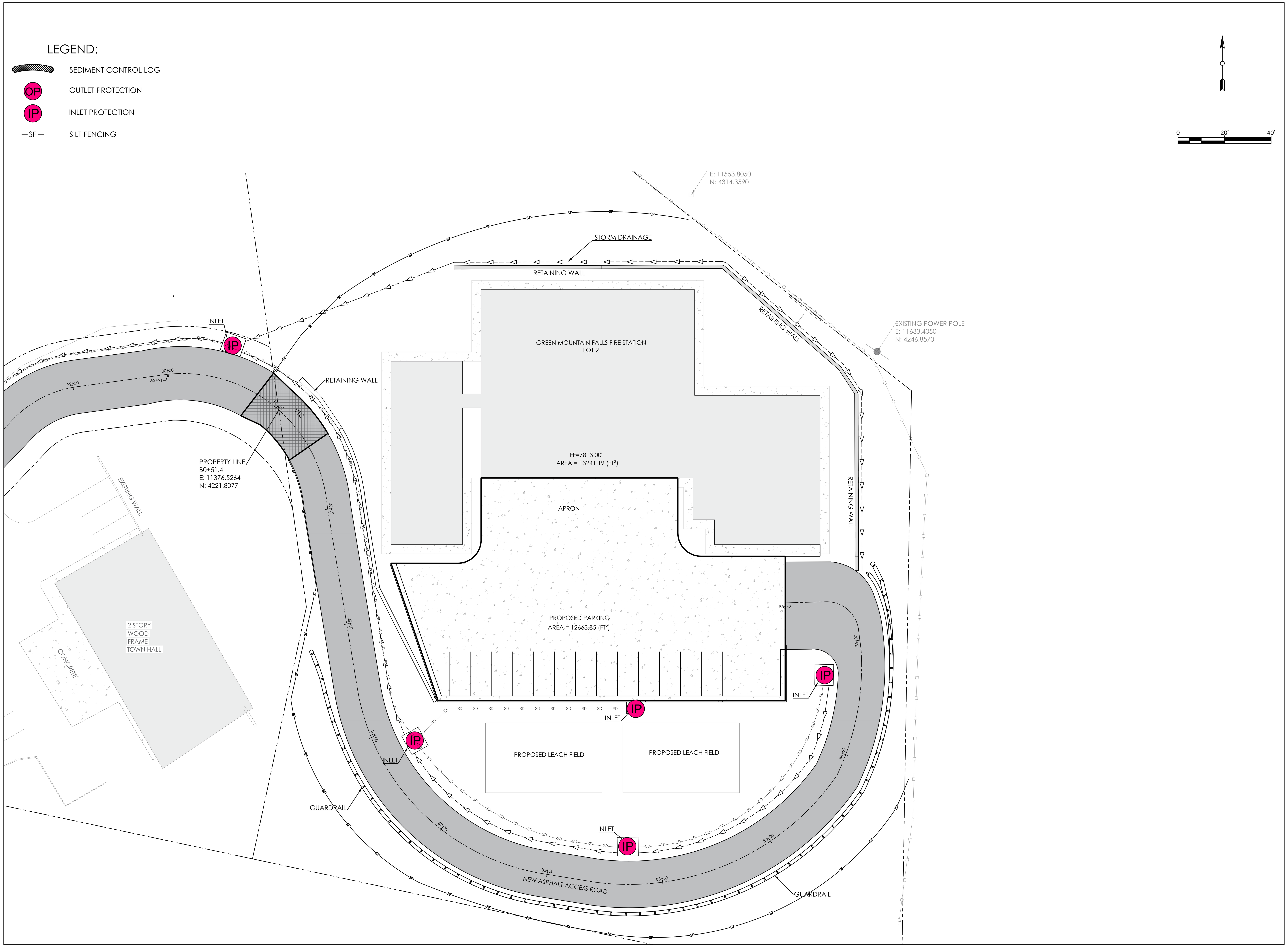
EROSION CONTROL PLAN

C 5.1



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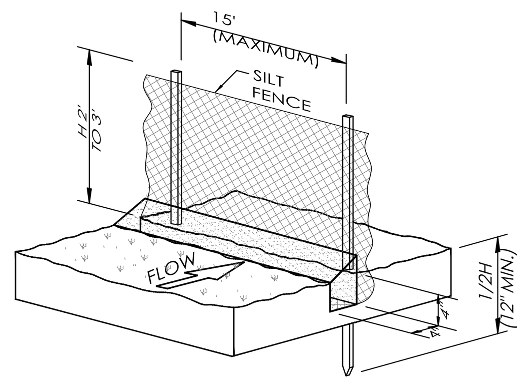
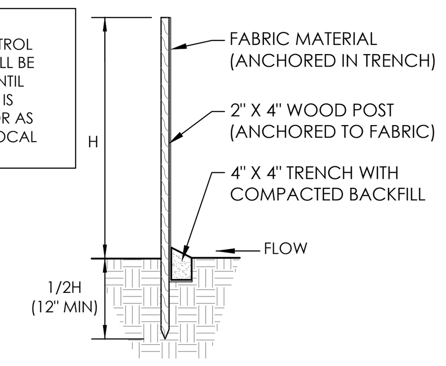
EROSION CONTROL PLAN

C 5.2



INSTALLATION DETAIL
-NTS-

NOTE:
EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL LANDSCAPING IS COMPLETED, OR AS DIRECTED BY LOCAL JURISDICTION

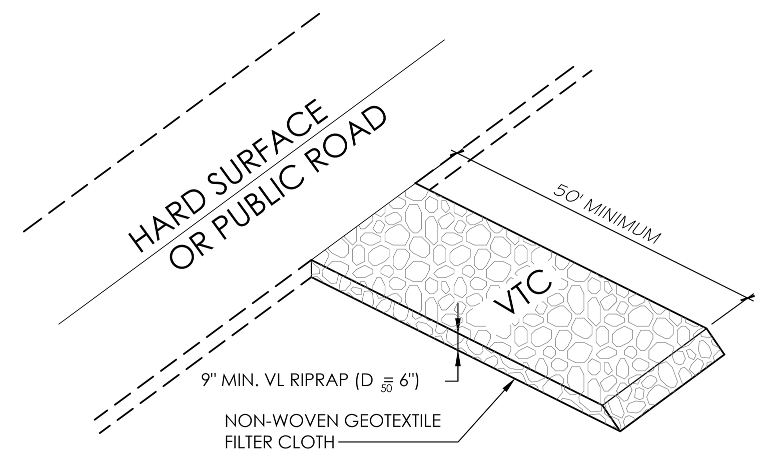


SECTION
-NTS-

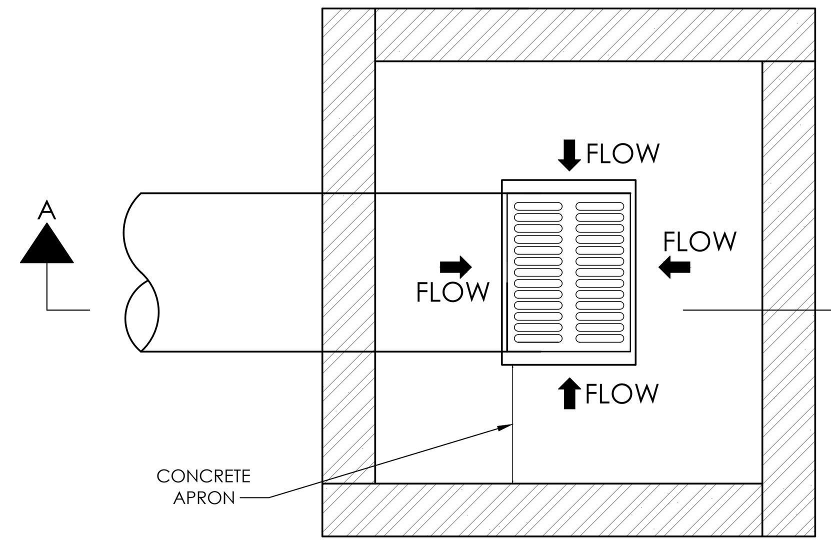
SILT FENCE DETAIL
N.T.S.

DEFINITION:
A STONE STABILIZED PAD LOCATED AT POINTS OF VEHICULAR INGRESS AND EGRESS ON A CONSTRUCTION SITE.

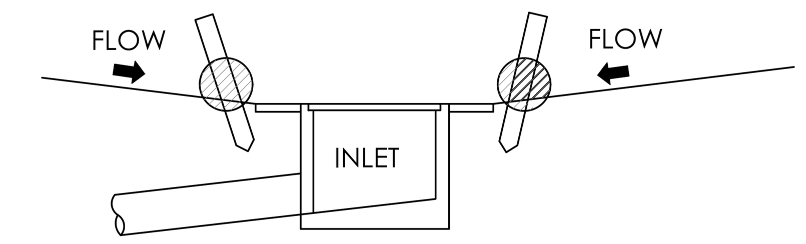
PURPOSES:
TO REDUCE THE AMOUNT OF MUD TRANSPORTED ONTO PUBLIC ROADS BY MOTOR VEHICLES OR RUNOFF.



VEHICLE TRACKING CONTROL DTL
N.T.S.



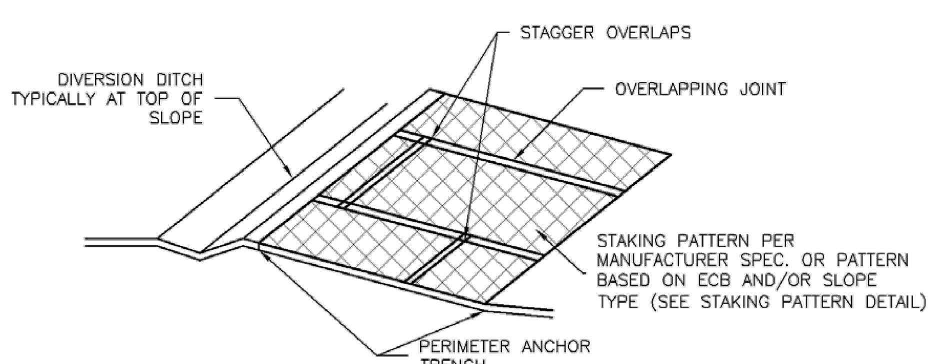
PLAN VEIW
NTS



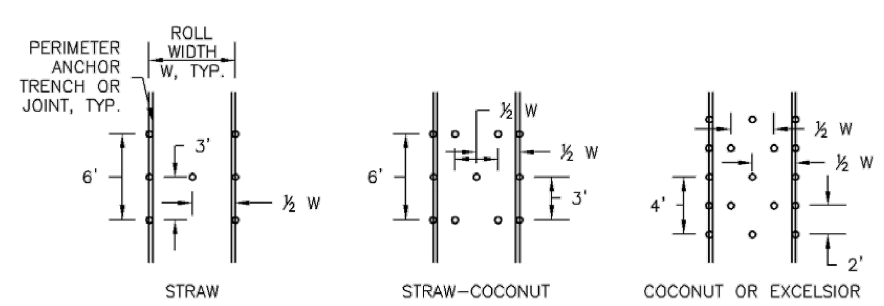
SECTION A - A
NTS

NOTES:
1. LOCATE EROSION LOGS AT THE OUTSIDE EDGE OF THE CONCRETE APRON

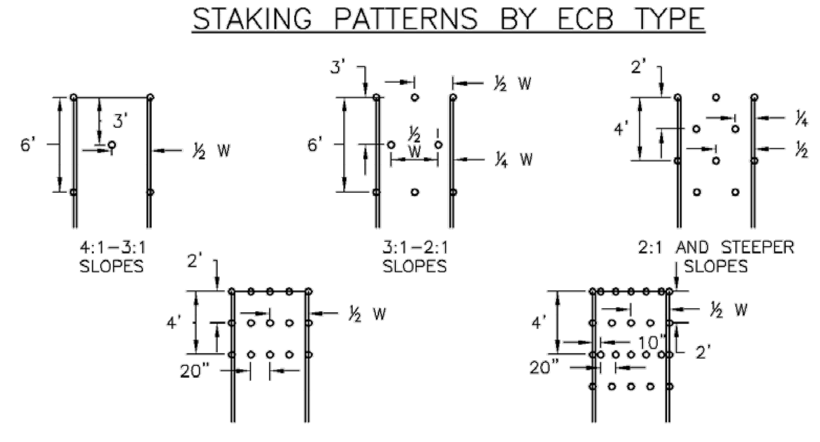
DROP INLET PROTECTION DETAIL N.T.S.



ECB–3. OUTSIDE OF DRAINAGEWAY



STAKING PATTERNS BY ECB TYPE



STAKING PATTERNS BY SLOPE OR CHANNEL TYPE

EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF ECB.
   –TYPE OF ECB (STRAW, STRAW–COCONUT, COCONUT, OR EXCELSIOR).
   –AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB.

2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.

3. IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE–HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.

7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.

8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB–1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBS SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB–1. ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED NETTING**
STRAW*	–	100%	–	DOUBLE/ NATURAL
STRAW–COCONUT	30% MIN	70% MAX	–	DOUBLE/ NATURAL
COCONUT	100%	–	–	DOUBLE/ NATURAL
EXCELSIOR	–	–	100%	DOUBLE/ NATURAL

*STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNEL.
**ALTERNATE NETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS

EROSION CONTROL BLANKET MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.

5. ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REINSTALLED. ANY SUBGRADE AREAS BELOW THE GEOTEXTILE THAT HAVE ERODED TO CREATED A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO AND TOWN OF PARKER COLORADO, NOT AVAILABLE IN AUTOCAD)

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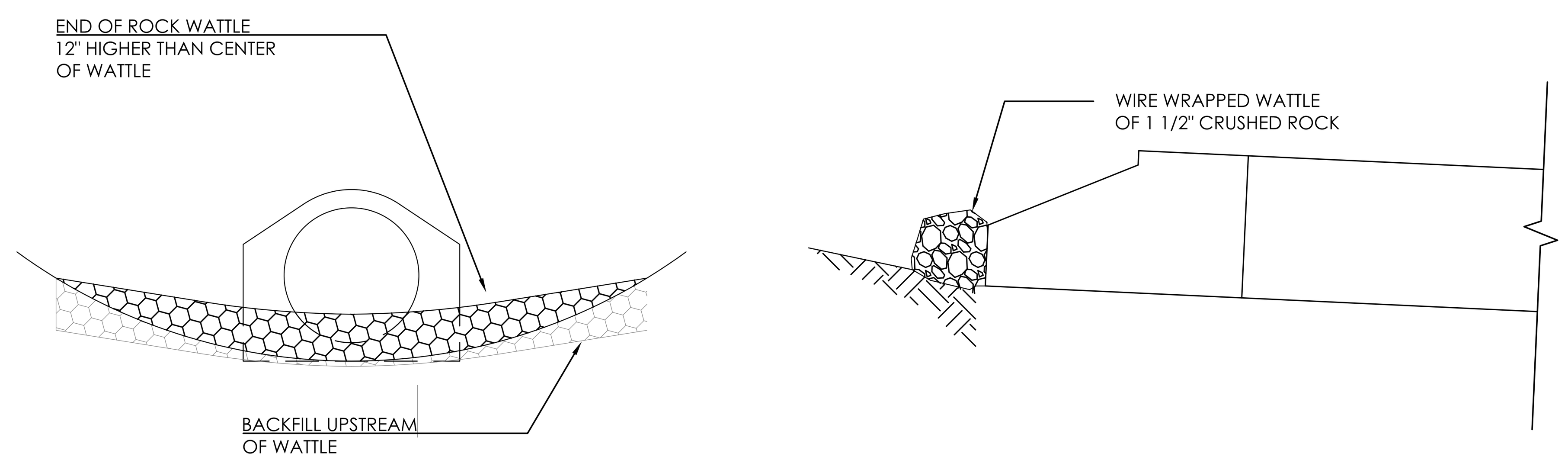
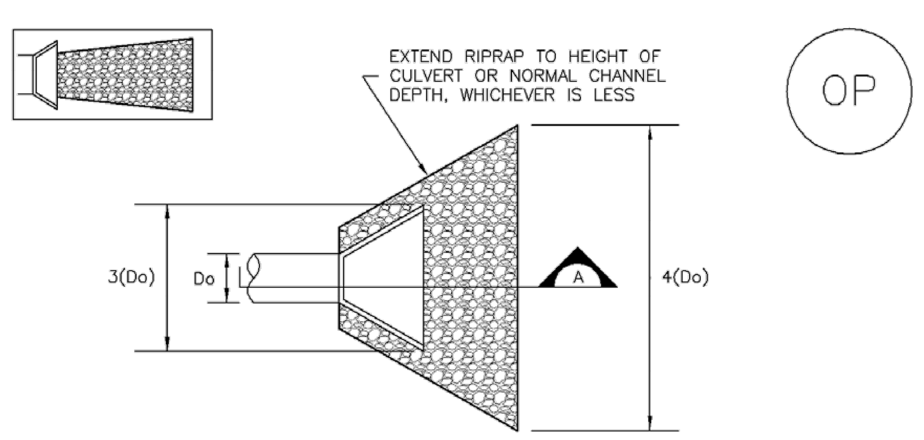
EROSION CONTROL DETAILS

C 5.3

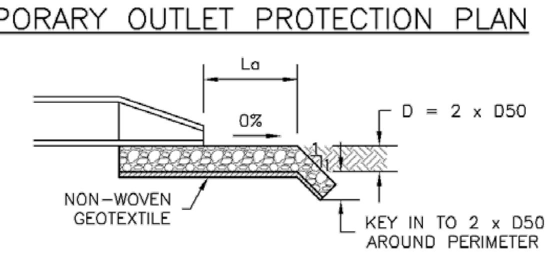


CULVERT INLET PROTECTION

EC-8 Temporary Outlet Protection (TOP)



TEMPORARY OUTLET PROTECTION PLAN

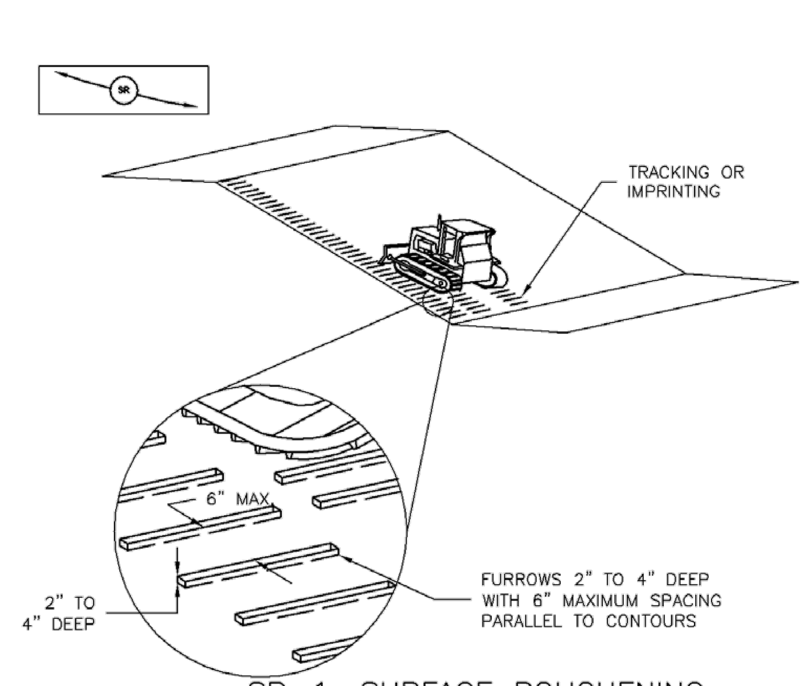


SECTION A

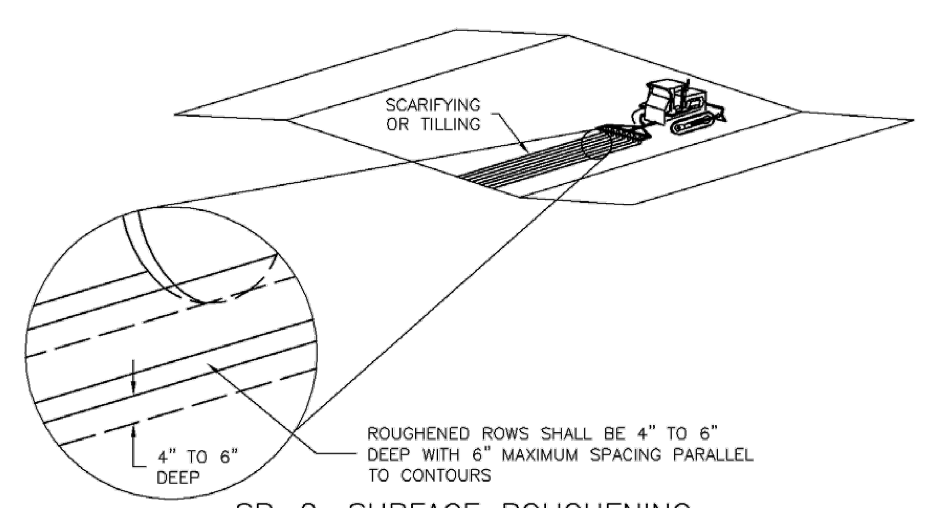
TABLE OP-1. TEMPORARY OUTLET PROTECTION SIZING TABLE			
PIPE DIAMETER, Do (INCHES)	DISCHARGE, Q (CFS)	APRON LENGTH, La (FT)	RIPRAP D50 DIAMETER MIN (INCHES)
8	2.5 5	5 10	4 6
12	5 10	10 13	4 6
18	10 20 30 40	10 16 23 26	6 9 12 16
24	30 40 50 60	16 26 26 30	9 9 12 16

OP-1. TEMPORARY OUTLET PROTECTION

Surface Roughening (SR) EC-1



SR-1. SURFACE ROUGHENING
FOR STEEP SLOPES (3:1 OR STEEPER)



SR-2. SURFACE ROUGHENING
FOR LOW SLOPES (LESS THAN 3:1)

SC-2 Sediment Control Log (SCL)

SEDIMENT CONTROL LOG INSTALLATION NOTES

1. SEE PLAN VIEW FOR LOCATION AND LENGTH OF SEDIMENT CONTROL LOGS.

2. SEDIMENT CONTROL LOGS THAT ACT AS A PERIMETER CONTROL SHALL BE INSTALLED PRIOR TO ANY UPGRADIENT LAND-DISTURBING ACTIVITIES.

3. SEDIMENT CONTROL LOGS SHALL CONSIST OF STRAW, COMPOST, EXCELSIOR OR COCONUT FIBER, AND SHALL BE FREE OF ANY NOXIOUS WEED SEEDS OR DEFECTS INCLUDING RIPS, HOLES AND OBVIOUS WEAR.

4. SEDIMENT CONTROL LOGS MAY BE USED AS SMALL CHECK DAMS IN DITCHES AND SWALES. HOWEVER, THEY SHOULD NOT BE USED IN PERENNIAL STREAMS.

5. IT IS RECOMMENDED THAT SEDIMENT CONTROL LOGS BE TRENCHED INTO THE GROUND TO A DEPTH OF APPROXIMATELY ⅓ OF THE DIAMETER OF THE LOG. IF TRENCHING TO THIS DEPTH IS NOT FEASIBLE AND/OR DESIRABLE (SHORT TERM INSTALLATION WITH DESIRE NOT TO DAMAGE LANDSCAPE) A LESSER TRENCHING DEPTH MAY BE ACCEPTABLE WITH MORE ROBUST STAKING. COMPOST LOGS THAT ARE 8 LB/FT DO NOT NEED TO BE TRENCHED.

6. THE UPHILL SIDE OF THE SEDIMENT CONTROL LOG SHALL BE BACKFILLED WITH SOIL OR FILTER MATERIAL THAT IS FREE OF ROCKS AND DEBRIS. THE SOIL SHALL BE TIGHTLY COMPACTED INTO THE SHAPE OF A RIGHT TRIANGLE USING A SHOVEL OR WEIGHTED LAWN ROLLER OR BLOWN IN PLACE.

7. FOLLOW MANUFACTURERS' GUIDANCE FOR STAKING. IF MANUFACTURERS' INSTRUCTIONS DO NOT SPECIFY SPACING, STAKES SHALL BE PLACED ON 4' CENTERS AND EMBEDDED A MINIMUM OF 6" INTO THE GROUND. 3" OF THE STAKE SHALL PROTRUDE FROM THE TOP OF THE LOG. STAKES THAT ARE BROKEN PRIOR TO INSTALLATION SHALL BE REPLACED. COMPOST LOGS SHOULD BE STAKED 10' ON CENTER.

SEDIMENT CONTROL LOG MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF SEDIMENT CONTROL LOG SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE SEDIMENT CONTROL LOG.

5. SEDIMENT CONTROL LOG SHALL BE REMOVED AT THE END OF CONSTRUCTION.COMPOST FROM COMPOST LOGS MAY BE LEFT IN PLACE AS LONG AS BAGS ARE REMOVED AND THE AREA SEEDED. IF DISTURBED AREAS EXIST AFTER REMOVAL, THEY SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, JEFFERSON COUNTY, COLORADO, DOUGLAS COUNTY, COLORADO, AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

90% BID DRAWINGS

F & D
International, LLC
Architecture . Engineering
Project Management
1930 CENTRAL AVE. SUITE B
BOULDER, COLORADO 80302
T : 303.652.3200
WWW. fdi-one.com

GREEN MOUNTAIN FALLS FIRE DISTRICT
Fire Station Project Two Carsell Way
Green Mountain Falls, El Paso County, CO

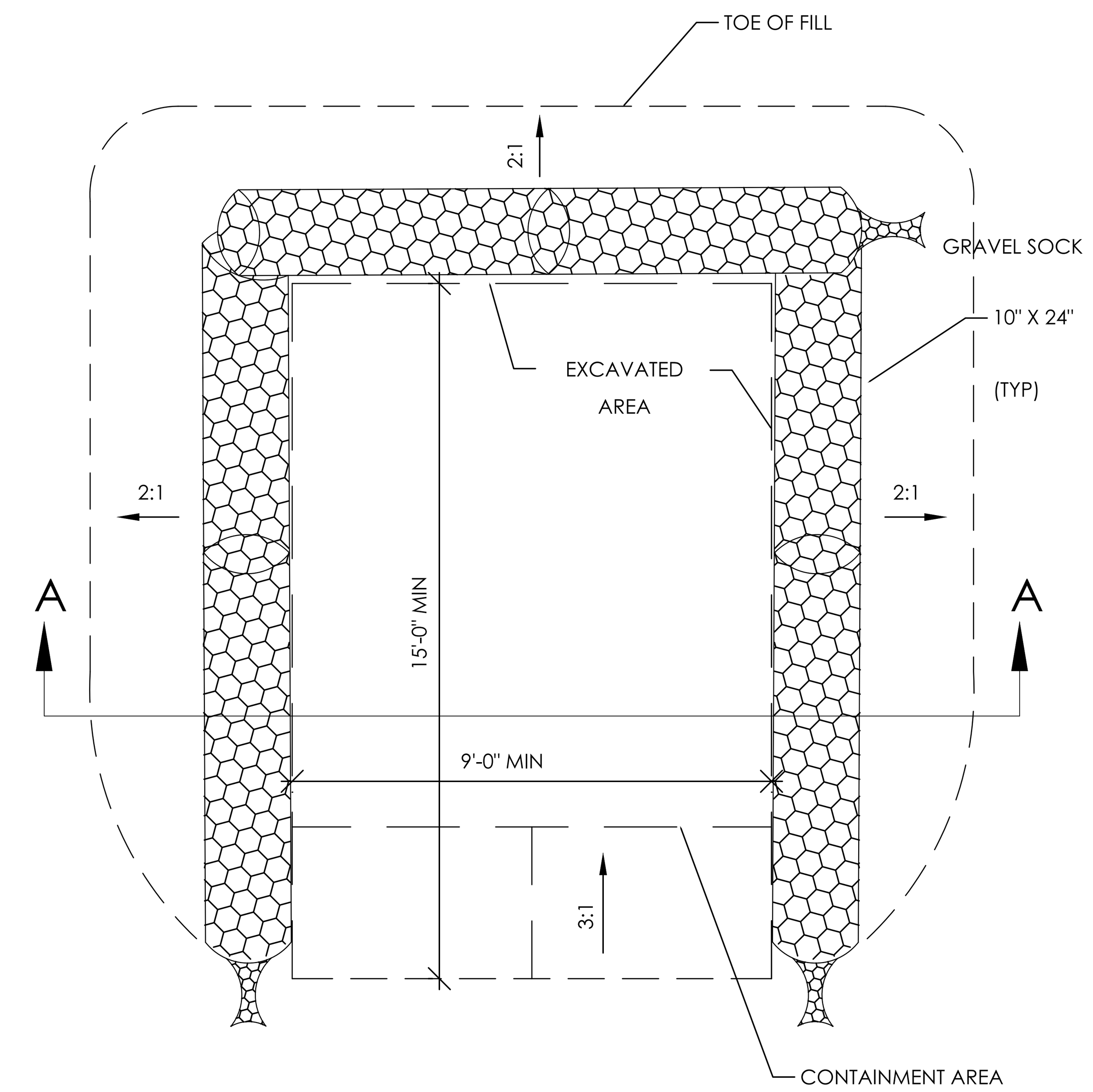
REVISIONS

1. 75% CD SET 30 AUG 2018
2. 90% BID SET 30 SEP 2018

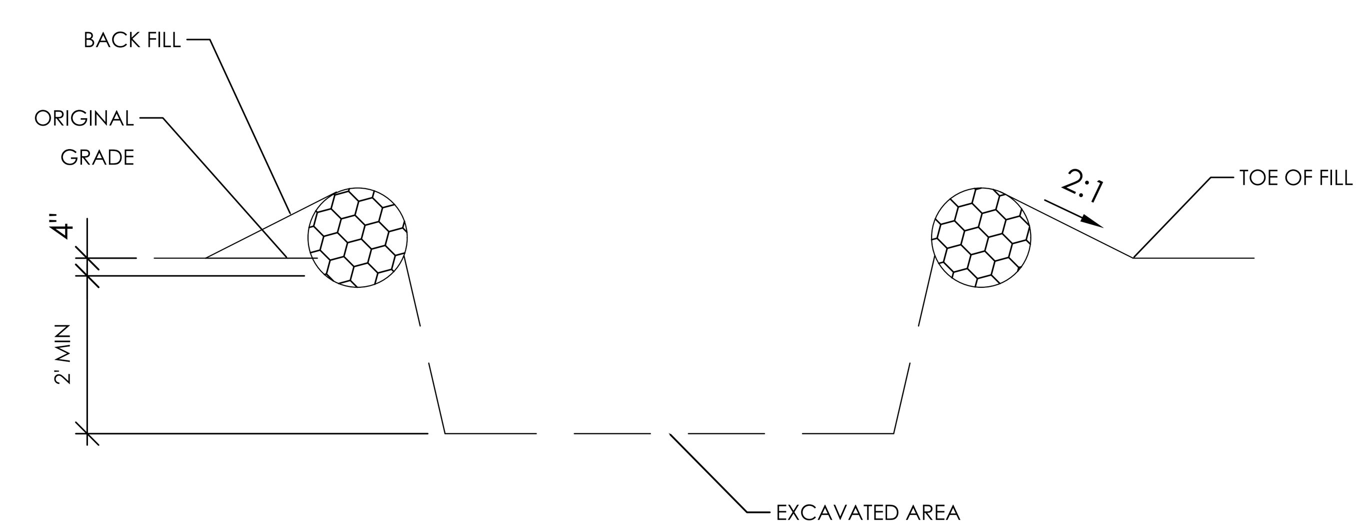
DATE: 30-SEP-18
DRAWN BY: H.A
CHECK BY: T.E.F

EROSION
CONTROL
DETAILS

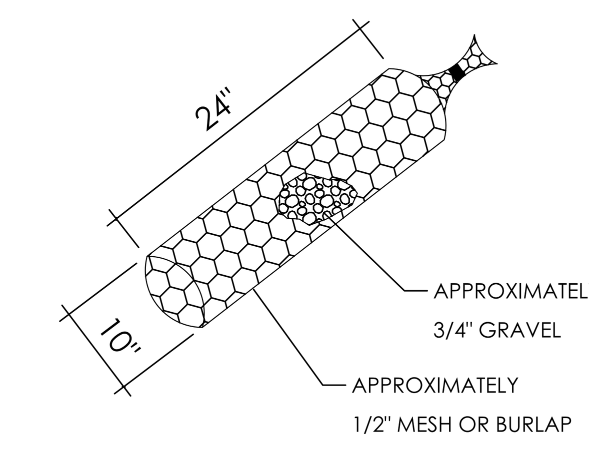
C 5.4



PLAN VIEW



SECTION A-A



SOCK TYPE

NOTE:
EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL CONSTRUCTION IS COMPLETED, OR AS DIRECTED BY THE LOCAL JURISDICTION.

CONCRETE WASHOUT FACILITY DETAIL

Temporary Outlet Protection (TOP) EC-8

TEMPORARY OUTLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   - LOCATION OF OUTLET PROTECTION.
   - DIMENSIONS OF OUTLET PROTECTION.

2. DETAIL IS INTENDED FOR PIPES WITH SLOPE ≤ 10%. ADDITIONAL EVALUATION OF RIPRAP SIZING AND OUTLET PROTECTION DIMENSIONS REQUIRED FOR STEEPER SLOPES.

3. TEMPORARY OUTLET PROTECTION INFORMATION IS FOR OUTLETS INTENDED TO BE UTILIZED LESS THAN 2 YEARS.

TEMPORARY OUTLET PROTECTION INSPECTION AND MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM AURORA, COLORADO AND PREVIOUS VERSION OF VOLUME 3, NOT AVAILABLE IN AUTOCAD)

EC-1 Surface Roughening (SR)

SURFACE ROUGHENING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION(S) OF SURFACE ROUGHENING.

2. SURFACE ROUGHENING SHALL BE PROVIDED PROMPTLY AFTER COMPLETION OF FINISHED GRADING (FOR AREAS NOT RECEIVING TOPSOIL) OR PRIOR TO TOPSOIL PLACEMENT OR ANY FORECASTED RAIN EVENT.

3. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD WILL BE PLACED WITHOUT DELAY IN THE CONSTRUCTION SEQUENCE, SURFACE ROUGHENING IS NOT REQUIRED.

4. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

5. A FARMING DISK SHALL NOT BE USED FOR SURFACE ROUGHENING.

SURFACE ROUGHENING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACE UPON DISCOVERY OF THE FAILURE.

4. VEHICLES AND EQUIPMENT SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.

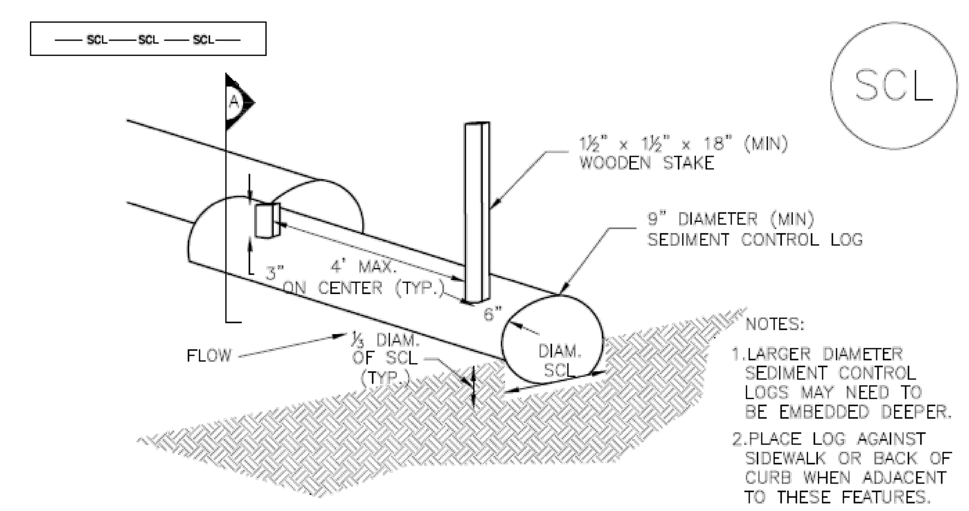
5. IN NON-TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.

6. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE-ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER RILL EROSION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

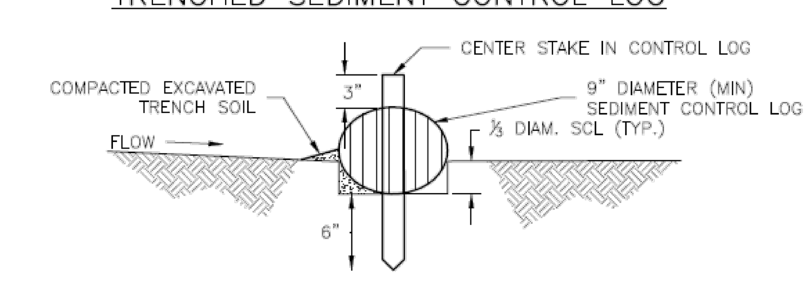
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Sediment Control Log (SCL) SC-2

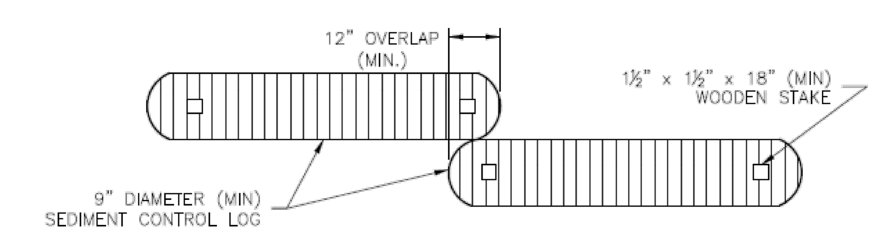


NOTES:
1. LARGER DIAMETER SEDIMENT CONTROL LOGS MAY NEED TO BE EMBEDDED DEEPER.
2. PLACE LOG AGAINST SIDEWALK OR BACK OF CURB WHEN ADJACENT TO THESE FEATURES.

TRENCHED SEDIMENT CONTROL LOG



SECTION (A) TRENCHED SEDIMENT CONTROL LOG



LOG JOINTS

SCL-1. TRENCHED SEDIMENT CONTROL LOG

90% BID DRAWINGS

F & D International, LLC
Architecture . Engineering
Project Management
1930 CENTRAL AVE. SUITE B
BOULDER, COLORADO 80302
T : 303.652.3200
WWW. fdi-one.com

GREEN MOUNTAIN FALLS FIRE DISTRICT
Fire Station Project Two Carsell Way
Green Mountain Falls, El Paso County, CO

REVISIONS
1. 75% CD SET 30 AUG 2018
2. 90% BID SET 30 SEP 2018

DATE: 30-SEP-18
DRAWN BY: H.A
CHECK BY: T.E.F

EROSION CONTROL DETAILS

C 5.5

DRAINAGE REPORT FOR

GREEN MOUNTAIN FALLS / CHIPITA PARK FIRE PROTECTION DISTRICT

CENTRAL FIRE STATION

TWO CARSELL WAY, GREEN MOUNTAIN FALLS, COLORADO 80819

30 AUGUST 2018

Prepared By:

F&D International LLC
1930 Central Ave., Unit #B
Boulder, CO 80301
(P) 303.652.3200

F&D Project No. 15004

Table of Contents

INTRODUCTION

GENERAL LOCATION AND DESCRIPTION

The Green Mountain Falls / Chipita Park Fire Protection District (District) proposes to construct a new central response fire station (Station) at Two Carsell Way, Green Mountain Falls, Colorado. The site is located within part of the Northwest ¼, Northeast 1/4 of Section 8, Township 12 South, Range 68 West, 6^{th} Principal Meridian, Green Mountain Falls, El Paso County, Colorado. The property is bound to the west, north, and south by developed properties and the east by US Highway 24. A vicinity map is located in Appendix A of this report.

PROPOSED DEVELOPMENT

The District is constructing a new central response fire station. The new facility is proposed to be approximately 14,000 ft^2 response fire station

EXISTING CONDITIONS

EXISTING DRAINAGE

Lot 2 – Lot 2 is a vacant undeveloped lot. The lot gradient primarily ranges from 25% to 5%. The western portion of the lot slopes generally to the south. The eastern half of the side slopes to the east and south.

Lot 1 – Lot 1 is a developed lot and contains a graveled surface parking lot and the Green Mountain Falls Townhall and police department. This lot has a gradient ranging from 30% to 5% and slopes generally to the south. The intention of this report is to incorporate and improve the drainage systems associated with the Lot 1 and incorporate the drainage with Lot 2.

According to FEMA Flood Insurance Rate Map for this project, both Lot 1 and Lot 2 are not located in a flood plain

PROPOSED (DEVELOPED) DRAINAGE

DRAINAGE DESIGN CRITERIA

The proposed drainage facilities have been designed to comply with the City of Colorado Springs Drainage Criteria Manual, 2014 edition. This manual has been adopted by El Paso county as their stormwater criteria manual.

HYDROLOGIC METHOD AND DESIGN STORM FREQUENCIES

The Rational Method (Q=CIA) was used to determine the storm runoff (Q) from the sites, with a composite runoff coefficient (C) and contributing areas (A) given for design points in sub basins. The runoff coefficients for various land uses where obtained from City of Colorado Springs Drainage Criteria Manual. Intensities (I) were determined using the Time-Intensity-Frequency Values (Figure 5, El Paso County) and a calculated Time of Concentration (tc). Post development time concentration calculations for each sub-basin, corresponding rainfall intensities, composite runoff coefficients, and storm flows for the 10-year and 100-year storms for each design point are provided in the appendix. Runoff rates have been shown on the included drainage map.

The total detention volume for this site was determined using the following equation;

$$V_{required} = ((V_{runoff} - V_{discharge}) + V_{Water\ Quality})*FS$$

Where

$V_{required}$ is defined as the total required detention volume

V_{runoff} is defined as the runoff volume from the site

$V_{discharge}$ is defined as the allowable discharge volume for storm event

$V_{Water\ Quality}$ is defined as the additional WQCV volume required for water quality

FS is the Factor of Safety

The historic and developed volumes where calculated from the subject properties. The Water Quality Capture Volume (WQCV) was calculated from the total lot area. The 100 year volume was calculated from the composite area of the defined on-site sub basins. It is assumed that all offsite properties that drain to the subject property will restrict developed release rates to the historic values. The offsite flows will therefore be routed un-detained through the pond. It is also assumed that the property to the west and Hwy 24 ROW to the north of the subject property will reach Fountain Creek and will not impact the proposed drainage system. Undeveloped and impacted areas of the subject properties will retain their respective historical flows.

SITE BASINS AND SUB-BASINS

The proposed site drainage consists of nine (9) major basins, two (2) Of-Site Basins OS and seven (7) On Site Basins A-G. Basins A-G are divided according to the areas that drain into each proposed stormwater structure on the site. This was done to simplify the calculations for sizing of swales, pipes and inlets in each basin.

Description of Major Drainage Basins

Basin “A” (13915.19 sf/ 0.319 acres) is comprised of the proposed parking and concrete apron at the south face of the proposed fire station. All drainage within Basin A sheet flows across parking area into a Type R Curb inlet along southern curb of parking

Basin “B” (11748.61 sf/ 0.270 acres) is comprised of the north eastern section of Lot 2. Drainage from this basin includes stormwater flowing from the eastern wing of the proposed building and building pad along with flows from the historic site above the eastern retaining wall. These flows are captured in a Type C inlet located at the interception of the proposed roadway and parking pad.

Basin “C” (8492.99 sf/ 0.1950acres) is comprised of the eastern half of the inner curve of the proposed roadway. Flows from this basin sheet flow across the historic site as well as the proposed roadway into a drainage swale along the roadway and is then carried to another Type C inlet at the southernmost point of the proposed roadway.

Basin “D” (7410.6971sf/ 0.170 acres) is comprised of the western half of the proposed roadway. Flows from this basin sheet flow across the historic site as well as the proposed roadway into a drainage swale along the roadway and is then carried to another Type C inlet located along the proposed roadway before the retaining wall also along the road.

Basin “E” (35250.59sf/ 0.809 acres) is comprised of the north western quarter of Lot 2. This area includes the center and western sections of the fire station and building pad, and historic flows from the existing drainage on the northern section of Lot 2. All drainage either sheet flows into the proposed Type C inlet directly or flows into a series of swales that transport the drainage into the inlet.

Basin "F" (21500.08sf/ 0.494 acres) is comprised of the north eastern section of lot 1. Flows from this basin sheet flow across the historic site into a drainage swale and then into the final Type C inlet that transports the flows into the detention basin.

Basin "G" (35865.94sf/ 0.823) is comprised of the existing town hall site located in lot 1. Flows from this basin flow directly from the town hall site and into the detention basin.

Basin "OS" (9939.16sf/0.228 acres) is comprised of a section of existing road and grading that slope off site and drain onto Green Mountain Falls Road as historical drainage that will not be captured in the proposed stormwater network.

Basin "OH" (11350.85sf/ 0.260 acres) is comprised of the area south of the proposed access road to the fire station. This area historically flows into the property to the south of lot 2 and no drainage from this area will be from developed areas, only historical flows will be flowing into adjacent site.

Runoff from the of-site basins OS and OH will follow existing flow paths off of the property and will not be captured in storm water network. While runoff from Basins A through G will be routed via overland flows and a network of inlets and private storm sewer system which combined will convey flows to the improved detention pond facility (pond) and ultimately to Fountain Creek. The pond, located in the lowest corner of Lot 1, e.g. the southeast corner, will also provide water quality for the tributary areas as described above. The basins are outlined in on civil sheet C 3.4 which is included in the Appendix.

RUNOFF AND DETENTION

Lot 2 is currently undeveloped and Lot 1 is currently developed. Lot 1 does have onsite detention but due to neglect the onsite detention is no longer functional. Lot 1 and 2 will share a revitalized and developed detention facility in the southeast corner of Lot 1.

The detention pond has been designed for the disturbed basin areas as defined above. The pond will receive overland developed flows as well as hydraulically connected flows by a series of 15" and 24" HDPE storm pipes.

The 10-year and 100-year detention pond volumes were calculated with the rational method per the City of Colorado Springs Drainage Criteria Manual. The pond is designed to contain the 100-year volume plus the water quality volume with a minimum of 1-foot of freeboard.

Flows from the 10-year storm event will be captured and conveyed through the proposed storm sewer, grass swales, and outland to the pond. A portion of the flows from the 100-year storm runoff will be captured by the proposed storm sewer system and swales and conveyed to the detention pond. The remainder of the 100-year storm runoff will sheet flow across the site toward the pond and public rights of way.

The outlet structure from the pond is a Type D Outlet and has been designed to restrict the three required release rates with the use of a water quality plate, a 10-year weir and a 100-year orifice plate on the outlet pipe with an overtopping grate. The allowable release rates have been computed per El Paso County standards and are 2.77 cfs for the 10-year event and 5.29 cfs for the 100-year event.

The emergency spillway for the pond is an engineered berm on the west side of the pond, see plans for dimensions and elevations. The berm will allow water to safely sheet flow at a low velocity to Fountain Creek. The spillway for the pond has been designed with a 1'-0" freeboard and will carry at least the flows for the 100-year storm event.

Some of the storm flows entering the detention pond will be conveyed via a hydraulic system consisting of 15" and 24" HDPE pipe. The flows entering via the storm sewer pipe will be controlled by an energy dissipating structure, prior to entering the pond. This structure has been designed to accommodate the 100-year storm flows. Refer to drawings for details.

CONCLUSIONS

The majority of the proposed development flows will be routed to the onsite detention and water quality pond. The proposed storm system and detention pond release rates are in conformed with El Paso requirements. Calculations and other reference materials used are attached in the Appendix. The referenced Developed Drainage Map, Figure 1, depicts the drainage design points, developed runoff sub-basins, and configuration of the proposed storm drainage system. The recommendations of this report are in conformance with El Paso County, Colorado.

Proper detention and drainage facilities are proposed to adequately handle all on-site drainage while enhancing the stormwater quality. There will not be any negative impacts on adjacent, upstream, and downstream properties under both existing and future build-out conditions of this site.

REFERENCES

1. City of Colorado Springs Drainage Criteria Manual, 2014 edition.

APPENDIX A – VICINITY MAP

Figure 1: Vicinity Map

APPENDIX B – CALCULATIONS

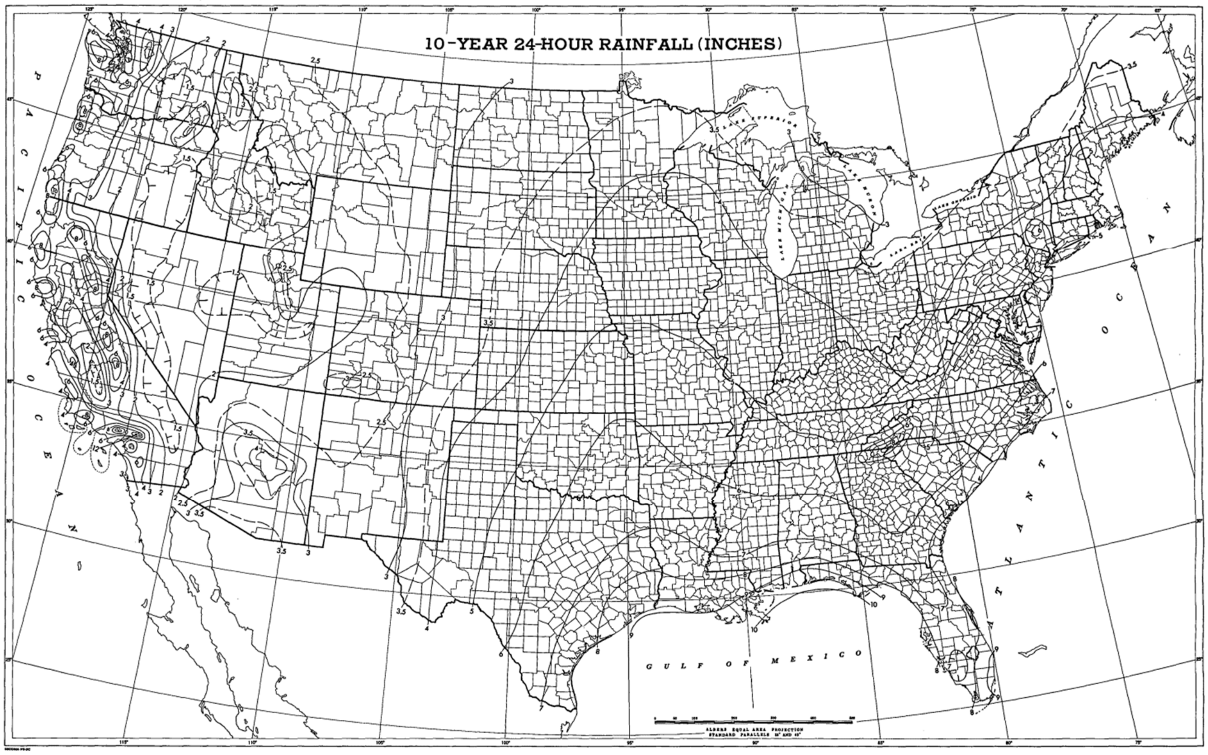


Figure 2: 10-Year Rainfall Depth

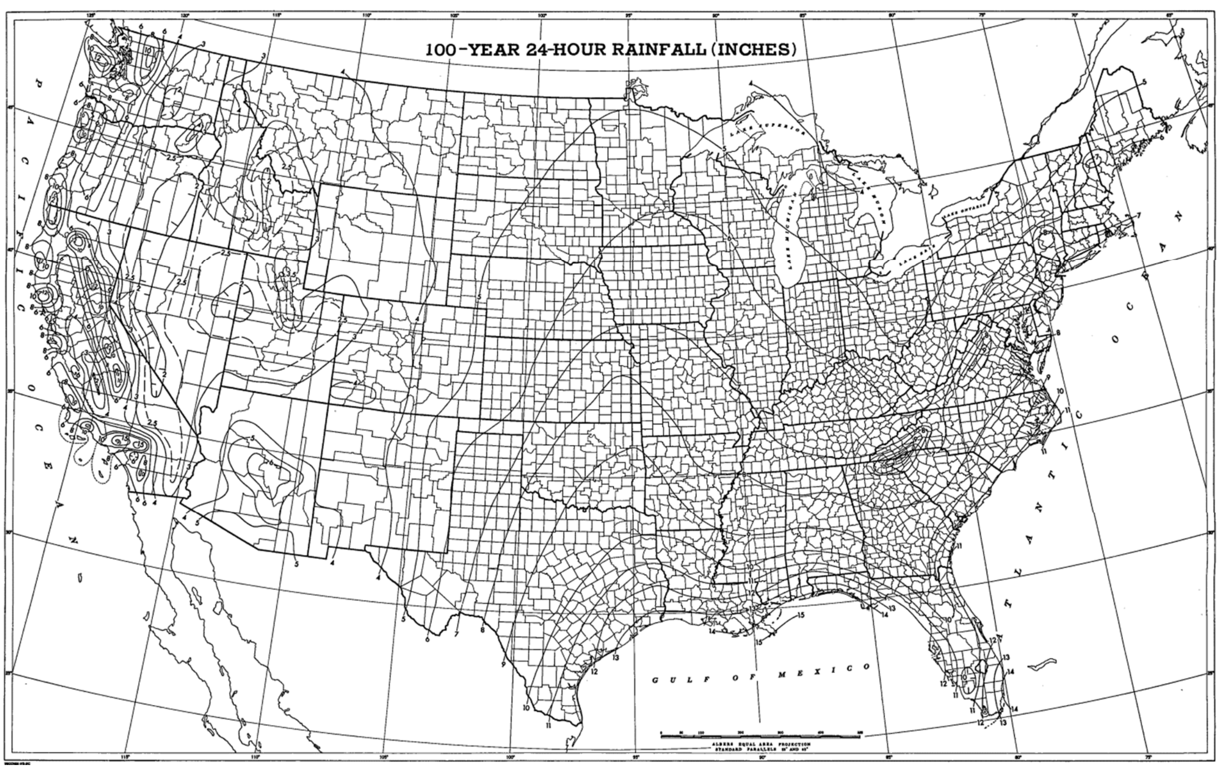


Figure 3: 100-Year Rainfall Depth

7/16/2018 Precipitation Frequency Data Server

NOAA Atlas 14, Volume 8, Version 2
Location name: Cascade, Colorado, USA*
Latitude: 38.9378°, Longitude: -105.0151°
Elevation: 7772.78 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.226 (0.184-0.280)	0.271 (0.220-0.336)	0.350 (0.283-0.435)	0.420 (0.338-0.526)	0.524 (0.408-0.693)	0.610 (0.460-0.819)	0.701 (0.508-0.971)	0.798 (0.551-1.15)	0.934 (0.617-1.39)	1.04 (0.666-1.57)
10-min	0.331 (0.269-0.410)	0.397 (0.323-0.492)	0.513 (0.415-0.637)	0.616 (0.494-0.770)	0.768 (0.597-1.01)	0.893 (0.674-1.20)	1.03 (0.744-1.42)	1.17 (0.807-1.68)	1.37 (0.903-2.03)	1.53 (0.976-2.30)
15-min	0.404 (0.328-0.500)	0.484 (0.393-0.600)	0.625 (0.506-0.777)	0.751 (0.603-0.939)	0.936 (0.728-1.24)	1.09 (0.822-1.46)	1.25 (0.907-1.73)	1.43 (0.984-2.05)	1.67 (1.10-2.48)	1.86 (1.19-2.81)
30-min	0.536 (0.435-0.663)	0.642 (0.521-0.795)	0.828 (0.669-1.03)	0.993 (0.798-1.24)	1.24 (0.961-1.63)	1.44 (1.09-1.93)	1.65 (1.20-2.29)	1.88 (1.30-2.69)	2.20 (1.45-3.26)	2.45 (1.57-3.69)
60-min	0.664 (0.540-0.822)	0.781 (0.634-0.967)	0.992 (0.802-1.23)	1.19 (0.953-1.48)	1.48 (1.16-1.97)	1.74 (1.31-2.34)	2.01 (1.46-2.79)	2.30 (1.59-3.32)	2.73 (1.80-4.06)	3.07 (1.96-4.63)
2-hr	0.792 (0.648-0.973)	0.919 (0.751-1.13)	1.16 (0.941-1.43)	1.38 (1.12-1.71)	1.73 (1.37-2.29)	2.03 (1.55-2.73)	2.36 (1.73-3.27)	2.73 (1.91-3.91)	3.26 (2.18-4.82)	3.69 (2.38-5.52)
3-hr	0.885 (0.727-1.08)	1.01 (0.829-1.24)	1.26 (1.03-1.54)	1.50 (1.22-1.85)	1.88 (1.50-2.50)	2.23 (1.71-2.99)	2.61 (1.93-3.61)	3.03 (2.13-4.34)	3.65 (2.46-5.40)	4.17 (2.70-6.21)
6-hr	1.11 (0.914-1.34)	1.25 (1.03-1.52)	1.54 (1.26-1.88)	1.83 (1.50-2.24)	2.31 (1.86-3.05)	2.74 (2.13-3.66)	3.23 (2.41-4.44)	3.77 (2.68-5.37)	4.58 (3.11-6.73)	5.25 (3.44-7.76)
12-hr	1.42 (1.18-1.71)	1.61 (1.34-1.94)	2.00 (1.66-2.42)	2.38 (1.96-2.90)	3.00 (2.43-3.93)	3.56 (2.78-4.71)	4.18 (3.14-5.69)	4.87 (3.49-6.87)	5.88 (4.04-8.57)	6.73 (4.45-9.87)
24-hr	1.75 (1.47-2.09)	2.02 (1.69-2.42)	2.53 (2.11-3.04)	3.03 (2.51-3.66)	3.83 (3.11-4.95)	4.53 (3.56-5.93)	5.30 (4.01-7.16)	6.16 (4.45-8.61)	7.41 (5.13-10.7)	8.45 (5.64-12.3)
2-day	2.06 (1.74-2.44)	2.39 (2.01-2.84)	3.02 (2.54-3.60)	3.63 (3.03-4.34)	4.59 (3.75-5.88)	5.43 (4.30-7.05)	6.35 (4.85-8.51)	7.38 (5.38-10.2)	8.88 (6.20-12.7)	10.1 (6.82-14.6)
3-day	2.26 (1.91-2.67)	2.61 (2.21-3.08)	3.28 (2.76-3.88)	3.92 (3.28-4.67)	4.94 (4.06-6.31)	5.84 (4.65-7.55)	6.82 (5.23-9.10)	7.92 (5.81-10.9)	9.52 (6.69-13.6)	10.8 (7.35-15.6)
4-day	2.43 (2.06-2.85)	2.78 (2.36-3.27)	3.46 (2.93-4.09)	4.12 (3.46-4.90)	5.17 (4.26-6.58)	6.10 (4.87-7.85)	7.11 (5.47-9.45)	8.25 (6.07-11.3)	9.90 (6.98-14.1)	11.3 (7.67-16.1)
7-day	2.86 (2.44-3.34)	3.23 (2.76-3.78)	3.95 (3.36-4.63)	4.64 (3.92-5.48)	5.74 (4.75-7.23)	6.69 (5.38-8.55)	7.75 (6.00-10.2)	8.92 (6.61-12.2)	10.6 (7.55-15.0)	12.0 (8.26-17.1)
10-day	3.27 (2.80-3.80)	3.69 (3.16-4.29)	4.47 (3.81-5.22)	5.20 (4.41-6.11)	6.35 (5.26-7.92)	7.33 (5.91-9.29)	8.40 (6.53-11.0)	9.59 (7.13-13.0)	11.3 (8.05-15.8)	12.7 (8.75-18.0)
20-day	4.49 (3.88-5.18)	5.11 (4.40-5.90)	6.16 (5.29-7.14)	7.08 (6.04-8.25)	8.40 (6.96-10.3)	9.48 (7.66-11.8)	10.6 (8.26-13.6)	11.8 (8.80-15.7)	13.4 (9.62-18.5)	14.7 (10.2-20.7)
30-day	5.47 (4.74-6.28)	6.24 (5.40-7.17)	7.50 (6.47-8.65)	8.56 (7.33-9.92)	10.0 (8.29-12.1)	11.1 (9.02-13.7)	12.3 (9.60-15.6)	13.4 (10.1-17.7)	15.0 (10.8-20.5)	16.2 (11.3-22.6)
45-day	6.63 (5.77-7.58)	7.56 (6.57-8.64)	9.03 (7.82-10.4)	10.2 (8.79-11.8)	11.8 (9.78-14.1)	13.0 (10.5-15.8)	14.1 (11.1-17.8)	15.2 (11.4-19.9)	16.7 (12.0-22.6)	17.7 (12.5-24.6)
60-day	7.56 (6.60-8.61)	8.59 (7.48-9.78)	10.2 (8.85-11.7)	11.5 (9.89-13.2)	13.1 (10.9-15.5)	14.3 (11.6-17.3)	15.4 (12.1-19.3)	16.5 (12.4-21.5)	17.8 (12.9-24.1)	18.7 (13.3-26.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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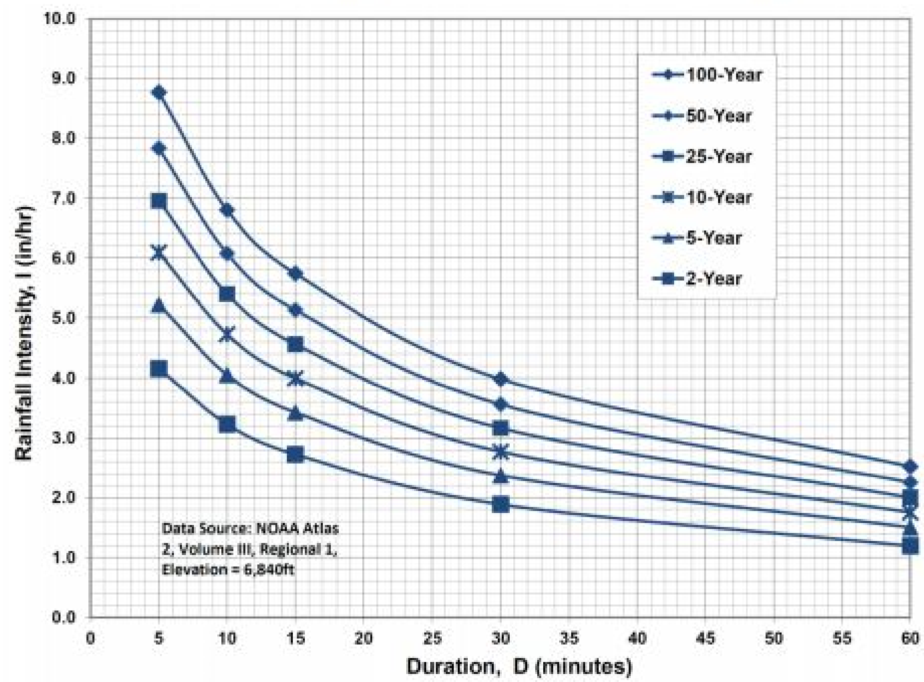
PF graphical

Figure 4: Design Storm Distribution of 1-Hour NOAA Atlas Depths

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$I_{100} = -2.52 \ln(D) + 12.735$

$I_{50} = -2.25 \ln(D) + 11.375$

$I_{25} = -2.00 \ln(D) + 10.111$

$I_{10} = -1.75 \ln(D) + 8.847$

$I_{5} = -1.50 \ln(D) + 7.583$

$I_{2} = -1.19 \ln(D) + 6.035$

Note: Values calculated by equations may not precisely duplicate values read from figure.

Figure 5: TIF Curve for El Paso County

Adjustment Factors to Obtain N-Minute Estimates From One-Hour Values

Duration (minutes)	5	10	15	30
Ratio to 1-Hr Depth	0.29	0.45	0.57	0.79

From NOAA Atlas 2 Vol. III Table 12

One-Hour Design Point Rainfall Values for Various Parts of Western El Paso County/Eastern Teller County

	5-Yr	10-Yr	100-Yr
Cascade	1.05	1.25	2.08
Woodland Park	0.979	1.18	2.04
Green Mountain Falls	1.00	1.20	2.01

Figure 6: Web Soil Map

Pike National Forest, Eastern Part, Colorado, Parts of Douglas, El Paso, Jefferson, and Teller Counties

47—Sphinx, warm-Rock outcrop complex, 15 to 80 percent slopes

Map Unit Setting

National map unit symbol: jpjz
Elevation: 6,500 to 9,200 feet
Mean annual precipitation: 15 to 24 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 70 to 125 days
Farmland classification: Not prime farmland

Map Unit Composition

Sphinx, warm, and similar soils: 60 percent
Rock outcrop: 25 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sphinx, Warm

Setting

Landform: Mountain slopes
Landform position (three-dimensional): Mountaintop, mountainflank
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Parent material: Weathered from granite

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 5 inches: gravelly coarse sandy loam
AC - 5 to 13 inches: very gravelly loamy coarse sand
Cr - 13 to 61 inches: weathered bedrock

Properties and qualities

Slope: 15 to 70 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Natural drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Other vegetative classification: Ponderosa pine/kinnikinnick (PIPO/ARUV) (C1140)
Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Mountain slopes
Landform position (three-dimensional): Mountaintop, mountainflank
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex

Figure 7: Soil Type 47 Description pt.1

Across-slope shape: Linear, convex

Typical profile

R - 0 to 61 inches: bedrock

Properties and qualities

Slope: 15 to 80 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Available water storage in profile: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Sphinx, dark surface

Percent of map unit: 10 percent
Landform: Mountain slopes
Landform position (three-dimensional): Mountainflank
Down-slope shape: Linear, convex
Across-slope shape: Linear, convex
Other vegetative classification: Ponderosa pine/kinnikinnick (PIPO/ARUV) (C1140)
Hydric soil rating: No

Garber

Percent of map unit: 5 percent
Landform: Drainageways, mountain slopes
Landform position (three-dimensional): Mountainbase
Down-slope shape: Linear, convex, concave
Across-slope shape: Linear, convex, concave
Hydric soil rating: No

Figure 8: Soil Type 47 Description pt.2

Calculations for Sizing of Detention Basin

Composite Runoff Coefficient Calculations

Composite Runoff coefficients were calculated for each basin using the formula:

$$C_c = \frac{C_1A_1 + C_2A_2 + \cdots C_iA_i}{A_t}$$

Where:

C_c = composite runoff coefficient of total area

C_i = runoff coefficient for subarea corresponding to surface type of land use

A_i = area of surface type corresponding to C_i

A_t = total area of all subareas where composite runoff coefficient applies

I = number of surface types in the drainage area

Values for runoff coefficients for different surface types were found in City of Colorado Springs Drainage Criteria Manual Chapter 6, Table 6-6

Ten Year Calculations

Historic Ten-Year Runoff Coefficient:

Lot 1:

$$C_1 = \frac{0.77*4230sf+0.92*1420sf+0.66*12900sf+0.25*46404sf}{67954sf}$$

$$C_1 = 0.36$$

Lot 2:

$$C_{c,1} = \frac{0.25*87555sf}{87555sf}$$

$$C_{c,1} = 0.25$$

10 Year Runoff Coefficient for Total Historic Site

$$C_T = \frac{0..36*1.56ac+0.25*2.01ac}{3.57ac}$$

$$C_T = 0.30$$

Developed Ten-Year Runoff Coefficient

Basin A:

$$C_{c,a} = \frac{0.92*13224.93\ sf+0.25*690.25sf}{13915.18sf}$$

$$C_{c,a} = 0.89$$

Basin B:

$$C_{c,b} = \frac{0.77*3381.81sf+0.92*3152.60sf+0.66*2605.17sf+0.25*2669.63}{11748.61sf}$$

$$C_{c,b} = 0.68$$

Basin C:

$$C_{c,c} = \frac{0.92*3377.09sf+0.25*5115.90sf}{8492.99sf}$$

$$C_{c,c} = 0.52$$

Basin D:

$$C_{c,d} = \frac{0.92*2507.66sf+0.25*4903.04sf}{7410.70sf}$$

$$C_{c,d} = 0.48$$

Basin E:

$$C_{c,e} = \frac{0.77*9859.38sf+0.92*5061.99sf+0.66*1708.76sf+0.25*18600.46sf}{5061.99sf}$$

$$C_{c,e} = 0.51$$

Basin F:

$$C_{c,f} = \frac{0.92*3206.43sf+0.25*18294.91sf}{21500.08sf}$$

$$C_{c,f} = 0.35$$

Basin G:

$$C_{c,g} = \frac{0.77*4230.0sf+0.92*1820.10sf+0.66*9199.21sf+0.25*20617.73sf}{35865.94sf}$$

$$C_{c,g} = 0.45$$

Composite 10 Year Runoff Coefficient for Total Developed Site

$$C_T = \frac{0.89*0.319ac+0.68*0.270ac+0.52*0.195ac+0.48*0.170ac+0.51*0.809ac+0.35*0.494ac+0.45*0.823ac}{3.08ac}$$

$$C_T = 0.52$$

100 Year Calculations

Historic Hundred-Year Runoff Coefficient:

Lot 1:

$$C_1 = \frac{0.83*4230sf+0.96*1420sf+0.74*12900sf+0.50*46404sf}{67954sf}$$

$$C_1 = 0.55$$

Lot 2:

$$C_{c,1} = \frac{0.5*87555sf}{87555sf}$$

$$C_{c,1} = 0.50$$

Runoff Coefficient for Total Historic Site

$$C_T = \frac{0.55*1.56ac+0.5*2.01ac}{3.57ac}$$

$$C_T = 0.52$$

Developed Hundred-Year Runoff Coefficient

Basin A:

$$C_{c,a} = \frac{0.96*13224.93\ sf + 0.5*690.25sf}{13915.18sf}$$

$$C_{c,a} = 0.94$$

Basin B:

$$C_{c,b} = \frac{0.83*3381.81sf + 0.96*3152.60sf + 0.74*2605.17sf + 0.5*2669.63}{11748.61sf}$$

$$C_{c,b} = 0.78$$

Basin C:

$$C_{c,c} = \frac{0.96*3377.09sf + 0.5*5115.90sf}{8492.99sf}$$

$$C_{c,c} = 0.68$$

Basin D:

$$C_{c,d} = \frac{0.96*2507.66sf + 0.5*4903.04sf}{7410.70sf}$$

$$C_{c,d} = 0.66$$

Basin E:

$$C_{c,e} = \frac{0.83*9859.38sf + 0.96*5061.99sf + 0.74*1708.76sf + 0.5*18600.46sf}{5061.99sf}$$

$$C_{c,e} = 0.67$$

Basin F:

$$C_{c,f} = \frac{0.96*3206.43sf + 0.5*18294.91sf}{21500.08sf}$$

$$C_{c,f} = 0.57$$

Basin G:

$$C_{c,g} = \frac{0.83*4230.0sf + 0.96*1820.10sf + 0.74*9199.21sf + 0.5*20617.73sf}{35865.94sf}$$

$$C_{c,g} = 0.62$$

Composite 100 Year Runoff Coefficient for Total Developed Site

$$C_T = \frac{0.94*0.319ac + 0.78*0.270ac + 0.68*0.195ac + 0.66*0.170ac + 0.67*0.809ac + 0.57*0.494ac + 0.62*0.823ac}{3.08ac}$$

$$C_T = 0.68$$

Time of Concentration Calculations

Time of concentration for historic and developed areas calculated using:

$$t_c = t_i + t_t$$

$$t_i = \frac{1.87(1.1 - C_{10})\sqrt{L_o}}{S^{0.33}} \text{ for 10 year}$$

$$t_i = \frac{4.43(1.1 - C_{100})\sqrt{L_o}}{S^{0.33}} \ for\ 100\ year$$

$$t_t = \frac{L_c}{C_v {S_w}^{0.5}}$$

Where:

t_c =time of concentration

t_i =overland flow time

t_t =travel time in ditch, channel, gutter, storm sewer etc.

C_i= Runoff coefficient

L_0= Length of overland flow

S = average basin slope

C_v= Conveyance coefficient (from Table 6-7 in Colorado Springs DCM)

Historic Time of Concentration of 10 year storm

$$t_i = \frac{1.87(1.1 - 0.30)\sqrt{600}}{11^{0.33}} = 16.61\ min$$

$$t_t = 0\ min$$

$$t_c = 16.60\ min$$

Developed Time of Concentration for 10 year storm

$$t_i = \frac{1.87(1.1 - 0.52)\sqrt{325}}{2^{0.33}} = 15.55\ min$$

$$t_t = \frac{600}{15 * 0.06^{0.5}} = 163.3 \sec = 2.72\ min$$

$$t_c = 18.27\ min$$

Historic Time of Concentration of 100 year storm

$$t_i = \frac{4.43(1.1 - 0.52)\sqrt{600}}{11^{0.33}} = 28.32\ min$$

$$t_t = 0\ min$$

$$t_c = 28.32\ min$$

Developed Time of Concentration for 100 year storm

$$t_i = \frac{4.43(1.1 - 0.68)\sqrt{325}}{2^{0.33}} = 26.62\ min$$

$t_t = \frac{600}{15*0.06^{0.5}} = 163.3 \sec = 2.72\ min$

$t_c = 29.34\ min$

Calculating WQCV

The Water Quality Capture Volume (WQCV) was calculated using:

$$WQCV = 0.91I^3 - 1.19I^2 + 0.78I$$

Where:

WQCV = Water Quality Capture Volume(in)

I = Percent Imperviousness of Basin

Calculating Percent Impervious of Total Site was calculated using

$$I_T = \frac{I_1 * A_1 + I_2 * A_2 \ldots + I_i * A_i}{A_t}$$

Where:

I_T = composite percent impervious of total area

I_i = percent impervious for subarea corresponding to surface type of land use

A_i = area of surface type corresponding to I_i

A_t = total area of all subareas where composite percent impervious applies

I = number of surface types in the drainage area

Percent Imperious of Site

$I_T = \frac{1.0*33364+0.9*1742+0.80*13514+0.02*106889}{155509}$

$I_T = 0.31$

Calculating WQCV

$WQCV = 0.91(0.31)^3 - 1.19(0.31)^2 + 0.78(0.31)$

$WQCV = 0.155\ in$

Calculating Full Spectrum Detention Volume

$$V_{required} = ((V_{runoff} - V_{discharge}) + V_{Water\ Quality})*FS$$

Where

$V_{required}$ is defined as the total required detention volume

V_{runoff} is defined as the runoff volume from the site

$V_{discharge}$ is defined as the allowable discharge volume for storm event

$V_{Water\ Quality}$ is defined as the additional volume required for detention for water quality

FS is the Factor of Safety

Calculating Site Runoff volume

From the Rational Method the site runoff volume is calculated using:

$$V_{runoff} = C_t I A_T T$$

Where:

C_t = The runoff coefficient for the developed site

I = Average Rainfall intensity for a duration equal to the time of concentration in in/hr (Determined using NOAA Atlas 14 rainfall intensity chart for site location)

A_T=Drainage basin area (acres)

T = Duration of Design Storm Event(Equal to Time of Concentration for storm event)

Calculating Runoff Volume for 15min 10-year storm

$$V_{runoff} = 0.52 * \frac{3.0\ in}{hr} * 3.08\ acre * 0.25hr * \frac{3600\ sec}{hr}$$

$$V_{runoff} = 4324.32\ cf$$

Calculating Runoff Volume for 30min 100-year storm

$$V_{runoff} = 0.68 * \frac{3.30\ in}{hr} * 3.08\ acre * 0.5hr * \frac{3600\ sec}{hr}$$

$$V_{runoff} = 12440.76\ cf$$

Calculating allowable Discharge Volume

From Colorado Spring DCM Volume 1 the allowable release rate for a site can be determined from the historic discharge rate of the existing site using the rational method:

$$V_{discharge} = C_t I A_T T$$

Where:

C_t = The runoff coefficient for the historic site

I = Average Rainfall intensity for a duration equal to the time of concentration in in/hr (Determined using NOAA Atlas 14 rainfall intensity chart for site location)

A_T=Drainage basin area (acres)

T = Duration of Design Storm Event (Equal to Time of Concentration for storm event)

Calculating Discharge Volume for 15min 10-year storm

$$V_{discharge} = 0.30 * \frac{3.0\ in}{hr} * 3.08\ acre * 0.25hr * \frac{3600\ sec}{hr}$$

$$V_{discharge} = 2494.8\ cf$$

Calculating Discharge Volume for 30min 100-year storm

$$V_{discharge} = 0.52 * \frac{3.30\ in}{hr} * 3.08\ acre * 0.5hr * \frac{3600\ sec}{hr}$$

$$V_{discharge} = 9513.504\ cf$$

Calculating Additional Water Quality Volume

Additional Storage Volume for proposed detention pond from WQCV is calculated using:

$$V = \frac{WQCV}{12}A$$

Where:

V= Storage Volume (acre-ft)

WQCV = Water Quality Capture Volume (in)

A = Area of site (acre)

Calculating Additional Storage

$V = \frac{0.155}{12}3.57$

$V =$ 0.046 acre-ft = 2008.66 cf additional detention volume

Calculating Total Detention Volume

Total Detention Volume for 10-year event

$V_{required} = ((V_{runoff} – V_{discharge}) + V_{Water\ Quality})*FS$

$V_{required}$ = (4324.32 cf – 2494.8 cf + 2008.66 cf)*1.25

$V_{required}$ = 4797.725 cf

Total Detention Volume for 100-year event

$V_{required} = ((V_{runoff} – V_{discharge}) + V_{Water\ Quality})*FS$

$V_{required}$ = (12440.76 cf – 9513.504 cf + 2008.66 cf)*1.25

$V_{required}$ = 6169.90 cf

Calculations for Sizing of Pipes

The proposed sub basins were drawn in such a way that the flows from each basin are captured in one proposed storm inlet as well as use one swale type to convey the flows. This allowed for simple calculations of stormwater pipe sizing and swale sizing.

Stormwater Pipe Sizing

Stormwater pipes were designed to contain the maximum expected flows of each basin with some design considerations:

- Maximum discharge of each pipe shall not exceed maximum expected flows
- Depth of flow in pipe is less than half of pipe diameter
- Minimum velocity of 3ft/s and a maximum velocity of 18ft/s
- Minimum slope of 0.5 percent
- Minimum pipe size of 15" diameter

With these considerations in mind a pipe diameter and maximum flow depth were assumed and then the discharge was calculated. If the calculated discharge equaled the maximum expected flow and all requirements were achieve, the pipe was determined to be acceptable. The maximum expected flow for each basin was determined using the rational method and the maximum discharge of each pipe was calculated using the manning equation:

$$Q = \frac{1.49}{n} * A * R^{\frac{2}{3}} * \sqrt{S}$$

Where:

Q is the volumetric flow rate passing through the pipe(ft^3/s)

A is the cross-sectional are of the flow normal to the flow direction (ft^2)

S is the slope of the pipe in ft/ft

n is the Manning Roughness coefficient (0.012 for Corrugated HDPE Pipe)

R is the hydraulic radius

Calculations for Pipe Sizes by Basin

Basin A

Maximum Expected flow:

$$Q = C_{100} * I * A$$

$$Q = 0.94 * \frac{3.3in}{hr} * 0.319acres$$

$$Q = 0.989\ cfs$$

Given Slope = 12.9% and in an assumed pipe of 15" diameter

Depth = 2"

V = 9.95 ft/s

A 15" pipe is an adequate as it can convey the required discharge at a flow depth and velocity within standards.

Basin B

Maximum Expected flow:

$$Q = C_{100} * I * A$$

$$Q = 0.78 * \frac{3.3in}{hr} * 0.270acres$$

$$Q = 0.695\ cfs$$

Given Slope = 4.94% and in an assumed pipe of 15" diameter

Depth = 2.1"

V = 6.29 ft/s

A 15" pipe is an adequate as it can convey the required discharge at a flow depth and velocity within standards.

Basin C

Maximum Expected flow:

$$Q = C_{100} * I * A + Q_B$$

$$Q = 0.68 * \frac{3.3in}{hr} * 0.195\ acres + 0.695\ cfs$$

$$Q = 1.13\ cfs$$

Given Slope = 2.18% and in an assumed pipe of 15" diameter

Depth = 3.3"

V = 5.53 ft/s

A 15" pipe is an adequate as it can convey the required discharge at a flow depth and velocity within standards.

Basin D

Maximum expected flow:

$$Q = C_{100} * I * A + Q_A + Q_B + Q_C$$

$$Q = 0.66 * \frac{3.3in}{hr} * 0.170\ acres + 0.989\ cfs + 0.695cfs + 0.44cfs$$

$$Q = 2.49\ cfs$$

Given Slope = 4.79% and in an assumed pipe of 18" diameter

Depth = 3.8"

V = 9.03 ft/s

A 18" pipe is an adequate as it can convey the required discharge at a flow depth and velocity within standards.

Basin E

Maximum expected flow:

$$Q = C_{100} * I * A + Q_A + Q_B + Q_C + Q_D$$

$$Q = 0.67 * \frac{3.3in}{hr} * 0.809\ acres + 0.989\ cfs + 0.695cfs + 0.44cfs + 0.37cfs$$

$$Q = 4.28cfs$$

Given Slope = 8.62% and in an assumed pipe of 24" diameter

Depth = 3.97"

V = 12.60 ft/s

A 24" pipe is an adequate as it can convey the required discharge at a flow depth and velocity within standards.

Basin F

Maximum expected flow:

$$Q = C_{100} * I * A + Q_A + Q_B + Q_C + Q_D + Q_E$$

$$Q = 0.57 * \frac{3.3in}{hr} * 0.494\ acres + 0.989\ cfs + 0.695cfs + 0.44cfs + 0.37cfs + 1.79cfs$$

$$Q = 5.209cfs$$

Given Slope = 16.71% and in an assumed pipe of 24" diameter

Depth = 3.69"

V = 17.01 ft/s

A 24" pipe is an adequate as it can convey the required discharge at a flow depth and velocity within standards.

Basin G

There are no pipes in conjunction with Basin G as all flows are overland sheet flows.

Outflow Pipe Sizing

To size the outflow pipe that conveys water from detention pond to Fountain Creek, the allowable maximum release rate for both the 10 year and 100-year storms were considered as know discharge values and a pipe size and flow depth were determined to match these discharge values

10 Year Outflow

Required discharge of 2.71 cfs and pipe slope of 0.75%

A 24" Pipe would have a discharge of 2.71cfs at a flow depth of approximately 5.75" and a velocity of 4.64 ft/s

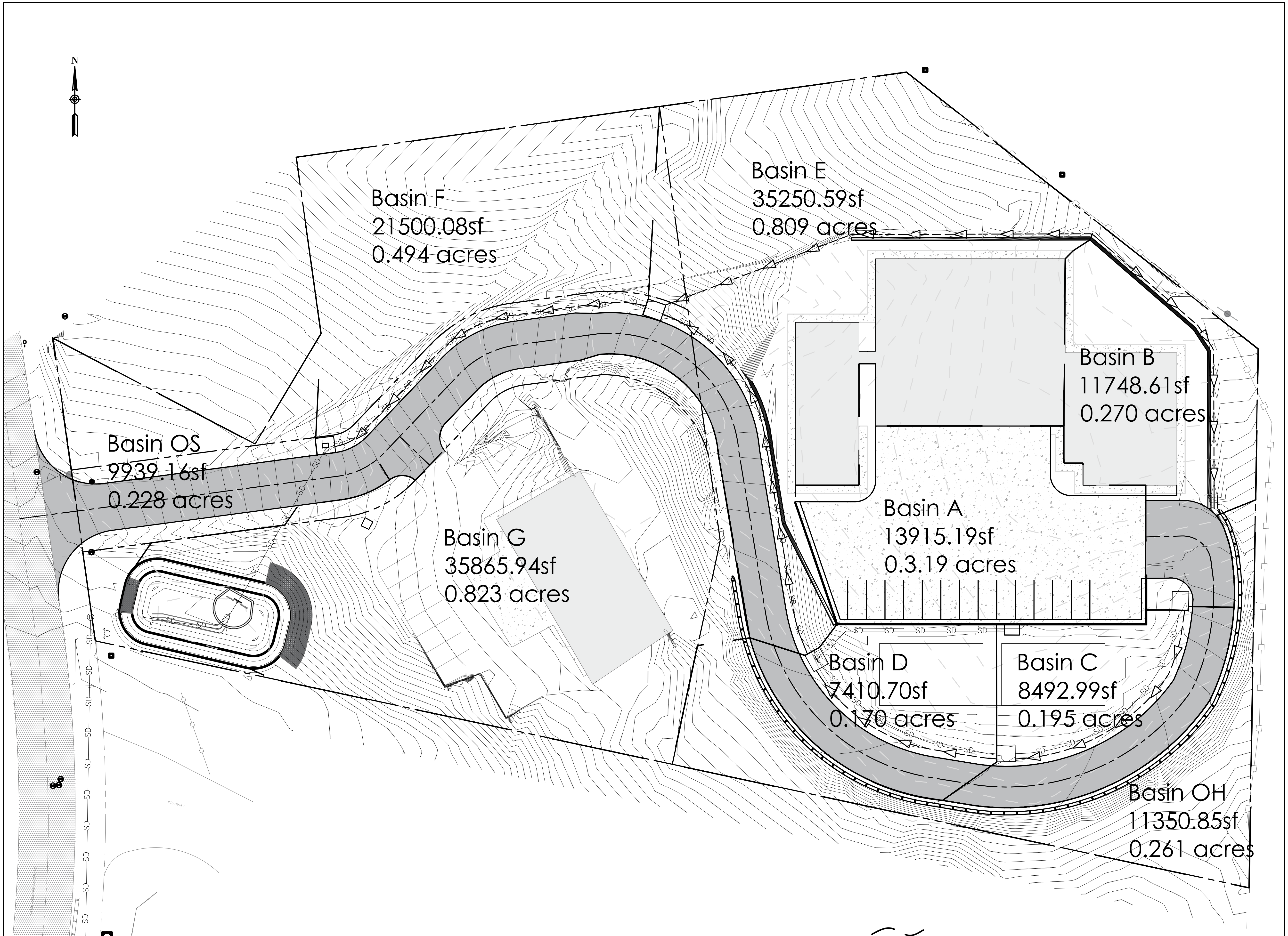
100 Year Outflow

Required discharge of 5.29 cfs and a pipe slope of 0.75%

A 24" Pipe would have a discharge of 5.29cfs at a flow depth of approximately 8.16" and a velocity of 5.62 ft/s

Appendix C – Details

Refer to Civil Drawing Set



F & D
International, LLC
Architecture . Engineering
Project Management
1930 CENTRAL AVE. SUITE B
BOULDER, COLORADO 80302
T : 303.652.3200
WWW. fdi-one.com

GREEN MOUNTAIN Falls Fire District

STORM DRAINFire Station

Town Of Green Mountain Falls, El Paso County, CO

DATE: 30-AUG-18

DRAWN BY: H.A

DRAINAGE BASINS

AMENDED GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION

A REPLAT OF LOT 1, LOT 2A AND LOT 2B, GREEN MOUNTAIN FALLS TOWN HALL SUBDIVISION, RECEPTION NO 214713433, PART OF THE NW¼NE¼ SEC.8, TOWNSHIP 13 SOUTH, RANGE 68 WEST, 6TH PM GREEN MOUNTAIN FALLS, EL PASO COUNTY, COLORADO

EASEMENTS:

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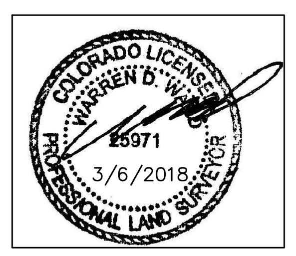
UNLESS SHOWN GREATER IN WIDTH OR DESCRIBED HEREIN, SIDE LOT LINES ARE HEREBY PLATTED WITH A FIVE (5) FOOT EASEMENT FOR DRAINAGE AND PUBLIC UTILITIES, THE REAR LOT LINES ARE HEREBY PLATTED WITH A SEVEN (7) FOOT EASEMENT FOR DRAINAGE AND PUBLIC UTILITIES ONLY, AND THE FRONT LOT LINES ARE HEREBY PLATTED WITH A TEN (10) FOOT EASEMENT FOR DRAINAGE AND PUBLIC UTILITIES ONLY WITH THE SOLE RESPONSIBILITY FOR MAINTENANCE BEING VESTED WITH THE PROPERTY OWNERS.

A. AN EASEMENT OF (0.196) ACRES +/– FOR DRAINAGE, STORMWATER DETENTION, AND STORMWATER QUALITY FOR THE SHARED USE OF LOT 1, LOT 2 WITH THE SOLE RESPONSIBILITY FOR MAINTENANCE BEING VESTED WITH THE PROPERTY OWNER(S) IS HEREBY PLATTED AS GRAPHICALLY REPRESENTED.
B. A (40) FOOT EXCLUSIVE PUBLIC INGRESS AND EGRESS RIGHT–OF–WAYS FOR THE BENEFIT OF LOTS 1 & 2, AND THE PUBLIC IS HEREBY PLATTED AS SHOWN ACROSS AND OVER LOT 1, GREEN MOUNTAIN FALLS TOWN HALL SUBDIVISION WITH THE SOLE RESPONSIBILITY FOR MAINTENANCE BEING VESTED WITH THE TOWN OF GREEN MOUNTAIN FALLS AS GRAPHICALLY DESCRIBED HEREIN. THIS RIGHT–OF–WAYS SHALL REMAIN AND SHALL NOT BE VACATED OR CHANGED AFTER ANY CONVEYANCE OF LOT 1 TO PRIVATE OWNERSHIP PRIOR TO A RE–PLAT DONE IN FULL COMPLIANCE WITH THE TOWN AND/OR COUNTY SUBDIVISION REGULATIONS.

SURVEYOR'S CERTIFICATION:
THE UNDERSIGNED LICENSED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO HEREBY CERTIFIES THAT THE ACCOMPANYING PLAT WAS SURVEYED AND DRAWN UNDER HIS RESPONSIBLE CHARGE AND ACCURATELY SHOWS THE DESCRIBED TRACT OF LAND, AND SUBDIVISION THEREOF, AND THAT THE REQUIREMENTS OF TITLE 38 OF THE COLORADO REVISED STATUTES, 1973, AS AMENDED HAVE BEEN MET BASED ON FACTS KNOWN TO ME.
THIS 6TH DAY OF MARCH, 2018.



WARREN D. WARD, COLORADO PLS 25971

PLANNERS CERTIFICATION:
I, TODD E. FICKEN, BEING A QUALIFIED PROFESSIONAL ENGINEER, CERTIFY THAT THIS PLAT OF THE AMENDED GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION HAS BEEN ENGINEERED, DESIGNED AND PLANNED IN ACCORDANCE WITH ALL APPLICABLE DESIGN STANDARDS AND OTHER REQUIREMENTS OF THE TOWN OF GREEN MOUNTAIN FALLS SUBDIVISION REGULATIONS BASED ON FACTS KNOWN TO ME
THIS___ DAY OF ____________, 20____.

____
TODD E. FICKEN, P.E.

BE IT KNOWN BY THESE PRESENTS:

THAT THE TOWN OF GREEN MOUNTAIN FALLS IS THE OWNER OF THE FOLLOWING DESCRIBED TRACT OF LAND TO WIT:
LOT 1, GREEN MOUNTAIN FALLS TOWN HALL SUBDIVISION, IN THE TOWN OF GREEN MOUNTAIN FALLS, EL PASO COUNTY, COLORADO, AS SHOWN ON THE SUBDIVISION PLAT RECORDED AT RECEPTION NO.21473433, CONTAINING 1.561 ACRES, +/–.

THAT GREEN MOUNTAIN FALLS–CHIPITA PARK FIRE PROTECTION DISTRICT IS THE OWNER OF THE FOLLOWING DESCRIBED TRACT OF LAND, TO WIT:

LOT 2A, GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION, IN THE TOWN OF GREEN MOUNTAIN FALLS, EL PASO COUNTY, COLORADO, AS SHOWN ON THE SUBDIVISION PLAT AT RECEPTION NO. 214713433, CONTAINING 1.00 ACRES +/–

AND

LOT 2B, GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION, IN THE TOWN OF GREEN MOUNTAIN FALLS, EL PASO COUNTY, COLORADO, AS SHOWN ON THE SUBDIVISION PLAT AT RECEPTION NO. 214713433, CONTAINING 1.00 ACRES +/–

DEDICATION:

THE UNDERSIGNED PARTY IN INTEREST HAS CAUSED SAID TRACT TO BE SURVEYED AND PLATTED INTO LOTS, EASEMENTS AND RIGHT OF WAY AS SHOWN ON THIS PLAT, WHICH PLAT IS DRAWN TO A FIXED SCALE AS INDICATED HEREIN AND ACCURATELY SETS FORTH THE BOUNDARIES AND DIMENSIONS OF SAID TRACT AND THE LOCATION OF SAID EASEMENTS, AND WHICH PLAT SO PLATTED SHALL BE KNOWN AS "THE AMENDED GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION", GREEN MOUNTAIN FALLS, EL PASO COUNTY, COLORADO.

LEGAL DESCRIPTION:

TO WIT A PARCEL OF LAND LOCATED IN THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 30, TOWNSHIP 13 SOUTH, RANGE 68 WEST OF THE 6TH PRINCIPAL MERIDIAN, COUNTY EL PASO, STATE OF COLORADO DESCRIBED AS FOLLOWS:
BEGINNING AT PLS MONUMENT 28685 IN THE SOUTHWEST CORNER OF LOT 2, AMENDED GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION
(1) THENCE SOUTH 77°55'01" EAST, A DISTANCE OF 284.87 FEET;
(2) THENCE NORTH 00°58'06" EAST, A DISTANCE OF 260.58 FEET;
(3) THENCE NORTH 51°54'57" WEST, A DISTANCE OF 216.33 FEET;
(4) THENCE SOUTH 82°10'54" WEST, A DISTANCE OF 120.25 FEET;
(5) THENCE SOUTH 81°59'59" WEST, A DISTANCE OF 177.24 FEET:
(6) THENCE SOUTH 08°00'33" EAST, A DISTANCE OF 85.96 FEET;
(7) THENCE SOUTH 30°35'18" WEST, A DISTANCE OF 62.03 FEET;
(8) THENCE NORTH 62°19'11" WEST, A DISTANCE OF 110.52 FEET;
(9) THENCE SOUTH 08°01'00" WEST, A DISTANCE OF 143.99 FEET;
(10) THENCE ALONG THE ARC OF A NON–TANGENT CURVE TO THE RIGHT HAVING A CENTRAL ANGLE OF 00°20'03", A RADIUS OF 677.53' FEET, AN ARCH LENGTH OF 3.95 FEET AND A CHORD THAT BEARS SOUTH 07°22'46" EAST A DISTANCE OF 3.95 FEET;
(11) THENCE SOUTH 77°55'33" EAST, A DISTANCE OF 285.15 FEET TO THE POINT OF BEGINNING; CONTAINING 3.569 ACRES +/–

IN WITNESS WHEREOF:

THE AFOREMENTIONED GREEN MOUNTAIN FALLS – CHIPITA PARK FIRE PROTECTION DISTRICT HAS EXECUTED THIS INSTRUMENT THIS _________ DAY OF _________________, 2018

____
RICHARD BOWMAN, BOARD PRESIDENT
GREEN MOUNTAIN FALLS – CHIPITA PARK FIRE PROTECTION DISTRICT

ATTEST:

____
JEFF IDELMAN, BOARD SECRETARY
GREEN MOUNTAIN FALLS – CHIPITA PARK FIRE PROTECTION DISTRICT

PLANNING COMMISSION APPROVAL:
APPROVED BY THE PLANNING COMMISSION OF THE TOWN OF GREEN MOUNTAIN FALLS, COLORADO, THIS ___ DAY OF _____________, 20____.

___________ _____________ ATTEST: _____________________
CHAIRMAN PLANNING COMMISSION TOWN CLERK

TOWN COUNCIL APPROVAL:
THE UNDERSIGNED HEREBY APPROVE FOR FILING THE ACCOMPANYING PLAT OF THE "GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION".

___________ ____________ ATTEST______________________
MAYOR TOWN CLERK

RECORDING
STATE OF COLORADO)
COUNTY OF EL PASO) SS

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD AT MY OFFICE AT _____ O'CLOCK __M, THIS _____ DAY OF ____________, 20_____, AND IS DULY RECORDED AT RECEPTION NO. _____________ OF THE RECORDS OF EL PASO COUNTY, COLORADO.

BY: ______________________
COUNTY CLERK AND RECORDER

FEE: _______

SURCHARGE: ______

AMENDED GREEN MOUNTAIN FALLS FIRE STATION SUBDIVISION

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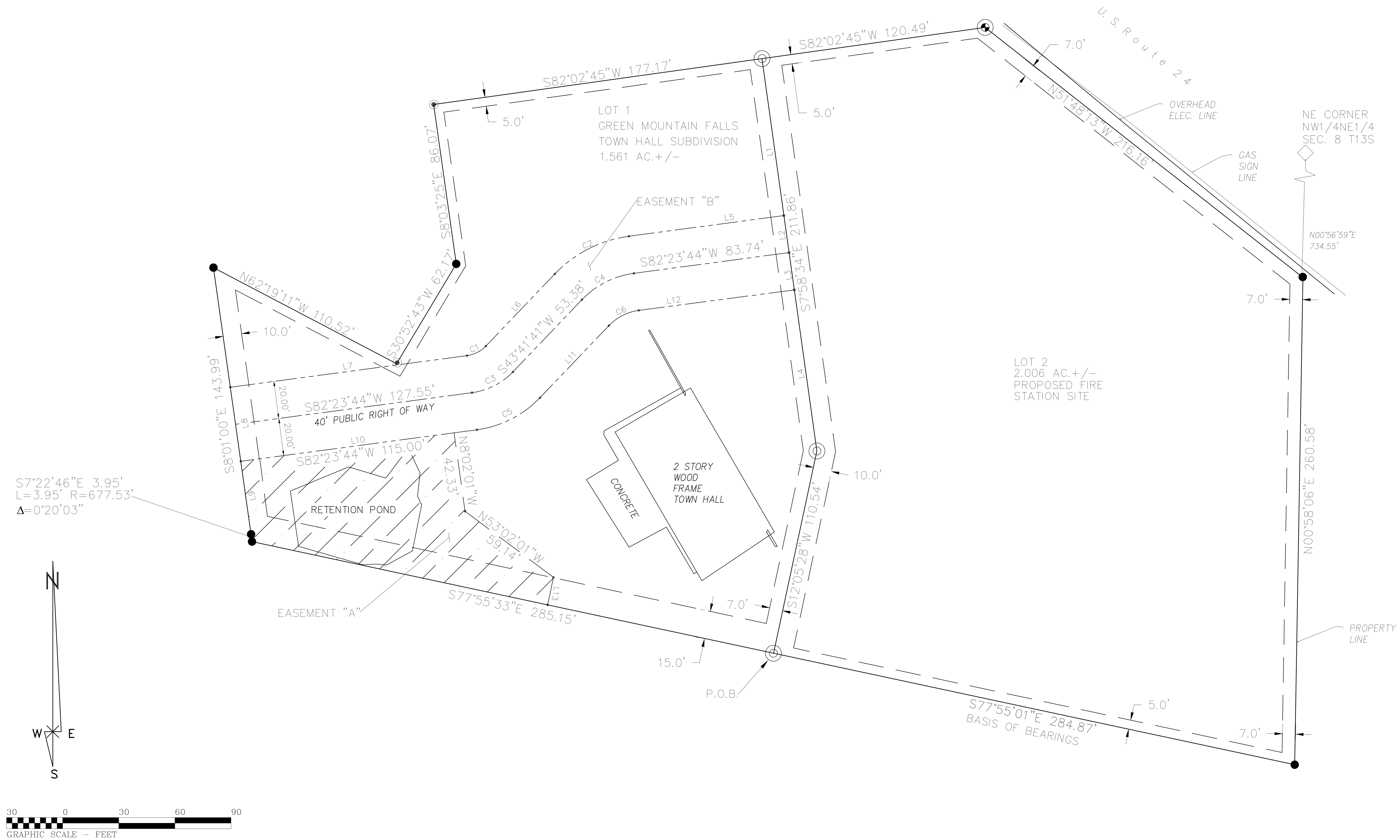

BASIS OF BEARINGS: Assumed S77°55'00"E, along the south boundary of Lot 2, monumented as shown.

LEGEND:

- *FOUND PLASTIC CAPPED REBAR STAMPED PLS 26965, APPARENT ORIGINAL MONUMENT*
- *FOUND ALUMINUM CAPPED REBAR STAMPED PLS 28658, APPARENT ORIGINAL MONUMNET*
- *FOUND1/2" REBAR, APPARENT ORIGINAL MONUMENT*
- *SET ALUMINUM CAPPED, 1/2" REBAR STAMPED PLS 25971*
- *FOUND ALUMINUM CAPPED REBAR, ILLEGIBLE, POSITIONED AS PER MONUMENT RECORDS*

CURVE TABLE

CURVE	LENGTH	RADIUS	BEARING	CHORD
C1	11.48	17.00	N63°02'43"E	11.27
C2	45.26	67.00	N63°02'43"E	44.40
C3	24.99	37.00	N63°02'43"E	24.52
C4	31.75	47.00	N63°02'43"E	31.15
C5	38.50	57.00	N63°02'43"E	37.77
C6	18.24	27.00	N63°02'43"E	17.89

LINE TABLE

LINE	LENGTH	BEARING
L1	84.73	S07°58'34"E
L2	20.00	S07°58'34"E
L3	20.14	S07°58'34"E
L4	87.00	S07°58'34"E
L5	83.61	S82°23'44"W
L6	53.38	S43°41'41"W
L7	127.70	S82°23'44"W
L8	40.00	S08°01'25"E
L9	39.41	S08°01'00"E
L10	115.01	N82°23'44"E
L11	53.38	N43°41'41"E
L12	83.87	N82°29'26"E
L13	15.01	S12°04'29"W