HARRIS KOCHER SMITH

DENVER • DALLAS/FORT WORTH

March 03, 2020
Tyler Burhenn
Civil Engineer
Town of Erie Department of Planning & Development
645 Holbrook St.
Erie, CO 80516

RE: Nine Mile Multifamily – Engineering Comments
HKS Project No. 160602

Dear Tyler,
Please see the following responses to address the engineering comments received on February 20, 2020.

Overall Comments

1. Provide exhibit B for review.
   HKS Response: Exhibit B is included with this submittal.
2. Raw Water Fee is **$1,786,281.35** see worksheet.
   HKS Response: Acknowledged.

Site Plan Engineering Comments

1. Sheet 18:
   a. Update, 10' separation needed between sanitary service and two canopy trees.
      Response (previous): All trees have been adjusted to be outside 10' of water lines and to avoid any utility conflicts.
      Town: Recommendation to adjust to give 10' horizontal clearance.
      HKS Response: Sanitary service line has been adjusted to provide 10' horizontal clearance from canopy trees.

Construction Plans Engineering Comments

1. Sheet 30:
   a. Add, retaining wall detail.
      Response (previous): A retaining wall detail has been added.
      Town: An engineered design will be needed. Show drawings by contractor will not be acceptable.
      HKS Response: An engineered retaining wall design will be submitted at a later date.

b. Section C-C Detail
   i) Add maintenance ladder to outlet structure.
   HKS Response: Maintenance ladder added to the outlet structure Section C-C.

Merrick Drainage Comments

Phase III Drainage Report

1. The following comments relate to the design of the detention pond:
   a. Update the water surface elevations in the text based on the comments below.
   HKS Response: Water surface elevations have been updated.
   b. We understand that the micropool water surface elevation was lowered to be 4" below the invert of the trickle channel as requested. This adjustment must also be accounted in the UD-Detention spreadsheet by adjusting the elevations or stages relative to the stage storage curve. Since the lowest water quality orifice will be lowered 4" to match the micropool elevation, the stage/depth will increase. To maintain the required WQCV and drain time with a 4" higher depth/head, smaller orifice sizes will likely be required. Revise design as needed.
   HKS Response: Design has been revised based on the elevation of the micropool water surface.

Construction Plans

4. On Sheet 37, in Section C-C show the wingwalls beyond in the micropool area to show the height of these walls.
   HKS Response: Micropool area walls are now shown in Section C-C.
5. On Sheet 37, in the WQCV Orifice Plate Detail specify the elevation of the lowest orifice/micropool. Also, make elevation adjustments for the Outlet Structure as needed per comment 1b above.
   HKS Response: A callout has been added showing the elevation of the lowest orifice corresponding to the micropool WSEL, which has been updated based on comment 1b above.
6. On sheet 37, we understand that safety railings were added to the Modified Impact Stilling Basin wingwalls since they exceed 2.5' high. Provide a detail for the safety railing. In addition, the downstream wall of the forebay is 3' high and also exceeds the maximum height of 2.5' and should be protected with a railing. A railing in this location is not desired since it would be in the main flow path and can catch debris. We recommend lowering this wall to 2.5' high if it will still provide the energy dissipation required.
   HKS Response: The downstream wall of the forebay has been lowered to be 2.5' high, and the safety railing has been added to the Modified Impact Stilling Basin detail.

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7. On sheet 38, Section D-D shows that the elevation of the Overflow Spillway crest is proposed to be 5250.8 which is about 3.7' higher than the 100-year water surface elevation and is about 1.1' higher than the Arapahoe Road grade adjacent to the spillway (see existing spot elevations on sheet 36). Since the pond depth exceeds 10' high from the spillway to the invert of the outlet pipe (about 13.8'), this pond could potentially be a State jurisdictional dam. We recommend lowering the spillway elevation to be at the roadway elevation (about 5249.7) since roadway embankments are typically exempt. If the spillway is not lowered, a determination must be obtained from State Dam Safety.
   HKS Response: The spillway elevation has been lowered to the extent feasible, and the pond bottom/outlet pipe invert have been raised to that the elevation difference between the two is now less than 10'.
8. On the Detailed Grading Plans (Sheets 40-56), label existing and proposed contours.
   HKS Response: Contour labels added.

Site Plan

9. See above comments and update as needed.
   HKS Response: Acknowledged. Site plan has been updated as needed.

Please let us know if you have any questions or require additional information for your review.

Sincerely,

Rachel Patton, PE
Harris Kocher Smith

March 3, 2020

Town of Erie – Department of Planning and Development
Hannah Hippely, Senior Planner
645 Holbrook St.
Erie CO, 80516

Re: Response to Parks and Open Space Division Comments

Parks & Open Space Division staff have reviewed the subject plans and offer the following comments:

General Comments:

- Provide identification signs for all three locations (clearly specifying contact number for maintenance or other concerns). These areas will be open for use by the general public.
Response: Wayfinding and identification signage has been included at all three courtyards as well as towards the north end of the trail within Tract H (4 locations total). This signage has been updated to include space for a maintenance and concerns contact number. The contact number will be determined at time of construction. The detail for this sign can be found on sheet, 24.

Landscape Comments:
Sheet 14 of 51
-Provide additional detail for the Pedestal Gas Grill (2) that are listed in List D.
Response: A pedestal grill detail has been added to sheet, 23.

Sheet 15 of 51
-The turf area should be open, remove the three SHU (Shummard Oak) from the open turf area.
Response: The three SHU located within the turf area have been relocated to adjacent beds.

-Horseshoe Pits are listed as part of the List C components. Correct the quantity to reflect the Horseshoe Pit as a quantity of one, or add an additional pit.
Response: The horseshoe pit quantity has been revised to be a quantity of one (2 stakes, 1 game).

-An additional Horseshoe Pit, or component of choice, is required to be provided for List C.
Response: In a meeting with Patrick Hammer and Hannah Hippely on November 22, the horseshoe pit was allowed to count towards List C as shown with the addition of a boulder/art feature and wayfinding signage (details 4 and 5 on sheet 24). This was confirmed in a conversation with Patrick on March 3rd.

Sheet 18 of 51
-Provide additional informational signage that describes the educational component of the display garden.
Response: A detail of the educational signage has been added to sheet, 24. The sign graphic will be determined at time of construction and will include, garden plant species (notable information and picture), bloom times, and animal/insect habitat.

Sheet 20 of 51
-The turf area should be open, remove the three SHU (Shummard Oak) from the open turf area.
Response: The three SHU located within the turf area have been relocated to adjacent beds.

-Additional information is requested on the boulder play including, fibar play surface depth, boulder information, and confirm that all ASTM playgrounds standards (use zones, surfacing, and access etc.) are being met.
Response: All playground features will meet ASTM playground standards and fall zones. A character image of the proposed climbing feature has been added to sheet, 23. Fibar Surfacing will be installed per manufacturers recommendations at the required depth per the height of the structure.

Sheet 22 of 51
-Provide additional information regarding ADA accessibility of the benches and picnic tables.
Response: The picnic table detail on sheet, 22 has been revised to include an ADA compliant table. (1) ADA compliant table shall be placed under each of the structures. Please reference civil plans for the ADA accessible path around the site. All amenities are located adjacent to an accessible route.

Sheet 24 of 51
-Correct Detail 6 to read HORSESHOE PIT.
Response: This detail name has been revised.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK AT NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

CIVIL CONSTRUCTION PLANS

LEGAL DESCRIPTION:

LOT 11, TRACTS H AND G
NINE MILE CORNER FILING NO. 1
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

BASIS OF BEARINGS:

BEARINGS ARE BASED ON THE NORTH LINE OF THE NORTHEAST QUARTER OF SECTION 34 AND MONUMENTED ON THE WEST BY A 2.5" ALUMINUM CAP STAMPED "PLS29752" IN A RANGE BOX FOR THE N ¼ CORNER AND MONUMENTED ON THE EAST BY A 2.5" ALUMINUM CAP STAMPED "PLS12405" FOR THE NE CORNER AND IS ASSUMED TO BEAR S 89°58'01"E.

BENCHMARK:

ELEVATIONS SHOWN ARE NAVD88 AND ARE DERIVED VIA GPS OBSERVATIONS FROM THE LIECA SMARTNET RTK GPS NETWORK AND GEOID 12B.

LEGEND

	EXISTING	PROPOSED
PROPERTY BOUNDARY		
PD BOUNDARY		
RIGHT-OF-WAY		
CONTOURS	5280	5280
SANITARY SEWER PIPE	SS	SS
WATER PIPE	W W	8W
STORM SEWER PIPE	ST	
GAS	G	G
UNDERGROUND TELEPHONE	UT UT UT	UT UT UT
UNDERGROUND ELECTRIC	UE	UE
OVERHEAD ELECTRIC	OE OE	OE OE
JOINT TRENCH		JT
TO BE ABANDONED OR REMOVED		
MANHOLE	ST	
GATE VALVE		
HYDRANT		
TEE & FITTINGS		
WATER METER W/ CURB STOP		
WATER DOMESTIC SERVICE		
WATER FIRE SERVICE		
SANITARY SERVICE W/ CLEANOUT		
INLET		
LANDSCAPE DRAIN		
LIGHT		
TELEPHONE VAULT		
TELEPHONE JUNCTION BOX		
FIBER OPTIC PEDESTAL	FO	
FENCE POST/BOLLARD		
TRANSFORMER		

Sheet List Table

1	COVER SHEET
2	GENERAL NOTES
3	GENERAL NOTES
4	OVERALL SITE PLAN
5	DETAILED SITE PLAN
6	DETAILED SITE PLAN
7	DETAILED SITE PLAN
8	EROSION CONTROL PLAN INITIAL
9	EROSION CONTROL PLAN INTERIM
10	EROSION CONTROL PLAN FINAL
11	EROSION CONTROL PLAN DETAIL 1
12	EROSION CONTROL PLAN DETAIL 2
13	EROSION CONTROL PLAN DETAIL 3
14	EROSION CONTROL PLAN DETAIL 4
15	EROSION CONTROL PLAN DETAIL 5
16	OVERALL UTILITY PLAN
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27	WATER DETAILS
28	WATER DETAILS
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34	STORM SEWER PLAN & PROFILE LINES D, E & F
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36	DETENTION POND PLAN
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39	SECONDARY ACCESS ROAD PLAN
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43	DETAILED GRADING PLAN
44	DETAILED GRADING PLAN
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54	DETAILED GRADING PLAN
55	DETAILED GRADING PLAN
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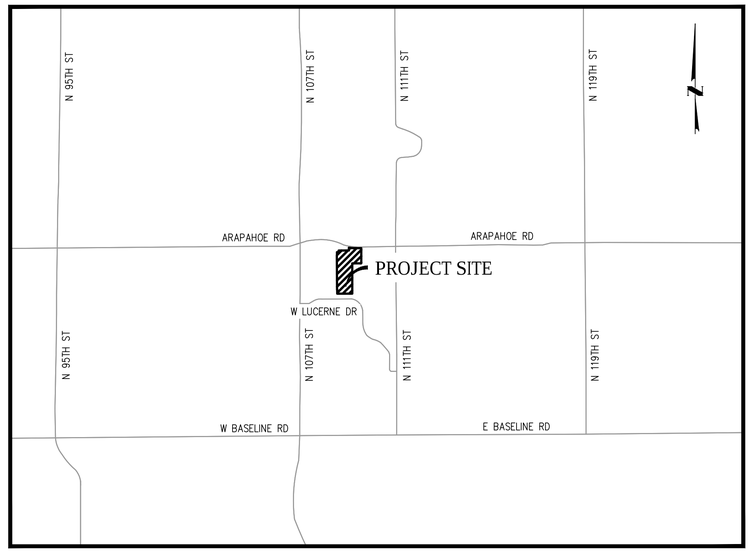

VICINITY MAP
SCALE: 1" = 2000'

ABBREVIATIONS

BOP	BOTTOM OF PIPE
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL (FG)
BYOT	BY OTHERS
CONC	CONCRETE
DIA	DIAMETER
DOM	DOMESTIC
DR	DOOR
DS	DOWNSPOUT
E	EAST, EASTING
EL	ELEVATION
ESMT	EASEMENT
EX	EXISTING
FES	FLARED END SECTION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
℄	FLOW LINE
GV	GATE VALVE
HC	HANDICAP
HGL	HYDRAULIC GRADE LINE
HP	HIGH POINT
INV	INVERT
JT	JOINT TRENCH
LP	LOW POINT
LSD	LANDSCAPE DRAIN
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
N	NORTH, NORTHING
PR	PROPOSED
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
SS	SANITARY SEWER
STA	STATION
STM	STORM
TB	THRUST BLOCK
TBC	TOP/BACK OF CURB
TOP	TOP OF PIPE
TS	TOP OF STEP
TW	TOP OF WALL (FG)
TYP	TYPICAL
UGE	UNDERGROUND ELECTRIC
WAT	WATER

SITE INFO TABLE

DESCRIPTION	VALUE
BUILDING FOOTPRINTS AREA	136,009 SQ FT
IRRIGATED XERIC AREA	61,798 SQ FT
IRRIGATED TURF LANDSCAPE AREA	10,291 SQ FT
NUMBER OF TREES IN NATIVE GRASS AREAS	49 TREES (35,967 SQ FT NATIVE GRASS AREA)

ALL WORK SHALL BE CONSTRUCTED TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS. THIS DRAWING HAS BEEN REVIEWED AND FOUND TO BE IN GENERAL COMPLIANCE WITH THESE STANDARDS AND SPECIFICATIONS AND OTHER TOWN REQUIREMENTS. THE ENGINEERING DESIGN AND CONCEPT REMAINS THE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON.

ACCEPTED BY: _____ _____
TOWN ENGINEER DATE

I HEREBY AFFIRM THAT THESE FINAL CONSTRUCTION PLANS WERE PREPARED UNDER MY DIRECT SUPERVISION, IN ACCORDANCE WITH ALL APPLICABLE TOWN OF ERIE AND STATE OF COLORADO STANDARDS AND STATUTES, RESPECTIVELY; AND THAT I AM FULLY RESPONSIBLE FOR ALL DESIGN AND REVISIONS RELATIVE TO SAID PLANS.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DEVELOPER:
Evergreen
Development | Services | Investments

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

CIVIL ENGINEER:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

RACHEL PATTON, P.E. 54450
ON THE BEHALF OF HARRIS KOCHER SMITH

PRELIMINARY NOT FOR CONSTRUCTION

Filepath: P:\160602\ENGINEERING\CD\CD - COVER SHEET.DWG Layout: COVER SHEET
Plotted: TUE 03/03/20 2:15:36P By: Joel Mensch

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

GENERAL NOTES – CONSTRUCTION

1. ALL CONSTRUCTION SHALL CONFORM TO THE LATEST "STANDARDS AND SPECIFICATIONS FOR DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS" BY THE TOWN OF ERIE. COPIES OF THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS MAY BE OBTAINED FROM THE TOWN OF ERIE WEB SITE. CONTRACTOR SHALL HAVE A SET ON SITE AT ALL TIMES.

2. THE OWNER SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE TOWN OF ERIE ENGINEERING STAFF PRIOR TO THE START OF CONSTRUCTION. THOSE IN ATTENDANCE SHALL INCLUDE THE OWNER, HIS ENGINEER, THE TOWN OF ERIE ENGINEERING STAFF, REPRESENTATIVES OF THE CONTRACTORS AND OTHER AFFECTED AGENCIES. PLANS SIGNED AND ACCEPTED BY THE TOWN OF ERIE WILL BE DISTRIBUTED AT THE PRECONSTRUCTION MEETING. CONTRACTOR SHALL HAVE (1) COPY OF THE SIGNED PLANS ON SITE AT ALL TIMES.

3. THE TOWN OF ERIE, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT. THE OWNER AND DESIGN ENGINEER UNDERSTAND THAT THE RESPONSIBILITY FOR THE ENGINEERING ADEQUACY OF THE FACILITIES DEPICTED IN THIS DOCUMENT LIES SOLELY WITH THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT. REPORT ALL DISCREPANCIES TO THE DESIGN ENGINEER IMMEDIATELY.

4. PRIOR TO BEGINNING THE WORK, THE CONTRACTOR SHALL OBTAIN ANY/ALL WRITTEN AGREEMENTS FOR INGRESS AND EGRESS TO THE WORK SITE FROM ADJACENT PRIVATE PROPERTY OWNERS. A COPY OF ALL AGREEMENTS SHALL BE PROVIDED TO THE TOWN. ACCESS TO ANY ADJACENT PRIVATE PROPERTY SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD.

5. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF ERIE ENGINEERING STAFF. THE TOWN RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO TOWN STANDARDS AND SPECIFICATIONS. INSPECTIONS AND ONSITE VISITS ARE NOT TO BE CONSTRUED AS A GUARANTEE BY THE TOWN ENGINEERING STAFF OF THE CONTRACTORS' CONTRACTUAL COMMITMENT. REQUESTS FOR INSPECTION BY THE TOWN OF ERIE SHALL BE MADE BY THE CONTRACTOR A MINIMUM OF TWENTY- FOUR (24) HOURS IN ADVANCE.

6. CONSTRUCTION WATER IS AVAILABLE TO THE CONTRACTOR AS ESTABLISHED IN THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE TOWN OF ERIE REGARDING CURRENT REGULATIONS, FEES AND REQUIRED AGREEMENTS RELATED TO THE PROVISION OF CONSTRUCTION WATER.

7. THE CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH THE AFFECTED UTILITY COMPANIES AND SHALL NOTIFY THE UTILITY NOTIFICATION CENTER, PHONE NUMBER 811, THREE (3) BUSINESS DAYS PRIOR TO THE START OF CONSTRUCTION.

8. UTILITIES IN THE AREA OF CONSTRUCTION ARE APPROXIMATE ONLY. THEY HAVE BEEN LOCATED FROM FIELD INVESTIGATION AND THE BEST AVAILABLE UTILITY RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION WHETHER SHOWN ON THESE PLANS OR NOT. THE CONTRACTOR SHALL CONTACT ALL RESPECTIVE UTILITIES AND HAVE ALL UTILITIES FIELD-LOCATED PRIOR TO CONSTRUCTION. IF ANY UNKNOWN SUBSURFACE STRUCTURES ARE ENCOUNTERED DURING CONSTRUCTION, IT SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE TOWN OF ERIE ENGINEERING STAFF AND DESIGN ENGINEER PRIOR TO PROCEEDING.

9. THE CONTRACTOR SHALL NOTIFY TOWN OF ERIE ENGINEERING STAFF OF ANY PROBLEM IMPACTING WATER AND WASTE WATER FACILITIES THAT WOULD POTENTIALLY REQUIRE A VARIANCE FROM THE APPROVED PLANS AND SPECIFICATIONS. ANY VARIANCE FROM THE APPROVED DOCUMENTS SHALL BE AT THE SOLE DISCRETION OF THE TOWN OF ERIE ENGINEERING STAFF.

10. CONTRACTOR SHALL OBTAIN, AT HIS OWN EXPENSE, ALL APPLICABLE SPECIFICATIONS AND PERMITS NECESSARY TO PERFORM THE PROPOSED WORK.

11. AS-BUILT DRAWINGS AS REQUIRED IN THE SPECIFICATIONS, ARE TO BE SUBMITTED BY THE OWNER/DEVELOPER PRIOR TO INITIAL ACCEPTANCE OF THE CONSTRUCTION.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND REPLACING ANY EXISTING SIGNS, STRUCTURES, FENCES, ETC., ENCOUNTERED ON THE JOB AND RESTORING THEM TO THEIR ORIGINAL CONDITION.

13. THE CONTRACTOR IS RESPONSIBLE FOR:

    A. NOTIFYING THE TOWN OF ERIE UTILITY CUSTOMERS OF POTENTIAL SERVICE OUTAGES, AND COORDINATE WITH THE TOWN OF ERIE FOR DETERMINATION OF MINIMUM TIME REQUIREMENT.

    B. NOTIFYING THE TOWN OF ERIE ENGINEERING STAFF IF WORK IS SUSPENDED FOR ANY PERIOD OF TIME AFTER INITIAL START-UP. THE CONTRACTOR SHALL NOTIFY THE TOWN OF ERIE FORTY-EIGHT (48) HOURS PRIOR TO RESTART.

    C. IN THE EVENT OF AN AFTER HOURS EMERGENCY, CALL 303-441-4444.

    D. NOTIFYING THE MOUNTAIN VIEW FIRE PROTECTION DISTRICT OF ALL STREET CLOSURES AND EXISTING FIRE HYDRANTS TAKEN OUT OF SERVICE A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO THE START OF CONSTRUCTION.

14. PRIOR TO INSTALLATION OF UTILITY MAINS, ROAD CONSTRUCTION MUST HAVE COMPLETED THE OVER LOT GRADING STAGE.

15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY GROUNDWATER ENCOUNTERED DURING THE CONSTRUCTION OF ANY PORTION OF THIS PROJECT. A CONSTRUCTION DEWATERING PERMIT MUST BE OBTAINED FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE). GROUNDWATER SHALL BE PUMPED, PIPED, REMOVED AND DISPOSED OF IN A MANNER WHICH DOES NOT CAUSE FLOODING OF EXISTING STREETS OR EROSION OF ABUTTING PROPERTIES IN ORDER TO CONSTRUCT THE IMPROVEMENTS SHOWN ON THESE PLANS. THE USE OF ANY SANITARY SEWER TO DISPOSE OF TRENCH WATER WILL NOT BE PERMITTED. NO CONCRETE SHALL BE PLACED WHERE GROUNDWATER IS VISIBLE OR UNTIL THE GROUNDWATER TABLE HAS BEEN LOWERED BELOW THE PROPOSED IMPROVEMENTS. ANY UNSTABLE AREAS, AS A RESULT OF GROUNDWATER, ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS SHALL BE STABILIZED AS AGREED UPON BY THE CONTRACTOR, THE TOWN OF ERIE, AND THE DESIGN ENGINEER AT THE TIME OF THE OCCURRENCE.

16. IT SHALL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO RESOLVE CONSTRUCTION PROBLEMS WITH THE TOWN OF ERIE DUE TO CHANGED CONDITIONS ENCOUNTERED BY THE CONTRACTOR DURING THE PROGRESS OF ANY PORTION OF THE PROPOSED WORK. IF, IN THE OPINION OF THE TOWN OF ERIE, PROPOSED ALTERATIONS TO THE SIGNED CONSTRUCTION PLANS INVOLVES SIGNIFICANT CHANGES TO THE CHARACTER OF THE WORK, OR TO THE FUTURE CONTIGUOUS PUBLIC OR PRIVATE IMPROVEMENTS, THE DESIGN ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING REVISED PLANS TO THE TOWN OF ERIE FOR REVIEW, PRIOR TO ANY FURTHER CONSTRUCTION RELATED TO THAT PORTION OF THE WORK.

17. DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR CONDITIONS AT AND ADJACENT TO THE JOB INCLUDING SAFETY OF ALL PERSONS AND PROPERTY DURING PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN, OR OTHER DEVICES NECESSARY TO PROVIDE FOR PUBLIC SAFETY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND IS NOT LIMITED TO NORMAL WORKING HOURS. THE TOWN OF ERIE OR THE DESIGN ENGINEER EXERCISE NO CONTROLS OVER THE SAFETY OR ADEQUACY OF ANY EQUIPMENT, BUILDING COMPONENTS, SCAFFOLDING, FORMS OR OTHER WORK AIDS USED IN OR ABOUT THE PROJECT, OR IN THE SUPERINTENDING OF THE SAME. THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD HARMLESS FROM ANY AND ALL LIABILITY, REAL AND ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER, THE DESIGN ENGINEER OR THE TOWN. THE TOWN OF ERIE ENGINEERING STAFF, OR ANY CONTRACTED ENGINEER, ARE NOT RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE PROJECT SITE, NOR FOR COMPLIANCE BY THE APPROPRIATE PARTY OF ANY REGULATIONS RELATING THERETO.

18. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.

19. REGULAR WORK HOURS ARE SEVEN (7) A.M. UNTIL SEVEN (7) P.M. OR DUSK (WHICHEVER OCCURS FIRST) OF THE SAME DAY, MONDAY THROUGH FRIDAY. THE CONTRACTOR WILL NOT PERMIT OVERTIME WORK OUTSIDE OF REGULAR WORKING HOURS OR THE PERFORMANCE OF WORK ON SATURDAY, SUNDAY OR ANY LEGAL HOLIDAY WITHOUT RECEIVING WRITTEN CONSENT FROM THE PUBLIC WORKS DIRECTOR. REQUESTS FOR WEEKEND WORK APPROVAL MUST BE SUBMITTED, IN WRITING TO THE TOWN OF ERIE NO LATER THAN WEDNESDAYS AT 3:30PM FOR SUBSEQUENT WEEKEND AND REQUESTS FOR HOLIDAY WORK APPROVAL MUST BE SUBMITTED, IN WRITING TO THE TOWN OF ERIE NO LATER THAN 7:00AM-2 BUSINESS DAYS PRIOR TO THE HOLIDAY. ALL EXPENSES INCURRED BY THE TOWN SHALL BE REIMBURSED AT A RATE TO BE DETERMINED BY DIRECTOR OF FINANCE.

20. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK. THE OWNER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL APPROPRIATE PERMITS FROM BOTH THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT AND THE TOWN OF ERIE FOR ANY PROJECT DISTURBING ONE ACRE OR MORE OR ANY PROJECT LESS THAN ONE ACRE THAT IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT.

21. EACH TYPE OF CONSTRUCTION SHALL BE COMPLETED BY A CONTRACTOR THAT HAS DEMONSTRATED ACCEPTABLE QUALIFICATIONS TO THE TOWN AND IS A LICENSED CONTRACTOR IN THE TOWN OF ERIE.

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL DURING CONSTRUCTION. ALL TRAFFIC CONTROLS SHALL CONFORM TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, (MUTCD) LATEST EDITIONS. A PLAN SHALL BE SUBMITTED TO THE TOWN FOR REVIEW AND ACCEPTANCE PRIOR TO CONSTRUCTION.

23. ALL BACKFILL SHALL CONFORM TO THE TRENCH DETAIL LOCATED IN THE TOWN OF ERIE STANDARDS & SPECIFICATIONS.

24. THE OWNER/OPERATOR IS RESPONSIBLE FOR ENSURING THE IMMEDIATE REMOVAL OF ANY CONSTRUCTION DEBRIS OR MUD TRACKED ONTO EXISTING ROADWAYS.

25. THE CONTRACTOR SHALL REPAIR ANY EXCAVATION OR PAVEMENT FAILURES CAUSED BY HIS CONSTRUCTION.

26. THE CONTRACTOR SHALL RENEW OR REPLACE ANY EXISTING TRAFFIC STRIPING AND/OR PAVEMENT MARKINGS, WHICH HAVE BEEN EITHER REMOVED OR THE EFFECTIVENESS OF WHICH HAS BEEN REDUCED DURING HIS OPERATION. RENEWAL OF PAVEMENT STRIPING AND MARKING SHALL BE DONE IN CONFORMANCE WITH THE TOWN OF ERIE STANDARD SPECIFICATIONS.

27. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO TAKE EVERY MEASURE NECESSARY TO COMPLY WITH ANY STATE, COUNTY OR TOWN DUST CONTROL ORDINANCE.

28. CONSTRUCTION VEHICLES SHALL USE TRUCK ROUTES DESIGNATED BY THE TOWN.

29. THE OWNER/DEVELOPER WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF THE IMPROVEMENTS FOR A MINIMUM OF TWO (2) YEARS FROM THE DATE OF INITIAL ACCEPTANCE OF THE IMPROVEMENTS BY THE TOWN OF ERIE. ANY FAILURE DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE OWNER/CONTRACTOR TO THE SATISFACTION OF THE TOWN OF ERIE AT NO EXPENSE TO THE TOWN.

30. THE SOILS ENGINEER SHALL PERFORM SUFFICIENT INSPECTIONS DURING GRADING AND CONSTRUCTION SO THAT AN OPINION CAN BE RENDERED AND VERIFIED IN WRITING AS TO COMPLIANCE WITH THE PLANS AND CODES WITHIN THE SOILS ENGINEER'S PURVIEW.

GENERAL NOTES – GRADING

1. ALL CONSTRUCTION ACTIVITIES THAT DISTURBS ONE OR MORE ACRES OF LAND, AS WELL AS ACTIVITIES THAT DISTURB LESS THAN ONE ACRE OF LAND, BUT IS PART OF A LARGER COMMON PLAN OF DEVELOPMENT, MUST COMPLY WITH BOTH LOCAL AND STATE REGULATIONS REGARDING STORMWATER DRAINAGE ON CONSTRUCTION SITES. OWNERS OR CONTRACTORS MUST OBTAIN A COLORADO STORMWATER DISCHARGE PERMIT FOR CONSTRUCTION ACTIVITIES FROM THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT (CDPHE) AND A GRADING AND STORMWATER QUALITY PERMIT FROM THE TOWN OF ERIE.
   CONTRACTOR SHALL:

   A. MAINTAIN A COPY OF THE STORM WATER MANAGEMENT PLAN (SWMP) ONSITE AT ALL TIMES OR PROVIDE AN UPDATED DIGITAL COPY WITHIN TWO BUSINESS DAYS UPON REQUEST. THE SWMP MUST BE MAINTAINED AND MADE AVAILABLE TO TOWN OF ERIE INSPECTORS UPON REQUEST.

   B. INSTALL AND MAINTAIN EROSION, SEDIMENT, AND MATERIALS MANAGEMENT CONTROL MEASURE AS SPECIFIED IN THE SWMP.

   C. INSPECT ALL CONTROL MEASURES AT LEAST EVERY SEVEN (7) DAYS OR EVERY FOURTEEN (14) DAYS AND WITHIN TWENTY FOUR (24) HOURS AFTER ANY PRECIPITATION OR SNOWMELT EVENT THAT CAUSES SURFACE RUNOFF.

   D. MAINTAIN INSPECTION AND MAINTENANCE RECORDS OF CONTROL MEASURES WITH THE SWMP. COPIES OF THESE REPORTS SHALL BE PROVIDED TO THE TOWN OF ERIE ENGINEERING STAFF.

   E. BASED ON INSPECTIONS PERFORMED BY THE PERMIT HOLDER OR BY TOWN PERSONNEL, MODIFICATIONS TO THE SWMP WILL BE NECESSARY IF AT ANY TIME THE SPECIFIED CONTROL MEASURES DO NOT MEET THE OBJECTIVES OF THE PERMIT. ALL MODIFICATIONS SHALL BE COMPLETED AS SOON AS PRACTICABLE AFTER THE REFERENCED INSPECTION, AND SHALL BE RECORDED ON THE OWNER'S COPY OF THE SWMP.

   F. THE OPERATOR SHALL AMEND THE SWMP WHENEVER THERE IS A SIGNIFICANT CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR DISCHARGE OF POLLUTANTS TO THE RECEIVING WATERS, OR IF THE SWMP PROVES TO BE INEFFECTIVE IN ACHIEVING THE GENERAL OBJECTIVES OF CONTROLLING POLLUTANTS IN STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.

   G. INSTALLATION AND MAINTENANCE OF CONTROL MEASURES SHALL BE SUPERVISED BY PERSONNEL CERTIFIED IN EROSION AND SEDIMENT CONTROL.

   H. ALL APPROPRIATE CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF EACH CONSTRUCTION PHASE.

   I. APPROPRIATE STABILIZED CONSTRUCTION ENTRANCES WITH VEHICLE TRACKING CONTROLS INSTALLED SHALL BE UTILIZED AT ALL TIMES TO REDUCE THE TRACKOUT OF SEDIMENT. IF NONSTRUCTURAL VEHICLE TRACKING CONTROLS ARE UTILIZED, CLEANUP OF TRACKOUT MUST OCCUR AT THE END OF EVERY BUSINESS DAY WITH CONSTRUCTION ACTIVITY OCCURRING.

2. ALL SITE GRADING (EXCAVATION, EMBANKMENT, AND COMPACTION) SHALL CONFORM TO THE RECOMMENDATIONS OF THE LATEST SOILS INVESTIGATION FOR THIS PROPERTY AND SHALL FURTHER BE IN CONFORMANCE WITH THE TOWN OF ERIE "STANDARDS AND SPECIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF PUBLIC IMPROVEMENTS", LATEST EDITION.

3. ALL GRADING AND FILLING OPERATIONS SHALL BE OBSERVED, INSPECTED AND TESTED BY A LICENSED SOILS ENGINEER. ALL TEST RESULTS SHALL BE SUBMITTED TO THE TOWN OF ERIE ENGINEERING STAFF.

4. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATION AND FOR THE SHORTEST PRACTICAL PERIOD OF TIME. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO AVOID ANY DAMAGE TO EXISTING FOLIAGE THAT LIES IN THE PROJECT AREA UNLESS DESIGNATED FOR REMOVAL AND SHALL BE LIABLE FOR SUCH DAMAGE AT HIS/HER EXPENSE.

5. TOPSOIL SHALL BE STOCKPILED TO THE EXTENT PRACTICABLE ON THE SITE FOR USE ON AREAS TO BE RE-VEGETATED. ANY AND ALL STOCKPILES SHALL BE LOCATED AND PROTECTED FROM EROSIVE ELEMENTS. IF MATERIALS ARE STORED OFFSITE, A WRITTEN USE AGREEMENT BETWEEN THE PERMITTEE AND THE OWNER/OPERATOR OF ANY CONTROL MEASURES BEING UTILIZED OUTSIDE OF THE PERMITTED AREA MUST BE MADE AVAILABLE TO TOWN PERSONNEL UPON REQUEST.

6. TEMPORARY VEGETATION/STABILIZATION SHALL BE INSTALLED ON ALL DISTURBED AREAS WHERE PERMANENT SURFACE IMPROVEMENTS ARE NOT SCHEDULED FOR IMMEDIATE INSTALLATION BUT NO LATER THAN FOURTEEN (14) DAYS. SEEDING WILL BE DONE ACROSS THE SLOPE FOLLOWING THE CONTOURS. VEGETATION SHALL CONFORM TO THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS. PROJECT SCHEDULING SHOULD TAKE ADVANTAGE OF SPRING OR FALL PLANTING SEASONS FOR NATURAL GERMINATION. SEEDED AREAS SHALL BE IRRIGATED IN ACCORDANCE WITH THE TOWN OF ERIE'S STANDARDS AND SPECIFICATIONS.

7. AT ALL TIMES, A WATER TRUCK SHALL BE ON-SITE AND THE PROPERTY SHALL BE MAINTAINED AND/OR WATERED TO PREVENT WIND-CAUSED EROSION. EARTHWORK OPERATIONS SHALL BE DISCONTINUED WHEN FUGITIVE DUST SIGNIFICANTLY IMPACTS ADJACENT PROPERTY. IF EARTHWORK IS COMPLETE OR DISCONTINUED AND DUST FROM THE SITE CONTINUES TO CREATE PROBLEMS, THE OWNER/DEVELOPER SHALL IMMEDIATELY INSTITUTE MITIGATIVE MEASURES AND SHALL CORRECT DAMAGE TO ADJACENT PROPERTY.

8. FILL SLOPES SHALL BE COMPACTED BY MEANS OF SHEEPSFOOT COMPACTOR OR OTHER SUITABLE EQUIPMENT. COMPACTING SHALL CONTINUE UNTIL SLOPES ARE STABLE AND THERE IS NOT AN APPRECIABLE AMOUNT OF LOOSE SOIL ON THE SLOPES.

9. TEMPORARY CUT/FILL SLOPES SHALL ABIDE BY THE SOILS REPORT. PERMANENT SLOPES SHALL BE AS SHOWN ON PLANS.

10. DEPTH OF MOISTURE-DENSITY CONTROL SHALL BE FULL DEPTH ON ALL EMBANKMENT AND SIX (6) INCHES ON THE BASE OF CUTS AND FILLS.

11. OUTLET SIDES OF ALL STORM PIPES SHALL BE GRADED TO DRAIN AND SHALL HAVE SUFFICIENT EROSION PROTECTION.

12. THE PERMITTEE OR HIS AGENT SHALL NOTIFY THE SITE GEOTECHNICAL ENGINEER WHEN THE GRADING OPERATION IS READY FOR EACH OF THE FOLLOWING INSPECTIONS:

    A. INITIAL INSPECTION WHEN THE PERMITTEE IS READY TO BEGIN WORK, BUT NOT LESS THAN TWO (2) DAYS BEFORE ANY GRADING OR GRUBBING IS STARTED.

    B. AFTER THE NATURAL GROUND OR BEDROCK IS EXPOSED AND PREPARED TO RECEIVE FILL, BUT BEFORE FILL IS PLACED.

    C. EXCAVATION INSPECTION AFTER THE EXCAVATION IS STARTED BUT BEFORE THE VERTICAL DEPTH OF THE EXCAVATION EXCEEDS TEN (10) FEET.

    D. FILL INSPECTION AFTER THE FILL PLACEMENT IS STARTED, BUT BEFORE THE FILL EXCEEDS TEN (10) FEET.

GENERAL NOTES – ROADWAY

1. ALL STATIONING IS BASED ON CENTERLINE OF ROADWAYS UNLESS OTHERWISE NOTED.

2. THE CONTRACTOR SHALL PREPARE THE SUBGRADE BY SCARIFYING THE UPPER ONE (1) FOOT OF THE SUBGRADE IN CUT AREAS OR AREAS WITH LITTLE OR NO FILL, UNLESS SPECIFIED IN THE SOILS REPORT. THE WORK SHALL CONFORM TO THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

3. PAVEMENT SHALL NOT BE CONSTRUCTED UNTIL ALL UNDERGROUND UTILITIES HAVE BEEN INSTALLED, TESTED AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.

4. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR TO SUPERVISE AND CERTIFY THAT PROPER COMPACTION HAS BEEN OBTAINED BY SUBCONTRACTORS AND AGENCIES CONCERNING UTILITY LINE BACKFILL INCLUDING, BUT NOT LIMITED TO, SEWER, WATER, ELECTRICAL, GAS AND LANDSCAPE IRRIGATION LINES AND ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF AND THE SOILS ENGINEER.

5. STREET PAVING SHALL NOT START UNTIL:

    A. A SOILS REPORT AND PAVEMENT DESIGN IS ACCEPTED BY THE TOWN OF ERIE ENGINEERING STAFF.

    B. ALL STREETS ARE COMPACTED IN ACCORDANCE WITH THE SOILS REPORT AND THE TOWN OF ERIE SPECIFICATIONS.

    C. ALL COMPACTION TEST REPORTS HAVE BEEN SUBMITTED TO THE TOWN ENGINEERING STAFF PRIOR TO PROOF ROLLS.

    D. PROOF ROLLS ARE PERFORMED USING A LOADED SINGLE AXLE 2000 GALLON WATER TRUCK AND MONITORED BY THE TOWN OF ERIE ENGINEERING STAFF.

6. THE OWNER/CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING ALL UTILITY MANHOLE COVERS AND ACCESS LIDS TO GRADE.

7. ALL CONCRETE SHALL BE A MINIMUM OF CLASS B, IN CONFORMANCE WITH CDOT STANDARDS.

8. ALL CONCRETE EDGES MUST BE ROUNDED TO A FOURTH (1/4) INCH RADIUS, EXCEPT WHERE SHOWN OTHERWISE ON DRAWINGS.

9. ONE HALF (1/2) INCH EXPANSION JOINTS SHALL BE INSTALLED AT ALL CURB RETURNS, CURB CUTS AND EXISTING STRUCTURES. CONTROL JOINTS SHALL BE INSTALLED PER THE TOWNS STANDARDS AND SPECIFICATIONS.

10. BEFORE PLACING OF ASPHALT THE SUBGRADE SHALL RECEIVE A GROUND STERILANT APPLIED AT A RATE IN ACCORDANCE TO MANUFACTURERS RECOMMENDATIONS.

11. THE GRADATION OF THE MINERAL AGGREGATE WILL BE GRADING SX (½" NOMINAL) FOR ALL TOP LIFTS AND OVERLAYS.

12. TACK COAT SHALL BE USED PRIOR TO OVERLAY, (CSS-1H), 50:50 DILUTION, 0.10 GAL/SY. ALL EDGES ABUTTING NEW PAVEMENT SHALL BE TACKED.

13. WHEN IT IS REQUIRED TO MATCH EXISTING PAVEMENT, EXISTING PAVEMENT SHALL BE SAW CUT IN A MANNER TO AFFECT A SMOOTH, VERTICAL STRAIGHT CUT EDGE. T PATCH MILLING MUST BE DONE PER STANDARD DETAILS.

14. ALL SAWCUT EDGES OF EXISTING PAVEMENT SHALL BE CLEAN AND COATED WITH TACK COAT PRIOR TO PLACING NEW PAVEMENT ADJACENT TO THE EXISTING PAVEMENT.

15. ALL ASPHALT SHALL BE ONE FOURTH (1/4) INCH ABOVE CONCRETE EDGES, MANHOLE COVERS AND ACCESS LIDS.

16. SIGNAGE AND STRIPING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, THE COLORADO DEPARTMENT OF TRANSPORTATION M&S STANDARDS, AND THE TOWN OF ERIE STANDARD DESIGN CRITERIA AND STANDARD CONSTRUCTION REQUIREMENTS.

17. THE PURCHASE AND INSTALLATION OF STREET NAME SIGNS SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR. THE OWNER/CONTRACTOR SHALL SECURE THE APPROVAL OF THE TOWN OF ERIE ENGINEERING STAFF FOR TYPE AND LOCATION OF THE STREET NAME SIGNS PRIOR TO INSTALLATION.

18. ALL NEW ROADWAY SECTIONS SHALL HAVE SUBGRADE PREPARATION AND INITIAL ASPHALT PAVEMENT PLACED WITH A 1% CROWN. FINAL OVERLAY IS TO BE PLACED WITH A 2% CROWN. SEE DETAIL ST7 IN THE "STANDARD DETAILS-STREET" FOR MORE INFORMATION.

19. DETERMINATION OF CROWN FOR CUL DE SAC PAVING SHALL BE EVALUATED ON A CASE BY CASE BASIS.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

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Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
GENERAL NOTES

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
2
2 OF 69

FILEPATH: P:\160602\ENGINEERING\CD\CD - GENERAL NOTES.DWG LAYOUT: GENERAL NOTES 1
NO XREFS
PLOTTED: TUE 03/03/20 2:15:43P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

GENERAL NOTES – SEWER

1. THE CONTRACTOR SHALL VERIFY HORIZONTAL AND VERTICAL LOCATIONS OF ALL EXISTING SEWERS TO BE CONNECTED TO PRIOR TO CONSTRUCTION STAKING.
2. CONNECTION TO EXISTING TOWN OF ERIE LINES WILL BE PERMITTED UPON INITIAL ACCEPTANCE OF THE NEW SANITARY SEWER SYSTEM. EXISTING PIPE AT THE POINT OF CONNECTION SHALL NOT BE "BROKEN OUT" UNTIL THE NEW SYSTEM IS ACCEPTED. IF CONNECTING TO AN EXISTING MANHOLE, THE NEW LINE SHALL BE PLUGGED UNTIL THE NEW SYSTEM IS ACCEPTED.
3. MINIMUM VERTICAL SEPARATIONS BETWEEN ALL UTILITY PIPES SHALL BE EIGHTEEN (18) INCHES. IF VERTICAL SEPARATIONS ARE LESS THAN EIGHTEEN (18) INCHES, THE UTILITY PIPES SHALL BE REINFORCED AND PROTECTED AS REQUIRED BY CURRENT TOWN STANDARD SPECIFICATIONS.
4. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE–HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
5. ALL SANITARY SEWER SERVICES AND WATER SERVICES ARE TO BE TEN (10) FEET APART.
6. SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHTS OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A GREEN PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH AN "S" OR "X".
7. THE LENGTH OF SANITARY SEWER LINE IS THE HORIZONTAL DISTANCE BETWEEN CENTER OF MANHOLE TO CENTER OF MANHOLE. THEREFORE, THE DISTANCES INDICATED ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND MANHOLE DIMENSIONS.
8. SERVICE LINE CONNECTIONS TO DEAD END MANHOLES THAT HAVE NO FURTHER POSSIBILITY OF EXTENSION SHALL BE ALLOWED AND SHALL HAVE A MINIMUM DROP OF 0.75 X MAIN DIAMETER. SERVICE LINE CONNECTIONS TO IN–LINE MANHOLES ARE NOT PERMITTED. MINIMUM SERVICE LINE SLOPE; 4 INCHES=2%; 6 INCHES= 1%; 8 INCHES=0.4%
9. ALL FOUR (4) THROUGH FIFTEEN (15) INCH SANITARY SEWER PIPE SHALL BE POLYVINYL CHLORIDE (PVC) AND SHALL BE IN ACCORDANCE WITH ASTM D–3034–SDR35, "STANDARD SPECIFICATION FOR PVC SEWER PIPE AND FITTINGS". ANY SANITARY SEWER HAVING A DEPTH IN EXCESS OF FIFTEEN (15) FEET SHALL BE COORDINATED WITH THE PUBLIC WORKS DEPARTMENT.
10. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
11. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE SEWER PIPE.
12. PRECAST CONCRETE MANHOLE SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C–478. MANHOLE STEPS SHALL BE POLYPROPYLENE COVERED STEEL CONFORMING TO ASTM. D–4101 AND ASTMA–615. CAST IRON RING AND COVER SHALL CONFORM TO ASTM A–48.
13. MANHOLES SHALL BE A MINIMUM FOUR (4) FOOT DIAMETER AND CONSTRUCTED PER THE STANDARDS AND SPECIFICATIONS.
14. THE CONTRACTOR SHALL TAKE CARE TO PROPERLY SHAPE ALL MANHOLE INVERTS AND BENCHES IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS, TO PROMOTE SMOOTH FLOW THROUGH THE MANHOLE. INVERTS OF LINES INTERSECTING AT 90 DEGREES AND AT HIGHLY DIVERGENT OR FLAT SLOPES ARE ESPECIALLY CRITICAL. MANHOLE INVERTS SHALL BE CONSTRUCTED WITH A SMOOTH TROWEL FINISH, AND BENCH FINISHED WITH A LIGHT BROOMED, NON–SKID, FINISH.
15. SEWER TEES AND/OR WYES SHALL BE STAKED BY A SURVEY CREW. THE CONTRACTOR SHALL FURNISH TO THE ENGINEER "AS–CONSTRUCTED" LOCATION OF TEES AND WYES. ALL SERVICE LINES ARE FOUR (4) INCH UNLESS OTHERWISE NOTED.
16. THE CONTRACTOR, AT THE OWNER'S EXPENSE, WILL MAKE ALL SEWER SERVICE TAPS.
17. PRIOR TO BACKFILL THE TOWN OF ERIE ENGINEERING STAFF SHALL INSPECT ALL SANITARY SEWER MAINS AND SERVICE EXTENSIONS.
18. MANHOLE RIMS SHALL BE SET AT AN ELEVATION RELATIVE TO THE PAVEMENT, IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS. WHETHER THE MANHOLE IS AT PAVED OR UNPAVED GRADE, A MINIMUM OF ONE (1) AND A MAXIMUM OF FOUR (4) CONCRETE RINGS SHALL BE USED TO ADJUST THE RIM ELEVATION TO FINAL GRADE. THE MAXIMUM ACCEPTABLE VERTICAL ADJUSTMENT UTILIZING CONCRETE RINGS IS EIGHTEEN (18) INCHES.
19. INITIAL ACCEPTANCE OF THE NEW SANITARY SEWER MAINS IS CONTINGENT UPON COMPLETION OF ITEMS LISTED IN THE TOWNS STANDARDS AND SPECIFICATIONS.

GENERAL NOTES – STORM DRAIN

1. EXCEPT WHERE NOTED, ALL STORM SEWER PIPE SHALL BE REINFORCED CONCRETE, CLASS III AND SHALL CONFORM TO REQUIREMENTS OF ASTM C76. ALL RCP SHALL HAVE RUBBER GASKETED JOINTS AND SHALL CONFORM TO REQUIREMENTS OF ASTM C443, AND SHALL PROVIDE WATERTIGHT PERFORMANCE CHARACTERISTICS.
2. TONGUE AND GROOVE JOINTS SHALL NOT BE ALLOWED.
3. THE MINIMUM COVERAGE FOR ALL STORM DRAINAGE PIPES SHALL BE 1.5 FEET FOR CLASS III PIPE AND 1 FOOT FOR CLASS IV PIPE.
4. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. ALL MANHOLES SHALL BE CONCRETE AND CONFORM TO CDOT STANDARD M–604–20.
6. THE MINIMUM MANHOLE DIAMETER SHALL BE AS SPECIFIED BELOW:

PIPE DIAMETER	MANHOLE SIZE
15" TO 18"	4' DIAMETER
21" TO 42"	5' DIAMETER
48" TO 54"	6' DIAMETER
60" AND LARGER	BOX BASE MANHOLE

7. ALL STREET INLETS SHALL BE CURB OPENING TYPE R CONFORMING TO CDOT STANDARD M–604–12, EXCEPT WHERE OTHERWISE NOTED.
8. ALL INLET ACCESS COVERS SHALL HAVE THE WORDS 'NO DUMPING-DRAINS TO RIVERS' AND 'STORM SEWER' CAST INTO THE COVER PER TOWN OF ERIE STANDARD DETAIL.
9. ALL END SECTIONS SHALL CONFORM TO CDOT STANDARD M–603–10.
10. WHERE RIPRAP OR GROUTED BOULDERS ARE CALLED FOR ON THE PLANS FOR EROSION CONTROL, IT SHALL CONFORM TO THE URBAN STORM DRAINAGE CRITERIA MANUAL SPECIFICATIONS (LATEST REVISION).
11. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.

GENERAL NOTES – WATER

1. AT ALL POINTS OF CONNECTION OF NEW WATER MAINS TO EXISTING MAINS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATING AND VERIFYING LOCATION OF THE EXISTING LINES PRIOR TO ANY CONSTRUCTION.
2. EXCEPT IN CASE OF AN EMERGENCY, VALVES ON THE TOWN OF ERIE WATER SYSTEM SHALL BE OPERATED BY OR UNDER THE DIRECTION OF THE APPROPRIATE TOWN OF ERIE PERSONNEL. THE CONTRACTOR SHALL GIVE THE TOWN OF ERIE ENGINEERING STAFF 48 HOURS NOTICE TO ARRANGE FOR OPERATING VALVES. BOTH THE CONTRACTOR AND THE APPROPRIATE TOWN OF ERIE PERSONNEL SHALL BE PRESENT WHEN THE VALVES ARE OPERATED.
3. WATER AND SANITARY SEWER LINES SHALL HAVE A MINIMUM HORIZONTAL SEPARATION OF TEN (10) FEET. WHEN A TEN (10) FOOT SEPARATION IS NOT PROVIDED OR WHEN SEWER LINES CROSS WATER LINES WITH LESS THAN ONE AND ONE–HALF (1½) FEET OF VERTICAL SEPARATION, SEWER LINE JOINTS SHALL BE CONCRETE ENCASED. FOR PERPENDICULAR CROSSINGS, ENCASED JOINTS SHALL EXTEND TEN (10) FEET, PERPENDICULAR TO THE WATER LINE IN BOTH DIRECTIONS.
4. ALL WATER LINES SHALL HAVE A MINIMUM OF FOUR AND ONE–HALF (4½) FEET OF COVER AND BE LOCATED A MINIMUM OF TEN (10) FEET FROM THE SANITARY SEWER AND THREE (3) FEET FROM THE EDGE OF CONCRETE CURB AND GUTTER PAN.
5. CHANGES IN DIRECTION OF WATERLINE PIPE GREATER THAN ONE DEGREE SHALL REQUIRE FITTINGS IN ALL INSTANCES. AXIAL DEFLECTION AT THE JOINTS SHALL NOT BE IN EXCESS OF MANUFACTURER'S RECOMMENDATION OR IN NO CASE MORE THAN ONE DEGREE.
6. WHEN IT IS NECESSARY TO DEPRESS WATER LINES AT UTILITY CROSSINGS, A MINIMUM CLEARANCE OF ONE AND ONE–HALF (1–1/2) FEET SHALL BE MAINTAINED BETWEEN OUTSIDES OF PIPE.
7. DISTANCES FOR WATER LINES ARE THE HORIZONTAL DISTANCE BETWEEN THE CENTERS OF THE FITTINGS. THEREFORE, DISTANCES SHOWN ON THE PLANS ARE APPROXIMATE AND COULD VARY DUE TO VERTICAL ALIGNMENT AND FITTING DIMENSIONS.
8. ALL WATER LINE VALVES SHALL BE SET ADJACENT TO THE TEE, EXCEPT FOR POINTS THAT FALL IN THE FLOW LINE OF A CONCRETE CROSS PAN. IN WHICH CASE, THE VALVE SHALL BE LOCATED SO THAT SURFACE DRAINAGE DOES NOT INFILTRATE THE VALVE BOX. VALVE BOXES SHALL BE SET AT AN ELEVATION IN ACCORDANCE WITH TOWN PAVING REQUIREMENTS.
9. ALL WATER MAINS SHALL BE POLYVINYL CHLORIDE (PVC) PRESSURE PIPE UNLESS SPECIFIED OTHERWISE. NOMINAL PVC PIPE SIZES 6–INCH THROUGH 12–INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C–900, PRESSURE CLASS 150 (DR18). NOMINAL PVC PIPE SIZES 16–INCH THROUGH 24–INCH SHALL CONFORM TO ALL REQUIREMENTS OF AWWA STANDARD C–905, PRESSURE CLASS 165 (DR25). ALL PVC PIPES SHALL HAVE OUTSIDE DIAMETERS EQUIVALENT TO CAST IRON PIPE.
10. FIRE HYDRANT ASSEMBLY INCLUDES THE FIRE HYDRANT, SIX (6) INCH VALVE, AND SIX (6) INCH PIPE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
11. ALL FITTINGS SHALL BE MADE FROM DUCTILE IRON, FURNISHED WITH MECHANICAL JOINT ENDS OR INTEGRAL RESTRAINED JOINTS, AND SHALL HAVE A PRESSURE RATING OF 350 PSI.
12. POLYETHYLENE WRAPPING SHALL BE INSTALLED AROUND ALL DUCTILE IRON PIPES, FITTINGS, VALVES, FIRE HYDRANT BARRELS AND ROD AND CLAMPS. THE POLYETHYLENE SHALL HAVE A MINIMUM THICKNESS OF EIGHT (8) MILS, IN ACCORDANCE WITH AWWA STANDARD C–105.
13. ALL WATER LINE PIPE SHALL BE PROVIDED WITH A MINIMUM GAGE SIZE OF 12 SINGLE STRAND INSULATED COPPER WIRE. SPLICES IN TRACER WIRE SHALL BE CAPPED IN WATER PROOF GEL CAP TYPE CONNECTORS SUITED FOR DIRECT BURY APPLICATION (3M TYPE DBY–6 LOW VOLTAGE OR EQUAL). WIRE SHALL BE ATTACHED TO TOP OF WATER LINE WITH 2–INCH WIDE PVC TAPE @ 5–FT INTERVALS ALONG PIPE TRACER WIRE SHALL EXTEND TO THE SURFACE AND BE COILED IN A LOCATE BOX AT THE BACKSIDE OF EITHER EACH FIRE HYDRANT OR VALVE. UNDER THE SUPERVISION OF TOWN OF ERIE ENGINEERING STAFF, TEST SHALL BE MADE BY THE CONTRACTOR @ THE COMPLETION OF CONSTRUCTION TO INSURE THAT THE TRACER WIRES CARRY A CONTINUOUS CURRENT BETWEEN ALL ACCESS POINTS.
14. WARNING TAPE SHALL BE INSTALLED 12" MINIMUM AND 18" MAXIMUM ABOVE WATER PIPE.
15. BEDDING MATERIAL SHALL CONFORM TO TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
16. VALVES SHALL OPEN COUNTER CLOCKWISE. VALVES 12–INCH AND SMALLER SHALL BE RESILIENT SEAT GATE VALVES. LARGER VALVES SHALL BE BUTTERFLY VALVES.
17. VALVE BOXES SHALL BE RAISED TO ONE–FOURTH (1/4) INCH BELOW GRADE AFTER COMPLETION OF SURFACE PAVING OR FINAL GRADING. VALVE BOXES IN NON–PAVED AREAS SHALL HAVE A CONCRETE COLLAR AROUND THE VALVE LID IN ACCORDANCE WITH THE DETAIL.
18. ALL SERVICE LINE TAPS SHALL HAVE DOUBLE STRAP BRASS TAPPING SADDLES. (ROMAC 202B OR APPROVED EQUAL).
19. ALL RESIDENTIAL WATER TAPS SHALL BE THREE–QUARTER (3/4) INCH OR AS REQUIRED BY THE CURRENT BUILDING CODE.
20. ALL WATER SERVICE LATERALS SHALL EXTEND FIVE (5) FEET BEYOND RIGHT OF WAY OR UTILITY EASEMENTS, WHICHEVER IS GREATER. THE ENDS SHALL BE MARKED BY A BLUE PAINTED WOOD POST UNTIL CURB AND GUTTER IS IN PLACE. WHEN CURB AND GUTTER IS IN PLACE THE LATERALS SHALL BE MARKED ON THE CONCRETE CURB FACE WITH A 'V' OR 'W'.
21. CONCRETE THRUST BLOCKS AND/OR "MEGA–LUG" MECHANICAL RESTRAINTS ARE REQUIRED AT ALL MECHANICAL FITTINGS. THRUST BLOCKS MAY NOT BE REQUIRED IF PIPE RESTRAINT IS PROVIDED IN ACCORDANCE WITH RESTRAINED PIPE DETAIL.
22. NO WORK SHALL BE BACKFILLED (INCLUDING BEDDING MATERIAL ABOVE THE SPRING LINE OF THE PIPE) UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE TOWN OF ERIE ENGINEERING STAFF.
23. ONLY ONE CONNECTION TO THE EXISTING WATER DISTRIBUTION SYSTEM SHALL BE MADE UNTIL ALL HYDROSTATIC TESTING, CHLORINATION AND FLUSHING HAS BEEN COMPLETED.
24. DISINFECTION AND HYDROSTATIC TESTING SHALL BE DONE IN THE PRESENCE OF A TOWN OF ERIE ENGINEERING STAFF. CONTACT THE TOWN OF ERIE DEPARTMENT OF PUBLIC WORKS, FORTY–EIGHT (48) HOURS PRIOR TO DISINFECTING AND/OR TESTING.
25. DISINFECTION AND FLUSHING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE COLORADO DEPARTMENT OF HEALTH AND THE PROCEDURE SET FORTH IN AWWA C651, "STANDARD FOR DISINFECTING WATER MAINS". THE CHLORINATION OF THE WATER LINE SHALL BE PERFORMED PRIOR TO THE HYDROSTATIC TESTING. ALL VALVES, FIRE HYDRANTS AND OTHER APPURTANCES SHALL BE OPERATED WHILE PIPELINE IS FILLED WITH THE CHLORINATING AGENT TO INSURE THAT HIGH CHLORINE CONTACT IS MADE WITH ALL INTERNAL SURFACES.
26. ALL WATER LINES SHALL BE HYDROSTATIC TESTED. PRESSURE AN LEAKAGE TESTS SHALL BE CONDUCTED ACCORDING TO THE APPLICABLE SECTIONS OF AWWA C600/605 TO A MINIMUM PRESSURE OF ONE HUNDRED AND FIFTY (150) POUNDS PER SQUARE (PSI) INCH AT THE LOW POINT OF THE SECTION BEING TESTED FOR THE DURATION OF TWO (2) HOURS. THE MAXIMUM LENGTH OF LINE TO BE TESTED SHALL BE ONE THOUSAND (1,000) FEET. ALL JOINTS IN CONNECTIONS ARE TO BE WATERTIGHT WITHIN TOLERANCES ALLOWED BY THE SPECIFICATIONS IN AWWA C600/605. ANY LEAKAGE THAT IS DISCOVERED BY OBSERVATION OR TESTS SHALL BE LOCATED AND MADE WATERTIGHT BY THE CONTRACTOR. PRESSURE AND LEAKAGE TESTS SHALL NOT BE CONDUCTED UNTIL THE LINE HAS PASSED ALL REQUIRED DISINFECTION TESTS.
27. INITIAL ACCEPTANCE OF THE NEW WATER LINES ARE CONTINGENT UPON RECEIVING COPIES OF:
    A. WATER TRENCH COMPACTION TEST RESULTS
    B. HYDRO STATIC TESTING OF 100% OF THE SYSTEM
    C. HEALTH DEPARTMENT TESTS. (CHLORINE AND/OR CLEAR WATER AS REQUIRED)
28. ALL METER PITS AND CURB STOPS SHALL BE PROTECTED AT THE TIME OF INSTALLATION WITH A MINIMUM OF THREE (3) T–POSTS AND ORANGE SAFETY FENCE. THE T–POST AND SAFETY FENCE SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL THE LANDSCAPING IS INSTALLED.
29. ALL WATER VAULTS SHALL BE WATER TIGHT. CONTRACTOR SHALL SEAL VAULTS TO ENSURE SURFACE WATER DOES NOT INFILTRATE INTO THE VAULTS. VAULT LIDS SHALL BE PLACED TO ENSURE THAT SURFACE WATER DOES NOT FLOW INTO THE VAULTS.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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HarrisKocherSmith.com

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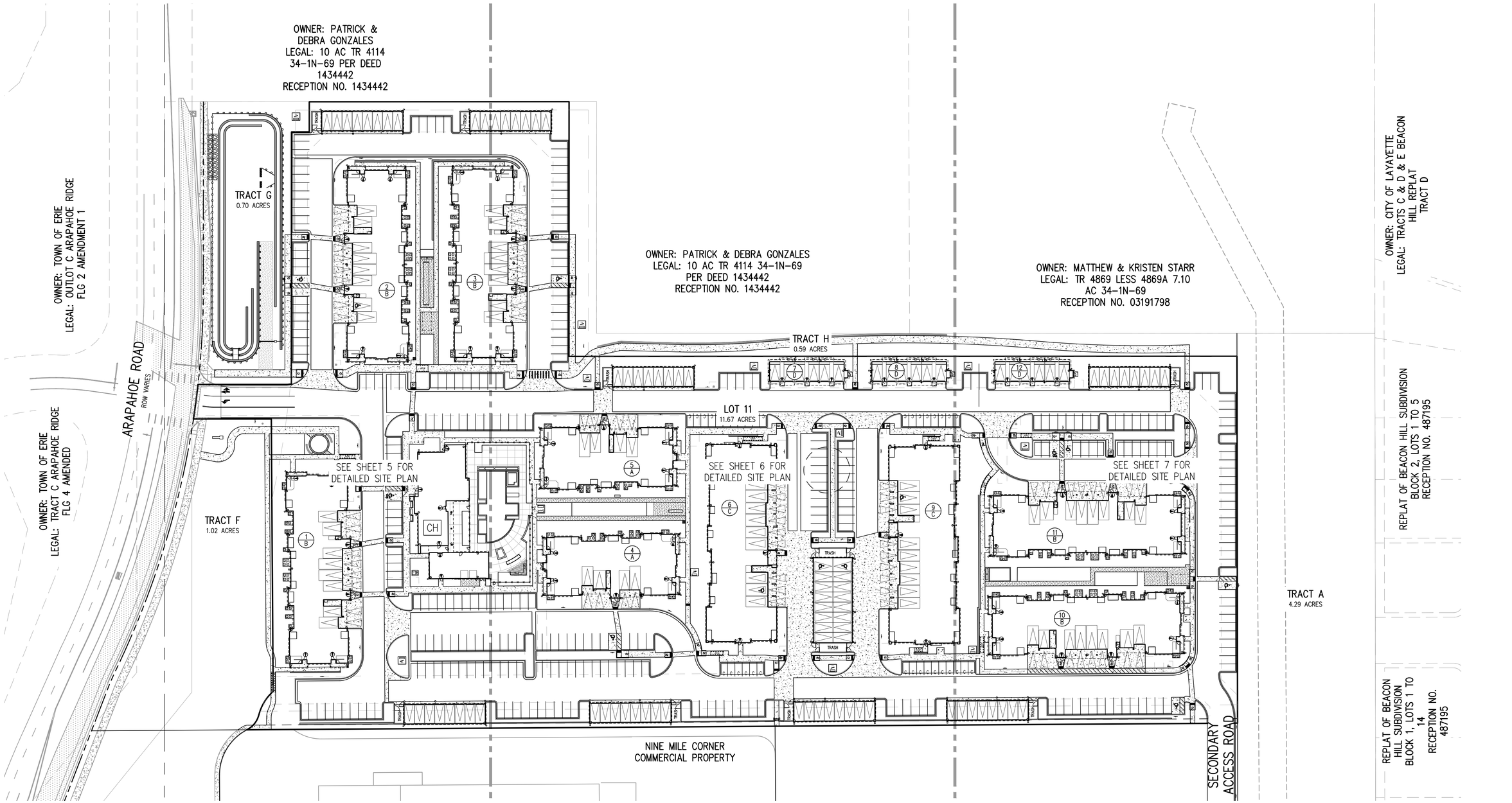
OUTLOOK AT NINE MILE
GENERAL NOTES

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
3
3 OF 69

FILEPATH: P:\160602\ENGINEERING\CD\CD - GENERAL NOTES.DWG LAYOUT: GENERAL NOTES 2
NO XREFS
PLOTTED: TUE 03/03/20 2:15:44P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



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PLOTTED: TUE 03/03/20 2:16:13P BY: JEFF MINNICH

Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

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OUTLOOK AT NINE MILE
OVERALL SITE PLAN

ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
4
4 OF 69

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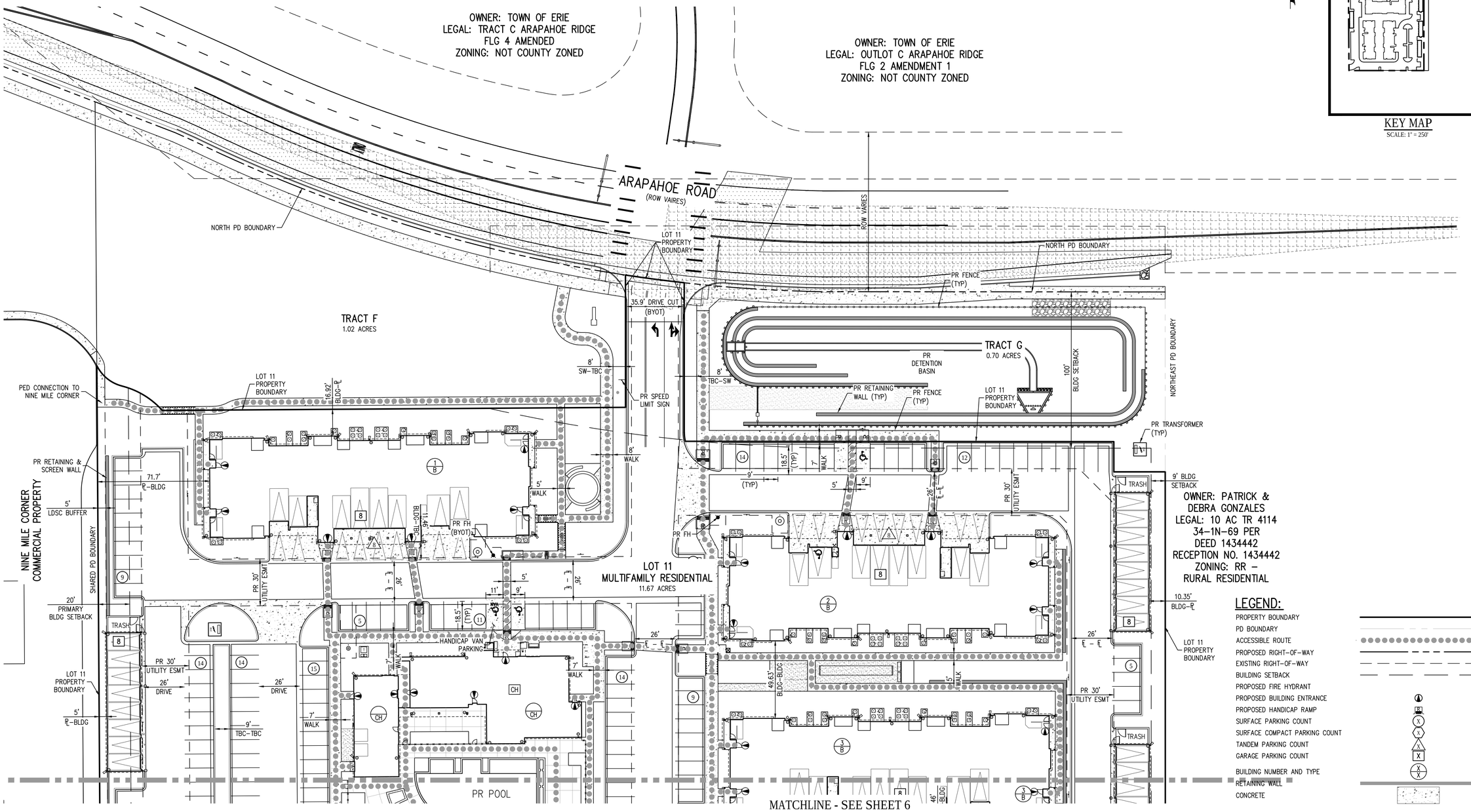

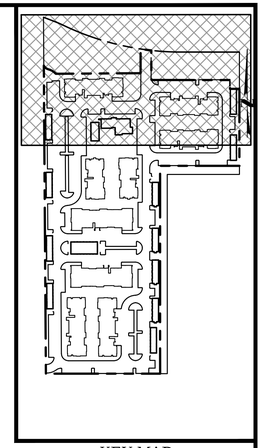

KEY MAP
SCALE: 1" = 250'

LEGEND:

- PROPERTY BOUNDARY
- PD BOUNDARY
- ACCESSIBLE ROUTE
- PROPOSED RIGHT-OF-WAY
- EXISTING RIGHT-OF-WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

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OUTLOOK AT NINE MILE
DETAILED SITE PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

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CONSTRUCTION

SHEET NO.
5
5 OF 69

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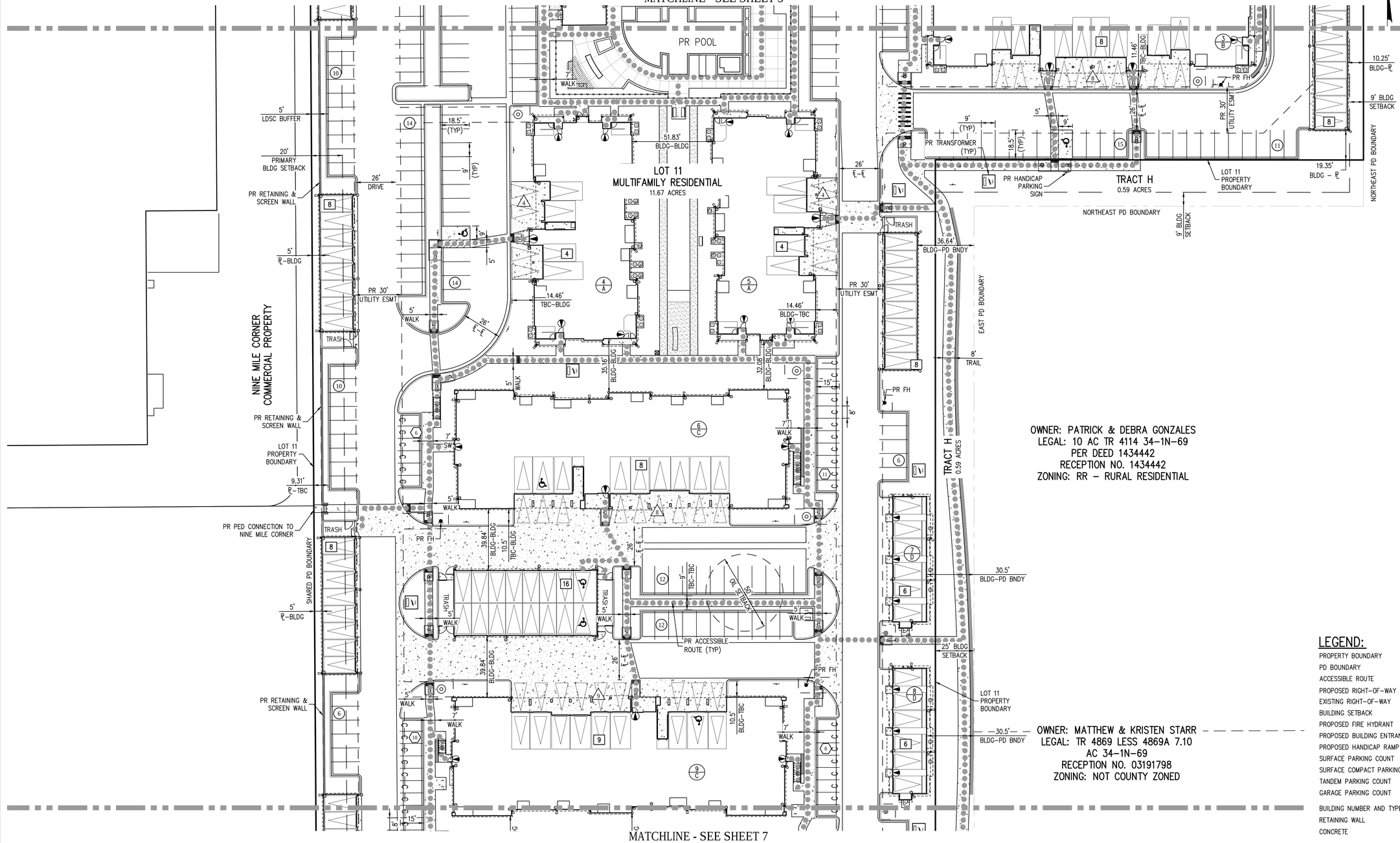
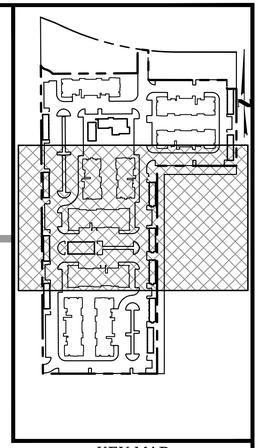
MATCHLINE - SEE SHEET 5





KEY MAP
SCALE: 1" = 250'

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34–1N–69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34–1N–69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

LEGEND:

- PROPERTY BOUNDARY
- PD BOUNDARY
- ACCESSIBLE ROUTE
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

MATCHLINE - SEE SHEET 7

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30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HKS HARRIS KOCHER SMITH
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OUTLOOK AT NINE MILE
DETAILED SITE PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
6
6 OF 69

FILEPATH: P:\160602\ENGINEERING\CDCD - DETAILED SITE PLAN DWG \ LAYOUT: LAYOUT2
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PLOTTED: TUE 03/02/20 2:16:22P BY: JEFF MINNICH

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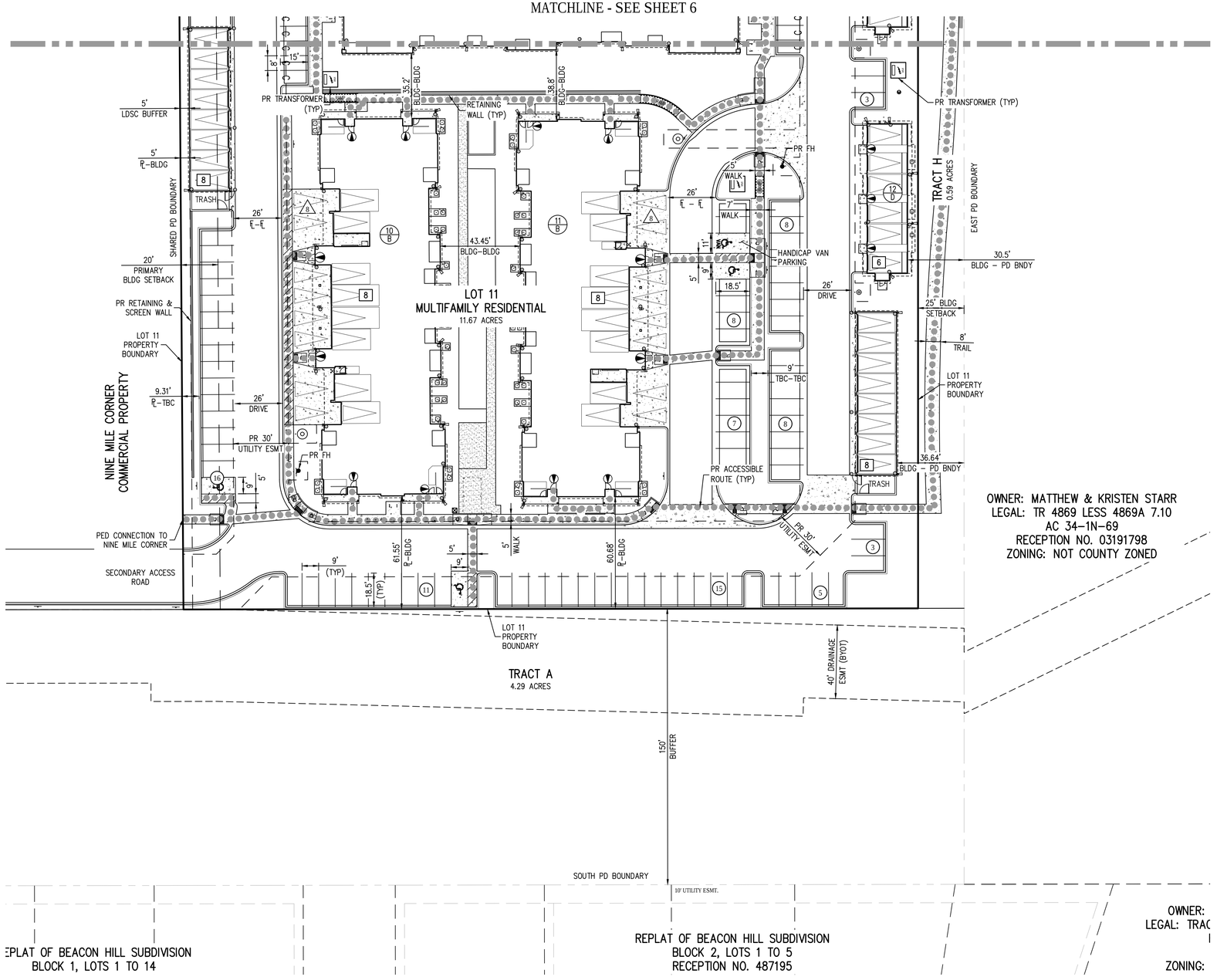
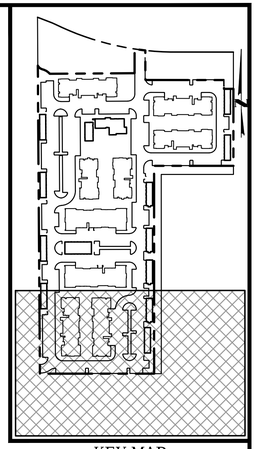
MATCHLINE - SEE SHEET 6



OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34–1N–69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED



KEY MAP
SCALE: 1" = 250'

LEGEND:

- PROPERTY BOUNDARY
- PD BOUNDARY
- ACCESSIBLE ROUTE
- PROPOSED RIGHT–OF–WAY
- EXISTING RIGHT–OF–WAY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
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- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE

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30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

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OUTLOOK AT NINE MILE
DETAILED SITE PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
7
7 OF 69

FILEPATH: P:\16960\ENGINEERING\CD\CD - DETAILED SITE PLAN.DWG | LAYOUT: LAYOUT2
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PLOTTED: TUE 03/03/20 2:16:37P BY: JEFF MINNICH

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OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69 PER DEED 1434442
RECEPTION NO. 1434442

OWNER: TOWN OF ERIE
LEGAL: OUTLOT C ARAPAHOE RIDGE FLG 2 AMENDMENT 1

OWNER: TOWN OF ERIE
LEGAL: TRACT C ARAPAHOE RIDGE FLG 4 AMENDED

OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798

ARAPAHOE ROAD (ROW VARIES)

TRACT G
TRACT H
TRACT F
LOT 11

50 LF 18" PVC TSD
SEDIMENT BASIN
PROPERTY LINE
PROPERTY BOUNDARY
EX STM (T (BY OTHE
EX SAN (TYP) (BY OTHERS)
EX UGE (TYP) (BY OTHERS)
EX WAT (TYP) (BY OTHERS)
EX GAS (TYP) (BY OTHERS)
EX STORM PROTECT IN PLACE
EX GAS LINE TO BE REMOVED
EX CAPPED OIL WELL TO BE ABANDONED
EX FENCE TO BE REMOVED (TYP)
NINE MILE CORNER COMMERCIAL PROPERTY

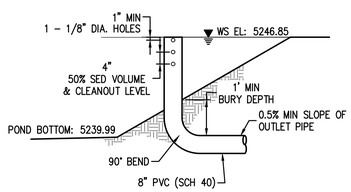
SF LOC CF SP SB DD IP VTC CT SSA CWA RS TRA

LEGEND:

- PROPERTY BOUNDARY
- EXISTING CONTOURS
- 100-YEAR FLOODPLAIN
- WETLANDS
- EXISTING WATER LINE
- EXISTING STORM MAIN
- EXISTING SANITARY SEWER
- DRAINAGE FLOW ARROW
- LIMITS OF CONSTRUCTION
- CONSTRUCTION FENCE
- SILT FENCE
- ROCK SOCK
- INLET PROTECTION
- CONCRETE WASHOUT AREA
- STABILIZED STAGING AREA
- VEHICLE TRACKING CONTROL
- CONSTRUCTION TRAILER
- SOIL STOCKPILE
- SEDIMENT BASIN
- DIVERSION DITCH

SEDIMENT BASIN INFORMATION:

TRIBUTARY AREA:	~ 13.25 AC
REQUIRED VOLUME:	47,700 CF
PROVIDED VOLUME:	81,791 CF
BERM ELEVATION:	5250
POND BOTTOM ELEVATION:	5239.99
WATER SURFACE ELEVATION (AT REQUIRED VOLUME):	5246.85
MAXIMUM BERM SLOPE:	4:1



SEDIMENT BASIN OUTLET

NOTES:

1. SEE SHEET 2 FOR TOWN OF ERIE GENERAL NOTES.
2. CONTRACTOR SHALL SEED AND MULCH ANY AREAS WHICH ARE TO REMAIN UNDISTURBED FOR MORE THAN FOURTEEN (14) DAYS.
3. FINAL STABILIZATION SHALL BE IN ACCORDANCE WITH FORMAL LANDSCAPING SHOWN ON THE APPROVED LANDSCAPE PLANS.
4. THE SEDIMENT BASIN IS ALSO BEING USED AS THE EXTENDED DETENTION BASIN. FULL STABILIZATION SHALL BE ACHIEVED WITHIN THE PERMANENT SEDIMENT CONTROL FACILITY BEFORE THE TERMINATION OF THE STORMWATER CONSTRUCTION ACTIVITY PERMIT.
5. ALL SILT FENCE SHALL BE INSTALLED ALONG CONTOURS. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10'-20').

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN INITIAL

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 8
8 OF 69

FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN INITIAL.DWG LAYOUT: EROSION CONTROL PLAN INITIAL
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PLOTTED: TUE 03/03/20 2:16:49P BY: JEFF MINNICH

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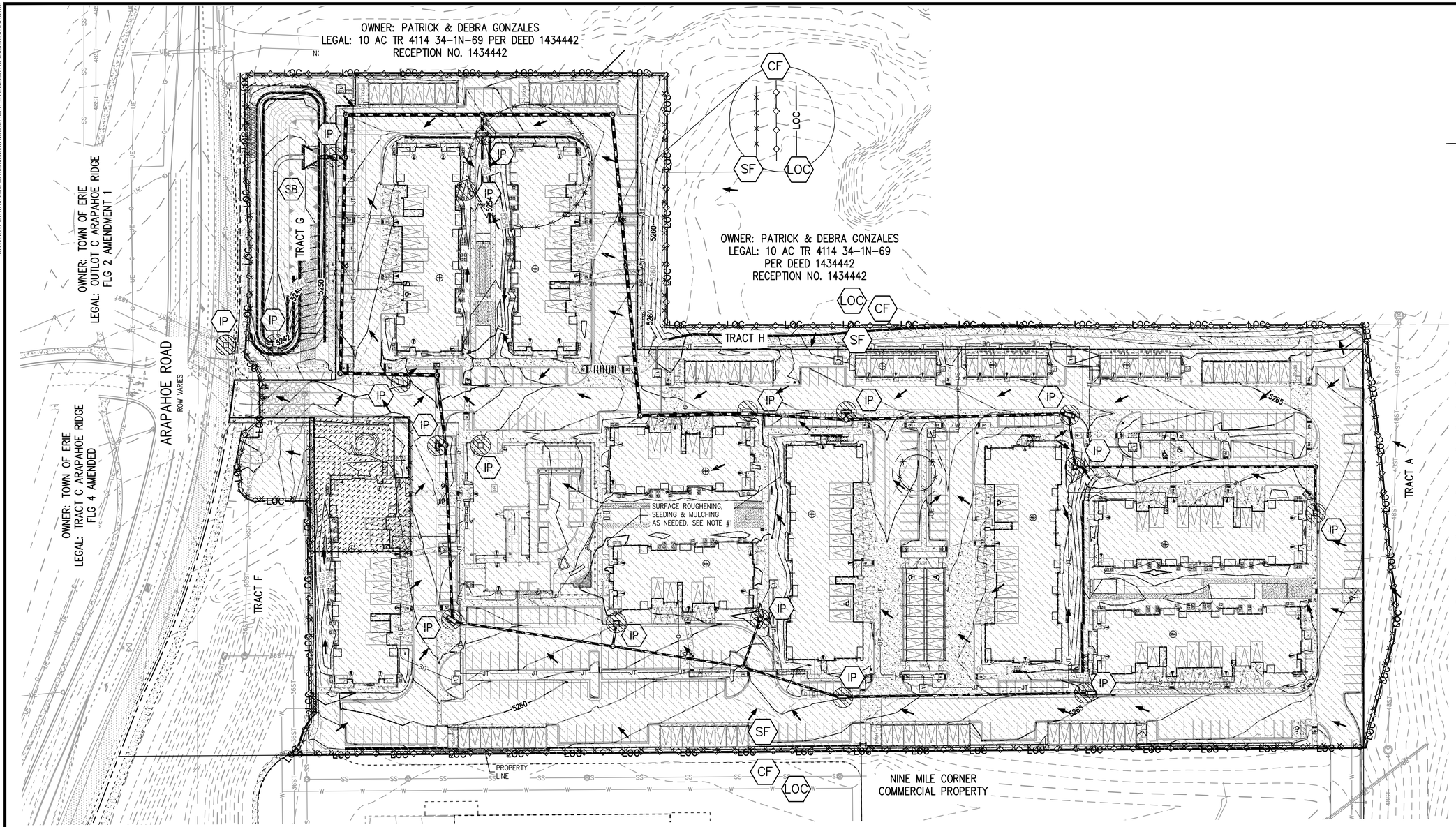

LEGEND:

- PROPERTY BOUNDARY
- EXISTING CONTOURS
- 100-YEAR FLOODPLAIN
- WETLANDS
- EXISTING WATER LINE
- EXISTING STORM MAIN
- EXISTING SANITARY SEWER
- DRAINAGE FLOW ARROW
- LOC — LIMITS OF CONSTRUCTION
- CF — CONSTRUCTION FENCE
- SF — SILT FENCE
- RS — ROCK SOCK
- IP — INLET PROTECTION
- CWA — CONCRETE WASHOUT AREA
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- CT — CONSTRUCTION TRAILER
- SP — SOIL STOCKPILE
- SB — SEDIMENT BASIN
- TEMPORARY SEEDING & MULCHING

NOTES:

1. SEE SHEET 2 FOR TOWN OF ERIE GENERAL NOTES.
2. CONTRACTOR SHALL SEED AND MULCH ANY AREAS WHICH ARE TO REMAIN UNDISTURBED FOR MORE THAN FOURTEEN (14) DAYS.
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4. THE SEDIMENT BASIN IS ALSO BEING USED AS THE EXTENDED DETENTION BASIN. FULL STABILIZATION SHALL BE ACHIEVED WITHIN THE PERMANENT SEDIMENT CONTROL FACILITY BEFORE THE TERMINATION OF THE STORMWATER CONSTRUCTION ACTIVITY PERMIT.

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

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Denver, Colorado 80203
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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN INTERIM

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 9

FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN INTERIM.DWG | LAYOUT: EROSION CONTROL PLAN INTERIM
9 XREFs: cd - erosion control plan initial, cd - siamp, cd_evergreen logo, e-base_hyot, e-text, p-base, p-base_offsite_hyot, p-legal, p-util
PLOTTED: TUE 03/03/20 2:17:19P BY: JEFF MINNICH

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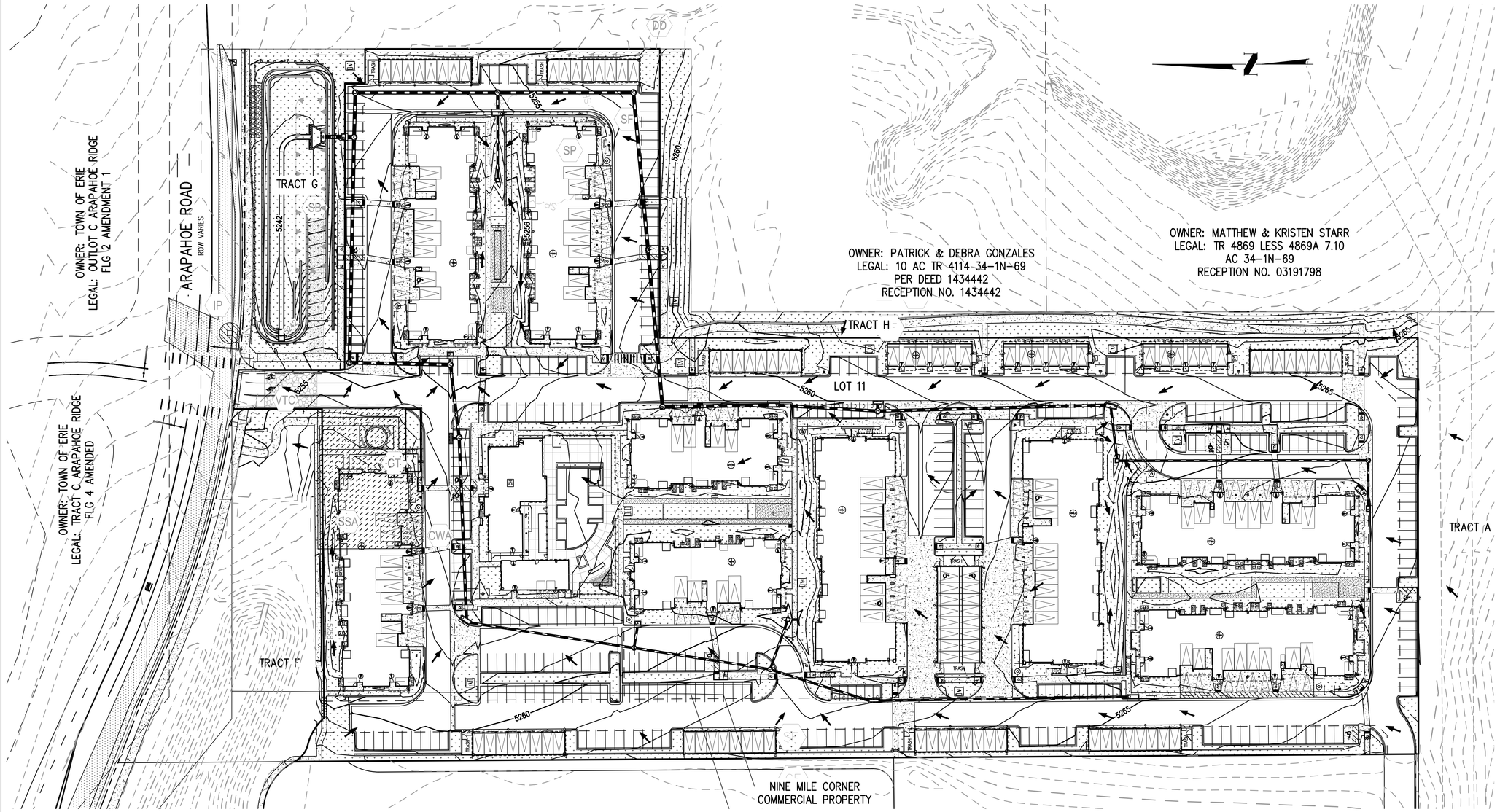

LEGEND:

- SEEDING AND MULCHING
- 5173 / 5170 — EXISTING CONTOURS
- 5173 / 5170 — PROPOSED CONTOURS
- DRAINAGE FLOW ARROW

NOTES:

1. SEE SHEET 2 FOR TOWN OF ERIE GENERAL NOTES.
2. CONTRACTOR SHALL SEED AND MULCH ANY AREAS WHICH ARE TO REMAIN UNDISTURBED FOR MORE THAN FOURTEEN (14) DAYS.
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50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN FINAL

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 10

FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN FINAL\DWG, LAYOUT: EROSION CONTROL PLAN FINAL
9 XREFS: cd - erosion control plan initial, cd - erosion control plan interim, cd - stamp, cd_evergreen logo, e-legal_byoa, p-base, p-base_offsite_byoa, p-legal, p-util
PLOTTED: TUE 03/03/20 2:17:54P BY: JEFF MINNICH

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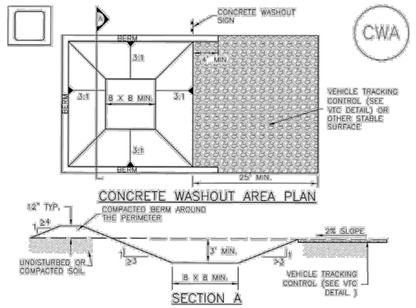
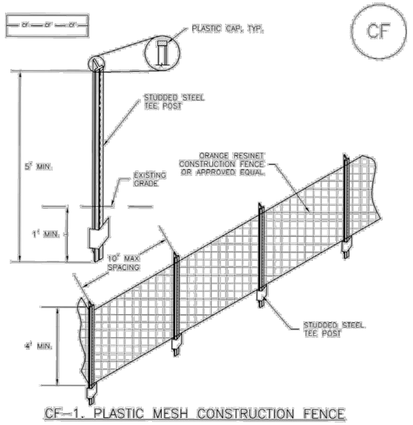


CWA–1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

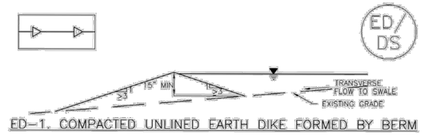
1. SEE PLAN VIEW FOR:
   –CWA INSTALLATION LOCATION.
2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.
3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.
4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.
5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.
6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.
7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.
8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

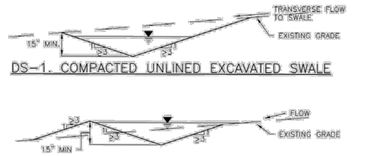


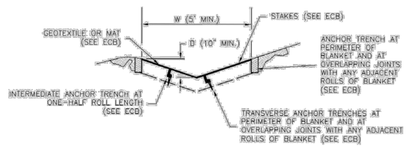
CF–1. PLASTIC MESH CONSTRUCTION FENCE

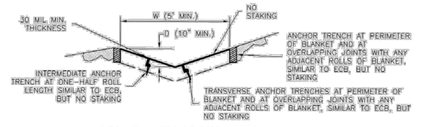
CONSTRUCTION FENCE INSTALLATION NOTES

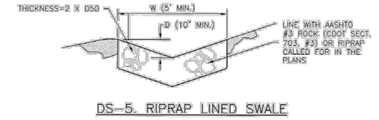
1. SEE PLAN VIEW FOR:
   –LOCATION OF CONSTRUCTION FENCE.
2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.
3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR-GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.
4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.
5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.











EARTH DIKE AND DRAINAGE SWALE INSTALLATION NOTES

1. SEE SITE PLAN FOR:
   – LOCATION OF DIVERSION SWALE
   – TYPE OF SWALE (UNLINED, COMPACTED AND/OR LINED).
   – LENGTH OF EACH SWALE.
   – DEPTH, D, AND WIDTH, W DIMENSIONS.
   – FOR ECB/TRM LINED DITCH, SEE ECB DETAIL.
   – FOR RIPRAP LINED DITCH, SIZE OF RIPRAP, D50.
2. SEE DRAINAGE PLANS FOR DETAILS OF PERMANENT CONVEYANCE FACILITIES AND/OR DIVERSION SWALES EXCEEDING 2-YEAR FLOW RATE OR 10 CFS.
3. EARTH DIKES AND SWALES INDICATED ON SWMP PLAN SHALL BE INSTALLED PRIOR TO LAND-DISTURBING ACTIVITIES IN PROXIMITY.
4. EMBANKMENT IS TO BE COMPACTED TO 90% OF MAXIMUM DENSITY AND WITHIN 2% OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D698.
5. SWALES ARE TO DRAIN TO A SEDIMENT CONTROL BMP.
6. FOR LINED DITCHES, INSTALLATION OF ECB/TRM SHALL CONFORM TO THE REQUIREMENTS OF THE ECB DETAIL.
7. WHEN CONSTRUCTION TRAFFIC MUST CROSS A DIVERSION SWALE, INSTALL A TEMPORARY CULVERT WITH A MINIMUM DIAMETER OF 12 INCHES.

CWA 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. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

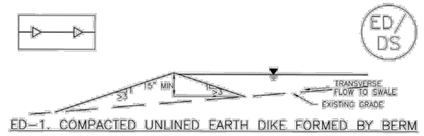
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

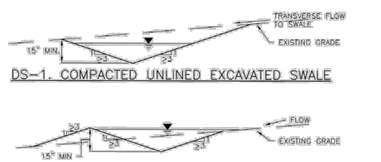
CONSTRUCTION FENCE MAINTENANCE NOTES

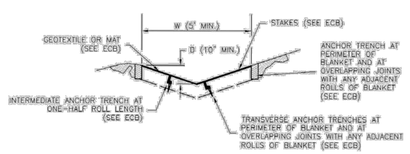
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS 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. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.
5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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.

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







EARTH DIKE AND DRAINAGE SWALE 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. SWALES SHALL REMAIN IN PLACE UNTIL THE END OF CONSTRUCTION; IF APPROVED BY LOCAL JURISDICTION, SWALES MAY BE LEFT IN PLACE.
5. WHEN A SWALE IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF COLORADO SPRINGS, 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.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 1

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 11

FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN DETAIL.DWG LAYOUT: EROSION CONTROL PLAN DETAIL 1
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PLOTTED: TUE 03/03/20 2:18:25P BY: JEFF MINNICH

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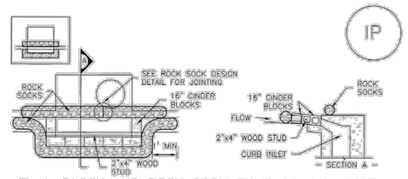
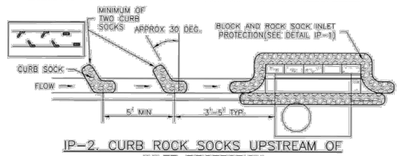


IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

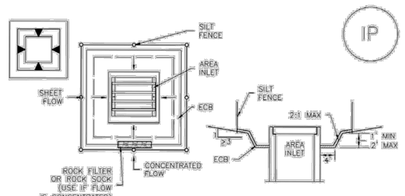
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.
3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

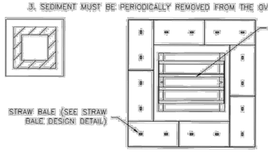
1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.
2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.
3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON-GRADE INLETS.



IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.
2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.
3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.



IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.
2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF INLET PROTECTION.
   –TYPE OF INLET PROTECTION ((P.1, IP.2, IP.3, IP.4, IP.5, IP.6)
2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.
3. 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.

INLET PROTECTION 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 INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.
5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, 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.

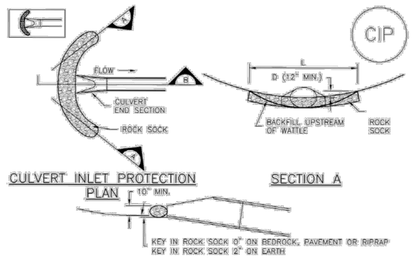
NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

TABLE SB–1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN			
Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	3/32
2	21	3	1/16
3	28	5	2
4	33 ½	6	3/16
5	38 ½	8	7/32
6	43	9	25/32
7	47 ½	11	29/32
8	51	12	2 1/32
9	55	13	1/8
10	58 ½	15	15/16
11	61	16	2 3/32
12	64	18	1/4
13	67 ½	19	1 1/16
14	70 ½	21	1 1/8
15	73 ½	22	1 3/16

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF SEDIMENT BASIN.
   –TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   –FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   –FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.
2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS A STORMWATER CONTROL.
4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.
5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
6. PIPE SCH 40 OR GREATER SHALL BE USED.
7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.



CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

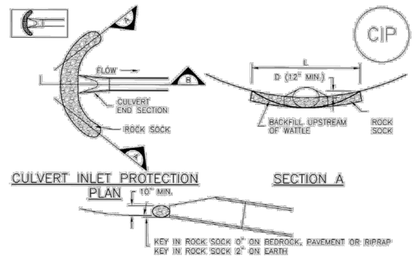
1. SEE PLAN VIEW FOR:
   –LOCATION OF CULVERT INLET PROTECTION.
2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION 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 THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.
5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM 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.



CIP–1. CULVERT INLET PROTECTION

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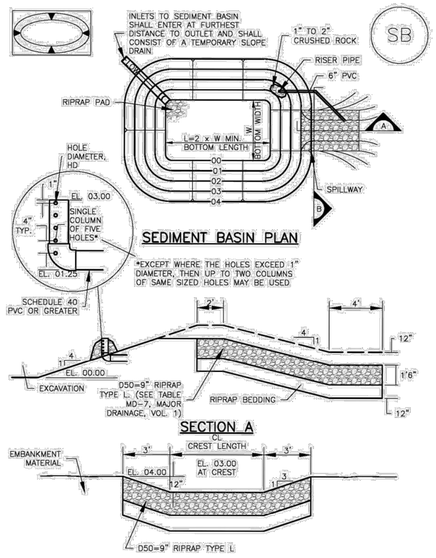
2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION 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 THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.
5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM 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.



SEDIMENT BASIN 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 IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).
5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.
6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

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.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: DAM
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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 2

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

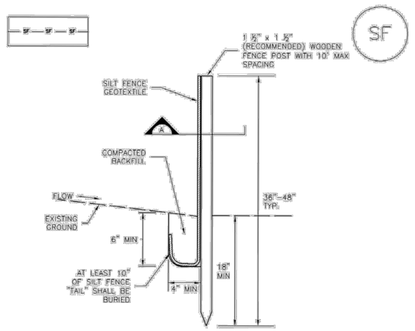
SHEET NO. 12

12 OF 69

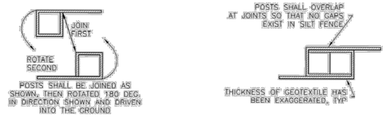
FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN DETAIL.DWG LAYOUT: EROSION CONTROL PLAN DETAIL 2
3 XREFs: p-base, p-legal, p-util[U]
PLOTTED: TUE 03.03.20 2:18:37P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

Silt Fence (SF) SC-1



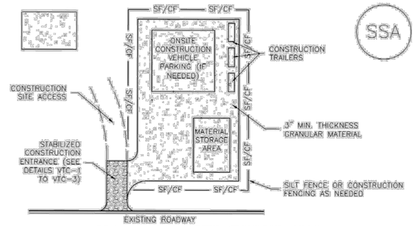
SILT FENCE



SECTION A

SF-1. SILT FENCE

Stabilized Staging Area (SSA) SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES:

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.

3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.

4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.

5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA MAINTENANCE NOTES:

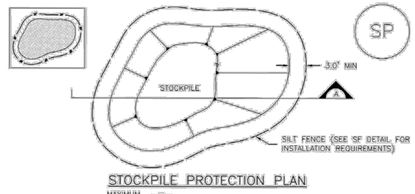
1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

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

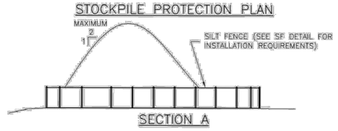
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

Stockpile Management (SP) MM-2



STOCKPILE PROTECTION PLAN



SECTION A

SP-1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES:

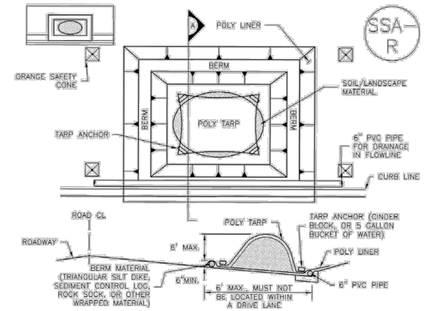
1. SEE PLAN VIEW FOR:
   -LOCATION OF STOCKPILES.
   -TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS; SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30-60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

Stockpile Management (SP) MM-2



SP-2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES:

1. SEE PLAN VIEW FOR
   -LOCATION OF MATERIAL STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.

3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.

4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.

5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.

6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.

7. THIS FEATURE CAN BE USED FOR:
   -UTILITY REPAIRS.
   -WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
   -OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

SC-1 Silt Fence (SF)

SILT FENCE INSTALLATION NOTES:

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2-3 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 8" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J-HOOK." THE "J-HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' = 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE 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 THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, 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.

SM-6 Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES:

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.

6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

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, NOT AVAILABLE IN AUTOCAD)

MM-2 Stockpile Management (SM)

STOCKPILE PROTECTION 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.

STOCKPILE PROTECTION MAINTENANCE NOTES

4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM 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.

MM-2 Stockpile Management (SM)

MATERIALS STAGING IN ROADWAY 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. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.

5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

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)

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

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CHECKED BY: MSM
DRAWN BY: DAM

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 3

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO. 13
13 OF 69

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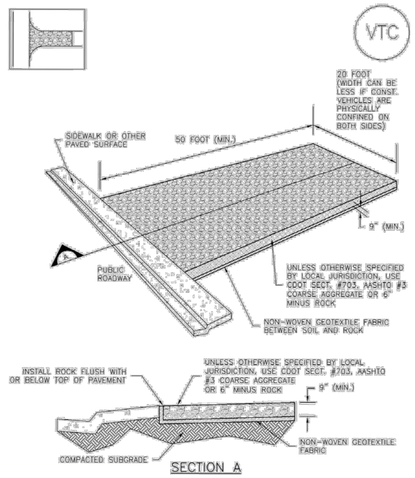
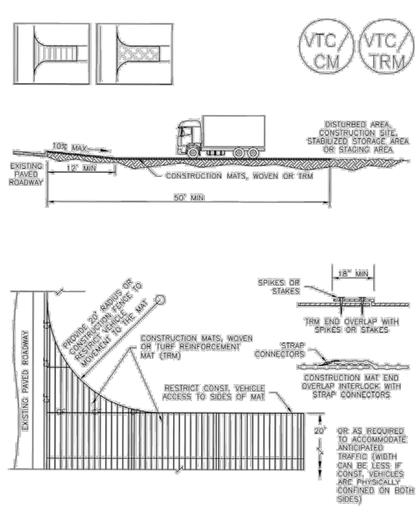
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



VTC–1. AGGREGATE VEHICLE TRACKING CONTROL



VTC–3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

Description

Temporary seeding can be used to stabilize disturbed areas that will be inactive for an extended period. Permanent seeding should be used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextiles, or other appropriate measures.

Photograph TS/PS -1. Equipment used to drill seed. Photo courtesy of Douglas County.

Appropriate Uses

When the soil surface is disturbed and will remain inactive for an extended period (typically 30 days or longer), proactive stabilization measures should be implemented. If the inactive period is short-lived (on the order of two weeks), techniques such as surface roughening may be appropriate. For longer periods of inactivity, temporary seeding and mulching can provide effective erosion control. Permanent seeding should be used on finished areas that have not been otherwise stabilized.

Typically, local governments have their own seed mixes and timelines for seeding. Check jurisdictional requirements for seeding and temporary stabilization.

Design and Installation

Effective seeding requires proper seedbed preparation, selection of an appropriate seed mixture, use of appropriate seeding equipment to ensure proper coverage and density, and protection with mulch or fabric until plants are established.

The USDCM Volume 2 *Revegetation* Chapter contains detailed seed mix, soil preparations, and seeding and mulching recommendations that may be referenced to supplement this Fact Sheet.

Drill seeding is the preferred seeding method. Hydroseeding is not recommended except in areas where steep slopes prevent use of drill seeding equipment, and even in these instances it is preferable to hand seed and mulch. Some jurisdictions do not allow hydroseeding or hydromulching.

Seedbed Preparation

Prior to seeding, ensure that areas to be revegetated have soil conditions capable of supporting vegetation. Overlot grading can result in loss of topsoil, resulting in poor quality subsoils at the ground surface that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. As a result, it is typically necessary to provide stockpiled topsoil, compost, or other

Temporary and Permanent Seeding	
Functions	
Erosion Control	Yes
Sediment Control	No
Site/Material Management	No

Seeding dates for the highest success probability of perennial species along the Front Range are generally in the spring from April through early May and in the fall after the first of September until the ground freezes. If the area is irrigated, seeding may occur in summer months, as well. See Table TS/PS-3 for appropriate seeding dates.

Table TS/PS-1. Minimum Drill Seeding Rates for Various Temporary Annual Grasses

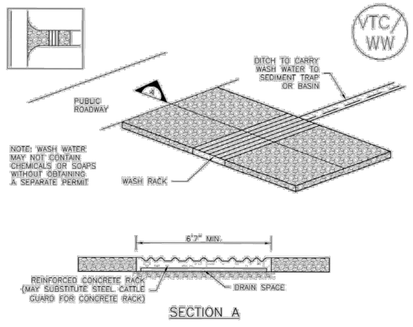
Species[a] (Common name)	Growth Season[b]	Pounds of Pure Live Seed (PLS)/acre[c]	Planting Depth (inches)
1. Oats	Cool	35 - 50	1 - 2
2. Spring wheat	Cool	25 - 35	1 - 2
3. Spring barley	Cool	25 - 35	1 - 2
4. Annual ryegrass	Cool	10 - 15	½
5. Millet	Warm	3 - 15	½ - ¾
6. Sudangrass	Warm	5–10	½ - ¾
7. Sorghum	Warm	5–10	½ - ¾
8. Winter wheat	Cool	20–35	1 - 2
9. Winter barley	Cool	20–35	1 - 2
10. Winter rye	Cool	20–35	1 - 2
11. Triticale	Cool	25–40	1 - 2

[a] Successful seeding of annual grass resulting in adequate plant growth will usually produce enough dead-plant residue to provide protection from wind and water erosion for an additional year. This assumes that the cover is not disturbed or mowed closer than 8 inches.

Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1 or where access limitations exist. When hydraulic seeding is used, hydraulic mulching should be applied as a separate operation, when practical, to prevent the seeds from being encapsulated in the mulch.

[b] See Table TS/PS-3 for seeding dates. Irrigation, if consistently applied, may extend the use of cool season species during the summer months.

[c] Seeding rates should be doubled if seed is broadcast, or increased by 50 percent if done using a Brillion Drill or by hydraulic seeding.



VTC–2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

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 CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

soil amendments and rototill them into the soil to a depth of 6 inches or more.

Topsoil should be salvaged during grading operations for use and spread on areas to be revegetated later. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, due to its water-holding capacity, structure, texture, organic matter content, biological activity, and nutrient content. The rooting depth of most native grasses in the semi-arid Denver metropolitan area is 6 to 18 inches. At a minimum, the upper 6 inches of topsoil should be stripped, stockpiled, and ultimately respread across areas that will be revegetated.

Where topsoil is not available, subsoils should be amended to provide an appropriate plant-growth medium. Organic matter, such as well digested compost, can be added to improve soil characteristics conducive to plant growth. Other treatments can be used to adjust soil pH conditions when needed. Soil testing, which is typically inexpensive, should be completed to determine and optimize the types and amounts of amendments that are required.

If the disturbed ground surface is compacted, rip or rototill the surface prior to placing topsoil. If adding compost to the existing soil surface, rototilling is necessary. Surface roughening will assist in placement of a stable topsoil layer on steeper slopes, and allow infiltration and root penetration to greater depth.

Prior to seeding, the soil surface should be rough and the seedbed should be firm, but neither too loose nor compacted. The upper layer of soil should be in a condition suitable for seeding at the proper depth and conducive to plant growth. Seed-to-soil contact is the key to good germination.

Seed Mix for Temporary Vegetation

To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped or worked for an extended period (typically 30 days or more), plant an annual grass appropriate for the time of planting and mulch the planted areas. Annual grasses suitable for the Denver metropolitan area are listed in Table TS/PS-1. These are to be considered only as general recommendations when specific design guidance for a particular site is not available. Local governments typically specify seed mixes appropriate for their jurisdiction.

Seed Mix for Permanent Revegetation

To provide vegetative cover on disturbed areas that have reached final grade, a perennial grass mix should be established. Permanent seeding should be performed promptly (typically within 14 days) after reaching final grade. Each site will have different characteristics and a landscape professional or the local jurisdiction should be contacted to determine the most suitable seed mix for a specific site. In lieu of a specific recommendation, one of the perennial grass mixes appropriate for site conditions and growth season listed in Table TS/PS-2 can be used. The pure live seed (PLS) rates of application recommended in these tables are considered to be absolute minimum rates for seed applied using proper drill-seeding equipment.

If desired for wildlife habitat or landscape diversity, shrubs such as rubber rabbitbrush (*Chrysothamnus nauseosus*), fourwing saltbush (*Atriplex canescens*) and skunkbrush sumac (*Rhus trilobata*) could be added to the upland seedmixes at 0.25, 0.5 and 1 pound PLS/acre, respectively. In riparian zones, planting root stock of such species as American plum (*Prunus americana*), woods rose (*Rosa woodsii*), plains cottonwood (*Populus sargentii*), and willow (*Populus spp.*) may be considered. On non-topsoiled upland sites, a legume such as Ladak alfalfa at 1 pound PLS/acre can be included as a source of nitrogen for perennial grasses.

Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses

Common[a] Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Alakali Soil Seed Mix					
Alkali sacaton	*Sporobolus airoides*	Cool	Bunch	1,750,000	0.25
Basin wildrye	*Elymus cinereus*	Cool	Bunch	165,000	2.5
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Jose tall wheatgrass	*Agropyron elongatum 'Jose'*	Cool	Bunch	79,000	7.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.75**
Fertile Loamy Soil Seed Mix					
Ephriam crested wheatgrass	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	2.0
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Sodar streambank wheatgrass	*Agropyron riparium 'Sodar'*	Cool	Sod	170,000	2.5
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	7.0
Total					**15.5**
High Water Table Soil Seed Mix					
Meadow foxtail	*Alopecurus pratensis*	Cool	Sod	900,000	0.5
Redtop	*Agrostis alba*	Warm	Open sod	5,000,000	0.25
Reed canarygrass	*Phalaris arundinacea*	Cool	Sod	68,000	0.5
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Pathfinder switchgrass	*Panicum virgatum 'Pathfinder'*	Warm	Sod	389,000	1.0
Alkar tall wheatgrass	*Agropyron elongatum 'Alkar'*	Cool	Bunch	79,000	5.5
Total					**10.75**
Transition Turf Seed Mix[c]					
Ruebens Canadian bluegrass	*Poa compressa 'Ruebens'*	Cool	Sod	2,500,000	0.5
Dural hard fescue	*Festuca ovina 'duriuscula'*	Cool	Bunch	565,000	1.0
Citation perennial ryegrass	*Lolium perenne 'Citation'*	Cool	Sod	247,000	3.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Total					**7.5**

811 Know what's below. Call before you dig.
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DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 4

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
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14 OF 69

FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN DETAIL.DWG LAYOUT: EROSION CONTROL PLAN DETAIL 4
3 XREFs: p-base, p-legal, p-util[U]
PLOTTED: TUE 03/03/20 2:19:10P BY: JEFF MINNICH

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Table TS/PS-2. Minimum Drill Seeding Rates for Perennial Grasses (cont.)

Common Name	Botanical Name	Growth Season[b]	Growth Form	Seeds/ Pound	Pounds of PLS/acre
Sandy Soil Seed Mix					
Blue grama	*Bouteloua gracilis*	Warm	Sod-forming bunchgrass	825,000	0.5
Camper little bluestem	*Schizachyrium scoparium 'Camper'*	Warm	Bunch	240,000	1.0
Prairie sandreed	*Calamovilfa longifolia*	Warm	Open sod	274,000	1.0
Sand dropseed	*Sporobolus cryptandrus*	Cool	Bunch	5,298,000	0.25
Vaughn sideoats grama	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**10.25**
Heavy Clay, Rocky Foothill Seed Mix					
Ephriam crested wheatgrass[d]	*Agropyron cristatum 'Ephriam'*	Cool	Sod	175,000	1.5
Oahe Intermediate wheatgrass	*Agropyron Intermedium 'Oahe'*	Cool	Sod	115,000	5.5
Vaughn sideoats grama[e]	*Bouteloua curtipendula 'Vaughn'*	Warm	Sod	191,000	2.0
Lincoln smooth brome	*Bromus inermis leyss 'Lincoln'*	Cool	Sod	130,000	3.0
Arriba western wheatgrass	*Agropyron smithii 'Arriba'*	Cool	Sod	110,000	5.5
Total					**17.5**

[a] All of the above seeding mixes and rates are based on drill seeding followed by crimped straw mulch. These rates should be doubled if seed is broadcast and should be increased by 50 percent if the seeding is done using a Brillion Drill or is applied through hydraulic seeding. Hydraulic seeding may be substituted for drilling only where slopes are steeper than 3:1. If hydraulic seeding is used, hydraulic mulching should be done as a separate operation.

[b] See Table TS/PS-3 for seeding dates.

[c] If site is to be irrigated, the transition turf seed rates should be doubled.

[d] Crested wheatgrass should not be used on slopes steeper than 6H to 1V.

[e] Can substitute 0.5 lbs PLS of blue grama for the 2.0 lbs PLS of Vaughn sideoats grama.

Table TS/PS-3. Seeding Dates for Annual and Perennial Grasses

	Annual Grasses (Numbers in table reference species in Table TS/PS-1)		Perennial Grasses	
Seeding Dates	**Warm**	**Cool**	**Warm**	**Cool**
January 1–March 15			✓	✓
March 16–April 30	4	1,2,3	✓	✓
May 1–May 15	4		✓	
May 16–June 30	4,5,6,7			
July 1–July 15	5,6,7			
July 16–August 31				
September 1–September 30		8,9,10,11		
October 1–December 31			✓	✓

Mulch

Cover seeded areas with mulch or an appropriate rolled erosion control product to promote establishment of vegetation. Anchor mulch by crimping, netting or use of a non-toxic tackifier. See the Mulching BMP Fact Sheet for additional guidance.

Maintenance and Removal

Monitor and observe seeded areas to identify areas of poor growth or areas that fail to germinate. Reseed and mulch these areas, as needed.

An area that has been permanently seeded should have a good stand of vegetation within one growing season if irrigated and within three growing seasons without irrigation in Colorado. Reseed portions of the site that fail to germinate or remain bare after the first growing season.

Seeded areas may require irrigation, particularly during extended dry periods. Targeted weed control may also be necessary.

Protect seeded areas from construction equipment and vehicle access.

Description

Mulching consists of evenly applying straw, hay, shredded wood mulch, rock, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers, netting or other measures. Mulching helps reduce erosion by protecting bare soil from rainfall impact, increasing infiltration, and reducing runoff. Although often applied in conjunction with temporary or permanent seeding, it can also be used for temporary stabilization of areas that cannot be reseeded due to seasonal constraints.

Mulch can be applied either using standard mechanical dry application methods or using hydromulching equipment that hydraulically applies a slurry of water, wood fiber mulch, and often a tackifier.

Photograph MU-1. An area that was recently seeded, mulched, and crimped.

Appropriate Uses

Use mulch in conjunction with seeding to help protect the seedbed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed areas where growing season constraints prevent effective reseeding. Disturbed areas should be properly mulched and tacked, or seeded, mulched and tacked promptly after final grade is reached (typically within no longer than 14 days) on portions of the site not otherwise permanently stabilized.

Standard dry mulching is encouraged in most jurisdictions; however, hydromulching may not be allowed in certain jurisdictions or may not be allowed near waterways.

Do not apply mulch during windy conditions.

Design and Installation

Prior to mulching, surface-roughen areas by rolling with a crimping or punching type roller or by track walking. Track walking should only be used where other methods are impractical because track walking with heavy equipment typically compacts the soil.

A variety of mulches can be used effectively at construction sites. Consider the following:

Mulch	
Functions	
Erosion Control	Yes
Sediment Control	Moderate
Site/Material Management	No

- Clean, weed-free and seed-free cereal grain straw should be applied evenly at a rate of 2 tons per acre and must be tacked or fastened by a method suitable for the condition of the site. Straw mulch must be anchored (and not merely placed) on the surface. This can be accomplished mechanically by crimping or with the aid of tackifiers or nets. Anchoring with a crimping implement is preferred, and is the recommended method for areas flatter than 3:1. Mechanical crimpers must be capable of tucking the long mulch fibers into the soil to a depth of 3 inches without cutting them. An agricultural disk, while not an ideal substitute, may work if the disk blades are dull or blunted and set vertically; however, the frame may have to be weighted to afford proper soil penetration.

- Grass hay may be used in place of straw; however, because hay is comprised of the entire plant including seed, mulching with hay may seed the site with non-native grass species which might in turn out-compete the native seed. Alternatively, native species of grass hay may be purchased, but can be difficult to find and are more expensive than straw. Purchasing and utilizing a certified weed-free straw is an easier and less costly mulching method. When using grass hay, follow the same guidelines as for straw (provided above).

- On small areas sheltered from the wind and heavy runoff, spraying a tackifier on the mulch is satisfactory for holding it in place. For steep slopes and special situations where greater control is needed, erosion control blankets anchored with stakes should be used instead of mulch.

- Hydraulic mulching consists of wood cellulose fibers mixed with water and a tackifying agent and should be applied at a rate of no less than 1,500 pounds per acre (1,425 lbs of fibers mixed with at least 75 lbs of tackifier) with a hydraulic mulcher. For steeper slopes, up to 2000 pounds per acre may be required for effective hydroseeding. Hydromulch typically requires up to 24 hours to dry; therefore, it should not be applied immediately prior to inclement weather. Application to roads, waterways and existing vegetation should be avoided.

- Erosion control mats, blankets, or nets are recommended to help stabilize steep slopes (generally 3:1 and steeper) and waterways. Depending on the product, these may be used alone or in conjunction with grass or straw mulch. Normally, use of these products will be restricted to relatively small areas. Biodegradable mats made of straw and jute, straw-coconut, coconut fiber, or excelsior can be used instead of mulch. (See the ECM/TRM BMP for more information.)

- Some tackifiers or binders may be used to anchor mulch. Check with the local jurisdiction for allowed tackifiers. Manufacturer's recommendations should be followed at all times. (See the Soil Binder BMP for more information on general types of tackifiers.)

- Rock can also be used as mulch. It provides protection of exposed soils to wind and water erosion and allows infiltration of precipitation. An aggregate base course can be spread on disturbed areas for temporary or permanent stabilization. The rock mulch layer should be thick enough to provide full coverage of exposed soil on the area it is applied.

Maintenance and Removal

After mulching, the bare ground surface should not be more than 10 percent exposed. Reapply mulch, as needed, to cover bare areas.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

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OUTLOOK AT NINE MILE
EROSION CONTROL PLAN DETAIL 5

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
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FILEPATH: P:\160602\ENGINEERING\EROSION\CD - EROSION CONTROL PLAN DETAIL.DWG LAYOUT: EROSION CONTROL PLAN DETAIL 5
3 XREFs: p-base, p-bgd, p-util[1]
PLOTTED: TUE 03/02/20 2:19:32P BY: JEFF MINNICH

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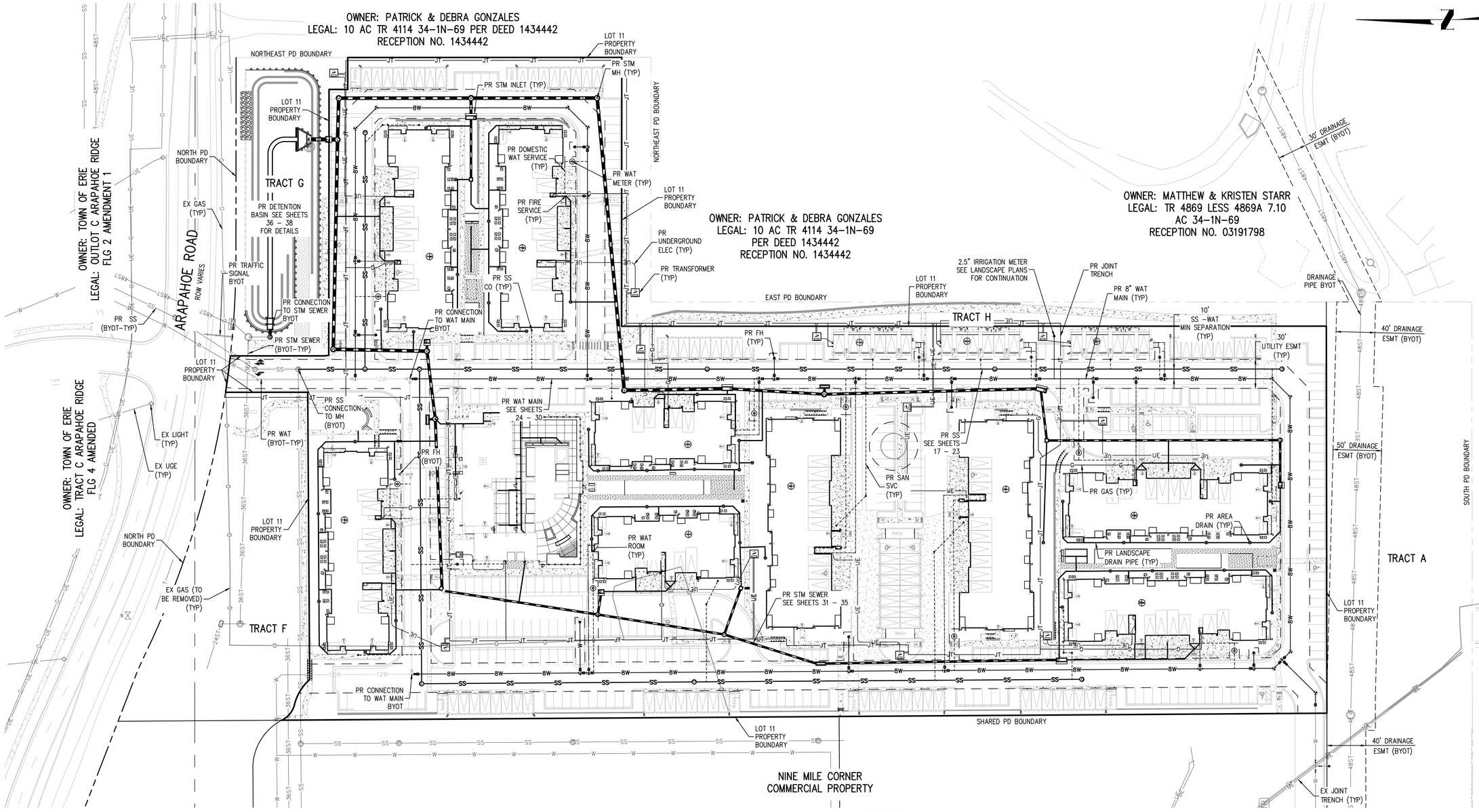

NOTES:

1. OVERALL PLAN DEPICTED IS INTENDED FOR GENERAL REFERENCE OF PROJECT DEVELOPMENT.
2. SEE SANITARY PLAN SHEETS FOR DETAILS REGARDING SANITARY IMPROVEMENTS.
3. SEE WATER PLAN SHEETS FOR DETAILS REGARDING WATER IMPROVEMENTS.
4. SEE STORM SEWER PLAN SHEETS FOR DETAILS REGARDING STORM IMPROVEMENTS.
5. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING NOTIFICATION:
   a. UTILITY NOTIFICATION CENTER OF COLORADO, 811. CALL THREE (3) BUSINESS DAYS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.
      - LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES, WHETHER SHOWN OR NOT SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS.
      - PROVIDING NOTIFICATION AND RECEIVING MARKING OF UNDERGROUND MEMBER UTILITIES IN NO WAY CONSTITUTES PERMISSION TO PERFORM CONSTRUCTION.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

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OUTLOOK AT NINE MILE
OVERALL UTILITY PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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01-27-2020	PER TOWN OF ERIE COMMENTS
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SHEET NO.
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FILEPATH: P:\160602\ENGINEERING\UTILITIES\CD_OVERALL UTILITY PLAN.DWG LAYOUT: OVERALL UTILITY PLAN
8 XREFs: c-ed - sump, c-el_evergreen logo, e-base_byot, e-legal_byot(1), e-util, p-base, p-legal, p-util
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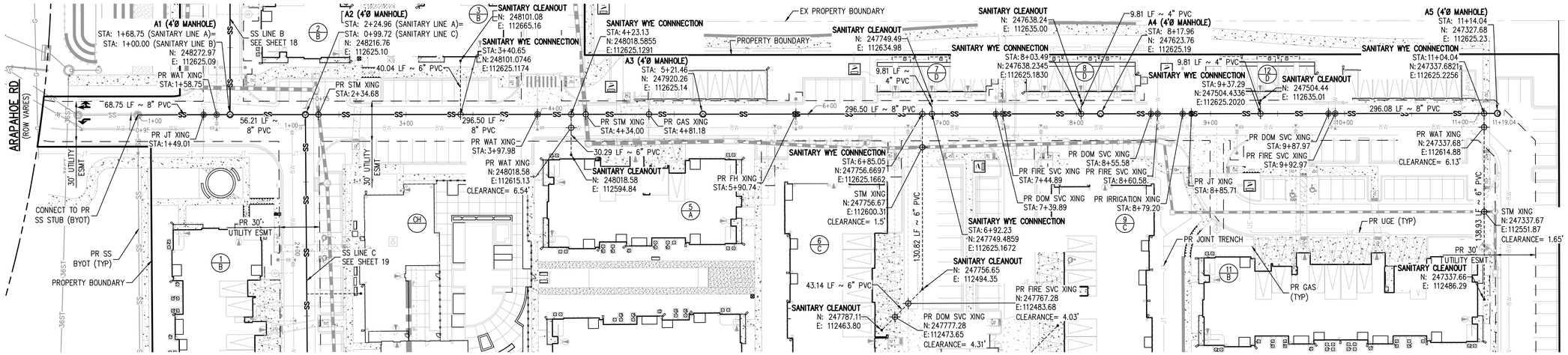
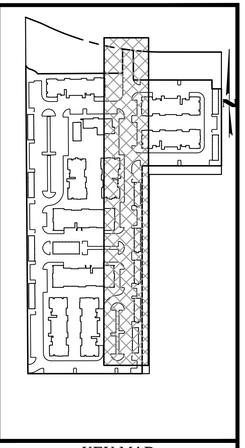


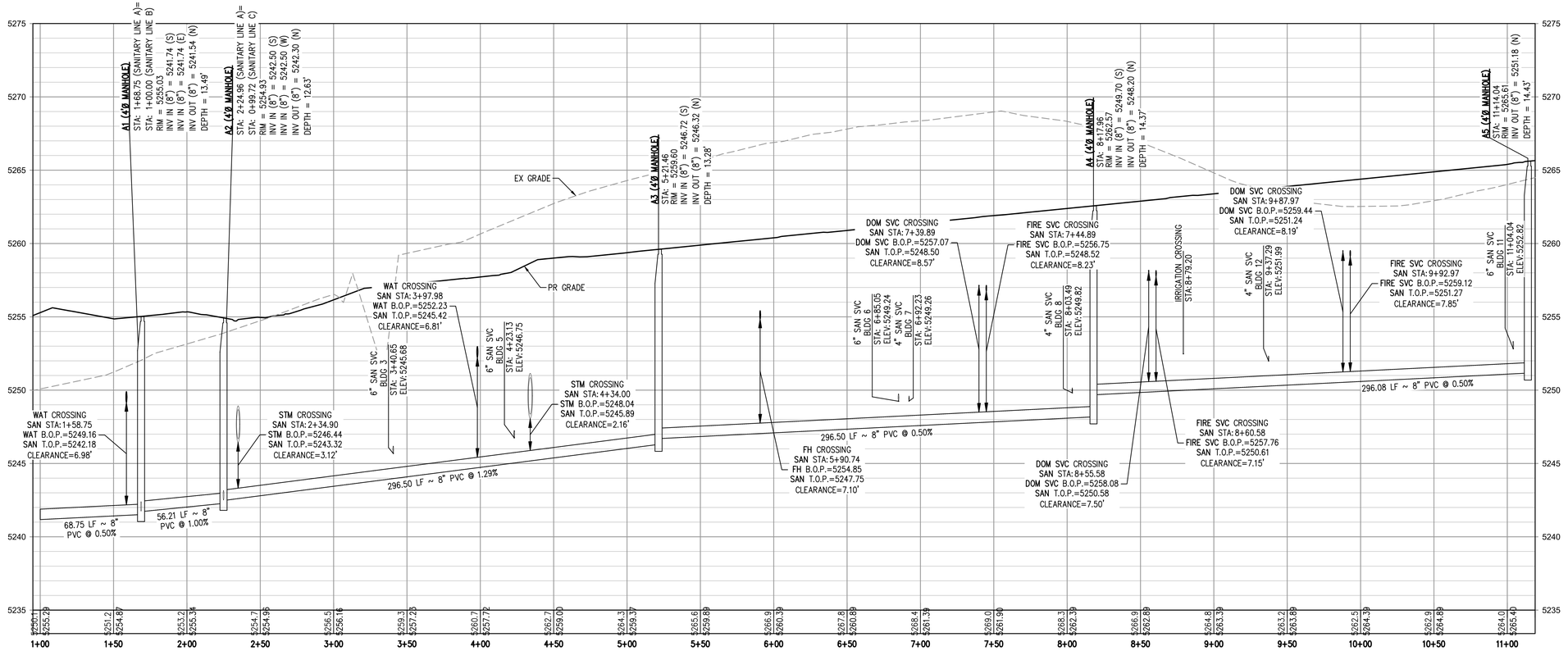
SANITARY LINE A PLAN

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



SANITARY LINE A PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

SANITARY SERVICE TABLE

BLDG SERVICE	SAN STA @ MAIN	SERVICE INV @ MAIN	INV @ BLDG CLEANOUT	FFE	LENGTH (FT)	SLOPE (%)	SIZE (DIA. IN.)
3	3+40.65	5245.68	5248.88	5258.10	40.04	8.00	6"
5	4+23.13	5246.75	5249.17	5259.77	30.29	8.00	6"
6	6+85.05	5249.24	5252.72	5263.12	173.96	2.00	6"
7	6+92.23	5249.26	5250.05	5262.21	9.81	8.00	4"
8	8+03.49	5249.82	5250.60	5263.32	9.81	8.00	4"
12	9+37.29	5251.99	5252.77	5264.66	9.81	8.00	4"
11	11+04.04	5252.82	5255.95	5266.86	138.93	2.25	6"

NOTES:

1. THE CONTRACTOR SHALL NOTIFY COLORADO 811 PRIOR TO EXCAVATION IN ACCORDANCE WITH COLORADO STATE STATUTES.
2. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
3. STATIONING IS ALONG CENTER LINE OF PIPE UNLESS OTHERWISE NOTED.
4. NORTHINGS/EASTINGS SHOWN FOR MANHOLE PLACEMENT REFERS TO CENTER OF BARREL.
5. PIPE LENGTH IS FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
6. MANHOLE LIDS TO BE ROTATED AS SHOWN ON PLAN.
7. ALL MANHOLES ARE ECCENTRIC UNLESS OTHERWISE NOTED.
8. ALL PROPOSED MANHOLES, SANITARY MAINS, AND SERVICES SHALL BE IN ACCORDANCE WITH CITY OF ERIE STANDARD DETAILS.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

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CHECKED BY: MSM
DRAWN BY: AEM

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OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE A

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
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03-03-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO.
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17 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY SEWER PLAN & PROFILE.DWG LAYOUT: SANITARY SEWER PLAN & PROFILE LINE A
6 XREFs: cd - sanitp, cd_evergreen logo, keymap, P-base, P-topo, pwll
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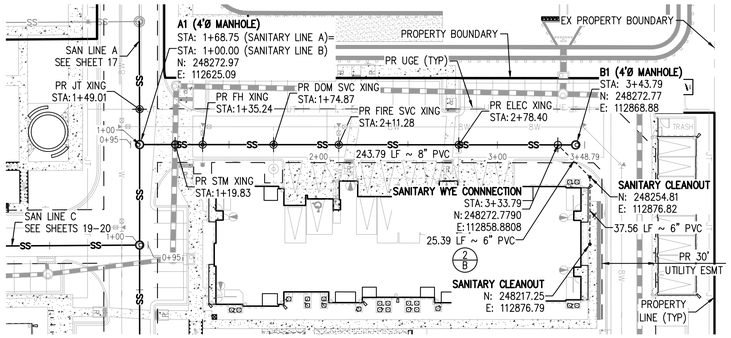
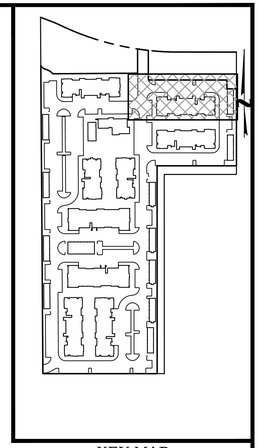


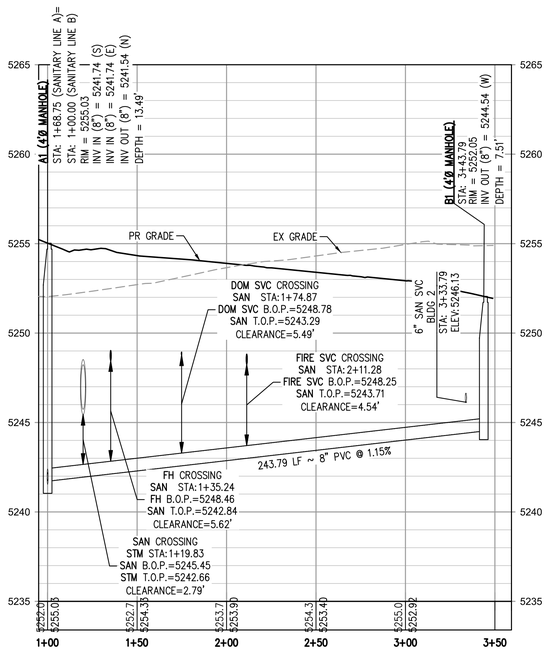
SANITARY LINE B PLAN

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



SANITARY LINE B PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

SANITARY SERVICE TABLE

BLDG SERVICE	SAN STA @ MAIN	SERVICE INV @ MAIN	INV @ BLDG CLEANOUT	FFE	LENGTH (FT)	SLOPE (%)	SIZE (DIA. IN.)
2	3+33.79	5246.13	5250.54	5254.44	62.95	7.00	6"

NOTES:

1. THE CONTRACTOR SHALL NOTIFY COLORADO 811 PRIOR TO EXCAVATION, IN ACCORDANCE WITH COLORADO STATE STATUTES.
2. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
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4. NORTHINGS/EASTINGS SHOWN FOR MANHOLE PLACEMENT REFERS TO CENTER OF BARREL.
5. PIPE LENGTH IS FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
6. MANHOLE LIDS TO BE ROTATED AS SHOWN ON PLAN.
7. ALL MANHOLES ARE ECCENTRIC UNLESS OTHERWISE NOTED.
8. ALL PROPOSED MANHOLES, SANITARY MAINS, AND SERVICES SHALL BE IN ACCORDANCE WITH CITY OF ERIE STANDARD DETAILS.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE B

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
18

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY SEWER PLAN & PROFILE.DWG LAYOUT: SANITARY SEWER PLAN & PROFILE LINE B
6 XREFs: cd - sump, cd_evergreen logo, layout, p-base, p-grid, p-text
PLOTTED: TUE 03/03/20 2:26:47P BY: JEFF MINNICH

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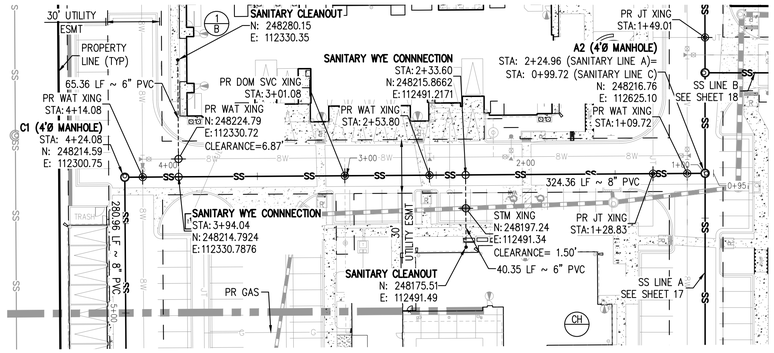
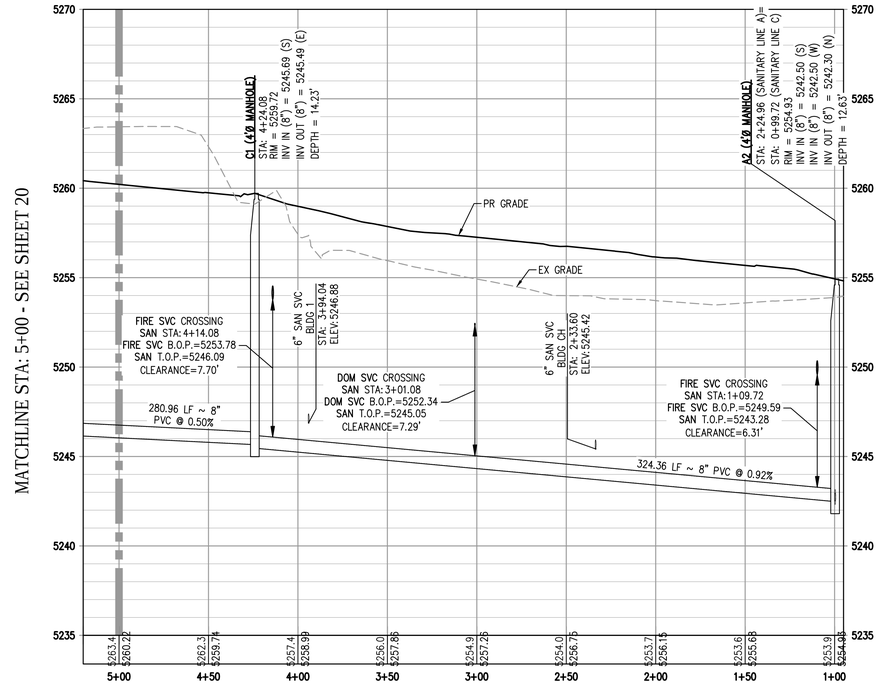


MATCHLINE STA: 5+00 - SEE SHEET 20

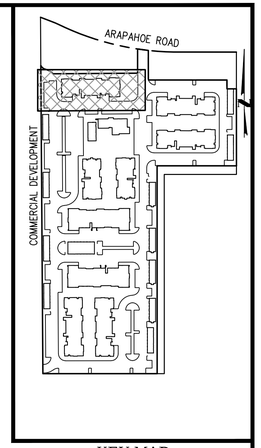
SANITARY LINE C

SCALE: 1" = 40'



SANITARY LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



KEY MAP

SCALE: 1" = 250'

SANITARY SERVICE TABLE

BLDG SERVICE	SAN STA @ MAIN	SERVICE INV @ MAIN	INV @ BLDG CLEANOUT	FFE	LENGTH (FT)	SLOPE (%)	SIZE (DIA. IN.)
CH	2+33.60	5245.42	5252.11	5257.92	40.35	1.56	6"
1	3+94.04	5246.88	5252.11	5258.77	65.36	8.00	6"

NOTES:

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE C
(STA: 0+95 TO STA: 5+00)

ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 19

19 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY SEWER PLAN & PROFILE.DWG LAYOUT: SANITARY SEWER PLAN & PROFILE LINES C
6 XREFs: cd - stamp, cd_evergreen logo, leeman_P.base, p-legal, p-util
PLOTTED: TUE 03/03/20 2:20:53P BY: JEFF MINNICH

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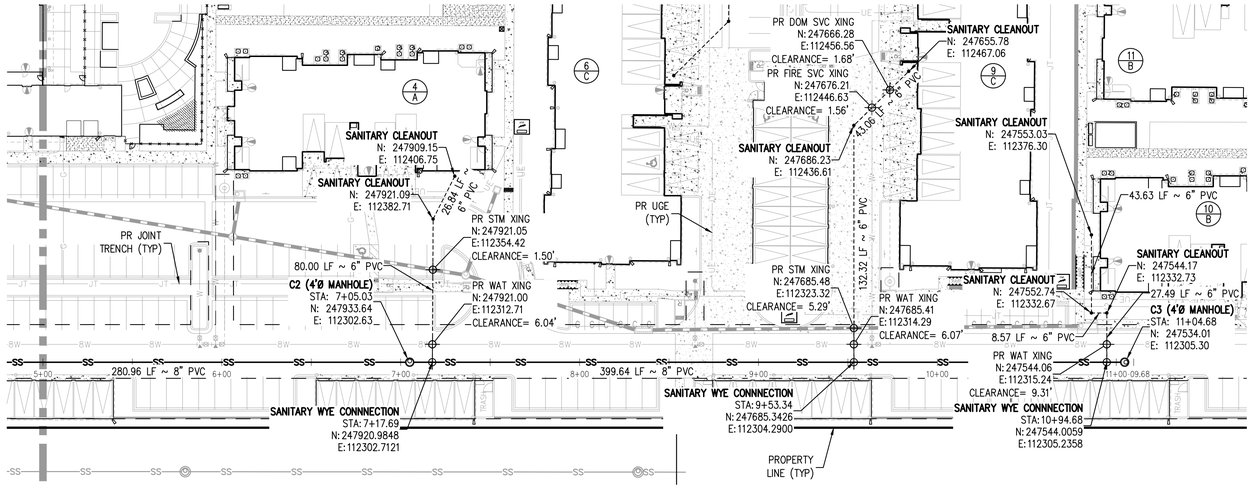
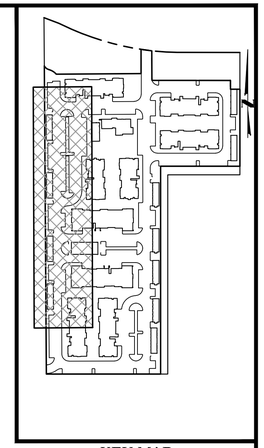
MATCHLINE STA: 5+00 - SEE SHEET 19



SANITARY LINE C

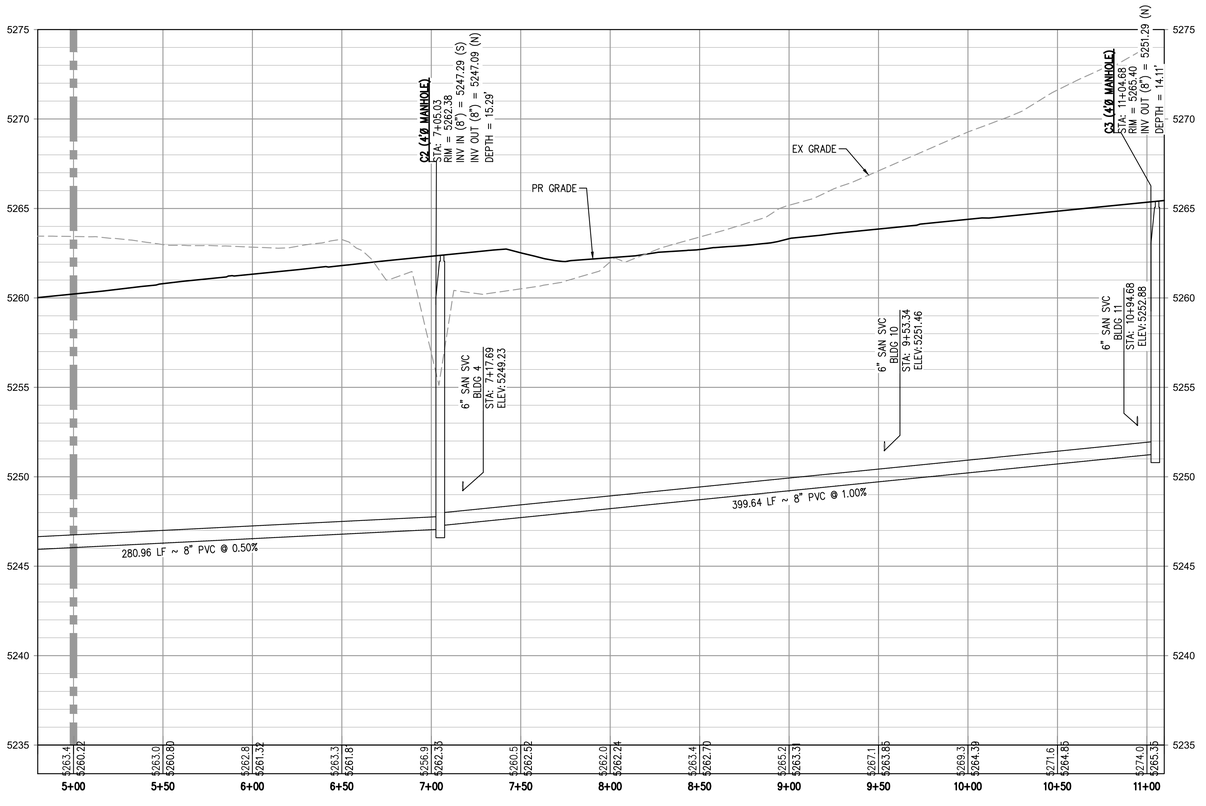
SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'

MATCHLINE STA: 5+00 - SEE SHEET 19



SANITARY LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

SANITARY SERVICE TABLE

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4	7+17.69	5249.23	5251.33	5260.66	106.84	1.74	6"
9	9+53.54	5251.46	5256.73	5264.43	132.32	3.00	6"
10	10+94.68	5252.88	5259.25	5267.33	79.69	8.00	6"

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SCALE: 1" = 40'

DESIGNED BY: AEM
CHECKED BY: MSM
DRAWN BY: AEM

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Denver, Colorado 80203
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Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
SANITARY SEWER P&P LINE C
(STA: 5+00 TO STA: 10+98)

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

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20
20 OF 69

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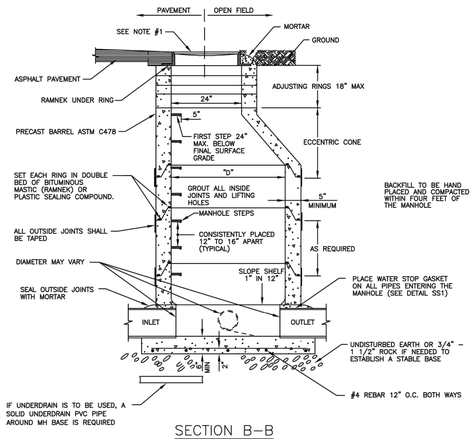


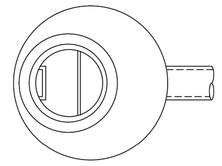
SECTION B–B

NOTES:

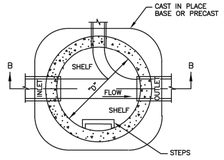
1. FINAL GRADE OF MANHOLE COVERS SHALL BE 1/4" LOWER THAN FINAL STREET.
2. ALL CHANNELS FLOWING INTO THE MAIN STREAM OF THE SEWER SHALL BE HAND FORMED INTO THE FLOW.
3. STEPS SHOULD BE PLACED OVER THE SHELF, NOT OVER THE FLOW. NO STEPS ALLOWED IN THE ADJUSTING RING AREA.
4. PRECAST CONCRETE SECTIONS SHALL CONFORM TO ASTM C–478.
5. BLOCK–OUTS, WHEN APPROVED, SHALL EXTEND A MAX. OF 6" PAST MANHOLE O.D. AND BE SATISFACTORILY PLUGGED AND SEALED.
6. BENCH MUST HAVE A BRUSHED, NON–SKID SURFACE.
7. BENCH IS TO BE EVEN WITH TOP OF PIPES
8. A MINIMUM OF 0.2' AND MAXIMUM OF 2' FALL REQUIRED FROM INLET TO OUTLET
9. MANHOLES NOT IN ASPHALT OR CONCRETE SHALL BE RAISED 6" ABOVE FINAL GRADE AND A CONCRETE COLLAR INSTALLED WITH A GREEN CARSONITE POST

The Town of ERIE COLORADO

DRAWING TITLE: STANDARD MANHOLE
DRAWING NUMBER: SS3A (1 OF 2)
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2010



ECCENTRIC CONE PLAN VIEW



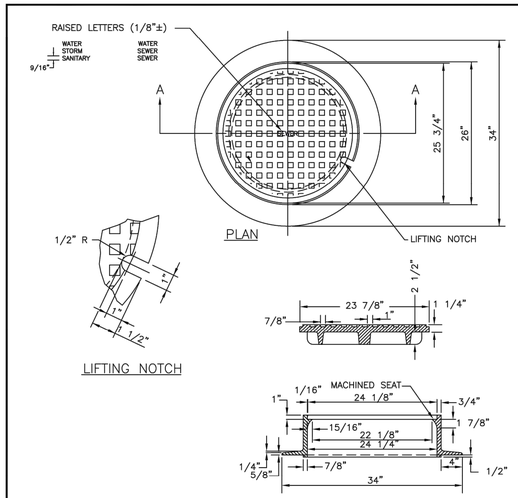
BASE PLAN VIEW

PIPE I.D.	MANHOLE I.D.	RING & COVER
18" & SMALLER	4'–0"▲	24"
21" TO 48"	5'–0"	30"
54"	6'–0"	30", 36" W/ 24"
60" & LARGER	SPECIAL DESIGN	INNER COVER

▲ WHENEVER MORE THAN A TWO WAY MANHOLE OF MAX. PIPE I.D. IS REQUIRED, THE MANHOLE SHOULD BE INCREASED TO LARGER DIA., EG. 18"x18"x18", REQUIRES 5'–0" I.D.

The Town of ERIE COLORADO

DRAWING TITLE: STANDARD MANHOLE
DRAWING NUMBER: SS3B (2 OF 2)
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



SECTION A–A

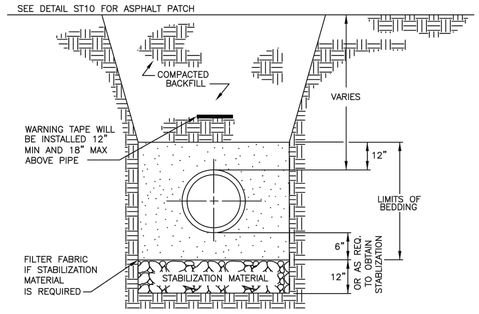
1. CASTING SPECIFICATIONS: ASTM A–48 WITH A MINIMUM TENSILE STRENGTH OF 25 KSI (CLASS 25)
2. ALL CASTINGS TO BE DIPPED IN ASPHALT BASE PAINT (OR APPROVED EQUAL)
3. CASTINGS SHALL BE AS SPECIFIED BELOW OR APPROVED EQUAL:

MANUFACTURERS	CAT. #
NEENAH	R–1706
CASTINGS, INC.	MH–400–24 C.I.
HUTCHINSON FDRY. & STL. INC.	MH–400

4. ALL NEW MANHOLES MUST INCLUDE A PLASTIC OR VINYL TAG ATTACHED TO THE TOP STEP STATING THE FOLLOWING "CAUTION CONFINED SPACE; ENTRY PERMIT REQUIRED.

The Town of ERIE COLORADO

DRAWING TITLE: 24" MANHOLE RING AND COVER
DRAWING NUMBER: SS6
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 1/2015



NOTES:

1. COMPACTION SHALL BE AS FOLLOWS: PIPE ZONE BEDDING 6" UNDER AND 12" OVER PIPE WILL REQUIRE 90% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, FULL TRENCH SECTION IN ROADWAY OR STREET R.O.W. LIMITS WILL REQUIRE 95% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, OUTSIDE OF STREET R.O.W. WILL REQUIRE 90% S.P.D.
2. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.
3. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND PROTECTION OF OTHER UTILITIES IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
4. PIPE SHALL BE BEDDED FROM 6" BELOW THE BOTTOM OF THE PIPE TO 12" ABOVE THE TOP OF THE PIPE.
5. TRENCH WIDTH SHALL NOT BE MORE THAN 24" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.
6. SHOULD THE TRENCH BE EXCAVATED WIDER THAN ALLOWED, A CONCRETE CRADLE SHALL BE PLACED WITH 2500 P.S.I. CONCRETE FROM TRENCH BOTTOM TO PIPE SPRINGLINE.

The Town of ERIE COLORADO

DRAWING TITLE: SANITARY SEWER TRENCH DETAIL
DRAWING NUMBER: SS8
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 01/2012

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DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

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Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
SANITARY SEWER DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

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03-03-2020	PER TOWN OF ERIE COMMENTS

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21
21 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY DETAILS.DWG LAYOUT: LAYOUT1
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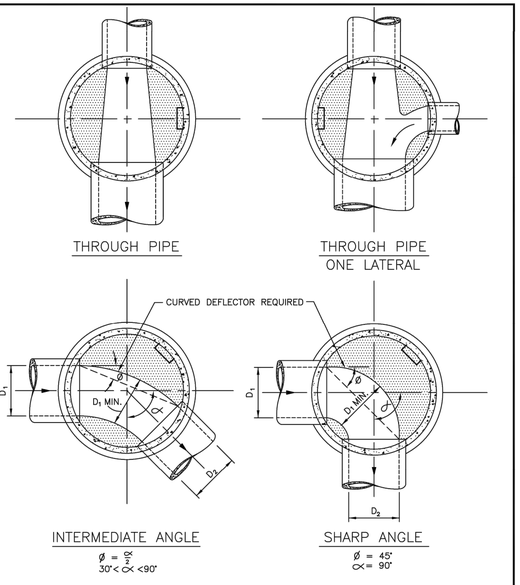
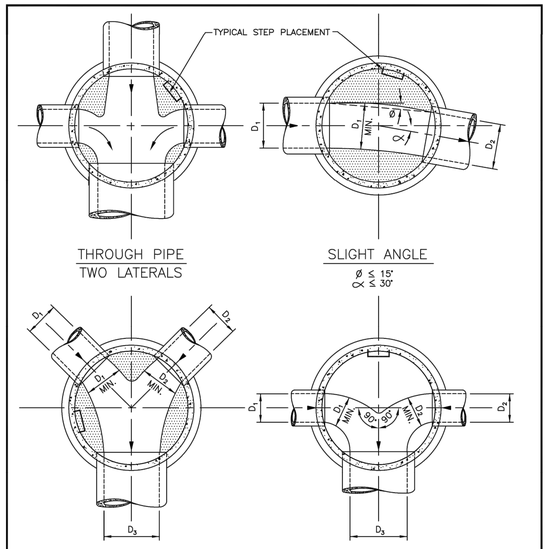


NOTES:
1. DETAILS SHOWN ARE TYPICAL ONLY FOR INSTALLATIONS WITH ALL INVERTS AT SAME RELATIVE ELEVATION.
2. FOR EXCESSIVE ELEVATION DIFFERENCE BETWEEN INVERTS, ETC. SPECIAL BASE/CHANNEL DETAILS SHALL BE SHOWN ON PLANS.
3. CHANNELIZATION DETAILS & STEP PLACEMENT TYPICAL FOR BOTH STORM AND SANITARY SEWER MH'S.
4. THE MINIMUM VERTICAL DROP THRU MANHOLE BASE SHALL BE 0.20 FOOT.
5. FOR VERTICAL DROPS IN EXCESS OF 1.5 FEET AN OUTSIDE DROP MANHOLE IS REQUIRED.

The Town of ERIE COLORADO

DRAWING TITLE: TYPICAL MH BASE CHANNELIZATION (1 OF 2)
DRAWING NUMBER: SS11A
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



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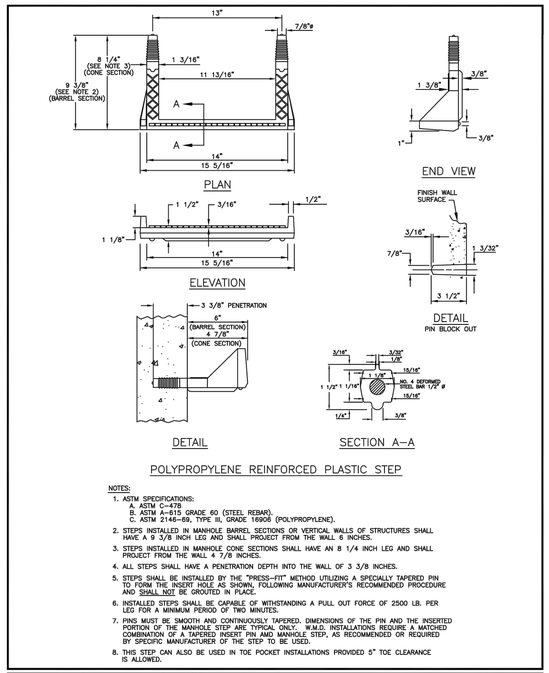
The Town of ERIE COLORADO

DRAWING TITLE: TYPICAL MH BASE CHANNELIZATION (2 OF 2)
DRAWING NUMBER: SS11B
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

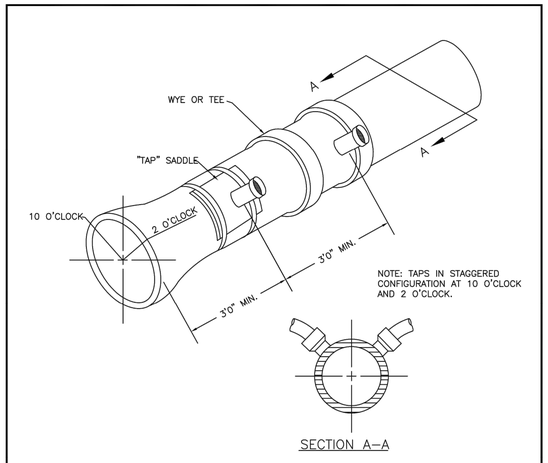


POLYPROPYLENE REINFORCED PLASTIC STEP

NOTES:
1. ASTM SPECIFICATIONS:
   A. ASTM C-478
   B. ASTM A-615 GRADE 60 (STEEL REBAR).
   C. ASTM 2146-69, TYPE III, GRADE 16906 (POLYPROPYLENE).
2. STEPS INSTALLED IN MANHOLE BARREL SECTIONS OR VERTICAL WALLS OF STRUCTURES SHALL HAVE A 9 3/8 INCH LEG AND SHALL PROJECT FROM THE WALL 8 INCHES.
3. STEPS INSTALLED IN MANHOLE CONE SECTIONS SHALL HAVE AN 8 1/4 INCH LEG AND SHALL PROJECT FROM THE WALL 4 7/8 INCHES.
4. ALL STEPS SHALL HAVE A PENETRATION DEPTH INTO THE WALL OF 3 3/8 INCHES.
5. STEPS SHALL BE INSTALLED BY THE "PRESS-FIT" METHOD UTILIZING A SPECIALLY TAPERED PIN TO FORM THE INSERT HOLE AS SHOWN, FOLLOWING MANUFACTURER'S RECOMMENDED PROCEDURE AND SHALL NOT BE GROUTED IN PLACE.
6. INSTALLED STEPS SHALL BE CAPABLE OF WITHSTANDING A PULL OUT FORCE OF 2500 LB. PER LEG FOR A MINIMUM PERIOD OF TWO MINUTES.
7. PINS MUST BE SMOOTH AND CONTINUOUSLY TAPERED. DIMENSIONS OF THE PIN AND THE INSERTED PORTION OF THE MANHOLE STEP ARE TYPICAL ONLY. W.M.D. INSTALLATIONS REQUIRE A MATCHED COMBINATION OF A TAPERED INSERT PIN AND MANHOLE STEP, AS RECOMMENDED OR REQUIRED BY SPECIFIC MANUFACTURER OF THE STEP TO BE USED.
8. THIS STEP CAN ALSO BE USED IN TOE POCKET INSTALLATIONS PROVIDED 5" TOE CLEARANCE IS ALLOWED.

The Town of ERIE COLORADO

DRAWING TITLE: MANHOLE STEPS
DRAWING NUMBER: SS12
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



NOTES:
1. SEWER SERVICE CONNECTIONS SHALL BE POSITIONED AT EITHER THE 2 O'CLOCK OR THE 10 O'CLOCK POSITION ON THE CIRCUMFERENCE OF THE SEWER MAIN.
2. ON NEW INSTALLATIONS, EITHER WYE OR TEE FITTINGS SHALL BE USED. WHEN TAPPING INTO AN EXISTING SEWER MAIN, A SADDLE CONNECTION AND APPROVED CORING METHOD SHALL BE USED.
3. THE MINIMUM DISTANCE BETWEEN SERVICE CONNECTIONS MADE ALONG THE PIPE SHALL BE 3–FEET. THE MINIMUM DISTANCE FROM EITHER THE BELL OR SPIGOT END OF A PIPE SHALL BE 3–FEET. THE MINIMUM DISTANCE FROM THE CENTER OF A MANHOLE TO A SERVICE CONNECTION SHALL BE EITHER 5–FEET OR THE TRANSITION POINT FROM THE MANHOLE TRENCH, WHICHEVER IS GREATER.
4. A MAXIMUM OF 4 SEWER SERVICE CONNECTIONS SHALL BE ALLOWED PER 20–FEET LENGTH OF PIPE. A SPECIFIC SOILS INVESTIGATIONS SHOULD BE CONDUCTED TO ASSURE THAT THE EXTERNAL LOADING WILL BE WITHIN ALLOWABLE LIMITS REGARDLESS OF THE NUMBER OF TAPS INVOLVED.

The Town of ERIE COLORADO

DRAWING TITLE: DOMESTIC SEWER TAPPING
DRAWING NUMBER: SS15
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
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Denver, Colorado 80203
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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
SANITARY SEWER DETAILS

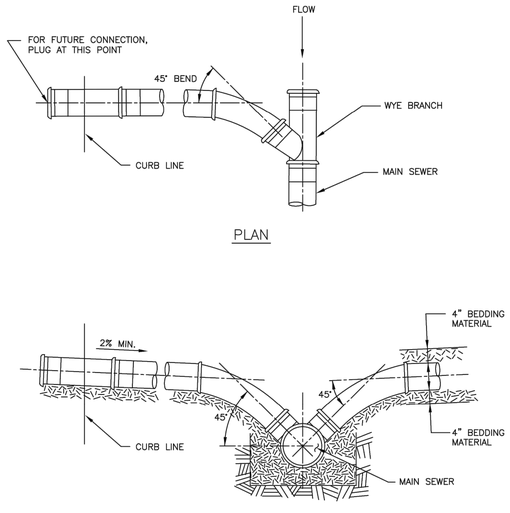
ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

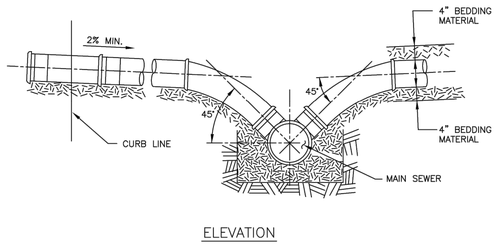
SHEET NO.
22
22 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY DETAILS.DWG LAYOUT: LAYOUT2
NO XREFs
PLOTTED: TUE 03/03/20 2:21:13P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



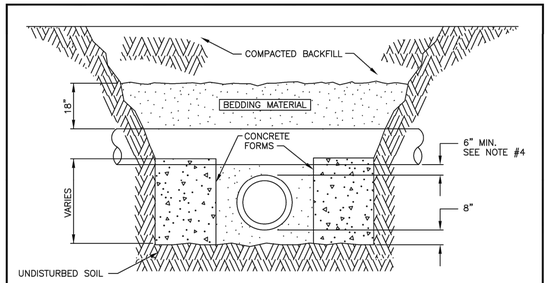
PLAN



ELEVATION

The Town of ERIE COLORADO

DRAWING TITLE: SEWER SERVICE CONNECTION
DRAWING NUMBER: SS18
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



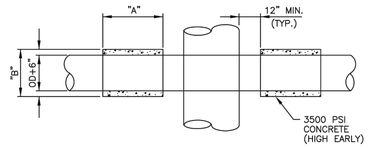


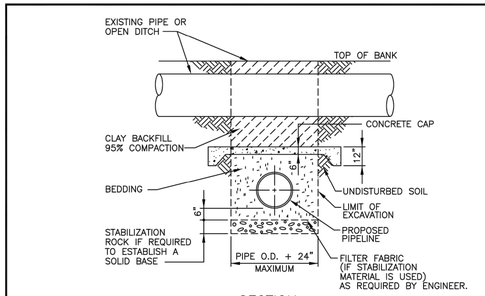
TABLE	
"A"	"B"
PIPES ≤ 12" =12" PIPES > 12" =18"	PIPE O.D. + 6" ON BOTH SIDES.

NOTES:

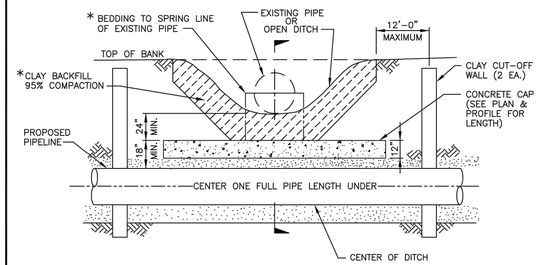
1. PIPE SECTIONS SHALL BE CENTERED OVER THE PIPE BEING CROSSED.
2. SIZES ABOVE 24" WILL BE DETERMINED BY THE ENGINEER.
3. A BOND BREAKER SHOULD BE PLACED BETWEEN THE CONCRETE AND THE PIPE BEING SUPPORTED.
4. IF THE CROSSING INVOLVES A WATER LINE AND THERE IS 6" OF CLEARANCE, OR THERE IS LESS THAN 4' OF COVER OVER THE UPPER PIPE, A FIBER BOARD INSULATION (DOW 2" EXTRUDED POLYSTYRENE IN ACCORDANCE WITH ASTM-C578 OR APPROVED EQUAL) MUST BE INSTALLED BETWEEN THE PIPES. THE BOARD SHOULD EXTEND 2' BEYOND THE OUTSIDE EDGES OF BOTH PIPES.

The Town of ERIE COLORADO

DRAWING TITLE: PIPE CROSSING SUPPORT PAD
DRAWING NUMBER: SS19
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



SECTION



PROFILE

* USE CLAY BACKFILL ONLY WHEN CROSSING OPEN DITCH. USE BEDDING MATERIAL TO SPRING LINE OF EXISTING PIPE WHEN CROSSING PIPE.

The Town of ERIE COLORADO

DRAWING TITLE: DITCH OR PIPE CROSSING
DRAWING NUMBER: SS21
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HKS HARRIS KOCHER SMITH
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OUTLOOK AT NINE MILE
SANITARY SEWER DETAILS

ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
23
23 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\SANITARY\CD - SANITARY DETAILS.DWG LAYOUT: LAYOUT3
NO XREFs
PLOTTED: TUE 03/03/20 2:21:17P BY: JEFF MINNICH

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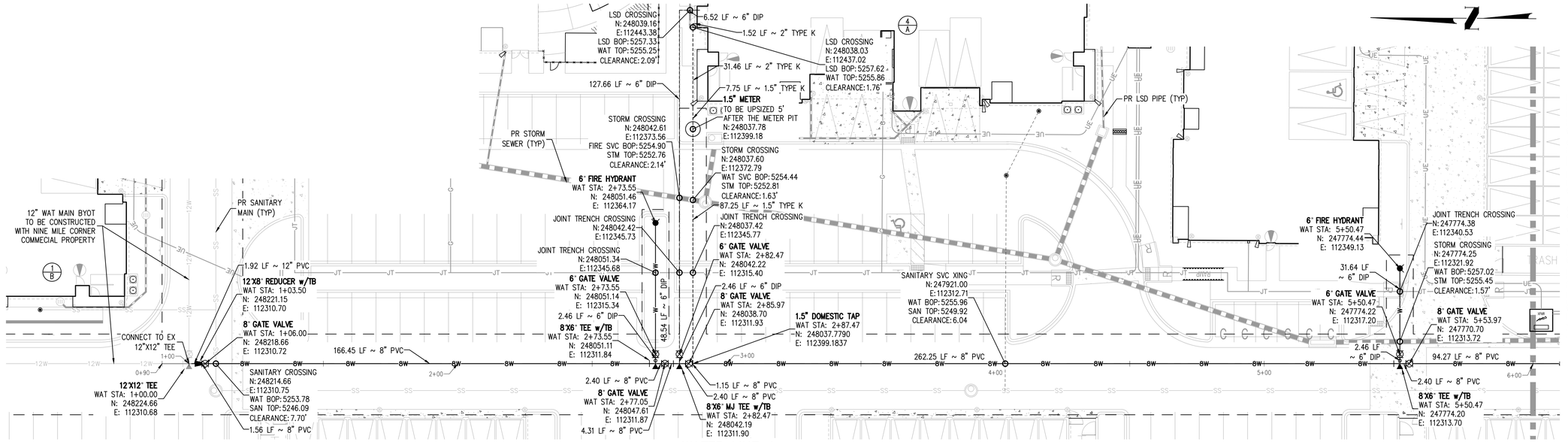
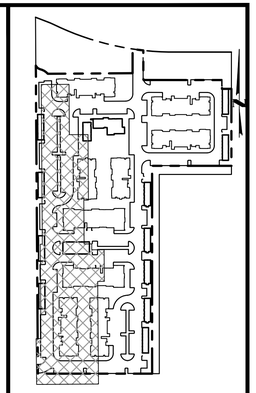


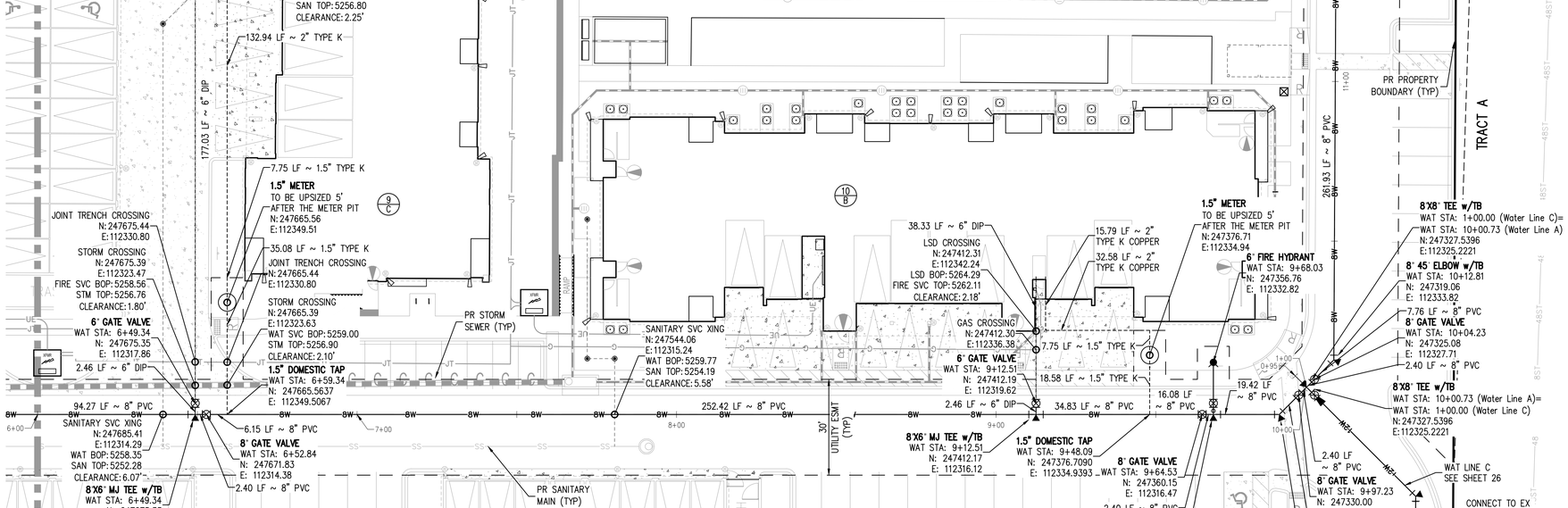
MATCHLINE STA: 6+00 - SEE THIS SHEET



KEY MAP
SCALE: 1" = 250'

WATER LINE A
STA: 1+00 TO 6+00
SCALE: 1" = 20'

MATCHLINE STA: 11+50 - SEE SHEET 25



MATCHLINE STA: 6+00 - SEE THIS SHEET

WATER LINE A
STA: 6+00 TO 11+50
SCALE: 1" = 20'

NOTES:

1. ALL WATER AND FIRE SERVICES SHALL BE INSTALLED A MINIMUM OF 4.5 FEET OF COVER FROM FINISHED GRADE.
2. STATIONING IS BASED ALONG WATER CENTER LINE.
3. PIPE LENGTH GIVEN FOR DOMESTIC WATER AND FIRE SERVICES ARE FROM MAIN TO BUILDING.
4. ALL HYDRANT ASSEMBLIES, VALVES, BENDS AND FITTINGS ARE TO BE FULLY RESTRAINED.
5. ALL VALVES, BENDS, TEES AND CROSSES SHALL HAVE THRUST BLOCKS.
6. ALL WORK SHALL BE IN ACCORDANCE WITH THE TOWN OF ERIE'S 2017 STANDARDS AND SPECIFICATIONS.
7. ALL WATER WILL BE PUBLIC UNLESS OTHERWISE NOTED.
8. CURB STOPS SHALL BE ONE FOOT FROM THE METER PIT.
9. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
10. FOR TOWN OF ERIE NOTES – SEE SHEETS 2 & 3

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SCALE: 1" = 20'

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

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1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER PLAN LINE A
STA: 1+00 TO 12+50

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
24
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FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER PLAN.DWG LAYOUT: WATER PLAN 1
7 XREFs: cd - stamp, cd_evergreen logo, e-util, keymap, p-base, p-bdpl, p-util
PLOTTED: TUE 03/03/20 2:22:11P BY: JEFF MINNICH

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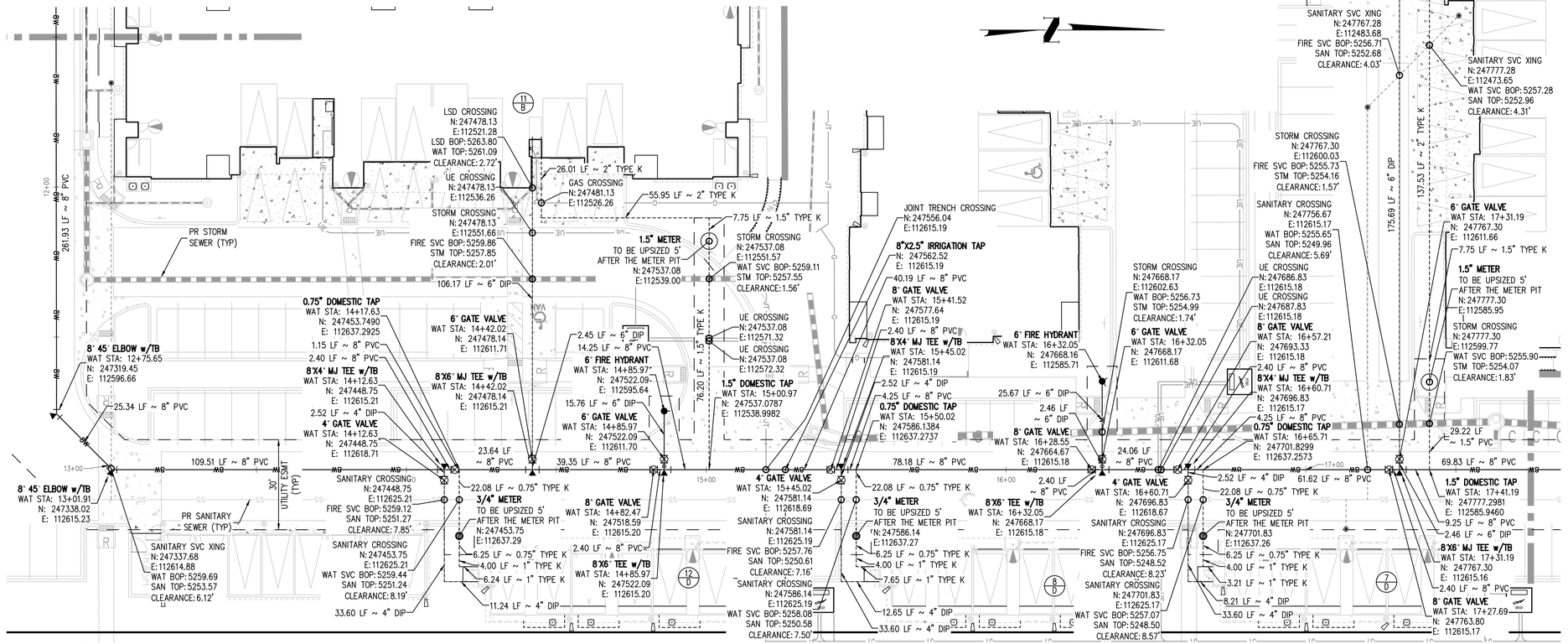
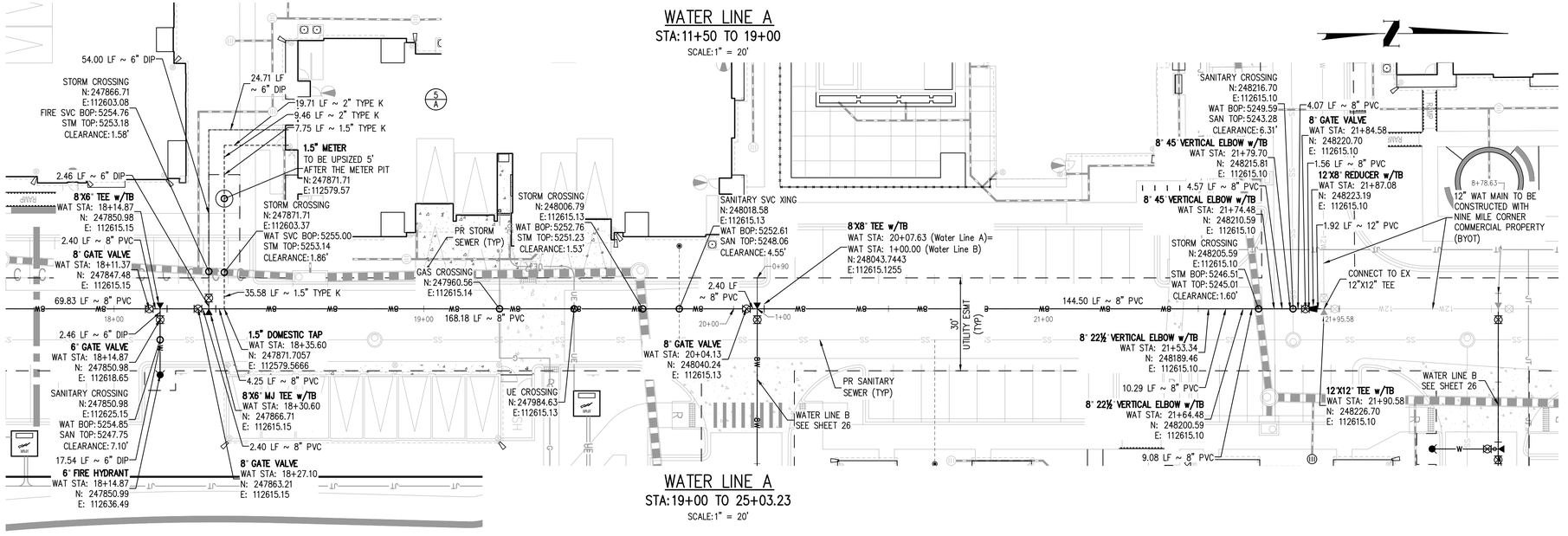
MATCHLINE STA: 11+50 - SEE SHEET 24



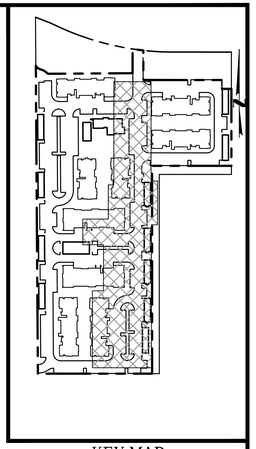
MATCHLINE STA: 17+75 - SEE THIS SHEET

WATER LINE A
STA: 11+50 TO 19+00
SCALE: 1" = 20'

MATCHLINE STA: 17+75 - SEE THIS SHEET



WATER LINE A
STA: 19+00 TO 25+03.23
SCALE: 1" = 20'



KEY MAP
SCALE: 1" = 250'

MATCHLINE STA: 17+75 - SEE THIS SHEET

NOTES:

1. ALL WATER AND FIRE SERVICES SHALL BE INSTALLED A MINIMUM OF 4.5 FEET OF COVER FROM FINISHED GRADE.
2. STATIONING IS BASED ALONG WATER CENTER LINE.
3. PIPE LENGTH GIVEN FOR DOMESTIC WATER AND FIRE SERVICES ARE FROM MAIN TO BUILDING.
4. ALL HYDRANT ASSEMBLIES, VALVES, BENDS AND FITTINGS ARE TO BE FULLY RESTRAINED.
5. ALL VALVES, BENDS, TEES AND CROSSES SHALL HAVE THRUST BLOCKS.
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20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER PLAN LINE A
STA: 12+00 TO 25+03.23

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
25
25 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD- WATER PLAN.DWG LAYOUT: WATER PLAN 2
7 XREFS: cdi - stamp, cd_evergreen logo, cwell, keymap, p-base, p-legal, p-util
PLOTTED: TUE 03/03/20 2:22:19P BY: JEFF MINNICH

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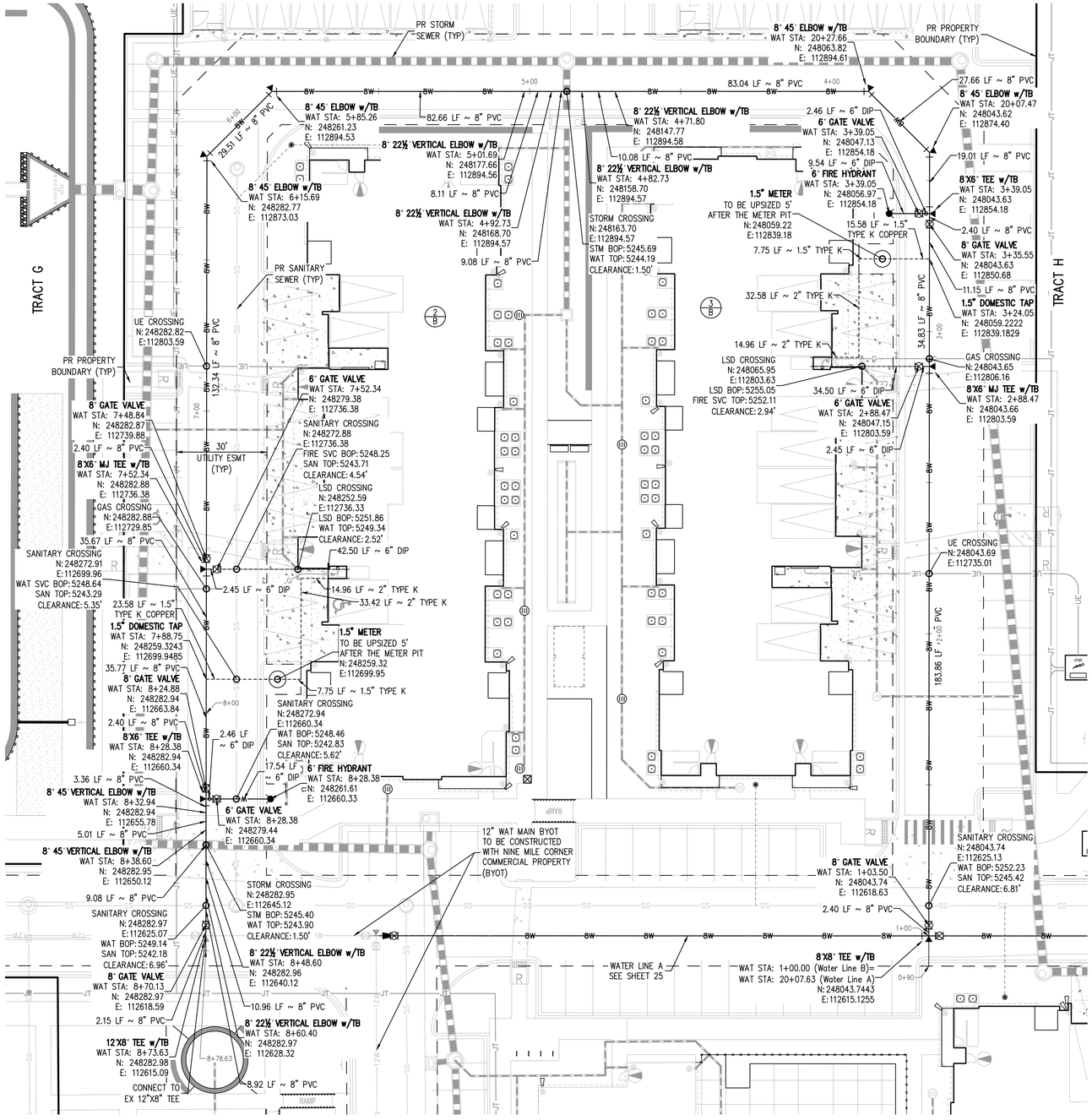
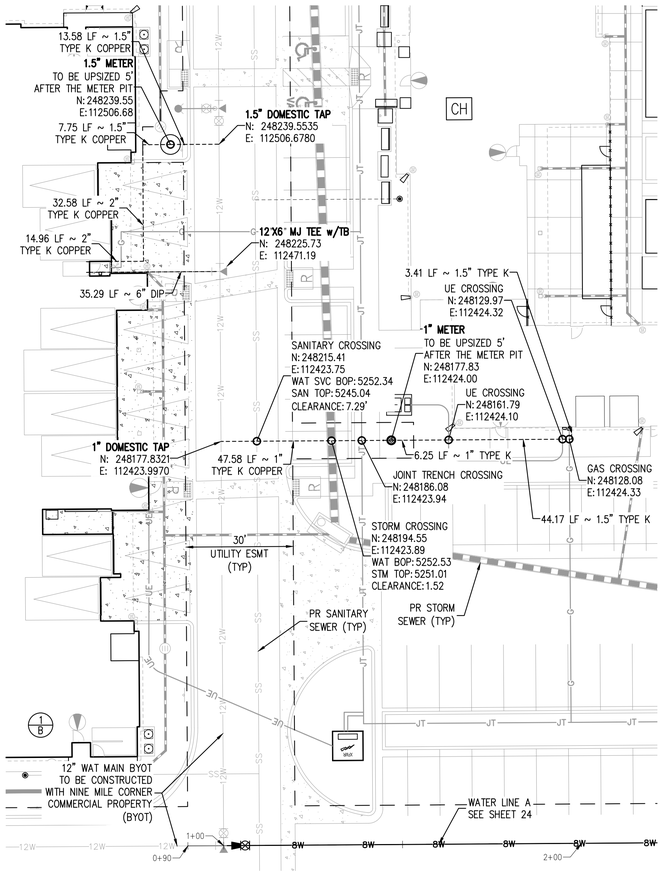
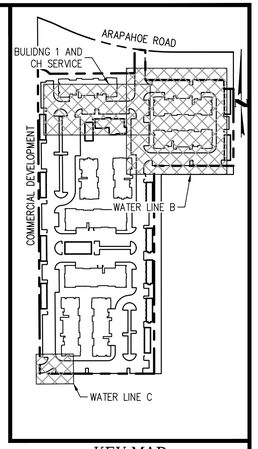


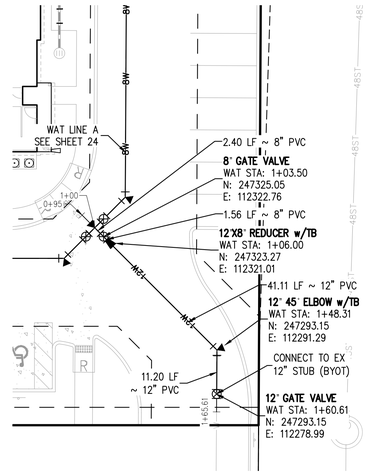
WATER LINE B
SCALE: 1" = 20'



BULIDING 1 AND CLUBHOUSE SERVICE
SCALE: 1" = 20'



KEY MAP
SCALE: 1" = 250'



WATER LINE C
SCALE: 1" = 20'

NOTES:

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20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
WATER PLAN LINE B & C
STA: 13+50 TO 22+00

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
26
26 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER PLAN.DWG LAYOUT: WATER PLAN 3
7.3REF's: cd - stamp, cd_evergreen logo, c-util_keymap, p-base, p-legal, p-util
PLOTTED: TUE 03/03/20 2:22:31 P BY: JEFF MINNICH

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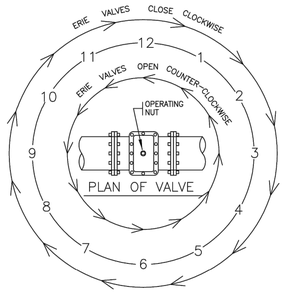
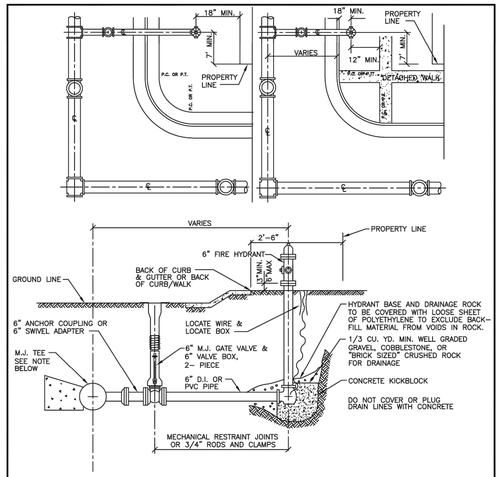


NOTE:
NORMALLY VALVES WITH A BLACK OPERATING NUT INDICATE A STANDARD ERIE VALVE. (OPEN LEFT)

VALVE OPENING & CLOSING PROCEDURE

The Town of ERIE COLORADO

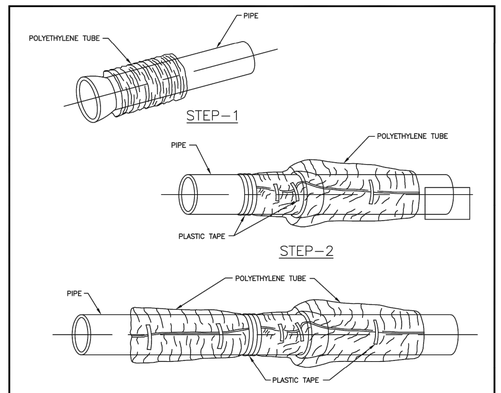
DRAWING TITLE: VALVE OPERATION
DRAWING NUMBER: W1
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



NOTES:
1. ALTERNATE TO THE ABOVE: FASTEN M.J. VALVE DIRECTLY TO A M.J. ANCHOR TEE (ALSO CALLED SWIVEL TEE)
2. NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED IN FIRE HYDRANT BRANCH OR SPRINKLER LINES
3. MAXIMUM OF ONE FIRE HYDRANT EXTENSION
4. CONTRACTOR TO TAKE CARE NOT TO BLOCK WEEP HOLES
5. ALL DUCTILE IRON PIPE TO BE POLYETHYLENE WRAPPED

The Town of ERIE COLORADO

DRAWING TITLE: FIRE HYDRANTS, MAINS & VALVES
DRAWING NUMBER: W7
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2010



FIELD INSTALLATION—POLYETHYLENE WRAP

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

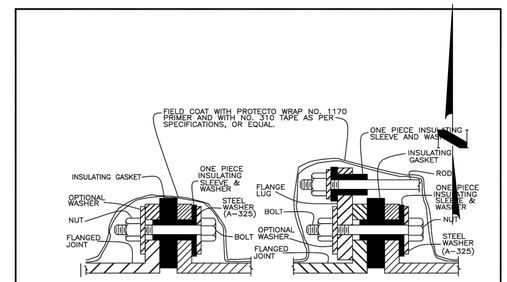
STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL AND SHOULD BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FOOT INTERVALS.

NOTE: ALL RODDING TO BE ENCASED IN POLYETHYLENE SEPARATED FROM THE PIPE

The Town of ERIE COLORADO

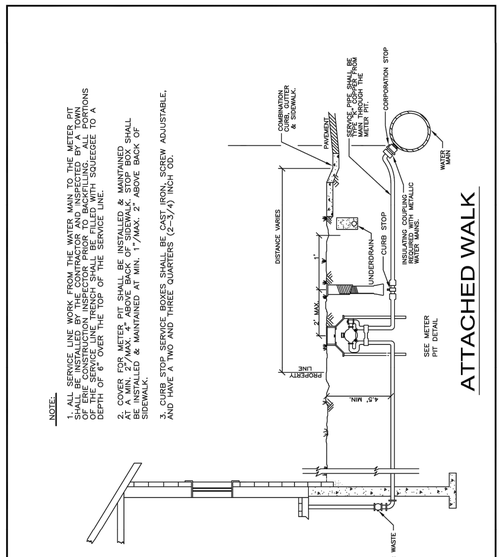
DRAWING TITLE: POLYETHYLENE WRAP
DRAWING NUMBER: W9
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



INSULATED MECHANICAL COUPLING

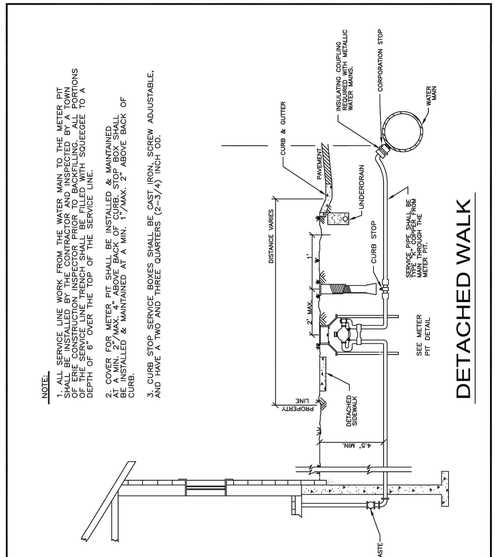
The Town of ERIE COLORADO

DRAWING TITLE: INSULATORS
DRAWING NUMBER: W10
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN DATE: 06/2004



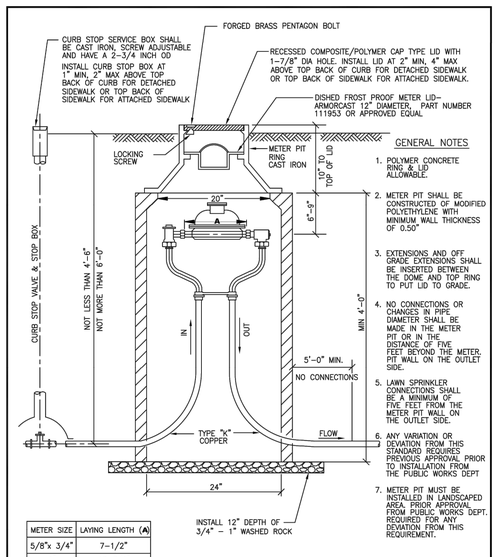
The Town of ERIE COLORADO

DRAWING TITLE: POTABLE SERVICE LINE ATTACHED WALK
DRAWING NUMBER: W11A (1 OF 2)
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



The Town of ERIE COLORADO

DRAWING TITLE: POTABLE SERVICE LINE DETACHED WALK
DRAWING NUMBER: W11B (2 OF 2)
DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 10/2018



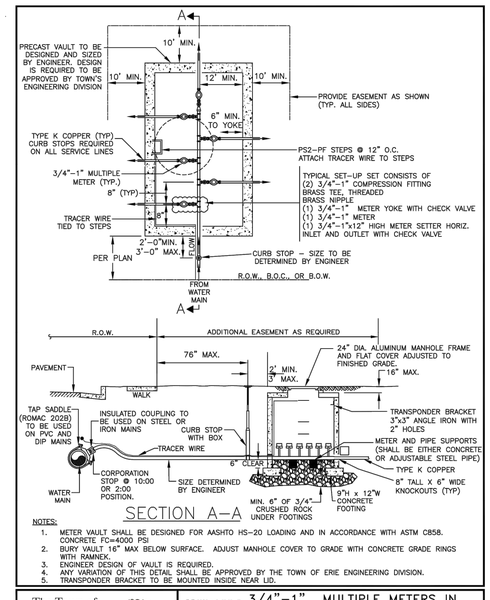
METER SIZE	LAYING LENGTH (A)
5/8"x 3/4"	7-1/2"
1"	10-3/4"

GENERAL NOTES

1. POLYMER CONCRETE RING & LID ALLOWABLE.
2. METER PIT SHALL BE CONSTRUCTED OF MODIFIED POLYETHYLENE WITH MINIMUM WALL THICKNESS OF 0.50"
3. EXTENSIONS AND OFF GRADE EXTENSIONS SHALL BE INSERTED BETWEEN THE DOME AND TOP RING TO PUT LID TO GRADE.
4. NO CONNECTIONS OR CHANGES IN PIPE DIAMETER SHALL BE MADE IN THE METER PIT OR IN THE DISTANCE OF FIVE FEET BEYOND THE METER. PIT WALL ON THE OUTLET SIDE.
5. LAWN SPRINKLER CONNECTIONS SHALL BE A MINIMUM OF FIVE FEET FROM THE METER PIT WALL ON THE OUTLET SIDE.
6. ANY VARIATION OR DEVIATION FROM THIS STANDARD REQUIRES PREVIOUS APPROVAL PRIOR TO INSTALLATION FROM THE PUBLIC WORKS DEPT
7. METER PIT MUST BE INSTALLED IN LANDSCAPED AREA PRIOR APPROVAL FROM PUBLIC WORKS DEPT. REQUIRED FOR ANY DEVIATION FROM THIS REQUIREMENT.

The Town of ERIE COLORADO

DRAWING TITLE: POTABLE WATER METER PIT 3/4" & 1" METER
DRAWING NUMBER: W12A
DRAWN BY: J. ASCUNCE APPROVED BY: J. SMITH REV. DATE: 05/2019



SECTION A–A

NOTES:
1. METER VAULT SHALL BE DESIGNED FOR AASHTO HS-20 LOADING AND IN ACCORDANCE WITH ASTM C858. CONCRETE FC=4000 PSI
2. BURY VAULT 16" MAX BELOW SURFACE. ADJUST MANHOLE COVER TO GRADE WITH CONCRETE GRADE RINGS WITH RAMNEK.
3. ENGINEER DESIGN OF VAULT IS REQUIRED.
4. ANY VARIATION OF THIS DETAIL SHALL BE APPROVED BY THE TOWN OF ERIE ENGINEERING DIVISION.
5. TRANSPONDER BRACKET TO BE MOUNTED INSIDE NEAR LID.

The Town of ERIE COLORADO

DRAWING TITLE: 3/4"-1" MULTIPLE METERS IN PRE CAST VAULT (TYP)
DRAWING NUMBER: W12B
DRAWN BY: S. ELKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2017

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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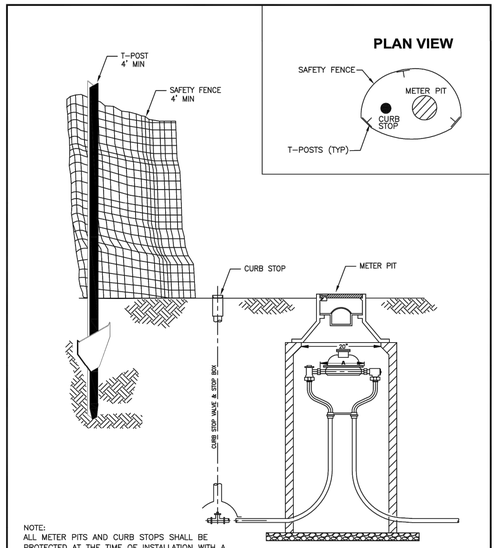
OUTLOOK AT NINE MILE
WATER DETAILS

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
27
27 OF 69

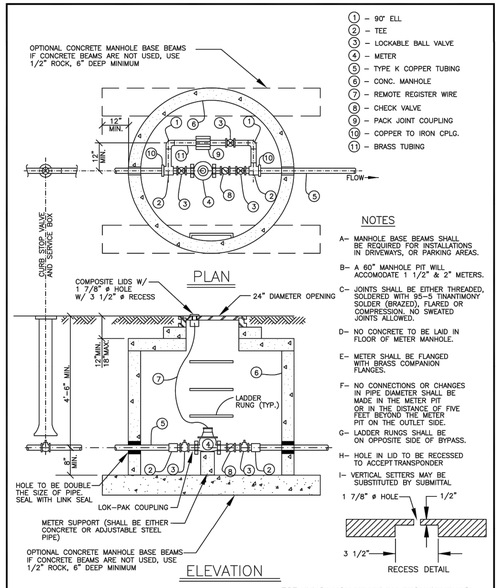
FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER DETAILS.DWG LAYOUT: LAYOUT1
NO XREFs
PLOTTED: TUE 03/03/20 2:22:46P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



The Town of ERIE COLORADO

DRAWING TITLE: METER PIT & CURB STOP PROTECTION
DRAWING NUMBER: W12C
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2012

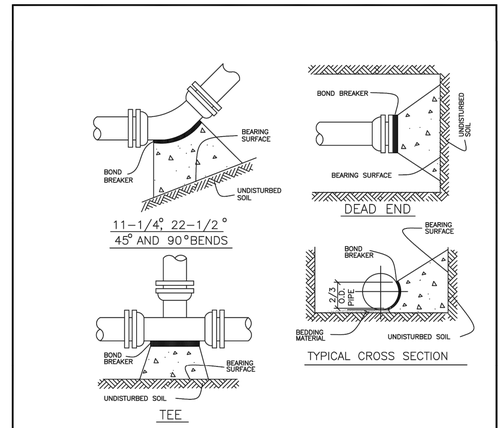


FOR SIZE OF METER PIT FOR LARGER THAN 2" METER, CONTACT TOWN OF ERIE ENGINEERING STAFF

FOR IRRIGATION METER PIT REQUIREMENTS SEE PARKS STANDARD DETAILS

The Town of ERIE COLORADO

DRAWING TITLE: 1–1/2" & 2" METER MANHOLE METER PIT
DRAWING NUMBER: W13
DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 08/2018



The Town of ERIE COLORADO

DRAWING TITLE: THRUST BLOCK
DRAWING NUMBER: W14A
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

TABLE OF BEARING AREAS IN SQ. FT. FOR CONCRETE THRUST BLOCKING

FOR 100 P.S.I. INTERNAL STATIC PRESSURE AND 1,000 LBS. PER SQUARE FOOT SOIL BEARING CAPACITY.

SIZE	BENDS				TEES *	GATE VALVES	DEAD ENDS	CROSS W/ 1 BRANCH PLUGGED	CROSS W/ 2 BRANCHES PLUGGED
	90°	45°	22–1/2°	11–1/4°					
3	1.0	0.6	0.3	1.0	0.7	0.5	0.7	0.7	0.7
4	1.8	1.0	0.5	1.0	1.3	0.5	1.3	1.3	1.3
6	4.0	2.2	1.1	1.0	2.8	0.7	2.8	2.8	2.8
8	7.1	3.8	2.0	1.0	5.0	2.4	5.0	5.0	5.0
10	11.1	6.0	3.0	1.5	7.8	4.5	7.8	7.8	7.8
12	16.0	8.6	4.4	2.2	11.3	7.3	11.3	11.3	11.3
14	21.7	11.8	6.0	3.0	15.4	11.0	15.4	15.4	15.4
15	25.0	13.5	7.0	3.5	17.6	SPECIAL DESIGN	17.6	17.6	17.6
16	28.4	15.3	8.0	4.0	20.0		20.0	20.0	20.0
18	36.0	19.4	10.0	5.0	25.4		25.4	25.4	25.4
20	44.2	24.0	12.2	6.1	31.4		31.4	31.4	31.4
21	49.0	26.5	13.5	6.8	34.6		34.6	34.6	34.6
22	54.0	29.0	14.8	7.4	38.0		38.0	38.0	38.0
24	64.0	34.5	17.7	8.8	45.0		45.0	45.0	45.0
30	100.0	54.0	27.6	13.8	71.0		71.0	71.0	71.0
36	144.0	78.0	40.0	20.0	102.0		102.0	102.0	102.0

* SIZE IS BRANCH SIZE

AREAS GIVEN IN TABLE ARE BASED UPON AN INTERNAL STATIC PRESSURE OF 100 P.S.I. AND A SOIL BEARING CAPACITY OF 1,000 LBS. PER SQUARE FOOT. BEARING AREAS FOR ANY PRESSURE AND SOIL BEARING CAPACITY MAY BE OBTAINED BY MULTIPLYING THE TABULATED VALUES BY A CORRECTION FACTOR "F".

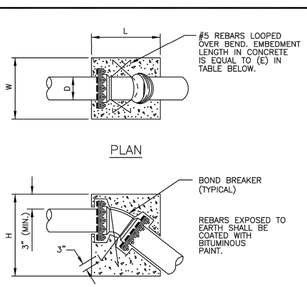
$$F = \frac{\text{ACTUAL SPECIFIED TEST PRESSURE IN HUNDRED OF LBS.}}{\text{ACTUAL SOIL BEARING CAPACITY IN THOUSANDS OF LBS.}}$$

EXAMPLE: TO FIND BEARING AREA FOR 8" – 90° BEND WITH A STATIC INTERNAL PRESSURE OF 150 P.S.I. AND WITH A SOIL BEARING CAPACITY OF 3,000 LBS. PER SQUARE FOOT.

F = 1.5 ÷ 3 = 0.5 TABULATED VALUE = 7.1 SQUARE FOOT.
0.5 x 7.1 = 3.56 SAY 4 SQUARE FEET OF 2 FOOT LONG BY 2 FOOT HIGH.

The Town of ERIE COLORADO

DRAWING TITLE: THRUST BLOCKING CHART
DRAWING NUMBER: W14B
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



SIZE OF PIPE (D)	11 1/4 DEG.					22 1/2 DEG.					45 DEG.				
	L"	W"	H"	E"	VOL	L"	W"	H"	E"	VOL	L"	W"	H"	E"	VOL
4"	12	24	24	12	4	12	34	34	12	8	22	37	32	22	15
6"	18	32	27	18	9	15	52	40	15	18	28	64	32	28	33
8"	21	40	33	21	16	22	61	40	22	31	35	64	45	35	58
10"	24	50	36	24	25	30	59	48	30	49	42	72	52	42	90
12"	31	56	36	31	36	36	70	48	36	70	45	80	62	45	129

NOTES:

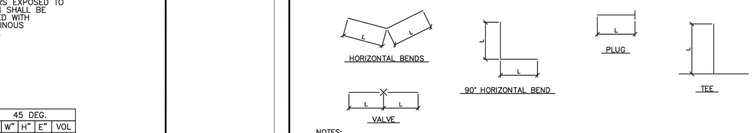
1. THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED EARTH. FORMS SHALL BE USED AS REQUIRED TO OBTAIN ADEQUATE BEARING AND TO CONFINE THE CONCRETE. THRUST BLOCKING SHALL BEAR ON THE FITTING OR END CAP ONLY AND SHOULD NOT BE ALLOWED TO SPILL OVER THE JOINT OR AGAINST THE PIPE.
2. VOLUME IS IN CUBIC FEET.
3. ALL CONCRETE TO BE 4000 P.S.I. MIN.
4. BLOCKS TO BE CENTERED HORIZONTALLY ON THE BEND.
5. DESIGN BASED ON A TEST PRESSURE OF 150 P.S.I. AND SAFETY FACTOR (S_f) OF 1.5
6. $V_g = \frac{S_f \text{ PA SIN } \Theta}{w_m}$
7. w_m= 140 # / FT^3
8. THE DESIGN ENGINEER IS RESPONSIBLE FOR VERIFYING THE ACTUAL SITE CONDITIONS WITH RESPECT TO THE ASSUMPTIONS LISTED ABOVE.

The Town of ERIE COLORADO

DRAWING TITLE: UPPER VERTICAL THRUST BLOCK
DRAWING NUMBER: W15
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

ROD DIAMETER, GRADE & LENGTH OF RESTRAINED PIPE

PIPE SIZE	4"			6"			8"			12"			16"			20"			24"		
FITTING	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G	D	L	G
90° BEND, TEE, PLUG	3/4"	30'	MS	3/4"	45'	MS	3/4"	60'	MS	3/4"	86'	MS	1"	108'	HS	1 1/4"	132'	HS	–	155'	–
VALVE	–	–	–	–	–	–	–	–	–	–	–	–	1"	108'	HS	1 1/4"	132'	HS	–	155'	–
45° BEND	3/4"	9'	MS	3/4"	13'	MS	3/4"	18'	MS	3/4"	25'	MS	1"	32'	MS	3/4"	39'	HS	–	45'	–
22 1/2° BEND	3/4"	1'	MS	3/4"	4'	MS	3/4"	5'	MS	3/4"	7'	MS	3/4"	8'	MS	3/4"	10'	MS	–	12'	–
11 1/4° BEND	–	–	–	–	–	–	3/4"	1'	MS	3/4"	2'	MS	3/4"	2'	MS	3/4"	3'	MS	–	3'	–

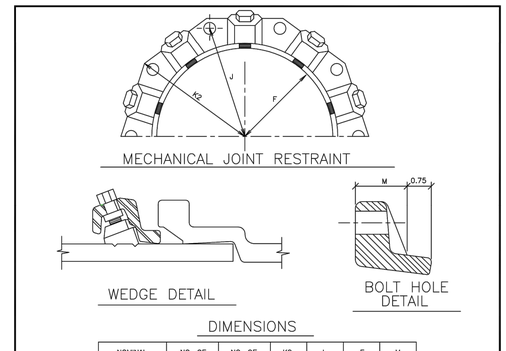


NOTES:

1. LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2. CLAMPS AND RODS NOT ALLOWED FOR 24" & LARGER PIPES.
3. D=DIAMETER, L=LENGTH, G=GRADE, MS=MILD STEEL, HS=HIGH STRENGTH.
4. MIN 4.5' GROUND COVER REQD.
5. BASED ON 150 PSI INTERNAL PRESSURE.
6. MS = MILD STEEL ROD ASTM A 36.
7. HS = HIGH STRENGTH ROD ASTM A 193 GRADE B7.
8. NUTS SHALL BE ASTM A 307 GRADE A OR B HEXAGON HEAVY SERIES. HS NUTS SHALL CONFORM TO MS–22.
9. LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED TOGETHER.
10. LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
11. TEES & CROSSES MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.
12. 12" AND SMALLER IN LINE VALVES AND TEES SHALL HAVE A MECHANICAL JOINT RESTRAINT DEVICE ON EACH SIDE OF THE FITTING OR VALVE.
13. A SECOND VALVE WILL BE REQD TO BE CLOSED WHEN EXCAVATING NEXT TO A EXIST VALVE.
14. WHEN REDUCERS ARE USED ON VALVE INSTALLATIONS THE LENGTH OF RESTRAINT SHALL BE BASED ON THE SIZE OF THE PIPE NOT THE SIZE OF THE VALVE.
15. ALL REDUCERS/INCREASERS SHALL HAVE MECHANICAL RESTRAINT DEVICES ON EACH SIDE OF FITTING.
16. PIPE JOINT RESTRAINT MAY BE ACCOMPLISHED USING HARNESS RODS, MECHANICAL JOINT RESTRAINT OR RESTRAINED JOINT PIPE AND FITTINGS.
17. AN ANALYSIS OF THE NECESSARY RESTRAINT LENGTH FOR PIPE LARGER THAN 24" SHALL BE SUBMITTED TO THE PUBLIC WORKS DEPT FOR REVIEW AND APPROVAL ON A CASE BY CASE BASIS.

The Town of ERIE COLORADO

DRAWING TITLE: RESTRAINED PIPE LENGTHS
DRAWING NUMBER: W16
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



DIMENSIONS

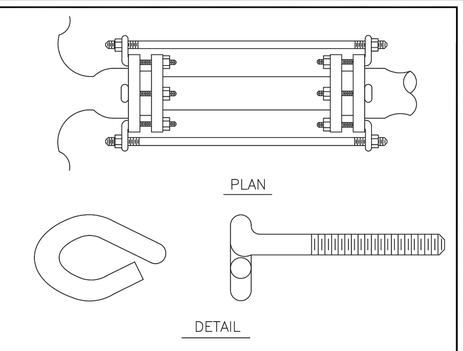
	NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
PVC	4"	2	2					PVC
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
DI	4"	4	2					DI
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	

NOTES:

1. DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN.
2. OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

The Town of ERIE COLORADO

DRAWING TITLE: MECHANICAL JOINT RESTRAINT DETAIL
DRAWING NUMBER: W17
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



DIMENSIONS

ALLOWABLE PIPE DIAMETER INCHES	BOLT SIZE	NO . OF BOLTS REQUIRED
4	3/4"	2
6	3/4"	2
8	3/4"	2
10	3/4"	4
12	3/4"	6

NOTES:

1. THE BOLT SHALL BE MANUFACTURED OF "COR–TEN" OR APPROVED EQUAL.
2. THE BOLT MAY BE HEAT TREATED.

The Town of ERIE COLORADO

DRAWING TITLE: JOINT RESTRAINT DETAIL
DRAWING NUMBER: W19
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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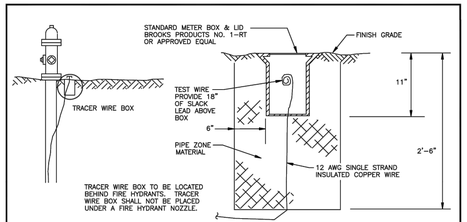
OUTLOOK AT NINE MILE
WATER DETAILS

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

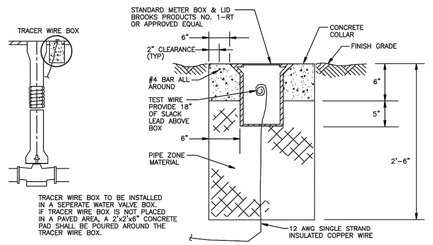
SHEET NO.
28
28 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER DETAILS.DWG LAYOUT: LAYOUT2
NO XREFs
PLOTTED: TUE 03/03/20 2:22:33P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

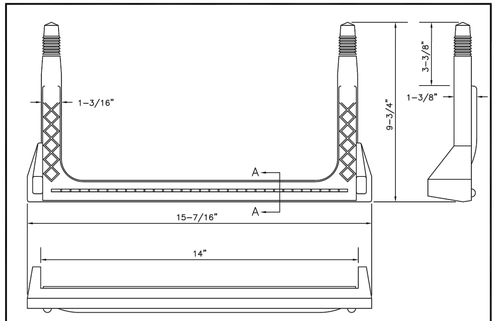


TRACER WIRE BOX AT FIRE HYDRANT



TRACER WIRE BOX FOR AREA WITH NO FIRE HYDRANT

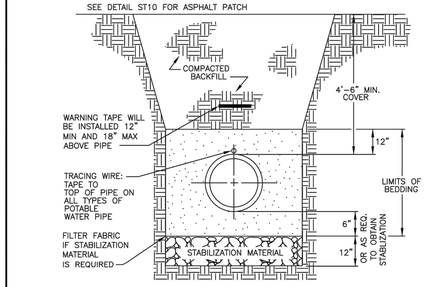
The Town of ERIE COLORADO	DRAWING TITLE: TRACER WIRE DRAWING NUMBER: W32B (2 OF 2) DRAWN BY: C. GERATY APPROVED BY: G. BEHLEN REV. DATE: 01/2016



COPOLYMER POLYPROPYLENE PLASTIC

SECTION A-A

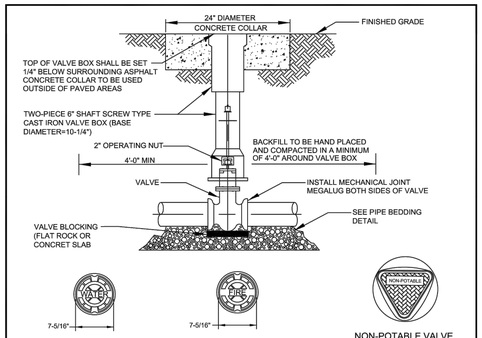
The Town of ERIE COLORADO	DRAWING TITLE: PLASTIC STEP DRAWING NUMBER: W34 DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



NOTES:

1. COMPACTION SHALL BE AS FOLLOWS: PIPE ZONE BEDDING 6" UNDER AND 12" OVER PIPE WILL REQUIRE 90% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, FULL TRENCH SECTION IN ROADWAY OR STREET R.O.W. LIMITS WILL REQUIRE 95% S.P.D. TRENCH ZONE ABOVE BEDDING MATERIALS, OUTSIDE OF STREET R.O.W. WILL REQUIRE 90% S.P.D.
2. 12 AWG. SINGLE STRAND INSULATED COPPER WIRE SHALL BE INSTALLED AS TRACING WIRE ABOVE ALL POTABLE WATER PIPES. THE WIRE SHALL BE CONNECTED AND COME TO THE SURFACE BEHIND THE FIRE HYDRANTS IN A TESTBOX.
3. FILTER FABRIC IS REQUIRED IF STABILIZATION MATERIAL IS USED. THE FABRIC SHALL BE INSTALLED AS SHOWN IN THE DETAIL.
4. TRENCH TO BE BRACED OR SHEETED AS NECESSARY FOR THE SAFETY OF THE WORKMEN AND PROTECTION OF OTHER UTILITIES IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL SAFETY REGULATIONS.
5. PIPE SHALL BE BEDDED FROM 6" BELOW THE BOTTOM OF THE PIPE TO 12" ABOVE THE TOP OF THE PIPE.
6. TRENCH WIDTH SHALL NOT BE MORE THAN 24" NOR LESS THAN 12" WIDER THAN THE LARGEST OUTSIDE DIAMETER OF THE PIPE.

The Town of ERIE COLORADO	DRAWING TITLE: WATER TRENCH DETAIL DRAWING NUMBER: W35 DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 09/2017

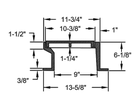


POTABLE VALVE BOX COVER PLAN

FIRE VALVE BOX COVER PLAN

NON-POTABLE VALVE BOX COVER PLAN

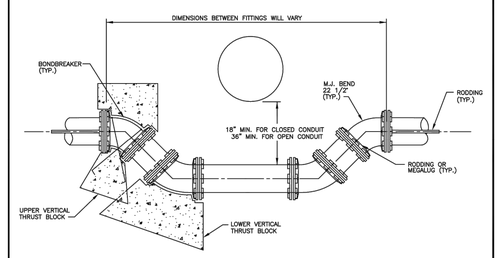
POTABLE & FIRE VALVE BOX COVER ELEVATION



NON-POTABLE VALVE BOX COVER ELEVATION

NOTES:
1. POTABLE & FIRE VALVE BOX LID RESTS INSIDE THE UPPER VALVE BOX SECTION.
2. NON-POTABLE VALVE BOX LID SLIDES OVER THE TOP OF THE UPPER VALVE BOX SECTION.
3. NON-POTABLE, WATER OR FIRE CAST IN TOP OF APPROPRIATE VALVE BOX COVER.
4. VALVE BOX SHALL NOT BE SUPPORTED BY WATER LINE.
5. VALVE BOX TO BE PLUMB AND CENTERED OVER NUT.
6. UTILIZING A VALVE BOX ALIGNMENT DEVICE IS OPTIONAL.
7. IF 2" OPERATING NUT IS MORE THAN 6' BELOW FINISHED GRADE, A VAULT NUT EXTENDER SHALL BE INSTALLED TO PUT THE VALVE NUT AT AN ELEVATION OF 4' BELOW FINISHED GRADE.

The Town of ERIE COLORADO	DRAWING TITLE: STANDARD VALVE AND BOX DRAWING NUMBER: W38 DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 1/2015



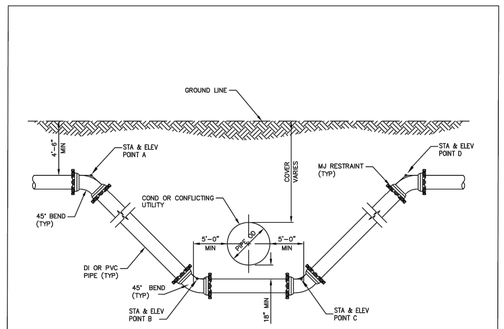
NOTES:

1. LOWERING OF THIS TYPE WILL BE RESTRAINED BY MEANS OF THRUST BLOCKING AND MEGALUGS OR RODDING.
2. FOR SIZING INFORMATION OF THRUST BLOCKS REFER TO THRUST BLOCK DETAILS.
3. WHEN RESTRAINING PIPE BY MEANS OF RODDING JOINTS, 3/4 " TIE RODS, NUTS, AND WASHERS WILL BE USED AND ARE TO BE MADE OF "COR-TEN" STEEL AS PER A.S.T.M. A242.
4. FOR FURTHER INFORMATION ON RODDING OF JOINTS REFER TO TABLE 1.
5. ALL METALLIC PIPE, FITTINGS, AND APPURTENANCES WILL BE WRAPPED IN POLYETHYLENE.
6. REQUIREMENTS FOR LARGER THAN 12" DIAMETER PIPE WILL BE DETERMINED ON A CASE BY CASE BASIS.
7. LENGTH OF EXTENSION OF PIPE AND RESTRAINED JOINTS SHALL BE IN ACCORDANCE WITH THE ENGINEERING STANDARDS.
8. CATHODIC PROTECTION SHALL BE AS REQUIRED IN ACCORDANCE WITH THE ENGINEERING STANDARDS.
9. A BORED CROSSING MAY BE REQUIRED BY THE ENGINEER.

TABLE 1

Pipe Size	Test Pressure	Minimum number of Tie Rods
10" and less	150 200	2 2
12"	150 200	2 4

The Town of ERIE COLORADO	DRAWING TITLE: 12" OR SMALLER WATERLINE, LOWERING DTL. FOR UTILITY CROSSINGS DRAWING NUMBER: W27 DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2011



CROSSING UNDER

NOTE:
THRUST BLOCK & RESTRAINT PER DENVER WATER SPECIFICATION (THRUST BLOCKS & RESTRAINTS NOT SHOWN FOR DETAIL CLEARITY.)

CONSOLIDATED mutual water

OPEN CUT CROSSING OVER OR UNDER CONDUIT OR CONFLICTING UTILITY

SCALE: NONE

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER DETAILS

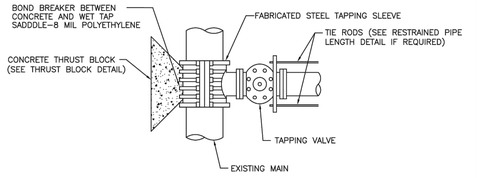
ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
29
29 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER DETAILS.DWG LAYOUT: LAYOUT4
NO XREFS
PLOTTED: TUE 03/03/20 2:23:03P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



NOTES:

1. FABRICATED STEEL TAPPING SLEEVE SHALL BE:

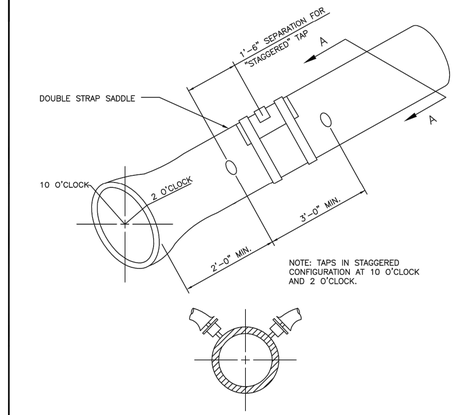
   ROMAC FTS419 OR APPROVED EQUAL TO BE USED FOR PVC UP TO 75% OF EXISTING MAIN

   ROMAC FTS420 OR APPROVED EQUAL TO BE USED FOR DIP UP TO 75% OF EXISTING MAIN

   ROMAC FTS425 OR APPROVED EQUAL TO BE USED ON ALL AC PIPE AND ANYTIME BRANCH LINE IS GREATER THAN 75% OF EXISTING MAIN

The Town of ERIE COLORADO

DRAWING TITLE: TAPPING TEE AND VALVE
DRAWING NUMBER: W21
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015

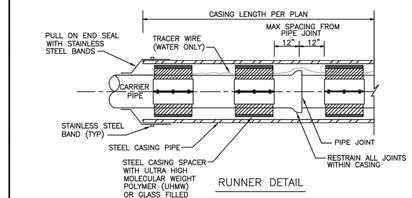


SECTION A–A

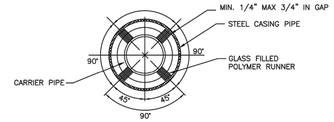
NOTE:
SERVICE TAPS – WATER SERVICE TAPS SHALL BE MADE AT EITHER THE 2 O'CLOCK OR THE 10 O'CLOCK POSITION ON THE CIRCUMFERENCE OF A WATER MAIN. THE MINIMUM DISTANCE BETWEEN A TAP MADE AT THE 2 O'CLOCK POSITION AND THE ONE MADE AT THE 10 O'CLOCK POSITION SHALL BE 18–INCHES MEASURED ALONG THE PIPE. THE MINIMUM DISTANCE BETWEEN SUCCESSIVE TAPS MADE EITHER AT THE 2 O'CLOCK OR THE 10 O'CLOCK POSITION SHALL BE 3–FEET. THE MINIMUM DISTANCE FROM EITHER THE BELL OR THE SPIGOT END OF A PIPE TO A TAP SHALL BE 2–FEET. A MAXIMUM OF 4 WATER SERVICE TAPS SHALL BE ALLOWED PER LENGTH OF PIPE. DOUBLE STRAP SADDLE (ROMAC 202B OR APPROVED EQUAL) SHALL BE USED FOR ALL SERVICE TAPS.

The Town of ERIE COLORADO

DRAWING TITLE: DOMESTIC WATER TAPPING DETAIL
DRAWING NUMBER: W22
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2010



RUNNER DETAIL



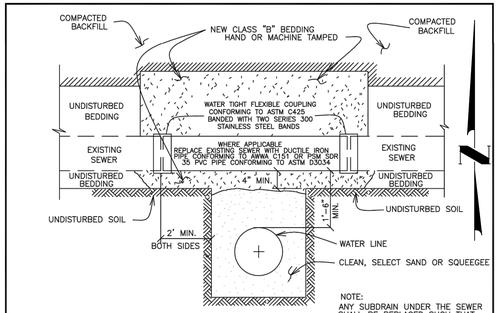
PIPE CASING DETAIL

1. EACH SECTION OF PIPE WITHIN CASING SHALL HAVE A MINIMUM OF (3) CASING SPACERS/SKIDS. THE MIDDLE SPACER/SKID SHALL BE CENTERED BETWEEN PIPE JOINTS
2. WATER & SANITARY SEWER PIPE JOINTS SHALL BE RESTRAINED
3. EXTEND TRACING WIRE THROUGH CASING (WATER APPLICATIONS ONLY)
4. MINIMUM RUNNER SIZE & DISTANCE BETWEEN SPACERS SHALL BE IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS

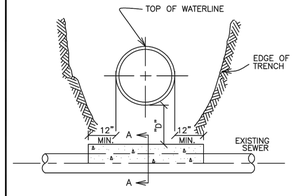
CARRIER PIPE NOMINAL DIA.	CASING PIPE MIN. THICK
4"	0.25"
6"	0.3125"
8"	0.3125"
12"	0.375"
16"	0.500"
20"	0.500"

The Town of ERIE COLORADO

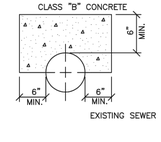
DRAWING TITLE: CASING PIPE DETAIL
DRAWING NUMBER: W24
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2016



NOTE:
ANY SUBDRAIN UNDER THE SEWER SHALL BE REPLACED SUCH THAT NO FLOW SHALL ENTER THE WATER LINE TRENCH.



SEWER CROSSING UNDER WITH "D" LESS THAN 2'

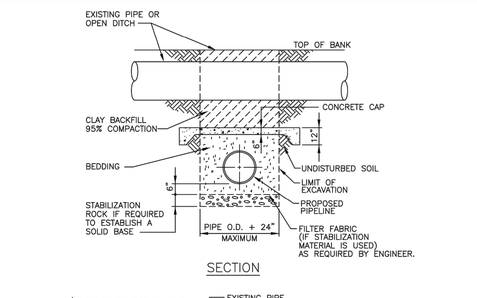


SECTION A–A

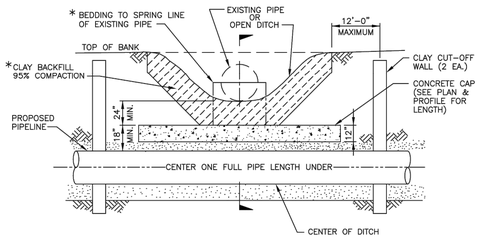
NOTE:
ALL EXISTING SEWER DAMAGED DURING INSTALLATION MUST BE REPLACED WITH PVC PIPE.

The Town of ERIE COLORADO

DRAWING TITLE: CROSSING STORM AND SANITARY SEWERS
DRAWING NUMBER: W25
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



SECTION



PROFILE

* USE CLAY BACKFILL ONLY WHEN CROSSING OPEN DITCH. USE BEDDING MATERIAL TO SPRING LINE OF EXISTING PIPE WHEN CROSSING PIPE.

The Town of ERIE COLORADO

DRAWING TITLE: DITCH OR PIPE CROSSING
DRAWING NUMBER: W26
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009

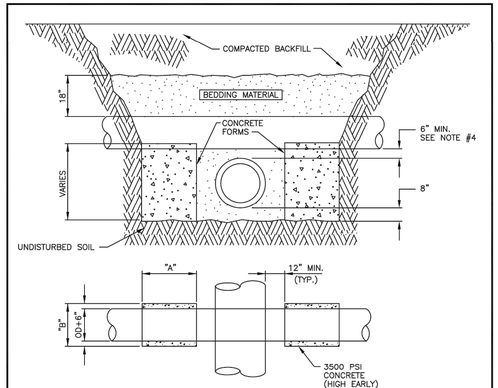


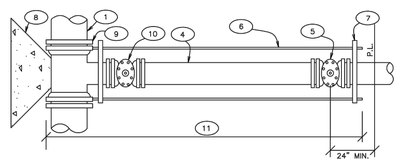
TABLE	
"A"	"B"
PIPES ≤ 12" =12" PIPES > 12" =18"	PIPE O.D. + 6" ON BOTH SIDES.

NOTES:

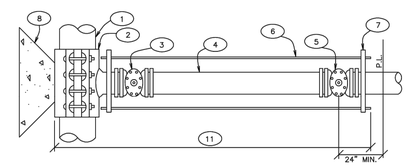
1. PIPE SECTIONS SHALL BE CENTERED OVER THE PIPE BEING CROSSED.
2. SIZES ABOVE 24" WILL BE DETERMINED BY THE ENGINEER.
3. A BOND BREAKER SHOULD BE PLACED BETWEEN THE CONCRETE AND THE PIPE BEING SUPPORTED.
4. IF THE CROSSING INVOLVES A WATER LINE AND THERE IS 6" OF CLEARANCE, OR THERE IS LESS THAN 4' OF COVER OVER THE UPPER PIPE, A FIBER BOARD INSULATION (DOW 2" EXTRUDED POLYSTYRENE IN ACCORDANCE WITH ASTM–C578 OR APPROVED EQUAL) MUST BE INSTALLED BETWEEN THE PIPES. THE BOARD SHOULD EXTEND 2' BEYOND THE OUTSIDE EDGES OF BOTH PIPES.

The Town of ERIE COLORADO

DRAWING TITLE: PIPE CROSSING SUPPORT PAD
DRAWING NUMBER: W36
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2015



FIRELINE OR DOMESTIC CONNECTION WITH MAIN EXTENSION

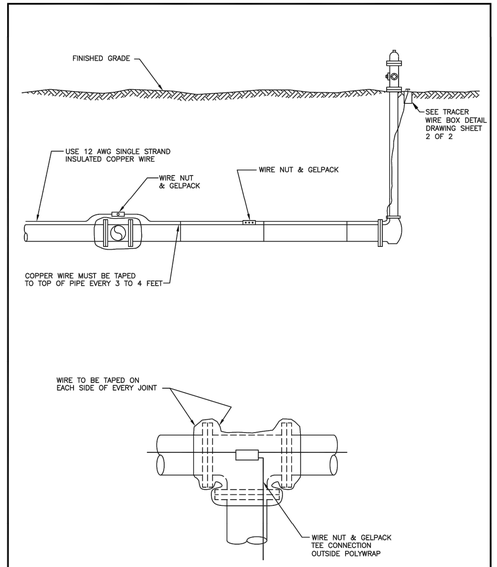


FIRELINE OR DOMESTIC CONNECTION

1. EXISTING MAIN
2. TAPPING SLEEVE
3. TAPPING VALVE
4. DOUBLE SPIGOT PIPE
5. PROPERTY LINE VALVE
6. TIE RODS (MEGALUGS MAY BE USED IN PLACE OF RODDING.)
7. PIPE CLAMP
8. CONCRETE KICKBLOCK
9. M.J. ANCHORING TEE (SWIVEL TEE WHERE APPLICABLE)
10. M.J. VALVE
11. POLYETHYLENE WRAPPED

The Town of ERIE COLORADO

DRAWING TITLE: 2" AND LARGER DOMESTIC AND FIRELINE CONNECTIONS
DRAWING NUMBER: W31
DRAWN BY: D. JENKINS APPROVED BY: G. BEHLEN REV. DATE: 01/2009



The Town of ERIE COLORADO

DRAWING TITLE: TRACER WIRE
DRAWING NUMBER: W32A (1 OF 2)
DRAWN BY: J. ASCUNCE APPROVED BY: R. PENNINGTON REV. DATE: 09/2017

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: BMW
CHECKED BY: MSM
DRAWN BY: BMW

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
WATER DETAILS

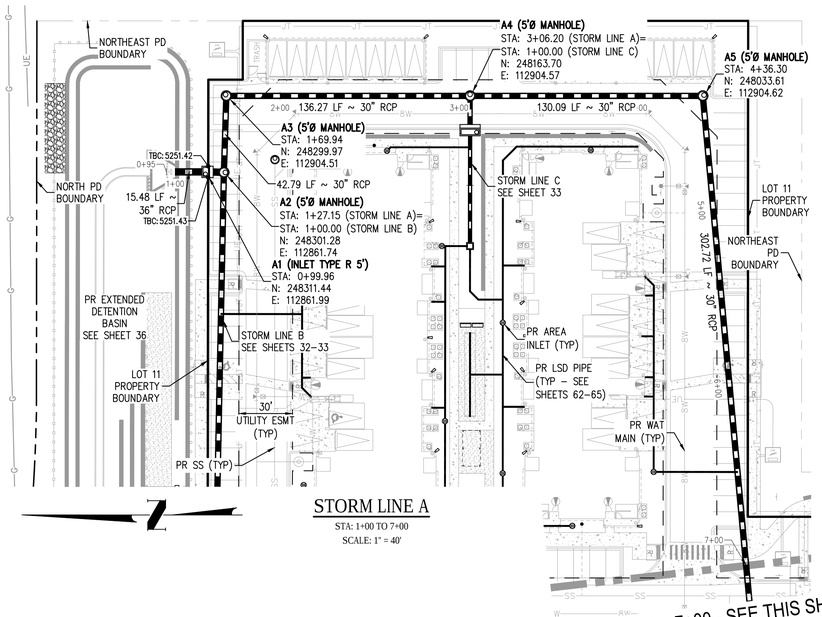
ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
30
30 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\WATER\CD - WATER DET'ALS.DWG LAYOUT: LAYOUT3
NO XREFs
PLOTTED: TUE 03/03/20 2:23:08P BY: JEFF MINNICH

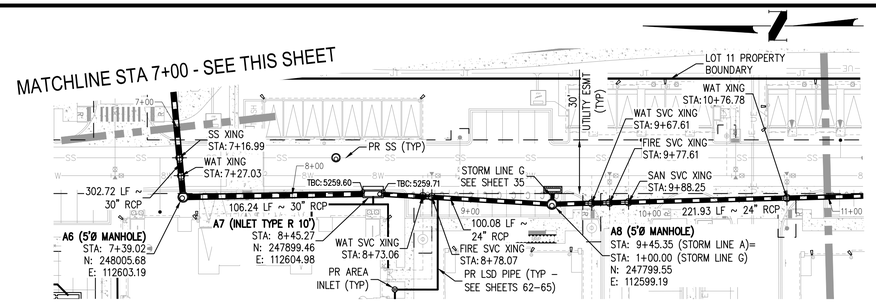
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



STORM LINE A

STA: 1+00 TO 7+00

SCALE: 1" = 40'

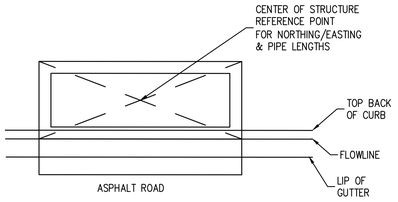


STORM LINE A,

STA: 7+00 TO 11+00

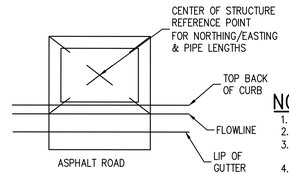
SCALE: 1" = 40'

MATCHLINE STA 11+00 - SEE SHEET 32



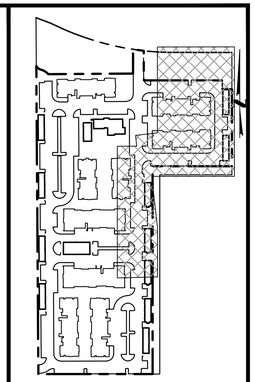
TYPE R 10' INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE R 5' INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

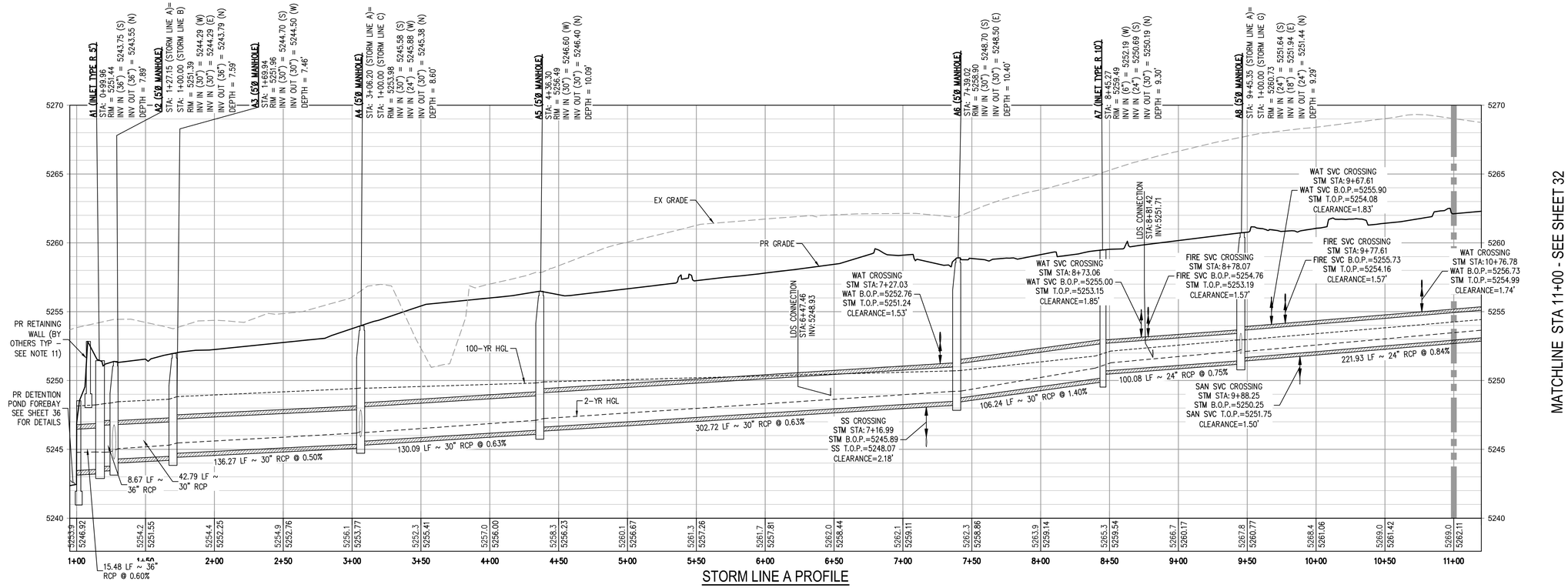


KEY MAP

SCALE: 1" = 250'

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. CONTRACTOR SHALL MODIFY ALL INLETS AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS (MODIFIED INLETS AND OUTLET STRUCTURE) FOR APPROVAL BY OWNER, ENGINEER, AND TOWN OF ERIE PRIOR TO INSTALLATION.
6. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 UNDERGROUND UTILITIES.
7. ALL STORM SEWER INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.



MATCHLINE STA 11+00 - SEE SHEET 32

STORM LINE A PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINE A

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
31
31 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM PRP.DWG LAYOUT: LINE A
7.XREFs - cd - storm, cd - evergreen logo, e-utl - leonard, p-base, p-legal, p-util
PLOTTED: TUE 03/03/20 2:53:34P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. CONTRACTOR SHALL MODIFY ALL INLETS AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS (MODIFIED INLETS AND OUTLET STRUCTURE) FOR APPROVAL BY OWNER, ENGINEER, AND TOWN OF ERIE PRIOR TO INSTALLATION.
6. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 UNDERGROUND UTILITIES.
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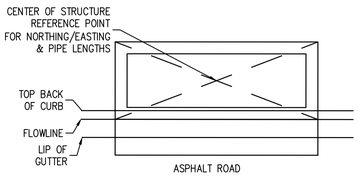
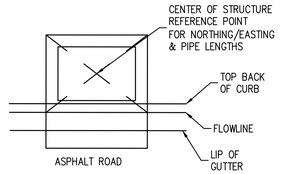
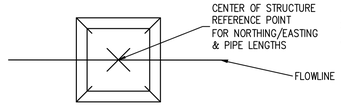
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.



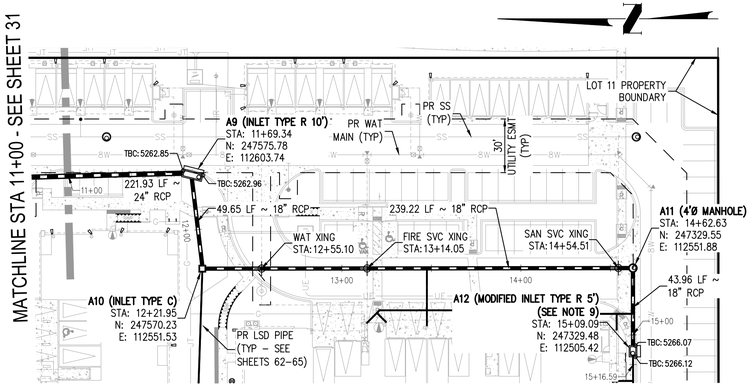
TYPE R 10' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



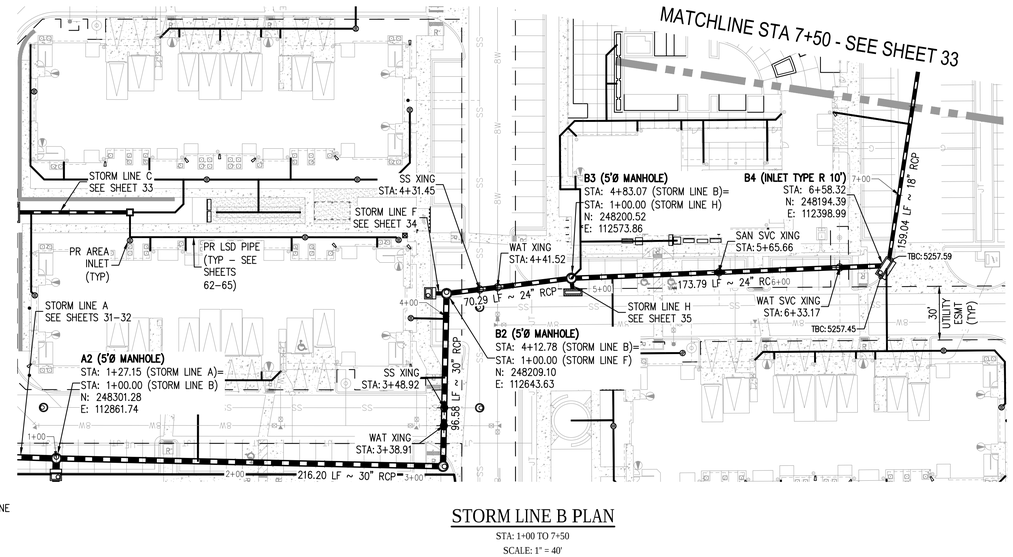
TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



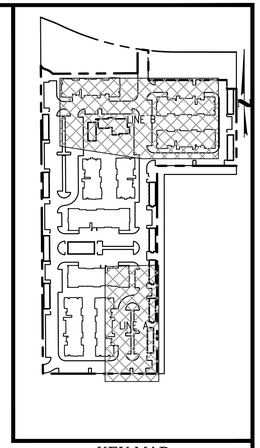
TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



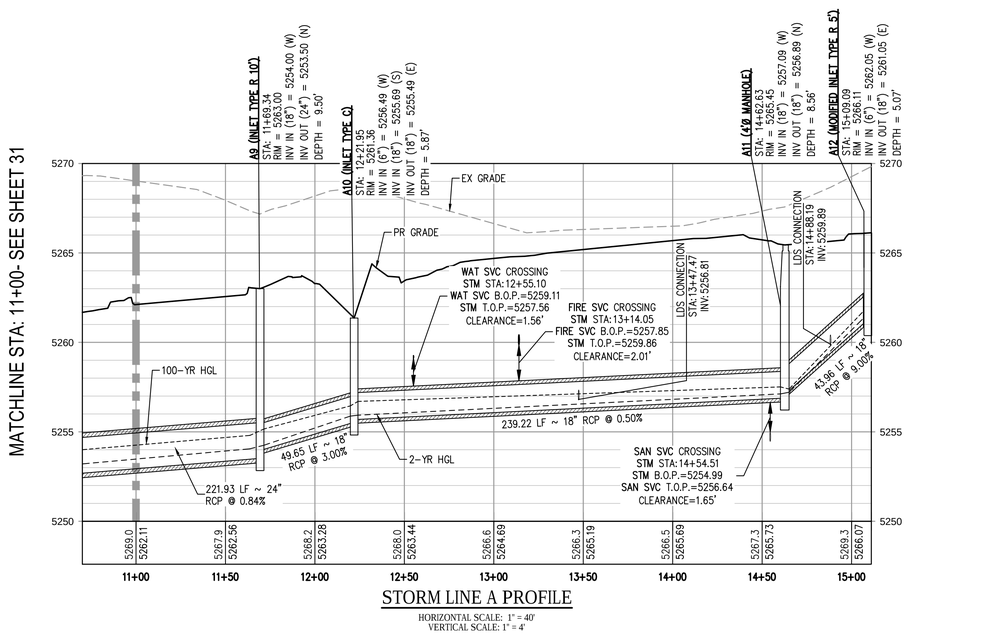
STORM LINE A PLAN
STA: 11+00 TO END
SCALE: 1" = 40'



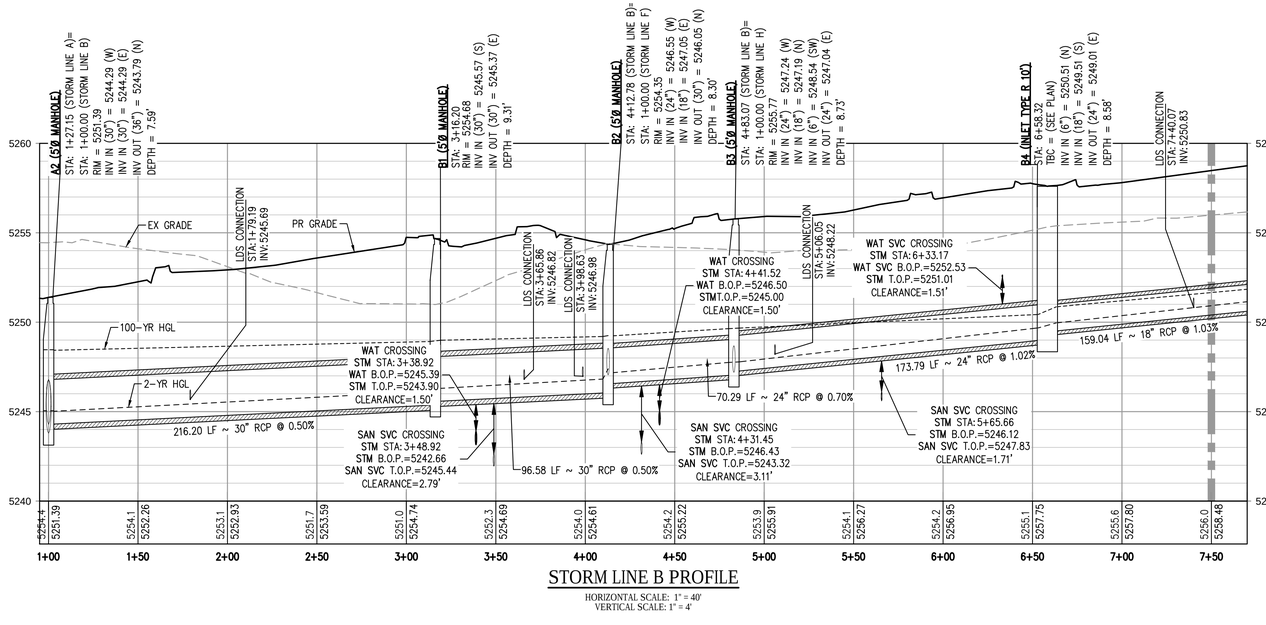
STORM LINE B PLAN
STA: 1+00 TO 7+50
SCALE: 1" = 40'



KEY MAP
SCALE: 1" = 250'



STORM LINE A PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE B PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES A & B

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

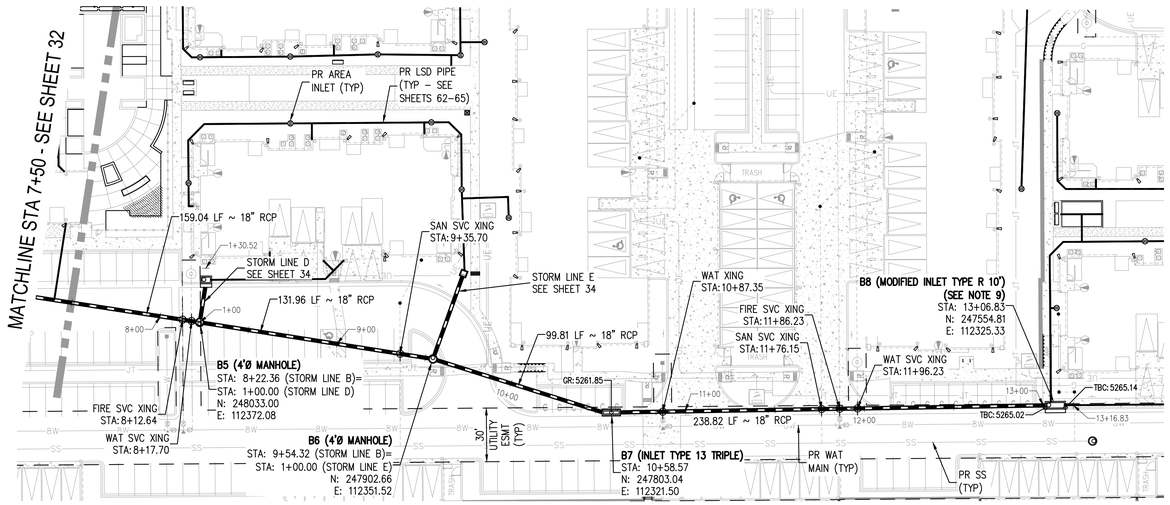
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 32

32 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM PROP.DWG LAYOUT: LINE A & B
7 XREFS - cd - storm, cd_evergreen logo, cwell, keymap, p-base, p-legal, p-util
PLOTTED: TUE 03/03/20 2:24:04P BY: JEFF MINNICH

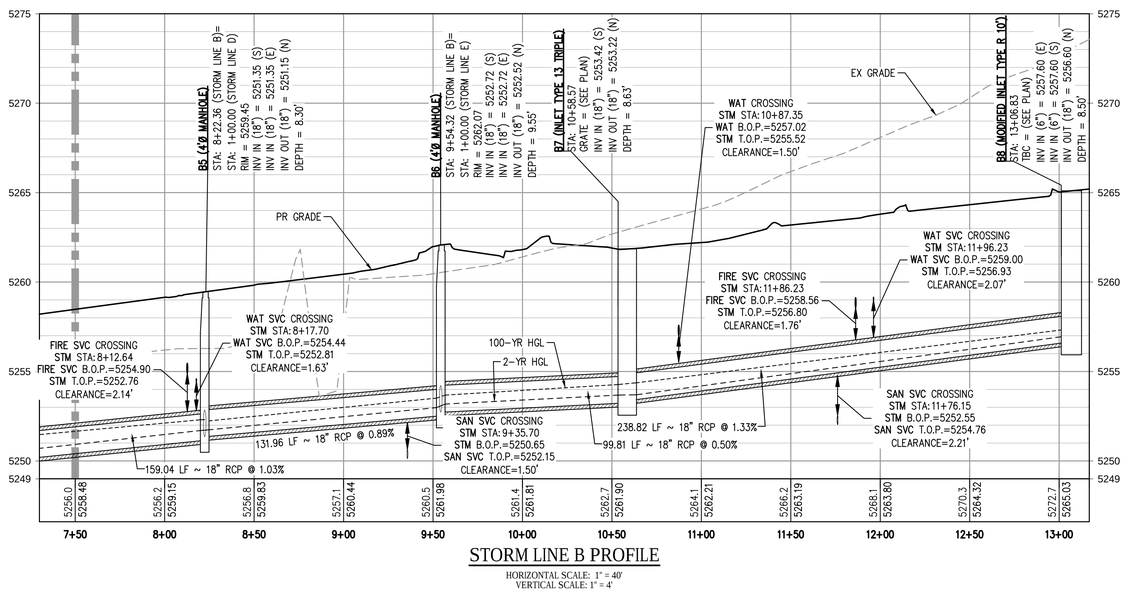
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



STORM LINE B PLAN

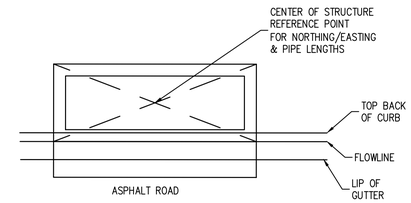
STA:7+50 TO END

SCALE: 1" = 40'



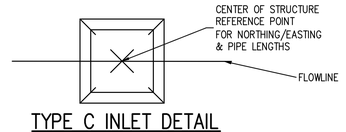
STORM LINE B PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



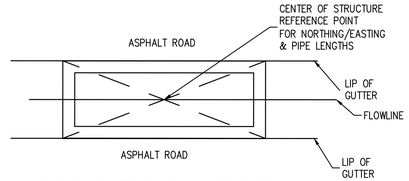
TYPE R 10' INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE C INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
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3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. CONTRACTOR SHALL MODIFY ALL INLETS AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS (MODIFIED INLETS AND OUTLET STRUCTURE) FOR APPROVAL BY OWNER, ENGINEER, AND TOWN OF ERIE PRIOR TO INSTALLATION.
6. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 UNDERGROUND UTILITIES.
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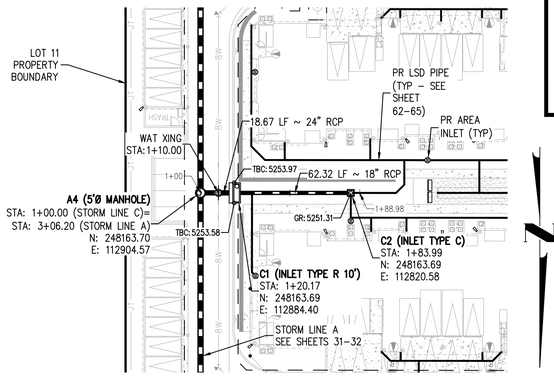
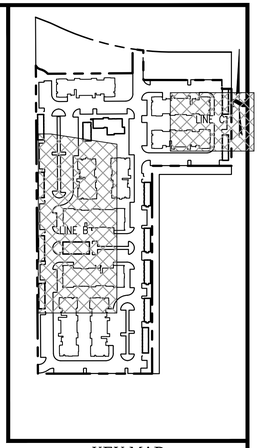
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.



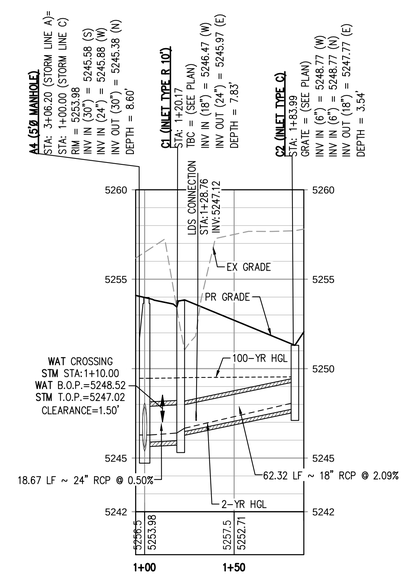
STORM LINE C PLAN

SCALE: 1" = 40'



KEY MAP

SCALE: 1" = 250'



STORM LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES B & C

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

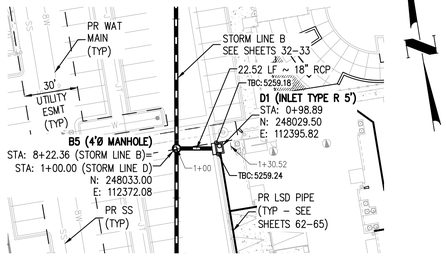
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 33

33 OF 69

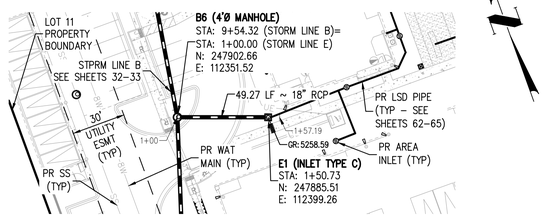
FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM PRP.DWG LAYOUT: LINE B & C
7 XREFs: cd - sump, cd_evergreen logo, e-util, keymap, p-base, p-base, p-hgal, p-util
PLOTTED: TUE 03/03/20 2:24:17P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



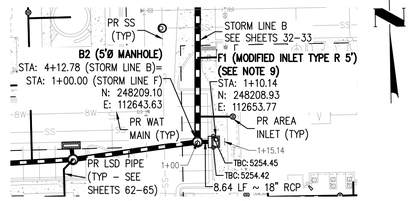
STORM LINE D PLAN

SCALE: 1" = 40'



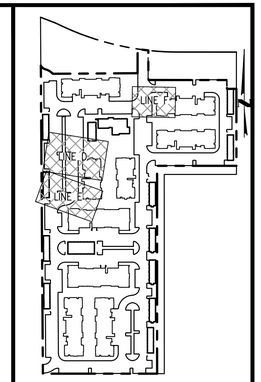
STORM LINE E PLAN

SCALE: 1" = 40'



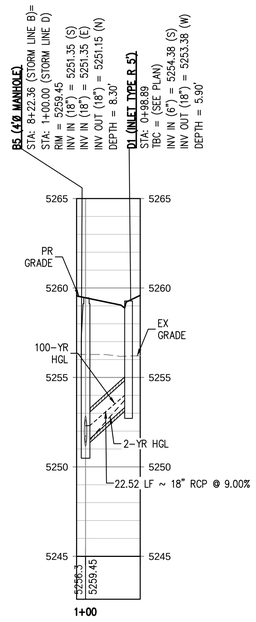
STORM LINE F PLAN

SCALE: 1" = 40'



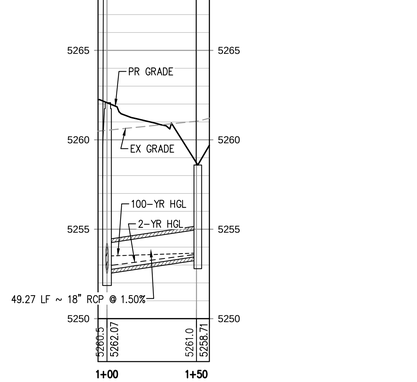
KEY MAP

SCALE: 1" = 250'



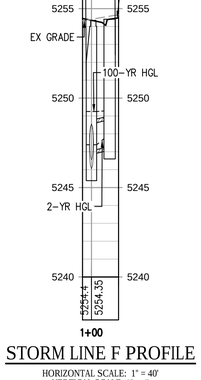
STORM LINE D PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



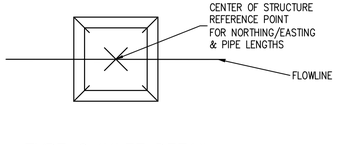
STORM LINE E PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



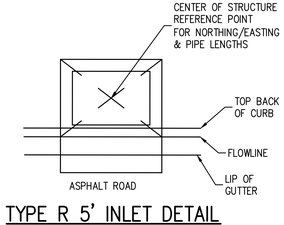
STORM LINE F PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT

SCALE: NTS

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES D, E & F

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

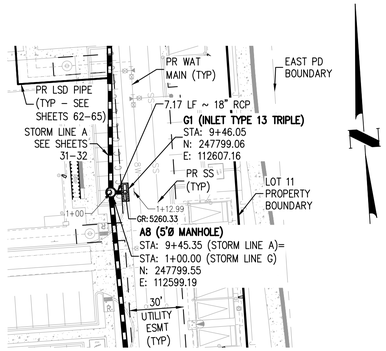
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
34
34 OF 69

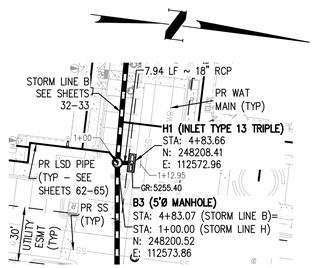
FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM P&P.DWG LAYOUT: LINE D E F
7 XREFs: c4 - sunny, c4_evergreen logo, c-util, levmap, p-base, p-legal, p-util
PLOTTED: TUE 03/03/20 2:24:21P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



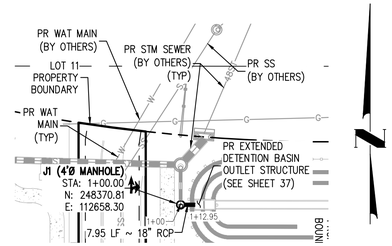
STORM LINE G PLAN

SCALE: 1" = 40'



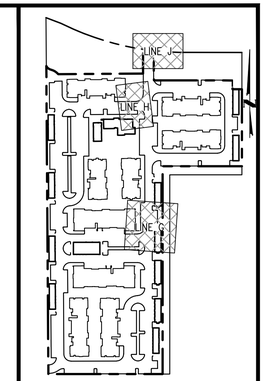
STORM LINE H PLAN

SCALE: 1" = 40'



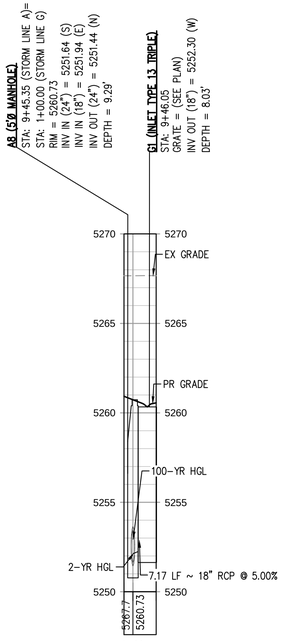
STORM LINE J PLAN

SCALE: 1" = 40'



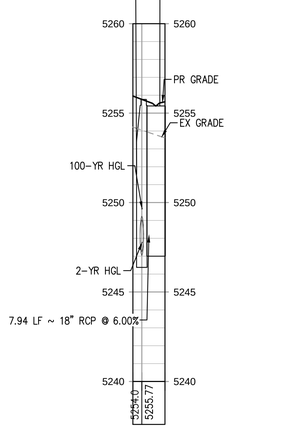
KEY MAP

SCALE: 1" = 250'



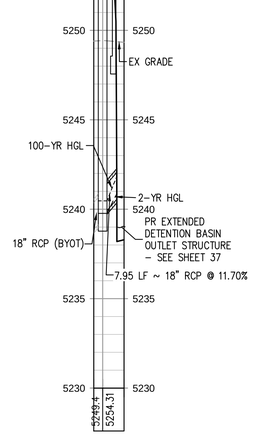
STORM LINE G PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



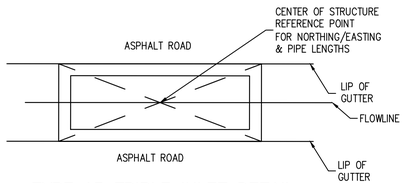
STORM LINE H PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE J PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
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6. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 UNDERGROUND UTILITIES.
7. ALL STORM SEWER INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES G, H & J

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 35

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FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM PAP.DWG LAYOUT: LINE G H & J
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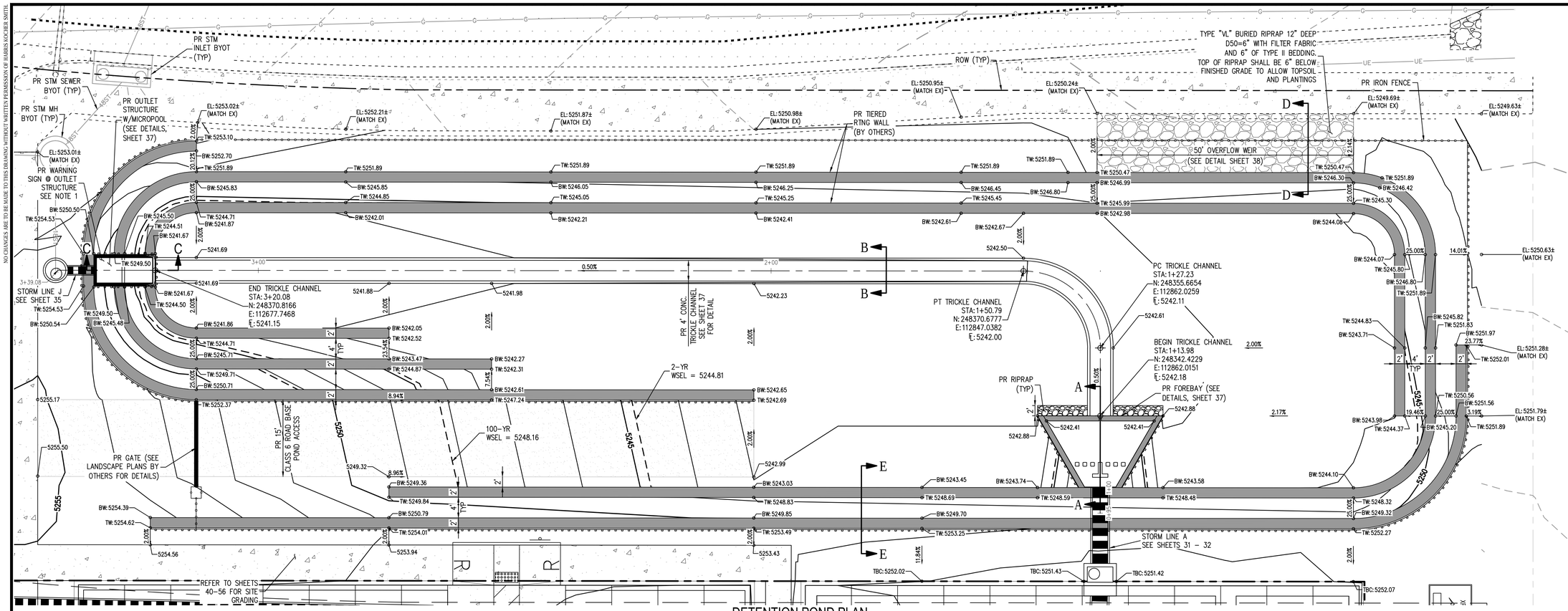
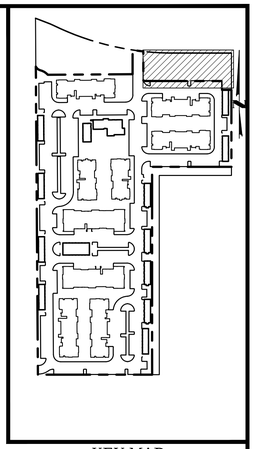


DETENTION POND PLAN

SCALE: 1" = 10'



KEY MAP

SCALE: 1" = 250'

TRICKLE CHANNEL PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

OUTLET STRUCTURE NOTES:

1. SIGN SHALL STATE " WARNING UNAUTHORIZED MODIFICATION OF THIS OUTLET IS A CODE VIOLATION AND SUBJECT TO THE PENALTIES AS PROVIDED BY LAW". REFER TO CITY AND STATE REGULATION REGARDING SPECIFICS OF THIS SIGN.
2. SEE SHEETS 37 FOR SECTIONS A–A, B–B, C–C, D–D AND FOR ALL SPECIFIC DETAILS FOR THIS DETENTION POND.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

SCALE: 1" = 10'

DESIGNED BY: KDB
CHECKED BY: MSM
DRAWN BY: KDB

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OUTLOOK AT NINE MILE
DETENTION POND PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

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SHEET NO. 36

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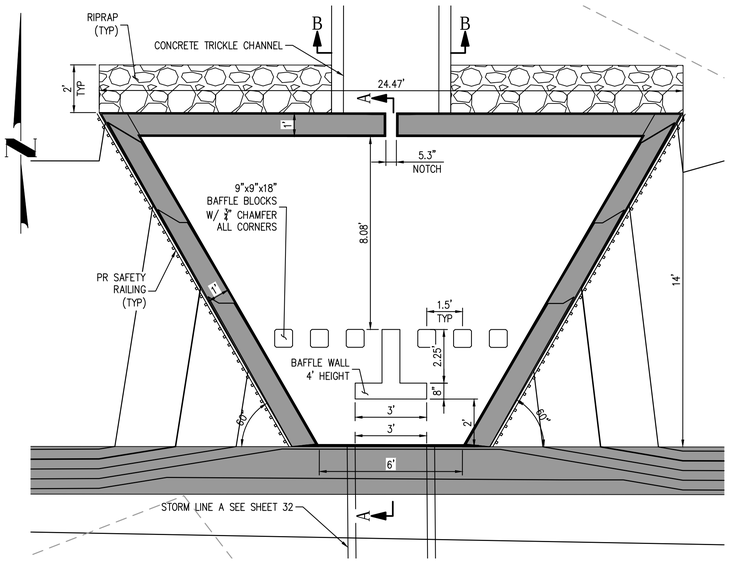
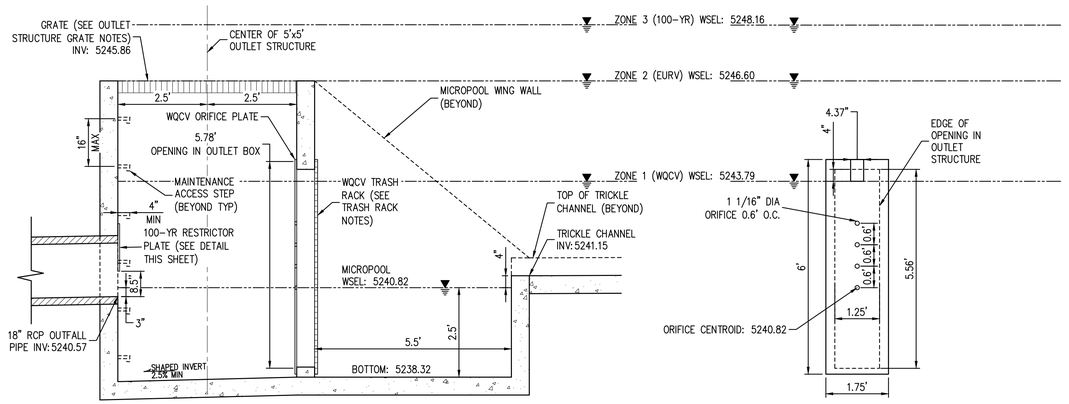


MODIFIED IMPACT STILLING BASIN PLAN

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'

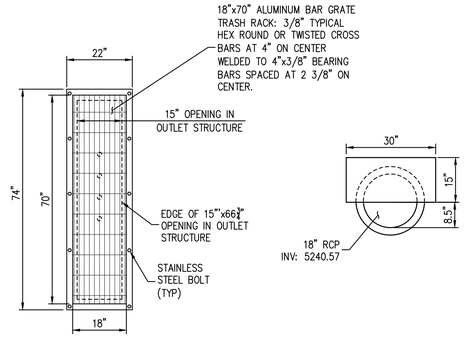


SECTION C-C
WATER QUALITY OUTLET STRUCTURE PROFILE

SCALE: N.T.S.

WQCV ORIFICE PLATE DETAIL

N.T.S.



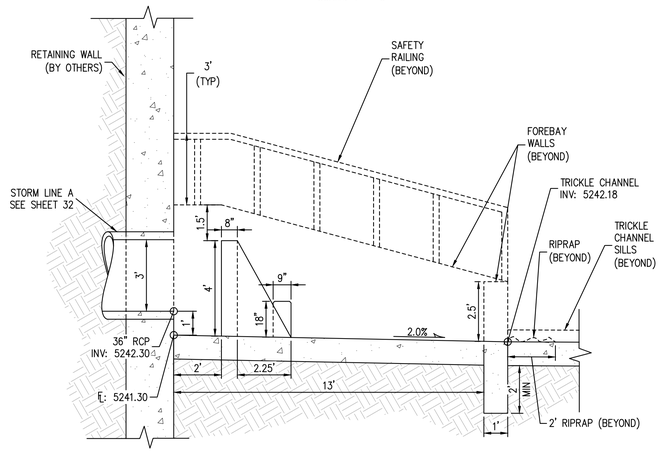
WQCV TRASH RACK DETAIL

N.T.S.

REFER TO UDFCD ORIFICE PLATE AND TRASH RACK NOTES (VOL 3, FIG OS-4) FOR ADDITIONAL INFORMATION

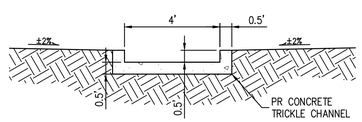
100-YR RESTRICTOR PLATE DETAIL

N.T.S.



SECTION A-A
MODIFIED IMPACT STILLING BASIN PROFILE DETAIL

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'



SECTION B-B
TRICKLE CHANNEL DETAIL

SCALE: 1" = 3'

WATER QUALITY OUTLET STRUCTURE PLAN

SCALE: N.T.S.

GENERAL NOTES:

1. ALL PENETRATIONS AND JOINTING SHALL BE WATER-TIGHT, WITH LINK-SEAL OR APPPROVED EQUIVALENT.
2. THE EXTENDED DETENTION BASIN FOREBAY SHALL BE BUILT IN ACCORDANCE WITH CURRENT UDFCD CRITERIA AND DETAILS.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL TRASH RACKS AND ORIFICE PLATES PRIOR TO CONSTRUCTION.
4. STRUCTURAL DESIGN OF ALL TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.
5. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
6. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.
7. MODIFIED IMPACT STILLING BASIN FIGURE 9-43 PER URBAN STORM DRAINAGE CRITERIA MANUAL, UPDATED SEPTEMBER 2017.
8. STEPS PROVIDED FOR MAINTENANCE ACCESS TO THE OUTLET STRUCTURE SHALL CONFORM TO AASHTO M 199.

TRASH RACK NOTES:

1. TRASH RACK SHALL BE IN ACCORDANCE WITH UDFCD TYPICAL BAR GRATE TRASH RACK
   - 1.1. 3/8" TYPICAL HEX ROUND OR TWISTED CROSS BARS MOUNTED AT 4" O.C.
   - 1.2. STAINLESS STEEL SUPPORT BARS SHALL BE 4" X 3/8", 2 3/8" O.C.
   - 1.3. C8X18.75 AMERICAN STANDARD STRUCTURAL STEEL CHANNEL FORMED INTO CONCRETE BOTTOM AND SIDE OF TRASH RACK SHALL BE ATTACHED BY STAINLESS STEEL BOLTING HARDWARE, 12" MAX O.C. ALONG THE EDGE OF THE MOUNTING FRAME.

OUTLET STRUCTURE GRATE NOTES:

1. GRATE SHALL BE CLOSED MESH GRATE PER CDOT TYPE C INLET M-604-10
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS ALUMINUM OR STEEL, SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.

ORIFICE/RESTRICTOR PLATE NOTES:

1. PROVIDE GASKET MATERIAL BETWEEN ORIFICE PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX O.C.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
37
37 OF 69

FILEPATH: P:\160602\ENGINEERING\DRAINAGE\CD - DETENTION POND DETAILS.DWG LAYOUT: LAYOUT1
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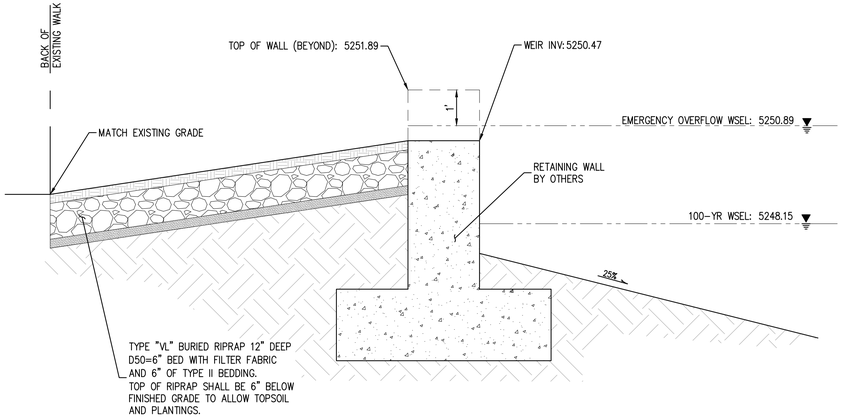
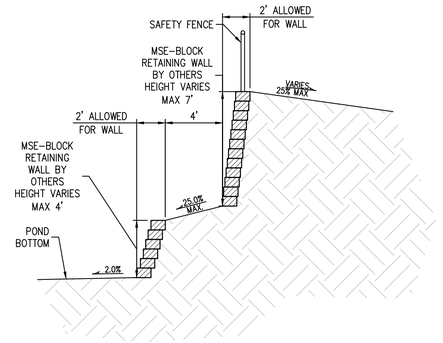
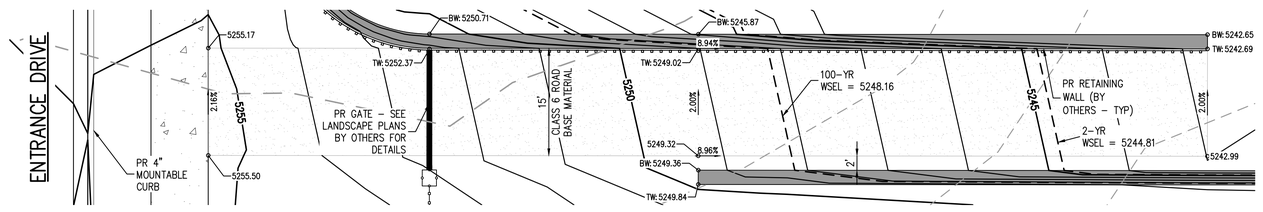


SECTION D-D
OVERFLOW SPILLWAY DETAIL
N.T.S.



SECTION E-E
RETAINING WALL DETAIL
N.T.S.



MAINTENANCE ACCESS DETAIL
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
2. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
38

FILEPATH: P:\160602\ENGINEERING\DRAINAGE\CD - DETENTION POND DETAILS.DWG LAYOUT: LAYOUT2
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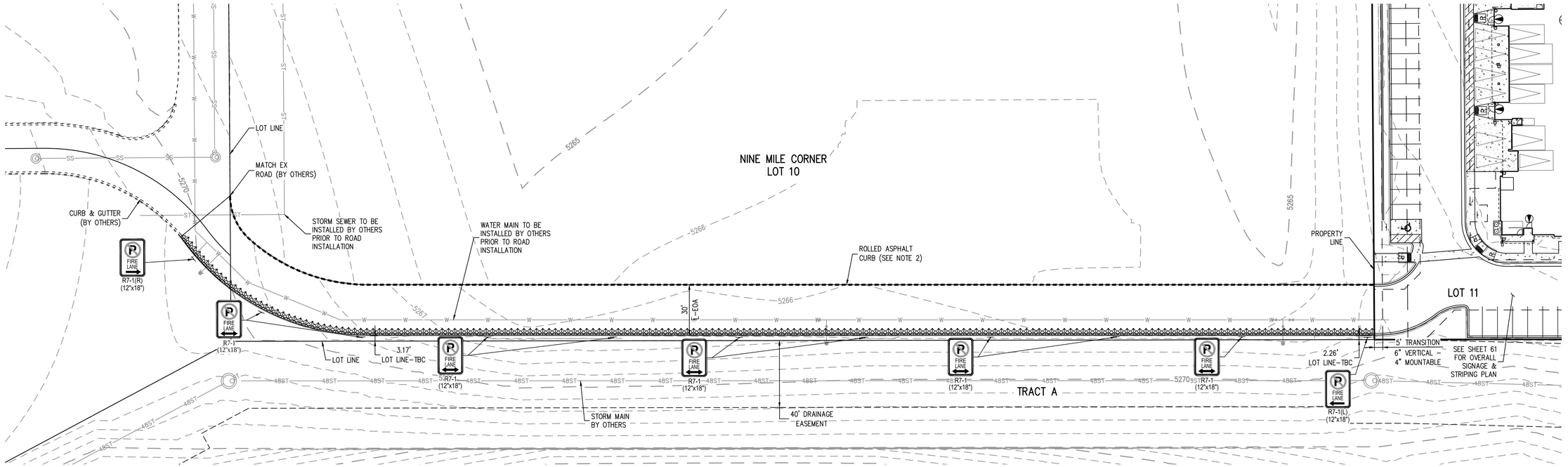

LEGEND:

PROPOSED 6" VERTICAL CURB & GUTTER (1' SPILL)

NOTES:

1. ALL WATER AND STORM IMPROVEMENTS SHOWN WAS PROVIDED BY GALLOWAY, AND IS SHOWN FOR REFERENCE ONLY. REFER TO NINE MILE CORNER COMMERCIAL CIVIL PLANS FOR DESIGN INFORMATION.
2. ROLLED ASPHALT CURB SHALL REMAIN IN PLACE UNTIL THE DEVELOPMENT OF LOT 10.
3. OVERLOT GRADING OF ROAD AND LOT 10 SHALL BE COMPLETED WITH METRO-DISTRICT WORK (BY OTHERS). GRADING INFORMATION SHOWN WAS PROVIDED BY GALLOWAY, AND IS SHOWN FOR REFERENCE ONLY. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES BETWEEN COMPLETED OVERLOT GRADING AND GRADING INFORMATION SHOWN ON THE PLAN.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

30 0 30 60
SCALE: 1" = 30'

DESIGNED BY: RCP
CHECKED BY: RCP
DRAWN BY: RCP

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OUTLOOK AT NINE MILE
SECONDARY ACCESS ROAD PLAN

ISSUE DATE: 11-08-2019 PROJECT #: 160602

DATE	REVISION COMMENTS
01/27/2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO. 39

39 OF 69

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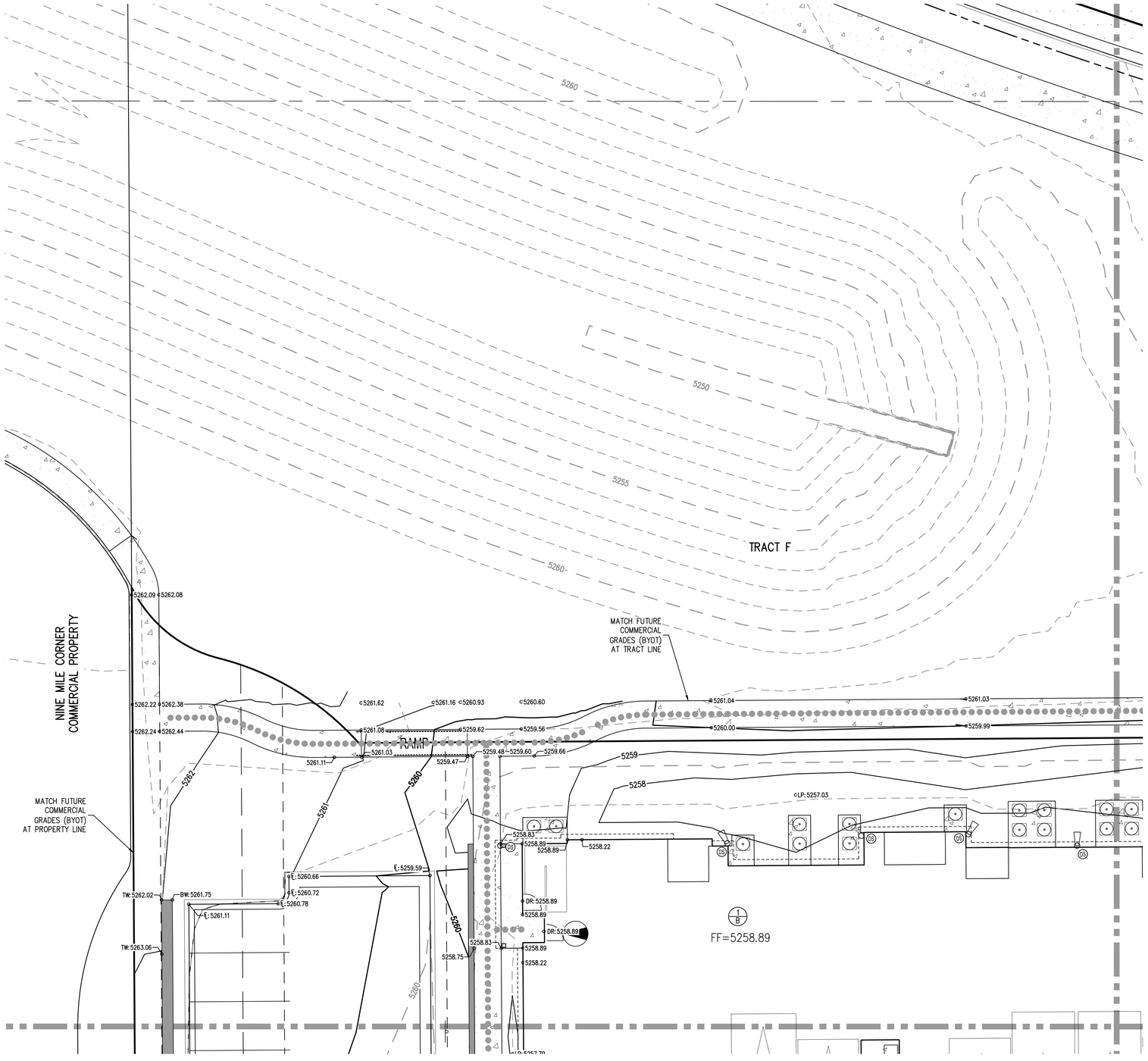

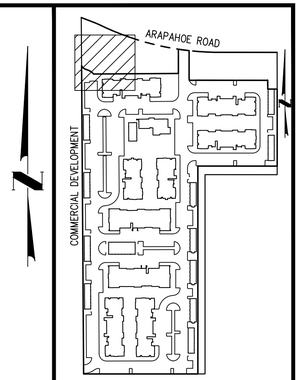

KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. LONGITUDINAL SLOPES ALONG THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% LONGITUDINAL SLOPES ON RAMPS SHALL NOT EXCEED 8.33% RAMPS, EXCEPT CURB RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
4. GUTTER SLOPES AT THE CURB RAMPS SHALL NOT EXCEED 5%.
5. GUTTER PANS SURROUNDING HANDICAP SPACES SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT WITH A MAXIMUM 2% SLOPE IN ALL DIRECTIONS.
6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
9. NON-PAVED GRADES ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 5% FOR 10-FT. ALL PAVED GRADES ATTACHED TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 1%, UNLESS OTHERWISE NOTED.
10. ALL GRADES FOR WALLS ARE FINISHED GRADE ELEVATIONS AT BOTTOM OF FRONT FACE (BW) AND TOP-BACK OF WALL (TW). THE WALL ELEVATIONS DO NOT INDICATE FOUNDATION DEPTHS OR ELEVATIONS. RETAINING WALL DETAILS SHALL BE PROVIDED BY OTHERS.
11. REFER TO STRUCTURAL PLANS FOR BUILDING FOUNDATION STEP LOCATIONS WHEN APPLICABLE.
12. PORTIONS OF STAIRS THAT DO NOT MEET THE MINIMUM 4-INCH RISER HEIGHT (DUE TO AN ADJACENT SLOPING PUBLIC WAY) SHALL HAVE A DISTINCTIVE MARKING STRIPE, 1-INCH TO 2-INCHES IN WIDTH, WITH A SLIP-RESISTANT SURFACE, IN ACCORDANCE WITH CURRENT INTERNATIONAL BUILDING CODE REGULATIONS.
13. SEE LANDSCAPE ARCHITECT PLANS FOR HEIGHT AND TOP OF COURTYARD AMENITIES (PLANTER CURBS, SEAT WALLS, BENCHES, FIRE WALL, MEDIA WALL, BARS, AND GRILLS).
14. TOP STEP ELEVATIONS FOR STOOPS AND PATIOS ARE SHOWN FOR REFERENCE ONLY. TOP OF STEPS AND PATIO ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL PLANS/DETAILS AND AS-BUILT STOOP/PATIO ELEVATIONS.
15. ELECTRICAL TRANSFORMER PADS AND AC-UNIT PADS ARE TO BE SET A MINIMUM OF 2-INCHES ABOVE THE ADJACENT FINISHED GRADE AROUND THE PERIMETER OF THE PAD. CONTRACTOR SHALL PROVIDE A CONCRETE TURNDOWN AS NECCESSARY. CONTRACTOR IS TO VERIFY POSITIVE DRAINAGE AWAY FROM, AND AROUND, ALL ELECTRICAL PADS AND AC-UNIT PADS.
16. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL ENGINEERING REPORT.
17. CONTRACTOR SHALL ENSURE ACCESSIBLE EXTERIOR DOORS AND GATES ARE CONSTRUCTED WITH ADEQUATE LANDING WIDTH AND DEPTH TO COMPLY WITH APPLICABLE AMERICANS WITH DISABILITIES ACT (ADA) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) MANEUVERING CLEARANCES AT DOOR REQUIREMENTS (BASED ON THE DIRECTION OF APPROACH OF THE SIDEWALK).

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

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SHEET NO.
40
40 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GCD - DETAILED GRADING PLAN LDWG LAYOUT: LAYOUT1
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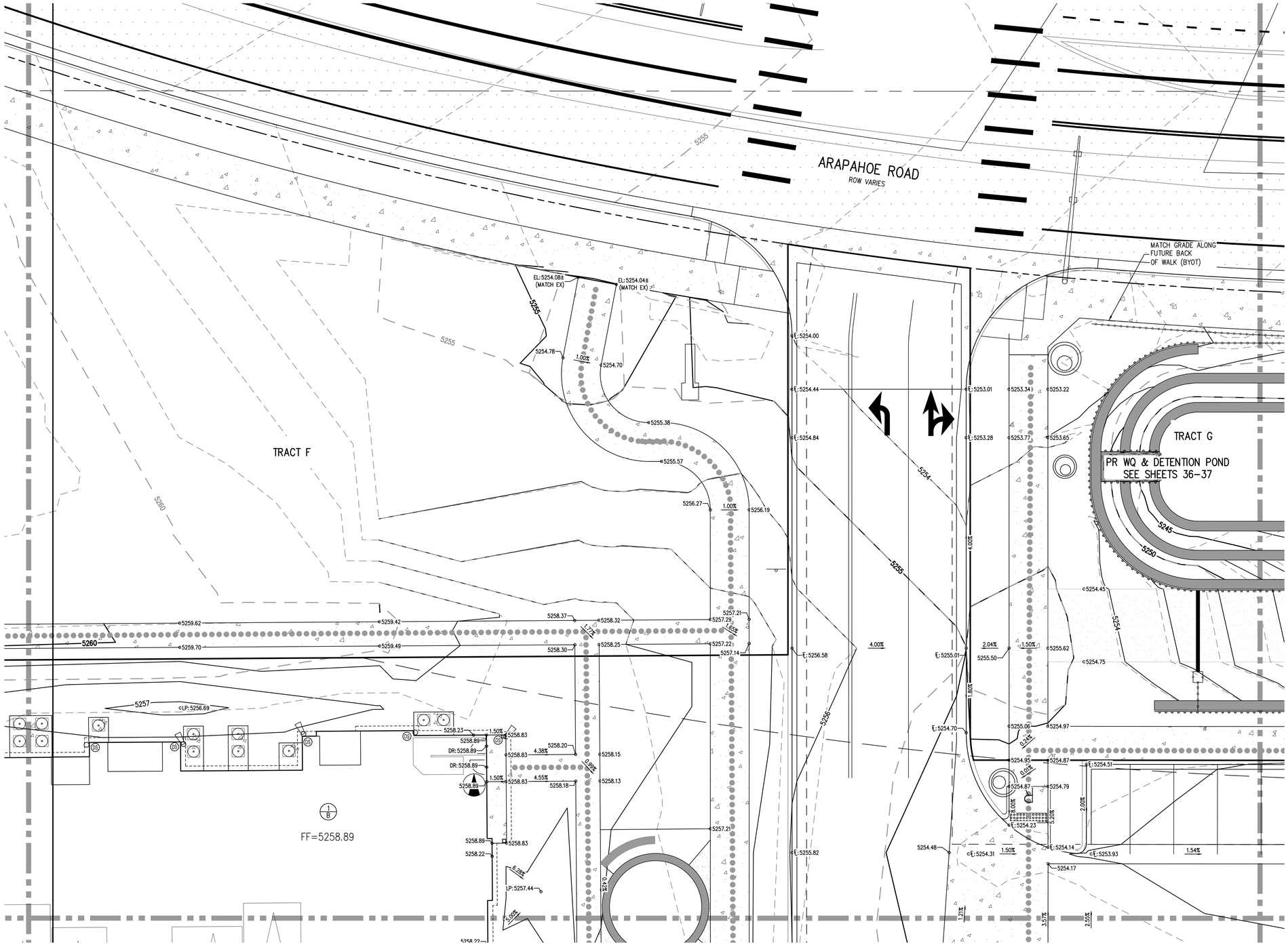

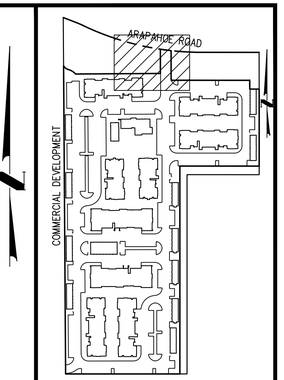

KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. LONGITUDINAL SLOPES ALONG THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% LONGITUDINAL SLOPES ON RAMPS SHALL NOT EXCEED 8.33% RAMPS, EXCEPT CURB RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
4. GUTTER SLOPES AT THE CURB RAMPS SHALL NOT EXCEED 5%.
5. GUTTER PANS SURROUNDING HANDICAP SPACES SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT WITH A MAXIMUM 2% SLOPE IN ALL DIRECTIONS.
6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

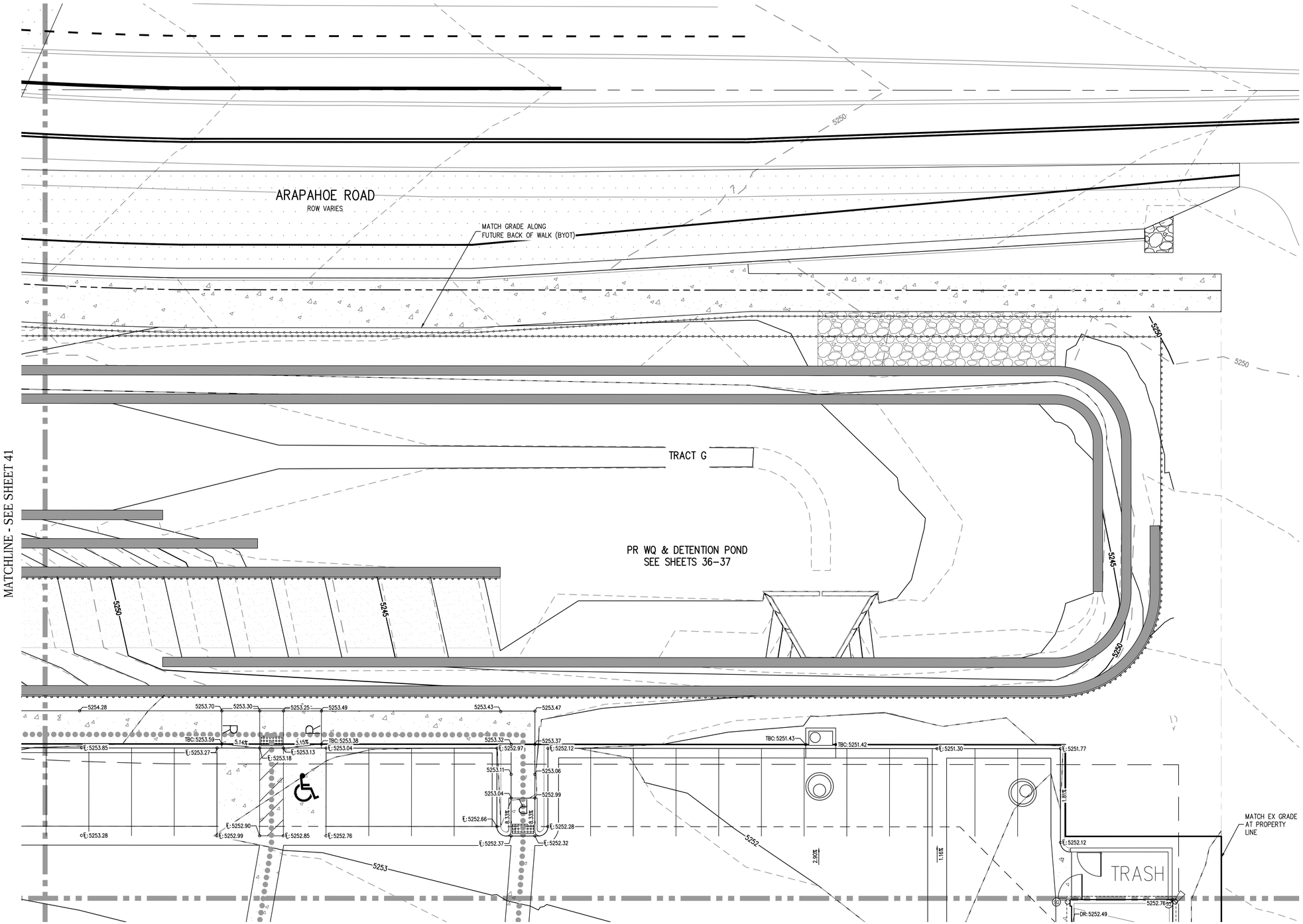
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

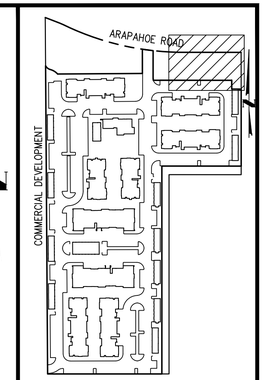
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
41
41 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GCD - DETAILED GRADING PLAN LDWG LAYOUT: LAYOUT2
NO XREFs
PLOTTED: TUE 03/03/20 2:26:41P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH





KEY MAP
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PRELIMINARY NOT FOR CONSTRUCTION

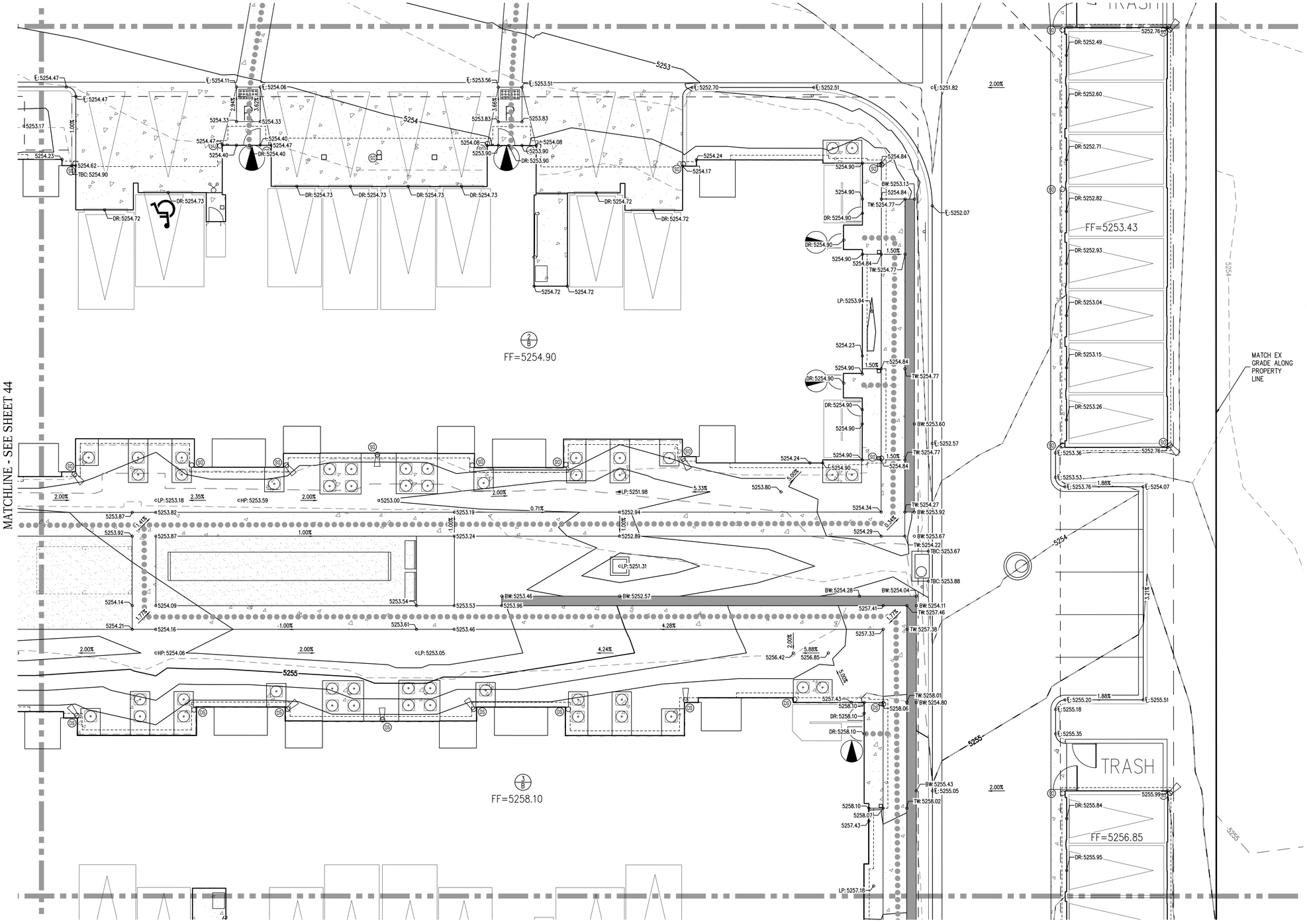
SHEET NO.
42
42 OF 69

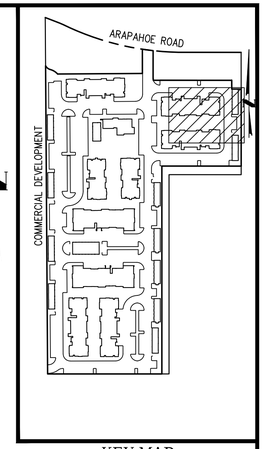
FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 1.DWG LAYOUT: LAYOUT3
NO XREFS
PLOTTED: TUE 03/03/20 2:26:49P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH

MATCHLINE - SEE SHEET 42

MATCHLINE - SEE SHEET 44





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MATCHLINE - SEE SHEET 48

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10 0 10 20
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DRAWN BY: RJH

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

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03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
43
43 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 1.DWG LAYOUT: LAYOUT4
NO XREFS
PLOTTED: TUE 03/03/20 2:26:59P BY: JEFF MINNICH

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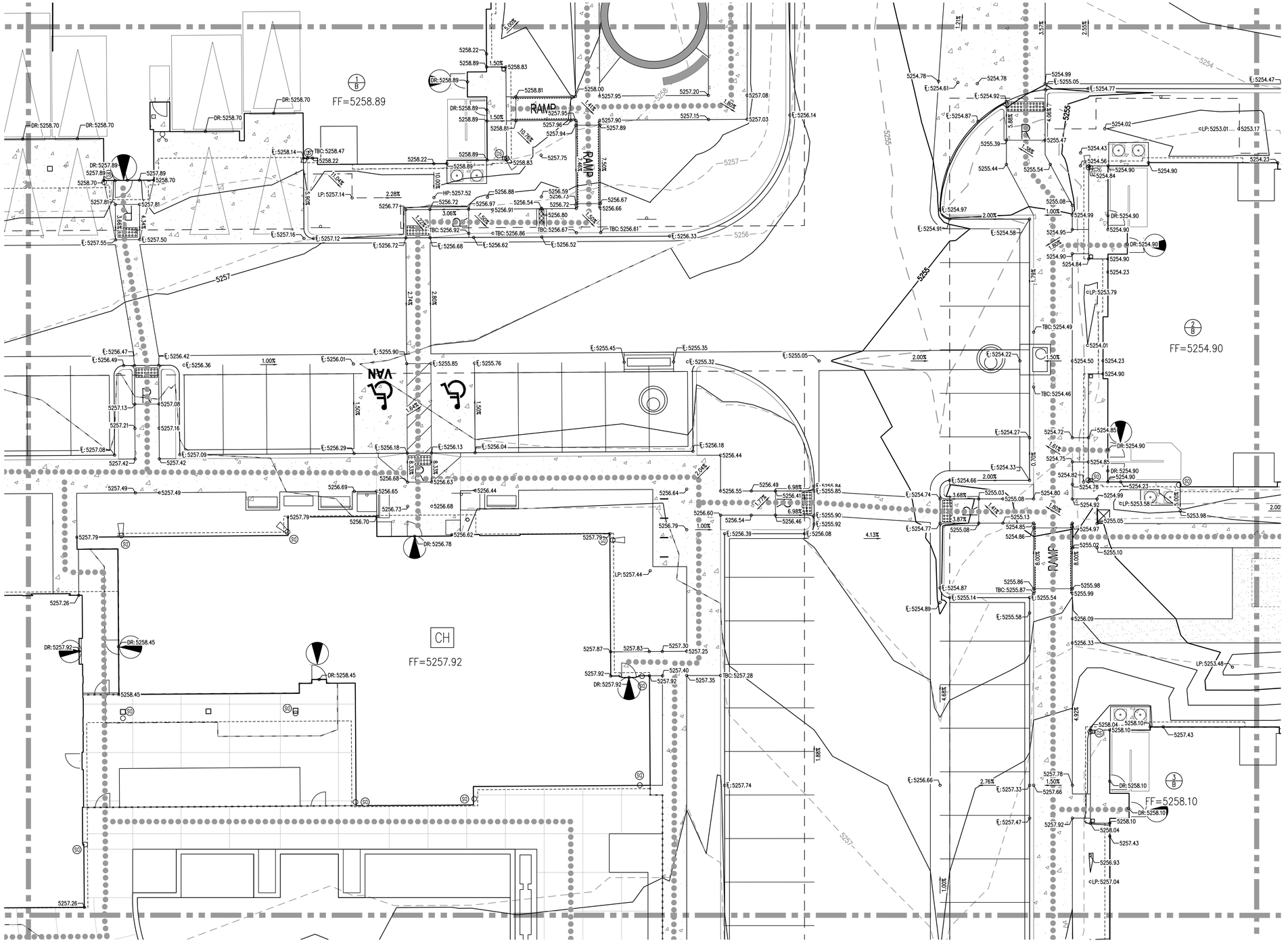
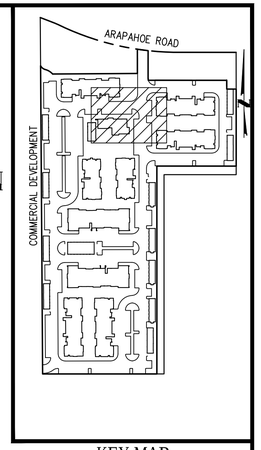
MATCHLINE - SEE SHEET 41





KEY MAP
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SHEET NO.
44
44 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 1.DWG LAYOUT: LAYOUT1
NO XREFS
PLOTTED: TUE 03/03/20 2:27:11 P BY: JEFF MINNICH

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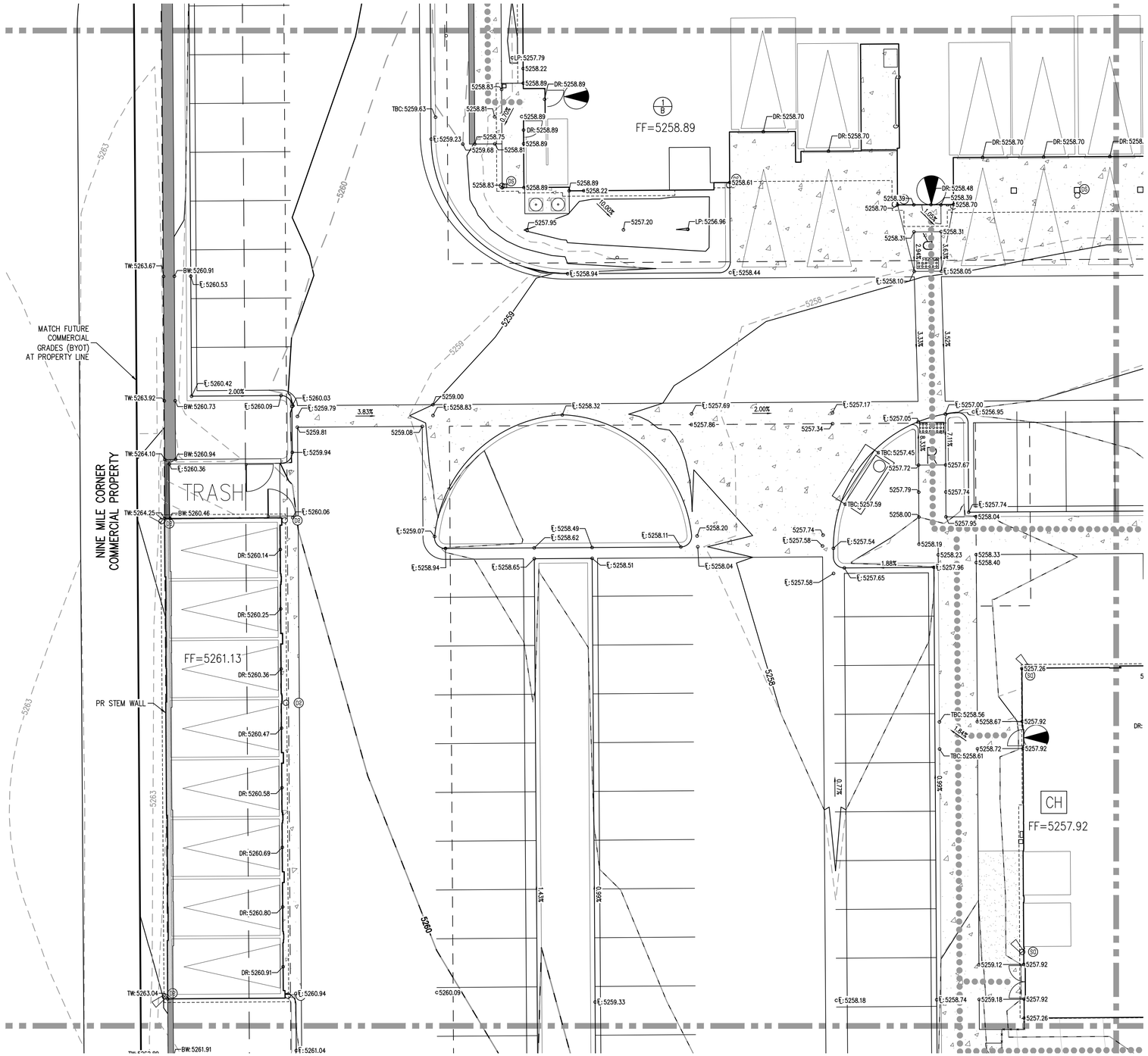
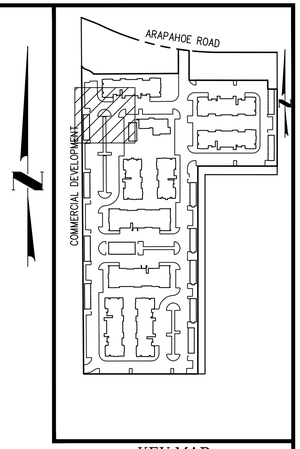
MATCHLINE - SEE SHEET 40



MATCHLINE - SEE SHEET 46



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16. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL ENGINEERING REPORT.
17. CONTRACTOR SHALL ENSURE ACCESSIBLE EXTERIOR DOORS AND GATES ARE CONSTRUCTED WITH ADEQUATE LANDING WIDTH AND DEPTH TO COMPLY WITH APPLICABLE AMERICANS WITH DISABILITIES ACT (ADA) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) MANEUVERING CLEARANCES AT DOOR REQUIREMENTS (BASED ON THE DIRECTION OF APPROACH OF THE SIDEWALK).

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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
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Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
45
45 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 1.DWG LAYOUT: LAYOUT6
NO XREFS
PLOTTED: TUE 03/03/20 2:27:20P BY: JEFF MINNICH

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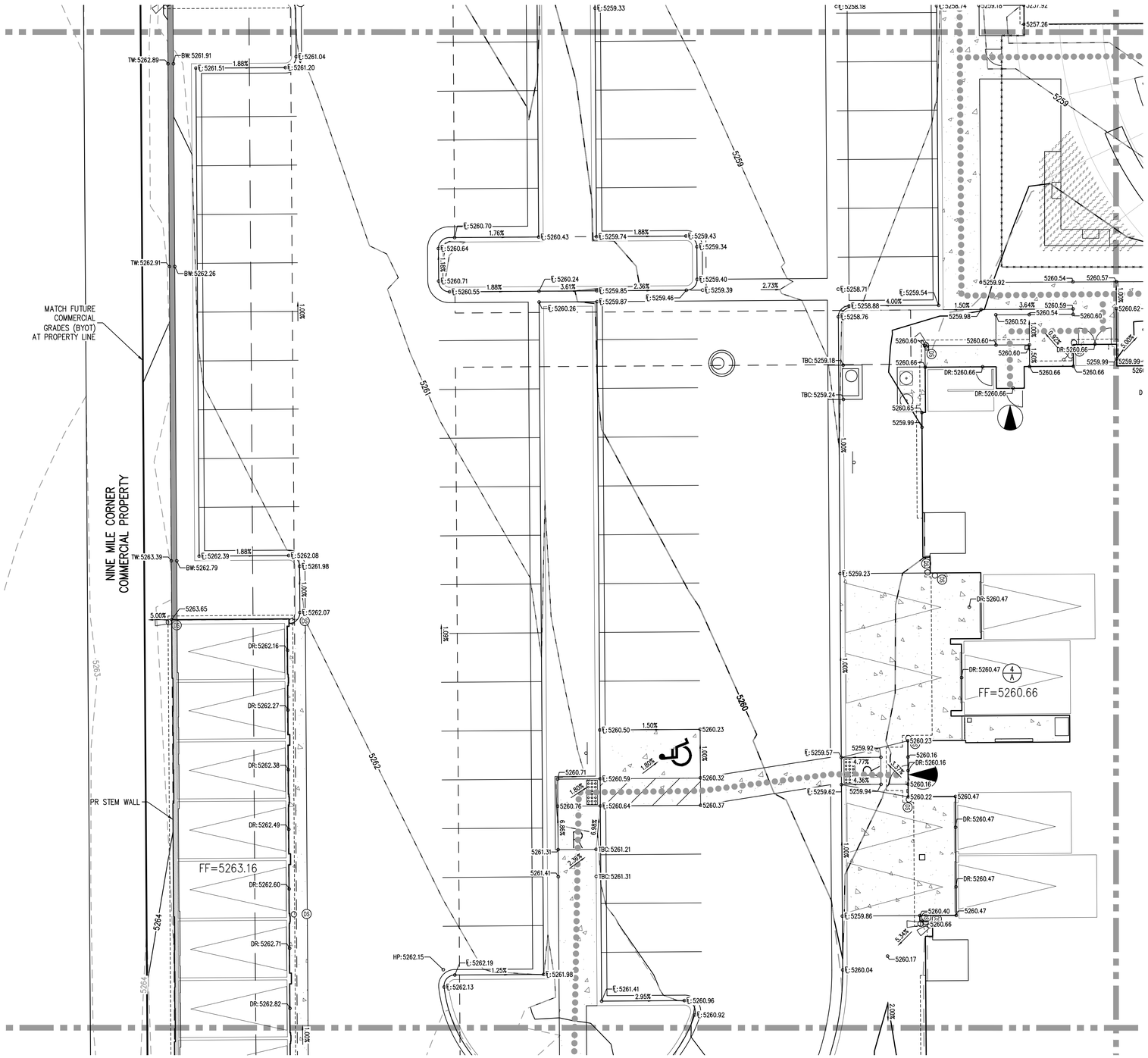

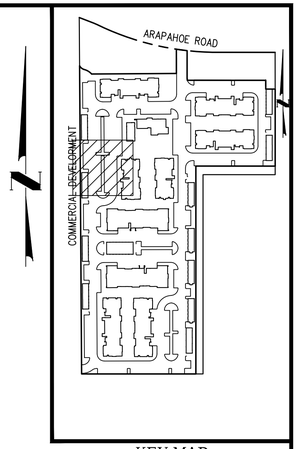

KEY MAP
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SHEET NO.
46
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FILEPATH: P:\160602\ENGINEERING\GRADING\GCD - DETAILED GRADING PLAN 2.DWG LAYOUT: LAYOUT1
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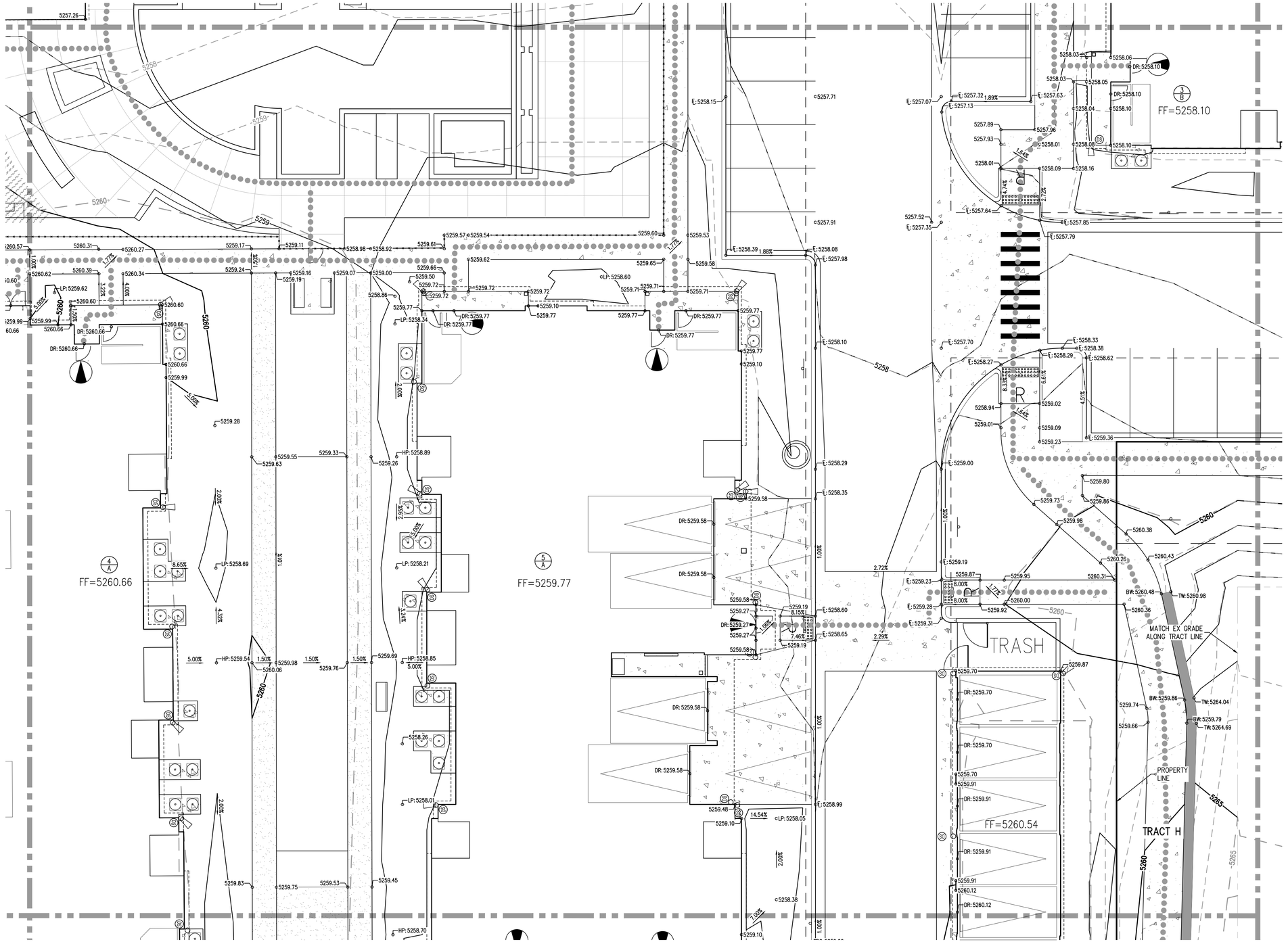

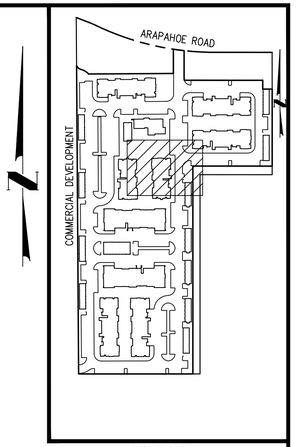

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DETAILED GRADING PLAN

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SHEET NO. 47
47 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 2.DWG LAYOUT: LAYOUT2
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PLOTTED: TUE 03/03/20 2:28:17P BY: JEFF MINNICH

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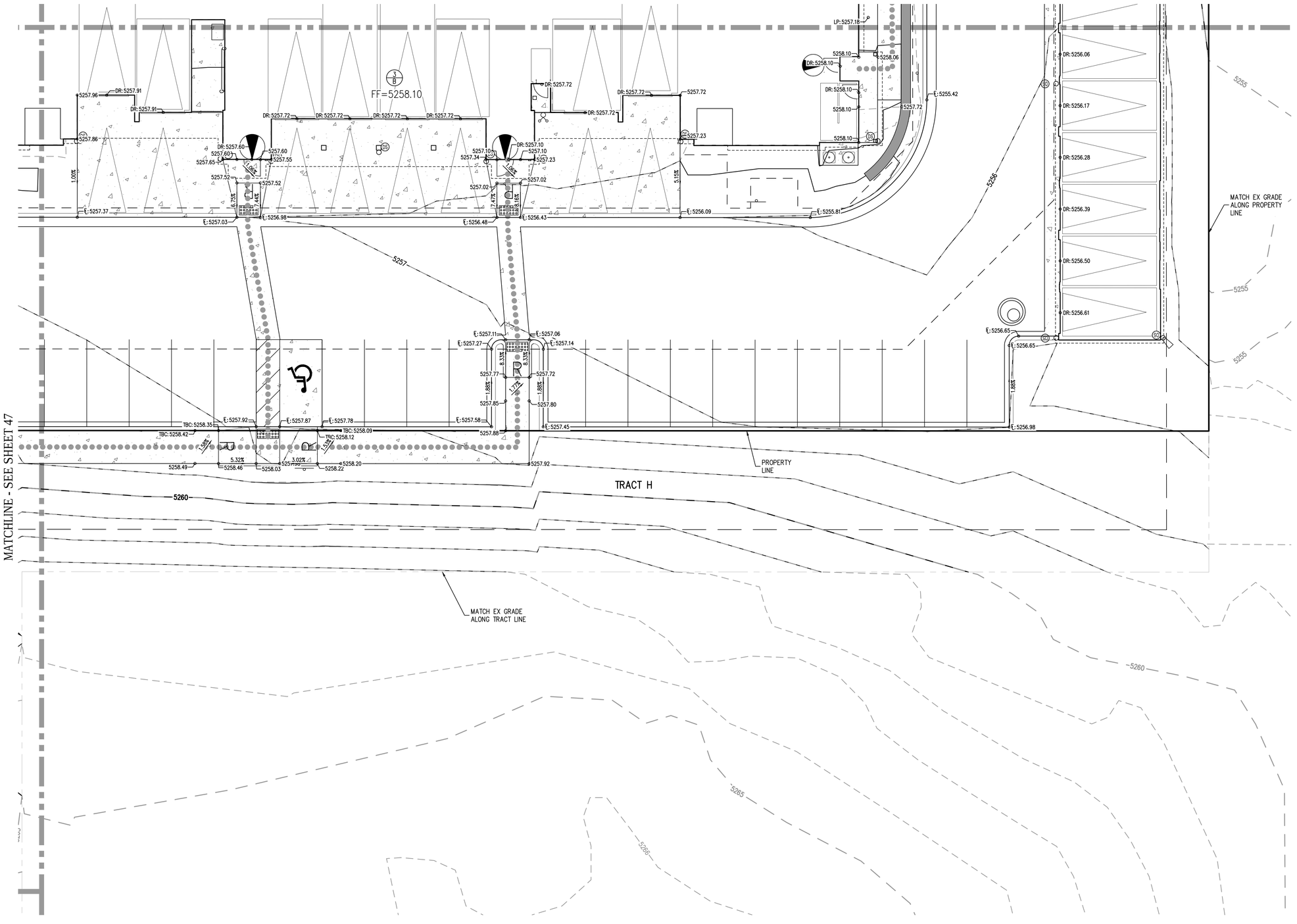
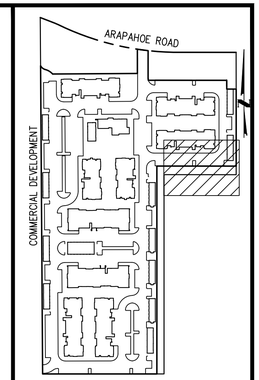
MATCHLINE - SEE SHEET 43





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SHEET NO.
48

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 2.DWG LAYOUT: LAYOUT3
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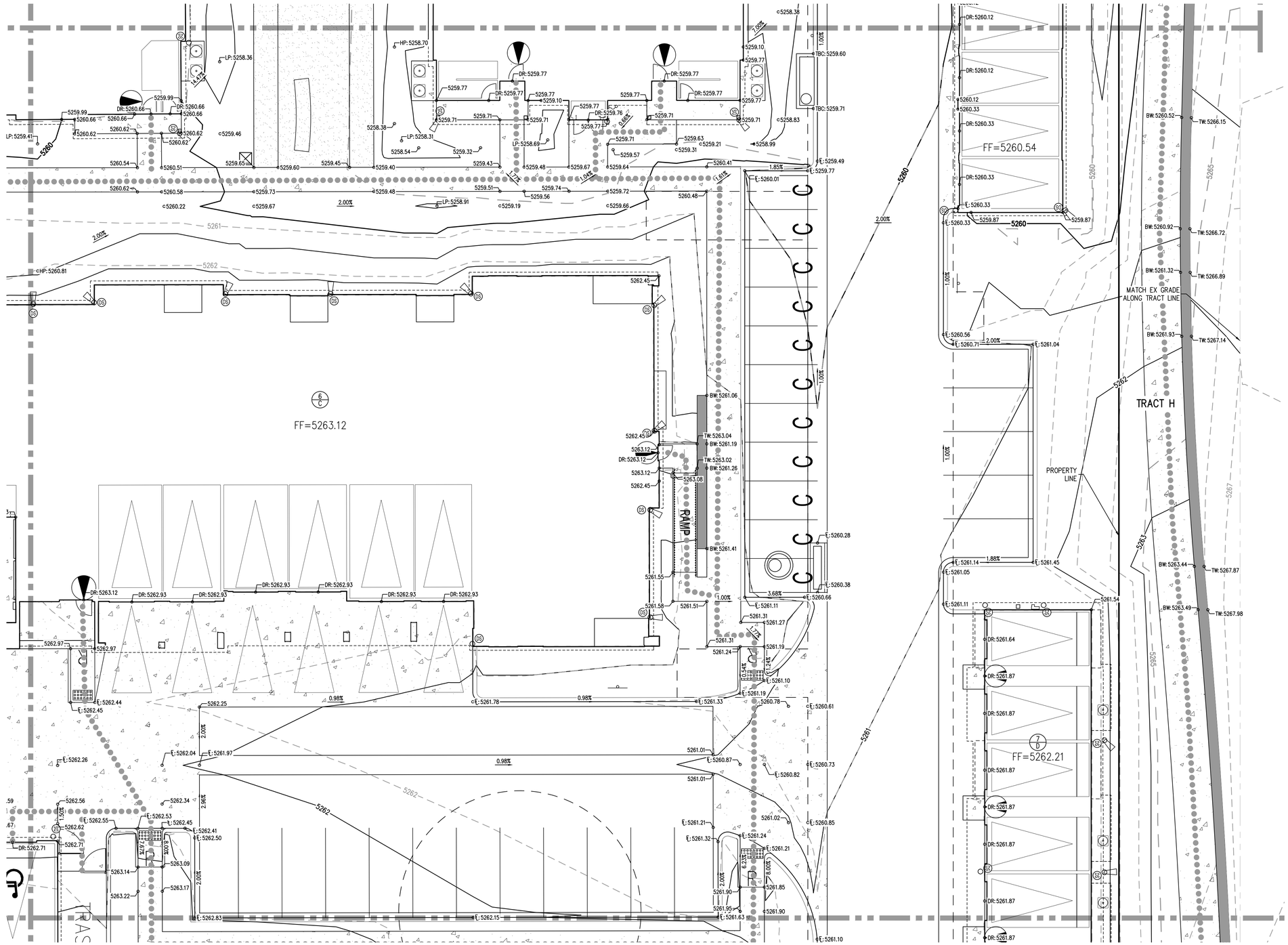
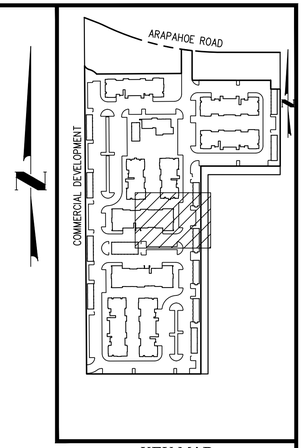
MATCHLINE - SEE SHEET 47

MATCHLINE - SEE SHEET 50



MATCHLINE - SEE SHEET 52



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FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 2.DWG LAYOUT: LAYOUT4
NO XREFS
PLOTTED: TUE 03/03/20 2:28:37P BY: JEFF MINNICH

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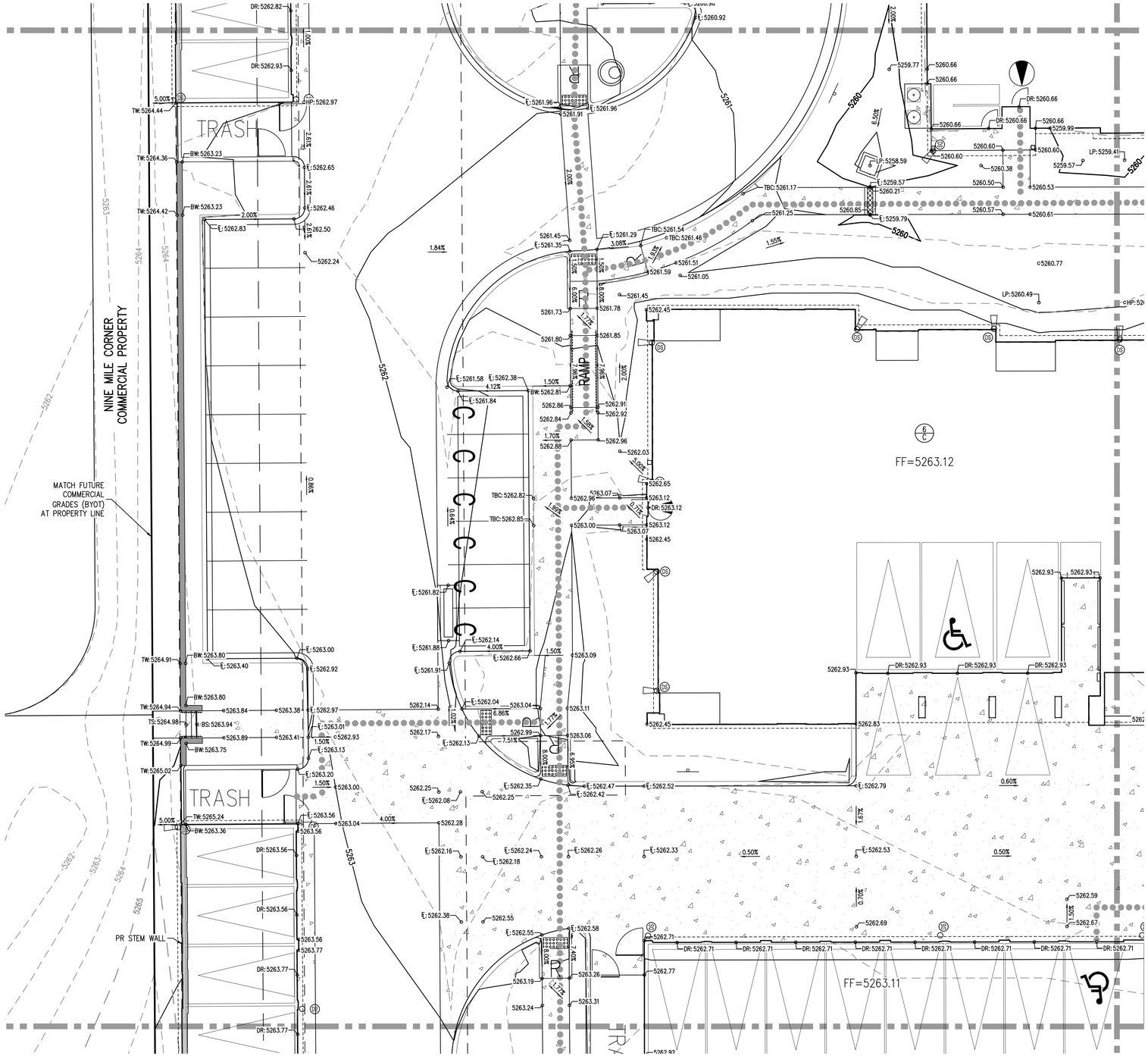
MATCHLINE - SEE SHEET 46


NINE MILE CORNER
COMMERCIAL PROPERTY
MATCH FUTURE COMMERCIAL GRADES (BYOT) AT PROPERTY LINE
PR STEM WALL
TRASH
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RAMP
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TBC: 5261.17
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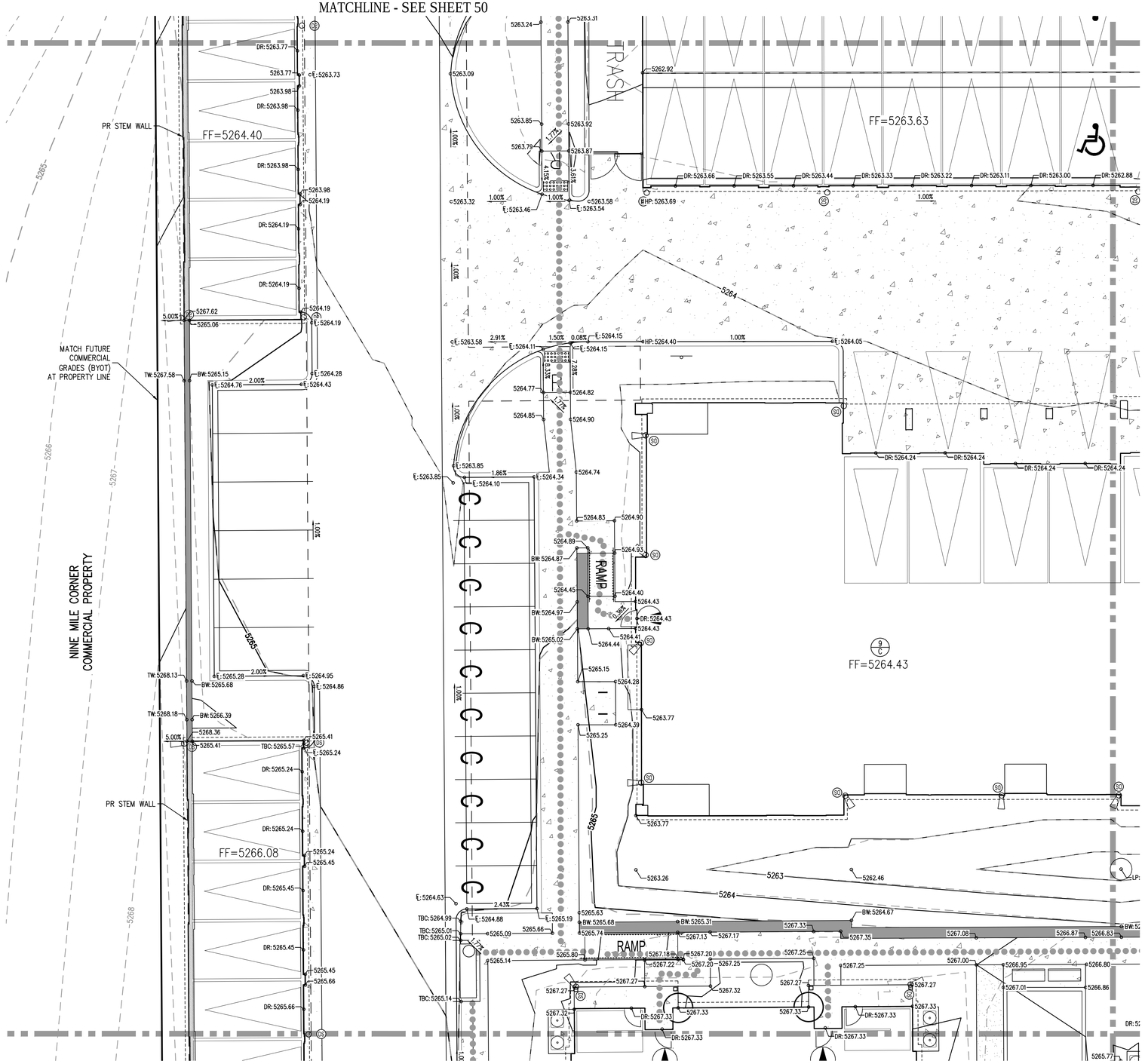

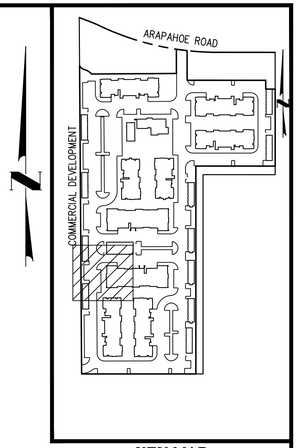

KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. LONGITUDINAL SLOPES ALONG THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% LONGITUDINAL SLOPES ON RAMPS SHALL NOT EXCEED 8.33% RAMPS, EXCEPT CURB RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
4. GUTTER SLOPES AT THE CURB RAMPS SHALL NOT EXCEED 5%.
5. GUTTER PANS SURROUNDING HANDICAP SPACES SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT WITH A MAXIMUM 2% SLOPE IN ALL DIRECTIONS.
6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
9. NON-PAVED GRADES ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 5% FOR 10-FT. ALL PAVED GRADES ATTACHED TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 1%, UNLESS OTHERWISE NOTED.
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11. REFER TO STRUCTURAL PLANS FOR BUILDING FOUNDATION STEP LOCATIONS WHEN APPLICABLE.
12. PORTIONS OF STAIRS THAT DO NOT MEET THE MINIMUM 4-INCH RISER HEIGHT (DUE TO AN ADJACENT SLOPING PUBLIC WAY) SHALL HAVE A DISTINCTIVE MARKING STRIPE, 1-INCH TO 2-INCHES IN WIDTH, WITH A SLIP-RESISTANT SURFACE, IN ACCORDANCE WITH CURRENT INTERNATIONAL BUILDING CODE REGULATIONS.
13. SEE LANDSCAPE ARCHITECT PLANS FOR HEIGHT AND TOP OF COURTYARD AMENITIES (PLANTER CURBS, SEAT WALLS, BENCHES, FIRE WALL, MEDIA WALL, BARS, AND GRILLS).
14. TOP STEP ELEVATIONS FOR STOOPS AND PATIOS ARE SHOWN FOR REFERENCE ONLY. TOP OF STEPS AND PATIO ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL PLANS/DETAILS AND AS-BUILT STOOP/PATIO ELEVATIONS.
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16. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL ENGINEERING REPORT.
17. CONTRACTOR SHALL ENSURE ACCESSIBLE EXTERIOR DOORS AND GATES ARE CONSTRUCTED WITH ADEQUATE LANDING WIDTH AND DEPTH TO COMPLY WITH APPLICABLE AMERICANS WITH DISABILITIES ACT (ADA) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) MANEUVERING CLEARANCES AT DOOR REQUIREMENTS (BASED ON THE DIRECTION OF APPROACH OF THE SIDEWALK).

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

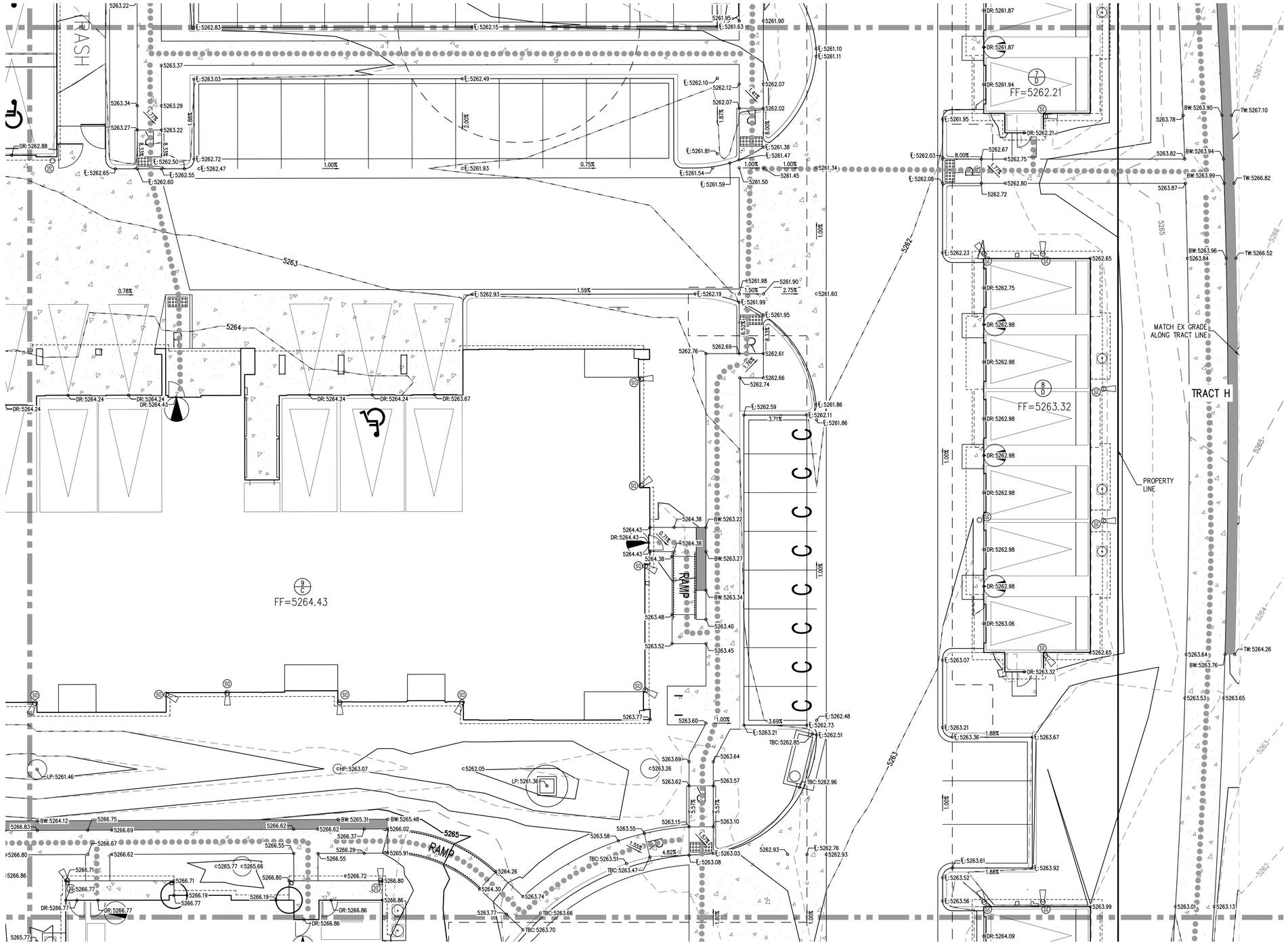
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
51
51 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT1
NO XREFs
PLOTTED: TUE 03/03/20 2:29:25P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH

MATCHLINE - SEE SHEET 49



MATCHLINE - SEE SHEET 51

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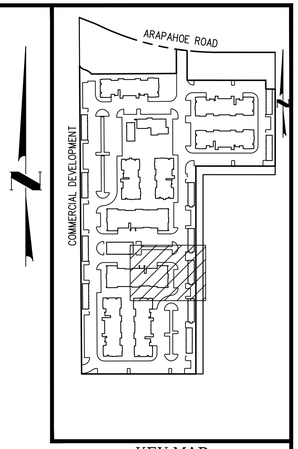

KEY MAP
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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
52
52 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT2
NO XREFS
PLOTTED: TUE 03/03/20 2:29:36P BY: JEFF MINNICH

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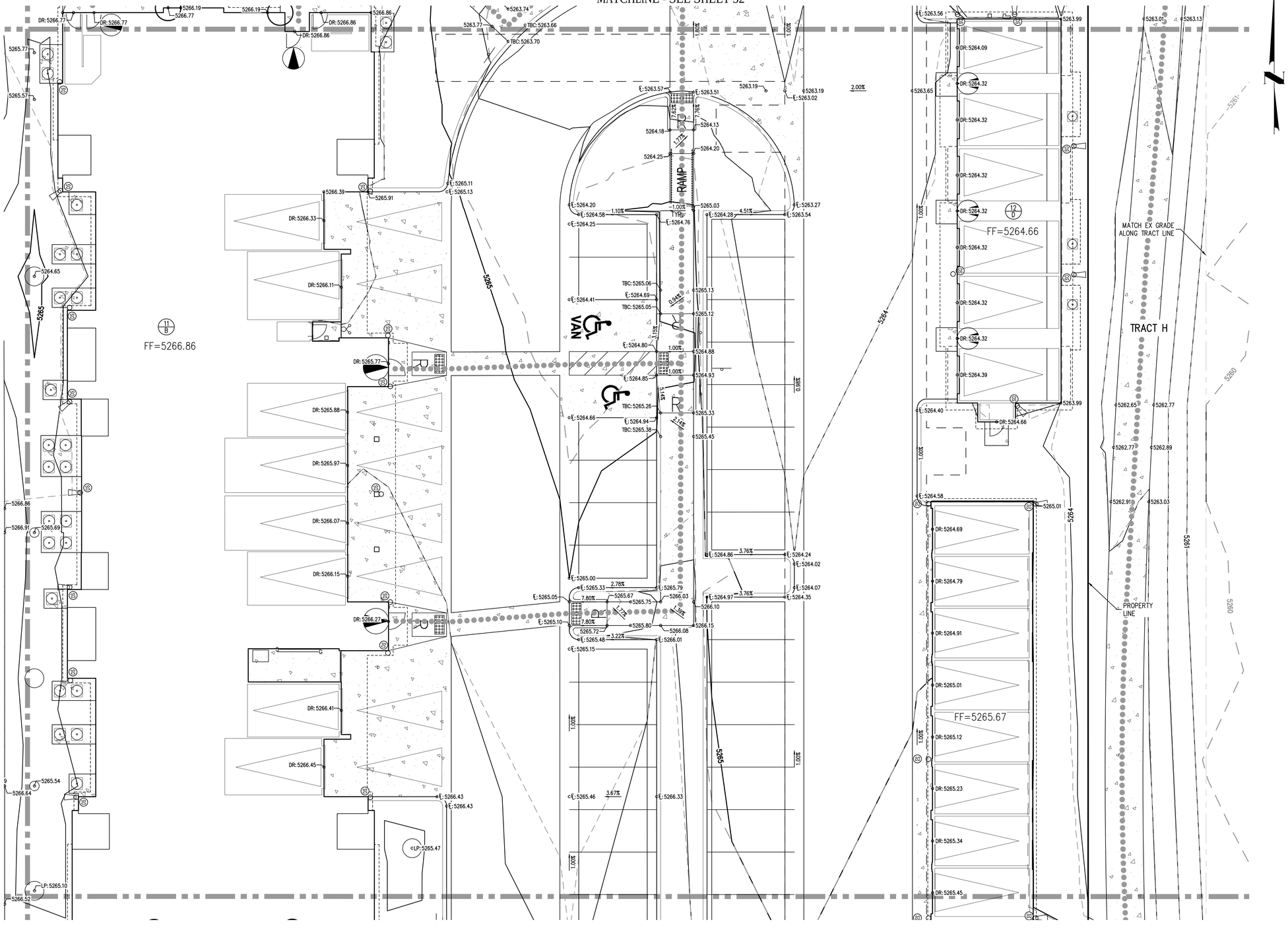

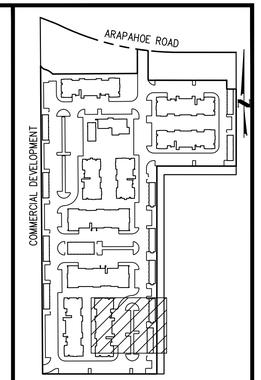

KEY MAP
SCALE: 1" = 250'

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PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
53
53 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT3
NO XREFs
PLOTTED: TUE 03/03/20 2:29:46P BY: JEFF MINNICH

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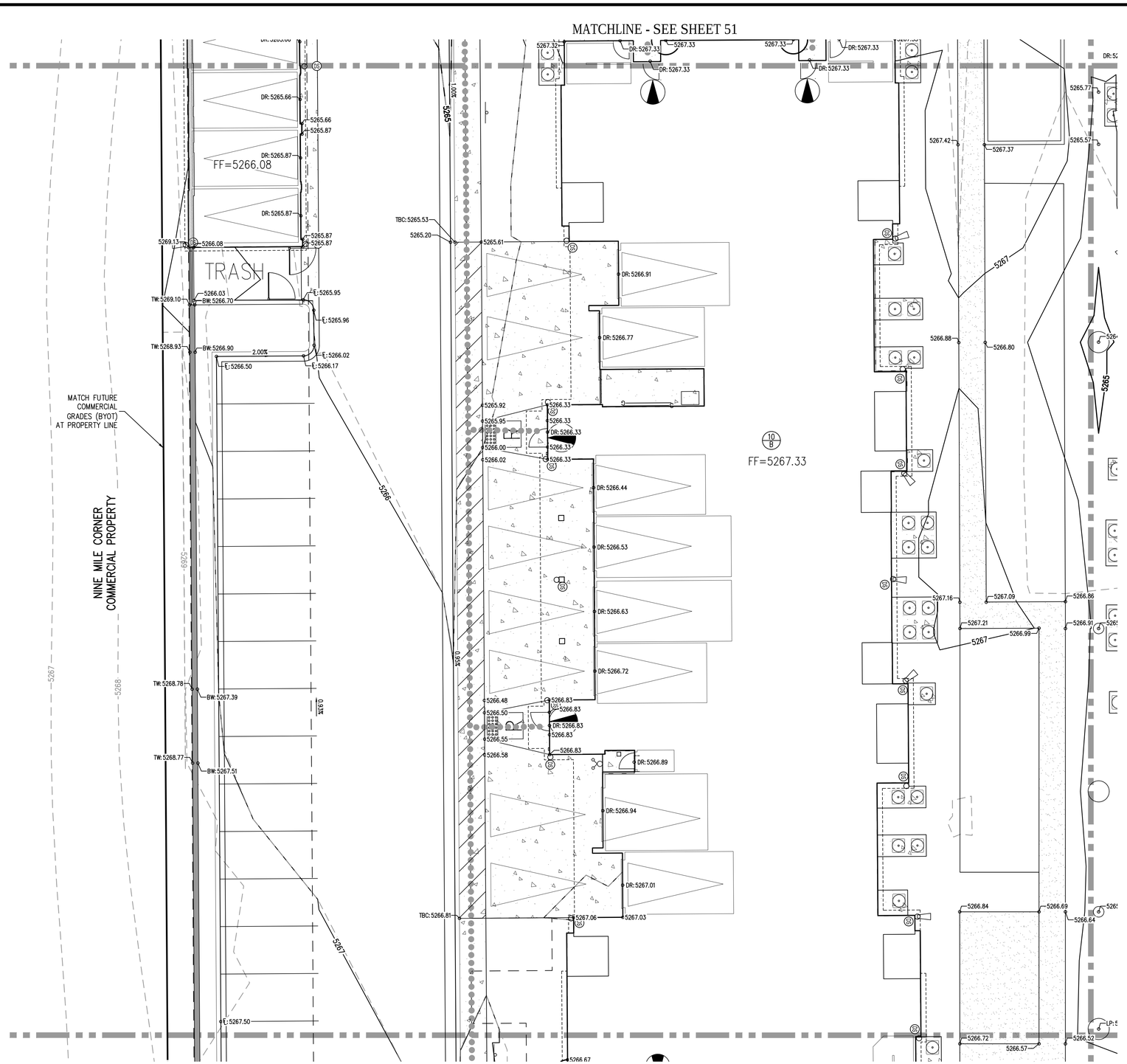

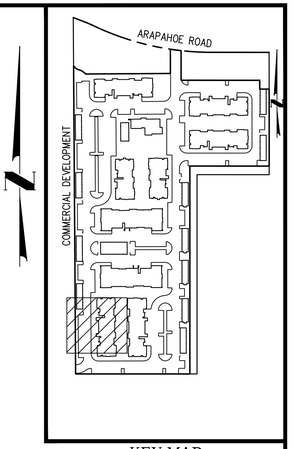

KEY MAP
SCALE: 1" = 250'

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13. SEE LANDSCAPE ARCHITECT PLANS FOR HEIGHT AND TOP OF COURTYARD AMENITIES (PLANTER CURBS, SEAT WALLS, BENCHES, FIRE WALL, MEDIA WALL, BARS, AND GRILLS).
14. TOP STEP ELEVATIONS FOR STOOPS AND PATIOS ARE SHOWN FOR REFERENCE ONLY. TOP OF STEPS AND PATIO ELEVATIONS SHALL BE COORDINATED WITH ARCHITECTURAL PLANS/DETAILS AND AS-BUILT STOOP/PATIO ELEVATIONS.
15. ELECTRICAL TRANSFORMER PADS AND AC-UNIT PADS ARE TO BE SET A MINIMUM OF 2-INCHES ABOVE THE ADJACENT FINISHED GRADE AROUND THE PERIMETER OF THE PAD. CONTRACTOR SHALL PROVIDE A CONCRETE TURNDOWN AS NECESSARY. CONTRACTOR IS TO VERIFY POSITIVE DRAINAGE AWAY FROM, AND AROUND, ALL ELECTRICAL PADS AND AC-UNIT PADS.
16. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS, AND THE RECOMMENDATIONS SET FORTH IN THE GEOTECHNICAL ENGINEERING REPORT.
17. CONTRACTOR SHALL ENSURE ACCESSIBLE EXTERIOR DOORS AND GATES ARE CONSTRUCTED WITH ADEQUATE LANDING WIDTH AND DEPTH TO COMPLY WITH APPLICABLE AMERICANS WITH DISABILITIES ACT (ADA) AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) MANEUVERING CLEARANCES AT DOOR REQUIREMENTS (BASED ON THE DIRECTION OF APPROACH OF THE SIDEWALK).

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

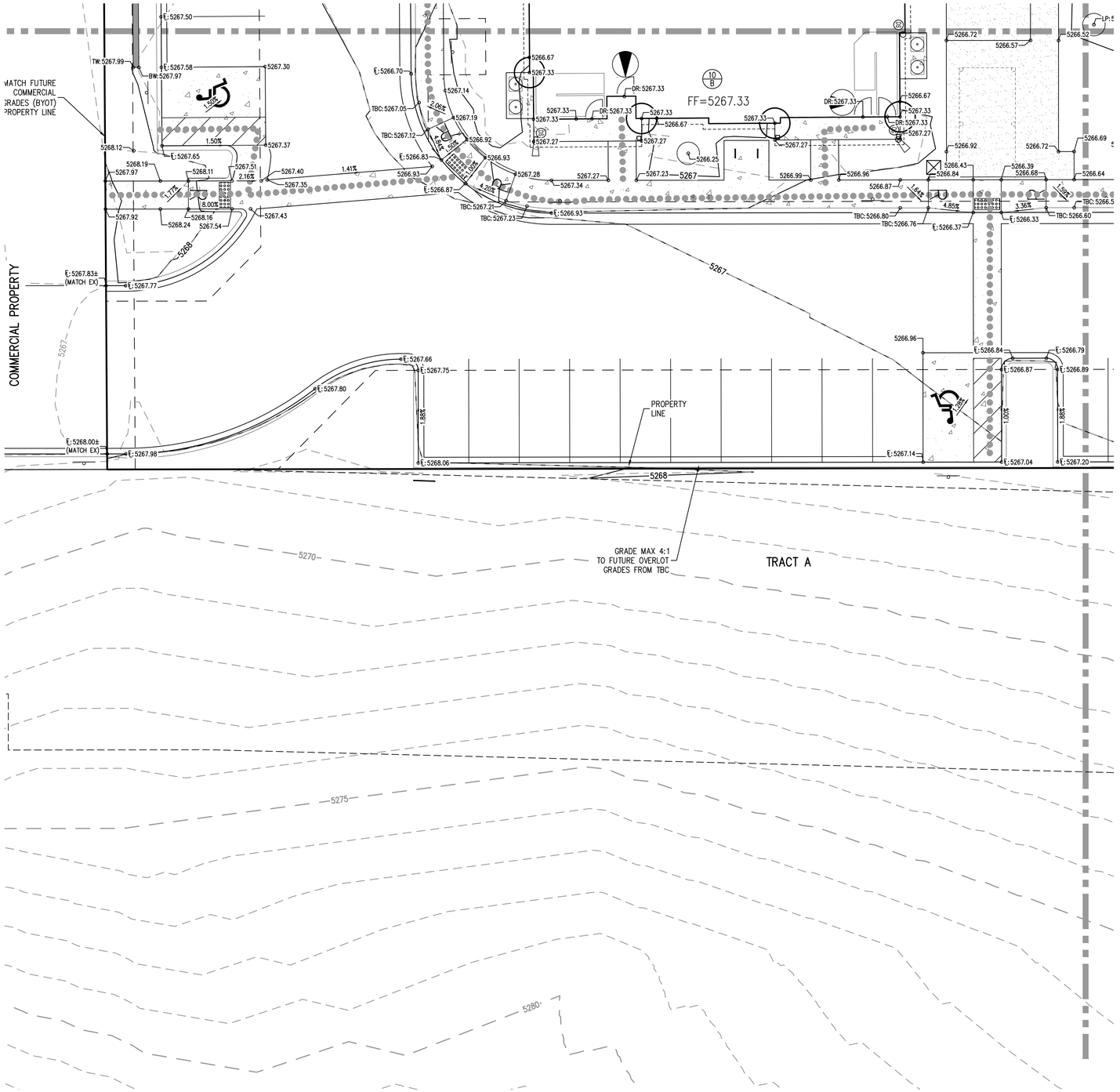
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

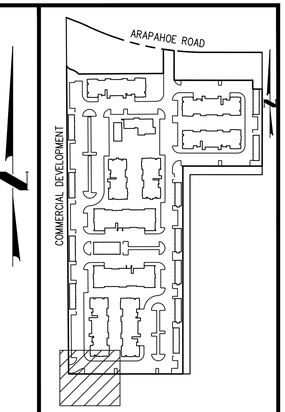
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
54
54 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\GD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT4
NO XREFS
PLOTTED: TUE 03/03/20 2:29:55P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT THE WRITTEN PERMISSION OF HARRIS KOCHER SMITH





KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT HANDRAILS, STAIRS, CURB RAMPS, AND RAMPS ARE INSTALLED IN CONFORMANCE WITH ALL APPLICABLE LOCAL STATE AND/OR FEDERAL REGULATIONS AND STANDARDS, INCLUDING BUT NOT LIMITED TO, THE AMERICANS WITH DISABILITIES ACT (ADA), THE FAIR HOUSING ACT (FHA) AND THE AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI).
2. CROSS SLOPES ALONG THE ACCESSIBLE ROUTE OR AT LANDINGS SHALL NOT EXCEED 2% IN ANY DIRECTION.
3. LONGITUDINAL SLOPES ALONG THE ACCESSIBLE ROUTE SHALL NOT EXCEED 5% LONGITUDINAL SLOPES ON RAMPS SHALL NOT EXCEED 8.33% RAMPS, EXCEPT CURB RAMPS, SHALL HAVE HANDRAILS ON BOTH SIDES.
4. GUTTER SLOPES AT THE CURB RAMPS SHALL NOT EXCEED 5%.
5. GUTTER PANS SURROUNDING HANDICAP SPACES SHALL MATCH THE SLOPE OF THE ADJACENT PAVEMENT WITH A MAXIMUM 2% SLOPE IN ALL DIRECTIONS.
6. ALL GRADES ARE FINISHED GRADE, UNLESS OTHERWISE NOTED.
7. ROCK MULCH, IF PLACED UPSTREAM OF CONCRETE FLATWORK OR GRASSED AREA, SHALL BE PLACED ON TOP OF FINISHED GRADE SHOWN ON THESE PLANS. ROCK MULCH AREAS SHALL BE DESIGNED AND CONSTRUCTED TO ADEQUATELY DRAIN AND NOT RETAIN WATER. ALL LANDSCAPE EDGE MATERIALS SHALL NOT PREVENT DRAINAGE TO PASS THROUGH.
8. ALL GRADES ADJACENT TO THE BUILDINGS SHALL BE AT MINIMUM 8-INCHES BELOW FINISHED FLOOR ELEVATION, UNLESS OTHERWISE NOTED.
9. NON-PAVED GRADES ADJACENT TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 5% FOR 10-FT. ALL PAVED GRADES ATTACHED TO BUILDINGS SHALL SLOPE AWAY FROM ALL BUILDINGS AT A MINIMUM OF 1%, UNLESS OTHERWISE NOTED.
10. ALL GRADES FOR WALLS ARE FINISHED GRADE ELEVATIONS AT BOTTOM OF FRONT FACE (BW) AND TOP-BACK OF WALL (TW). THE WALL ELEVATIONS DO NOT INDICATE FOUNDATION DEPTHS OR ELEVATIONS. RETAINING WALL DETAILS SHALL BE PROVIDED BY OTHERS.
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10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
55
55 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT5
NO XREFS
PLOTTED: TUE 03/03/20 2:30:05P BY: JEFF MINNICH

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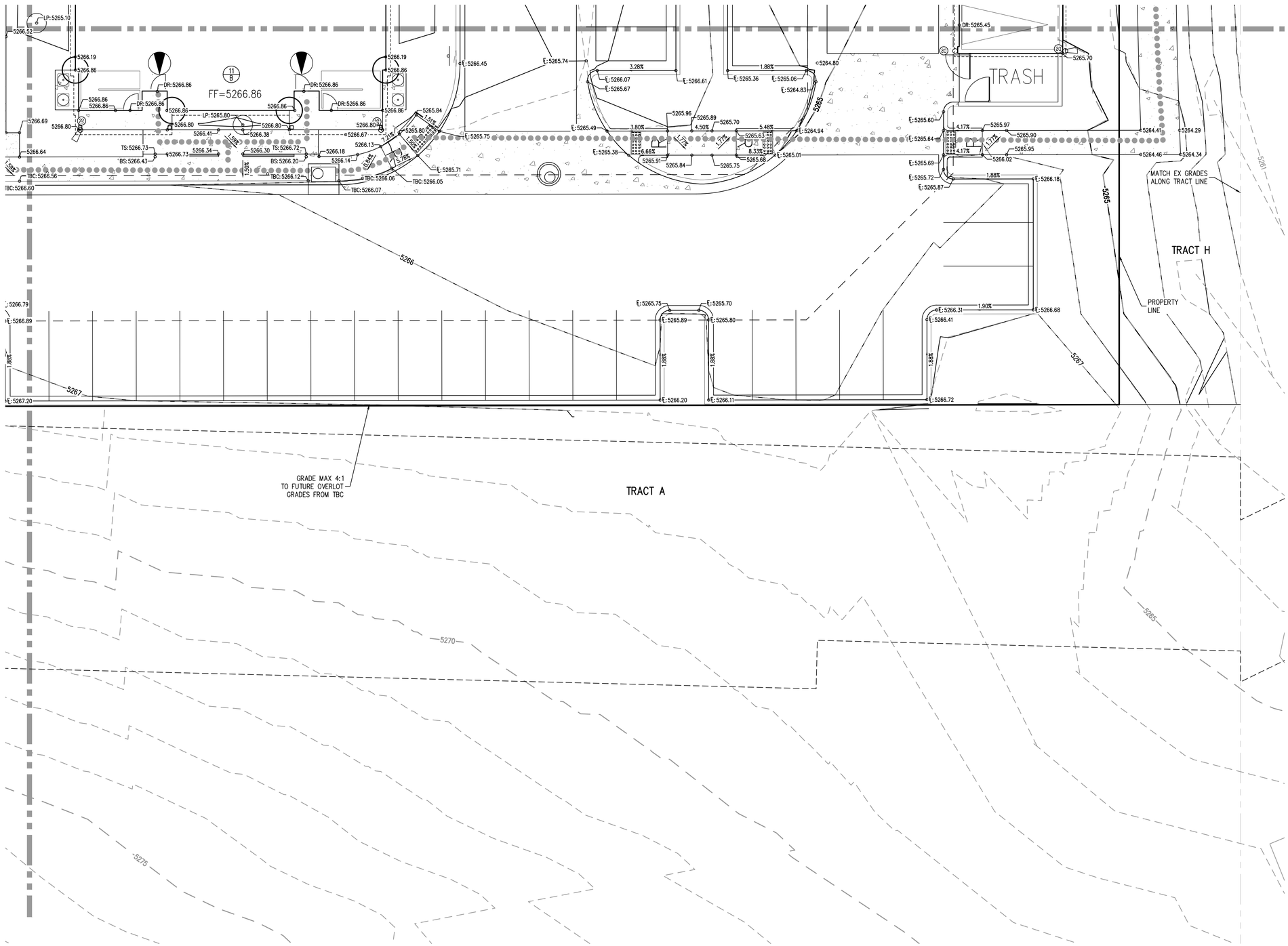
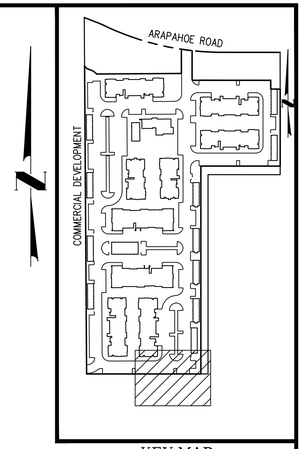
MATCHLINE - SEE SHEET 53



MATCHLINE - SEE SHEET 55



KEY MAP
SCALE: 1" = 250'

GENERAL GRADING NOTES:

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: RJH
CHECKED BY: RCP
DRAWN BY: RJH

HARRIS KOCHER SMITH
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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
DETAILED GRADING PLAN

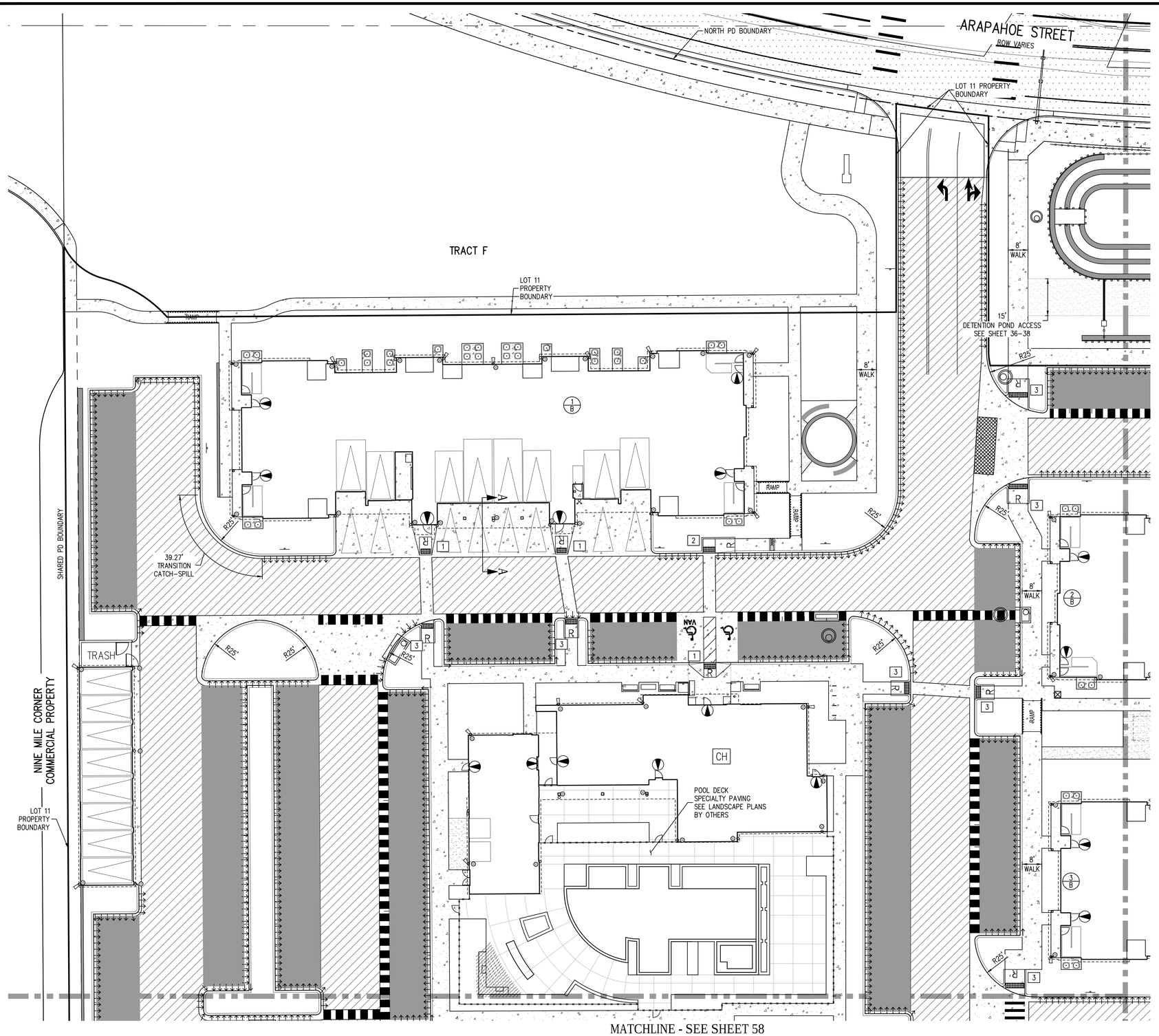
ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
56
56 OF 69

FILEPATH: P:\160602\ENGINEERING\GRADING\CD - DETAILED GRADING PLAN 3.DWG LAYOUT: LAYOUT6
NO XREFS
PLOTTED: TUE 03/03/20 2:30:15P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

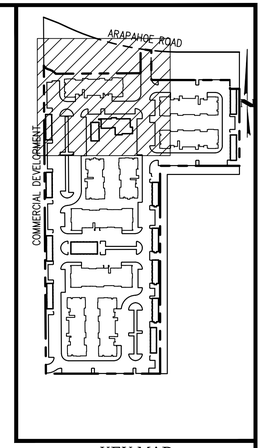


LEGEND:

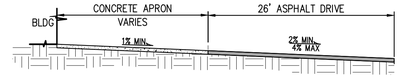
- 6" PORTLAND CEMENT CONCRETE PAVEMENT
- 7" HOT MIX ASPHALT FOR ACCESS DRIVES/FIRE LANES
- 6" HOT MIX ASPHALT FOR PARKING AREAS ONLY
- PROPOSED 4" MOUNTABLE CURB & GUTTER (2' CATCH)
- PROPOSED 4" MOUNTABLE CURB & GUTTER (1' SPILL)
- PROPOSED 8' CROSS PAN
- PROPOSED 4' VALLEY PAN
- 1 TYPE 1 HANDICAP RAMP
- 2 TYPE 2 HANDICAP RAMP
- 3 TYPE 3 HANDICAP RAMP

NOTES:

1. ALL DETACHED SIDEWALKS ARE 5' UNLESS OTHERWISE DIMENSIONED
2. ALL ATTACHED (TO HEAD-IN PARKING STALLS) ARE 7' UNLESS OTHERWISE DIMENSIONED.
3. ALL DRIVE AISLES ARE 26' FLOWLINE TO FLOWLINE UNLESS OTHERWISE DIMENSIONED.
4. NO GUTTER PAN ACROSS HANDICAP PARKING.
5. PARKING CURB RADIUS IS 2' UNLESS OTHERWISE NOTED.
6. ALL STREET SECTIONS ARE PRELIMINARY. FINAL PAVEMENT DESIGN TO BE UPDATED AFTER UTILITIES ARE IN AND PRIOR TO CURB AND GUTTER.
7. REFER TO GEOTECH REPORT FOR PAVEMENT AND ASPHALT SECTION RECOMMENDATIONS.
8. FOR TOWN OF ERIE STANDARD NOTES – SEE SHEET 2



KEY MAP
SCALE: 1" = 250'



SECTION A-A
NTS

Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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HarrisKocherSmith.com

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OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

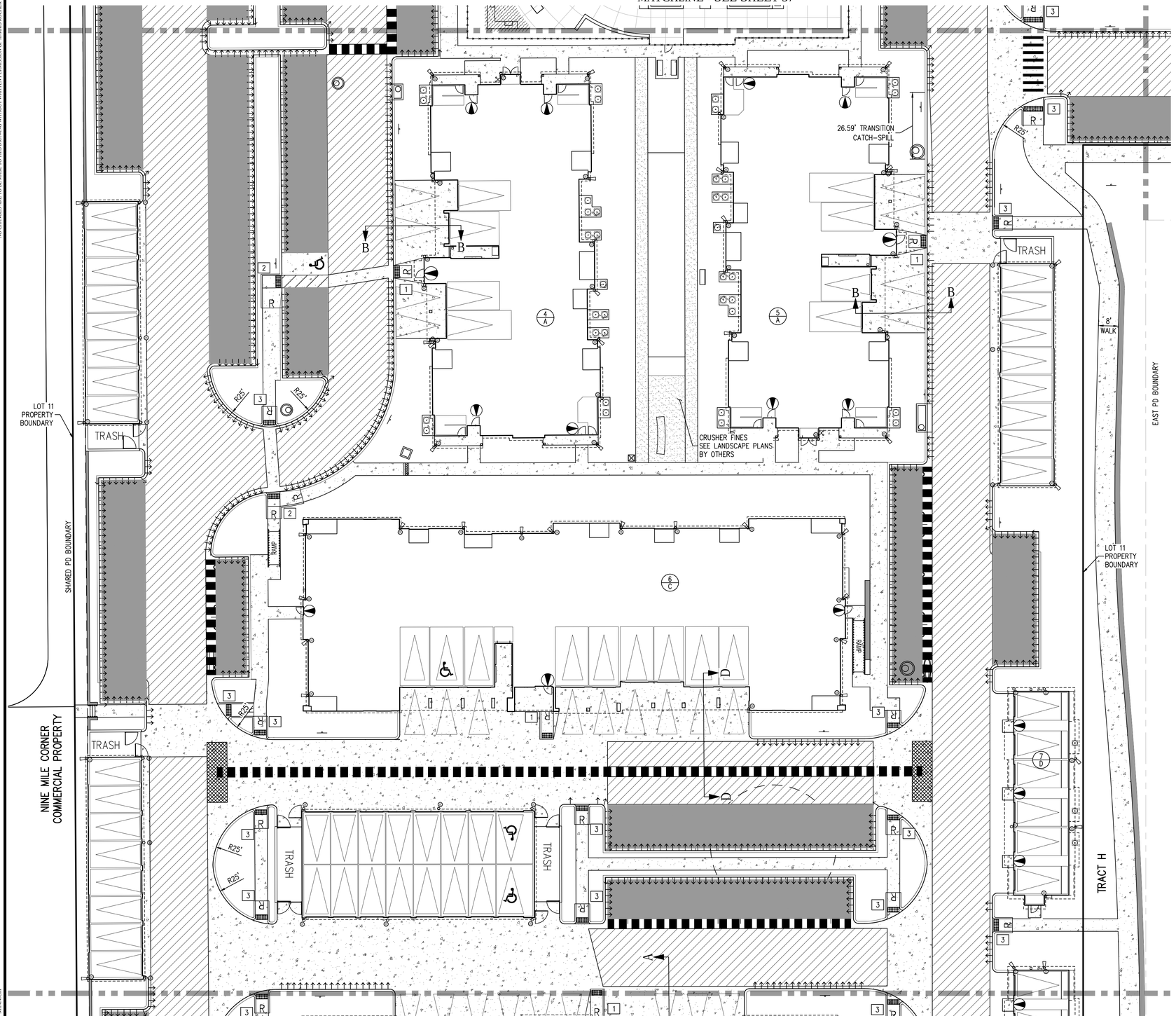
PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
57
57 OF 69

FILEPATH: P:\160602\ENGINEERING\ROADWAY\CD - PAVING PLAN.DWG | LAYOUT: LAYOUT1
6 XREFs: cd - stamp, e-base_hyo, keymap, p-base, p-base_offsite_hyo, p-legal
PLOTTED: TUE 03/03/20 2:30:35P BY: JEFF MINNICH

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

MATCHLINE - SEE SHEET 57



LEGEND:

- 6" PORTLAND CEMENT CONCRETE PAVEMENT
- 7" HOT MIX ASPHALT FOR ACCESS DRIVES/FIRE LANES
- 6" HOT MIX ASPHALT FOR PARKING AREAS ONLY
- PROPOSED 4" MOUNTABLE CURB & GUTTER (2' CATCH)
- PROPOSED 4" MOUNTABLE CURB & GUTTER (1' SPILL)
- PROPOSED 8' CROSS PAN
- PROPOSED 4' VALLEY PAN
- 1 TYPE 1 HANDICAP RAMP
- 2 TYPE 2 HANDICAP RAMP
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NOTES:

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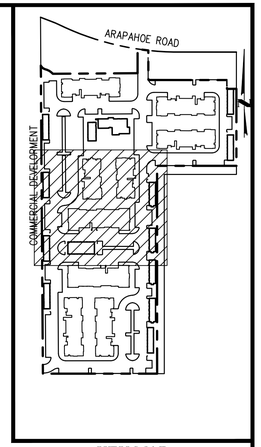
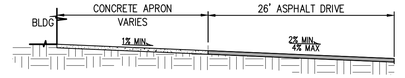
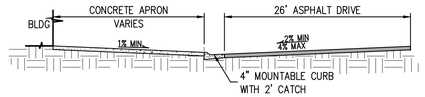


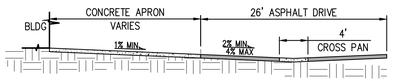
KEY MAP
SCALE: 1" = 250'



SECTION A-A
NTS



SECTION B-B
NTS



SECTION D-D
NTS

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20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

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OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
58
58 OF 69

FILEPATH: P:\160602\ENGINEERING\ROADWAY\CD_PAVING PLAN.DWG LAYOUT: LAYOUT2
6 XREFS: cd_stamp, e-base_bw, keymap, p-base, pbase_offsite_bw, p-legal
PLOTTED: TUE 03/03/20 2:36:42P BY: JEFF MINNICH

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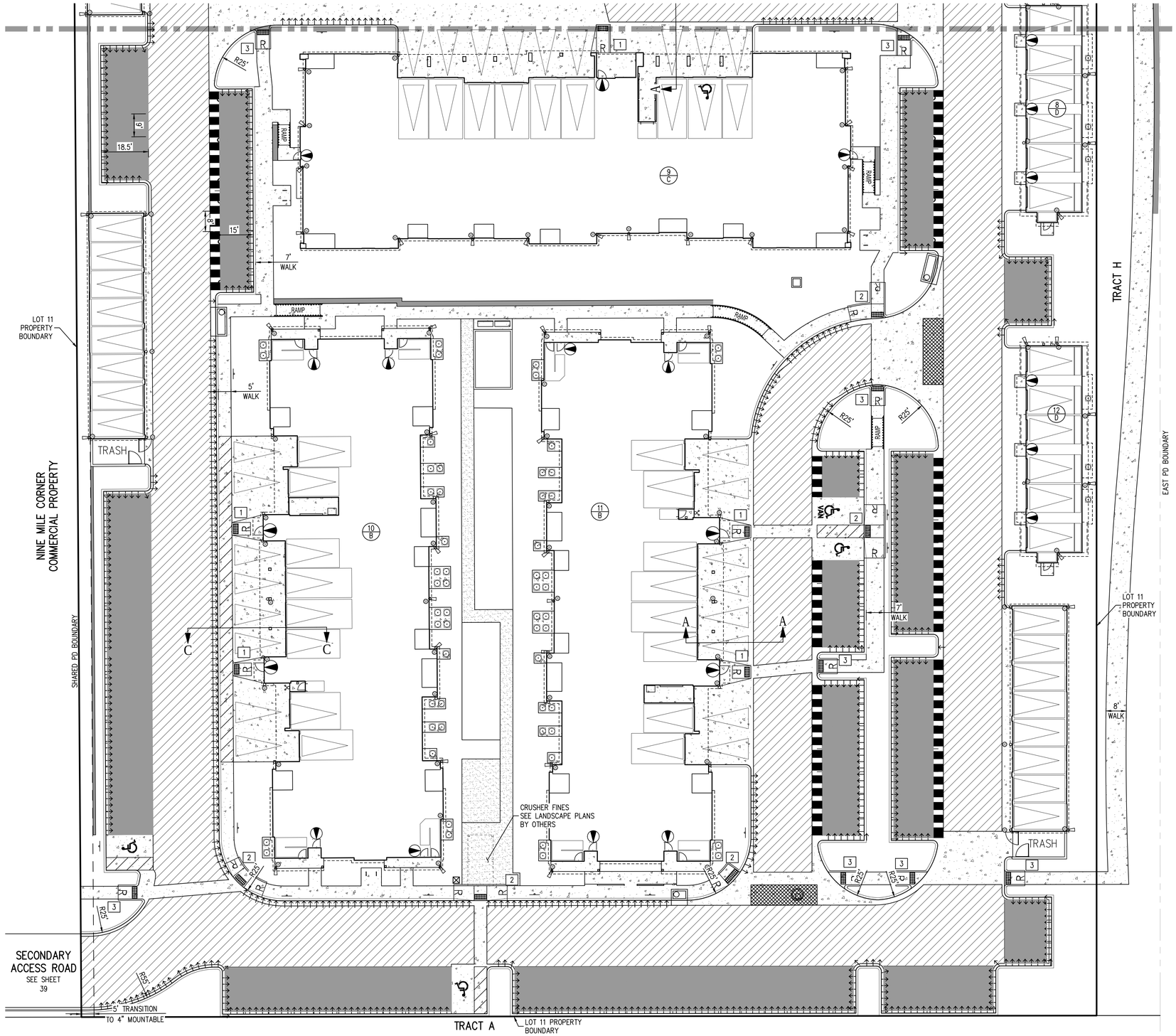
MATCHLINE - SEE SHEET 58



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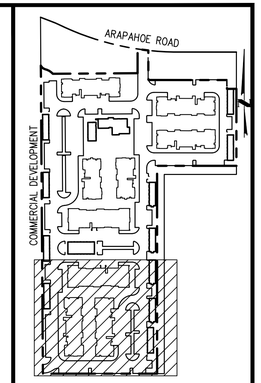
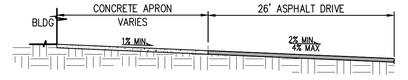
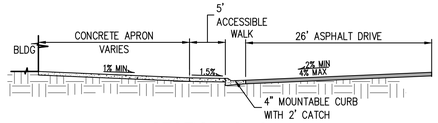


KEY MAP
SCALE: 1" = 250'



SECTION A–A
NTS



SECTION C–C
NTS

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
59
59 OF 69

FILEPATH: P:\160602\ENGINEERING\ROADWAY\CD - PAVING PLAN.DWG | LAYOUT: LAYOUT3
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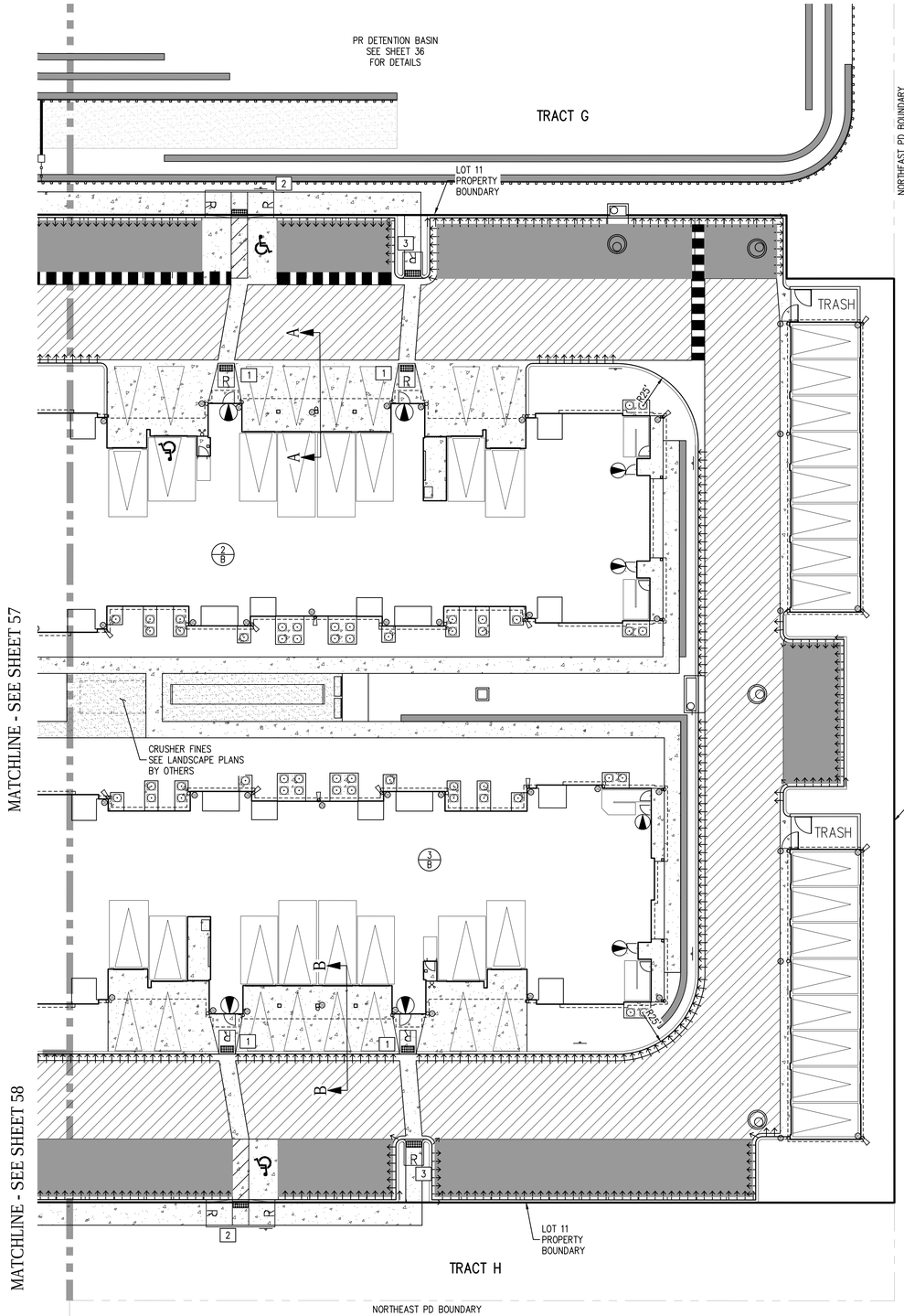
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

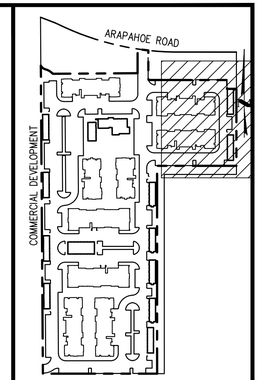


LEGEND:

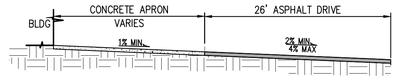
- 6" PORTLAND CEMENT CONCRETE PAVEMENT
- 7" HOT MIX ASPHALT FOR ACCESS DRIVES/FIRE LANES
- 6" HOT MIX ASPHALT FOR PARKING AREAS ONLY
- PROPOSED 4" MOUNTABLE CURB & GUTTER (2' CATCH)
- PROPOSED 4" MOUNTABLE CURB & GUTTER (1' SPILL)
- PROPOSED 8' CROSS PAN
- PROPOSED 4' VALLEY PAN
- 1 TYPE 1 HANDICAP RAMP
- 2 TYPE 2 HANDICAP RAMP
- 3 TYPE 3 HANDICAP RAMP

NOTES:

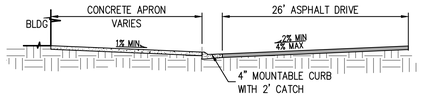
1. ALL DETACHED SIDEWALKS ARE 5' UNLESS OTHERWISE DIMENSIONED
2. ALL ATTACHED (TO HEAD-IN PARKING STALLS) ARE 7' UNLESS OTHERWISE DIMENSIONED.
3. ALL DRIVE AISLES ARE 26' FLOWLINE TO FLOWLINE UNLESS OTHERWISE DIMENSIONED.
4. NO GUTTER PAN ACROSS HANDICAP PARKING.
5. PARKING CURB RADIUS IS 2' UNLESS OTHERWISE NOTED.
6. ALL STREET SECTIONS ARE PRELIMINARY. FINAL PAVEMENT DESIGN TO BE UPDATED AFTER UTILITIES ARE IN AND PRIOR TO CURB AND GUTTER.
7. REFER TO GEOTECH REPORT FOR PAVEMENT AND ASPHALT SECTION RECOMMENDATIONS.
8. FOR TOWN OF ERIE STANDARD NOTES – SEE SHEET 2



KEY MAP
SCALE: 1" = 250'



SECTION A–A
NTS



SECTION B–B
NTS

811 Know what's below. Call before you dig.

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20 0 20 40
SCALE: 1" = 20'

DESIGNED BY: DAM
CHECKED BY: MSM
DRAWN BY: DAM

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OUTLOOK AT NINE MILE
PAVING PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
60
60 OF 69

FILEPATH: P:\160602\ENGINEERING\ROADWAY\CD_PAVING PLAN.DWG LAYOUT: LAYOUT4
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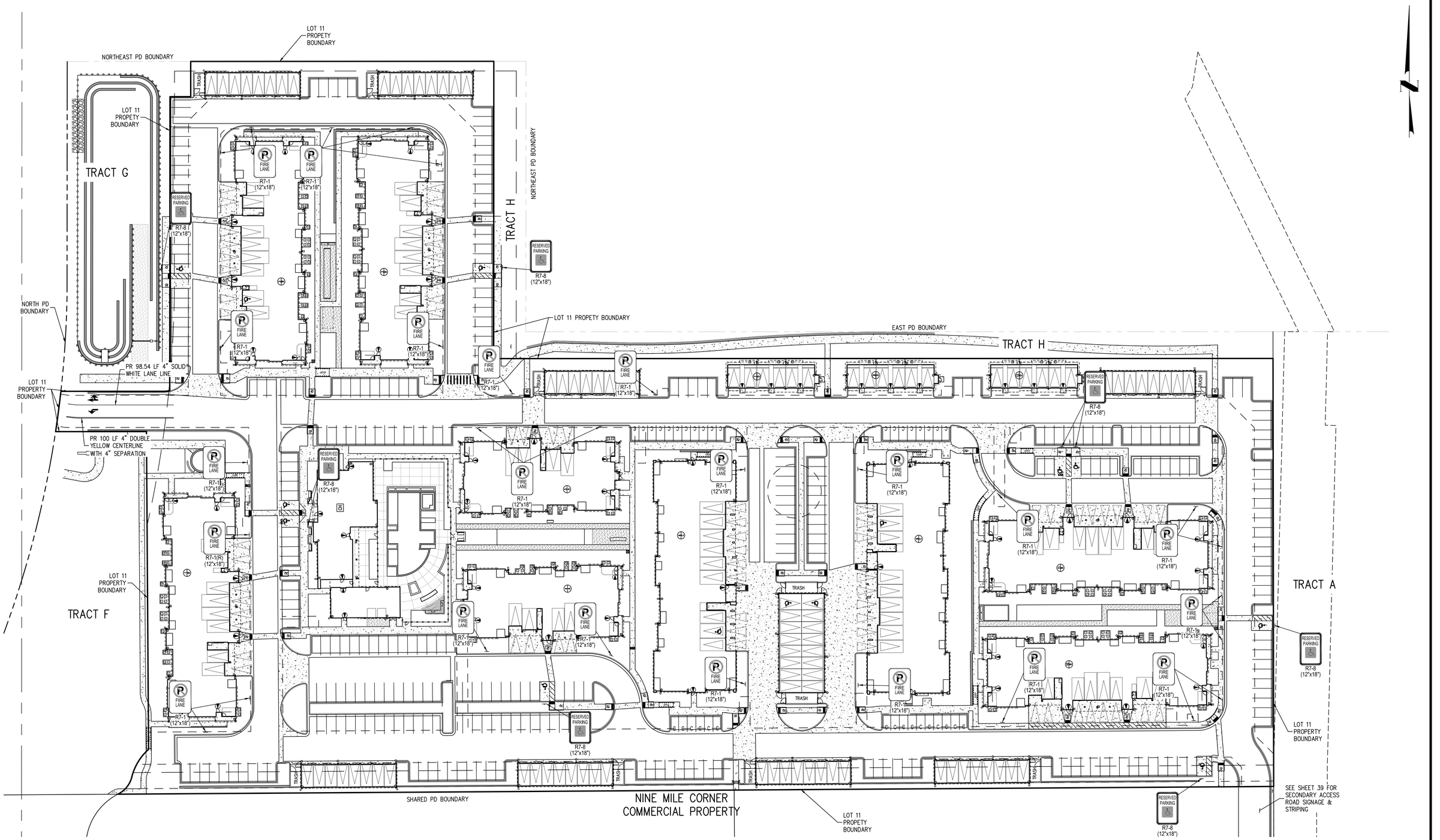

NOTES:

1. STRIPING AND SIGNAGE SHALL BE INSTALLED IN ACCORDANCE WITH TOWN OF ERIE STANDARD DETAILS AND SPECIFICATIONS.

253 LF 4" DOUBLE YELLOW CENTERLINE WITH 4" SEPARATION

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RCP
CHECKED BY: RCP
DRAWN BY: RCP

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OUTLOOK AT NINE MILE
SIGNING & STRIPING PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
61
61 OF 69

PLOTTED: TUE 03/03/20 2:31:04P BY: JEFF MINNICH
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PATH: P:\160602\ENGINEERING\ROADWAY\CD - SIGNING & STRIPING PLAN\DWG LAYOUT: SIGNING & STRIPING PLAN 1

HARRIS KOCHER SMITH

Outlook at Nine Mile
Preliminary Opinion of Public Improvements
March 3, 2020

Description	Unit	Quantity	Unit Cost	Total Cost
Public Sanitary Sewer Improvements				
4" PVC	LF	30	$38.00	$1,140.00
6" PVC	LF	911	$50.00	$45,550.00
8" PVC	LF	2265	$75.00	$169,875.00
4' Manhole	EA	9	$2,500.00	$22,500.00
Sanitary Cleanout	EA	18	$200.00	$3,600.00
			Public Sanitary Sewer Improvements Sub Total	$242,665.00
Public Water Improvements				
3/4" Water Meter	EA	4	$7,000.00	$28,000.00
2" Water Meter	EA	9	$12,000.00	$108,000.00
4" DIP	LF	141	$105.00	$14,805.00
6" DIP	LF	1128	$120.00	$135,360.00
8" PVC Water Main	LF	2795	$25.00	$69,875.00
12" PVC Water Main	LF	52.2	$52.00	$2,714.40
4" Gate Valves	EA	3	$575.00	$1,725.00
6" Gate Valves	EA	17	$650.00	$11,050.00
8" Gate Valves	EA	24	$1,300.00	$31,200.00
12" Gate Valves	EA	1	$2,800.00	$2,800.00
Water Fittings (Bends)	EA	21	$350.00	$7,350.00
Water Fittings (Crosses & Tees)	EA	21	$1,000.00	$21,000.00
Water Services 3/4" Type "K"	LF	85	$9.00	$765.00
Water Services 1" Type "K"	LF	54	$10.00	$540.00
Water Services 1.5" Type "K"	LF	405	$11.00	$4,455.00
12" x 8" Reducer	EA	3	$2,200.00	$6,600.00
6" Fire Hydrant	EA	9	$3,600.00	$32,400.00
			Public Water Improvements Sub Total	$478,639.40

Public Improvements Sub Total	$721,304.40
Contingency (10%)	$72,130.44
Public Improvements Grand Total	$793,434.84

PHASE III DRAINAGE REPORT

FOR

OUTLOOK NINE MILE
ERIE, COLORADO

Prepared: November 8, 2019
Revised: March 3, 2020

Prepared for:

Evergreen
Development | Services | Investments

1873 S. Bellaire Street, Suite 1200
Denver, Colorado 80222
Phone: 303-757-0401

Prepared by:

HKS HARRIS KOCHER SMITH

Michael Moore, P.E.
1120 Lincoln Street, Suite 1000
Denver, CO 80203
Ph.: 303-623-6300, Fax: 303-623-6311

Harris Kocher Smith Project No.: 160602

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Appendix E: Final Drainage Plan, Detention Pond Plan & Details, Storm Sewer Plan & Profiles
Appendix F: Excerpt from Town of Erie Standards & Specifications
Appendix G: Operations & Maintenance Plan, Design Standards Form

ENGINEER'S CERTIFICATION

I hereby certify that this Phase III Drainage Report for Outlook at Nine Mile was prepared by me, or under my direct supervision, in accordance with the provisions of the *Town of Erie Standards and Specifications for Design and Construction* for the owners thereof. I understand that the Town of Erie (Town) does not and will not assume liability for drainage facilities designed by others, including the designs presented in this report.

Michael Moore, P.E.
Registered Professional Engineer
State of Colorado License No. 47854
On Behalf of Harris Kocher Smith

TOWN ACCEPTANCE

This report has been reviewed and found to be in general compliance with the *Town of Erie Standards and Specifications for Design and Construction* and other Town requirements. **THE ACCURACY AND VALIDITY OF THE ENGINEERING DESIGN, DETAILS, DIMENSIONS, QUANTITIES, AND CONCEPTS IN THIS REPORT REMAINS THE SOLE RESPONSIBILITY OF THE PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE APPEAR HEREON**.

Accepted by: _____ _____

Deputy Public Works Director Date

If during the construction process or at any time within one year following the acceptance by the Town of the completed improvements, any deficiencies or errors are discovered in the construction plans, specifications, drainage reports, or the actual constructed improvements, the Town shall have the right to require the developer to make any and all corrections which may be deemed necessary by the Town. The costs associated with any such corrections shall be the sole responsibility of the developer.

CONTACT INFORMATION

Applicant:	Jeff Wikstrom
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Mailing Address:	1873 S. Bellaire St., Ste 1106
	Denver, CO 80222
Telephone #:	(602) 808-8600

Plan Preparation Consultant:

Company Name:	Harris Kocher Smith
Professional Engineer:	Michael Moore, P.E.
Email:	mmoore@hkseng.com
Mailing Address:	1120 Lincoln Street, Suite 1000
	Denver, CO 80203
Telephone #	(303) 623-6300
Fax #	(303) 623-6311

General Location & Description

A. Location

The Outlook at Nine Mile development project is within a greater PD-Development that is within a portion of the northeast quarter of Section 34, Township 1 North, Range 69 West and the southeast quarter of Section 27, Township 1 North, Range 69 West of the Sixth Principal Meridian, in the Town of Erie, County of Boulder, State of Colorado. The PD-Development is located at the southeast corner of Arapahoe Road (variable width R.O.W.), and North 107th Street, aka State Highway 287 (variable width R.O.W.).

The PD-Development is bounded by Arapahoe Road to the north, rural residential developments to the south and east, and N 107th Street to the west. The South Boulder Canyon Ditch (Ditch) meanders east to west through the northern portion of the Site. In the recent past, there was an existing pond, Prince Lake Number 1, on the west side of the PD-Development that has been removed as part of the Site's greater development, Nine Mile Corner Planned Development (PD).

The area studied for the multifamily development (Site) includes lot 11, block 2, tract G and tract H, and the eastern portion of tract A of the PD-development. The Site will be developed as multi-family residential housing with 287 units. The proposed development will also include attached and detached garages, surface parking, a clubhouse with pool, maintenance facilities, trash enclosures, and on-site stormwater conveyance and detention facilities with water quality treatment.

A Vicinity Map is located in Appendix A of this report.

B. Description of Property

The Site is comprised of Lot 11, Tract G, and Tract H of Nine Mile Corner Filing Number 1, totaling approximately 12.96 acres of primarily undeveloped land, with a few permanent and temporary structures – residential and other. For the proposed development, lot 11 will consist of the multifamily buildings and will be owned and maintained by the multifamily property owner. Tract G will consist of the proposed Extended Detention Basin and Tract H will consist of a proposed pedestrian trail. Tracts G and H will be owned and maintained by the Metro District. Primary existing ground cover appears to be native grasses and weeds, some dirt drives, and dense vegetation along the Ditch including trees and shrubs. Small tracts of farmland are also present.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey, the underlying surface soils are Ascalon sandy loam, which is classified as Hydrologic Group B (see Appendix B).

The north portion of the Site drains north with 3% to 6% slopes, to Arapahoe Road. The middle portion of the Site drains north-northeast with 3% to 6% slopes, to South Boulder Canyon Ditch, which flows generally east through the north portion of the Site. The south portion of the Site drains generally to the east with 5% to 9% slopes.

A small portion, along the west edge of the north portion of the Site, drains to the west, toward (former) Prince Lake Number 1.

Irrigation facilities exist on and adjacent to the property; plans to re-route an existing on-site irrigation ditch are currently in place.

No major drainageways exist within or adjacent to the Site. The Site is not within the bounds of any existing FHAD according to Urban Drainage & Flood Control District.

There are no known designated wetland areas within the Site or affected by the development.

Drainage Basins

C. Major Basin Description

The Site is a part of the Erie Outfall Systems Planning Preliminary Design, issued in May 2001. The study shows the Site to be tributary to Bullhead Gulch, with all runoff originating on the Site flowing to Bullhead Gulch in both the historic and developed conditions. This report was updated in 2007 but did not study the Prince/Bullhead Gulch tributary.

RESPEC Consulting & Services also prepared a report entitled *Town of Erie Outfall Systems Plan (West of Coal Creek)* in January 2014. This report identified existing drainage problems in the existing watershed and provided different alternatives for future improvements to help control outflow to the effected tributaries.

Much of the major basin remains undeveloped, relatively pervious land. The intent of the study was to update the hydrology for the watershed and ensure proper measures are taken as the watershed develops to prevent flooding and to treat stormwater. For private site development, the recommendations include runoff volume control practices including minimizing directly connected impervious areas, employing infiltrating BMPs, and utilizing stormwater detention.

The Site is shown to be in a Zone X (unshaded) Flood Area according to FIRM Map 08013C0438J effective December 18, 2012. Zone X (unshaded) is described by FEMA as areas determined to be outside the 500-year flood plain. A copy of the FEMA Firmette is included in Appendix A, for reference.

As mentioned above, South Boulder Canyon Ditch meanders through the Site. In order to develop the Site, the ditch will need to be re-routed to the South. A plan is in place and running concurrently with the development of the Site as part of the PD in order to shift the alignment of the Ditch to the south and alter the flow regime from open ditch to closed conduit for the section directly adjacent to the Site.

A previously existing pond, Prince Lake Number 1, to the west of the Site has been removed as part of the PD and will no longer be influenced by this Site.

D. Sub-basin Description

The Site is mostly undeveloped, pervious area with Type B soils and likely does not constitute a large portion of the runoff in the greater area. Runoff originating in the southern portion of the Site nearly entirely drains toward the Ditch, leaving the Site at different locations but eventually making its way to the Ditch. The northern portion of the Site drains toward Arapahoe Road right of way. As mentioned above, Prince Lake Number 1 and South Boulder Canyon Ditch (wetlands) will no longer be influenced by the site under post-development conditions. Refer to the master drainage study for the PD provided by Galloway for additional details.

Drainage Design Criteria

E. Development Criteria Reference and Constraints

The principal design criteria used for this Phase III Drainage Report was the Town of Erie Standards and Specifications for Design and Construction of Public Improvements (Erie Standards), 2019 Edition.

In addition, the Urban Storm Drainage Criteria Manual (USDCM), Volumes 1-3 for Urban Drainage and Flood Control District (UDFCD) was also consulted.

F. Hydrological Criteria

The design storms analyzed for this Site are the 2-year and 100-year for the initial and major storm, respectively.

Rainfall intensities were taken from the following USDCM equation:

$$I = \frac{28.5P_1}{(10 + T_C)^{0.786}}$$

One hour rainfall P_1 values were taken from Table 800-2 in the Erie Standards. For the Site, the 2-year storm P_1=0.81 inches and for the 100-year storm, P_1=2.68 inches.

The Rational Method was used to analyze the initial and major storm for the design of storm sewer and inlets.

The empirical equations provided in Section 814.09 of the Erie Standards were used to compute the necessary 100-year detention volume for the extended detention basin (EDB). The release rates were computed using Table 800-4 of the Erie Standards. The Site is comprised of Hydrologic Type B soil and will use a unit release rate of 0.85 cfs per acre, subtracting any flow leaving the Site undetained. Table 800-4 and Section 814.09 of the Erie standards are included in Appendix F for reference.

The following equation was used for the 100-year detention volume:

$V_{100}=K_{100}*A$ where:
$K_{100} = (1.78*I – 0.002*I^2-3.56)/1000$
I = Developed basin imperviousness (%)
A = Tributary area

The EDB will use Full-Spectrum Detention. The USDCM was consulted in order to compute this volume and release rate. EDB volumes are tabulated in Section “I” of this report and calculations are provided in the appendices, for reference.

G. Hydraulic Criteria

Inlet capacity is based on fully developed conditions and designed utilizing the UDFCD spreadsheet “UD Inlet v4.05.xls”, released March 2017. Some on-grade inlets will bypass a portion of the major storm events. Roadway capacity will be adequate to convey all runoff during the major storm event minus discharge captured by roadway inlets. Cross-section capacity analysis has been provided in Appendix D.

All proposed storm sewer pipes will be sized to convey the major storm event. The existing ultimate receiving storm sewer system is being designed by others as part of the PD and will be adequate to receive the Site’s detained stormwater runoff.

Erie Standards were followed without variation or deviation, except where specifically noted.

Drainage Facility Design

H. General Concept

An area totaling approximately 14.5 acres was analyzed as tributary to the proposed EDB under post-development conditions. All impervious area developed within the Outlook at Nine Mile project, as well as potential runoff from off-site, will be routed to the proposed EDB in Tract G along the north property boundary of the Site, with the exception of a small portion of the private drive. The EDB will be designed for Full-Spectrum Detention and will outfall to a proposed storm sewer outfall designed by others as part of the PD. The EDB will be owned and maintained by the Metro District.

The general concept of the drainage design is to route runoff into the major storm sewer inlets through grass swales, landscape & roof drains, and private drive curb & gutter. Inlets within the private drive are designed to be spaced at intervals that ensure the private drive is still passable to emergency vehicles during the major storm event.

The major storm sewer is routed through the Site generally from south to north toward the proposed EDB at the north end of the Site. Runoff will be conveyed to the

EDB, detained and treated, and then be conveyed to the proposed storm sewer outfall (by others).

Inspection and maintenance of all private storm sewer facilities will be the responsibility of the property owner and shall be done in accordance with Town of Erie standards.

The EDB will exist in a tract of land that is to be owned and maintained by the Metro District. Access for maintenance to the EDP is provided off the main drive at the entrance to the Site.

I. Specific Details

Runoff from nearly all Site sub-basins is captured via proposed storm sewer and routed to the proposed EDB at the north end of the Site. One small sub-basin will flow off the Site un-detained. Peak discharge to the EDB in the fully developed condition will be approximately 12 cfs during the initial storm event and approximately 47 cfs during the major storm event.

The following is a summary of each on-site drainage sub-basin:

Basin A1 (0.71 acres) consists of landscaping only. The peak runoff rate from basin A1 is calculated to be 0.01 cfs during the initial storm event and 2.2 cfs during the major storm event. Peak runoff from basin A1 sheet flows to the north and joins runoff in basin A as described below.

Basin A (0.31 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed 5' Type R on-grade curb inlet (inlet A12) within the private drive (design point 1a). The peak runoff rate from basin A combined with runoff from basin A1 is calculated to be 0.4 cfs during the initial storm event and 3.8 cfs during the major storm event. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. The inlet captures all runoff during the initial storm event and bypasses 1.1 cfs during the major storm event which will flow through curb & gutter to the inlet in downstream basin B (Design Point 2). In the event of a storm sewer clog, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin C (0.49 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to Design Point 1 in basin F, described below. The peak runoff rate from basin C is calculated to be 0.4 cfs during the initial storm event and 2.4 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design

Point 1 in basin F. If the landscape drains clog, runoff will overtop the sump area and flow to Design Point 1.

Basin F (0.33 acres) consists of buildings and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to a proposed sump-condition Type C inlet (inlet A10) and then conveyed by closed conduit at Design Point 1. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the initial storm event, the peak runoff rate from basin F, 0.3 cfs, will combine with carryover flow from upstream basin C to total 0.7 cfs, all of which will be captured by the inlet and conveyed via closed conduit to Design Point 2. During the major storm event, the peak runoff originating in Basin F, 1.7 cfs, will combine with carryover flow from upstream basin C to total 3.6 cfs of surface flow routed to the inlet. The inlet will capture and convey 3.6 cfs from surface runoff and convey it to Design Point 2, along with 2.7 cfs conveyed via closed conduit from upstream basin A (a total of 6.2 cfs). If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin B1 (0.47 acres) consists of landscaping only. The peak runoff rate from basin B1 is calculated to be 0.01 cfs during the initial storm event and 1.4 cfs during the major storm event. Peak runoff from basin B1 sheet flows to the north and joins runoff in basin B as described below.

Basin B (1.18 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10’ Type R curb inlet (inlet A9) within the private drive (Design Point 2). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin B combined with runoff from basin B1 is calculated to be 1.4 cfs during the initial storm event, all of which will be captured by the inlet and conveyed via closed conduit to Design Point 3. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event, the peak runoff originating in basin B will combine with runoff from basin B1 and bypass flow from upstream basin A for a total of 8.1 cfs to be routed to inlet A9. The inlet will capture 7.0 cfs from surface runoff and convey it to Design Point 3, along with 6.2 cfs conveyed via closed conduit from upstream basins (a total of 13.0 cfs). The inlet will bypass 1.1 cfs to Design Point 3. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin G (1.60 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade Triple Type 13 valley inlet (inlet G1) within the private drive (Design Point 3). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin G is calculated to be 1.9 cfs

during the initial storm event. The inlet will capture 1.6 cfs from the initial storm surface runoff to be conveyed via closed conduit to Design Point 3a. The inlet will bypass 0.3 cfs to Design Point 4 during the initial storm. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet at Design Point 3. During the major storm event the peak runoff originating in basin G, 8.5 cfs, will combine with bypassed flow from upstream basin B to total 8.1 cfs of surface flow routed to the inlet. The inlet will capture 5.3 cfs from surface runoff and convey it to Design Point 4, along with 13.0 cfs conveyed via closed conduit from upstream basins (a total of 17.2 cfs). The inlet will bypass 2.8 cfs to Design Point 4. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin I (0.29 acres) consists of buildings and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to the on-grade inlet in downstream basin J (Design Point 4). The peak runoff rate from basin I is calculated to be 0.3 cfs during the initial storm event and 1.4 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 4.

Basin J (0.32 acres) consists of buildings, sidewalks, drives, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10' type-R inlet (inlet A7) within the private drive (Design Point 4). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin J combined with runoff from basin I and bypass flow from basin G is calculated to be 0.9 cfs for the initial storm event. During the initial storm event, all runoff should ultimately be collected and conveyed to Design Point 6. During the major storm event the peak runoff originating in basin J, 2.0 cfs, will combine with runoff from basin I and bypass flow from upstream basin G to total 5.2 cfs of surface flow routed to the inlet. The inlet will capture 5.1 cfs from surface runoff and convey it to Design Point 4, along with 17.2 cfs conveyed via closed conduit from upstream basins (a total of 21.9 cfs). If the landscape drains clog, runoff will overtop the sump area and flow to the private drive and eventually to Design Point 4, or ultimately to the detention basin. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin N (0.55 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to a sump condition Type C inlet (inlet C2) at design point 5a and then conveyed by closed conduit to Design Point 5. The peak runoff rate from basin N is calculated to be 0.6 cfs during the initial storm event and 2.9 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 5. If the

inlet clogs, runoff will overtop the sump area and flow into the private drive and eventually to Design Point 5, or ultimately to the detention basin.

Basin L1 (0.55 acres) consists of buildings, drives, and landscaping. The peak runoff rate from basin L1 is calculated to be 0.2 cfs during the initial storm event and 2.0 cfs during the major storm event. Peak runoff from basin L1 sheet flows to the north and joins runoff in basin L as described below.

Basin L (0.87 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10' Type R curb inlet (inlet C1) within the private drive (Design Point 5). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin L combined with runoff from basin L1 is calculated to be 1.1 cfs during the initial storm event, all of which will be captured by the inlet and conveyed via closed conduit to Design Point 6. During the major storm event, the peak runoff originating in basin L will combine with runoff from basin L1 for a total of 6.2 cfs to be routed to inlet C1. The inlet will capture 5.9 cfs from surface runoff and convey it to Design Point 6, along with 2.9 cfs conveyed via closed conduit from upstream basin N (a total of 7.7 cfs). The inlet will bypass 0.3 cfs to Design Point 7a. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to inlet C1. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin D (0.61 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10' Type R curb inlet (inlet B8) within the private drive (Design Point 8c). The peak runoff rate from basin D is calculated to be 0.9 cfs during the initial storm event and 3.7 cfs during the major storm event. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. The inlet captures all runoff during the initial and major storm events. In the event of a storm sewer clog, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin E (0.46 acres) consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade Triple Type 13 valley inlet (inlet B7) within the private drive (Design Point 8). The peak runoff rate from basin E is calculated to be 0.7 cfs during the initial storm event, all of which will be captured by inlet B7 and conveyed via closed conduit to Design Point 8a. During the initial storm event it is expected that the landscape drains will capture

and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. The peak runoff rate from basin E is calculated to be 3.0 cfs during the major storm event to be routed to inlet B7. The inlet will capture 2.3 cfs from surface runoff and convey it to Design Point 8a, along with 3.7 cfs conveyed via closed conduit from upstream basin D (a total of 6.2 cfs). The inlet will bypass 0.7 cfs to Design Point 9. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin H1 (0.06 acres) Consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to a sump condition Type C inlet (inlet E1) at design point 8b and then conveyed by closed conduit to Design Point 8a. The peak runoff rate from basin H1 is calculated to be 0.1 cfs during the initial storm event and 0.3 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 8a. For the major storm event, the 0.3 cfs captured by inlet E1 will combine with 6.2 cfs conveyed via closed conduit from Design Point 8 for a total of 6.5 cfs to be conveyed via closed conduit to Design Point 10. If the inlet clogs, runoff will overtop the sump area and flow into the private drive and eventually to Design Point 9, or ultimately to the detention basin.

Basin H (0.53 acres) consists of consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 5’ Type R curb inlet (inlet D1) within the private drive (Design Point 9). The peak runoff rate from basin H is calculated to be 0.9 cfs during the initial storm event, all of which will be captured by inlet D1 and conveyed via closed conduit to Design Point 10. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event the peak runoff originating in basin H will combine with bypass flow from upstream basin E for a total of 3.7 cfs to be routed to inlet D1. The inlet will capture 2.7 cfs from surface runoff and convey it to Design Point 10, where it will combine with 6.5 cfs conveyed via closed conduit from Design Point 8a for a total of 8.8 cfs to be conveyed via closed conduit to Design Point 11. The inlet will bypass 1.0 cfs to Design Point 11. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin P (1.20 acres) consists of consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade 10’ Type R curb inlet (inlet B4) within the private drive (Design Point 11). The peak runoff rate from basin P is calculated to be 2.0 cfs during the initial storm event, all of which will be captured by inlet B4 and conveyed via closed conduit to Design

Point 12a. During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event the peak runoff originating in basin P will combine with bypass flow from upstream basin H for a total of 7.7 cfs to be routed to inlet B4. The inlet will capture 6.9 cfs from surface runoff and convey it to Design Point 12a, along with 8.8 cfs conveyed via closed conduit from upstream Design Point 10 (a total of 15.4 cfs). The inlet will bypass 0.8 cfs to Design Point 12. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin Q (0.44 acres) consists of consists of buildings, drives, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed on-grade Type 13 Triple Valley inlet (inlet H1) within the private drive (Design Point 12). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin Q is calculated to be 0.7 cfs during the initial storm event. The inlet will capture 0.6 cfs from the initial storm surface runoff to be conveyed via closed conduit to Design Point 12a. The inlet will bypass 0.1 cfs to Design Point 13 during the initial storm. During the major storm event, some runoff may overtop the landscaped areas into the roadway and be conveyed by curb & gutter to the on-grade inlet. During the major storm event the peak runoff originating in basin Q will combine with bypass flow from upstream basin P for a total of 3.2 cfs to be routed to inlet H1. The inlet will capture 2.5 cfs from surface runoff and convey it to Design Point 12a, where it will combine with 15.4 cfs conveyed via closed conduit from Design Point 11 for a total of 17.0 cfs to be conveyed via closed conduit to Design Point 14. The inlet will bypass 0.7 cfs to Design Point 13. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin O (0.75 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to the sump-condition 5’ Type R curb inlet in downstream basin K (Design Point 13). The peak runoff rate from basin O is calculated to be 0.5 cfs during the initial storm event and 3.5 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 13.

Basin K (0.86 acres) consists of buildings, sidewalks, drives, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed sump-condition 5’ Type R curb inlet (inlet F1) within the private drive (Design Point 13). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin K combined with runoff from basin O and bypass flow from basin Q is calculated to be 1.5 cfs for the initial storm event. During the initial storm event, all runoff should ultimately be collected and

conveyed to Design Point 14. During the major storm event the peak runoff originating in basin K, 5.2 cfs, will combine with runoff from basin O and bypass flow from upstream basin Q to total 6.2 cfs of surface flow routed to the inlet. The inlet will capture all surface runoff and convey it to Design Point 14, where it will combine with 17.0 cfs conveyed via closed conduit from Design Point 11 for a total of 19.4 cfs to be conveyed via closed conduit to Design Point 7. If the inlet clogs, runoff will be conveyed through the private drive to the next inlet, or ultimately to the detention basin.

Basin R (0.32 acres) consists of buildings, sidewalks, and landscaping. Runoff originating within this basin will either surface-drain through grass swales or be captured and conveyed by roof & landscape drains to the on-grade 5' Type R curb inlet in downstream basin M (Design Point 7a). The peak runoff rate from basin O is calculated to be 0.3 cfs during the initial storm event and 1.6 cfs during the major storm event. During the initial and major storm events, all runoff should ultimately be collected and conveyed to Design Point 7a.

Basin M (0.99 acres) consists of buildings, sidewalks, drives, and landscaping. Runoff originating within this basin will either surface-drain through curb & gutter or be captured and conveyed by roof & landscape drains to a proposed sump-condition 5' type-R inlet (inlet A1) within the private drive (Design Point 7a). During the initial storm event it is expected that the landscape drains will capture and convey all landscaping runoff. The peak runoff rate from basin M combined with runoff from basin R and bypass flow from basin L is calculated to be 1.5 cfs for the initial storm event. During the initial storm event, all runoff should ultimately be collected and conveyed to Design Point 7a where it will combined with 10.5 cfs conveyed via closed conduit from Design Point 7 for a total of 11.7 cfs to outfall into the detention basin. During the major storm event the peak runoff originating in basin M, 6.0 cfs, will combine with runoff from basin R and bypass flow from upstream basin L to total 6.4 cfs of surface flow routed to inlet A1. This surface flow will combine with 44.2 cfs conveyed via closed conduit from Design Point 7 to total 49.4 cfs to outfall into the detention basin during the major storm event.

Basin OS-3 (0.61 acres) consists of sidewalks, landscaping, and EDB. All runoff originating in basin OS-3 will surface drain to the EDB where it will combine with all upstream runoff from the Site. Peak runoff during the initial and major storm events are 0.15 cfs and 2.2 cfs, respectively.

Basin OS-2 (0.07 acres) consists of the small portion of private drive between the most downstream inlet in the private storm sewer system and the northern property boundary. Runoff originating in this basin totals 0.2 cfs and 0.6 cfs in the initial and major storm events, respectively. The major and minor storm event runoff escaping the Site undetained into Arapahoe Road right of way is subtracted from the total allowable detention pond release. These flows ultimately collect at a downstream inlet to the east of the private drive entrance in Arapahoe Road.

Basin OS-4 (0.22 acres) consists of sidewalks and landscaping within Tract F. Runoff originating in this basin totals 0.07 cfs and 0.9 cfs in the initial and major storm events, respectively. These flows ultimately collect at a downstream inlet to the east of the private drive entrance in Arapahoe Road.

Basin OS-1 (0.11 acres) consists of landscaping only. Runoff originating in this basin totals negligible and 0.4 cfs in the initial and major storm events, respectively. The major and minor storm event runoff escaping the Site undetained to the east is subtracted from the total allowable detention pond release.

The proposed EDB will outfall into a proposed storm sewer outfall location being designed by others as part of the PD. Controlled, detained runoff release will be conveyed from the outlet structure of the EDB to an outfall manhole along the northern property boundary of the Site. An overflow weir along the northern edge of the EDB will safely convey flows during outlet clogging or storms in excess of the 100-year event to Arapahoe Road right of way.

Due to the available footprint for the EDB, retaining walls were used to achieve adequate detention volume.

Design Storm Event	WSEL (feet)	Volume Provided CF	Volume Provided Acre-Feet	Release Rate (CFS)
WQCV	5243.79	14,579	0.335	40-Hour drain time
EURV	5246.60	48,593	1.116	12-32-Hour drain time*
100-Year	5248.16	70,399	1.616	11.2

*Independent of the WQCV

The EDB provides a micropool within the outlet box to and provides an adequate surcharge depth separate from the WQCV and EURV volumes. The EURV will be discharged through an orifice plate on the outlet box in standard conformance with the USDCM. Above the EURV water surface elevation, the outlet box will allow stormwater to flow into the outlet structure and discharge directly to the outlet pipe. The release will be controlled to the maximum allowable 11.3 cfs (14.50 acres * 0.85 cfs/acre – 1.0 cfs undetained release) via restrictor plate bolted over the outlet pipe designed to release 11.2 cfs with an accumulated head corresponding to the 100-year water surface elevation shown above.

Per Erie Standards, there is one foot of provided freeboard between the 100-year water surface elevation and the top of the berm. The weir has been designed to discharge the peak runoff rate during the major storm event at a flow depth of approximately 5 inches. The discharge will flow over the weir crest and down the reinforced pond berm to the outfall location in Arapahoe Road right of way. EDB Pond details can be found in Appendix E.

Calculations for the pond hydraulic designs are included in Appendix D. Storm sewer profiles can be found in Appendix E.

Construction will be phased in a way that will utilize the existing low point where the EDB is proposed as a temporary sediment basin to receive discharge that may be conveying sediment during construction. As storm sewer and roadway infrastructure is built (from downstream to the southern corner of the Site), proper temporary BMPs will be put in place in order to limit the amount of sediment leaving the Site.

Summary & Conclusion

All proposed on-site drainage infrastructure shown on the Final Drainage Plan (Appendix E) will be designed to convey the major-storm event and all sumps will be designed to have points of overland relief in order to prevent property damage in the event of clogging.

Stormwater quality will be provided within the proposed EDB and where feasible, directly connected impervious areas will be avoided.

The proposed project will not adversely affect drainage patterns on the Site or negatively affect adjacent, upstream, or downstream property. The project was designed in accordance with the Town of Erie storm drainage criteria.

References

1. Town of Erie Standards and Specifications for Design and Construction of Public Improvements, Town of Erie, Colorado, 2019.

2. Town of Erie Outfall Systems Planning Preliminary Design, Town of Erie, Colorado, May 2001

3. Urban Storm Drainage Criteria Manual, Vol. 1, Urban Drainage and Flood Control District, Revised August 2018.

4. Urban Storm Drainage Criteria Manual, Vol. 2, Urban Drainage and Flood Control District, Revised September 2017.

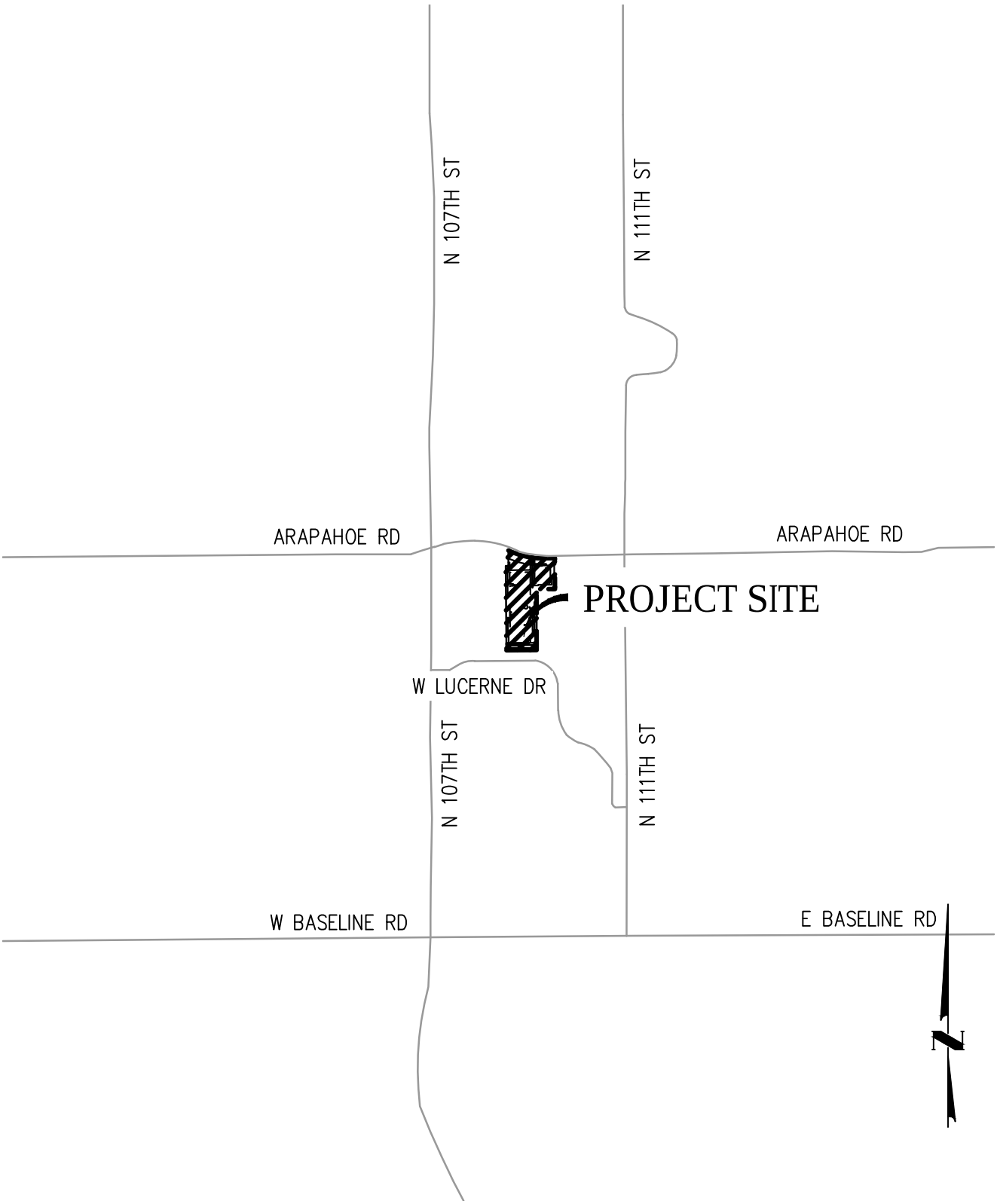
5. Urban Storm Drainage Criteria Manual, Vol. 3, Urban Drainage and Flood Control District, Revised April 2018.

6. United States Department of Agriculture, Natural Resources Conservation Service. Custom Soil Resource Report.

7. United States Department of Homeland Security, Federal Emergency Management Agency. Flood Insurance Rate Map. Map Number 08005C0194K, December 17, 2010

APPENDIX A

Vicinity Map
FEMA Firmette



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NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

ISSUE DATE: 09/19/2016	PROJECT #: 160602
DATE	REVISION COMMENTS

EVERGREEN

OUTLOOK AT NINE MILE
VICINITY MAP

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CHK'D BY: TEG
DRAWN BY: MEG

SHEET NO.
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1 OF 1

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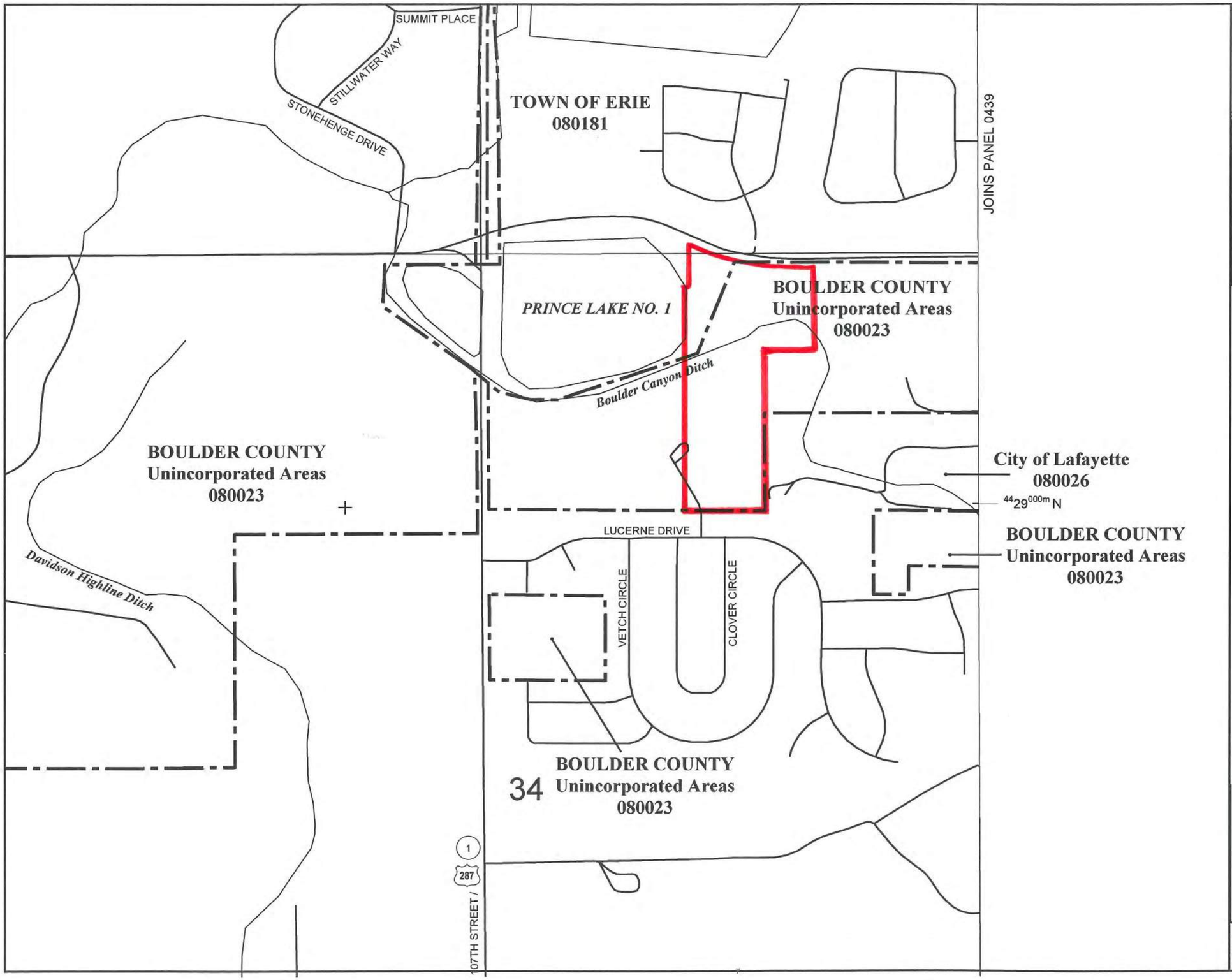

MAP SCALE 1" = 500'

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0438J

FIRM

FLOOD INSURANCE RATE MAP

BOULDER COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 438 OF 615

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOULDER COUNTY	080023	0438	J
ERIE, TOWN OF	080181	0438	J
LAFAYETTE, CITY OF	080026	0438	J

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
08013C0438J

MAP REVISED
DECEMBER 18, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX B

Soils Information

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Boulder County Area, Colorado

July 18, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

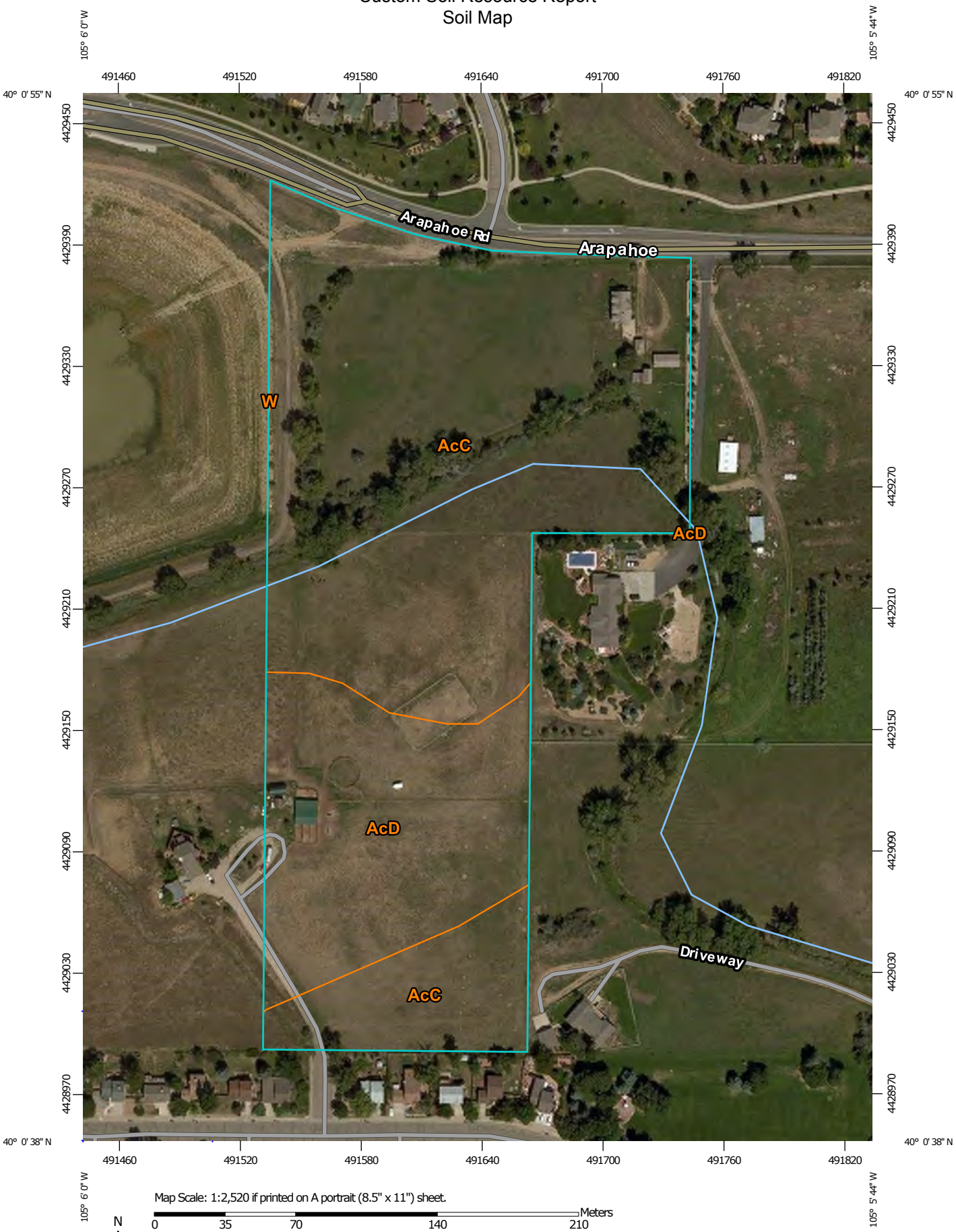
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,520 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Boulder County Area, Colorado
Survey Area Data: Version 12, Sep 22, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 30, 2014—Sep 18, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Boulder County Area, Colorado (CO643)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AcC	Ascalon sandy loam, 3 to 5 percent slopes	11.9	74.6%
AcD	Ascalon sandy loam, 5 to 9 percent slopes	4.1	25.4%
W	Water	0.0	0.0%
Totals for Area of Interest		**15.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If

intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Boulder County Area, Colorado

AcC—Ascalon sandy loam, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2tlnt
Elevation: 3,550 to 5,970 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 57 degrees F
Frost-free period: 135 to 160 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ascalon and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind-reworked alluvium and/or calcareous sandy eolian deposits

Typical profile

Ap - 0 to 6 inches: sandy loam
Bt1 - 6 to 12 inches: sandy clay loam
Bt2 - 12 to 19 inches: sandy clay loam
Bk - 19 to 35 inches: sandy clay loam
C - 35 to 80 inches: sandy loam

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline (0.1 to 1.9 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 1.0
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4c
Hydrologic Soil Group: B
Ecological site: Sandy Plains (R067BY024CO), Sandy (North) Draft (April 2010) (PE 16-20) (R072XA022KS)

Minor Components

Stoneham

Percent of map unit: 10 percent
Landform: Interfluves
Landform position (two-dimensional): Shoulder, summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Plains (R067BY002CO), Loamy Upland (North) (PE 16-20) (R072XA015KS)

Vona

Percent of map unit: 8 percent
Landform: Interfluves
Landform position (two-dimensional): Backslope, footslope, shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Sandy Plains (R067BY024CO), Sandy (North) Draft (April 2010) (PE 16-20) (R072XA022KS)

Platner

Percent of map unit: 2 percent
Landform: Interfluves
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Loamy Plains (R067BY002CO), Loamy Upland (North) (PE 16-20) (R072XA015KS)

AcD—Ascalon sandy loam, 5 to 9 percent slopes

Map Unit Setting

National map unit symbol: jpr4
Elevation: 4,900 to 5,500 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 155 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ascalon and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ascalon

Setting

Landform: Terraces
Landform position (three-dimensional): Side slope, tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed loamy alluvium and/or eolian deposits

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 16 inches: sandy clay loam, sandy loam
H2 - 5 to 16 inches: fine sandy loam, loamy fine sand, sandy loam
H3 - 16 to 60 inches:
H3 - 16 to 60 inches:
H3 - 16 to 60 inches:

Properties and qualities

Slope: 5 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 16.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Sandy (R067XB026CO)

Minor Components

Olney

Percent of map unit: 10 percent

Otero

Percent of map unit: 5 percent

Terry

Percent of map unit: 5 percent

W—Water

Map Unit Composition

Water: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Aquolls

Percent of map unit: 5 percent
Landform: Marshes

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APPENDIX C

Hydrologic Computations

Project Name: Outlook Nine Mile

Composite C-Value Computations

Post-Development

Project No: 160602

Date: 11/04/19

Revised: 03/03/20

Design by: JWM

Checked by: MSM

NRCS Soil Group B

BASIN	TOTAL AREA (ACRES)	ROOFS (90%)	CONCRETE DRIVES & WALKS (90%)	STREETS (100%)	LANDSCAPE AREA (2%)	PERCENT IMPERVIOUS	C_2=	C_5=	C_{100}=
A	0.31	0.07	0.03	0.16	0.05	81%	0.66	0.69	0.81
B	1.18	0.20	0.22	0.50	0.25	75%	0.60	0.63	0.78
C	0.49	0.27	0.03	0.00	0.19	56%	0.42	0.45	0.69
D	0.61	0.18	0.09	0.24	0.10	79%	0.64	0.67	0.80
E	0.46	0.07	0.11	0.18	0.10	74%	0.59	0.62	0.77
F	0.33	0.19	0.00	0.00	0.14	53%	0.40	0.43	0.67
G	1.60	0.48	0.29	0.47	0.36	73%	0.58	0.61	0.77
H	0.53	0.08	0.06	0.27	0.12	76%	0.61	0.64	0.78
H1	0.06	0.03	0.01	0.00	0.03	53%	0.40	0.43	0.68
I	0.29	0.19	0.00	0.00	0.10	60%	0.46	0.49	0.71
J	0.32	0.04	0.06	0.11	0.11	63%	0.49	0.52	0.72
K	0.86	0.16	0.21	0.32	0.17	76%	0.61	0.64	0.78
L	0.87	0.21	0.09	0.30	0.27	66%	0.52	0.55	0.74
M	0.99	0.24	0.15	0.38	0.23	74%	0.59	0.62	0.77
N	0.55	0.28	0.06	0.00	0.20	58%	0.44	0.47	0.70
O	0.75	0.22	0.15	0.00	0.38	45%	0.33	0.36	0.64
P	1.20	0.16	0.09	0.69	0.26	77%	0.62	0.65	0.79
Q	0.44	0.15	0.10	0.13	0.06	82%	0.66	0.69	0.81
R	0.32	0.16	0.03	0.00	0.13	53%	0.40	0.44	0.68
On-Site Total	**12.16**	**3.38**	**1.78**	**3.75**	**3.24**	**70%**	**0.55**	**0.58**	**0.75**

A1	0.71	0.00	0.00	0.00	0.71	2%	0.01	0.01	0.44
B1	0.47	0.00	0.00	0.00	0.47	2%	0.01	0.01	0.44
OS-1	0.11	0.00	0.00	0.00	0.11	2%	0.01	0.01	0.44
OS-2	0.07	0.00	0.00	0.07	0.00	100%	0.84	0.86	0.90
OS-3	0.61	0.00	0.12	0.00	0.49	19%	0.12	0.14	0.51
OS-4	0.22	0.00	0.05	0.00	0.17	22%	0.14	0.17	0.53
L1	0.55	0.03	0.12	0.00	0.41	25%	0.16	0.19	0.54
OS (off-site) Total	**2.74**	**0.03**	**0.28**	**0.07**	**1.79**	**14%**	**0.08**	**0.10**	**0.49**

Project Name: Outlook Nine Mile
Project No: 160602
Date: 11/04/19
Revised: 03/03/20

STANDARD FORM SF-2
TIME OF CONCENTRATION

Designed By: JWM
Checked By: MSM

SUB-BASIN DATA			INITIAL/OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK (URBANIZED BASINS)			FINAL	REMARKS
BASIN	AREA (AC)	C_5	LENGTH (FT)	SLOPE %	Ti (MIN)	LENGTH (FT)	SLOPE %	C_v	VELOCITY (FPS)	Tt (MIN)	COMPOS. Tc (MIN)	TOTAL LENGTH	Tc = (L/180) + 10 (MIN)	Tc (MIN)	
A	0.31	0.69	69	2.00	5.01	104	1.50	20	2.45	0.71	5.72	173	10.96	5.72	
B	1.18	0.63	69	2.00	5.64	202	1.75	20	2.65	1.27	6.92	271	11.51	6.92	
C	0.49	0.45	114	2.00	10.05	47	5.53	15	3.53	0.22	10.27	161	10.89	10.27	
D	0.61	0.67	190	2.00	8.68	35	5.54	20	4.71	0.12	8.80	225	11.25	8.80	
E	0.46	0.62	50	2.00	4.93	220	1.10	20	2.10	1.75	6.68	270	11.50	6.68	
F	0.33	0.43	77	2.00	8.57	20	4.45	15	3.16	0.11	8.68	97	10.54	8.68	
G	1.60	0.61	220	2.00	10.49	154	1.97	20	2.81	0.91	11.41	374	12.08	11.41	
H	0.53	0.64	46	2.00	4.56	73	1.81	20	2.69	0.45	5.01	119	10.66	5.01	
H1	0.06	0.43	51	2.00	6.92	14	1.50	7	0.86	0.27	7.19	65	10.36	7.19	
I	0.29	0.49	182	2.00	11.96	25	5.60	15	3.55	0.12	12.08	207	11.15	11.15	
J	0.32	0.52	50	2.00	5.96	58	2.38	20	3.09	0.31	6.27	108	10.60	6.27	
K	0.86	0.64	113	2.00	7.09	242	1.76	20	2.65	1.52	8.61	355	11.97	8.61	
L	0.87	0.55	110	2.00	8.40	110	3.02	20	3.48	0.53	8.92	220	11.22	8.92	
M	0.99	0.62	116	2.00	7.60	96	1.94	20	2.79	0.57	8.17	212	11.18	8.17	
N	0.55	0.47	90	2.00	8.64	50	5.40	15	3.49	0.24	8.88	140	10.78	8.88	
O	0.75	0.36	85	2.00	9.90	29	6.90	15	3.94	0.12	10.02	114	10.63	10.02	
P	1.20	0.65	42	2.00	4.29	137	2.34	20	3.06	0.75	5.04	179	10.99	5.04	
Q	0.44	0.69	150	2.00	7.32	62	4.32	20	4.16	0.25	7.57	212	11.18	7.57	
R	0.32	0.44	100	2.00	9.68	38	3.18	15	2.67	0.24	9.91	138	10.77	9.91	
Off-Site															
A1	0.71	0.01	191	4.35	16.89	0	0.00	7	0.00	0.00	16.89	191	11.06	11.06	
B1	0.47	0.01	201	2.83	19.99	0	0.00	7	0.00	0.00	19.99	201	11.12	11.12	
OS-1	0.11	0.01	43	11.50	5.79	0	0.00	7	0.00	0.00	5.79	43	10.24	5.79	
OS-2	0.07	0.86	53	5.67	1.80	41	1.00	20	2.00	0.34	5.00	94	10.52	5.00	
OS-3	0.61	0.14	58	2.00	10.66	193	0.50	20	1.41	2.27	12.94	251	11.39	11.39	
OS-4	0.22	0.17	101	5.47	9.77	0	0.00	7	0.00	0.00	9.77	101	10.56	9.77	
L1	0.55	0.19	279	3.80	17.88	154	2.10	20	2.90	0.89	18.76	433	12.41	12.41	

Project Name: Outlook Nine Mile

Project No: 160602

Date: 11/04/19

Revised: 03/03/20

STANDARD FORM SF-2

Post-Development
Rational Method Procedure

Designed By: JWM

Checked By: MSM

Design Storm: 2 YR

		DIRECT RUNOFF						TOTAL RUNOFF				STREET/INLET					STORM SEWER PIPE				TRAVEL TIME			CARRYOVER FLOWS					
BASIN (s)	DESIGN POINT	AREA (AC)	RUNOFF COEFF	Tc (min)	C x A (AC)	I (IN/HR)	DIRECT RUNOFF, Q (CFS)	Tc (min)	Σ(C x A) (AC)	I (IN/HR)	TOTAL RUNOFF, Q (CFS)	SLOPE (%)	STREET FLOW (CFS)	INLET DESIGN FLOW (CFS)	STREET OR INLET INTERCEPTION (CFS)	CARRYOVER (CFS)	DESIGN FLOW (CFS)	PIPE SLOPE (%)	PIPE SIZE (IN)	Q_{FULL} (CFS)	LENGTH (FT)	VELOCITY (FPS)	Tt (min)	Σ(C x A) BYPASS (AC)	LENGTH (FT)	SLOPE (%)	VELOCITY (FPS)	Tt (min)	REMARKS
A1		0.71	0.01	11.06	0.01	2.10	0.01	11.06	0.01	2.10	0.01													0.01	61.83	1.81	2.7	0.38	Basin A1 Direct Runoff
A		0.31	0.66	5.72	0.20	2.65	0.5	5.72	0.20	2.65	0.5																		Basin A Direct runoff
Basin A + Basin A1	1a							**11.44**	**0.21**	**2.07**	**0.4**						**0.4**	**3.84**	**18**	**20.6**	**283.0**	**4.3**	**1.09**						**Basin A + Basin A1 surface flow captured by Pr Inlet (Combined flow from DP 1a to DP 1)**
C		0.49	0.42	10.27	0.21	2.17	0.4																	0.21	202	0.40	1.3	2.66	Basin C Direct Runoff
F		0.33	0.40	8.68	0.13	2.31	0.3																						Basin F Direct Runoff
Basin C + Basin F	1							12.93	0.34	1.97	0.7																		Total Flow captured by Type C Inlet at DP 1
								12.93	**0.55**	**1.97**	**1.1**						**1.1**	**3.0**	**18**	**18.2**	**50.2**	**5.6**	**0.15**						**Combined flow in Pipe at from DP 1 to DP 2**
B1		0.47	0.01	11.12	0.004	2.10	0.01	11.12	0.004	2.10	0.01													0.004	294.9	1.12	2.1	2.32	Basin B1 Direct Runoff
B		1.18	0.60	6.92	0.71	2.50	1.8																						Basin B Direct Runoff
Basin B + Basin B1								13.44	0.72	1.93	1.4																		Captured by PR Inlet at DP 2
Basin B + Basin B1 + DP 1	2							**13.08**	**1.26**	**1.96**	**2.5**						**2.5**	**0.84**	**24**	**20.7**	**219.0**	**4.4**	**0.83**						**Combined flow in pipe from DP 2 to DP3a**
G	3	1.60	0.58	11.41	0.94	2.08	1.9						1.9	1.6	1.6	0.3													Basin G Direct runoff
								11.41	**0.77**	**2.08**	**1.6**						**1.6**	**5.0**	**18**	**23.5**	**7.2**	**7.3**	**0.02**						**Captured by PR Inlet at DP 3 (Combined flow from DP 3 to DP 3a)**
DP 2 + DP 3	3a							**13.91**	**2.03**	**1.90**	**3.9**						**3.9**	**0.75**	**24**	**19.6**	**100.8**	**4.8**	**0.35**						**Combined flow in pipe from DP 3a to DP 4**
								11.41	0.17	2.08	0.3													0.17	101.4	1.00	2.0	0.85	Bypass Flows to DP 4
J		0.32	0.49	6.27	0.16	2.58	0.4																						Basin J Direct Runoff
I		0.29	0.46	11.15	0.13	2.10	0.3																	0.13	130	2.88	3.4	0.64	Basin I direct Runoff
Basin I + Basin J + Bypass								12.25	0.46	2.01	0.9																		Basin J Direct Runoff + Basin I Carryover + Bypass form Basin G (Captured by PR Inlet)
Basin J +Basin I + Bypass + DP 3a	4							**14.26**	**2.49**	**1.88**	**4.7**						**4.7**	**0.78**	**30**	**36.2**	**539.1**	**5.0**	**1.80**						**Combined flow in pipe from DP 4 to DP 6**
N	5a	**0.55**	**0.44**	**8.88**	**0.24**	**2.29**	**0.6**										**0.6**	**2.09**	**18**	**15.2**	**62.3**	**4.0**	**0.26**						**Basin N Direct Runoff Captured by PR Inlet (combined flow from DP 5a to DP 5)**
L1		0.55	0.16	12.41	0.09	2.00	0.2	12.41	0.09	2.00	0.2													0.09	198.3	4.01	4.0	0.83	Basin L1 Direct Runoff
L		0.87	0.52	8.92	0.45	2.29	1.0																						Basin L Direct Runoff
Basin L + Basin L1								13.23	0.54	1.95	1.1																		Captured by PR Inlet at DP 5
Basin L + Basin L1 + Basin N	5							**13.23**	**0.79**	**1.95**	**1.5**						**1.5**	**0.50**	**24**	**16.0**	**18.7**	**3.1**	**0.10**						**Combined flow in pipe from DP 5 to DP 6**
DP 4 + DP 5	6							**16.06**	**3.27**	**1.78**	**5.8**						**5.8**	**0.50**	**30**	**29.0**	**179.1**	**3.0**	**1.01**						**Combined flow in pipe from DP 6 to DP 7**
D	8c	**0.61**	**0.64**	**8.80**	**0.39**	**2.30**	**0.9**										**0.9**	**1.6**	**18**	**13.2**	**227.7**	**4.1**	**0.92**						**Basin D Direct Runoff captured by PR inlet (combined flow from DP 8c to DP 8)**
E		0.46	0.59	6.68	0.27	2.53	0.7																						Basin E Direct Runoff captured by PR inlet
Basin D + Basin E	8							**9.73**	**0.66**	**2.22**	**1.5**						**1.5**	**0.5**	**18**	**7.4**	**113.7**	**3.1**	**0.60**						**Combined flow in pipe from DP 8 to DP 8a**
H1	8b	**0.06**	**0.40**	**7.19**	**0.02**	**2.47**	**0.1**										**0.1**	**1.50**	**18**	**12.9**	**49.3**	**1.3**	**0.62**						**Basin H1 Direct Runoff Captured by PR Inlet (flow from DP 8b to DP 8a)**
DP 8b + DP9	8a							**10.33**	**0.69**	**2.16**	**1.5**						**1.5**	**0.89**	**18**	**9.9**	**132.0**	**3.8**	**0.58**						**Combined flow in pipe from DP 8a to DP 10**
H	9	**0.53**	**0.61**	**5.01**	**0.32**	**2.75**	**0.9**										**0.9**	**9.0**	**18**	**31.5**	**22.5**	**7.4**	**0.05**						**Basin H Direct Runoff captured by PR inlet (Flow in Pipe from DP 9 to DP 10)**
DP 8a + DP 9	10							**10.33**	**0.99**	**2.16**	**2.1**						**2.1**	**1.0**	**18**	**10.5**	**159.0**	**4.5**	**0.59**						**Combined flow in Pipe from DP 10 to DP 11**
P		1.20	0.62	5.04	0.74	2.74	2.0																						Basin P Direct Runoff captured by PR inlet
Basin P + DP 10	11							**10.92**	**1.73**	**2.12**	**3.6**						**3.6**	**1.0**	**24**	**22.8**	**173.8**	**5.2**	**0.55**						**Combined flow in pipe from DP 11 to DP 12a**
Q	12	0.44	0.66	7.57	0.29	2.43	0.7						0.7	0.6	0.6	0.1													Basin Q Direct Runoff
								7.57	**0.25**	**2.43**	**0.6**						**0.6**	**5.0**	**18**	**23.5**	**7.9**	**5.9**	**0.02**						**Captured by Pr Inlet (combined flow from DP 12 ro DP 12a)**
DP 11 + DP 12	12a							**11.47**	**1.97**	**2.07**	**4.1**						**4.1**	**0.7**	**24**	**18.9**	**70.3**	**4.8**	**0.24**						**Combined Flow in Pipe from DP 12a to DP 14**
								7.57	0.04	2.43	0.1													0.04	95.12	1.00	2.0	0.79	Bypass Flow to DP 13
O		0.75	0.33	10.02	0.25	2.19	0.5																	0.25	354.1	1.00	2.0	2.95	Basin O Direct Runoff
K		0.86	0.61	8.61	0.53	2.32	1.2																						Basin K Direct Runoff
Basin O + Basin K + Bypass	13							**12.97**	**0.78**	**1.97**	**1.5**						**1.5**	**2.5**	**18**	**16.6**	**8.6**	**5.7**	**0.03**						**(Captured by PR inlet) Combined Flow in Pipe from DP 13 to DP 14**
DP 12a + DP 13	14							**13.00**	**2.75**	**1.96**	**5.4**						**5.4**	**0.5**	**30**	**29.0**	**312.8**	**4.4**	**1.18**						**Combined Flow in Pipe from DP 14 to DP 7**
DP 14 + DP 6	7							**17.08**	**6.02**	**1.73**	**10.4**						**10.4**	**0.5**	**36**	**47.2**	**8.7**	**5.3**	**0.03**						**Combined Flow in Pipe from DP 7 to DP 7a**
M		0.99	0.59	8.17	0.58	2.36	1.4																						Basin M direct Runoff
R		0.32	0.40	9.91	0.13	2.20	0.3																	0.13	402.6	1.49	2.4	2.75	Basin R Direct Runoff
Basin M + Basin R + Bypass								12.66	0.75	1.99	1.5																		Total Runoff to PR Inlet at DP 7a
Basin M + Basin R + Bypass + DP 7	7a							**17.10**	**6.78**	**1.73**	**11.7**						**11.7**	**0.6**	**36**	**51.7**	**15.5**	**5.8**	**0.04**						**Combined Flow in Pipe From DP 7a to DP 15**
TOTAL OUTFALL TO EDB	15							**17.15**	**6.78**	**1.72**	**11.7**																		**Total Flow at Outfall to EDB**
Off-Site																													
OS-1		0.11	0.01	5.79	0.001	2.64	0.003																						Basin OS-1 Flow Off Site
OS-2		0.07	0.84	5.00	0.06	2.75	0.2																						Basin OS-2 Flow Off Site to Arapahoe Rd
OS-3		0.61	0.12	11.39	0.07	2.08	0.15																						Basin OS 3 Direct Runoff
OS-4		0.22	0.14	9.77	0.031	2.21	0.07																						Basin OS-4 Floww Off Site to Arapahoe Rd

Project Name: Outlook Nine Mile

Project No: 160602

Date: 11/04/19

Revised: 03/03/20

STANDARD FORM SF-2

Post-Development Rational Method Procedure

Designed By: JWM

Checked By: MSM

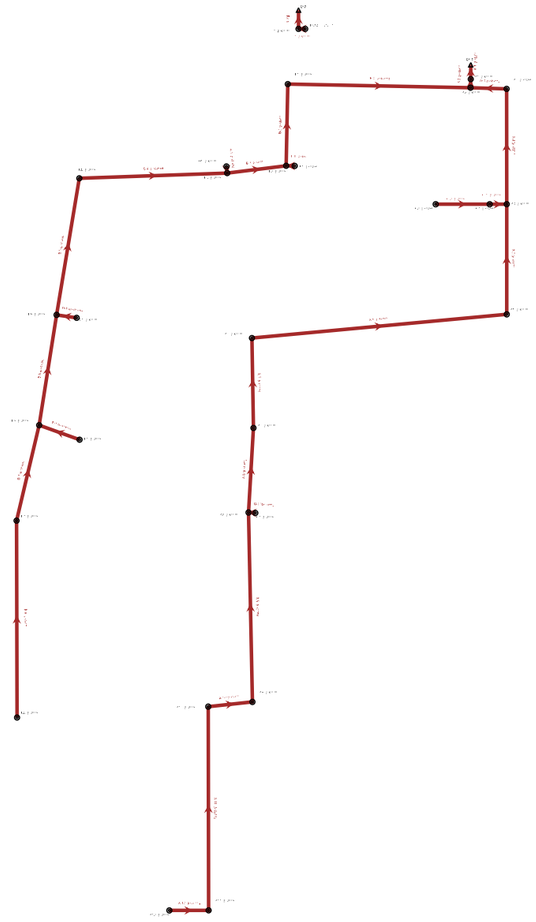
Design Storm: 100 YR

		DIRECT RUNOFF						TOTAL RUNOFF				STREET/INLET					STORM SEWER PIPE				TRAVEL TIME			CARRYOVER FLOWS					
BASIN (s)	DESIGN POINT	AREA (AC)	RUNOFF COEFF	Tc (min)	C x A (AC)	I (IN/HR)	DIRECT RUNOFF, Q (CFS)	Tc (min)	Σ(C x A) (AC)	I (IN/HR)	TOTAL RUNOFF, Q (CFS)	SLOPE (%)	STREET FLOW (CFS)	INLET DESIGN FLOW (CFS)	STREET OR INLET INTERCEPTION (CFS)	CARRYOVER (CFS)	DESIGN FLOW (CFS)	PIPE SLOPE (%)	PIPE SIZE (IN)	Q_{FULL} (CFS)	LENGTH (FT)	VELOCITY (FPS)	Tt (min)	Σ(C x A) BYPASS (AC)	LENGTH (FT)	SLOPE (%)	VELOCITY (FPS)	Tt (min)	REMARKS
A1		0.71	0.44	11.06	0.31	6.96	2.2	11.06	0.31	6.96	2.2													0.31	61.83	1.81	2.7	0.38	Basin A1 Direct Runoff
A		0.31	0.81	5.72	0.25	8.76	2.2																						Basin A Direct runoff
Basin A + Basin A1	1a							11.44	0.56	6.86	3.8		3.8	2.7	2.7	1.1													Basin A + Basin A1 Direct Runoff
								11.44	**0.39**	**6.86**	2.7						**2.7**	**3.84**	**18**	**20.6**	**283.2**	**8.0**	**0.59**						**Runoff From Basin A + A1 captured by PR Inlet (combined flow from DP 1a to DP 1)**
								11.44	0.17	6.86	1.1													0.17	306.5	1.00	2.0	2.55	Bypass to DP 2
C		0.49	0.69	10.27	0.34	7.17	2.4																	0.34	202	0.40	1.3	2.66	Basin C Direct Runoff
F		0.33	0.67	8.68	0.22	7.65	1.7																						Basin F Direct Runoff
Basin C + Basin F	1							12.93	0.56	6.51	3.6																		Total Flow captured at Type C Inlet at DP 1
								12.93	**0.95**	**6.51**	**6.2**						**6.2**	**3.0**	**18**	**18.2**	**50.2**	**9.2**	**0.09**						**Combined flow in Pipe from DP 1 to DP 2**
B1		0.47	0.44	11.12	0.20	6.95	1.4	11.12	0.20	6.95	1.4													0.205	294.9	1.12	2.1	2.32	Basin B1 Direct Runoff
B		1.18	0.78	6.92	0.92	8.27	7.6																						Basin B Direct Runoff
Basin B + Bypass + Basin B1								14.00	1.29	6.28	8.1		8.1	7.0	7.0	1.1													Basin B Runoff + Basin A Bypass
								14.00	1.11	6.28	7.0																		Captured by PR Inlet
	2							**14.00**	**2.07**	**6.28**	**13.0**						**13.0**	**0.84**	**24**	**20.7**	**219.0**	**6.9**	**0.53**						**Combined flow in pipe from DP 2 to DP3a**
								14.00	0.18	6.28	1.1													0.18	335.2	1.00	2.0	2.79	Bypass Flow to DP 3
G		1.60	0.77	11.41	1.23	6.87	8.5																						Basin G Direct runoff
Basin G + Bypass	3							16.79	1.41	5.76	8.1		8.1	5.3	5.3	2.8													Basin G Runoff + Basin B Bypass
								16.79	**0.92**	**5.76**	5.3						**5.3**	**5.0**	**18**	**23.5**	**7.2**	**10.5**	**0.01**						**Captured by PR Inlet at DP 3 (Combined flow from DP 3 to DP 3a)**
DP 2 +DP 3	**3a**							**16.80**	**2.99**	**5.76**	**17.2**						**17.2**	**0.75**	**24**	**19.6**	**100.8**	**7.0**	**0.24**						**Combined flow in pipe at DP from DP 3a to DP 4**
								16.79	0.49	5.76	2.8													0.49	101.4	1.00	2.0	0.85	Bypass Flow to DP 4
I		0.29	0.71	11.15	0.20	6.94	1.4																	0.20	130	2.88	3.4	0.64	Basin I direct Runoff
J		0.32	0.72	6.27	0.23	8.53	2.0																						Basin J Direct Runoff
Basin J + Basin I + Bypass								17.64	0.93	5.62	5.2		5.2	5.1	5.1	0.1													Basin J Runoff + Basin G Bypass + Basin I Carryover
								17.64	0.91	5.62	5.1																		Captured by PR Inlet
Basin J + Basin I + Bypass + DP 3	4							**17.64**	**3.89**	**5.62**	**21.9**						**21.9**	**0.78**	**30**	**36.2**	**539.1**	**7.7**	**1.17**						**Combined flow in pipe from DP 4 to DP 6**
								17.64	0.02	5.62	0.1													0.02	354.5	1.37	2.3	2.52	Bypass flow to DP 13
N	**5a**	**0.55**	**0.70**	**8.88**	**0.38**	**7.59**	**2.9**										**2.9**	**2.09**	**18**	**15.2**	**62.3**	**6.5**	**0.16**						**Basin N Direct Runoff Captured by PR Inlet (combined flow from DP 5a to DP 5)**
L1		0.55	0.54	12.41	0.30	6.63	2.0	12.41	0.30	6.63	2.0													0.30	61.83	1.81	2.7	0.38	Basin L1 Direct Runoff
L		0.87	0.74	8.92	0.64	7.57	4.9																						Basin L Direct Runoff
Basin L + Basin L1								12.79	0.94	6.54	6.2		6.2	5.9	5.9	0.3													Basin L + Basin L1 Direct Runoff
								12.79	0.90	6.54	5.9						5.9	0.50	24	16.0	18.7	4.7	0.07						Captured by PR Inlet at DP 5
								12.79	0.04	6.54	0.3													0.04	170.1	1.41	2.4	1.19	Bypass to DP 7a
Basin L + Basin L1 + Basin N	**5**							**9.04**	**1.03**	**7.54**	**7.7**						**7.7**	**0.50**	**24**	**16.0**	**18.7**	**5.0**	**0.06**						**Combined flow in pipe at from DP 5 to DP 6**
DP 4 + DP 5	**6**							**18.80**	**4.92**	**5.44**	**26.8**						**26.8**	**0.50**	**30**	**29.0**	**179.1**	**6.7**	**0.45**						**Combined flow in pipe from DP 6 to DP 7**
D	**8c**	**0.61**	**0.80**	**8.80**	**0.49**	**7.61**	**3.7**										**3.7**	**1.3**	**18**	**12.0**	**238.8**	**6.0**	**0.66**						**Basin D Direct Runoff Captured by PR Inlet (combined flow from DP 8c to DP 8)**
E		0.46	0.77	6.68	0.36	8.36	3.0						3.0	2.3	2.3	0.7													Basin E Direct Runoff
								6.68	0.28	8.36	2.3																		Captured by PR Inlet
DP 8c + Basin E	**8**							**9.47**	**0.84**	**7.41**	**6.2**						**6.2**	**0.5**	**18**	**7.4**	**99.8**	**4.7**	**0.36**						**Combined flow in pipe from DP 8 to DP 8a**
								6.68	0.08	8.36	0.7													0.08	276.3	1.00	2.0	2.30	Bypass flow to DP 9
H1	**8b**	**0.06**	**0.68**	**7.19**	**0.04**	**8.17**	**0.3**										**0.3**	**1.50**	**18**	**12.9**	**49.3**	**2.0**	**0.42**						**Basin H1 Direct Runoff Captured by PR Inlet (flow from DP 8b to DP 8a)**
DP 8b + DP 8	**8a**							**9.82**	**0.88**	**7.30**	**6.5**						**6.5**	**0.89**	**18**	**9.9**	**132.0**	**5.9**	**0.37**						**Combined flow in pipe from DP 8a to DP 10**
H		0.53	0.78	5.01	0.42	9.08	3.8																						Basin H Direct Runoff
Basin H + Bypass								8.98	0.50	7.55	3.7		3.7	2.7	2.7	1.0													Basin H Runoff + Bypass from Basin E
	9							**8.98**	**0.36**	**7.55**	2.7						**2.7**	**9.0**	**18**	**31.5**	**22.5**	**10.7**	**0.04**						**Captured by PR Inlet (Flow from DP 9 to DP 10)**
								8.98	0.14	7.55	1.0													0.14	167.1	1.00	2.0	1.39	Bypass flow to DP 11
DP 8 + DP 9	**10**							**9.82**	**1.20**	**7.30**	**8.8**						**8.8**	**1.0**	**18**	**10.5**	**159.0**	**6.7**	**0.40**						**Combined flow in Pipe from DP 10 to DP 11**
P		1.20	0.79	5.04	0.94	9.07	8.6																						Basin P Direct Runoff
Basin P + Bypass								10.38	1.08	7.14	7.7		7.7	6.9	6.9	0.8													Basin P Runoff + Bypass from Basin H
								10.38	0.97	7.14	6.9																		Captured by PR Inlet
Basin P + DP 10	**11**							**10.22**	**2.14**	**7.19**	**15.4**						**15.4**	**1.0**	**24**	**22.8**	**173.8**	**7.8**	**0.37**						**Combined flow in pipe from DP 11 to DP 12a**
								10.38	0.12	7.14	0.8													0.12	180.4	1.00	2.0	1.50	Bypass Flows to DP 12
Q		0.44	0.81	7.57	0.36	8.03	2.9																						Basin Q Direct Runoff
Basin Q + Bypass	12							11.88	0.47	6.76	3.2		3.2	2.5	2.5	0.7													Basin Q Runoff + bypass from Basin P
								11.88	**0.37**	**6.76**	2.5						**2.5**	**5.0**	**18**	**23.5**	**7.9**	**8.6**	**0.02**						**Captured by PR Inlet (combined flow from DP 12 to DP 12a)**
DP 11+ DP 12	**12a**							**11.90**	**2.51**	**6.75**	**17.0**						**17.0**	**0.7**	**24**	**18.9**	**70.3**	**6.8**	**0.17**						**Combined Flow in Pipe from DP 12a to DP 14**
								11.88	0.10	6.76	0.7													0.10	95.12	1.00	2.0	0.79	Bypass Flow to DP 13
O		0.75	0.64	10.02	0.48	7.24	3.5																	0.48	354.1	1.00	2.0	2.95	Basin O Direct Runoff
K		0.86	0.78	8.61	0.68	7.67	5.2																						Basin K Direct Runoff
Basin K + Basin O + Bypass	13							**20.16**	**1.17**	**5.25**	**6.2**						**6.2**	**2.5**	**18**	**16.6**	**8.6**	**8.6**	**0.02**						**Captured by PR Inlet (Combined flow from DP 13 to DP 14)**
DP 12a + DP 13	**14**							**20.18**	**3.69**	**5.25**	**19.4**						**19.4**	**0.5**	**30**	**29.0**	**312.8**	**6.3**	**0.83**						**Combined flow in pipe from DP 14 to DP 7**
DP 6 + DP 14	**7**							**21.01**	**8.61**	**5.14**	**44.2**						**44.2**	**0.5**	**36**	**47.2**	**8.7**	**7.6**	**0.02**						**Combined Flow in Pipe from DP 7 to DP 7a**
R		0.32	0.68	9.91	0.22	7.28	1.6																	0.22	402.6	1.49	2.4	2.75	Basin R Direct Runoff
M		0.99	0.77	8.17	0.76	7.82	6.0																						Basin M Direct Runoff
Basin M + Basin R + Bypass								13.98	1.02	6.29	6.4																		Total Runoff to PR Inlet at DP 7
Basin M + Basin R + Bypass + DP 7	**7a**							**21.02**	**9.63**	**5.13**	**49.4**						**49.4**	**0.6**	**36**	**51.7**	**15.5**	**8.3**	**0.03**						**Combined Flow in Pipe from DP 7a to DP 15**
Total Outfall to EDB	**15**							**21.06**	**9.63**	**5.13**	**49.4**																		**Total Flow at Outfall to EDB**
Off-Site																													
OS-1		0.11	0.44	5.79	0.05	8.73	0.4																						Basin OS-1 Flow Off Site
OS-2		0.07	0.90	5.00	0.06	9.09	0.6																						Basin OS-2 Flow Off Site to Arapahoe Rd
OS-3		0.61	0.51	11.39	0.31	6.88	2.2																						Basin OS 3 Direct Runoff
OS-4		0.22	0.53	9.77	0.12	7.32	0.9																						Basin OS-4 Flow Off Site to Arapahoe Rd

APPENDIX D

Hydraulic Computations

Scenario: 100-YR
Active Scenario: 100-YR



FlexTable: Conduit Table

Active Scenario: 2-YR

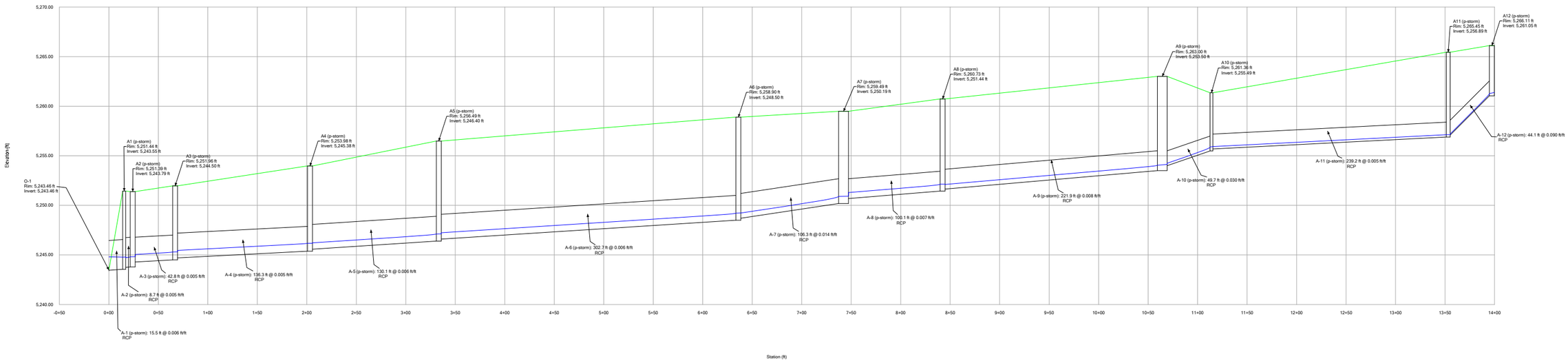
Label	Notes	Diameter (in)	Manning's n	Start Node	Stop Node	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
A-1 (p-storm)	36" RCP	36.0	0.013	A1 (p-storm)	O-1	15.5	5,243.55	5,243.46	0.006	11.70	51.66	5.91	5,244.78	5,244.81	5,245.07	5,245.03
A-2 (p-storm)	36" RCP	36.0	0.013	A2 (p-storm)	A1 (p-storm)	8.7	5,243.79	5,243.75	0.005	10.40	47.16	5.35	5,244.81	5,244.79	5,245.19	5,245.15
A-3 (p-storm)	30" RCP	30.0	0.013	A3 (p-storm)	A2 (p-storm)	42.8	5,244.50	5,244.29	0.005	5.80	29.00	4.61	5,245.30	5,245.05	5,245.59	5,245.38
A-4 (p-storm)	30" RCP	30.0	0.013	A4 (p-storm)	A3 (p-storm)	136.3	5,245.38	5,244.70	0.005	5.80	29.00	4.61	5,246.18	5,245.46	5,246.47	5,245.79
A-5 (p-storm)	30" RCP	30.0	0.013	A5 (p-storm)	A4 (p-storm)	130.1	5,246.40	5,245.58	0.006	4.70	32.56	4.72	5,247.11	5,246.22	5,247.37	5,246.57
A-6 (p-storm)	30" RCP	30.0	0.013	A6 (p-storm)	A5 (p-storm)	302.7	5,248.50	5,246.60	0.006	4.70	32.49	4.71	5,249.21	5,247.24	5,249.47	5,247.59
A-7 (p-storm)	30" RCP	30.0	0.013	A7 (p-storm)	A6 (p-storm)	106.3	5,250.19	5,248.70	0.014	4.70	48.57	6.27	5,250.90	5,249.23	5,251.16	5,249.84
A-8 (p-storm)	24" RCP	24.0	0.013	A8 (p-storm)	A7 (p-storm)	100.1	5,251.44	5,250.69	0.007	3.90	19.59	4.86	5,252.13	5,251.29	5,252.39	5,251.66
A-9 (p-storm)	24" RCP	24.0	0.013	A9 (p-storm)	A8 (p-storm)	221.9	5,253.50	5,251.64	0.008	2.50	20.71	4.46	5,254.05	5,252.11	5,254.25	5,252.42
A-10 (p-storm)	18" RCP	18.0	0.013	A10 (p-storm)	A9 (p-storm)	49.7	5,255.49	5,254.00	0.030	1.10	18.19	5.68	5,255.88	5,254.25	5,256.02	5,254.75
A-11 (p-storm)	18" RCP	18.0	0.013	A11 (p-storm)	A10 (p-storm)	239.2	5,256.89	5,255.69	0.005	0.40	7.43	2.24	5,257.12	5,255.93	5,257.20	5,256.00
A-12 (p-storm)	18" RCP	18.0	0.013	A12 (p-storm)	A11 (p-storm)	44.1	5,261.05	5,257.09	0.090	0.40	31.45	6.15	5,261.28	5,257.21	5,261.36	5,257.80
B-1 (p-storm)	30" RCP	30.0	0.013	B1 (p-storm)	A2 (p-storm)	216.2	5,245.37	5,244.29	0.005	5.40	29.00	4.52	5,246.14	5,245.02	5,246.42	5,245.34
B-2 (p-storm)	30" RCP	30.0	0.013	B2 (p-storm)	B1 (p-storm)	96.6	5,246.05	5,245.57	0.005	5.40	29.00	4.52	5,246.82	5,246.30	5,247.10	5,246.62
B-3 (p-storm)	24" RCP	24.0	0.013	B3 (p-storm)	B2 (p-storm)	70.3	5,247.04	5,246.55	0.007	4.10	18.93	4.81	5,247.75	5,247.18	5,248.01	5,247.54
B-4 (p-storm)	24" RCP	24.0	0.013	B4 (p-storm)	B3 (p-storm)	173.8	5,249.01	5,247.24	0.010	3.60	22.85	5.31	5,249.68	5,247.78	5,249.92	5,248.21
B-5 (p-storm)	18" RCP	18.0	0.013	B5 (p-storm)	B4 (p-storm)	159.0	5,251.15	5,249.51	0.010	2.10	10.67	4.69	5,251.70	5,249.96	5,251.90	5,250.30
B-6 (p-storm)	18" RCP	18.0	0.013	B6 (p-storm)	B5 (p-storm)	132.0	5,252.52	5,251.35	0.009	1.50	9.89	4.04	5,252.98	5,251.74	5,253.15	5,252.00
B-7 (p-storm)	18" RCP	18.0	0.013	B7 (p-storm)	B6 (p-storm)	99.8	5,253.22	5,252.72	0.005	1.50	7.43	3.29	5,253.68	5,253.18	5,253.85	5,253.35
B-8 (p-storm)	18" RCP	18.0	0.013	B8 (p-storm)	B7 (p-storm)	238.8	5,256.60	5,253.42	0.013	0.90	12.12	4.02	5,256.95	5,253.70	5,257.08	5,253.95
C-1 (p-storm)	24" RCP	24.0	0.013	C1 (p-storm)	A4 (p-storm)	18.7	5,245.97	5,245.88	0.005	1.50	16.00	3.19	5,246.40	5,246.29	5,246.55	5,246.45
C-2 (p-storm)	18" RCP	18.0	0.013	C2 (p-storm)	C1 (p-storm)	62.3	5,247.77	5,246.47	0.021	0.60	15.17	4.17	5,248.06	5,246.67	5,248.16	5,246.94
D-1 (p-storm)	18" RCP	18.0	0.013	D1 (p-storm)	B5 (p-storm)	22.6	5,253.38	5,251.35	0.090	0.90	31.45	7.84	5,253.73	5,251.52	5,253.85	5,252.48
E-1 (p-storm)	18" RCP	18.0	0.013	E1 (p-storm)	B6 (p-storm)	49.3	5,253.46	5,252.72	0.015	0.10	12.86	2.17	5,253.58	5,252.98	5,253.61	5,252.98
EX-2 (p-storm)	18" RCP	18.0	0.013	J1 (p-storm)	O-2	22.4	5,239.42	5,236.75	0.119	0.70	36.26	8.04	5,239.73	5,236.89	5,239.84	5,237.90
F-1 (p-storm)	18" RCP	18.0	0.013	F1 (p-storm)	B2 (p-storm)	8.6	5,247.27	5,247.05	0.025	1.50	16.61	5.83	5,247.73	5,247.39	5,247.89	5,247.79
G-1 (p-storm)	18" RCP	18.0	0.013	G1 (p-storm)	A8 (p-storm)	7.2	5,252.30	5,251.94	0.050	1.60	23.47	7.59	5,252.77	5,252.25	5,252.95	5,252.82
H-1 (p-storm)	18" RCP	18.0	0.013	H1 (p-storm)	B3 (p-storm)	8.0	5,247.67	5,247.19	0.060	0.60	25.71	6.03	5,247.95	5,247.75	5,248.05	5,247.77
J-1 (p-storm)	18" RCP	18.0	0.013	POND OUTLET	J1 (p-storm)	8.0	5,240.57	5,239.62	0.119	0.70	36.26	8.04	5,240.88	5,239.77	5,240.99	5,240.57

FlexTable: Manhole Table

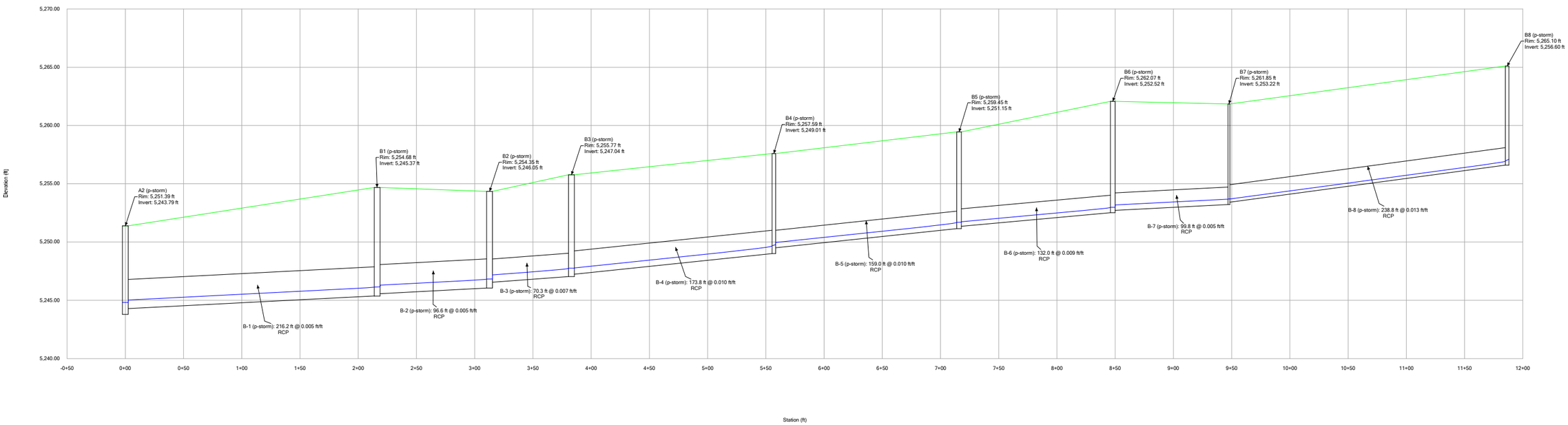
Active Scenario: 2-YR

Label	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Out) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Notes	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	HEC-22 Benching Method	Flow (Known) (cfs)
A1 (p-storm)	5,251.44	5,251.44	5,243.55	1.22	11.70	5,244.79	5,244.78	5,245.15	5,245.07	Inlet Type R 5'	HEC-22 Energy (Second Edition)		0.01	Flat	11.70
A2 (p-storm)	5,251.39	5,251.39	5,243.79	1.02	10.40	5,244.82	5,244.81	5,245.14	5,245.19	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	10.40
A3 (p-storm)	5,251.96	5,251.96	5,244.50	0.80	5.80	5,245.32	5,245.30	5,245.65	5,245.59	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	5.80
A4 (p-storm)	5,253.98	5,253.98	5,245.38	0.80	5.80	5,246.18	5,246.18	5,246.53	5,246.47	5'Ø MANHOLE	HEC-22 Energy (Second Edition)		0.00	Half	5.80
A5 (p-storm)	5,256.49	5,256.49	5,246.40	0.71	4.70	5,247.13	5,247.11	5,247.47	5,247.37	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	4.70
A6 (p-storm)	5,258.90	5,258.90	5,248.50	0.71	4.70	5,249.23	5,249.21	5,249.84	5,249.47	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	4.70
A7 (p-storm)	5,259.49	5,259.49	5,250.19	0.71	4.70	5,250.93	5,250.90	5,251.29	5,251.16	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.02	Flat	4.70
A8 (p-storm)	5,260.73	5,260.73	5,251.44	0.69	3.90	5,252.14	5,252.13	5,252.45	5,252.39	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	3.90
A9 (p-storm)	5,263.00	5,263.00	5,253.50	0.55	2.50	5,254.13	5,254.05	5,254.63	5,254.25	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.07	Flat	2.50
A10 (p-storm)	5,261.36	5,261.36	5,255.49	0.39	1.10	5,255.93	5,255.88	5,256.00	5,256.02	Inlet Type C	HEC-22 Energy (Second Edition)		0.05	Flat	1.10
A11 (p-storm)	5,265.45	5,265.45	5,256.89	0.24	0.40	5,257.13	5,257.12	5,257.71	5,257.20	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	0.40
A12 (p-storm)	5,266.11	5,266.11	5,261.05	0.23	0.40	5,261.38	5,261.28	5,261.46	5,261.36	Modified Inlet Type R 5'	Standard	1.250	0.10	<None>	0.40
B1 (p-storm)	5,254.68	5,254.68	5,245.37	0.77	5.40	5,246.15	5,246.14	5,246.47	5,246.42	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	5.40
B2 (p-storm)	5,254.35	5,254.35	5,246.05	0.77	5.40	5,246.83	5,246.82	5,247.19	5,247.10	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	5.40
B3 (p-storm)	5,255.77	5,255.77	5,247.04	0.71	4.10	5,247.75	5,247.75	5,247.77	5,248.01	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	4.10
B4 (p-storm)	5,257.59	5,257.59	5,249.01	0.66	3.60	5,249.78	5,249.68	5,250.12	5,249.92	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.10	Flat	3.60
B5 (p-storm)	5,259.45	5,259.45	5,251.15	0.55	2.10	5,251.70	5,251.70	5,252.66	5,251.90	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	2.10
B6 (p-storm)	5,262.07	5,262.07	5,252.52	0.46	1.50	5,252.98	5,252.98	5,252.98	5,253.15	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	1.50
B7 (p-storm)	5,261.85	5,261.85	5,253.22	0.46	1.50	5,253.71	5,253.68	5,253.96	5,253.85	Inlet Type 13 Triple	HEC-22 Energy (Second Edition)		0.03	Flat	1.50
B8 (p-storm)	5,265.10	5,265.10	5,256.60	0.35	0.90	5,257.11	5,256.95	5,257.23	5,257.08	MODIFIED INLET TYPE R 10'	Standard	1.250	0.16	<None>	0.90
C1 (p-storm)	5,253.80	5,253.80	5,245.97	0.42	1.50	5,246.41	5,246.40	5,246.68	5,246.55	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.01	Flat	1.50
C2 (p-storm)	5,251.31	5,251.31	5,247.77	0.29	0.60	5,248.18	5,248.06	5,248.28	5,248.16	Inlet Type C	Standard	1.250	0.13	<None>	0.60
D1 (p-storm)	5,259.28	5,259.28	5,253.38	0.35	0.90	5,253.89	5,253.73	5,254.01	5,253.85	Inlet Type R 5'	Standard	1.250	0.16	<None>	0.90
E1 (p-storm)	5,258.59	5,258.59	5,253.46	0.12	0.10	5,253.62	5,253.58	5,253.66	5,253.61	Inlet Type C	Standard	1.250	0.05	<None>	0.10
F1 (p-storm)	5,254.41	5,254.41	5,247.27	0.46	1.50	5,247.93	5,247.73	5,248.10	5,247.89	MODIFIED INLET TYPE R 5'	Standard	1.250	0.21	<None>	1.50
G1 (p-storm)	5,260.33	5,260.33	5,252.30	0.48	1.60	5,252.99	5,252.77	5,253.16	5,252.95	Inlet Type 13 Triple	Standard	1.250	0.22	<None>	1.60
H1 (p-storm)	5,255.40	5,255.40	5,247.67	0.29	0.60	5,248.08	5,247.95	5,248.18	5,248.05	Inlet Type 13 Triple	Standard	1.250	0.13	<None>	0.60
J1 (p-storm)	5,254.31	5,254.31	5,239.42	0.31	0.70	5,239.74	5,239.73	5,240.54	5,239.84	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	0.70
POND OUTLET	5,240.57	5,240.57	5,240.57	0.00	0.70	5,240.71	5,240.57	5,240.81	5,240.68	Dummy Null Structure for LandXML purposes	Standard	1.250	0.14	<None>	0.70

Profile Report
Engineering Profile - Profile - 1 (2020-03-02 StormCAD Base.stsw)
Active Scenario: 2-YR



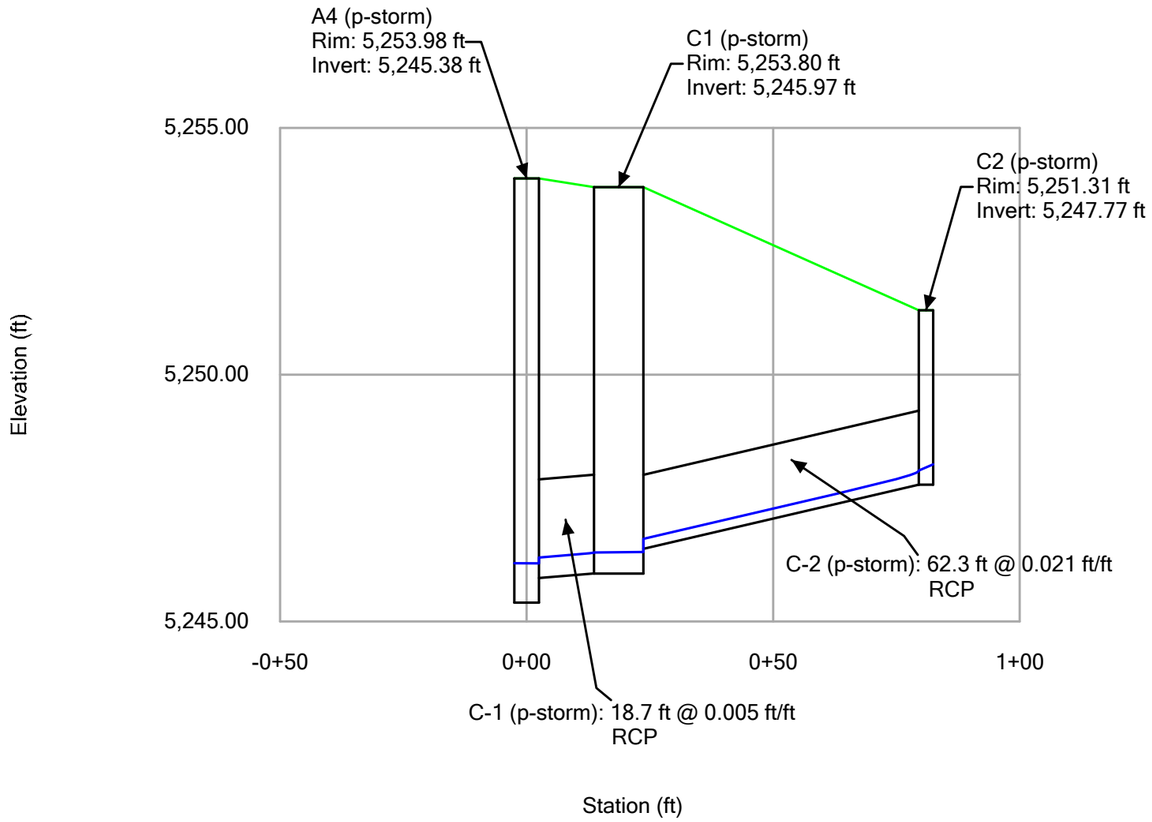
Profile Report
Engineering Profile - STORM LINE B (2020-03-02 StormCAD Base.stsw)
Active Scenario: 2-YR



Profile Report

Engineering Profile - STORM LINE C (2020-03-02 StormCAD Base.stsw)

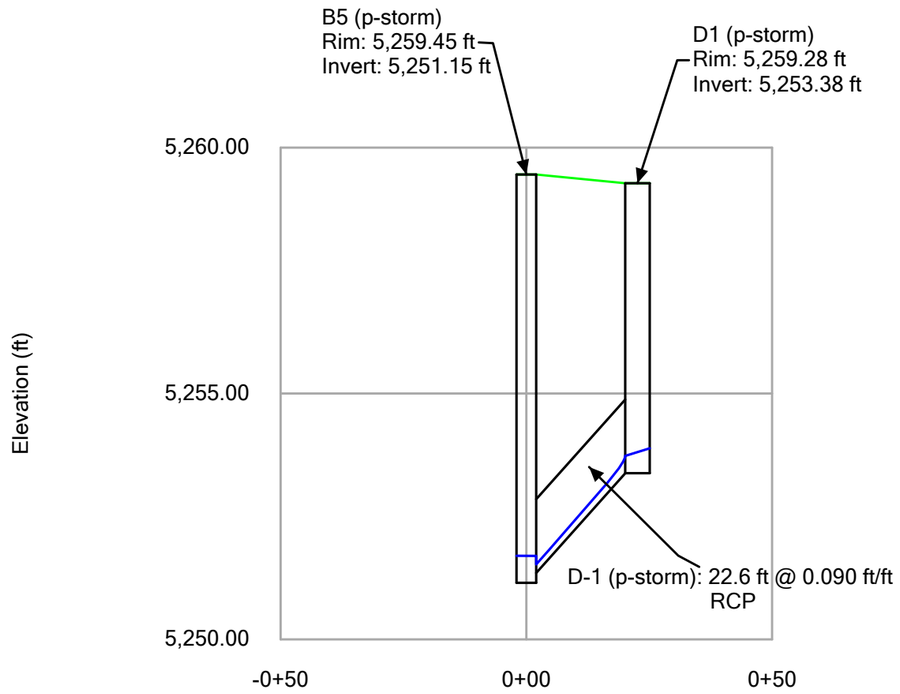
Active Scenario: 2-YR



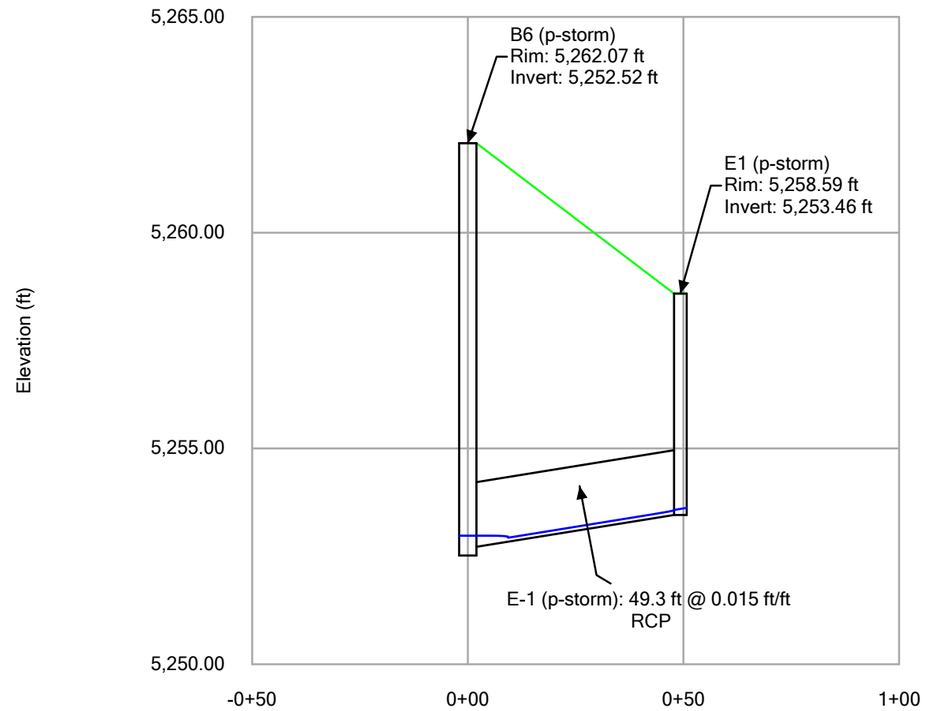
Profile Report

Engineering Profile - STORM LINE D (2020-03-02 StormCAD Base.stsw)

Active Scenario: 2-YR



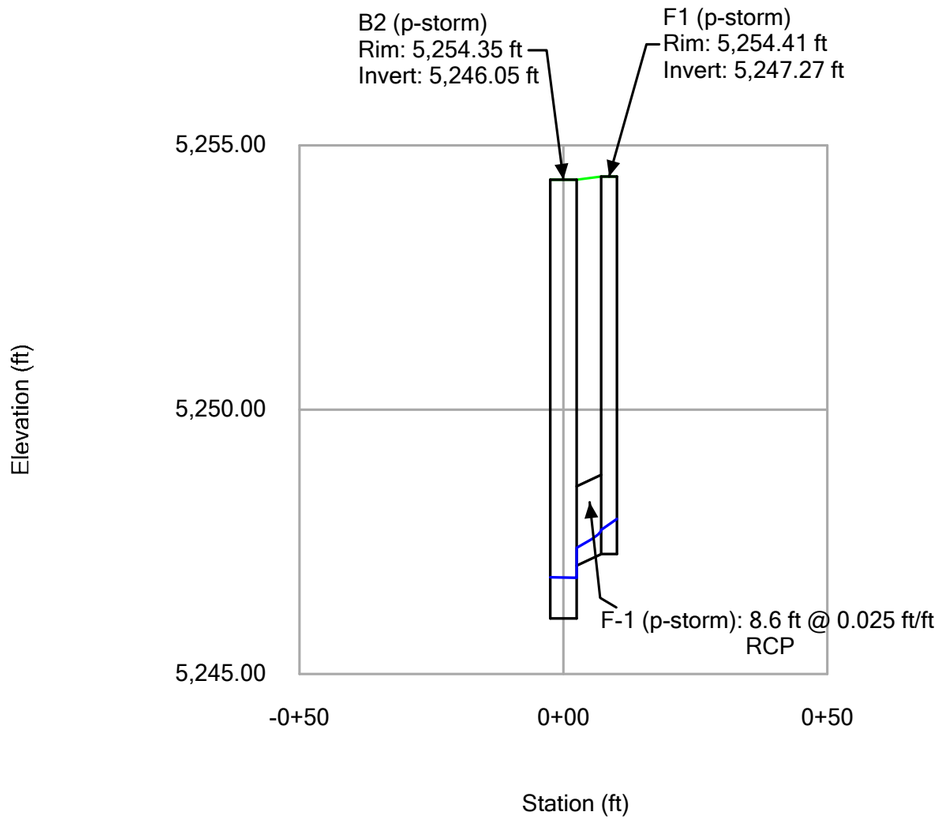
Profile Report
Engineering Profile - STORM LINE E (2020-03-02 StormCAD Base.stsw)
Active Scenario: 2-YR



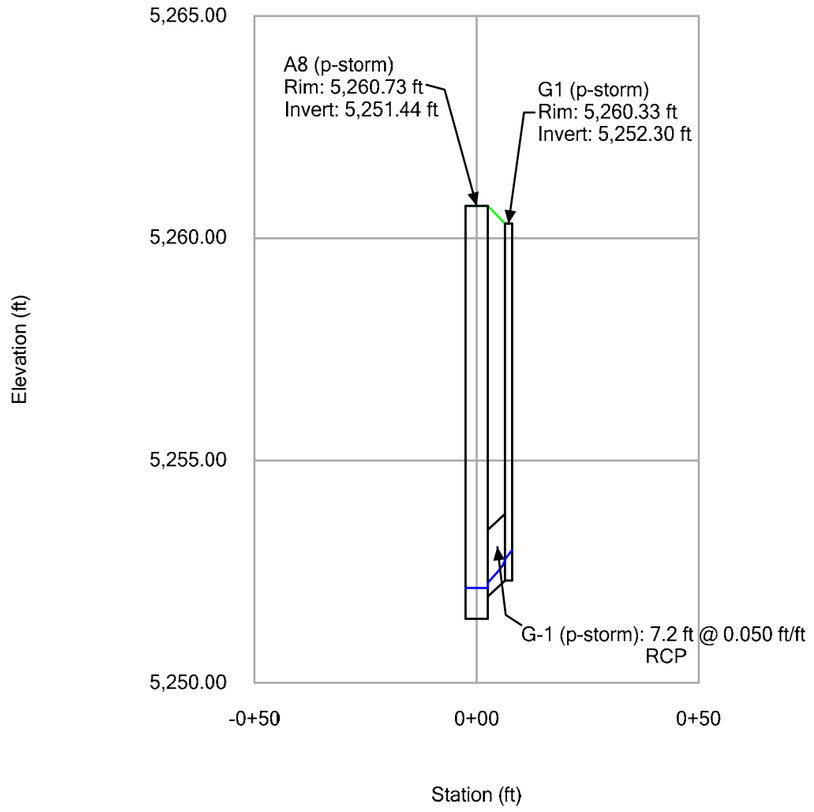
Profile Report

Engineering Profile - STORM LINE F (2020-03-02 StormCAD Base.stsw)

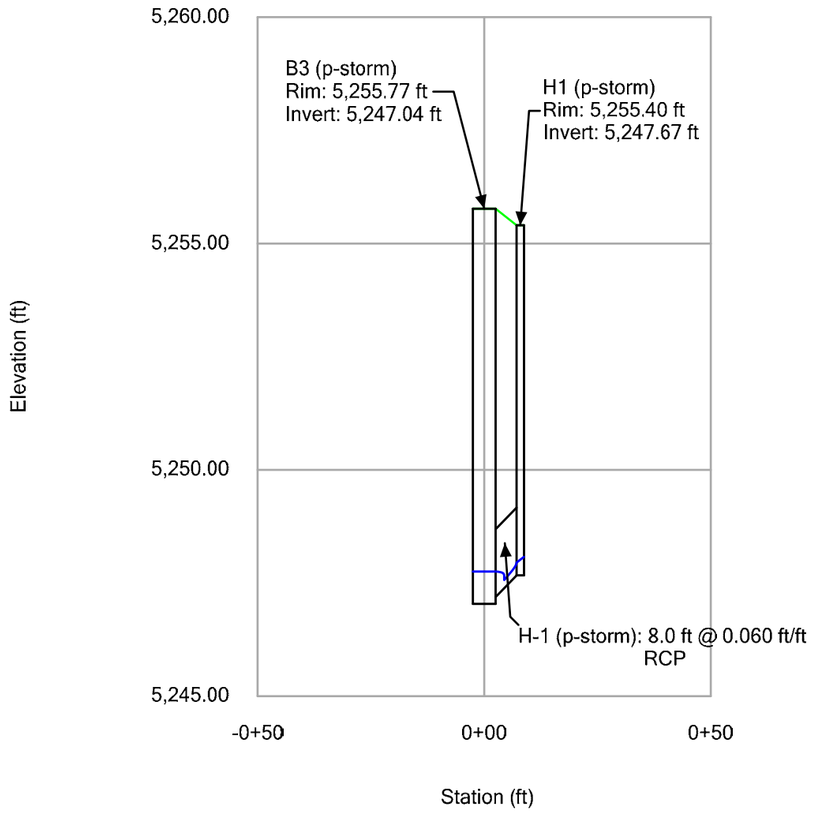
Active Scenario: 2-YR



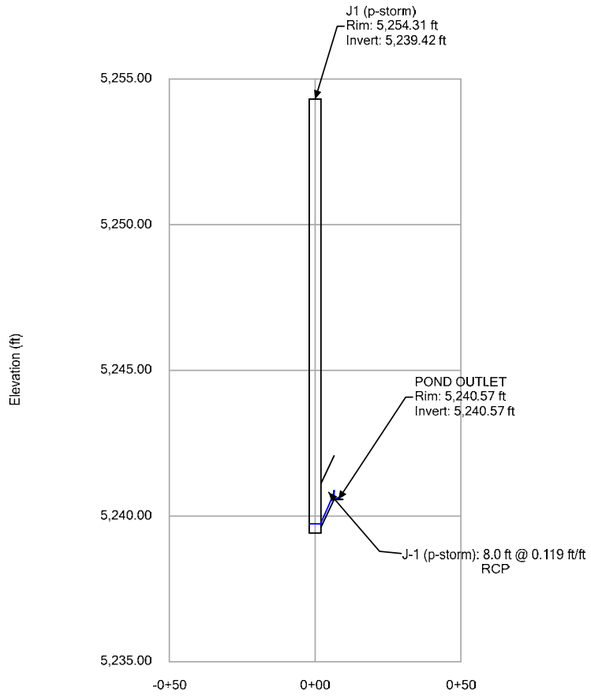
Profile Report
Engineering Profile - STORM LINE G (2020-03-02 StormCAD Base.stsw)
Active Scenario: 2-YR



Profile Report
Engineering Profile - STORM LINE H (2020-03-02 StormCAD Base.stsw)
Active Scenario: 2-YR



Profile Report
Engineering Profile - STORM LINE J (2020-03-02 StormCAD Base.stsw)
Active Scenario: 2-YR



FlexTable: Conduit Table

Active Scenario: 100-YR

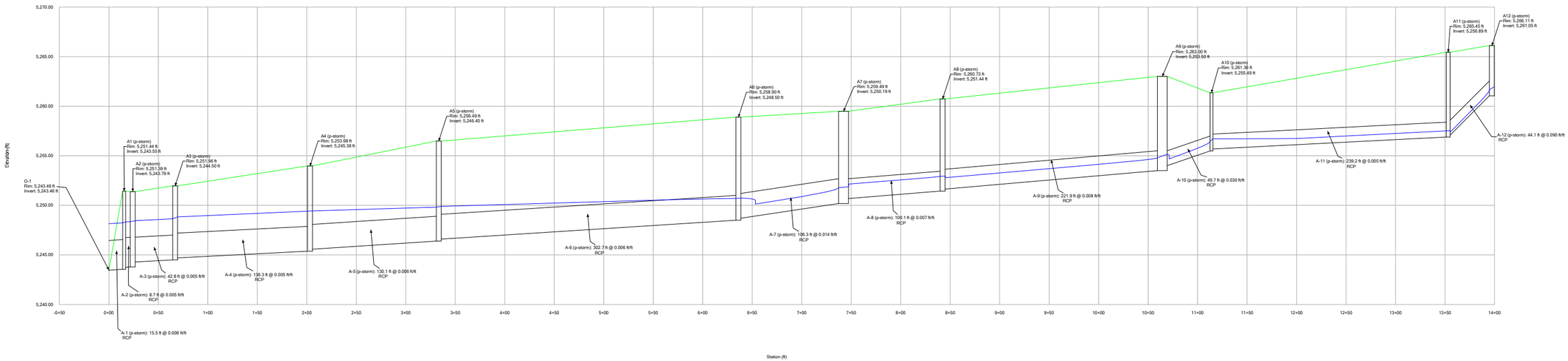
Label	Notes	Diameter (in)	Manning's n	Start Node	Stop Node	Length (Unified) (ft)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)	Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)
A-1 (p-storm)	36" RCP	36.0	0.013	A1 (p-storm)	O-1	15.5	5,243.55	5,243.46	0.006	49.40	51.66	6.99	5,248.23	5,248.15	5,248.99	5,248.91
A-2 (p-storm)	36" RCP	36.0	0.013	A2 (p-storm)	A1 (p-storm)	8.7	5,243.79	5,243.75	0.005	44.20	47.16	6.25	5,248.36	5,248.32	5,248.97	5,248.93
A-3 (p-storm)	30" RCP	30.0	0.013	A3 (p-storm)	A2 (p-storm)	42.8	5,244.50	5,244.29	0.005	26.80	29.00	5.46	5,248.64	5,248.46	5,249.11	5,248.92
A-4 (p-storm)	30" RCP	30.0	0.013	A4 (p-storm)	A3 (p-storm)	136.3	5,245.38	5,244.70	0.005	26.80	29.00	5.46	5,249.42	5,248.83	5,249.88	5,249.30
A-5 (p-storm)	30" RCP	30.0	0.013	A5 (p-storm)	A4 (p-storm)	130.1	5,246.40	5,245.58	0.006	21.90	32.56	4.46	5,249.82	5,249.44	5,250.13	5,249.75
A-6 (p-storm)	30" RCP	30.0	0.013	A6 (p-storm)	A5 (p-storm)	302.7	5,248.50	5,246.60	0.006	21.90	32.49	7.10	5,250.70	5,249.90	5,251.05	5,250.21
A-7 (p-storm)	30" RCP	30.0	0.013	A7 (p-storm)	A6 (p-storm)	106.3	5,250.19	5,248.70	0.014	21.90	48.57	9.64	5,251.78	5,250.73	5,252.47	5,251.14
A-8 (p-storm)	24" RCP	24.0	0.013	A8 (p-storm)	A7 (p-storm)	100.1	5,251.44	5,250.69	0.007	17.20	19.59	7.03	5,252.94	5,252.14	5,253.66	5,252.91
A-9 (p-storm)	24" RCP	24.0	0.013	A9 (p-storm)	A8 (p-storm)	221.9	5,253.50	5,251.64	0.008	13.00	20.71	6.96	5,254.80	5,252.96	5,255.36	5,253.50
A-10 (p-storm)	18" RCP	18.0	0.013	A10 (p-storm)	A9 (p-storm)	49.7	5,255.49	5,254.00	0.030	6.20	18.19	9.32	5,256.45	5,255.16	5,256.87	5,255.44
A-11 (p-storm)	18" RCP	18.0	0.013	A11 (p-storm)	A10 (p-storm)	239.2	5,256.89	5,255.69	0.005	2.70	7.43	3.87	5,257.51	5,256.70	5,257.74	5,256.77
A-12 (p-storm)	18" RCP	18.0	0.013	A12 (p-storm)	A11 (p-storm)	44.1	5,261.05	5,257.09	0.090	2.70	31.45	10.88	5,261.67	5,257.39	5,261.90	5,259.23
B-1 (p-storm)	30" RCP	30.0	0.013	B1 (p-storm)	A2 (p-storm)	216.2	5,245.37	5,244.29	0.005	19.40	29.00	3.95	5,248.92	5,248.43	5,249.16	5,248.67
B-2 (p-storm)	30" RCP	30.0	0.013	B2 (p-storm)	B1 (p-storm)	96.6	5,246.05	5,245.57	0.005	19.40	29.00	3.95	5,249.20	5,248.99	5,249.44	5,249.23
B-3 (p-storm)	24" RCP	24.0	0.013	B3 (p-storm)	B2 (p-storm)	70.3	5,247.04	5,246.55	0.007	17.00	18.93	5.41	5,249.64	5,249.24	5,250.10	5,249.70
B-4 (p-storm)	24" RCP	24.0	0.013	B4 (p-storm)	B3 (p-storm)	173.8	5,249.01	5,247.24	0.010	15.40	22.85	7.80	5,250.43	5,249.67	5,251.08	5,250.04
B-5 (p-storm)	18" RCP	18.0	0.013	B5 (p-storm)	B4 (p-storm)	159.0	5,251.15	5,249.51	0.010	8.80	10.67	6.74	5,252.30	5,250.86	5,252.87	5,251.29
B-6 (p-storm)	18" RCP	18.0	0.013	B6 (p-storm)	B5 (p-storm)	132.0	5,252.52	5,251.35	0.009	6.50	9.89	5.97	5,253.51	5,252.24	5,253.94	5,252.79
B-7 (p-storm)	18" RCP	18.0	0.013	B7 (p-storm)	B6 (p-storm)	99.8	5,253.22	5,252.72	0.005	6.20	7.43	4.70	5,254.27	5,253.68	5,254.61	5,254.10
B-8 (p-storm)	18" RCP	18.0	0.013	B8 (p-storm)	B7 (p-storm)	238.8	5,256.60	5,253.42	0.013	3.70	12.12	6.03	5,257.33	5,254.37	5,257.62	5,254.52
C-1 (p-storm)	24" RCP	24.0	0.013	C1 (p-storm)	A4 (p-storm)	18.7	5,245.97	5,245.88	0.005	7.70	16.00	2.45	5,249.48	5,249.46	5,249.57	5,249.55
C-2 (p-storm)	18" RCP	18.0	0.013	C2 (p-storm)	C1 (p-storm)	62.3	5,247.77	5,246.47	0.021	2.90	15.17	1.64	5,249.54	5,249.50	5,249.59	5,249.54
D-1 (p-storm)	18" RCP	18.0	0.013	D1 (p-storm)	B5 (p-storm)	22.6	5,253.38	5,251.35	0.090	2.70	31.45	10.88	5,254.00	5,252.31	5,254.23	5,252.39
E-1 (p-storm)	18" RCP	18.0	0.013	E1 (p-storm)	B6 (p-storm)	49.3	5,253.46	5,252.72	0.015	0.30	12.86	3.02	5,253.66	5,253.51	5,253.73	5,253.51
EX-2 (p-storm)	18" RCP	18.0	0.013	J1 (p-storm)	O-2	22.4	5,239.44	5,236.84	0.116	11.20	35.75	17.89	5,240.72	5,237.53	5,241.48	5,240.61
F-1 (p-storm)	18" RCP	18.0	0.013	F1 (p-storm)	B2 (p-storm)	8.6	5,247.27	5,247.05	0.025	6.20	16.61	3.51	5,249.28	5,249.25	5,249.48	5,249.45
G-1 (p-storm)	18" RCP	18.0	0.013	G1 (p-storm)	A8 (p-storm)	7.2	5,252.30	5,251.94	0.050	5.30	23.47	10.73	5,253.19	5,252.95	5,253.55	5,253.22
H-1 (p-storm)	18" RCP	18.0	0.013	H1 (p-storm)	B3 (p-storm)	8.0	5,247.67	5,247.19	0.060	2.50	25.71	1.41	5,249.66	5,249.65	5,249.69	5,249.68
J-1 (p-storm)	18" RCP	18.0	0.013	POND OUTLET	J1 (p-storm)	8.0	5,240.57	5,239.64	0.116	11.20	35.80	17.91	5,241.85	5,240.47	5,242.61	5,242.42

FlexTable: Manhole Table

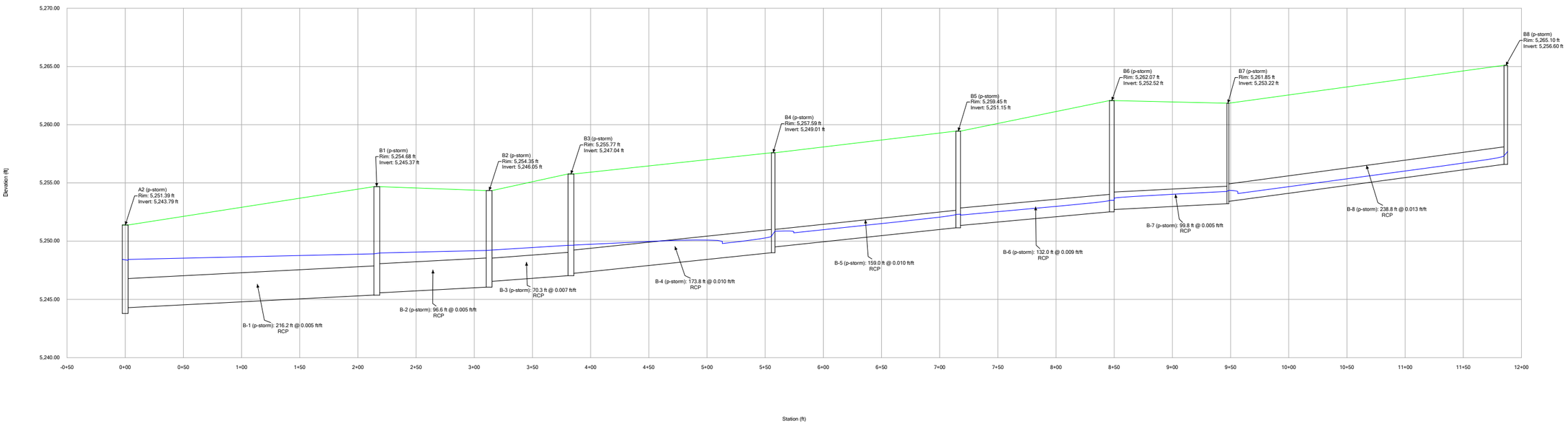
Active Scenario: 100-YR

Label	Elevation (Ground) (ft)	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Out) (ft)	Flow (Total Out) (cfs)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Energy Grade Line (In) (ft)	Energy Grade Line (Out) (ft)	Notes	Headloss Method	Headloss Coefficient (Standard)	Headloss (ft)	HEC-22 Benching Method	Flow (Known) (cfs)
A1 (p-storm)	5,251.44	5,251.44	5,243.55	4.68	49.40	5,248.32	5,248.23	5,248.93	5,248.99	Inlet Type R 5'	HEC-22 Energy (Second Edition)		0.09	Flat	49.40
A2 (p-storm)	5,251.39	5,251.39	5,243.79	4.57	44.20	5,248.43	5,248.36	5,248.67	5,248.97	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.07	Half	44.20
A3 (p-storm)	5,251.96	5,251.96	5,244.50	4.14	26.80	5,248.83	5,248.64	5,249.30	5,249.11	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.19	Half	26.80
A4 (p-storm)	5,253.98	5,253.98	5,245.38	4.03	26.80	5,249.44	5,249.42	5,249.75	5,249.88	5'Ø MANHOLE	HEC-22 Energy (Second Edition)		0.03	Half	26.80
A5 (p-storm)	5,256.49	5,256.49	5,246.40	3.42	21.90	5,249.90	5,249.82	5,250.21	5,250.13	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.08	Half	21.90
A6 (p-storm)	5,258.90	5,258.90	5,248.50	2.20	21.90	5,250.73	5,250.70	5,251.14	5,251.05	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.04	Half	21.90
A7 (p-storm)	5,259.49	5,259.49	5,250.19	1.59	21.90	5,251.87	5,251.78	5,252.64	5,252.47	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.09	Flat	21.90
A8 (p-storm)	5,260.73	5,260.73	5,251.44	1.50	17.20	5,252.95	5,252.94	5,253.22	5,253.66	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	17.20
A9 (p-storm)	5,263.00	5,263.00	5,253.50	1.30	13.00	5,255.16	5,254.80	5,255.44	5,255.36	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.36	Flat	13.00
A10 (p-storm)	5,261.36	5,261.36	5,255.49	0.96	6.20	5,256.70	5,256.45	5,256.77	5,256.87	Inlet Type C	HEC-22 Energy (Second Edition)		0.25	Flat	6.20
A11 (p-storm)	5,265.45	5,265.45	5,256.89	0.63	2.70	5,257.53	5,257.51	5,259.37	5,257.74	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.02	Half	2.70
A12 (p-storm)	5,266.11	5,266.11	5,261.05	0.62	2.70	5,261.96	5,261.67	5,262.20	5,261.90	Modified Inlet Type R 5'	Standard	1.250	0.29	<None>	2.70
B1 (p-storm)	5,254.68	5,254.68	5,245.37	3.54	19.40	5,248.99	5,248.92	5,249.23	5,249.16	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.07	Half	19.40
B2 (p-storm)	5,254.35	5,254.35	5,246.05	3.15	19.40	5,249.24	5,249.20	5,249.70	5,249.44	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.04	Half	19.40
B3 (p-storm)	5,255.77	5,255.77	5,247.04	2.60	17.00	5,249.65	5,249.64	5,249.68	5,250.10	5'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	17.00
B4 (p-storm)	5,257.59	5,257.59	5,249.01	1.41	15.40	5,250.86	5,250.43	5,251.29	5,251.08	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.43	Flat	15.40
B5 (p-storm)	5,259.45	5,259.45	5,251.15	1.15	8.80	5,252.31	5,252.30	5,252.87	5,252.87	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.01	Half	8.80
B6 (p-storm)	5,262.07	5,262.07	5,252.52	0.99	6.50	5,253.51	5,253.51	5,253.51	5,253.94	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.00	Half	6.50
B7 (p-storm)	5,261.85	5,261.85	5,253.22	1.05	6.20	5,254.37	5,254.27	5,254.52	5,254.61	Inlet Type 13 Triple	HEC-22 Energy (Second Edition)		0.10	Flat	6.20
B8 (p-storm)	5,265.10	5,265.10	5,256.60	0.73	3.70	5,257.69	5,257.33	5,257.98	5,257.62	MODIFIED INLET TYPE R 10'	Standard	1.250	0.36	<None>	3.70
C1 (p-storm)	5,253.80	5,253.80	5,245.97	3.50	7.70	5,249.50	5,249.48	5,249.54	5,249.57	Inlet Type R 10'	HEC-22 Energy (Second Edition)		0.02	Flat	7.70
C2 (p-storm)	5,251.31	5,251.31	5,247.77	1.78	2.90	5,249.60	5,249.54	5,249.64	5,249.59	Inlet Type C	Standard	1.250	0.05	<None>	2.90
D1 (p-storm)	5,259.28	5,259.28	5,253.38	0.62	2.70	5,254.29	5,254.00	5,254.53	5,254.23	Inlet Type R 5'	Standard	1.250	0.29	<None>	2.70
E1 (p-storm)	5,258.59	5,258.59	5,253.46	0.20	0.30	5,253.75	5,253.66	5,253.82	5,253.73	Inlet Type C	Standard	1.250	0.09	<None>	0.30
F1 (p-storm)	5,254.41	5,254.41	5,247.27	2.02	6.20	5,249.52	5,249.28	5,249.71	5,249.48	MODIFIED INLET TYPE R 5'	Standard	1.250	0.24	<None>	6.20
G1 (p-storm)	5,260.33	5,260.33	5,252.30	0.89	5.30	5,253.65	5,253.19	5,254.02	5,253.55	Inlet Type 13 Triple	Standard	1.250	0.46	<None>	5.30
H1 (p-storm)	5,255.40	5,255.40	5,247.67	1.99	2.50	5,249.70	5,249.66	5,249.73	5,249.69	Inlet Type 13 Triple	Standard	1.250	0.04	<None>	2.50
J1 (p-storm)	5,254.31	5,254.31	5,239.42	1.28	11.20	5,240.78	5,240.70	5,242.76	5,241.46	4'Ø Manhole	HEC-22 Energy (Second Edition)		0.08	Half	11.20
POND OUTLET	5,240.57	5,240.57	5,240.57	0.00	11.20	5,241.52	5,240.57	5,242.27	5,241.33	Dummy Null Structure for LandXML purposes	Standard	1.250	0.94	<None>	11.20

Profile Report
Engineering Profile - STORM LINE A (2020-03-02 StormCAD Base.stsw)
Active Scenario: 100-YR



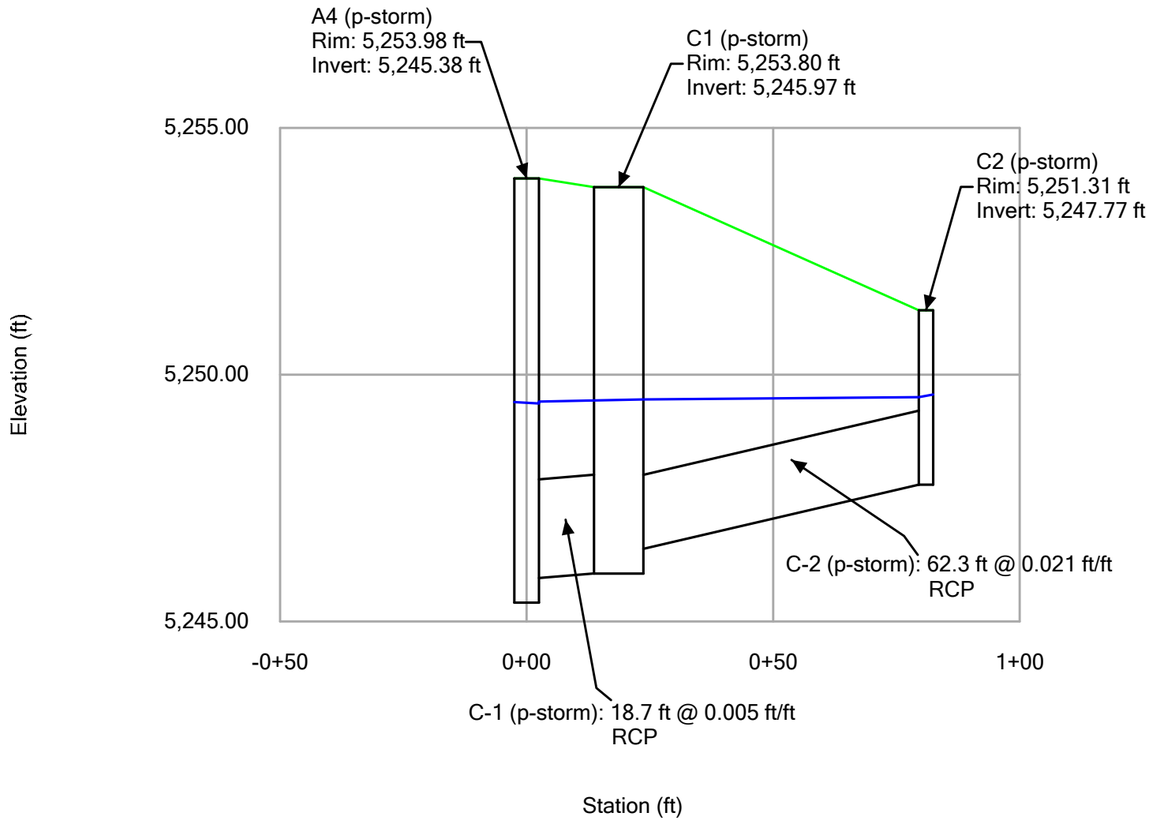
Profile Report
Engineering Profile - STORM LINE B (2020-03-02 StormCAD Base.stsw)
Active Scenario: 100-YR



Profile Report

Engineering Profile - STORM LINE C (2020-03-02 StormCAD Base.stsw)

Active Scenario: 100-YR



Profile Report

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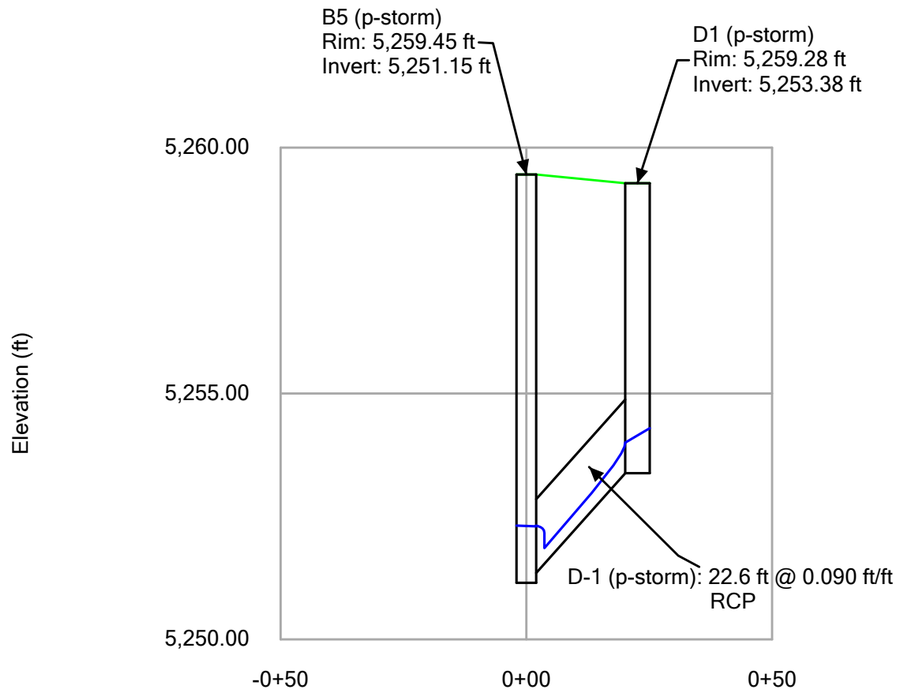
Active Scenario: 100-YR



Profile Report

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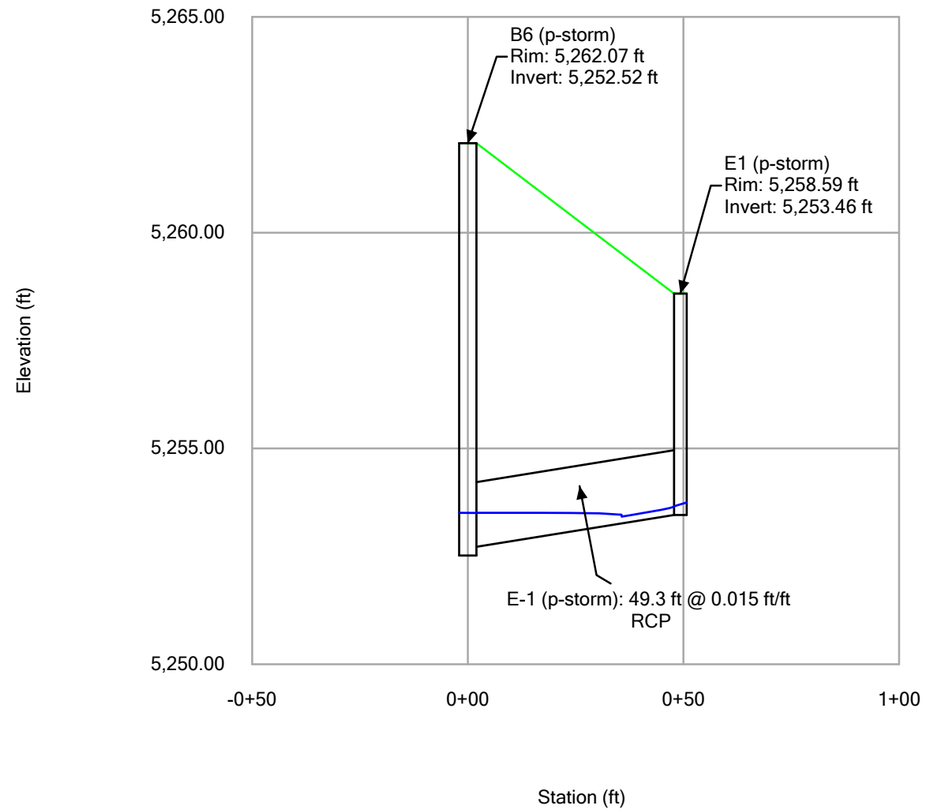

Profile Report

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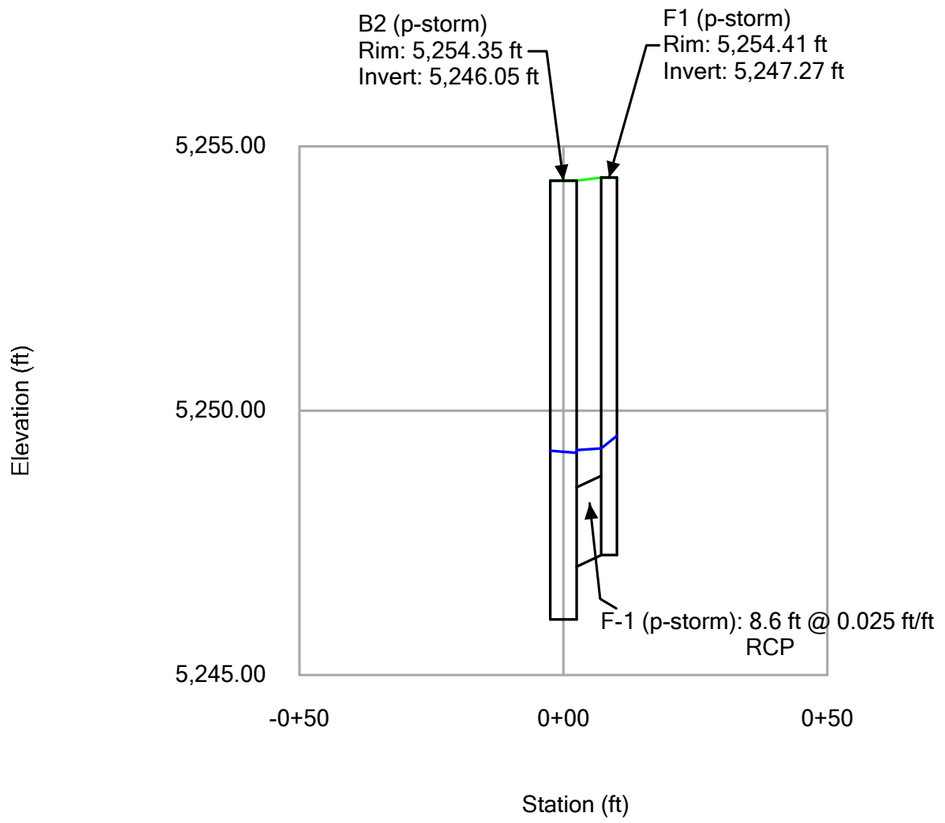
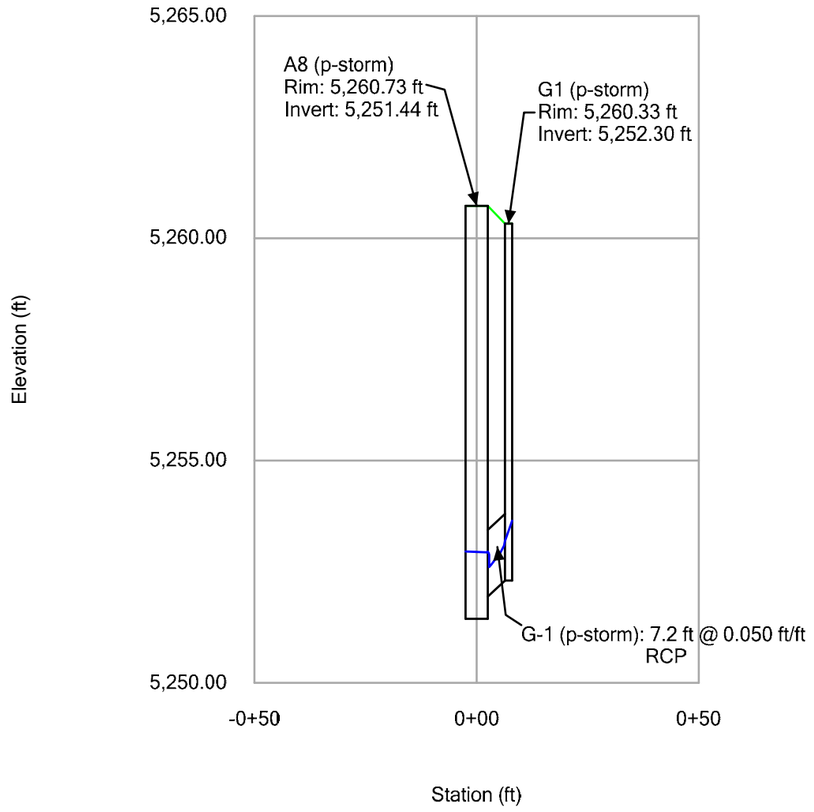
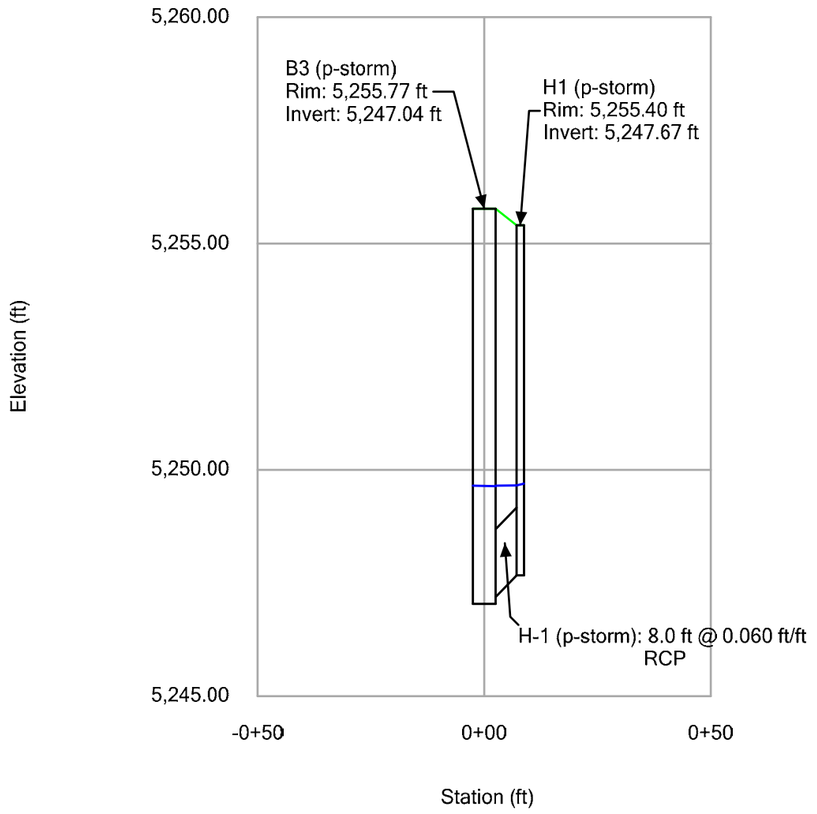
Active Scenario: 100-YR



Profile Report
Engineering Profile - STORM LINE G (2020-03-02 StormCAD Base.stsw)
Active Scenario: 100-YR



Profile Report
Engineering Profile - STORM LINE H (2020-03-02 StormCAD Base.stsw)
Active Scenario: 100-YR



Profile Report
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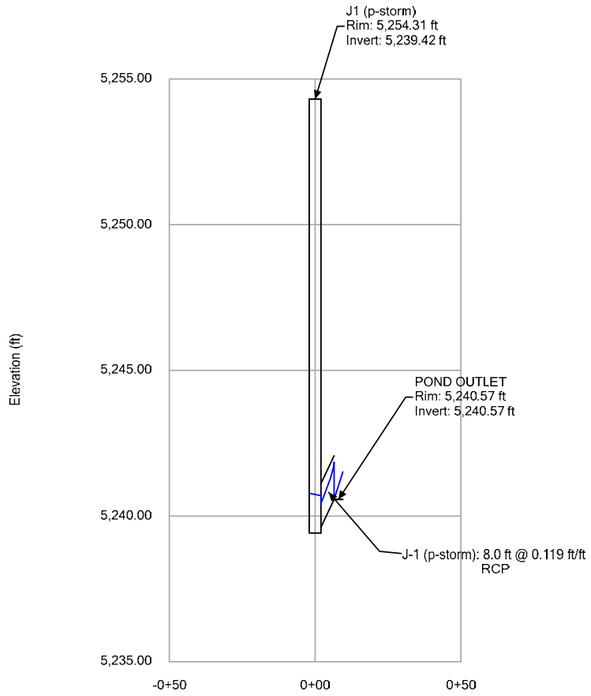


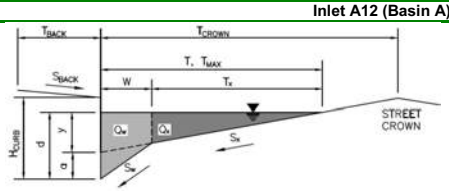
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A12 (Basin A)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.013	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.008	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

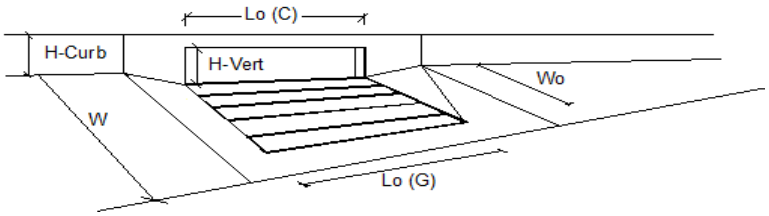
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.9**	**4.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	5.00	5.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.4**	**2.7**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**72**	**%**

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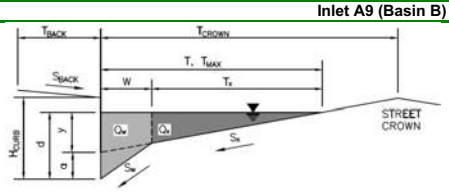
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A9 (Basin B)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.2**	**6.8**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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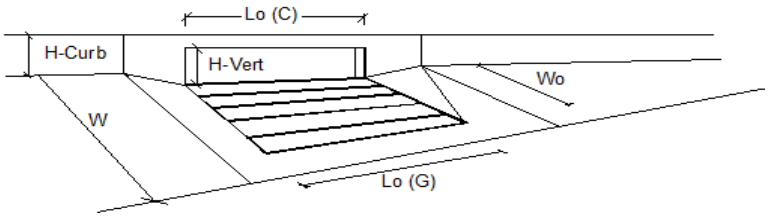

Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.4**	**7.0**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.1**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**86**	**%**

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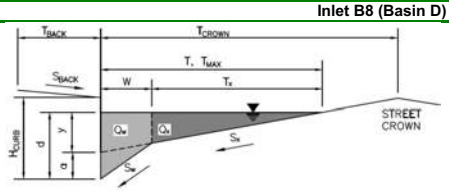
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet B8 (Basin D)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.025	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.1**	**7.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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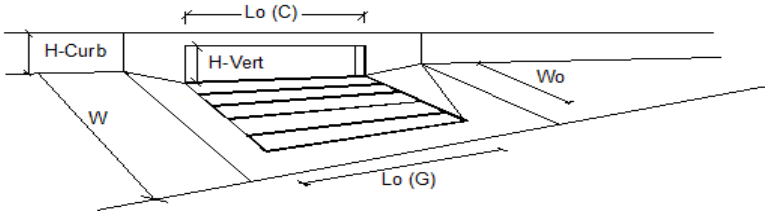

Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	5.0	5.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10

Street Hydraulics: OK - Q < Allowable Street Capacity'	MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.9**	**3.7** **cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.0** **cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**100** **%**

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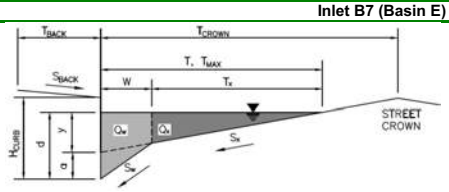
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet B7 (Basin E)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	18.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	45.5	ft
Gutter Width	W =	4.00	ft
Street Transverse Slope	S_X =	0.022	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**2.3**	**11.2**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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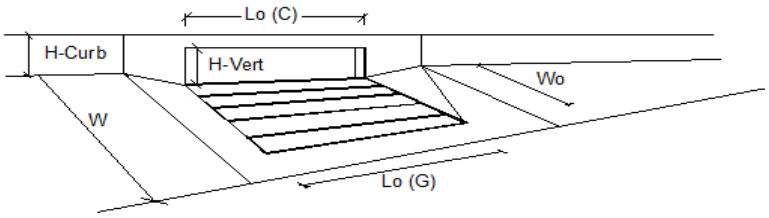

Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT/Denver 13 Valley Grate	Type =	CDOT/Denver 13 Valley Grate	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	2.0	2.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	3	3
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	3.00	3.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	1.73	1.73 ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	0.50	0.50
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	N/A	N/A

Street Hydraulics: OK - Q < Allowable Street Capacity'	MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.7**	**2.3** **cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.7** **cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**97**	**76** **%**

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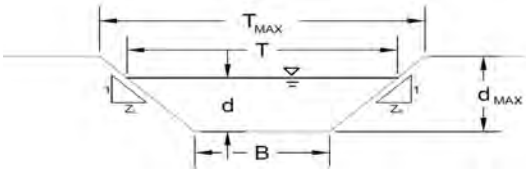
AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet A10 (Basin F)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.040	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- Non-Cohesive
- Cohesive
- Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	6.00	9.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	6.0	17.8	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.75	1.13	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	0.7	3.6	cfs
Water Depth	d =	0.33	0.62	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

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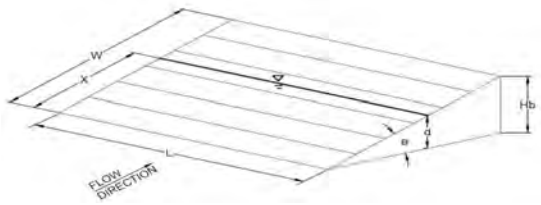
AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet A10 (Basin F)

Inlet Design Information (Input)

Type of Inlet	CDOT Type C	Inlet Type =	CDOT Type C	
Angle of Inclined Grate (must be <= 30 degrees)		θ =	0.00	degrees
Width of Grate		W =	3.00	feet
Length of Grate		L =	3.00	feet
Open Area Ratio		A_{RATIO} =	0.70	
Height of Inclined Grate		H_B =	0.00	feet
Clogging Factor		C_f =	0.50	
Grate Discharge Coefficient		C_d =	0.96	
Orifice Coefficient		C_o =	0.64	
Weir Coefficient		C_w =	2.05	



		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	0.33	0.62	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**3.6**	**9.0**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

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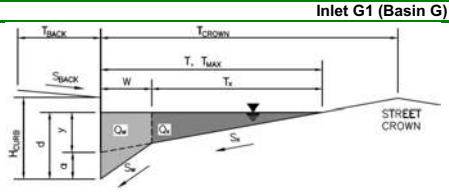
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet G1 (Basin G)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	15.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	28.0	ft
Gutter Width	W =	4.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.042	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**5.1**	**7.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

WARNING: MAJOR STORM max. allowable capacity is less than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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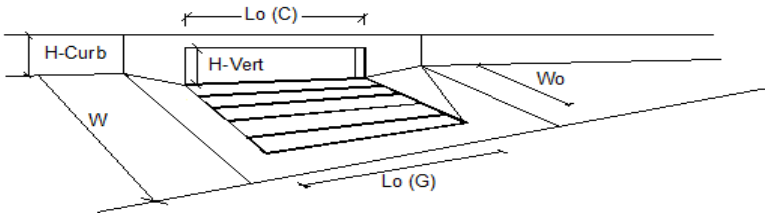

Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT/Denver 13 Valley Grate		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	N/A	N/A	

Street Hydraulics: WARNING: Q > ALLOWABLE Q FOR MAJOR STORM		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.6**	**5.3**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.3**	**2.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**85**	**66**	**%**

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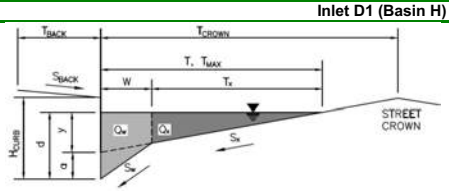
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet D1 (Basin H)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

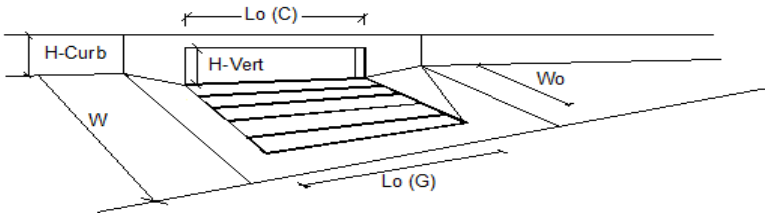
		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.2**	**7.0**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	5.0	5.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	5.00	5.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10

Street Hydraulics: OK - Q < Allowable Street Capacity'	MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.9**	**2.7** **cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**1.0** **cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**74** **%**

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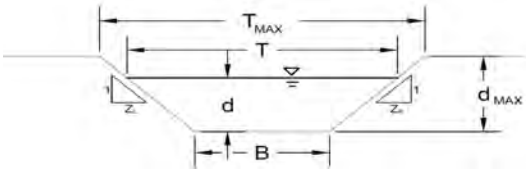
AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet E1 (Basin H1)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.040	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- ○ Non-Cohesive
- ◉ Cohesive
- ○ Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	6.00	9.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	6.0	17.8	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.75	1.13	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	0.1	0.3	cfs
Water Depth	d =	0.16	0.24	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

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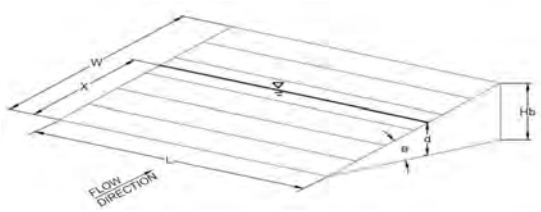
AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet E1 (Basin H1)

Inlet Design Information (Input)

Type of Inlet	CDOT Type C	Inlet Type =	CDOT Type C	
Angle of Inclined Grate (must be <= 30 degrees)		θ =	0.00	degrees
Width of Grate		W =	3.00	feet
Length of Grate		L =	3.00	feet
Open Area Ratio		A_{RATIO} =	0.70	
Height of Inclined Grate		H_B =	0.00	feet
Clogging Factor		C_f =	0.50	
Grate Discharge Coefficient		C_d =	0.96	
Orifice Coefficient		C_o =	0.64	
Weir Coefficient		C_w =	2.05	



		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	0.16	0.24	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**1.2**	**2.2**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

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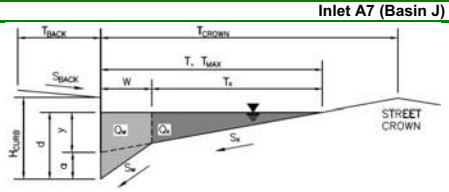
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A7 (Basin J)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	34.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Spread Criterion	**Q_{allow} =**	**3.4**	**5.7**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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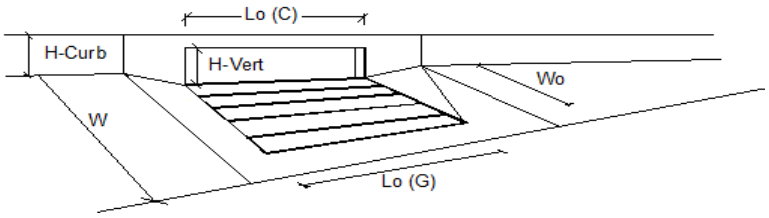

Design Information (Input)		MINOR	MAJOR	
Type of Inlet	CDOT Type R Curb Opening	Type =	CDOT Type R Curb Opening	
Local Depression (additional to continuous gutter depression 'a')		a_{LOCAL} =	5.0	5.0 inches
Total Number of Units in the Inlet (Grate or Curb Opening)		No =	1	1
Length of a Single Unit Inlet (Grate or Curb Opening)		L_o =	10.00	10.00 ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)		W_o =	N/A	N/A ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)		C_f-G =	N/A	N/A
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)		C_f-C =	0.10	0.10

Street Hydraulics: OK - Q < Allowable Street Capacity'	MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.9**	**5.1** **cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.1** **cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**98** **%**

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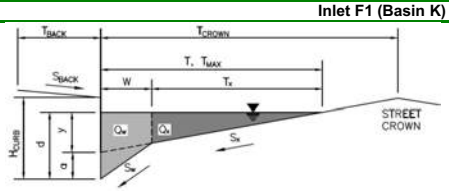
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet F1 (Basin K)



Gutter Geometry (Enter data in the blue cells)

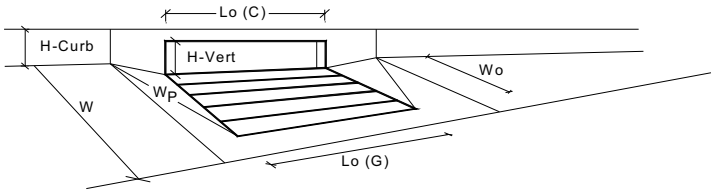
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.015	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	31.5	31.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

Version 4.05 Released March 2017



Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	4.0	7.3	inches
Grate Information			MINOR	MAJOR	Override Depths
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.17	0.44	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.51	0.94	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
			MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)		**Q_a =**	**1.9**	**8.2**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		$Q_{PEAK\ REQUIRED}$ =	1.5	6.2	cfs

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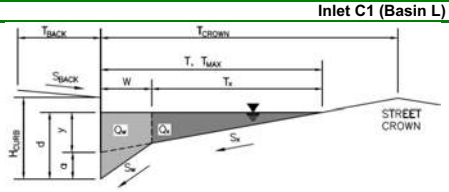
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet C1 (Basin L)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.023	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.021	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

	Minor Storm	Major Storm	
Q_{allow} =	**4.6**	**10.4**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

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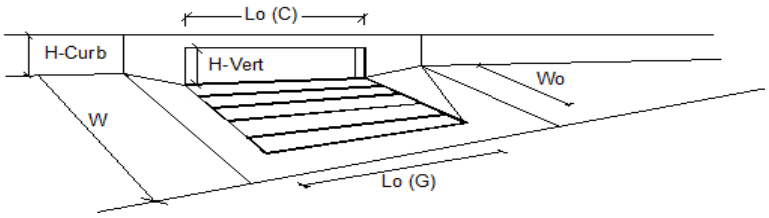

Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**1.1**	**5.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.3**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**95**	**%**

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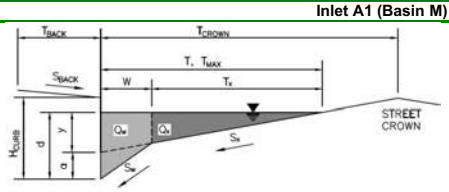
ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet A1 (Basin M)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	44.5	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.015	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	31.5	31.5	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

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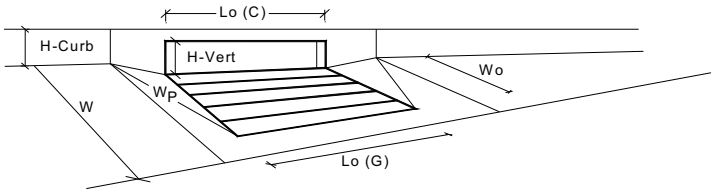

Design Information (Input)	CDOT Type R Curb Opening		MINOR	MAJOR	
Type of Inlet		Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)		a_{local} =	5.00	5.00	inches
Number of Unit Inlets (Grate or Curb Opening)		No =	1	1	
Water Depth at Flowline (outside of local depression)		Ponding Depth =	4.0	7.4	inches
Grate Information			MINOR	MAJOR	Override Depths
Length of a Unit Grate		L_o (G) =	N/A	N/A	feet
Width of a Unit Grate		W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)		A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)		C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)		C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)		C_o (G) =	N/A	N/A	
Curb Opening Information			MINOR	MAJOR	
Length of a Unit Curb Opening		L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches		H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches		H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)		Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)		W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)		C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)		C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)		C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)			MINOR	MAJOR	
Depth for Grate Midwidth		d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation		d_{Curb} =	0.17	0.45	ft
Combination Inlet Performance Reduction Factor for Long Inlets		$RF_{Combination}$ =	0.51	0.95	
Curb Opening Performance Reduction Factor for Long Inlets		RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets		RF_{Grate} =	N/A	N/A	
			MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)		**Q_a =**	**1.9**	**8.5**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)		$Q_{PEAK\ REQUIRED}$ =	1.5	6.4	cfs

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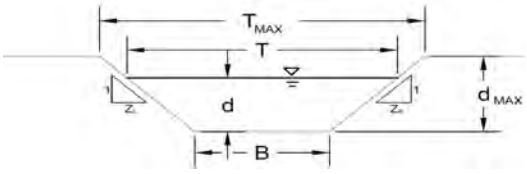
AREA INLET IN A SWALE

OUTLOOK AT NINE MILE

Inlet C2 (Basin N)



This worksheet uses the NRCS vegetal retardance method to determine Manning's n.

For more information see Section 7.2.3 of the USDCM.

Analysis of Trapezoidal Grass-Lined Channel Using SCS Method

NRCS Vegetal Retardance (A, B, C, D, or E)	A, B, C, D or E		
Manning's n (Leave cell D16 blank to manually enter an n value)	n =	0.040	
Channel Invert Slope	S_O =	0.0200	ft/ft
Bottom Width	B =	0.00	ft
Left Side Slope	Z1 =	4.00	ft/ft
Right Side Slope	Z2 =	4.00	ft/ft

Check one of the following soil types:

Soil Type:	Max. Velocity (V_{MAX})	Max Froude No. (F_{MAX})
Non-Cohesive	5.0 fps	0.60
Cohesive	7.0 fps	0.80
Paved	N/A	N/A

Choose One:
- Non-Cohesive
- Cohesive
- Paved

		Minor Storm	Major Storm	
Max. Allowable Top Width of Channel for Minor & Major Storm	T_{MAX} =	6.00	9.00	feet
Max. Allowable Water Depth in Channel for Minor & Major Storm	d_{MAX} =	1.00	2.00	feet

Allowable Channel Capacity Based On Channel Geometry

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Top Width Criterion	Q_{allow} =	6.0	17.8	cfs
MAJOR STORM Allowable Capacity is based on Top Width Criterion	d_{allow} =	0.75	1.13	ft

Water Depth in Channel Based On Design Peak Flow

Design Peak Flow	Q_o =	0.6	2.9	cfs
Water Depth	d =	0.32	0.57	feet

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Version 4.05 Released March 2017

AREA INLET IN A SWALE

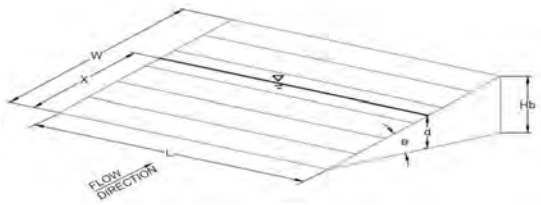
OUTLOOK AT NINE MILE

Inlet C2 (Basin N)

Inlet Design Information (Input)

Type of Inlet: CDOT Type C

Inlet Type = CDOT Type C



Angle of Inclined Grate (must be <= 30 degrees)	θ =	0.00	degrees
Width of Grate	W =	3.00	feet
Length of Grate	L =	3.00	feet
Open Area Ratio	A_{RATIO} =	0.70	
Height of Inclined Grate	H_B =	0.00	feet
Clogging Factor	C_f =	0.50	
Grate Discharge Coefficient	C_d =	0.96	
Orifice Coefficient	C_o =	0.64	
Weir Coefficient	C_w =	2.05	

		MINOR	MAJOR	
Water Depth at Inlet (for depressed inlets, 1 foot is added for depression)	d =	0.32	0.57	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**3.3**	**7.9**	**cfs**
	Bypassed Flow, Q_b =	**0.0**	**0.0**	**cfs**
	Capture Percentage = Q_a/Q_o = C%	**100**	**100**	**%**

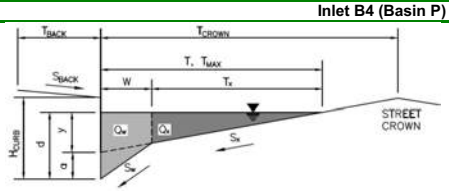
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet B4 (Basin P)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.0	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	34.4	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.028	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	17.2	17.2	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

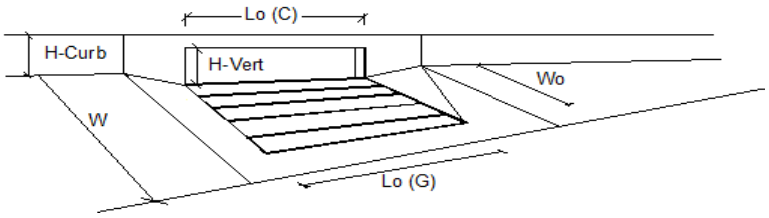
	Minor Storm	Major Storm	
Q_{allow} =	**3.0**	**18.9**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	5.0	5.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	1	1	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	10.00	10.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	N/A	N/A	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	N/A	N/A	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	0.10	0.10	

Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**2.0**	**6.9**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.0**	**0.8**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**100**	**89**	**%**

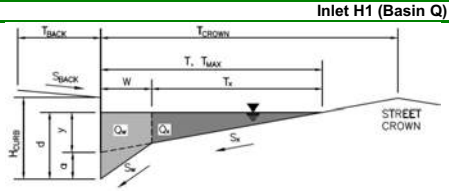
Version 4.05 Released March 2017

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project: OUTLOOK AT NINE MILE

Inlet ID: Inlet H1 (Basin Q)



Gutter Geometry (Enter data in the blue cells)

Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	18.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =	0.020	ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.016	
Height of Curb at Gutter Flow Line	H_{CURB} =	4.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	26.0	ft
Gutter Width	W =	4.00	ft
Street Transverse Slope	S_X =	0.025	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.042	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.010	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.016	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	13.0	13.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	4.0	12.0	inches
Allow Flow Depth at Street Crown (leave blank for no)		☐	☐	check = yes

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

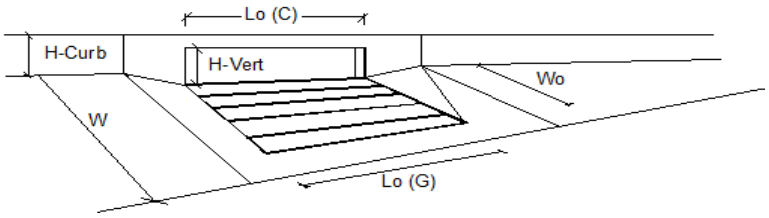
	Minor Storm	Major Storm	
Q_{allow} =	**4.9**	**8.1**	**cfs**

Minor storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

Major storm max. allowable capacity GOOD - greater than the design flow given on sheet 'Inlet Management'

INLET ON A CONTINUOUS GRADE

Version 4.05 Released March 2017



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT/Denver 13 Valley Grate		
Local Depression (additional to continuous gutter depression 'a')	a_{LOCAL} =	2.0	2.0	inches
Total Number of Units in the Inlet (Grate or Curb Opening)	No =	3	3	
Length of a Single Unit Inlet (Grate or Curb Opening)	L_o =	3.00	3.00	ft
Width of a Unit Grate (cannot be greater than W, Gutter Width)	W_o =	1.73	1.73	ft
Clogging Factor for a Single Unit Grate (typical min. value = 0.5)	C_f-G =	0.50	0.50	
Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1)	C_f-C =	N/A	N/A	

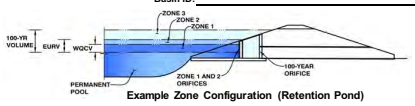
Street Hydraulics: OK - Q < Allowable Street Capacity'		MINOR	MAJOR	
Total Inlet Interception Capacity	**Q =**	**0.6**	**2.5**	**cfs**
Total Inlet Carry-Over Flow (flow bypassing inlet)	**Q_b =**	**0.1**	**0.7**	**cfs**
Capture Percentage = Q_a/Q_o =	**C% =**	**92**	**80**	**%**

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)

Project: _____

Basin ID: _____



Example Zone Configuration (Retention Pond)

Required Volume Calculation

Selected BMP Type =	EDB	
Watershed Area =	14.50	acres
Watershed Length =	1,150	ft
Watershed Slope =	0.014	ft/ft
Watershed Imperviousness =	70.00%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Desired WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	Erie	
Water Quality Capture Volume (WQCV) =	0.332	acre-feet
Excess Urban Runoff Volume (EURV) =	1.115	acre-feet
2-yr Runoff Volume (P1 = 0.81 in.) =	0.634	acre-feet
5-yr Runoff Volume (P1 = 1.11 in.) =	0.914	acre-feet
10-yr Runoff Volume (P1 = 1.39 in.) =	1.244	acre-feet
25-yr Runoff Volume (P1 = 1.84 in.) =	1.817	acre-feet
50-yr Runoff Volume (P1 = 2.24 in.) =	2.267	acre-feet
100-yr Runoff Volume (P1 = 2.68 in.) =	2.845	acre-feet
500-yr Runoff Volume (P1 = 3.89 in.) =	4.354	acre-feet
Approximate 2-yr Detention Volume =	0.594	acre-feet
Approximate 5-yr Detention Volume =	0.859	acre-feet
Approximate 10-yr Detention Volume =	1.164	acre-feet
Approximate 25-yr Detention Volume =	1.448	acre-feet
Approximate 50-yr Detention Volume =	1.630	acre-feet
Approximate 100-yr Detention Volume =	1.866	acre-feet

Optional User Override 1-hr Precipitation

	inches
	inches
	inches
	inches
	inches
	inches

Stage-Storage Calculation

Zone 1 Volume (WQCV) =	0.332	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.782	acre-feet
Zone 3 Volume (User Defined - Zones 1 & 2) =	0.498	acre-feet
Total Detention Basin Volume =	1.613	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	
Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	user	acre-feet

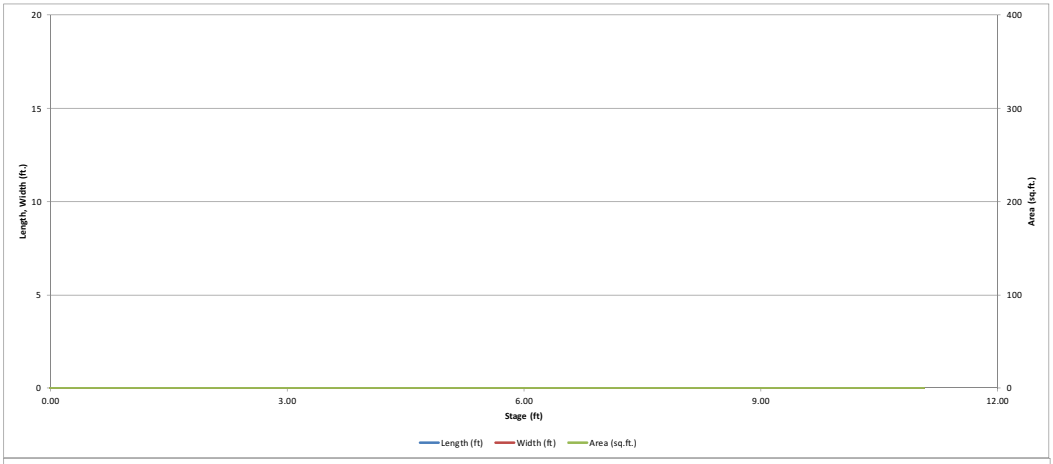
Total detention volume is less than 100-year volume.

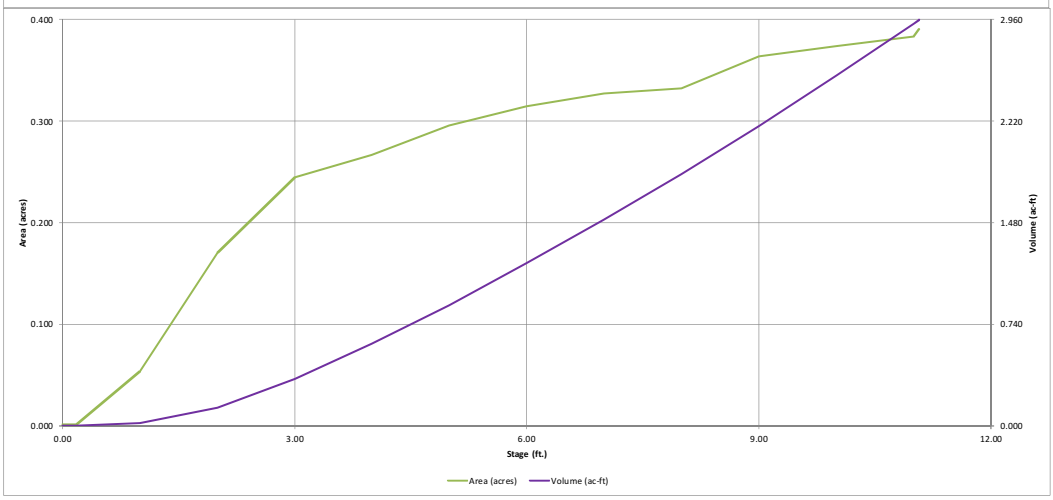
Depth Increment = _____ ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	59	0.001		
	--	0.18	--	--	--	60	0.001	10	0.000
	--	1.00	--	--	--	2,335	0.054	969	0.022
	--	2.00	--	--	--	7,405	0.170	5,789	0.133
	--	3.00	--	--	--	10,665	0.245	14,898	0.342
	--	4.00	--	--	--	11,625	0.267	26,043	0.598
	--	5.00	--	--	--	12,887	0.296	38,299	0.879
	--	6.00	--	--	--	13,684	0.314	51,584	1.184
	--	7.00	--	--	--	14,237	0.327	65,545	1.505
	--	8.00	--	--	--	14,472	0.332	79,899	1.834
	--	9.00	--	--	--	15,825	0.363	95,048	2.182
	--	10.00	--	--	--	16,285	0.374	111,103	2.551
	--	11.00	--	--	--	16,696	0.383	127,593	2.929
	--	11.07	--	--	--	17,002	0.390	128,773	2.956

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

UD-Detention, Version 3.07 (February 2017)



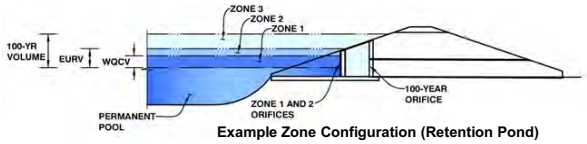


Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Project:

Basin ID:



Example Zone Configuration (Retention Pond)

	Stage (ft)	Zone Volume (ac-ft)	Outlet Type
Zone 1 (WQCV)	2.97	0.332	Orifice Plate
Zone 2 (EURV)	5.78	0.782	Rectangular Orifice
Zone 3 (User)	7.34	0.498	Weir&Pipe (Restrict)
		1.613	Total

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

Underdrain Orifice Invert Depth =	N/A	ft (distance below the filtration media surface)	Underdrain Orifice Area =	N/A	ft²
Underdrain Orifice Diameter =	N/A	inches	Underdrain Orifice Centroid =	N/A	feet

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

Invert of Lowest Orifice =	0.00	ft (relative to basin bottom at Stage = 0 ft)	WQ Orifice Area per Row =	5.972E-03	ft²
Depth at top of Zone using Orifice Plate =	2.97	ft (relative to basin bottom at Stage = 0 ft)	Elliptical Half-Width =	N/A	feet
Orifice Plate: Orifice Vertical Spacing =	7.60	inches	Elliptical Slot Centroid =	N/A	feet
Orifice Plate: Orifice Area per Row =	0.86	sq. inches (diameter = 1-1/16 inches)	Elliptical Slot Area =	N/A	ft²

Calculated Parameters for Plate

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

	Row 1 (required)	Row 2 (optional)	Row 3 (optional)	Row 4 (optional)	Row 5 (optional)	Row 6 (optional)	Row 7 (optional)	Row 8 (optional)
Stage of Orifice Centroid (ft)	0.00	0.60	1.20	1.80				
Orifice Area (sq. inches)	0.86	0.86	0.86	0.86				

	Row 9 (optional)	Row 10 (optional)	Row 11 (optional)	Row 12 (optional)	Row 13 (optional)	Row 14 (optional)	Row 15 (optional)	Row 16 (optional)
Stage of Orifice Centroid (ft)								
Orifice Area (sq. inches)								

User Input: Vertical Orifice (Circular or Rectangular)

	Zone 2 Rectangular	Not Selected	
Invert of Vertical Orifice =	2.97	N/A	ft (relative to basin bottom at Stage = 0 ft)
Depth at top of Zone using Vertical Orifice =	5.78	N/A	ft (relative to basin bottom at Stage = 0 ft)
Vertical Orifice Height =	4.00	N/A	inches
Vertical Orifice Width =	4.37		inches

Calculated Parameters for Vertical Orifice

	Zone 2 Rectangular	Not Selected	
Vertical Orifice Area =	0.12	N/A	ft²
Vertical Orifice Centroid =	0.17	N/A	feet

User Input: Overflow Weir (Dropbox) and Grate (Flat or Sloped)

	Zone 3 Weir	Not Selected	
Overflow Weir Front Edge Height, Ho =	5.91	N/A	ft (relative to basin bottom at Stage = 0 ft)
Overflow Weir Front Edge Length =	5.00	N/A	feet
Overflow Weir Slope =	0.00	N/A	H:V (enter zero for flat grate)
Horiz. Length of Weir Sides =	5.00	N/A	feet
Overflow Grate Open Area % =	70%	N/A	%, grate open area/total area
Debris Clogging % =	50%	N/A	%

Calculated Parameters for Overflow Weir

	Zone 3 Weir	Not Selected	
Height of Grate Upper Edge, H_t =	5.91	N/A	feet
Over Flow Weir Slope Length =	5.00	N/A	feet
Grate Open Area / 100-yr Orifice Area =	21.31	N/A	should be ≥ 4
Overflow Grate Open Area w/o Debris =	17.50	N/A	ft²
Overflow Grate Open Area w/ Debris =	8.75	N/A	ft²

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

	Zone 3 Restrictor	Not Selected	
Depth to Invert of Outlet Pipe =	0.25	N/A	ft (distance below basin bottom at Stage = 0 ft)
Outlet Pipe Diameter =	18.00	N/A	inches
Restrictor Plate Height Above Pipe Invert =	8.50		inches

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

	Zone 3 Restrictor	Not Selected	
Outlet Orifice Area =	0.82	N/A	ft²
Outlet Orifice Centroid =	0.41	N/A	feet
Half-Central Angle of Restrictor Plate on Pipe =	1.52	N/A	radians

User Input: Emergency Spillway (Rectangular or Trapezoidal)

Spillway Invert Stage=	9.65	ft (relative to basin bottom at Stage = 0 ft)	Spillway Design Flow Depth=	0.42	feet
Spillway Crest Length =	50.00	feet	Stage at Top of Freeboard =	11.07	feet
Spillway End Slopes =	4.00	H:V	Basin Area at Top of Freeboard =	0.39	acres
Freeboard above Max Water Surface =	1.00	feet			

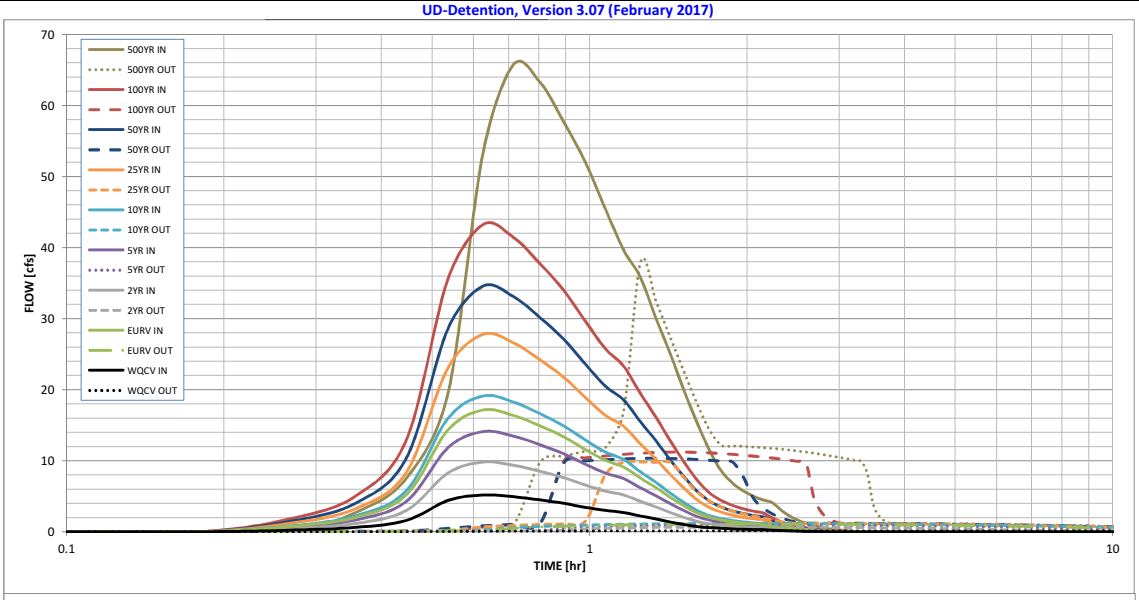
Calculated Parameters for Spillway

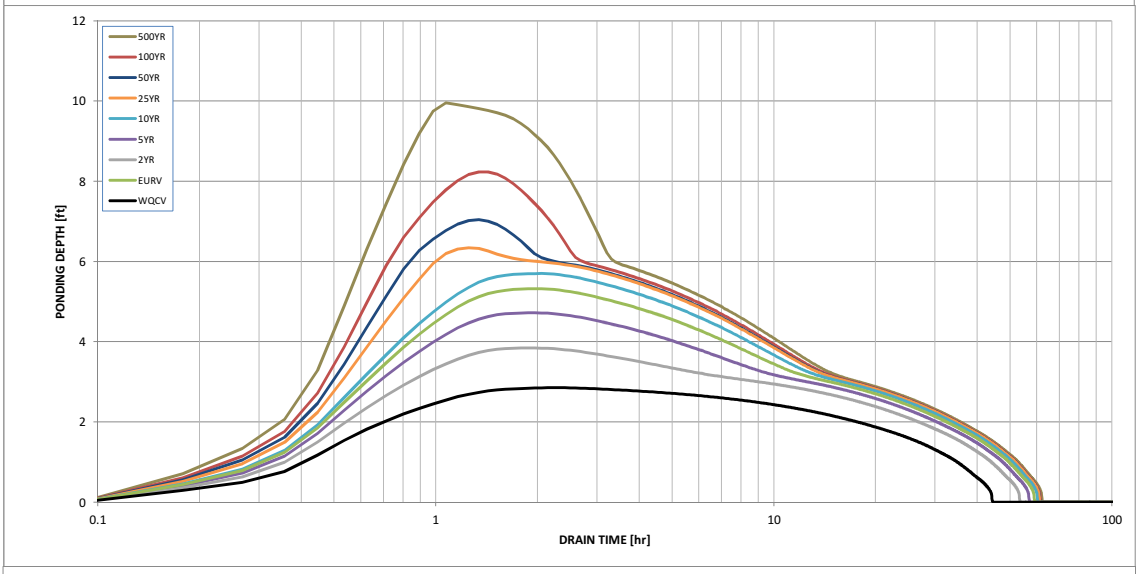
Routed Hydrograph Results

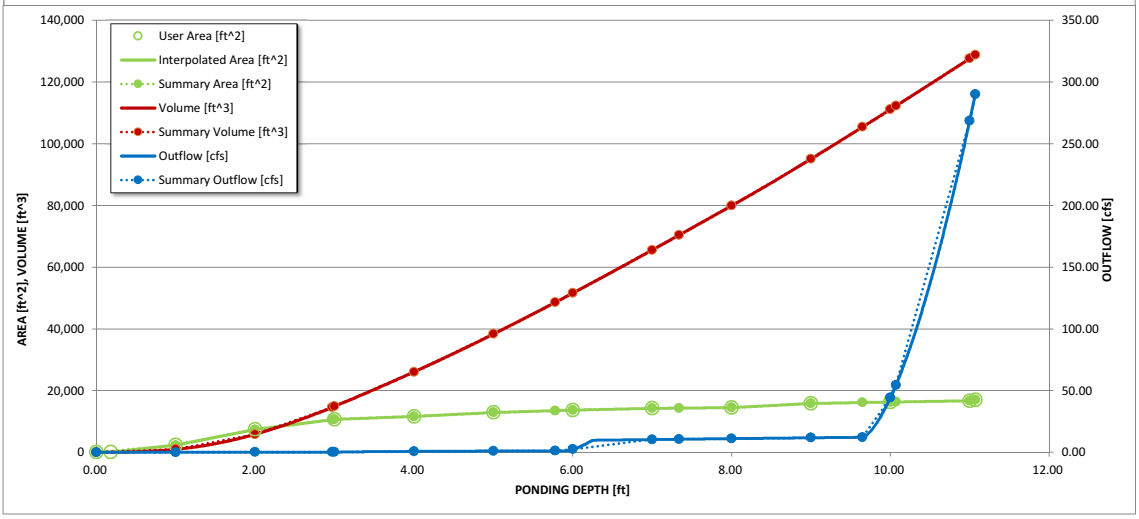
Design Storm Return Period =	WQCV	EURV	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year	500 Year
One-Hour Rainfall Depth (in) =	0.53	1.07	0.81	1.11	1.39	1.84	2.24	2.68	3.89
Calculated Runoff Volume (acre-ft) =	0.332	1.115	0.634	0.914	1.244	1.817	2.267	2.845	4.354
OPTIONAL Override Runoff Volume (acre-ft) =									
Inflow Hydrograph Volume (acre-ft) =	0.332	1.113	0.633	0.913	1.243	1.815	2.266	2.843	4.351
Predevelopment Unit Peak Flow, q (cfs/acre) =	0.00	0.00	0.01	0.01	0.15	0.56	0.85	1.22	2.10
Predevelopment Peak Q (cfs) =	0.0	0.0	0.1	0.2	2.1	8.2	12.3	17.7	30.5
Peak Inflow Q (cfs) =	5.2	17.1	9.8	14.1	19.1	27.8	34.6	43.2	65.7
Peak Outflow Q (cfs) =	0.2	1.1	0.7	1.0	1.2	9.8	10.4	11.2	38.0
Ratio Peak Outflow to Predevelopment Q =	N/A	N/A	N/A	4.7	0.6	1.2	0.8	0.6	1.2
Structure Controlling Flow =	Plate	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Vertical Orifice 1	Outlet Plate 1	Outlet Plate 1	Outlet Plate 1	Spillway
Max Velocity through Grate 1 (fps) =	N/A	N/A	N/A	N/A	N/A	0.5	0.5	0.5	0.6
Max Velocity through Grate 2 (fps) =	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Time to Drain 97% of Inflow Volume (hours) =	39	47	45	47	48	45	43	41	36
Time to Drain 99% of Inflow Volume (hours) =	**42**	53	49	52	54	53	52	51	48
Maximum Ponding Depth (ft) =	2.85	5.32	3.84	4.72	5.70	6.34	7.04	8.24	9.95
Area at Maximum Ponding Depth (acres) =	0.23	0.30	0.26	0.29	0.31	0.32	0.33	0.34	0.37
Maximum Volume Stored (acre-ft) =	0.306	0.972	0.555	0.795	1.088	1.292	1.518	1.911	2.532

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)







S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

Detention Basin Outlet Structure Design

Outflow Hydrograph Workbook Filename:

Storm Inflow Hydrographs **UD-Detention, Version 3.07 (February 2017)**

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

Time Interval	SOURCE	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK	WORKBOOK
	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.36 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hydrograph	0:10:43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Constant	0:16:05	0.23	0.75	0.43	0.62	0.83	1.20	1.48	1.84	2.72
0.932	0:21:26	0.62	2.03	1.17	1.67	2.26	3.27	4.05	5.04	7.56
	0:26:48	1.60	5.21	3.01	4.30	5.80	8.39	10.40	12.95	19.41
	0:32:10	4.40	14.32	8.27	11.82	15.94	23.04	28.54	35.54	53.22
	0:37:31	5.18	17.13	9.81	14.09	19.10	27.78	34.56	43.23	65.71
	0:42:53	4.93	16.38	9.36	13.46	18.27	26.59	33.11	41.46	63.27
	0:48:14	4.49	14.91	8.52	12.26	16.63	24.21	30.14	37.73	57.64
	0:53:36	4.00	13.35	7.61	10.97	14.90	21.72	27.08	33.93	51.93
	0:58:58	3.43	11.57	6.57	9.49	12.91	18.87	23.57	29.59	45.44
	1:04:19	3.00	10.06	5.72	8.26	11.23	16.39	20.50	25.78	39.68
	1:09:41	2.71	9.12	5.19	7.49	10.18	14.87	18.57	23.32	35.81
	1:15:02	2.22	7.57	4.28	6.20	8.46	12.39	15.50	19.49	30.03
	1:20:24	1.81	6.21	3.49	5.08	6.95	10.21	12.79	16.11	24.89
	1:25:46	1.38	4.82	2.69	3.93	5.41	7.99	10.05	12.70	19.73
	1:31:07	1.01	3.63	2.00	2.94	4.08	6.08	7.68	9.74	15.25
	1:36:29	0.74	2.63	1.45	2.13	2.97	4.46	5.66	7.22	11.40
	1:41:50	0.58	2.02	1.12	1.64	2.27	3.39	4.29	5.45	8.54
	1:47:12	0.47	1.66	0.92	1.35	1.86	2.76	3.48	4.41	6.87
	1:52:34	0.40	1.41	0.79	1.14	1.58	2.33	2.94	3.72	5.78
	1:57:55	0.36	1.23	0.69	1.00	1.38	2.04	2.57	3.24	5.02
	2:03:17	0.32	1.11	0.62	0.90	1.24	1.83	2.30	2.90	4.49
	2:08:38	0.30	1.02	0.57	0.83	1.14	1.68	2.11	2.66	4.11
	2:14:00	0.22	0.75	0.42	0.61	0.84	1.24	1.56	1.97	3.07
	2:19:22	0.16	0.55	0.31	0.45	0.61	0.90	1.13	1.43	2.22
	2:24:43	0.12	0.40	0.23	0.33	0.45	0.67	0.84	1.06	1.64
	2:30:05	0.09	0.30	0.17	0.24	0.33	0.49	0.62	0.78	1.22
	2:35:26	0.06	0.21	0.12	0.17	0.24	0.36	0.45	0.57	0.90
	2:40:48	0.04	0.15	0.08	0.12	0.17	0.25	0.32	0.41	0.64
	2:46:10	0.03	0.11	0.06	0.09	0.12	0.18	0.23	0.30	0.47
	2:51:31	0.02	0.07	0.04	0.06	0.08	0.13	0.16	0.21	0.33
	2:56:53	0.01	0.04	0.02	0.04	0.05	0.08	0.10	0.13	0.21
	3:02:14	0.01	0.02	0.01	0.02	0.03	0.04	0.06	0.07	0.12
	3:07:36	0.00	0.01	0.00	0.01	0.01	0.02	0.02	0.03	0.06
	3:12:58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02
	3:18:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:23:41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:29:02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:34:24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:39:46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:45:07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:50:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3:55:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:01:12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:06:34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:11:55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:17:17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:22:38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:28:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:33:22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:38:43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:44:05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:49:26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:54:48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:05:31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:16:14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:21:36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:26:58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:32:19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:37:41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:43:02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:48:24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:53:46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:59:07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:04:29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:09:50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:15:12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:20:34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:25:55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Detention Basin Outlet Structure Design

UD-Detention, Version 3.07 (February 2017)

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.

The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft^2]	Area [acres]	Volume [ft^3]	Volume [ac-ft]	Total Outflow [cfs]
Top of Micropool	0.00	59	0.001	0	0.000	0.00
	1.00	2,307	0.053	969	0.022	0.05
	2.00	7,354	0.169	5,789	0.133	0.11
WQCV	2.97	10,567	0.243	14,579	0.335	0.16
	3.00	10,665	0.245	14,898	0.342	0.17
	4.00	11,625	0.267	26,043	0.598	0.74
	5.00	12,887	0.296	38,299	0.879	1.03
EURV	5.78	13,509	0.310	48,593	1.116	1.20
	6.00	13,684	0.314	51,584	1.184	2.41
	7.00	14,237	0.327	65,545	1.505	10.34
100-yr Water Surface	7.34	14,317	0.329	70,399	1.616	10.59
	8.00	14,472	0.332	79,899	1.834	11.07
	9.00	15,825	0.363	95,048	2.182	11.76
Spillway Invert	9.65	16,124	0.370	105,431	2.420	12.18
	10.00	16,285	0.374	111,103	2.551	44.16
Overflow Water Surface	10.07	16,314	0.375	112,244	2.577	54.37
	11.00	16,696	0.383	127,593	2.929	268.63
Freeboard Elevation	11.07	17,002	0.390	128,773	2.956	289.95

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018)

Designer: JWM
Company: HKS
Date: January 23, 2020
Project: 160602 - Outlook at Nine Mile
Location: Erie, CO

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, I_a — I_a = 70.0 %

B) Tributary Area's Imperviousness Ratio ($i = I_a / 100$) — i = 0.700

C) Contributing Watershed Area — Area = 14.500 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — d_6 = 1.11 in

E) Design Concept (Select EURV when also designing for flood control)

Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time
($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area$)
V_{DESIGN} = ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN}/0.43))$)
$V_{DESIGN\ OTHER}$ = ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired)
$V_{DESIGN\ USER}$ = 0.393 ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
i) Percentage of Watershed consisting of Type A Soils — HSG_A = 0 %
ii) Percentage of Watershed consisting of Type B Soils — HSG_B = 100 %
iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = 0 %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
$EURV_{DESIGN}$ = ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired)
$EURV_{DESIGN\ USER}$ = 1.277 ac-f t

2. Basin Shape: Length to Width Ratio (A basin length to width ratio of at least 2:1 will improve TSS reduction.)
L : W = 4.0 : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes (Horizontal distance per unit vertical, 4:1 or flatter preferred)
Z = 4.00 ft / ft

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

5. Forebay

A) Minimum Forebay Volume (V_{FMIN} = 3% of the WQCV)
V_{FMIN} = 0.012 ac-ft

B) Actual Forebay Volume
V_F = 0.012 ac-ft

C) Forebay Depth (D_F = 18 inch maximum)
D_F = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge
Q_{100} = 43.10 cfs

ii) Forebay Discharge Design Flow ($Q_F = 0.02 * Q_{100}$)
Q_F = 0.86 cfs

E) Forebay Discharge Design

Choose One
- ○ Berm With Pipe
- ◉ Wall with Rect. Notch
- ○ Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches)
Calculated D_P = in

G) Rectangular Notch Width
Calculated W_N = 5.3 in

Design Procedure Form: Extended Detention Basin (EDB)

Designer: JWM
Company: HKS
Date: January 23, 2020
Project: 160602 - Outlook at Nine Mile
Location: Erie, CO

6. Trickle Channel

A) Type of Trickle Channel — Choose One: (•) Concrete ( ) Soft Bottom

F) Slope of Trickle Channel — S = 0.0050 ft / ft

7. Micropool and Outlet Structure

A) Depth of Micropool (2.5-feet minimum) — D_M = 2.8 ft

B) Surface Area of Micropool (10 ft^2 minimum) — A_M = 25 sq ft

C) Outlet Type — Choose One: (•) Orifice Plate ( ) Other (Describe):

D) Smallest Dimension of Orifice Opening Based on Hydrograph Routing (Use UD-Detention) — $D_{orifice}$ = 0.96 inches

E) Total Outlet Area — A_{ot} = 3.84 square inches

8. Initial Surcharge Volume

A) Depth of Initial Surcharge Volume (Minimum recommended depth is 4 inches) — D_{IS} = 4 in

B) Minimum Initial Surcharge Volume (Minimum volume of 0.3% of the WQCV) — V_{IS} = 51 cu ft

C) Initial Surcharge Provided Above Micropool — V_s = 8.3 cu ft

9. Trash Rack

A) Water Quality Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.095D})$ — A_t = 135 square inches

B) Type of Screen (If specifying an alternative to the materials recommended in the USDCM, indicate "other" and enter the ratio of the total open are to the total screen are for the material specified.) — Other (Y/N): y — *Other (Please describe below)*: Aluminum Bar Grate trash rack per town of Erie comments. See detention pond details for additional information.

C) Ratio of Total Open Area to Total Area (only for type 'Other') — User Ratio =

D) Total Water Quality Screen Area (based on screen type) — A_{total} = sq. in.

E) Depth of Design Volume (EURV or WQCV) (Based on design concept chosen under 1E) — H= 5.87 feet

F) Height of Water Quality Screen (H_{TR}) — H_{TR}= 102.4 inches

G) Width of Water Quality Screen Opening ($W_{opening}$) (Minimum of 12 inches is recommended) — $W_{opening}$ = inches

Design Procedure Form: Extended Detention Basin (EDB)

Designer: JWM
Company: HKS
Date: January 23, 2020
Project: 160602 - Outlook at Nine Mile
Location: Erie, CO

10. Overflow Embankment

A) Describe embankment protection for 100-year and greater overtopping:

B) Slope of Overflow Embankment
(Horizontal distance per unit vertical, 4:1 or flatter preferred)

Ze = 4.00 ft / ft

11. Vegetation

Choose One
- ○ Irrigated
- ○ Not Irrigated

12. Access

A) Describe Sediment Removal Procedures

Notes:

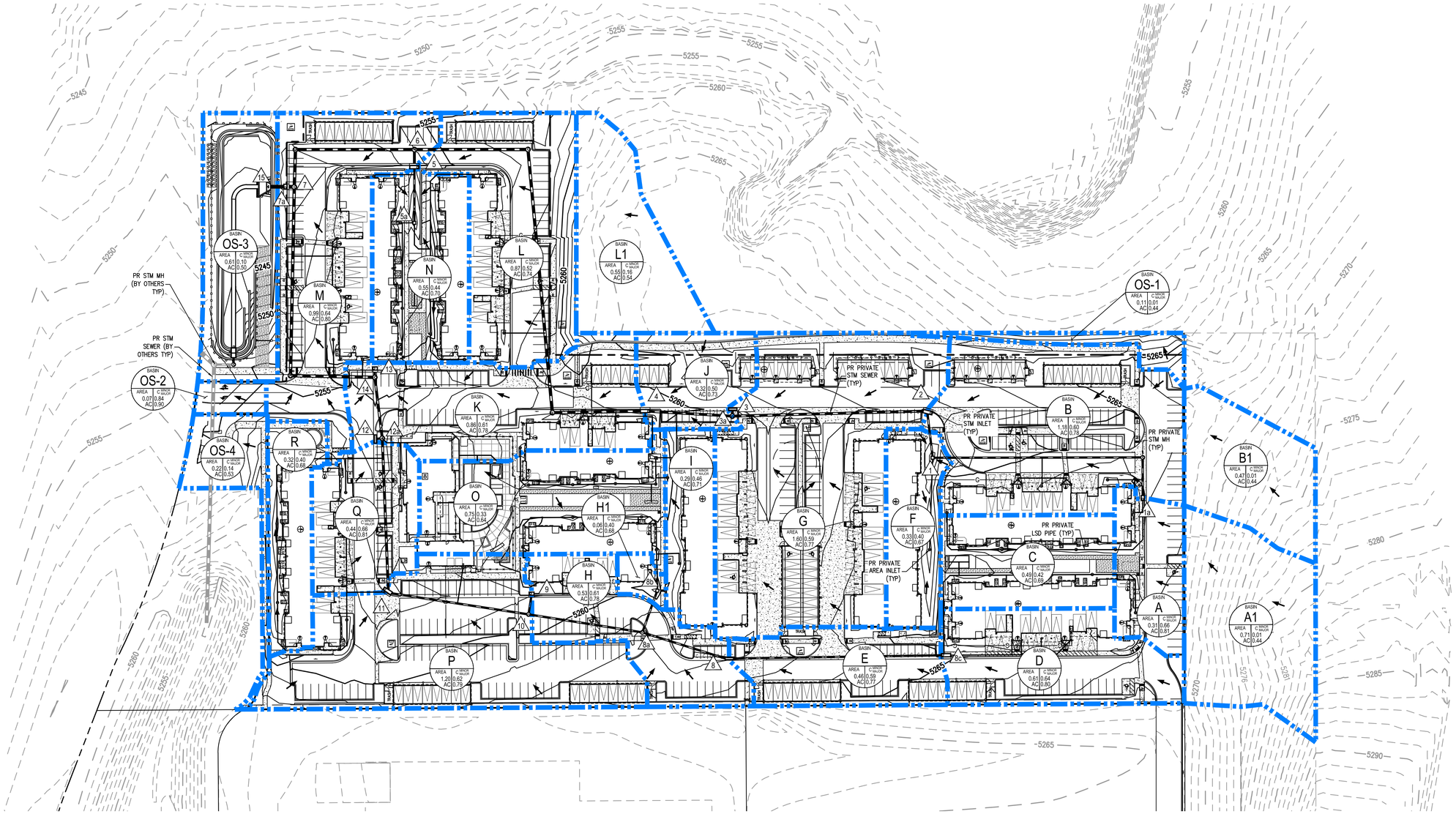
APPENDIX E

Final Drainage Plan

Detention Pond Details

Storm Sewer Profiles

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



LENGEND:

- BASIN BOUNDARY
- DRAINAGE FLOW
- PROPOSED STORM SEWER
- PROPOSED CONTOURS
- PROPOSED OVERLOT GRADING CONTOURS BY OTHERS

BASIN DESIGNATION — OS 1 — 2-YR RATIONAL C COEFFICIENT
BASIN SIZE IN ACRES — AREA 1.23 AC — C MINOR 0.45 C MAJOR 0.67 — 100-YR RATIONAL C COEFFICIENT
1 — BASIN DESIGN POINT

NOTES:

1. THE OVERLOT GRADING SHOWN EXTERIOR TO THE SITE WAS PROVIDED BY GALLOWAY AND IS SHOWN FOR REFERENCE ONLY.

RUNOFF SUMMARY TABLE

DESIGN POINT	CONTRIBUTING AREA (ACRES)	RUNOFF PEAK 2-YEAR EVENT (CFS)	RUNOFF PEAK 100-YEAR EVENT (CFS)
1a	1.02	0.40	3.80
1	0.82	0.70	3.60
2	1.65	1.39	8.12
3	1.60	1.94	8.13
4	0.61	0.92	5.21
5	1.42	1.06	6.15
5a	0.55	0.56	2.91
7a	1.31	1.50	6.41
8	0.46	0.69	2.98
8b	0.06	0.06	0.33
8c	0.61	0.90	3.71
9	0.53	0.89	3.75
11	1.20	2.03	7.74
12	0.44	0.71	3.20
13	1.61	1.52	6.16

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

60 0 60 120
SCALE: 1" = 60'

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen Development | Services | Investments

OUTLOOK AT NINE MILE
DRAINAGE PLAN

ISSUE DATE: 11-01-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 1 OF 1

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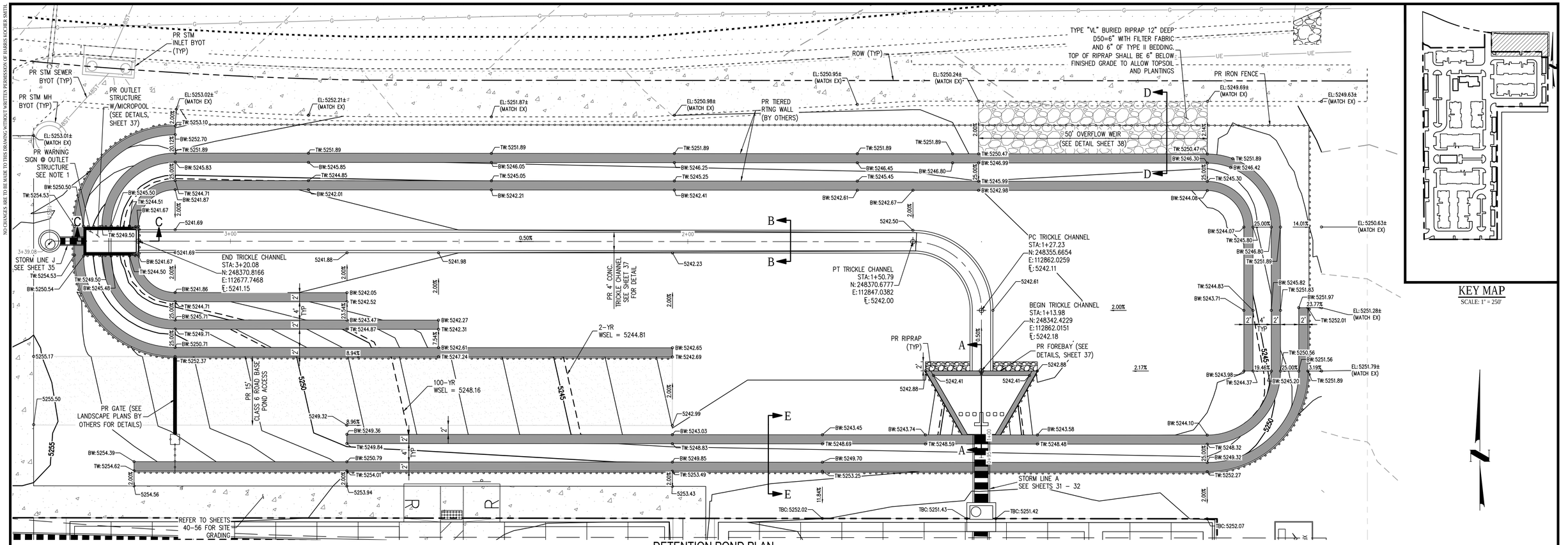
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

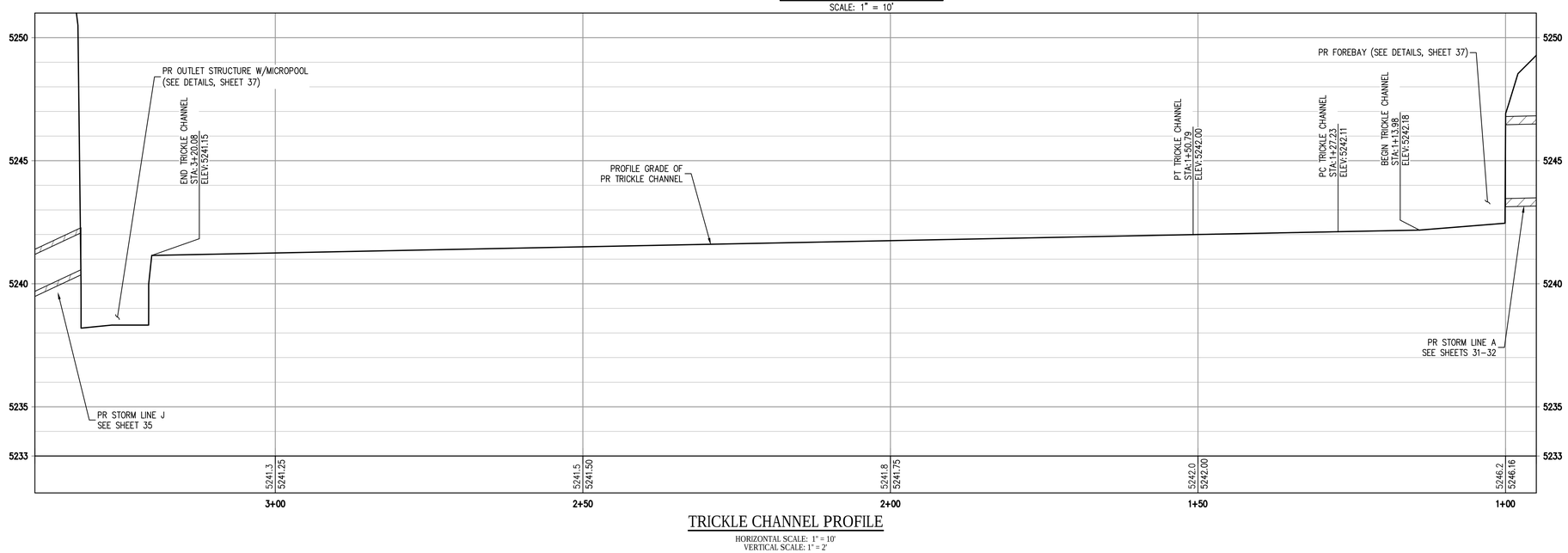


DETENTION POND PLAN

SCALE: 1" = 10'

KEY MAP

SCALE: 1" = 250'



TRICKLE CHANNEL PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

OUTLET STRUCTURE NOTES:

1. SIGN SHALL STATE " WARNING UNAUTHORIZED MODIFICATION OF THIS OUTLET IS A CODE VIOLATION AND SUBJECT TO THE PENALTIES AS PROVIDED BY LAW". REFER TO CITY AND STATE REGULATION REGARDING SPECIFICS OF THIS SIGN.
2. SEE SHEETS 37 FOR SECTIONS A-A, B-B, C-C, D-D AND FOR ALL SPECIFIC DETAILS FOR THIS DETENTION POND.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: KDB
CHECKED BY: MSM
DRAWN BY: KDB

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
DETENTION POND PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 36

36 OF 69

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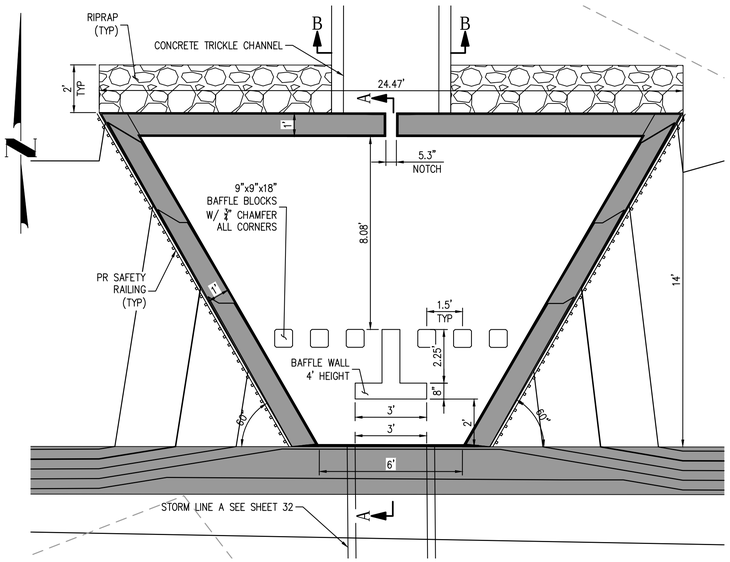
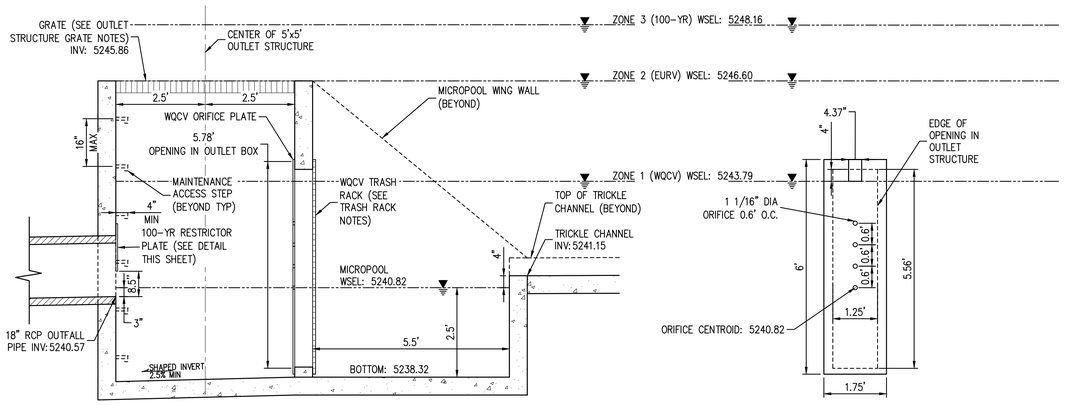
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



MODIFIED IMPACT STILLING BASIN PLAN

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'

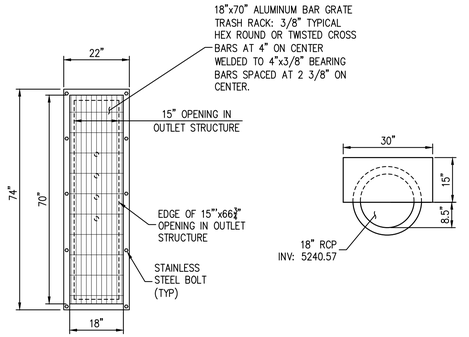


SECTION C–C
WATER QUALITY OUTLET STRUCTURE PROFILE

SCALE: N.T.S.

WQCV ORIFICE PLATE DETAIL

N.T.S.



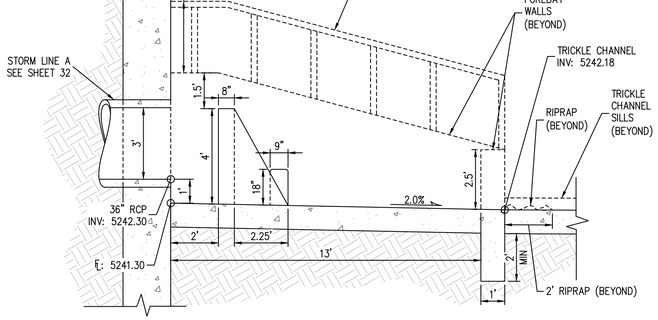
WQCV TRASH RACK DETAIL

N.T.S.

REFER TO UDFCD ORIFICE PLATE AND TRASH RACK NOTES (VOL 3, FIG OS-4) FOR ADDITIONAL INFORMATION

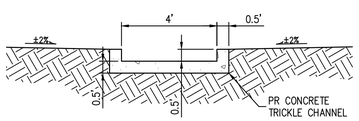
100-YR RESTRICTOR PLATE DETAIL

N.T.S.



SECTION A–A
MODIFIED IMPACT STILLING BASIN PROFILE DETAIL

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'



SECTION B–B
TRICKLE CHANNEL DETAIL

SCALE: 1" = 3'

WATER QUALITY OUTLET STRUCTURE PLAN

SCALE: N.T.S.

GENERAL NOTES:

1. ALL PENETRATIONS AND JOINTING SHALL BE WATER-TIGHT, WITH LINK-SEAL OR APPPROVED EQUIVALENT.
2. THE EXTENDED DETENTION BASIN FOREBAY SHALL BE BUILT IN ACCORDANCE WITH CURRENT UDFCD CRITERIA AND DETAILS.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL TRASH RACKS AND ORIFICE PLATES PRIOR TO CONSTRUCTION.
4. STRUCTURAL DESIGN OF ALL TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.
5. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
6. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.
7. MODIFIED IMPACT STILLING BASIN FIGURE 9-43 PER URBAN STORM DRAINAGE CRITERIA MANUAL, UPDATED SEPTEMBER 2017.
8. STEPS PROVIDED FOR MAINTENANCE ACCESS TO THE OUTLET STRUCTURE SHALL CONFORM TO AASHTO M 199.

TRASH RACK NOTES:

1. TRASH RACK SHALL BE IN ACCORDANCE WITH UDFCD TYPICAL BAR GRATE TRASH RACK
   - 1.1. ⅜" TYPICAL HEX ROUND OR TWISTED CROSS BARS MOUNTED AT 4" O.C.
   - 1.2. STAINLESS STEEL SUPPORT BARS SHALL BE 4" X ⅜", 2 ⅜" O.C.
   - 1.3. C8X18.75 AMERICAN STANDARD STRUCTURAL STEEL CHANNEL FORMED INTO CONCRETE BOTTOM AND SIDE OF TRASH RACK SHALL BE ATTACHED BY STAINLESS STEEL BOLTING HARDWARE, 12" MAX O.C. ALONG THE EDGE OF THE MOUNTING FRAME.

OUTLET STRUCTURE GRATE NOTES:

1. GRATE SHALL BE CLOSED MESH GRATE PER CDOT TYPE C INLET M-604-10
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS ALUMINUM OR STEEL, SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.

ORIFICE/RESTRICTOR PLATE NOTES:

1. PROVIDE GASKET MATERIAL BETWEEN ORIFICE PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX O.C.

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 37

37 OF 69

FILEPATH: P:\160602\ENGINEERING\DRAINAGE\CD - DETENTION POND DETAILS.DWG LAYOUT: LAYOUT1
4 XREFs: cd - stamp, cd_evergreen logo, p-base, p-util
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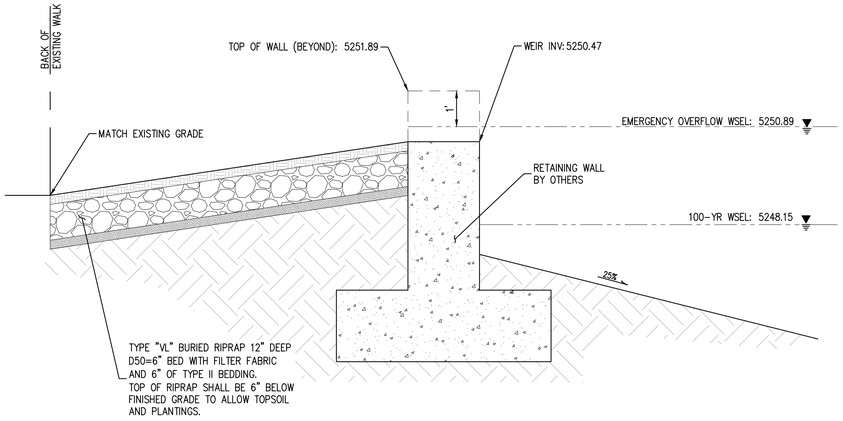
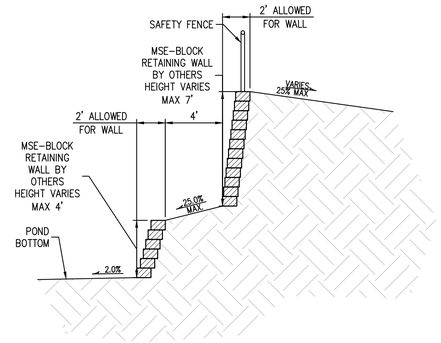
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



SECTION D-D
OVERFLOW SPILLWAY DETAIL
N.T.S.



SECTION E-E
RETAINING WALL DETAIL
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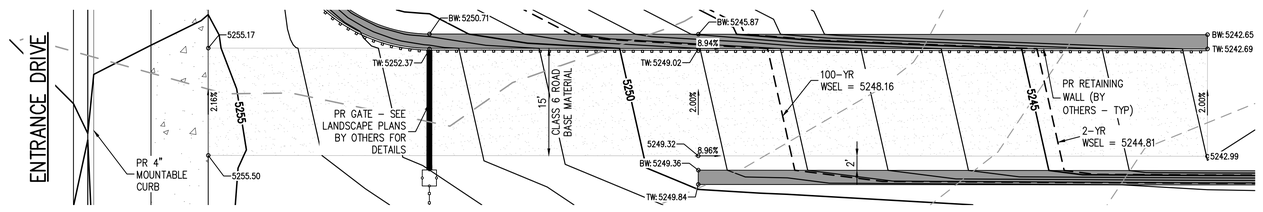

MAINTENANCE ACCESS DETAIL
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
2. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.

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DRAWN BY: JWM

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OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
38

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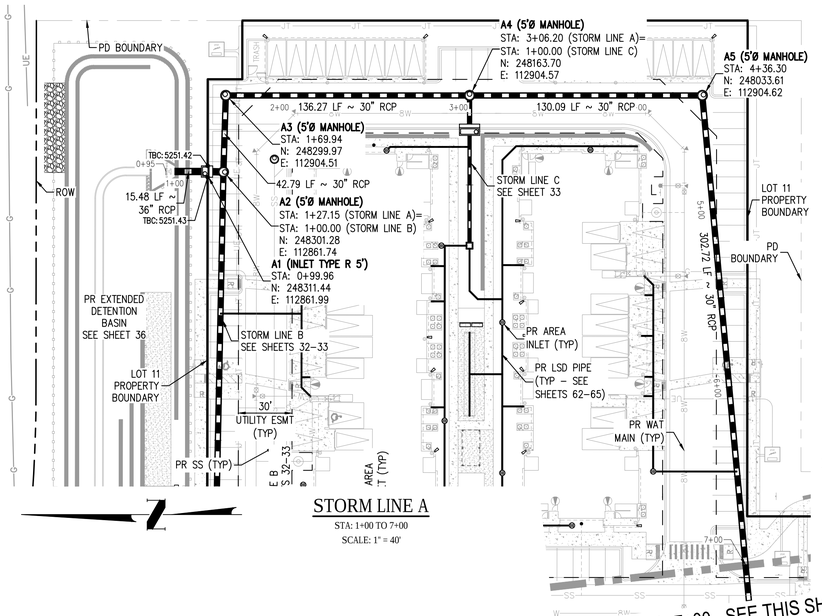
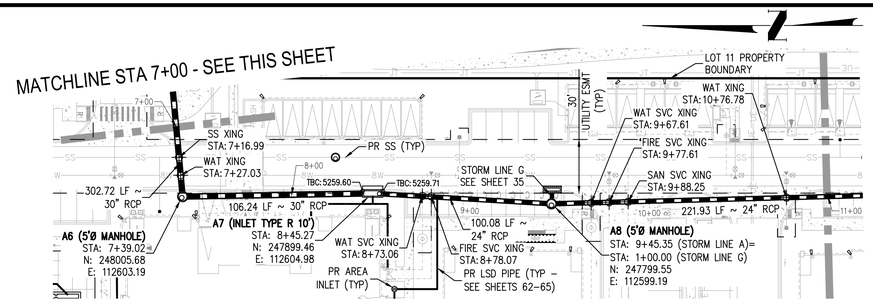
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



STORM LINE A

STA: 1+00 TO 7+00

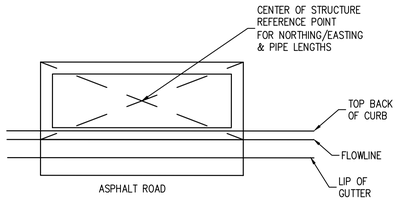
SCALE: 1" = 40'



STORM LINE A,

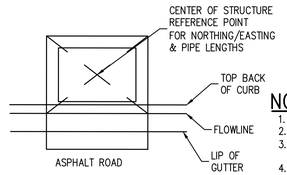
STA: 7+00 TO 11+00

SCALE: 1" = 40'



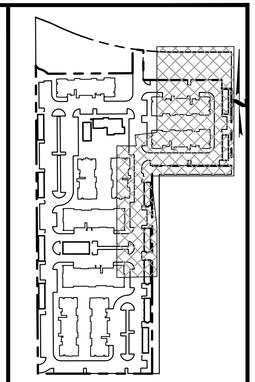
TYPE R 10' INLET DETAIL
STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT

SCALE: NTS

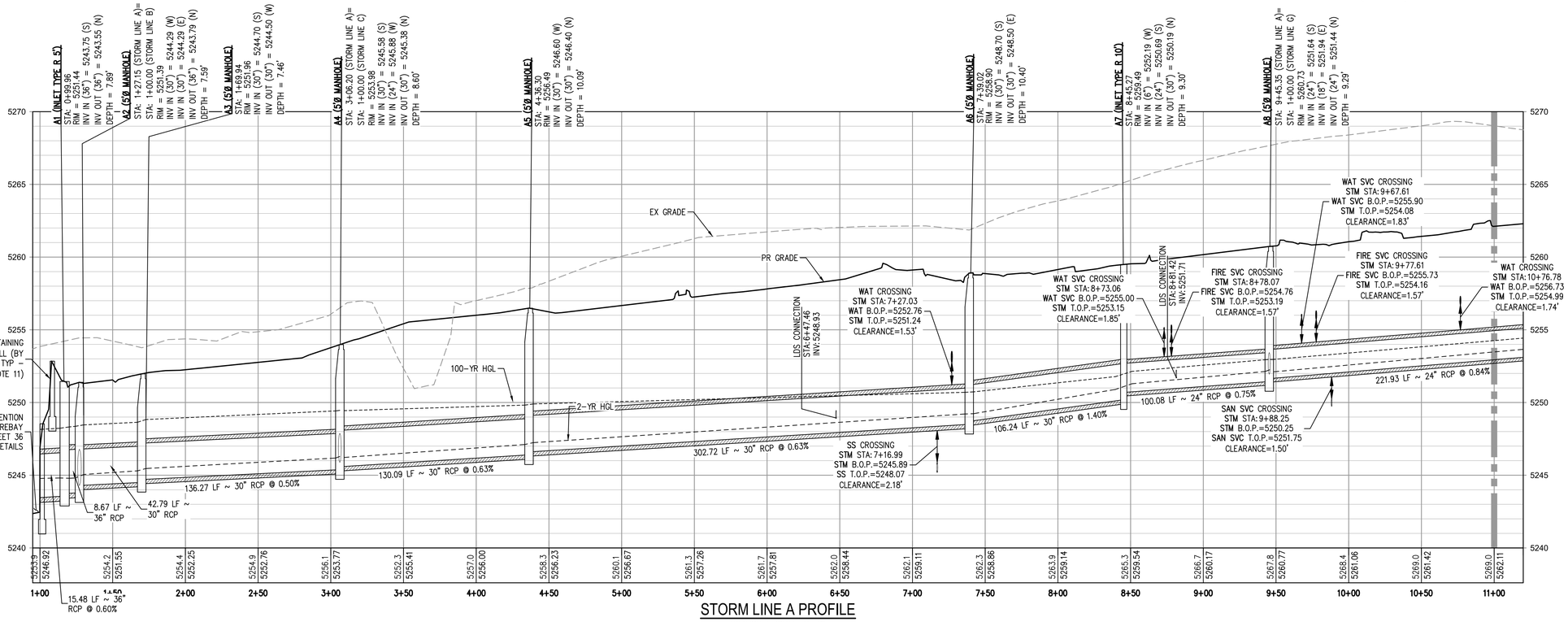


KEY MAP

SCALE: 1" = 250'

NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. CONTRACTOR SHALL MODIFY ALL INLETS AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS (MODIFIED INLETS AND OUTLET STRUCTURE) FOR APPROVAL BY OWNER, ENGINEER, AND TOWN OF ERIE PRIOR TO INSTALLATION.
6. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 UNDERGROUND UTILITIES.
7. ALL STORM SEWER INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.
11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.



STORM LINE A PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

MATCHLINE STA 11+00 - SEE SHEET 32

811 Know what's below. Call before you dig.

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINE A

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
31
31 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM PKP.DWG LAYOUT: LINE A
7 XREFS - cd - storm, cd_evergreen logo, cvil1, levmap, p base, p-legal, pvtl
PLOTTED: TUE 03/03/20 10:43:34A BY: JEFF MINNICH

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NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
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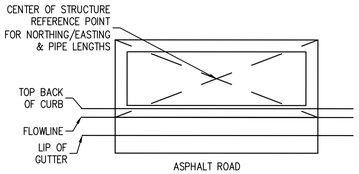
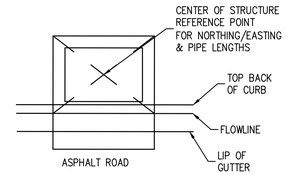


TYPE R 10' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



TYPE R 5' INLET DETAIL
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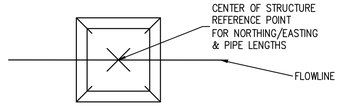
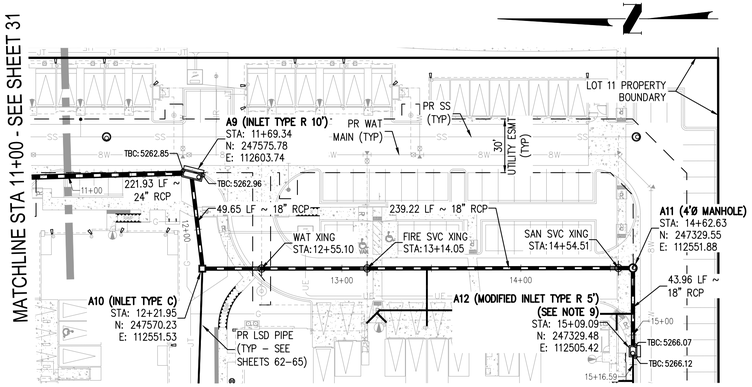
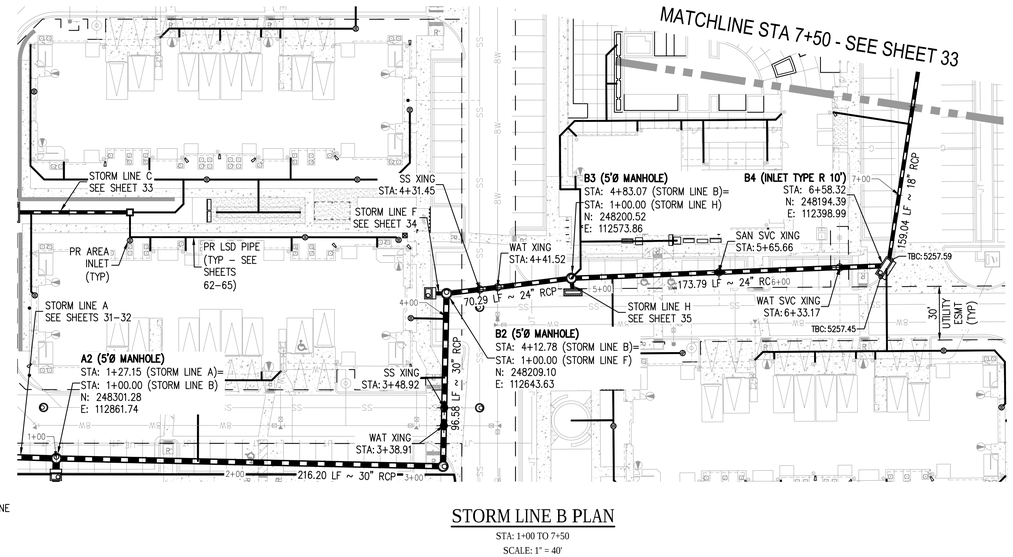


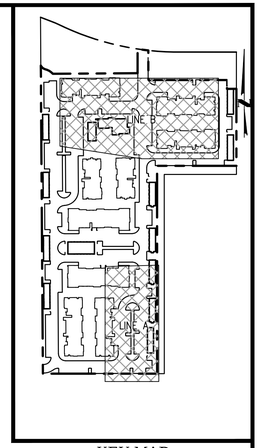
TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



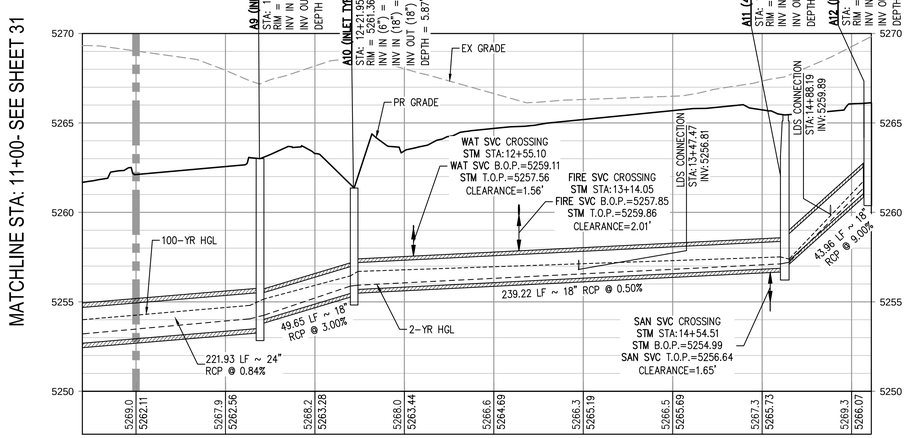
STORM LINE A PLAN
STA: 11+00 TO END
SCALE: 1" = 40'



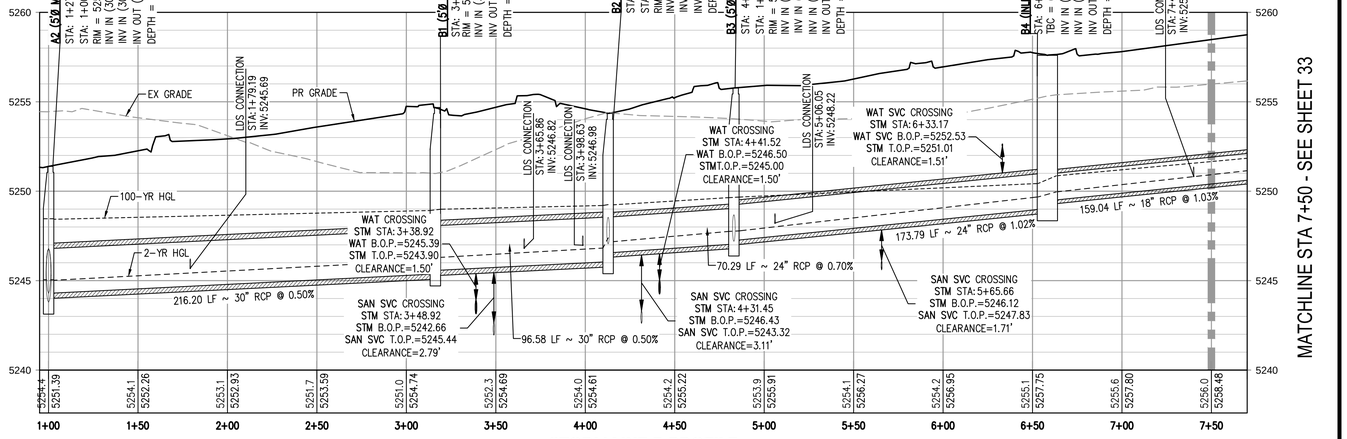
STORM LINE B PLAN
STA: 1+00 TO 7+50
SCALE: 1" = 40'



KEY MAP
SCALE: 1" = 250'



STORM LINE A PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



STORM LINE B PROFILE
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'

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40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES A & B

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 32
32 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\STORM\CD - STORM PKP.DWG LAYOUT: LINE A & B
7 XREFS - cd - storm, cd_evergreen logo, cwtl1, levmap, p base, p-legal, p-util
PLOTTED: TUE 03/03/20 10:43:49A BY: JEFF MINNICH

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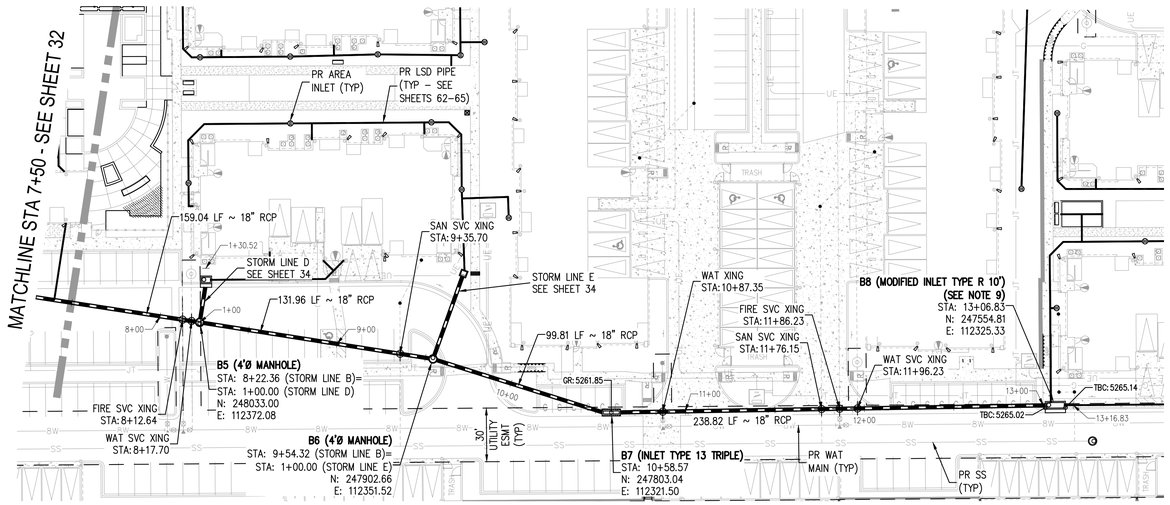
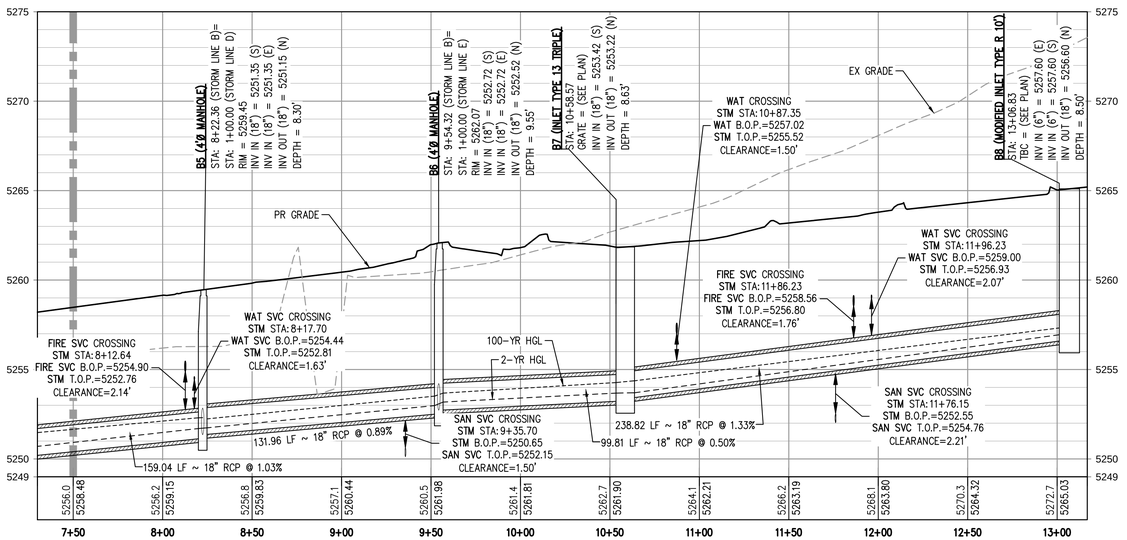


STORM LINE B PLAN

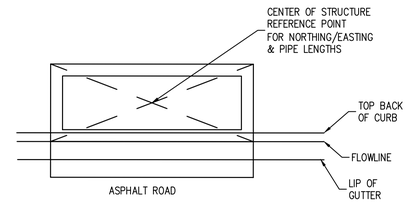
STA:7+50 TO END

SCALE: 1" = 40'



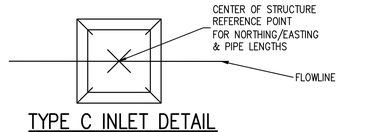
STORM LINE B PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



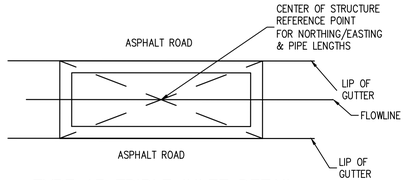
TYPE R 10' INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS



TYPE C INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

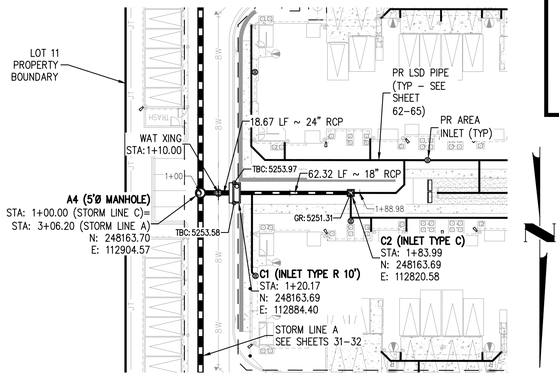


TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

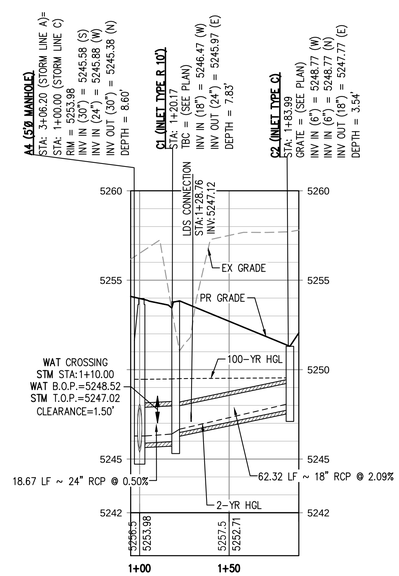
NOTES:

1. PIPE LENGTHS ARE GIVEN FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE.
2. ALL COORDINATES ARE AT THE CENTER OF THE STRUCTURE UNLESS OTHERWISE INDICATED.
3. ALL WORK SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS. STANDARDS ARE AVAILABLE AT THE TOWN'S WEBSITE. THE CONTRACTOR MUST HAVE A COPY ON SITE.
4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
5. CONTRACTOR SHALL MODIFY ALL INLETS AS NEEDED IN ORDER TO ENSURE ALL STORM PIPES CONNECT PROPERLY TO THE INLET. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS (MODIFIED INLETS AND OUTLET STRUCTURE) FOR APPROVAL BY OWNER, ENGINEER, AND TOWN OF ERIE PRIOR TO INSTALLATION.
6. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE 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 UNDERGROUND UTILITIES.
7. ALL STORM SEWER INLETS SHALL BE CONSTRUCTED IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
8. STORM SEWER MANHOLE RIMS SHALL BE ROTATED AS SHOWN ON PLAN.
9. INLETS WITHIN SIDEWALKS HAVE BEEN MARKED MODIFIED AND SHALL HAVE THE TOP OF THEIR BOX MODIFIED TO MATCH THE SIDEWALK GRADES NOTED ON THE GRADING PLAN.
10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.



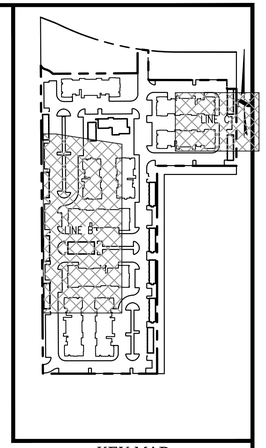
STORM LINE C PLAN

SCALE: 1" = 40'



STORM LINE C PROFILE

HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: 1" = 4'



KEY MAP

SCALE: 1" = 250'

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

40 0 40 80
SCALE: 1" = 40'

DESIGNED BY: RJH
CHECKED BY: MSM
DRAWN BY: RJH

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES B & C

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 33

33 OF 69

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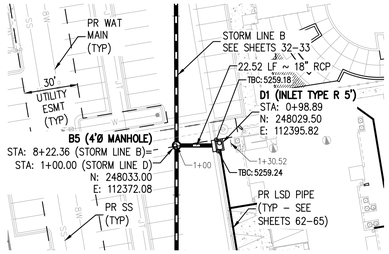
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



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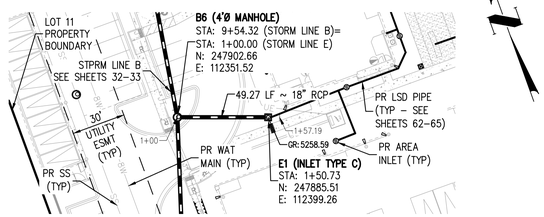

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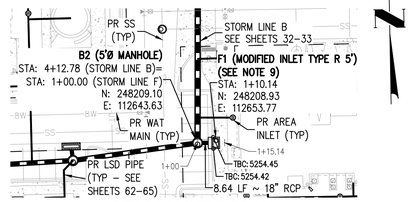

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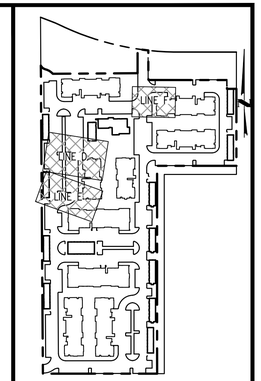

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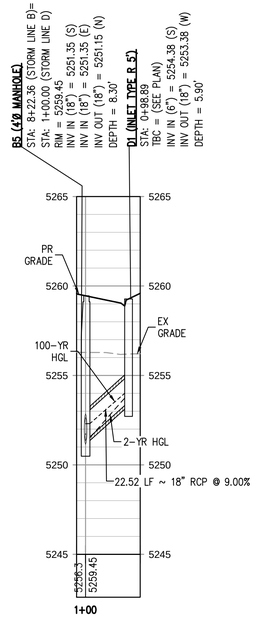
SCALE: 1" = 250'



STORM LINE D PROFILE
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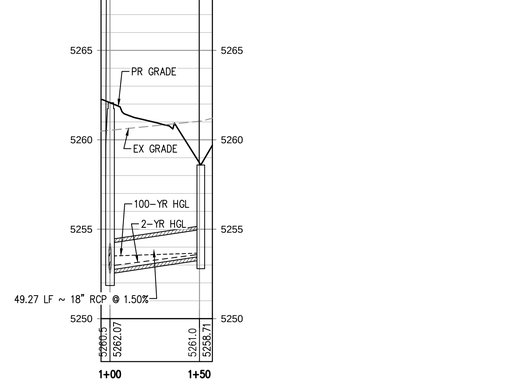
VERTICAL SCALE: 1" = 4'



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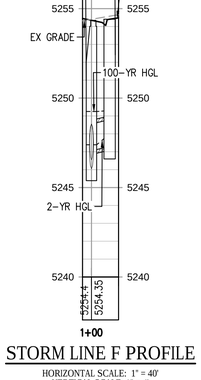

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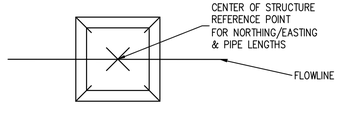
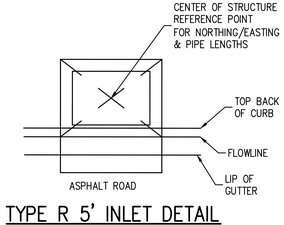


TYPE C INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS



TYPE R 5' INLET DETAIL
STRUCTURE REFERENCE POINT
SCALE: NTS

NOTES:

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4. STORM SEWER PIPE SHALL BE IN ACCORDANCE WITH TOWN OF ERIE STANDARDS AND SPECIFICATIONS.
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10. ALL STORM SEWER SHALL BE PRIVATE UNLESS OTHERWISE NOTED.

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40 0 40 80
SCALE: 1" = 40'

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES D, E & F

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
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03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
34

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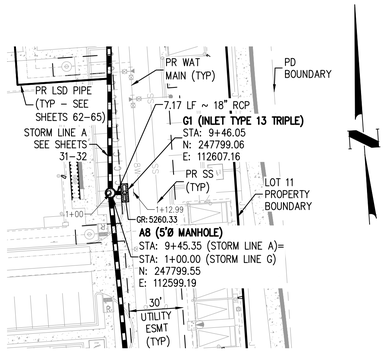
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.



STORM LINE G PLAN

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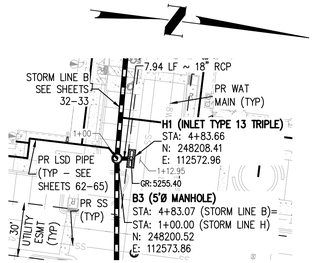

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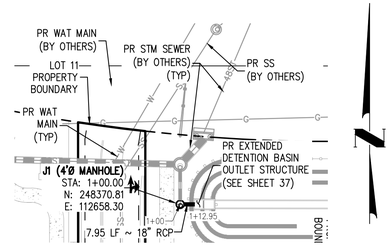

STORM LINE J PLAN

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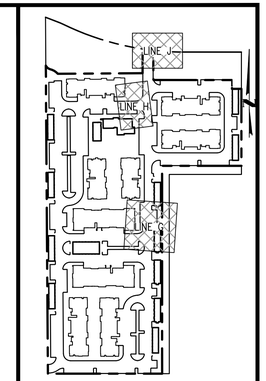
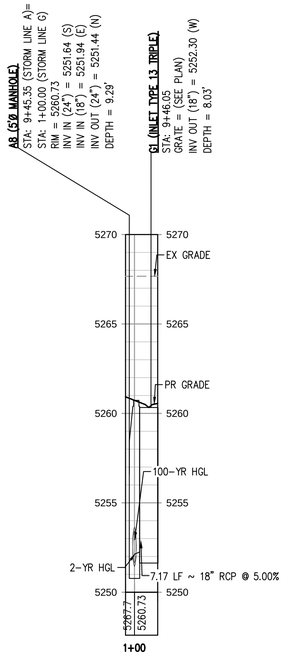


KEY MAP

SCALE: 1" = 250'



STORM LINE G PROFILE

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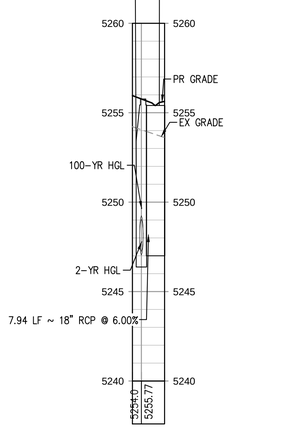
VERTICAL SCALE: 1" = 4'



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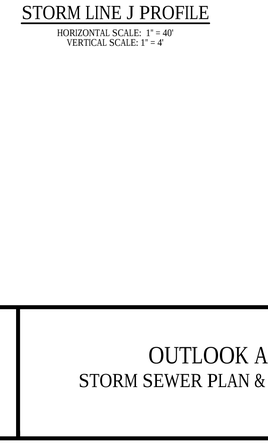

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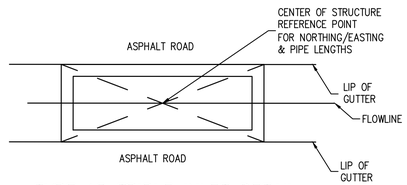

TYPE 13 TRIPLE INLET DETAIL STRUCTURE REFERENCE POINT

SCALE: NTS

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11. RETAINING WALLS (BY OTHERS) ARE SHOWN IN AN APPROXIMATE WAY ONLY.

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40 0 40 80
SCALE: 1" = 40'

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DRAWN BY: RJH

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OUTLOOK AT NINE MILE
STORM SEWER PLAN & PROFILE LINES G, H & J

ISSUE DATE: 11-08-2019	PROJECT #: 160602
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PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 35

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7 XREFs: cd_ stamp, cd_ evergreen logo, e-tail, keymap, p-base, p-legal, p-util
PLOTTED: TUE 03/03/20 10:44:28A BY: JEFF MINNICH

APPENDIX F

Excerpt from Town of Erie Engineering Standards & Specifications

TABLE 800-4
ALLOWABLE RELEASE RATES FOR DETENTION PONDS - CFS/ACRE

	SCS SOIL GROUP*		
CONTROL FREQUENCY	A	B	C & D
2-year	0.02	0.03	0.04
5-year	0.07	0.13	0.17
10-year	0.13	0.23	0.30
25-year	0.24	0.41	0.52
100-year	0.5	0.85	1.00

*SCS soil groups are classified according to their infiltration and transmission rates. The hydrologic soil groups are:

A. - Soils having high infiltration rates even when thoroughly wetted. These consist chiefly of deep, well to excessively drained sands or gravel. These soils have a high rate of water transmission.

B. - Soils having moderate infiltration rates when thoroughly wetted. These consist chiefly of moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission.

C & D. - Soils having slow infiltration rates when thoroughly wetted. These consist chiefly of soils with a layer that impede downward movement of water or soils with moderately fine to fine texture. These soils have a slow rate of water transmission.

814.09 Minimum Detention Volume

The minimum required detention volumes should be determined using the following equations (Refer to Urban Storm Drainage Criteria Manual Volume 3 for water quality release rates):

V= KA, (Equation 801)

For the 100-year storm event,
$K_{100} = (1.78I-0.002I^2- 3.56)/1000$ (Equation 802)

For the 10-year, storm event,

$K_{10} = (0.95I – 1.90)/1000$ (Equation 803)

Where V = required volume for the 100 or 10-year storm event (acre-feet),
I = Developed basin imperviousness (%)
A = Tributary area (Acres)

814.10 Compensating Detention Procedure

Detention facilities are to be designed using the compensating detention procedure if any runoff is to flow undetained from the subject property. There may be more than one local detention facility onsite. The compensating detention procedure requires that the total release rates from the detained and undetained areas be equal to the allowable release rates from the site. Therefore, the more undetained runoff, the less the allowable detention facility release rates. The maximum limit on the undetained area is 5% or 5 acres, whichever is less.

APPENDIX G

Operations & Maintenance Plan

Design Standards Form

ADAPTED FOR THE TOWN OF ERIE, COLORADO

PERMANENT STORMWATER CONTROL FACILITIES

OPERATION AND MAINTENANCE (O&M) PLAN

for:

Outlook at Nine Mile

Located at:

Nine Mile Corner Planned Development

Prepared for:

Prepared by:

HKS Engineering 1120 Lincoln Street, Suite 1000, (303) 623-6300

REFERENCES:

This manual is adapted from both:

TOWN OF PARKER, COLORADO, STORMWATER PERMANENT BEST MANAGEMENT PRACTICES (PBMP) LONG-TERM OPERATION AND MAINTENANCE MANUAL, OCTOBER 2004

SOUTHEAST METRO STORMWATER AUTHORITY, STORMWATER MANAGEMENT FACILITY OPERATION AND MAIN OPERATION AND MAINTENANCE MANUAL

TABLE OF CONTENTS

I. COMPLIANCE WITH STORMWATER CONTROL FACILITIES MAINTENANCE REQUIREMENTS

II. INSPECTION & MAINTENANCE: ANNUAL REPORTING

III. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

IV. ACCESS

V. SAFETY

VI. FIELD INSPECTION EQUIPMENT

VII. INSPECTING AND MAINTAINING STORMWATER CONTROL FACILITIES

A. INSPECTION PROCEDURES AND REPORTING

B. MAINTENANCE CATEGORIES AND MAINTENANCE SCHEDULE

ATTACHMENTS

ATTACHMENT 1 – PERMANENT STORMWATER CONTROL FACILITIES DRAWINGS

ATTACHMENT 2 – INSPECTION CHECKLIST(S) (TEMPLATE)

ATTACHMENT 3 – ANNUAL INSPECTION AND MAINTENANCE REPORTING FORM (TEMPLATE)

PERMANENT STORMWATER CONTROL FACILITIES
OPERATION AND MAINTENANCE (O&M) PLAN

I. COMPLIANCE WITH PERMANENT STORMWATER CONTROL FACILITIES MAINTENANCE REQUIREMENTS

All property owners are responsible for ensuring that stormwater control facilities installed on their property are properly maintained and that they function as designed. In some cases, this maintenance responsibility may be assigned to others through special agreements. Property owners should be aware of their responsibilities regarding stormwater control facilities maintenance.

II. INSPECTION & MAINTENANCE: ANNUAL REPORTING

Requirements for the inspection and maintenance of stormwater control facilities, as well as reporting requirements are included in this Permanent Stormwater Control Facilities O&M Plan.

Verification that the stormwater control facilities have been properly inspected and maintained is established through the submittal of the required Inspection Forms to the Town of Erie on an annual basis. The annual reporting forms shall be provided to the Town of Erie for the previous year by January 31.

Copies of the Inspection Checklist(s) for each of the stormwater control facilities are provided as Attachment 2. A standard annual reporting form is provided as Attachment 3. Each form shall be reviewed and submitted by the permit holder to the Town of Erie.

III. PREVENTATIVE MEASURES TO REDUCE MAINTENANCE COSTS

The most effective way to maintain stormwater control facilities is to prevent the pollutants from entering the facilities in the first place. Common pollutants include sediment, trash & debris, chemicals, dog wastes, runoff from stored materials, illicit discharges into the storm drainage system, and many others. A thoughtful maintenance program will include measures to address these potential contaminants, and will save money and time in the long run. Key points to consider in your maintenance program include:

- Educate property owners/residents to be aware of how their actions affect water quality, and how they can help reduce maintenance costs.
- Keep properties, streets and gutters, and parking lots free of trash, debris, and lawn clippings.
- Ensure the proper disposal of hazardous wastes and chemicals.
- Plan lawn care to minimize the use of chemicals and pesticides.
- Sweep paved surfaces and put the sweepings back on the lawn.
- Be aware of automobiles leaking fluids. Use absorbents such as cat litter to soak up drippings – dispose of properly.
- Re-vegetate disturbed and bare areas to maintain vegetative stabilization.

- Clean out the upstream components of the storm drainage system, including inlets, storm sewers and outfalls.
- Do not store materials outdoors (including landscaping materials) unless properly protected from runoff.

IV. ACCESS

All stormwater control facilities located on the site have a designated access location for maintenance. Refer to the Permanent Stormwater Control Facilities Drawings provided as Attachment 1 for access locations.

V. SAFETY

Keep safety considerations at the forefront of inspection procedures at all times. Likely hazards should be anticipated and avoided. Never enter a confined space (outlet structure, manhole, etc) without proper training or equipment. A confined space should never be entered without at least one additional person present.

If a toxic or flammable substance is discovered, leave the immediate area and contact the local Sheriff at 911.

Potentially dangerous (e.g., fuel, chemicals, hazardous materials) substances found in the areas must be referred to the local Sheriff's Office immediately for response by the Hazardous Materials Unit. The emergency contact number is 911.

Vertical drops may be encountered in areas located within and around the facility. Avoid walking on top of retaining walls or other structures that have a significant vertical drop. If a vertical drop is identified within the pond that is greater than 48" in height, make the appropriate note/comment on the inspection form.

If any hazard is found within the facility area that poses an immediate threat to public safety, contact the local Sheriff's Office immediately.

VI. FIELD INSPECTION EQUIPMENT

It is imperative that the appropriate equipment is taken to the field with the inspector(s). This is to ensure the safety of the inspector and allow the inspections to be performed as efficiently as possible. Below is a list of the equipment that may be necessary to perform the inspections of all stormwater control facilities:

- Protective clothing and boots
- Safety equipment (vest, hard hat, confined space entry equipment)
- Communication equipment
- O&M Plan for the site including stormwater control facilities drawings
- Clipboard
- Inspection and Maintenance Forms (See Attachment 2)

- Manhole lid remover
- Shovel

Some of the items identified above need not be carried by the inspector (manhole lid remover, shovel, and confined space entry equipment). However, this equipment should be available in the vehicle driven to the site.

VII. Inspection and Maintenance of Stormwater Control Facilities

The quality of stormwater entering the waters of the state relies heavily on the proper operation and maintenance of stormwater control facilities. These facilities must be inspected to ensure that they function as designed. The inspection will determine the appropriate maintenance that is required.

A. Inspection Procedures and Reporting

All stormwater control facilities are required to be inspected by a qualified individual at a minimum of once per year. Inspection and maintenance personnel must be qualified to properly maintain stormwater control facilities. Inadequately trained personnel can cause additional problems resulting in additional maintenance costs. The person conducting the inspection should follow the inspection checklist provided as Attachment 2 for the specific type of facility.

Completed inspection checklists must be signed by the inspector and the permit holder prior to being submitted to the City. Reference Section II for submittal procedures.

For each inspection item, the inspector is required to circle “Yes”, “No”, or “N/A”. For items that are not relevant for the specific facility, the “N/A” selection should be circled. Not all facilities have all of the features identified on the form (forebay, micro-pool, etc.).

B. Maintenance Categories and Schedule

Routine maintenance performed on a scheduled basis, can help avoid more costly rehabilitative maintenance that results when facilities are not adequately maintained. The recommended inspection and maintenance schedule for the stormwater control facility is provided in the Table(s) below.

Stormwater control facility maintenance programs are separated into three broad categories of work. The categories are separated based upon the magnitude and type of maintenance activities performed. A description of each category follows:

- Routine Work

  The majority of this work consists of scheduled mowings and trash/debris pickups for stormwater control facilities during the growing season. This includes items such as the removal of debris/material that may be clogging the inlet, outlet structure, well screens, and trash racks. It also includes activities such as weed control, mosquito treatment, and algae treatment. These activities normally will be performed multiple times during the year.

- Periodic Work

  This work consists of a variety of isolated or small-scale maintenance and the work needed to address operational problems. Most of this work can be completed by a small crew, with minor tools, and small equipment.

- Rehabilitation Work

  This work consists of large-scale maintenance and major improvements needed to address failures within stormwater control facilities. This work may also require more specialized maintenance equipment, surveying, construction permits or assistance through private contractors and consultants. This work requires consultation with the Town of Erie as the work may modify the design of the stormwater control facility and a revised permit may be required.

The Table below provides recommended maintenance schedules for the stormwater control facilities.

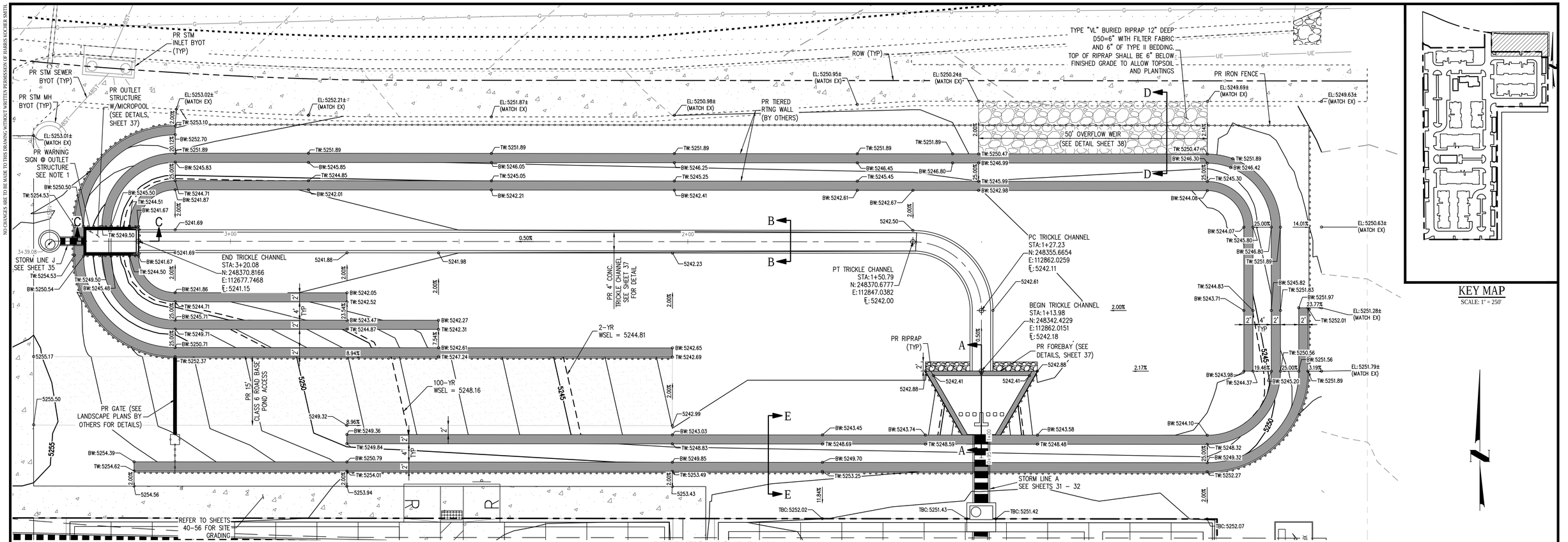
TABLE 1: MAINTENANCE SCHEDULE

WATER QUALITY EXTENDED DETENTION BASIN		
CATEGORY	**MAINTENANCE**	**ESTIMATED FREQUENCY**
Routine	Mowing irrigated vegetation to 3-4 inches tall	2 weeks
Routine	Mowing non-irrigated vegetation to 4-6 inches tall	2 weeks
Routine	Micropool-Sediment Removal	As needed
Routine	Micropool periodic draining	2 times per year
Routine	Clean orifices, remove trash and sediments from grates and trickle channel	As needed -Visually checked at least monthly
Routine	Fertilize (Use minimum amount)	2 times per year
Periodic	Repair and re-vegetate eroded areas	1-3 years
Periodic	Sediment removal	15-25 years
Routine	Nuisance control (odor, insects, etc)	As needed
Periodic	Aquatic plant harvesting	5-15 years
Routine	Visually inspect after storm event of 0.75 inches or more to check facility function and/or alert to maintenance needs	At least once per year
Periodic	Replacement of Facility	30 years

ATTACHMENT 1

PERMANENT STORMWATER CONTROL FACILITY DRAWINGS

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



DETENTION POND PLAN

SCALE: 1" = 10'

TRICKLE CHANNEL PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 2'

OUTLET STRUCTURE NOTES:

1. SIGN SHALL STATE " WARNING UNAUTHORIZED MODIFICATION OF THIS OUTLET IS A CODE VIOLATION AND SUBJECT TO THE PENALTIES AS PROVIDED BY LAW". REFER TO CITY AND STATE REGULATION REGARDING SPECIFICS OF THIS SIGN.
2. SEE SHEETS 37 FOR SECTIONS A–A, B–B, C–C, D–D AND FOR ALL SPECIFIC DETAILS FOR THIS DETENTION POND.

KEY MAP

SCALE: 1" = 250'

811 Know what's below. Call before you dig.
CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

10 0 10 20
SCALE: 1" = 10'

DESIGNED BY: KDB
CHECKED BY: MSM
DRAWN BY: KDB

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
DETENTION POND PLAN

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO. 36

36 OF 69

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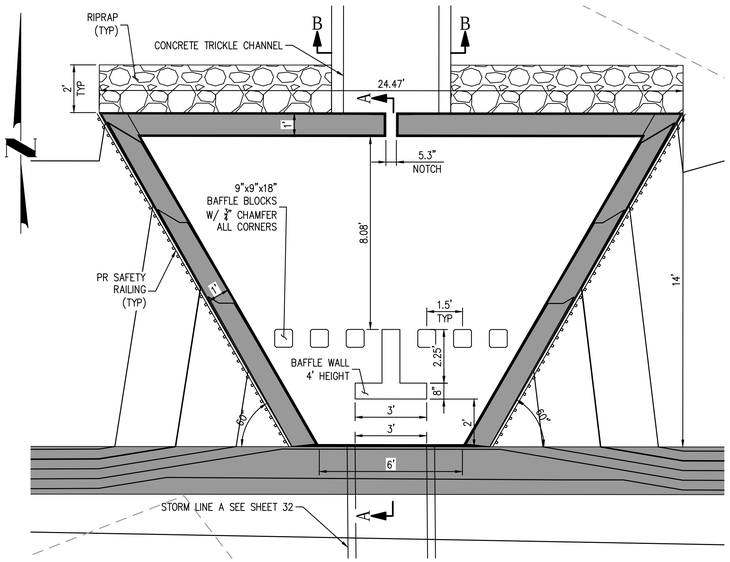
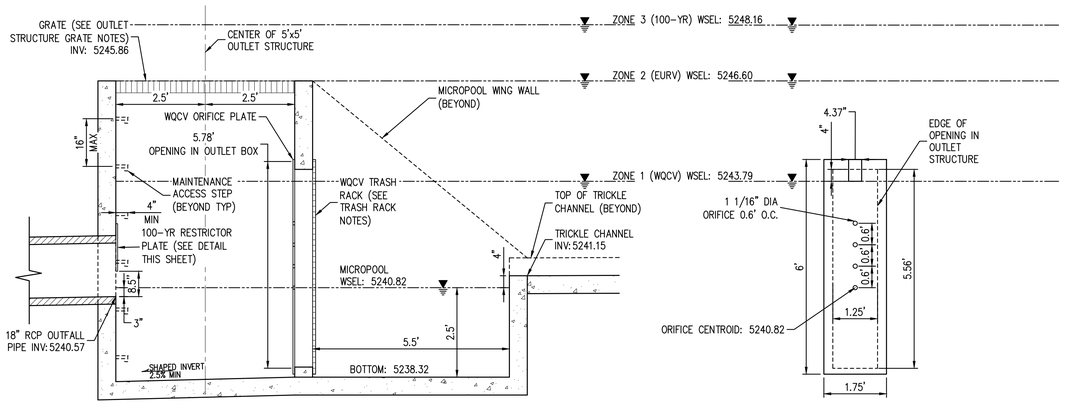


MODIFIED IMPACT STILLING BASIN PLAN

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'

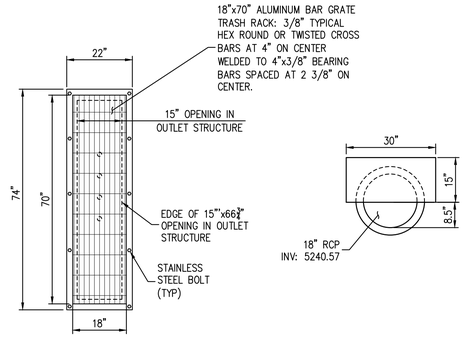


SECTION C-C
WATER QUALITY OUTLET STRUCTURE PROFILE

SCALE: N.T.S.

WQCV ORIFICE PLATE DETAIL

N.T.S.



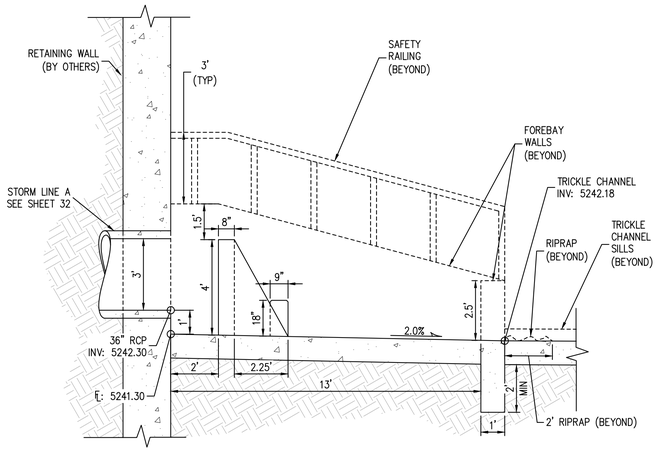
WQCV TRASH RACK DETAIL

N.T.S.

REFER TO UDFCD ORIFICE PLATE AND TRASH RACK NOTES (VOL 3, FIG OS-4) FOR ADDITIONAL INFORMATION

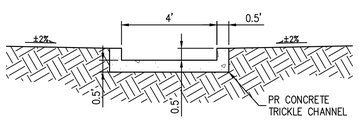
100-YR RESTRICTOR PLATE DETAIL

N.T.S.



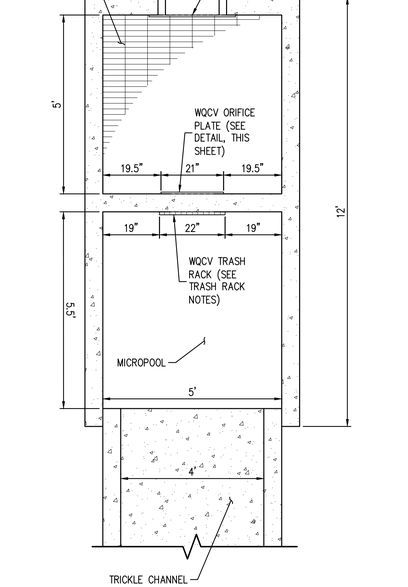
SECTION A-A
MODIFIED IMPACT STILLING BASIN PROFILE DETAIL

SEE NOTE #7 THIS SHEET
SCALE: 1" = 3'



SECTION B-B
TRICKLE CHANNEL DETAIL

SCALE: 1" = 3'



WATER QUALITY OUTLET STRUCTURE PLAN

SCALE: N.T.S.

GENERAL NOTES:

1. ALL PENETRATIONS AND JOINTING SHALL BE WATER-TIGHT, WITH LINK-SEAL OR APPPROVED EQUIVALENT.
2. THE EXTENDED DETENTION BASIN FOREBAY SHALL BE BUILT IN ACCORDANCE WITH CURRENT UDFCD CRITERIA AND DETAILS.
3. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS FOR ALL TRASH RACKS AND ORIFICE PLATES PRIOR TO CONSTRUCTION.
4. STRUCTURAL DESIGN OF ALL TRASH RACKS SHALL BE BASED ON FULL HYDROSTATIC HEAD WITH ZERO HEAD DOWNSTREAM OF THE RACK.
5. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
6. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.
7. MODIFIED IMPACT STILLING BASIN FIGURE 9-43 PER URBAN STORM DRAINAGE CRITERIA MANUAL, UPDATED SEPTEMBER 2017.
8. STEPS PROVIDED FOR MAINTENANCE ACCESS TO THE OUTLET STRUCTURE SHALL CONFORM TO AASHTO M 199.

TRASH RACK NOTES:

1. TRASH RACK SHALL BE IN ACCORDANCE WITH UDFCD TYPICAL BAR GRATE TRASH RACK
   - 1.1. 3/8" TYPICAL HEX ROUND OR TWISTED CROSS BARS MOUNTED AT 4" O.C.
   - 1.2. STAINLESS STEEL SUPPORT BARS SHALL BE 4" X 3/8", 2 3/8" O.C.
   - 1.3. C8X18.75 AMERICAN STANDARD STRUCTURAL STEEL CHANNEL FORMED INTO CONCRETE BOTTOM AND SIDE OF TRASH RACK SHALL BE ATTACHED BY STAINLESS STEEL BOLTING HARDWARE, 12" MAX O.C. ALONG THE EDGE OF THE MOUNTING FRAME.

OUTLET STRUCTURE GRATE NOTES:

1. GRATE SHALL BE CLOSED MESH GRATE PER CDOT TYPE C INLET M-604-10
2. GRATE SHALL BE MOUNTED USING STAINLESS STEEL HARDWARE AND PROVIDED WITH HINGED AND LOCKABLE OR BOLTABLE ACCESS PANELS.
3. GRATE SHALL BE STAINLESS ALUMINUM OR STEEL, SHALL BE HOT DIP GALVANIZED AND MAY BE HOT POWDER COATED AFTER GALVANIZING.

ORIFICE/RESTRICTOR PLATE NOTES:

1. PROVIDE GASKET MATERIAL BETWEEN ORIFICE PLATE AND CONCRETE.
2. BOLT PLATE TO CONCRETE 12" MAX O.C.

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CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
37
37 OF 69

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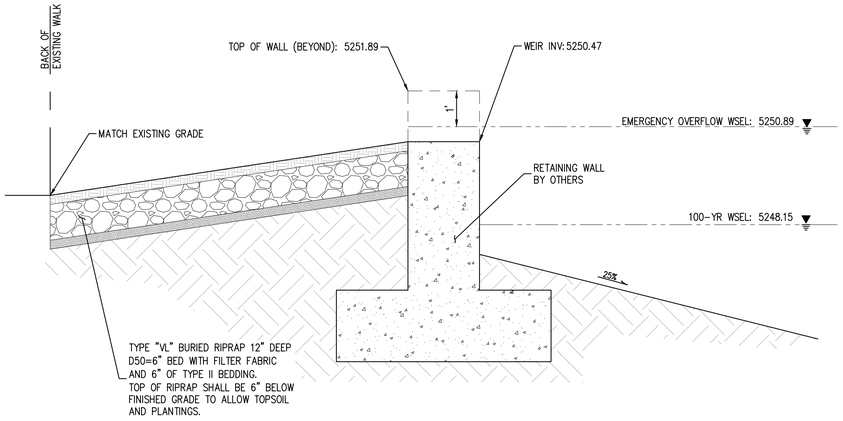
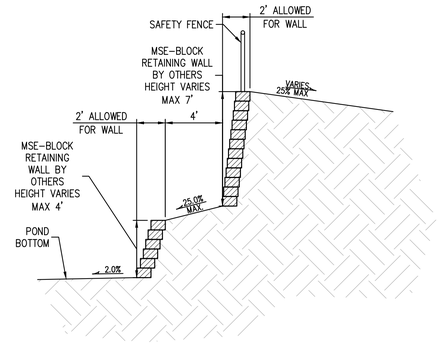
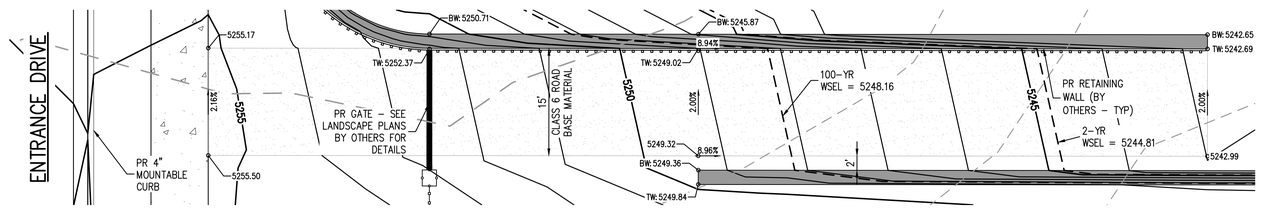


SECTION D-D
OVERFLOW SPILLWAY DETAIL
N.T.S.



SECTION E-E
RETAINING WALL DETAIL
N.T.S.



MAINTENANCE ACCESS DETAIL
SCALE: 1" = 10'

GENERAL NOTES:

1. CONTRACTOR SHALL PROVIDE STRUCTURAL DESIGN/SHOP DRAWINGS FOR THE POND WALLS, ENERGY DISSIPATION BAFFLE WALLS, FOREBAY SLAB, FOREBAY WALLS, TRICKLE CHANNEL, MICROPOOL, WINGWALLS, AND OUTLET STRUCTURE.
2. ALL DESIGN ELEMENTS INCLUDING CONCRETE, THICKNESS, AND REINFORCEMENT FOR POND WALL ENERGY DISSIPATION BAFFLE WALL, FOREBAY SLAB, FOREBAY WALL, TRICKLE CHANNEL, MICROPOOL, WINGWALLS AND OUTLET STRUCTURE WILL BE ACCORDING TO UDFCD CRITERIA AND DETAILS.

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DESIGNED BY: JWM
CHECKED BY: MSM
DRAWN BY: JWM

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Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
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Development | Services | Investments

OUTLOOK AT NINE MILE
POND PLAN DETAILS

ISSUE DATE: 11-08-2019 | PROJECT #: 160602

DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS
03-03-2020	PER TOWN OF ERIE COMMENTS

SHEET NO.
38

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ATTACHMENT 2

INSPECTION CHECKLIST(S)

PERMANENT STORMWATER CONTROL FACILITY
INSPECTION CHECKLIST
ADAPTED FOR THE TOWN OF ERIE.

EXTENDED DETENTION BASIN/WATER QUALITY POND

PSC Permit Number:	
Property Name:	
Contact Name (Permit):	Contact Phone:
Inspector Name & Company:	Inspector Phone:

Inspection Items	Inspected?	Maintenance Needed	Comments/Description
Vegetation healthy and desirable?	Yes No N/A	Yes No N/A	
Vegetation interfering with flow or volume?	Yes No N/A	Yes No N/A	
Erosion present?	Yes No N/A	Yes No N/A	
Sediment accumulation in forebay or bottom of pond?	Yes No N/A	Yes No N/A	
Drains blocked or not functioning?	Yes No N/A	Yes No N/A	
Underdrain system clogged?	Yes No N/A	Yes No N/A	
Standing water or boggy areas?	Yes No N/A	Yes No N/A	
Leaks or seeps on embankment?	Yes No N/A	Yes No N/A	
Forebay in good condition and functional?	Yes No N/A	Yes No N/A	
Orifices in good condition and functional?	Yes No N/A	Yes No N/A	
Trash rack free of debris and corrosion?	Yes No N/A	Yes No N/A	
Concrete/masonry in good condition?	Yes No N/A	Yes No N/A	
Metal in good condition?	Yes No N/A	Yes No N/A	
Valves operational?	Yes No N/A	Yes No N/A	
Outfall channels in good condition?	Yes No N/A	Yes No N/A	
Overflow in good condition?	Yes No N/A	Yes No N/A	
Visual pollution?	Yes No N/A	Yes No N/A	
Nuisance noticed (odor, insects, etc.)?	Yes No N/A	Yes No N/A	
Encroachment into pond or easement area by other activities?	Yes No N/A	Yes No N/A	
Burrowing animals/pests?	Yes No N/A	Yes No N/A	
Any evidence that water is not draining properly?	Yes No N/A	Yes No N/A	
Access for maintenance in good condition?	Yes No N/A	Yes No N/A	
Have there been complaints?	Yes No N/A	Yes No N/A	
Public hazards noted?	Yes No N/A	Yes No N/A	

Inspector Comments: _____

If any of the above Inspection Items are marked ***Yes*** for *Maintenance Needed* , list the maintenance actions and their completion or scheduled maintenance dates below:

Maintenance Action Needed	Date

Inspector Signature:_____ Date:_____

Permit Contact Signature:_____ Date:_____

ATTACHMENT 3

ANNUAL INSPECTION AND MAINTENANCE REPORTING FORM

ENVIRONMENTAL SERVICES
(303) 651-8416 | LONGMONTCOLORADO.GOV

ADAPTED FOR THE TOWN OF ERIE.

PSC ANNUAL REPORTING FORM

*This form must be completed and the certification signed by the Owner, its administrator, executor, successor, heir or assign. One copy of the completed Annual Report, including the inspection log, and any other applicable attachments, shall be submitted by **January 31st** for the year prior.*

NAME OF DEVELOPMENT _____

1. GENERAL INFORMATION

Name of Ownership Company / Organization _____

O&M Contact Name _____ Contact Phone _____

Company Name _____ Company Phone _____

Email Address _____

Billing Address _____

City _____ State _____ Zip Code _____

2. INSPECTION DETAILS

Reporting Period: January 1 to December 31, _____ (enter year)

PSC Permit Number PSC _____ (enter number)

Have there been any major changes to, or maintenance upon, the BMP? ☐ Yes ☐ No

Does the BMP have any major deficiencies that need to be addressed? ☐ Yes ☐ No

Do you have any requests for updates to the O&M Manual? ☐ Yes ☐ No

3. MAINTENANCE SUMMARY

_____

_____

_____

_____

4. MAINTENANCE CERTIFICATION

"I certify that to the best of my knowledge and belief the maintenance and inspection of the permanent BMP is being implemented in accordance to the Permanent Stormwater Control Operation and Maintenance Plan for this property or that a notice of any deficiencies has been provided."

Signature _____ Date _____

Printed Name _____ Title _____

Attachments: Inspection Log

[Attach additional information as needed. Remedial actions taken, how they were completed, and who performed them. Deficiencies to the BMPs, or problems encountered.]

Please submit this form to:

City of Longmont
Water Resources and Environmental Services
RE: Permanent Stormwater Control Permit – Annual Reporting
1100 S. Sherman St. Longmont CO 80501

Digital submittals are accepted. Submit signed PDF to:

SWQProgram@LongmontColorado.gov

PROJECT SHEET *BASE DESIGN STANDARDS*

Complete one Project Sheet for each project that includes Stormwater Quality Control Measures.

SITE INFORMATION

Project Name: OUTLOOK AT NINE				
Project Location: NINE MILE CORNER PLANNED DEVELOPMENT - ERIE, CO				
Submitted Date: 01/27/2020			Submitted By:	
Acreage Disturbed: 12.96				
Existing Impervious: NEGLIGIBLE			New Net Impervious: 70%	
Review Date:			Reviewed By:	
✓ Preparer	✓ TOE	Requirements		
✓		Design Details are included for all Control Measures (CM)		
✓ FULL SPECTRUM EDB		List or include a description of any Source CMs (i.e. preventing pollutants from contacting stormwater) or other non-structural CMs:		
		Does project overlap multiple MS4 Jurisdictions?	Yes	No
N/A		If project overlaps jurisdictions, provide written agreement designating responsibility for CM requirements, review, inspections		

DESIGN STANDARDS

Design Standards may be used in combination, as necessary, to meet the requirements. Additional design methods may be considered if they comply with the MS4 Permit. Evaluation of suitability of Stormwater Quality Control Measures (CMs) is based on pollutant removal, flood attenuation and long-term maintenance. CMs must be designed in accordance with the most current version of USDCM vol. 3, Chapter 4 "Treatment BMPs" and the Town of Erie's Standards and Specifications. CMs must also meet the specific requirements for each Design Standard used.

1. Indicate below, which Design Standards will be used for the project, and
2. Complete a separate, corresponding Design Standards checklist for each CM (e.g., WQCV, etc.)

Design Standard	*# CMs*	*Location/Identifying information*
WQCV	1	TRACT G - EDB
Pollutant Removal	1	TRACT G - EDB
Runoff Reduction	1	TRACT G - EDB
Regional WQCV Control Measure	0	
Regional WQCV Facility	0	

CHECKLIST WQCV Standard

WQCV STANDARD Criteria

Control measure(s) must be designed to provide treatment and/or infiltration of the Water Quality Capture Volume (WQCV) for 100% of the site.

Complete checklist if using the WQCV Standard to meet Design Standard requirements.

Project Name:			
Preparer	TOE	Requirements	
N/A		Control measure(s) provide treatment and/or infiltration of the WQCV for 100% of the site	
		% of site treated:	
		CM type:	CM ID/location:
		See Drainage Report section:	

If less than 100% of the site is treated, complete the following:

Preparer	TOE	Requirements	
✓		% of site not treated by control measures (not to exceed 20% or 1 acre):	
		2.5 %	0.33 size (acres)
✓		Provide explanation that the excluded area is impractical to treat: GRADING RESTRAINTS CAUSE A SMALL PORTION OF RUNOFF TO FLOW OFFSITE UNTREATED.	
✓		Provide explanation that another CM is not practicable for the untreated area: UNTREATED AREAS CREATE A MINIMAL AMOUNT OF RUNOFF AND WILL EVENTUALLY BE COLLOECTED AND TREATED BY THE OVERALL STORM SEWER SYSTEM FOR THE PLANNED NINE MILE CORNER DEVELOPMENT.	

FINAL UTILITY REPORT

FOR

OUTLOOK NINE MILE

Prepared: November 5, 2019

Revised: January 27, 2020

Prepared for:

Evergreen

Development | Services | Investments

1873 S. Bellaire Street, Suite 1200

Denver, Colorado 80222

Phone: 303-757-0401

Prepared by:

HKS HARRIS KOCHER SMITH

Michael Moore, P.E.

1120 Lincoln Street, Suite 1000

Denver, CO 80203

Ph.: 303-623-6300, Fax: 303-623-6311

Harris Kocher Smith Project No.: 160602

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Appendix A: Vicinity Map

Appendix B: Water Demands

Appendix C: Water Hydraulic Analysis & Modeling & Fire Hydrant Test Results

Appendix D: Wastewater Flow Calculations

Appendix E: Proposed Overall Utility Plan

ENGINEER'S STATEMENT

The enclosed utility report, and exhibits, were prepared by me or under my direct supervision and is correct to the best of my knowledge and belief. Said utility report has been prepared in accordance with applicable Town of Erie criteria and is in conformance with the master utility plans for the affected area. I accept responsibility for any liability caused by negligent acts, errors or omissions on my part in preparing this report.

_____ _____

Michael S. Moore, PE 47854 Date

For and on behalf of Harris Kocher Smith

OWNER/DEVELOPER STATEMENT:

As Owner/Developer of land identified within this report; I agree to proceed, implement and comply with all recommendations and requirements outlined herein.

_____

Name of Developer

_____

Authorized Signature

I. PROJECT LOCATION AND DESCRIPTION

A. Site Location

The proposed Outlook Nine Mile project ("Site") is located within the Town of Erie, County of Boulder, Colorado at the southeast corner of Arapahoe Road and N. 107th Street. More specifically, it is situated within the Northeast ¼ of Section 34, and the Southeast ¼ of Section 27, Township 1 North, Range 69 West of the 6th Principal Meridian.

The Site is bordered by Arapahoe Road to the north, private land to the east, a single-family residential development to the south and the future Nine Mile Commercial project ("Commercial") to the west.

The Site is a part of a master development, Nine Mile Corner, under Nine Mile Corner PD – Development Plan ("PD")

B. Description of Property

The Site consists of Lot 11, Tract H, and Tract G of Nine Mile Corner Filing Number 1, for a total of 12.96 acres. It is currently vacant land which will be used for a multi-family development. For the proposed development, lot 11 will consist of the multi-family buildings and will be owned and maintained by the multi-family property owner. Tract G will consist of the proposed Extended Detention Basin serving the multi-family development. Tract H will consist of a proposed pedestrian trail. Tracts G and H will be owned and maintained by the Metro District. Vegetation cover is comprised of native grasses and bare ground with approximately 100% coverage.

The existing ground generally slopes from south to north, with slopes ranging from 0.5% to 25%. Construction will include overlot grading, installation of internal roadway and utility infrastructure, and construction of multi-family buildings, including a clubhouse and associated amenities.

The Site will be developed as twelve multi-family residential buildings, a clubhouse/leasing office, a swimming pool and various site amenities, such as landscaping, and associated infrastructure improvements, including construction of private drives and utility installation.

One detention and water quality pond is proposed to accommodate runoff from the development.

Easements will be provided around water mains, fire hydrants, water meters, and sanitary sewer mains outside of the public rights-of-way, in accordance with Town of Erie (Town) standards regarding location and size. The proposed easements are to be dedicated by plat, Nine Mile Corner Filing Number 1

There is an existing irrigation ditch located on-Site. As a part of the master development, the ditch will be filled in, and flows will be conveyed via storm pipe along the southern portion of the Site. At the time of the start of the Site development, the ditch will no longer be located on site.

As previously mentioned, the Site is a part of a master development, and the water and sanitary sewer infrastructure was analyzed in the "Final Utility Report at Nine Mile Corner at Nine Mile Subdivision Filing No. 1" prepared by Galloway & Company, Inc. on August 16, 2019.

II. CALCULATED WATER DEMANDS

The design of the water distribution system was based on the information provided in The Erie Planning & Development Standards and Specifications Section 600 – Water Facilities (Water Manual). Demands were computed for the full build out of the Project. Water demand calculations by building can be found in Appendix A.

A. AVERAGE DAY DEMANDS (ADD)

The Average Daily Demand rate is 140 GPCD (Gallons Per Capita/Day) for Multi-Family Residential per the Water Manual. Per the PD, a value of 2.79 persons/dwelling unit was used.

Land Use	Dwelling Units	ADD (GPD)	ADD (GPM)
Multi-Family Residential	287	112,102	78

B. MAX DAY DEMANDS (MDD)

The Maximum Day Demand rate is 2.6 MDD/ADD per the Water Manual.

Land Use	Dwelling Units	ADD (GPD)	MDD (GPD)	MDD (GPM)
Multi-Family Residential	287	112,102	291466	202

C. MAX HOUR DEMANDS (MH)

The Max Hour Demand Rate is 3.9 (MH/ADD) per the Water Manual.

Land Use	Dwelling Units	ADD (GPD)	MH (GPD)	PHD (GPM)
Multi-Family Residential	287	112,102	437,199	304

D. FIRE FLOW DEMANDS

Fire flow was calculated based on 2018 International Fire Code flow rates. All buildings were assumed to be construction Type V-A or V-B. It was also assumed that only one fire would be fought at a time. Based on Table B 105.1, a minimum fire flow demand of 4,250 GPM was derived. An automatic sprinkler system is to be installed within the multi-family apartment buildings allowing a 50% reduction in flow, resulting in a fire flow of 2,125 GPM which is then rounded to the nearest 500 GPM. Thus the final required fire flow is 2500 GPM. An excerpt of IFC Table B 105.1 is on the following page for reference.

TABLE B105.1(2)
REFERENCE TABLE FOR TABLES B105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)[b]	FLOW DURATION (hours)
Type IA and IB[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
—	—	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
—	—	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
—	—	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
—	—	145,801-156,700	106,801-113,200	64,801-69,600	7,000	
—	—	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
—	—	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
—	—	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
—	—	191,401-Greater	138,301-Greater	85,101-Greater	8,000	

For SI: 1 square foot = 0.0929 m^2, 1 gallon per minute = 3.785 L/m, 1 pound per square inch = 6.895 kPa.

a.Types of construction are based on the *International Building Code*.
b.Measured at 20 psi residual pressure.

III. EXISTING WATER SYSTEM

A. Existing Distribution System

An existing 12” water main is located along the north side of Arapahoe Road. This is the only existing water distribution system near the Site.

IV. PROPOSED WATER SYSTEM

A. Proposed Distribution System

The proposed on-site water infrastructure will be designed to accommodate the entire development. Water meter sizes are summarized in the Table 1 below. The water services are proposed to be upsized 5’ past the meter.

Water Meter Sizes	
Building Type	**Meter Size (in)**
Type A	1.5”
Type B	1.5”
Type C	1.5”
Type D	0.75”
Clubhouse	1”

Table 1: Water Meter sizes on Site

A portion of the water system on Site will be 12” water main. This 12” water main and one hydrant will be constructed by Galloway with the Nine Mile Corner commercial property. This 12” water loop is shown as existing on the multi-family plans. The proposed water system, consisting of 8” water main, will be looped through the Site and connect to the 12” water main constructed by Galloway. The proposed water main will be connected to water main constructed by Galloway at three locations: southwest of Building 1, east of Building 2, and southwest of building 10. As part of the master development, Galloway will be placing new water main along Arapahoe Street, as well as in their

commercial development previously discussed. See Appendix E for existing and proposed water infrastructure.

V. PROPOSED WATER SYSTEM ANALYSIS AND MODELING

A. Hydraulic Models and Pressure Constraints

The proposed water system was modeled using Bentley WaterCAD V8i software. Per the Water Manual, water distribution pipes must have a maximum velocity of 10 feet per second, which applies to all scenarios. A Hazen Williams "C" factor of 100 was used. Maximum allowable head loss is 2 feet per 1000 feet, which applies to the maximum daily demand scenario. Operating pressure requirements from the water manual are:

- Maximum static pressure of 125 psi
- Minimum static pressure of 43 psi
- Maintaining 20 psi residual pressure during required fire flow and 40 psi residential residual pressure during peak residential flow
- Maximum pressure drop from static head to either fire flow or peak residential shall not exceed 30 psi.

B. Hydraulic Modeling Scenarios

The Following scenarios were modeled and results can be found in Appendix C:

- Average Daily Demand
- Maximum Daily Demand plus Fire Flow for the full build-out of the development
- Maximum Hour Demand for the full build-out of the development

C. Hydraulic Modeling Output

The total demand supplied by the model for each scenario can be found in Table 2 on the following page. The Maximum Daily Demand + Fire Scenarios were calculated by adding the Fire Flow GPM to the Maximum Daily Demand scenario. Per the Water Manual, the complete fire flow demand is applied at a single hydrant location, where the pressure is lowest within the proposed water system. The complete modeling output can be found in Appendix C.

Scenario	Demand (GPM)
Average Daily Demand	81
Max Hour Demand	305
Max Daily Demand [MDD]	204
MDD + Fire Building CH	2,704
MDD + Fire Building 1	1,904
MDD + Fire Building 2	1,904
MDD + Fire Building 3	1,904
MDD + Fire Building 4	1,904
MDD + Fire Building 5	1,904
MDD + Fire Building 6	3,004
MDD + Fire Building 7	1,904
MDD + Fire Building 8	1,904
MDD + Fire Building 9	3,004
MDD + Fire Building 10	1,904
MDD + Fire Building 11	1,904
MDD + Fire Building 12	1,904

Table 2: Water Demand For Each Scenario

D. FIRE HYDRANT TEST RESULTS

A fire hydrant test was conducted around Highway 287 and Arapahoe Road. A copy of the results can be found in Appendix B. Hydraulic grades, provided by the Town of Erie, were used in our water model and can be seen in the table below.

Connection Point	Maximum Day HGL	Peak Hour HGL
Beasley Drive & Arapahoe Road	5418.1 feet MSL	5406.1 feet MSL
Safeway Shopping Plaza & Arapahoe Road	5417.8 feet MSL	5405.8 feet MSL

VI. CALCULATED WASTEWATER FLOWS

A. Average Daily Flows

Average Daily Flows (ADF) for wastewater was calculated per the Town of Erie Public Works Standards and Specifications Section 700 – Sanitary Sewer Facilities ("Sanitary Manual"). A flow of 90 gallons/day/capita with 2.79 persons/dwelling unit was utilized for the multi-family units.

Peak Daily Flows were determined by multiplying the Average Daily Flow by the Peaking Factor (PF). The Peaking Factor is calculated using the following equation:

$$PF = 3.8/(ADF)^{0.17}$$

The Peaking Factor shall not be less than 2.5 or greater than 5 per the Sanitary Manual.

The Peak Flow rate is calculated by multiplying the Average Design Flows with the Peaking Factor. The sanitary sewers must convey the Peak Flow Rate at a maximum flow depth of 80% of the pipe diameter.

The Peak Design Flow rate has been calculated to be 360,329 gpd or 0.56 cfs.

Average Daily Flows and Peak Flow Rate for the development are as follows:

Multi-Family Site		
	287	Units
	2.79	Capita/Unit
	90	Gal/Day/Capita
Average Daily Flow	72,066	Gal/Day
	0.11	cfs
	5.94	Calculated Peaking Factor
	5	Used Peaking Factor
Peak Flow Rate	360,329	Gal/Day
	0.56	cfs

Table 3: Sanitary Flow Calculations

VII. EXISTING WASTEWATER SYSTEM

A. Existing Collection System

An existing 8" sanitary main is located on the north side of the site in the Arapahoe Road right-of-way. This line is currently operating at or above capacity. As a part of the commercial and master development, a bypass line is extending from the Nine Mile Corner development to an interceptor line that runs north from Arapahoe ridge subdivision within N. 111th Street to prevent overload of existing sanitary system. This bypass line includes a stub into Lot 11 for the Site connection.

VIII. PROPOSED WASTEWATER SYSTEM

A. Proposed Collection System

The proposed on-site sanitary infrastructure will be designed to accommodate the entire development. Service sizes for the building types A, B, C can be found in Table 4 below.

Sanitary Service Sizes	
Building Type	**Service Size (in)**
Type A	6"
Type B	6"
Type C	6"
Type D	4"
Clubhouse	6"

Table 4: Sanitary Service Sizes on Site

The sanitary infrastructure generally flows northeast within the development to the provided stub near Arapahoe Road. See Appendix E for the existing and proposed sanitary system.

B. Proposed Wastewater Facilities

No new wastewater facilities will be constructed as part of this development.

IX. PROPOSED WASTEWATER SYSTEM ANALYSIS AND MODELING

A. Hydraulic Constraints

Per the Sanitary Manual:

- Sanitary Mains 10" and smaller shall carry a maximum design flow at a maximum flow depth of 80%
- Sanitary Mains 12" and larger may be designed to flow full at the peak design flow rate.
- Minimum Velocity at the peak design flow rate shall be two feet per second.
- Maximum Velocity shall not exceed 10 feet per second at 80% flow depth.

B. Modeling Output

Using Hydraflow Express, three wastewater system models were created: one model showing the system as maximum capacity, one model showing the system at its minimum velocity, and one showing the system at its maximum velocity. The results can be found in Table 5 below. For the Hydraflow Express modeling output see Appendix D.

Model Scenario	Input	Flow Result (cfs)	Velocity Result (ft/s)
Maximum Capacity	80% depth, 0.5% Pipe Slope	0.923	3.03
Minimum Velocity	0.56 cfs, 0.5% Pipe Slope	N/A	2.70
Maximum Velocity	0.56 cfs, 1.0% Pipe Slope	N/A	3.49

Table 5: Wastewater Modeling Output

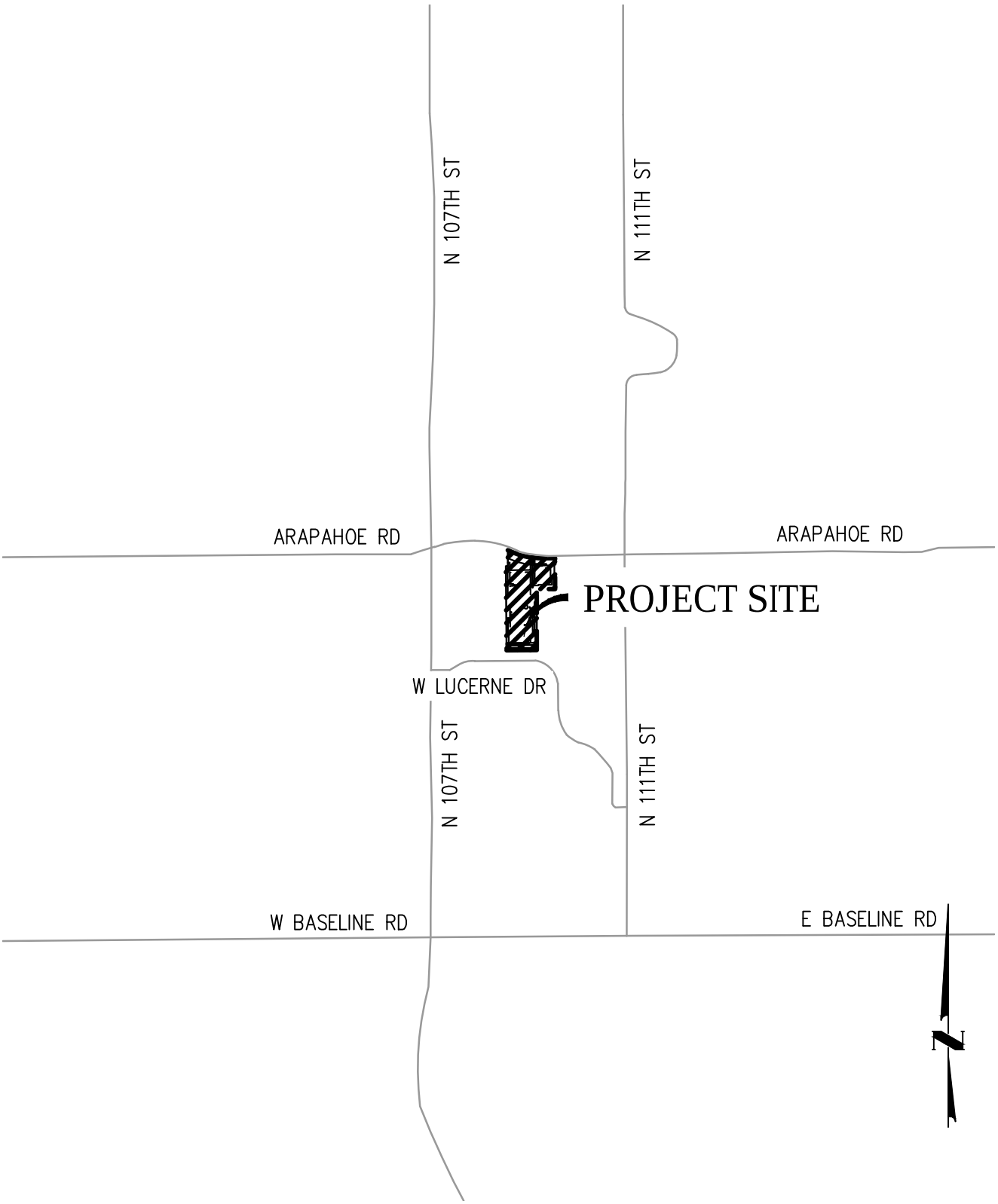
X. FUTURE DEVELOPMENT REQUIREMENTS

No future development of water and/or sanitary infrastructure and service stubs are expected or incorporated into the design.

XI. REFERENCES

- Town of Erie Public Works Standards and Specifications Section 600 – Water Facilities
- Town of Erie Public Works Standards and Specifications Section 700 – Sanitary Sewer Facilities
- Galloway Final Utility Report for Nine Mile Corner At Nine Mile Subdivision Filing No. 1

Appendix A – Vicinity Map



Plotted: THU 04/27/17 3:47:19P By: Derrik Mills Filepath: p:\160602\engineering\xref\vicmap.dwg Layout: layout1

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

ISSUE DATE: 09/19/2016	PROJECT #: 160602
DATE	REVISION COMMENTS

EVERGREEN

OUTLOOK AT NINE MILE
VICINITY MAP

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

DSN'D BY: MEG
CHK'D BY: TEG
DRAWN BY: MEG

SHEET NO.
1
1 OF 1

Appendix B – Water Demands

BLDG	Total Sq Ft	Count	Construction Type	Stories	Calculated Fire Flow (Table B105.1) (GPM)	W/50% Reduction (Min 1,500)	Min Hydrants	Average Spacing	Max Spacing	Hose Pull	Number of Hydrants Used	Fire Flow to Each Hydrant (GPM)
Clubhouse	6,350	1	V-B	1	2,500	No Reduction	2	500	300	250	2	1,250
Carriage	3,753	3	V-B	2	1,750	1,500	1	500	300	250	1	1,500
18-Plex	18,388	2	V-A	3	2,500	1,500	1	500	300	250	1	1,500
28-Plex	27,751	5	V-A	2	3,000	1,500	1	500	300	250	1	1,500
51-Plex	57,383	2	V-A	4	4,250	2,500	2	450	300	225	2	1,250

BUILDING	Type	TOTAL BUILDING SQUARE FOOTAGE	CONSTRUCTION TYPE	NUMBER OF STORIES	SPRINKLED	CALCULATED FIRE FLOW (IFC TABLE B105.1) (GPM)	CALCULATED FIRE FLOW W/ 50% REDUCTION (IFC SECTION B105) (GPM)	MINIMUM NUMBER OF HYDRANTS (IFC TABLE C105.1)	NUMBER OF HYDRANTS USED	FIRE FLOW TO EACH HYDRANT (GPM)
Building 1	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 2	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 3	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 4	18-Plex	18,388	V-A	3	Yes	2,500	1,500	1	1	1500
Building 5	18-Plex	18,388	V-A	3	Yes	2,500	1,500	1	1	1500
Building 6	51-Plex	57,383	V-A	4	Yes	4,250	2,500	2	2	1250
Building 7	Carriage	3,753	V-B	2	Yes	1,750	1,500	1	1	1500
Building 8	Carriage	3,753	V-B	2	Yes	1,750	1,500	1	1	1500
Building 9	51-Plex	57,383	V-A	4	Yes	4,250	2,500	2	2	1250
Building 10	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 11	28-Plex	27,751	V-A	2	Yes	3,000	1,500	1	1	1500
Building 12	Carriage	3,753	V-B	2	Yes	1,750	1,500	1	1	1500
Clubhouse	Clubhouse	6,350	V-B	1	No	2,500	N/A	2	2	1250

- unknown quantities (from previous iteration of calcs in 2017)

Lot/Parcel	3	Area (acre)	Units	Persons/Unit	ADF/Unit* Gal/Unit/Day	ADF (gpd)	Max Hour Factor** (MHD)	MHD (gpm)	Max Daily Factor*** (MDD)	MDD (gpm)
Block 2	Multi-Family	12.96	287	2.79	140	112102.2	3.9	304	2.6	202

BUILDING TYPE	# OF UNITS	SPRINKLER FIRE FLOWS (GPM)	AVG DAILY DEMAND (GPD)	AVG DAILY DEMAND (GPM)	MAX DAILY DEMAND (GPM)	MAX HOUR DEMAND (GPM)
51-PLEX	51	300	19920.6	13.83	35.97	53.95
28-PLEX	28	200	10936.8	7.60	19.75	29.62
18-PLEX	18	200	7030.8	4.88	12.69	19.04
CARRIAGE	3	200	1171.8	0.81	2.12	3.17

** MAX DAY/AVG DAY 2.6
*** MAX HR./FLOW RATIO 3.9

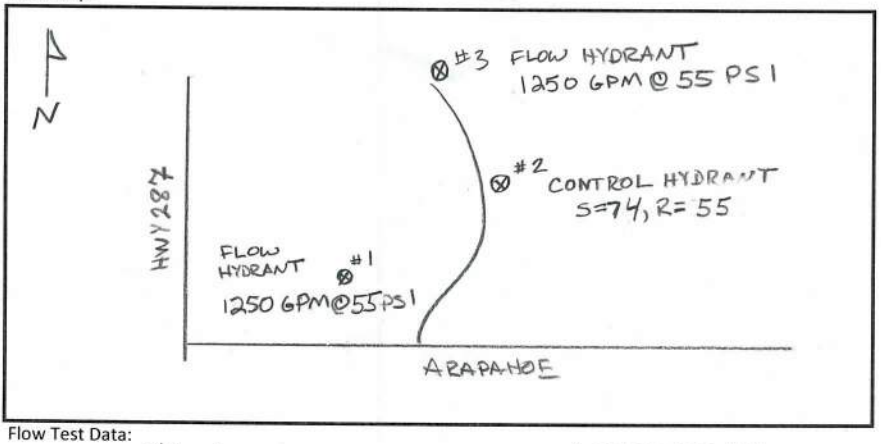
Appendix C – Water Hydraulic Analysis & Modeling & Fire Hydrant Test Results

Flow Test Information Report

Date: 8/7/19 Time: 10:30AM

Project Name: ERIE

Address: HWY 287 and ARAPAHOE, ERIE, CO
Test conducted by: Jim Maxwell FireTest Company (3) 697-7377
Test witnessed by: Scott Brown, Town of Erie + DEREKLIS, EVERGREEN
Source of water supply: Town of Erie, Pumps
Name of Water District: " " "
Area Map:



Flow Test Data:
Hose size: 4 inch / 2.5 inch Number of Hoses: 1 @ 1250 GPM / 2 @ 11 PSI

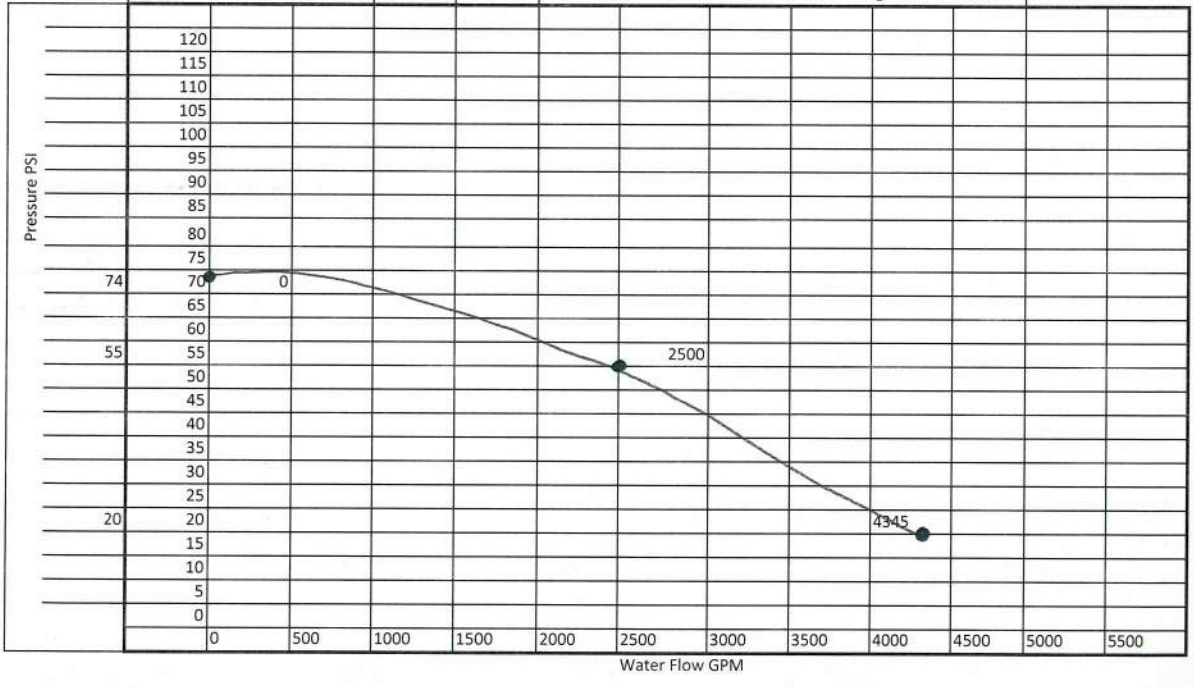
Flow at Hydrant No.	Static at Hydrant No.	Static PSIG	Residual PSIG	Flow GPM
1	2	74	55	1250
3	2	74	55	1250
TOTAL		74	55	2500

See second page for graph

Signed [signature] 08/07/2019

Water Flow Test Summary & Graph

Hydrant No.	Outlet I.D> Inches	Pitot or Gauge Pressure	Flow GPM	Residual PSI	**FireTest** Company 13724 W. Auburn Ave. Lakewood, CO 80228 (303) 697-7377
1	4		1250	55	Date: 8/7/2019 Time: 10:30 AM
3	2.5	11	625	55	Name: Erie, Safeway Hwy 287 and Arapahoe
3	2.5	11	625	55	Address: 3331 Arapahoe, Erie, CO
Total Flow			2500		Static Presure PSI: 74 Flow GPM @ 20 PSI 4395



Scenario: Avg Day
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	8	72
1Fire	5,251.80	0	72
2Dom	5,248.40	8	73
2Fire	5,248.00	0	74
3Dom	5,251.10	8	72
3Fire	5,251.50	0	72
4Dom	5,255.80	5	70
4Fire	5,255.80	0	70
5Dom	5,254.60	5	71
5Fire	5,254.70	0	71
6Dom	5,255.60	14	70
6Fire	5,255.70	0	70
7Dom	5,256.40	1	70
7Fire	5,256.40	0	70
8Dom	5,257.50	1	69
8Fire	5,257.60	0	69
9Dom	5,258.70	14	69
9Fire	5,258.60	0	69
10Dom	5,261.40	8	68
10Fire	5,261.10	0	68
11Dom	5,258.00	8	69
11Fire	5,258.60	0	69
12Dom	5,258.80	1	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	71
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	72
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 81	

P:\160602\Documents\Utilities\Water\WaterCAD\2019-11-07\Outlook Erie 2nd-pipe-addition.wtg

Scenario: Avg Day
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	345	0.98	0.700
P-2	56	12.0	100.0	300	0.85	0.659
P-3	183	8.0	100.0	43	0.28	0.096
P-4	45	8.0	100.0	44	0.28	0.151
P-5	40	8.0	100.0	44	0.28	0.111
P-6	36	8.0	100.0	37	0.23	0.080
P-7	413	8.0	100.0	37	0.23	0.069
P-8	15	8.0	100.0	37	0.23	0.098
P-9	36	8.0	100.0	29	0.19	0.055
P-10	188	8.0	100.0	29	0.19	0.047
P-11	172	8.0	100.0	72	0.46	0.244
P-12	5	8.0	100.0	67	0.43	0.391
P-13	16	8.0	130.0	67	0.43	0.248
P-14	74	8.0	100.0	67	0.43	0.232
P-15	10	8.0	100.0	54	0.34	0.195
P-16	65	8.0	100.0	54	0.34	0.142
P-17	5	8.0	100.0	53	0.34	0.195
P-18	29	8.0	100.0	53	0.34	0.170
P-19	82	8.0	100.0	53	0.34	0.143
P-20	5	8.0	100.0	52	0.33	0.293
P-21	44	8.0	100.0	52	0.33	0.134
P-22	15	8.0	100.0	44	0.28	0.127
P-23	44	8.0	100.0	44	0.28	0.122
P-24	24	8.0	100.0	44	0.28	0.120
P-25	5	8.0	100.0	44	0.28	0.098
P-26	414	8.0	100.0	44	0.28	0.095
P-27	61	12.0	100.0	-49	0.14	0.024
P-28	33	8.0	100.0	-6	0.04	0.015
P-29	20	8.0	100.0	-6	0.04	0.000
P-30	36	8.0	100.0	-13	0.09	0.014
P-31	253	8.0	100.0	-13	0.09	0.010
P-32	10	8.0	100.0	-27	0.17	0.049
P-33	99	8.0	100.0	-27	0.17	0.044
P-34	263	8.0	100.0	-27	0.17	0.037
P-35	5	8.0	100.0	-32	0.21	0.098
P-36	9	8.0	100.0	-32	0.21	0.164
P-37	174	8.0	100.0	-32	0.21	0.053
P-38	108	12.0	100.0	218	0.62	0.284
P-39	113	12.0	100.0	-250	0.71	0.432
P-40	48	12.0	100.0	-250	0.71	0.370
P-41	36	12.0	100.0	-250	0.71	0.398
P-42	10	12.0	100.0	-257	0.73	0.928
P-43	98	12.0	100.0	-257	0.73	0.506

Scenario: Max Day
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	74
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	71
5Fire	5,254.70	0	71
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	72
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 204	

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Scenario: Max Day
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	378	1.07	0.832
P-2	56	12.0	100.0	314	0.89	0.720
P-3	183	8.0	100.0	64	0.41	0.197
P-4	45	8.0	100.0	64	0.41	0.291
P-5	40	8.0	100.0	64	0.41	0.234
P-6	36	8.0	100.0	44	0.28	0.107
P-7	413	8.0	100.0	44	0.28	0.097
P-8	15	8.0	100.0	44	0.28	0.163
P-9	36	8.0	100.0	25	0.16	0.027
P-10	188	8.0	100.0	25	0.16	0.036
P-11	172	8.0	100.0	88	0.56	0.349
P-12	5	8.0	100.0	75	0.48	0.488
P-13	16	8.0	130.0	75	0.48	0.341
P-14	74	8.0	100.0	75	0.48	0.278
P-15	10	8.0	100.0	39	0.25	0.146
P-16	65	8.0	100.0	39	0.25	0.075
P-17	5	8.0	100.0	37	0.24	0.195
P-18	29	8.0	100.0	37	0.24	0.085
P-19	82	8.0	100.0	37	0.24	0.071
P-20	5	8.0	100.0	35	0.22	0.195
P-21	44	8.0	100.0	35	0.22	0.067
P-22	15	8.0	100.0	15	0.10	0.000
P-23	44	8.0	100.0	15	0.10	0.022
P-24	24	8.0	100.0	15	0.10	0.000
P-25	5	8.0	100.0	13	0.09	0.098
P-26	414	8.0	100.0	13	0.09	0.009
P-27	61	12.0	100.0	16	0.05	0.000
P-28	33	8.0	100.0	30	0.19	0.075
P-29	20	8.0	100.0	30	0.19	0.049
P-30	36	8.0	100.0	10	0.06	0.014
P-31	253	8.0	100.0	10	0.06	0.006
P-32	10	8.0	100.0	-26	0.17	0.049
P-33	99	8.0	100.0	-26	0.17	0.040
P-34	263	8.0	100.0	-26	0.17	0.035
P-35	5	8.0	100.0	-39	0.25	0.195
P-36	9	8.0	100.0	-39	0.25	0.164
P-37	174	8.0	100.0	-39	0.25	0.079
P-38	108	12.0	100.0	192	0.54	0.225
P-39	113	12.0	100.0	-231	0.65	0.372
P-40	48	12.0	100.0	-231	0.65	0.319
P-41	36	12.0	100.0	-231	0.65	0.343
P-42	10	12.0	100.0	-250	0.71	0.879
P-43	98	12.0	100.0	-250	0.71	0.477

Scenario: Max Hour
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	30	67
1Fire	5,251.80	0	67
2Dom	5,248.40	30	68
2Fire	5,248.00	0	68
3Dom	5,251.10	30	67
3Fire	5,251.50	0	67
4Dom	5,255.80	19	65
4Fire	5,255.80	0	65
5Dom	5,254.60	19	65
5Fire	5,254.70	0	65
6Dom	5,255.60	54	65
6Fire	5,255.70	0	65
7Dom	5,256.40	3	65
7Fire	5,256.40	0	65
8Dom	5,257.50	3	64
8Fire	5,257.60	0	64
9Dom	5,258.70	54	64
9Fire	5,258.60	0	64
10Dom	5,261.40	30	62
10Fire	5,261.10	0	63
11Dom	5,258.00	30	64
11Fire	5,258.60	0	64
12Dom	5,258.80	3	64
12Fire	5,258.90	0	64
CHDOM	5,252.30	0	66
H1	5,248.80	0	68
H2	5,251.00	0	67
H3	5,254.90	0	65
H4	5,256.70	0	65
H5	5,258.10	0	64
H6	5,261.60	0	62
H7	5,257.60	0	64
H8	5,255.70	0	65
H9	5,251.30	0	67
Tee1	5,250.10	0	67
Tee2	5,250.20	0	67
Tee3	5,252.60	0	66
Tee4	5,261.40	0	62
Tee5	5,254.30	0	66
		TOTAL: 305	

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Scenario: Max Hour
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	400	1.13	0.924
P-2	56	12.0	100.0	322	0.91	0.755
P-3	183	8.0	100.0	75	0.48	0.267
P-4	45	8.0	100.0	78	0.50	0.432
P-5	40	8.0	100.0	78	0.50	0.333
P-6	36	8.0	100.0	48	0.31	0.121
P-7	413	8.0	100.0	48	0.31	0.113
P-8	15	8.0	100.0	48	0.31	0.163
P-9	36	8.0	100.0	19	0.12	0.027
P-10	188	8.0	100.0	19	0.12	0.021
P-11	172	8.0	100.0	93	0.60	0.392
P-12	5	8.0	100.0	74	0.47	0.488
P-13	16	8.0	130.0	74	0.47	0.310
P-14	74	8.0	100.0	74	0.47	0.272
P-15	10	8.0	100.0	20	0.13	0.049
P-16	65	8.0	100.0	20	0.13	0.022
P-17	5	8.0	100.0	17	0.11	0.000
P-18	29	8.0	100.0	17	0.11	0.034
P-19	82	8.0	100.0	17	0.11	0.018
P-20	5	8.0	100.0	14	0.09	0.000
P-21	44	8.0	100.0	14	0.09	0.011
P-22	15	8.0	100.0	-16	0.10	0.032
P-23	44	8.0	100.0	-16	0.10	0.011
P-24	24	8.0	100.0	-16	0.10	0.020
P-25	5	8.0	100.0	-19	0.12	0.000
P-26	414	8.0	100.0	-19	0.12	0.020
P-27	61	12.0	100.0	72	0.21	0.056
P-28	33	8.0	100.0	54	0.34	0.209
P-29	20	8.0	100.0	54	0.34	0.196
P-30	36	8.0	100.0	24	0.15	0.027
P-31	253	8.0	100.0	24	0.15	0.031
P-32	10	8.0	100.0	-30	0.19	0.049
P-33	99	8.0	100.0	-30	0.19	0.049
P-34	263	8.0	100.0	-30	0.19	0.046
P-35	5	8.0	100.0	-49	0.31	0.195
P-36	9	8.0	100.0	-49	0.31	0.274
P-37	174	8.0	100.0	-49	0.31	0.121
P-38	108	12.0	100.0	168	0.48	0.176
P-39	113	12.0	100.0	-217	0.62	0.333
P-40	48	12.0	100.0	-217	0.62	0.288
P-41	36	12.0	100.0	-217	0.62	0.302
P-42	10	12.0	100.0	-247	0.70	0.879
P-43	98	12.0	100.0	-247	0.70	0.462

Scenario: 1Fire H9
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	200	71
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	1,500	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 1Fire H9
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	906	2.57	4.309
P-2	56	12.0	100.0	816	2.32	4.442
P-3	183	8.0	100.0	-89	0.57	0.368
P-4	45	8.0	100.0	90	0.57	0.572
P-5	40	8.0	100.0	90	0.57	0.444
P-6	36	8.0	100.0	70	0.45	0.241
P-7	413	8.0	100.0	70	0.45	0.228
P-8	15	8.0	100.0	70	0.45	0.391
P-9	36	8.0	100.0	50	0.32	0.123
P-10	188	8.0	100.0	50	0.32	0.137
P-11	172	8.0	100.0	-39	0.25	0.077
P-12	5	8.0	100.0	-52	0.33	0.293
P-13	16	8.0	130.0	-52	0.33	0.155
P-14	74	8.0	100.0	-52	0.33	0.139
P-15	10	8.0	100.0	-88	0.56	0.488
P-16	65	8.0	100.0	-88	0.56	0.351
P-17	5	8.0	100.0	-90	0.57	0.684
P-18	29	8.0	100.0	-90	0.57	0.477
P-19	82	8.0	100.0	-90	0.57	0.387
P-20	5	8.0	100.0	-92	0.59	0.684
P-21	44	8.0	100.0	-92	0.59	0.403
P-22	15	8.0	100.0	-112	0.71	0.667
P-23	44	8.0	100.0	-112	0.71	0.711
P-24	24	8.0	100.0	-112	0.71	0.621
P-25	5	8.0	100.0	-114	0.73	1.074
P-26	414	8.0	100.0	-114	0.73	0.563
P-27	61	12.0	100.0	236	0.67	0.548
P-28	33	8.0	100.0	122	0.78	0.986
P-29	20	8.0	100.0	122	0.78	0.955
P-30	36	8.0	100.0	102	0.65	0.494
P-31	253	8.0	100.0	102	0.65	0.446
P-32	10	8.0	100.0	66	0.42	0.293
P-33	99	8.0	100.0	66	0.42	0.227
P-34	263	8.0	100.0	66	0.42	0.201
P-35	5	8.0	100.0	54	0.34	0.293
P-36	9	8.0	100.0	54	0.34	0.329
P-37	174	8.0	100.0	54	0.34	0.143
P-38	108	12.0	100.0	-760	2.16	2.970
P-39	113	12.0	100.0	814	2.31	4.040
P-40	48	12.0	100.0	814	2.31	3.422
P-41	36	12.0	100.0	614	1.74	2.127
P-42	10	12.0	100.0	594	1.69	4.834
P-43	98	12.0	100.0	-906	2.57	5.537

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Scenario: 2Fire H1
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	71
2Fire	5,248.00	200	71
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	69
7Fire	5,256.40	0	69
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	68
CHDOM	5,252.30	0	71
H1	5,248.80	1,500	71
H2	5,251.00	0	71
H3	5,254.90	0	70
H4	5,256.70	0	69
H5	5,258.10	0	69
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 2Fire H1
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	1,163	3.30	6.887
P-2	56	12.0	100.0	-173	0.49	0.226
P-3	183	8.0	100.0	294	1.88	3.424
P-4	45	8.0	100.0	1,336	8.53	101.145
P-5	40	8.0	100.0	-164	1.05	1.368
P-6	36	8.0	100.0	-184	1.17	1.502
P-7	413	8.0	100.0	-384	2.45	5.384
P-8	15	8.0	100.0	-384	2.45	9.635
P-9	36	8.0	100.0	-404	2.58	6.545
P-10	188	8.0	100.0	-404	2.58	6.643
P-11	172	8.0	100.0	-110	0.70	0.528
P-12	5	8.0	100.0	-122	0.78	1.270
P-13	16	8.0	130.0	-122	0.78	0.776
P-14	74	8.0	100.0	-122	0.78	0.702
P-15	10	8.0	100.0	-158	1.01	1.563
P-16	65	8.0	100.0	-158	1.01	1.059
P-17	5	8.0	100.0	-160	1.02	2.148
P-18	29	8.0	100.0	-160	1.02	1.397
P-19	82	8.0	100.0	-160	1.02	1.149
P-20	5	8.0	100.0	-163	1.04	2.246
P-21	44	8.0	100.0	-163	1.04	1.152
P-22	15	8.0	100.0	-182	1.16	1.747
P-23	44	8.0	100.0	-182	1.16	1.800
P-24	24	8.0	100.0	-182	1.16	1.561
P-25	5	8.0	100.0	-184	1.18	2.832
P-26	414	8.0	100.0	-184	1.18	1.385
P-27	61	12.0	100.0	266	0.75	0.693
P-28	33	8.0	100.0	82	0.52	0.463
P-29	20	8.0	100.0	82	0.52	0.441
P-30	36	8.0	100.0	62	0.40	0.192
P-31	253	8.0	100.0	62	0.40	0.176
P-32	10	8.0	100.0	26	0.17	0.049
P-33	99	8.0	100.0	26	0.17	0.040
P-34	263	8.0	100.0	26	0.17	0.033
P-35	5	8.0	100.0	13	0.08	0.098
P-36	9	8.0	100.0	13	0.08	0.000
P-37	174	8.0	100.0	13	0.08	0.011
P-38	108	12.0	100.0	-474	1.34	1.224
P-39	113	12.0	100.0	487	1.38	1.521
P-40	48	12.0	100.0	487	1.38	1.305
P-41	36	12.0	100.0	487	1.38	1.386
P-42	10	12.0	100.0	467	1.32	2.979
P-43	98	12.0	100.0	467	1.32	1.569

Scenario: 3Fire H2
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	72
2Fire	5,248.00	0	72
3Dom	5,251.10	20	67
3Fire	5,251.50	200	67
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	69
5Fire	5,254.70	0	69
6Dom	5,255.60	36	69
6Fire	5,255.70	0	69
7Dom	5,256.40	2	69
7Fire	5,256.40	0	69
8Dom	5,257.50	2	68
8Fire	5,257.60	0	68
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	68
11Fire	5,258.60	0	68
12Dom	5,258.80	2	68
12Fire	5,258.90	0	68
CHDOM	5,252.30	0	71
H1	5,248.80	0	72
H2	5,251.00	1,500	67
H3	5,254.90	0	69
H4	5,256.70	0	69
H5	5,258.10	0	68
H6	5,261.60	0	68
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 3Fire H2
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	1,067	3.03	5.856
P-2	56	12.0	100.0	295	0.84	0.642
P-3	183	8.0	100.0	719	4.59	18.197
P-4	45	8.0	100.0	772	4.92	35.175
P-5	40	8.0	100.0	772	4.92	25.398
P-6	36	8.0	100.0	752	4.80	20.944
P-7	413	8.0	100.0	752	4.80	18.804
P-8	15	8.0	100.0	-748	4.78	34.831
P-9	36	8.0	100.0	-768	4.90	21.887
P-10	188	8.0	100.0	-968	6.18	34.307
P-11	172	8.0	100.0	-249	1.59	2.430
P-12	5	8.0	100.0	-262	1.67	5.469
P-13	16	8.0	130.0	-262	1.67	3.446
P-14	74	8.0	100.0	-262	1.67	2.916
P-15	10	8.0	100.0	-298	1.90	5.078
P-16	65	8.0	100.0	-298	1.90	3.445
P-17	5	8.0	100.0	-300	1.91	7.227
P-18	29	8.0	100.0	-300	1.91	4.566
P-19	82	8.0	100.0	-300	1.91	3.702
P-20	5	8.0	100.0	-302	1.93	7.227
P-21	44	8.0	100.0	-302	1.93	3.690
P-22	15	8.0	100.0	-322	2.05	5.113
P-23	44	8.0	100.0	-322	2.05	5.255
P-24	24	8.0	100.0	-322	2.05	4.564
P-25	5	8.0	100.0	-324	2.07	8.301
P-26	414	8.0	100.0	-324	2.07	3.946
P-27	61	12.0	100.0	384	1.09	1.410
P-28	33	8.0	100.0	60	0.38	0.254
P-29	20	8.0	100.0	60	0.38	0.245
P-30	36	8.0	100.0	40	0.26	0.082
P-31	253	8.0	100.0	40	0.26	0.081
P-32	10	8.0	100.0	5	0.03	0.000
P-33	99	8.0	100.0	5	0.03	0.000
P-34	263	8.0	100.0	5	0.03	0.002
P-35	5	8.0	100.0	-8	0.05	0.000
P-36	9	8.0	100.0	-8	0.05	0.055
P-37	174	8.0	100.0	-8	0.05	0.003
P-38	108	12.0	100.0	-452	1.28	1.121
P-39	113	12.0	100.0	444	1.26	1.279
P-40	48	12.0	100.0	444	1.26	1.089
P-41	36	12.0	100.0	444	1.26	1.166
P-42	10	12.0	100.0	424	1.20	2.490
P-43	98	12.0	100.0	424	1.20	1.301

Scenario: 4Fire H8
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	67
4Fire	5,255.80	200	67
5Dom	5,254.60	13	71
5Fire	5,254.70	0	71
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	67
9Fire	5,258.60	0	67
10Dom	5,261.40	20	67
10Fire	5,261.10	0	67
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	67
H7	5,257.60	0	67
H8	5,255.70	1,500	67
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 4Fire H8
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	547	1.55	1.668
P-2	56	12.0	100.0	472	1.34	1.562
P-3	183	8.0	100.0	59	0.38	0.171
P-4	45	8.0	100.0	76	0.48	0.410
P-5	40	8.0	100.0	76	0.48	0.320
P-6	36	8.0	100.0	56	0.36	0.161
P-7	413	8.0	100.0	56	0.36	0.150
P-8	15	8.0	100.0	56	0.36	0.260
P-9	36	8.0	100.0	36	0.23	0.069
P-10	188	8.0	100.0	36	0.23	0.073
P-11	172	8.0	100.0	95	0.61	0.406
P-12	5	8.0	100.0	82	0.53	0.586
P-13	16	8.0	130.0	82	0.53	0.373
P-14	74	8.0	100.0	82	0.53	0.331
P-15	10	8.0	100.0	46	0.30	0.146
P-16	65	8.0	100.0	46	0.30	0.112
P-17	5	8.0	100.0	44	0.28	0.195
P-18	29	8.0	100.0	44	0.28	0.119
P-19	82	8.0	100.0	44	0.28	0.101
P-20	5	8.0	100.0	42	0.27	0.195
P-21	44	8.0	100.0	42	0.27	0.089
P-22	15	8.0	100.0	22	0.14	0.032
P-23	44	8.0	100.0	22	0.14	0.033
P-24	24	8.0	100.0	22	0.14	0.040
P-25	5	8.0	100.0	20	0.13	0.000
P-26	414	8.0	100.0	20	0.13	0.024
P-27	61	12.0	100.0	569	1.61	3.005
P-28	33	8.0	100.0	589	3.76	19.800
P-29	20	8.0	100.0	589	3.76	19.301
P-30	36	8.0	100.0	569	3.63	12.487
P-31	253	8.0	100.0	569	3.63	10.747
P-32	10	8.0	100.0	533	3.40	15.576
P-33	99	8.0	100.0	533	3.40	11.260
P-34	263	8.0	100.0	533	3.40	9.511
P-35	5	8.0	100.0	521	3.32	20.898
P-36	9	8.0	100.0	321	2.05	11.553
P-37	174	8.0	100.0	-1,179	7.53	46.178
P-38	108	12.0	100.0	-786	2.23	3.164
P-39	113	12.0	100.0	-393	1.12	1.015
P-40	48	12.0	100.0	-393	1.12	0.874
P-41	36	12.0	100.0	-393	1.12	0.919
P-42	10	12.0	100.0	-413	1.17	2.344
P-43	98	12.0	100.0	-413	1.17	1.241

Scenario: 5Fire H3
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	70
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	66
5Fire	5,254.70	200	65
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	66
8Fire	5,257.60	0	66
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	66
11Fire	5,258.60	0	66
12Dom	5,258.80	2	66
12Fire	5,258.90	0	66
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	1,500	65
H4	5,256.70	0	65
H5	5,258.10	0	66
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 5Fire H3
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	865	2.45	3.944
P-2	56	12.0	100.0	483	1.37	1.631
P-3	183	8.0	100.0	791	5.05	21.762
P-4	45	8.0	100.0	381	2.43	9.085
P-5	40	8.0	100.0	381	2.43	6.691
P-6	36	8.0	100.0	362	2.31	5.310
P-7	413	8.0	100.0	362	2.31	4.812
P-8	15	8.0	100.0	362	2.31	8.594
P-9	36	8.0	100.0	342	2.18	4.789
P-10	188	8.0	100.0	342	2.18	4.858
P-11	172	8.0	100.0	1,133	7.23	40.925
P-12	5	8.0	100.0	1,120	7.15	92.188
P-13	16	8.0	130.0	920	5.88	39.521
P-14	74	8.0	100.0	-580	3.70	12.943
P-15	10	8.0	100.0	-616	3.93	20.508
P-16	65	8.0	100.0	-616	3.93	13.364
P-17	5	8.0	100.0	-618	3.94	29.102
P-18	29	8.0	100.0	-618	3.94	18.060
P-19	82	8.0	100.0	-618	3.94	14.339
P-20	5	8.0	100.0	-620	3.96	29.297
P-21	44	8.0	100.0	-620	3.96	14.189
P-22	15	8.0	100.0	-639	4.08	18.862
P-23	44	8.0	100.0	-639	4.08	19.387
P-24	24	8.0	100.0	-639	4.08	16.674
P-25	5	8.0	100.0	-642	4.10	31.348
P-26	414	8.0	100.0	-642	4.10	14.116
P-27	61	12.0	100.0	636	1.81	3.730
P-28	33	8.0	100.0	-5	0.03	0.000
P-29	20	8.0	100.0	-5	0.03	0.000
P-30	36	8.0	100.0	-25	0.16	0.041
P-31	253	8.0	100.0	-25	0.16	0.033
P-32	10	8.0	100.0	-61	0.39	0.244
P-33	99	8.0	100.0	-61	0.39	0.193
P-34	263	8.0	100.0	-61	0.39	0.169
P-35	5	8.0	100.0	-74	0.47	0.488
P-36	9	8.0	100.0	-74	0.47	0.657
P-37	174	8.0	100.0	-74	0.47	0.259
P-38	108	12.0	100.0	-401	1.14	0.896
P-39	113	12.0	100.0	328	0.93	0.722
P-40	48	12.0	100.0	328	0.93	0.617
P-41	36	12.0	100.0	328	0.93	0.659
P-42	10	12.0	100.0	308	0.87	1.367
P-43	98	12.0	100.0	308	0.87	0.705

Scenario: 6Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	68
4Fire	5,255.80	0	69
5Dom	5,254.60	13	67
5Fire	5,254.70	0	67
6Dom	5,255.60	36	65
6Fire	5,255.70	300	65
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	65
8Fire	5,257.60	0	65
9Dom	5,258.70	36	66
9Fire	5,258.60	0	66
10Dom	5,261.40	20	67
10Fire	5,261.10	0	67
11Dom	5,258.00	20	65
11Fire	5,258.60	0	65
12Dom	5,258.80	2	65
12Fire	5,258.90	0	65
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	1,250	64
H5	5,258.10	0	65
H6	5,261.60	0	67
H7	5,257.60	1,250	66
H8	5,255.70	0	69
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 3004	

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Scenario: 6Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	873	2.48	4.018
P-2	56	12.0	100.0	558	1.58	2.152
P-3	183	8.0	100.0	638	4.07	14.548
P-4	45	8.0	100.0	315	2.01	6.312
P-5	40	8.0	100.0	315	2.01	4.670
P-6	36	8.0	100.0	295	1.89	3.634
P-7	413	8.0	100.0	295	1.89	3.306
P-8	15	8.0	100.0	295	1.89	5.827
P-9	36	8.0	100.0	276	1.76	3.211
P-10	188	8.0	100.0	276	1.76	3.246
P-11	172	8.0	100.0	914	5.83	27.395
P-12	5	8.0	100.0	901	5.75	60.352
P-13	16	8.0	130.0	901	5.75	37.937
P-14	74	8.0	100.0	901	5.75	29.636
P-15	10	8.0	100.0	865	5.52	39.258
P-16	65	8.0	100.0	565	3.61	11.395
P-17	5	8.0	100.0	563	3.59	24.219
P-18	29	8.0	100.0	563	3.59	15.146
P-19	82	8.0	100.0	-687	4.39	17.512
P-20	5	8.0	100.0	-689	4.40	35.938
P-21	44	8.0	100.0	-689	4.40	17.320
P-22	15	8.0	100.0	-709	4.53	22.927
P-23	44	8.0	100.0	-709	4.53	23.597
P-24	24	8.0	100.0	-709	4.53	20.257
P-25	5	8.0	100.0	-711	4.54	38.184
P-26	414	8.0	100.0	-711	4.54	17.097
P-27	61	12.0	100.0	1,356	3.85	16.064
P-28	33	8.0	100.0	644	4.11	23.518
P-29	20	8.0	100.0	644	4.11	22.925
P-30	36	8.0	100.0	625	3.99	14.847
P-31	253	8.0	100.0	625	3.99	12.766
P-32	10	8.0	100.0	589	3.76	18.799
P-33	99	8.0	100.0	589	3.76	13.551
P-34	263	8.0	100.0	-661	4.22	14.171
P-35	5	8.0	100.0	-674	4.30	34.473
P-36	9	8.0	100.0	-674	4.30	49.388
P-37	174	8.0	100.0	-674	4.30	16.220
P-38	108	12.0	100.0	-774	2.19	3.069
P-39	113	12.0	100.0	100	0.28	0.078
P-40	48	12.0	100.0	100	0.28	0.062
P-41	36	12.0	100.0	100	0.28	0.069
P-42	10	12.0	100.0	80	0.23	0.098
P-43	98	12.0	100.0	80	0.23	0.055

Scenario: 7Fire H3
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	66
5Fire	5,254.70	0	66
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	65
7Fire	5,256.40	200	65
8Dom	5,257.50	2	65
8Fire	5,257.60	0	65
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	66
11Fire	5,258.60	0	66
12Dom	5,258.80	2	66
12Fire	5,258.90	0	66
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	1,500	65
H4	5,256.70	0	65
H5	5,258.10	0	66
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 7Fire H3
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	851	2.41	3.823
P-2	56	12.0	100.0	477	1.35	1.596
P-3	183	8.0	100.0	774	4.94	20.860
P-4	45	8.0	100.0	373	2.38	8.729
P-5	40	8.0	100.0	373	2.38	6.433
P-6	36	8.0	100.0	354	2.26	5.095
P-7	413	8.0	100.0	354	2.26	4.617
P-8	15	8.0	100.0	354	2.26	8.236
P-9	36	8.0	100.0	334	2.13	4.583
P-10	188	8.0	100.0	334	2.13	4.648
P-11	172	8.0	100.0	1,107	7.07	39.211
P-12	5	8.0	100.0	1,095	6.99	88.184
P-13	16	8.0	130.0	1,095	6.99	55.323
P-14	74	8.0	100.0	-405	2.59	6.614
P-15	10	8.0	100.0	-441	2.82	10.840
P-16	65	8.0	100.0	-441	2.82	7.182
P-17	5	8.0	100.0	-443	2.83	15.332
P-18	29	8.0	100.0	-643	4.11	19.508
P-19	82	8.0	100.0	-643	4.11	15.476
P-20	5	8.0	100.0	-645	4.12	31.641
P-21	44	8.0	100.0	-645	4.12	15.318
P-22	15	8.0	100.0	-665	4.25	20.323
P-23	44	8.0	100.0	-665	4.25	20.898
P-24	24	8.0	100.0	-665	4.25	17.975
P-25	5	8.0	100.0	-667	4.26	33.691
P-26	414	8.0	100.0	-667	4.26	15.187
P-27	61	12.0	100.0	658	1.87	3.980
P-28	33	8.0	100.0	-9	0.06	0.015
P-29	20	8.0	100.0	-9	0.06	0.000
P-30	36	8.0	100.0	-29	0.19	0.055
P-31	253	8.0	100.0	-29	0.19	0.042
P-32	10	8.0	100.0	-65	0.42	0.293
P-33	99	8.0	100.0	-65	0.42	0.217
P-34	263	8.0	100.0	-65	0.42	0.191
P-35	5	8.0	100.0	-78	0.50	0.586
P-36	9	8.0	100.0	-78	0.50	0.712
P-37	174	8.0	100.0	-78	0.50	0.290
P-38	108	12.0	100.0	-394	1.12	0.864
P-39	113	12.0	100.0	316	0.90	0.674
P-40	48	12.0	100.0	316	0.90	0.586
P-41	36	12.0	100.0	316	0.90	0.604
P-42	10	12.0	100.0	296	0.84	1.270
P-43	98	12.0	100.0	296	0.84	0.655

Scenario: 7Fire H4
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	67
5Fire	5,254.70	0	67
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	64
7Fire	5,256.40	200	64
8Dom	5,257.50	2	64
8Fire	5,257.60	0	64
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	64
11Fire	5,258.60	0	64
12Dom	5,258.80	2	65
12Fire	5,258.90	0	65
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	66
H4	5,256.70	1,500	63
H5	5,258.10	0	64
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71

TOTAL: 1904

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Scenario: 7Fire H4
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	774	2.20	3.204
P-2	56	12.0	100.0	445	1.26	1.397
P-3	183	8.0	100.0	675	4.31	16.171
P-4	45	8.0	100.0	329	2.10	6.852
P-5	40	8.0	100.0	329	2.10	5.077
P-6	36	8.0	100.0	310	1.98	3.969
P-7	413	8.0	100.0	310	1.98	3.603
P-8	15	8.0	100.0	310	1.98	6.380
P-9	36	8.0	100.0	290	1.85	3.513
P-10	188	8.0	100.0	290	1.85	3.562
P-11	172	8.0	100.0	965	6.16	30.327
P-12	5	8.0	100.0	952	6.08	67.188
P-13	16	8.0	130.0	952	6.08	42.222
P-14	74	8.0	100.0	952	6.08	32.877
P-15	10	8.0	100.0	916	5.85	43.848
P-16	65	8.0	100.0	916	5.85	28.092
P-17	5	8.0	100.0	914	5.83	62.109
P-18	29	8.0	100.0	714	4.56	23.784
P-19	82	8.0	100.0	-786	5.02	22.530
P-20	5	8.0	100.0	-788	5.03	46.582
P-21	44	8.0	100.0	-788	5.03	22.251
P-22	15	8.0	100.0	-808	5.16	29.373
P-23	44	8.0	100.0	-808	5.16	30.230
P-24	24	8.0	100.0	-808	5.16	25.922
P-25	5	8.0	100.0	-810	5.17	49.121
P-26	414	8.0	100.0	-810	5.17	21.787
P-27	61	12.0	100.0	779	2.21	5.510
P-28	33	8.0	100.0	-31	0.20	0.075
P-29	20	8.0	100.0	-31	0.20	0.049
P-30	36	8.0	100.0	-50	0.32	0.137
P-31	253	8.0	100.0	-50	0.32	0.120
P-32	10	8.0	100.0	-86	0.55	0.488
P-33	99	8.0	100.0	-86	0.55	0.370
P-34	263	8.0	100.0	-86	0.55	0.327
P-35	5	8.0	100.0	-99	0.63	0.781
P-36	9	8.0	100.0	-99	0.63	1.205
P-37	174	8.0	100.0	-99	0.63	0.453
P-38	108	12.0	100.0	-349	0.99	0.689
P-39	113	12.0	100.0	250	0.71	0.432
P-40	48	12.0	100.0	250	0.71	0.380
P-41	36	12.0	100.0	250	0.71	0.384
P-42	10	12.0	100.0	230	0.65	0.781
P-43	98	12.0	100.0	230	0.65	0.407

Scenario: 8Fire H4
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	67
5Fire	5,254.70	0	67
6Dom	5,255.60	36	65
6Fire	5,255.70	0	65
7Dom	5,256.40	2	64
7Fire	5,256.40	0	64
8Dom	5,257.50	2	63
8Fire	5,257.60	200	63
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	68
10Fire	5,261.10	0	68
11Dom	5,258.00	20	64
11Fire	5,258.60	0	64
12Dom	5,258.80	2	64
12Fire	5,258.90	0	65
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	1,500	63
H5	5,258.10	0	64
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	68
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 8Fire H4
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	764	2.17	3.123
P-2	56	12.0	100.0	441	1.25	1.371
P-3	183	8.0	100.0	661	4.22	15.562
P-4	45	8.0	100.0	323	2.06	6.614
P-5	40	8.0	100.0	323	2.06	4.892
P-6	36	8.0	100.0	303	1.94	3.821
P-7	413	8.0	100.0	303	1.94	3.471
P-8	15	8.0	100.0	303	1.94	6.120
P-9	36	8.0	100.0	284	1.81	3.376
P-10	188	8.0	100.0	284	1.81	3.425
P-11	172	8.0	100.0	945	6.03	29.163
P-12	5	8.0	100.0	932	5.95	64.551
P-13	16	8.0	130.0	932	5.95	40.514
P-14	74	8.0	100.0	932	5.95	31.598
P-15	10	8.0	100.0	896	5.72	42.041
P-16	65	8.0	100.0	896	5.72	26.959
P-17	5	8.0	100.0	894	5.71	59.473
P-18	29	8.0	100.0	894	5.71	36.494
P-19	82	8.0	100.0	-606	3.87	13.833
P-20	5	8.0	100.0	-608	3.88	28.223
P-21	44	8.0	100.0	-808	5.16	23.313
P-22	15	8.0	100.0	-828	5.28	30.771
P-23	44	8.0	100.0	-828	5.28	31.674
P-24	24	8.0	100.0	-828	5.28	27.143
P-25	5	8.0	100.0	-830	5.30	51.465
P-26	414	8.0	100.0	-830	5.30	22.798
P-27	61	12.0	100.0	796	2.26	5.752
P-28	33	8.0	100.0	-34	0.21	0.090
P-29	20	8.0	100.0	-34	0.21	0.073
P-30	36	8.0	100.0	-53	0.34	0.151
P-31	253	8.0	100.0	-53	0.34	0.133
P-32	10	8.0	100.0	-89	0.57	0.488
P-33	99	8.0	100.0	-89	0.57	0.395
P-34	263	8.0	100.0	-89	0.57	0.345
P-35	5	8.0	100.0	-102	0.65	0.879
P-36	9	8.0	100.0	-102	0.65	1.259
P-37	174	8.0	100.0	-102	0.65	0.475
P-38	108	12.0	100.0	-342	0.97	0.666
P-39	113	12.0	100.0	240	0.68	0.402
P-40	48	12.0	100.0	240	0.68	0.339
P-41	36	12.0	100.0	240	0.68	0.370
P-42	10	12.0	100.0	221	0.63	0.684
P-43	98	12.0	100.0	221	0.63	0.377

Scenario: 9Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	68
4Fire	5,255.80	0	68
5Dom	5,254.60	13	68
5Fire	5,254.70	0	68
6Dom	5,255.60	36	67
6Fire	5,255.70	0	67
7Dom	5,256.40	2	66
7Fire	5,256.40	0	66
8Dom	5,257.50	2	66
8Fire	5,257.60	0	66
9Dom	5,258.70	36	65
9Fire	5,258.60	300	65
10Dom	5,261.40	20	66
10Fire	5,261.10	0	66
11Dom	5,258.00	20	66
11Fire	5,258.60	0	66
12Dom	5,258.80	2	66
12Fire	5,258.90	0	66
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	68
H4	5,256.70	1,250	66
H5	5,258.10	0	66
H6	5,261.60	0	67
H7	5,257.60	1,250	65
H8	5,255.70	0	68
H9	5,251.30	0	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 3004	

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Scenario: 9Fire H4 & H7
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	831	2.36	3.664
P-2	56	12.0	100.0	572	1.62	2.256
P-3	183	8.0	100.0	510	3.26	9.579
P-4	45	8.0	100.0	260	1.66	4.348
P-5	40	8.0	100.0	260	1.66	3.253
P-6	36	8.0	100.0	240	1.53	2.454
P-7	413	8.0	100.0	240	1.53	2.247
P-8	15	8.0	100.0	240	1.53	3.906
P-9	36	8.0	100.0	220	1.41	2.099
P-10	188	8.0	100.0	220	1.41	2.135
P-11	172	8.0	100.0	730	4.66	18.046
P-12	5	8.0	100.0	718	4.58	38.867
P-13	16	8.0	130.0	718	4.58	24.402
P-14	74	8.0	100.0	718	4.58	19.338
P-15	10	8.0	100.0	682	4.35	24.902
P-16	65	8.0	100.0	682	4.35	16.175
P-17	5	8.0	100.0	680	4.34	34.961
P-18	29	8.0	100.0	680	4.34	21.671
P-19	82	8.0	100.0	-570	3.64	12.357
P-20	5	8.0	100.0	-572	3.65	25.000
P-21	44	8.0	100.0	-572	3.65	12.232
P-22	15	8.0	100.0	-592	3.78	16.322
P-23	44	8.0	100.0	-592	3.78	16.754
P-24	24	8.0	100.0	-592	3.78	14.432
P-25	5	8.0	100.0	-594	3.79	26.953
P-26	414	8.0	100.0	-594	3.79	12.241
P-27	61	12.0	100.0	1,415	4.01	17.458
P-28	33	8.0	100.0	821	5.24	37.420
P-29	20	8.0	100.0	821	5.24	36.421
P-30	36	8.0	100.0	801	5.11	23.684
P-31	253	8.0	100.0	801	5.11	20.253
P-32	10	8.0	100.0	765	4.88	31.055
P-33	99	8.0	100.0	465	2.97	8.707
P-34	263	8.0	100.0	-785	5.01	19.479
P-35	5	8.0	100.0	-798	5.09	47.656
P-36	9	8.0	100.0	-798	5.09	68.716
P-37	174	8.0	100.0	-798	5.09	22.221
P-38	108	12.0	100.0	-756	2.14	2.939
P-39	113	12.0	100.0	-42	0.12	0.013
P-40	48	12.0	100.0	-42	0.12	0.021
P-41	36	12.0	100.0	-42	0.12	0.014
P-42	10	12.0	100.0	-62	0.17	0.049
P-43	98	12.0	100.0	-62	0.17	0.030

Scenario: 10Fire H6
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	74
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	67
9Fire	5,258.60	0	68
10Dom	5,261.40	20	66
10Fire	5,261.10	200	66
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	68
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	69
H5	5,258.10	0	69
H6	5,261.60	1,500	66
H7	5,257.60	0	68
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	73
Tee3	5,252.60	0	71
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 10Fire H6
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	455	1.29	1.178
P-2	56	12.0	100.0	364	1.03	0.954
P-3	183	8.0	100.0	129	0.83	0.739
P-4	45	8.0	100.0	91	0.58	0.593
P-5	40	8.0	100.0	91	0.58	0.444
P-6	36	8.0	100.0	72	0.46	0.255
P-7	413	8.0	100.0	72	0.46	0.236
P-8	15	8.0	100.0	72	0.46	0.391
P-9	36	8.0	100.0	52	0.33	0.137
P-10	188	8.0	100.0	52	0.33	0.142
P-11	172	8.0	100.0	181	1.16	1.343
P-12	5	8.0	100.0	168	1.08	2.441
P-13	16	8.0	130.0	168	1.08	1.459
P-14	74	8.0	100.0	168	1.08	1.279
P-15	10	8.0	100.0	132	0.85	1.074
P-16	65	8.0	100.0	132	0.85	0.761
P-17	5	8.0	100.0	130	0.83	1.465
P-18	29	8.0	100.0	130	0.83	0.937
P-19	82	8.0	100.0	130	0.83	0.780
P-20	5	8.0	100.0	128	0.82	1.367
P-21	44	8.0	100.0	128	0.82	0.749
P-22	15	8.0	100.0	108	0.69	0.667
P-23	44	8.0	100.0	108	0.69	0.667
P-24	24	8.0	100.0	108	0.69	0.580
P-25	5	8.0	100.0	106	0.68	0.977
P-26	414	8.0	100.0	106	0.68	0.497
P-27	61	12.0	100.0	1,278	3.62	14.324
P-28	33	8.0	100.0	1,384	8.83	101.987
P-29	20	8.0	100.0	-116	0.74	0.857
P-30	36	8.0	100.0	-136	0.87	0.851
P-31	253	8.0	100.0	-336	2.14	4.035
P-32	10	8.0	100.0	-372	2.37	7.813
P-33	99	8.0	100.0	-372	2.37	5.714
P-34	263	8.0	100.0	-372	2.37	4.870
P-35	5	8.0	100.0	-384	2.45	11.621
P-36	9	8.0	100.0	-384	2.45	16.481
P-37	174	8.0	100.0	-384	2.45	5.680
P-38	108	12.0	100.0	-170	0.48	0.180
P-39	113	12.0	100.0	-215	0.61	0.324
P-40	48	12.0	100.0	-215	0.61	0.277
P-41	36	12.0	100.0	-215	0.61	0.302
P-42	10	12.0	100.0	-234	0.66	0.781
P-43	98	12.0	100.0	-234	0.66	0.422

Scenario: 11Fire H5
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	68
5Fire	5,254.70	0	68
6Dom	5,255.60	36	66
6Fire	5,255.70	0	66
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	64
8Fire	5,257.60	0	63
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	67
10Fire	5,261.10	0	68
11Dom	5,258.00	20	63
11Fire	5,258.60	200	63
12Dom	5,258.80	2	63
12Fire	5,258.90	0	63
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	0	65
H5	5,258.10	1,500	63
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 11Fire H5
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	704	2.00	2.681
P-2	56	12.0	100.0	418	1.18	1.241
P-3	183	8.0	100.0	580	3.70	12.162
P-4	45	8.0	100.0	287	1.83	5.255
P-5	40	8.0	100.0	287	1.83	3.906
P-6	36	8.0	100.0	267	1.70	3.003
P-7	413	8.0	100.0	267	1.70	2.734
P-8	15	8.0	100.0	267	1.70	4.818
P-9	36	8.0	100.0	247	1.58	2.607
P-10	188	8.0	100.0	247	1.58	2.643
P-11	172	8.0	100.0	827	5.28	22.738
P-12	5	8.0	100.0	814	5.20	49.609
P-13	16	8.0	130.0	814	5.20	31.138
P-14	74	8.0	100.0	814	5.20	24.500
P-15	10	8.0	100.0	778	4.97	32.031
P-16	65	8.0	100.0	778	4.97	20.709
P-17	5	8.0	100.0	776	4.95	45.215
P-18	29	8.0	100.0	776	4.95	27.856
P-19	82	8.0	100.0	776	4.95	22.000
P-20	5	8.0	100.0	774	4.94	45.020
P-21	44	8.0	100.0	774	4.94	21.513
P-22	15	8.0	100.0	754	4.81	25.785
P-23	44	8.0	100.0	-746	4.76	25.986
P-24	24	8.0	100.0	-946	6.04	34.890
P-25	5	8.0	100.0	-948	6.05	66.699
P-26	414	8.0	100.0	-948	6.05	29.217
P-27	61	12.0	100.0	899	2.55	7.259
P-28	33	8.0	100.0	-49	0.32	0.179
P-29	20	8.0	100.0	-49	0.32	0.171
P-30	36	8.0	100.0	-69	0.44	0.233
P-31	253	8.0	100.0	-69	0.44	0.216
P-32	10	8.0	100.0	-105	0.67	0.684
P-33	99	8.0	100.0	-105	0.67	0.533
P-34	263	8.0	100.0	-105	0.67	0.468
P-35	5	8.0	100.0	-118	0.75	1.172
P-36	9	8.0	100.0	-118	0.75	1.643
P-37	174	8.0	100.0	-118	0.75	0.625
P-38	108	12.0	100.0	-300	0.85	0.518
P-39	113	12.0	100.0	182	0.52	0.238
P-40	48	12.0	100.0	182	0.52	0.206
P-41	36	12.0	100.0	182	0.52	0.220
P-42	10	12.0	100.0	162	0.46	0.391
P-43	98	12.0	100.0	162	0.46	0.209

Scenario: 12Fire H5
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	72
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	71
3Fire	5,251.50	0	71
4Dom	5,255.80	13	70
4Fire	5,255.80	0	70
5Dom	5,254.60	13	68
5Fire	5,254.70	0	68
6Dom	5,255.60	36	66
6Fire	5,255.70	0	66
7Dom	5,256.40	2	65
7Fire	5,256.40	0	65
8Dom	5,257.50	2	64
8Fire	5,257.60	0	64
9Dom	5,258.70	36	69
9Fire	5,258.60	0	69
10Dom	5,261.40	20	67
10Fire	5,261.10	0	68
11Dom	5,258.00	20	63
11Fire	5,258.60	0	63
12Dom	5,258.80	2	63
12Fire	5,258.90	200	63
CHDOM	5,252.30	0	72
H1	5,248.80	0	73
H2	5,251.00	0	71
H3	5,254.90	0	67
H4	5,256.70	0	65
H5	5,258.10	1,500	63
H6	5,261.60	0	67
H7	5,257.60	0	69
H8	5,255.70	0	70
H9	5,251.30	0	72
Tee1	5,250.10	0	73
Tee2	5,250.20	0	72
Tee3	5,252.60	0	70
Tee4	5,261.40	0	67
Tee5	5,254.30	0	71
		TOTAL: 1904	

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Scenario: 12Fire H5
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	701	1.99	2.655
P-2	56	12.0	100.0	416	1.18	1.241
P-3	183	8.0	100.0	575	3.67	11.981
P-4	45	8.0	100.0	285	1.82	5.190
P-5	40	8.0	100.0	285	1.82	3.845
P-6	36	8.0	100.0	265	1.69	2.963
P-7	413	8.0	100.0	265	1.69	2.696
P-8	15	8.0	100.0	265	1.69	4.720
P-9	36	8.0	100.0	245	1.56	2.566
P-10	188	8.0	100.0	245	1.56	2.601
P-11	172	8.0	100.0	820	5.23	22.397
P-12	5	8.0	100.0	807	5.15	48.828
P-13	16	8.0	130.0	807	5.15	30.642
P-14	74	8.0	100.0	807	5.15	24.122
P-15	10	8.0	100.0	771	4.92	31.543
P-16	65	8.0	100.0	771	4.92	20.374
P-17	5	8.0	100.0	769	4.91	44.434
P-18	29	8.0	100.0	769	4.91	27.413
P-19	82	8.0	100.0	769	4.91	21.649
P-20	5	8.0	100.0	767	4.90	44.238
P-21	44	8.0	100.0	767	4.90	21.155
P-22	15	8.0	100.0	747	4.77	25.372
P-23	44	8.0	100.0	-753	4.80	26.430
P-24	24	8.0	100.0	-753	4.80	22.679
P-25	5	8.0	100.0	-755	4.82	42.773
P-26	414	8.0	100.0	-955	6.09	29.603
P-27	61	12.0	100.0	904	2.57	7.347
P-28	33	8.0	100.0	-50	0.32	0.179
P-29	20	8.0	100.0	-50	0.32	0.171
P-30	36	8.0	100.0	-70	0.45	0.247
P-31	253	8.0	100.0	-70	0.45	0.220
P-32	10	8.0	100.0	-106	0.68	0.732
P-33	99	8.0	100.0	-106	0.68	0.543
P-34	263	8.0	100.0	-106	0.68	0.473
P-35	5	8.0	100.0	-119	0.76	1.172
P-36	9	8.0	100.0	-119	0.76	1.697
P-37	174	8.0	100.0	-119	0.76	0.633
P-38	108	12.0	100.0	-297	0.84	0.509
P-39	113	12.0	100.0	178	0.51	0.229
P-40	48	12.0	100.0	178	0.51	0.195
P-41	36	12.0	100.0	178	0.51	0.220
P-42	10	12.0	100.0	159	0.45	0.342
P-43	98	12.0	100.0	159	0.45	0.204

Scenario: CH H8 & H9
Current Time Step: 0.000Hr
FlexTable: Junction Table

Label	Elevation (ft)	Demand (gpm)	Pressure (psi)
1Dom	5,251.50	20	72
1Fire	5,251.80	0	71
2Dom	5,248.40	20	73
2Fire	5,248.00	0	73
3Dom	5,251.10	20	72
3Fire	5,251.50	0	72
4Dom	5,255.80	13	68
4Fire	5,255.80	0	68
5Dom	5,254.60	13	70
5Fire	5,254.70	0	70
6Dom	5,255.60	36	70
6Fire	5,255.70	0	70
7Dom	5,256.40	2	70
7Fire	5,256.40	0	70
8Dom	5,257.50	2	69
8Fire	5,257.60	0	69
9Dom	5,258.70	36	68
9Fire	5,258.60	0	68
10Dom	5,261.40	20	67
10Fire	5,261.10	0	67
11Dom	5,258.00	20	69
11Fire	5,258.60	0	69
12Dom	5,258.80	2	69
12Fire	5,258.90	0	69
CHDOM	5,252.30	0	71
H1	5,248.80	0	73
H2	5,251.00	0	72
H3	5,254.90	0	70
H4	5,256.70	0	70
H5	5,258.10	0	69
H6	5,261.60	0	67
H7	5,257.60	0	68
H8	5,255.70	1,250	68
H9	5,251.30	1,250	72
Tee1	5,250.10	0	72
Tee2	5,250.20	0	72
Tee3	5,252.60	0	71
Tee4	5,261.40	0	68
Tee5	5,254.30	0	70
		TOTAL: 2704	

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Scenario: CH H8 & H9
Current Time Step: 0.000Hr
FlexTable: Pipe Table

Label	Length (ft)	Diameter (in)	Hazen-Williams C	Flow (gpm)	Velocity (ft/s)	Headloss Gradient (ft/1000ft)
P-1	133	12.0	100.0	899	2.55	4.246
P-2	56	12.0	100.0	806	2.29	4.338
P-3	183	8.0	100.0	-74	0.47	0.259
P-4	45	8.0	100.0	93	0.59	0.604
P-5	40	8.0	100.0	93	0.59	0.468
P-6	36	8.0	100.0	73	0.47	0.268
P-7	413	8.0	100.0	73	0.47	0.246
P-8	15	8.0	100.0	73	0.47	0.391
P-9	36	8.0	100.0	53	0.34	0.151
P-10	188	8.0	100.0	53	0.34	0.150
P-11	172	8.0	100.0	-20	0.13	0.023
P-12	5	8.0	100.0	-33	0.21	0.098
P-13	16	8.0	130.0	-33	0.21	0.062
P-14	74	8.0	100.0	-33	0.21	0.066
P-15	10	8.0	100.0	-69	0.44	0.293
P-16	65	8.0	100.0	-69	0.44	0.231
P-17	5	8.0	100.0	-71	0.45	0.391
P-18	29	8.0	100.0	-71	0.45	0.307
P-19	82	8.0	100.0	-71	0.45	0.250
P-20	5	8.0	100.0	-73	0.47	0.488
P-21	44	8.0	100.0	-73	0.47	0.268
P-22	15	8.0	100.0	-93	0.59	0.476
P-23	44	8.0	100.0	-93	0.59	0.500
P-24	24	8.0	100.0	-93	0.59	0.440
P-25	5	8.0	100.0	-95	0.61	0.781
P-26	414	8.0	100.0	-95	0.61	0.405
P-27	61	12.0	100.0	555	1.58	2.868
P-28	33	8.0	100.0	460	2.94	12.334
P-29	20	8.0	100.0	460	2.94	12.026
P-30	36	8.0	100.0	440	2.81	7.698
P-31	253	8.0	100.0	440	2.81	6.669
P-32	10	8.0	100.0	404	2.58	9.180
P-33	99	8.0	100.0	404	2.58	6.692
P-34	263	8.0	100.0	404	2.58	5.689
P-35	5	8.0	100.0	392	2.50	12.109
P-36	9	8.0	100.0	392	2.50	17.083
P-37	174	8.0	100.0	-858	5.48	25.493
P-38	108	12.0	100.0	-1,248	3.54	7.534
P-39	113	12.0	100.0	389	1.10	0.998
P-40	48	12.0	100.0	389	1.10	0.863
P-41	36	12.0	100.0	389	1.10	0.906
P-42	10	12.0	100.0	370	1.05	1.904
P-43	98	12.0	100.0	-880	2.50	5.244

Appendix D – Wastewater Flow Calculations and Modeling

HARRIS KOCHER SMITH
DENVER • DALLAS/FORT WORTH

Outlook Nine Mile
Jan. 27, 2020

Sanitary Sewer Peak Flow									
	Units	Capita/Unit	Gal/Capita/Day	Gal/Unit/Day	Average Day (Gal/Day)	Average Day (cfs)	Peaking Factor	Max Flow Rate (Gal/Day)	Max Flow Rate (cfs)
Multi-Family Area	287	2.79	90	251.1	72,066	0.11	5	360,329	0.56

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 15 2020

Maximum Sanitary Sewer Pipe Capacity

Circular

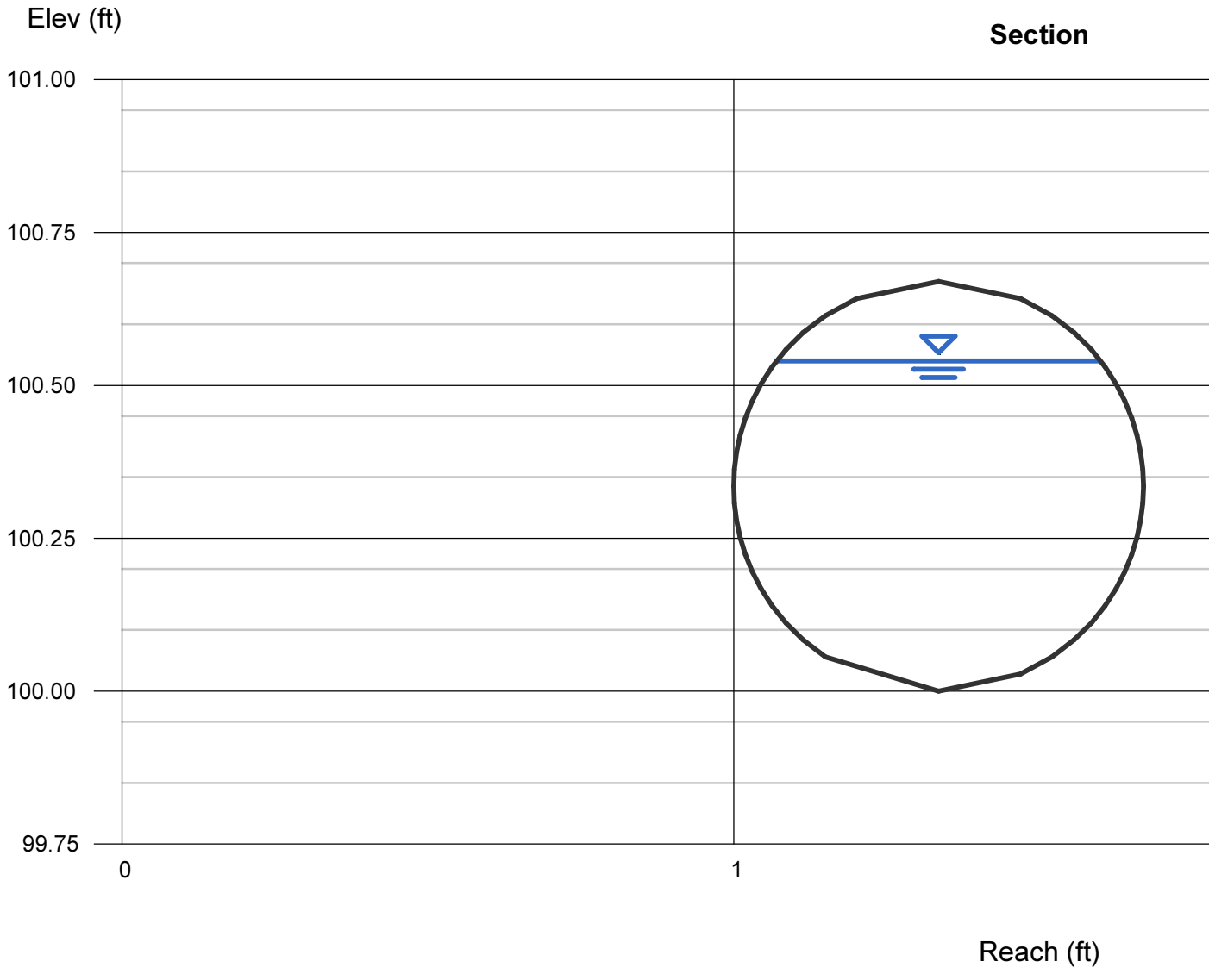
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.012

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.54

Highlighted

Depth (ft)	= 0.54
Q (cfs)	= 0.923
Area (sqft)	= 0.30
Velocity (ft/s)	= 3.03
Wetted Perim (ft)	= 1.49
Crit Depth, Yc (ft)	= 0.46
Top Width (ft)	= 0.53
EGL (ft)	= 0.68



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 15 2020

Minimum Sanitary Sewer Pipe Velocity

Circular

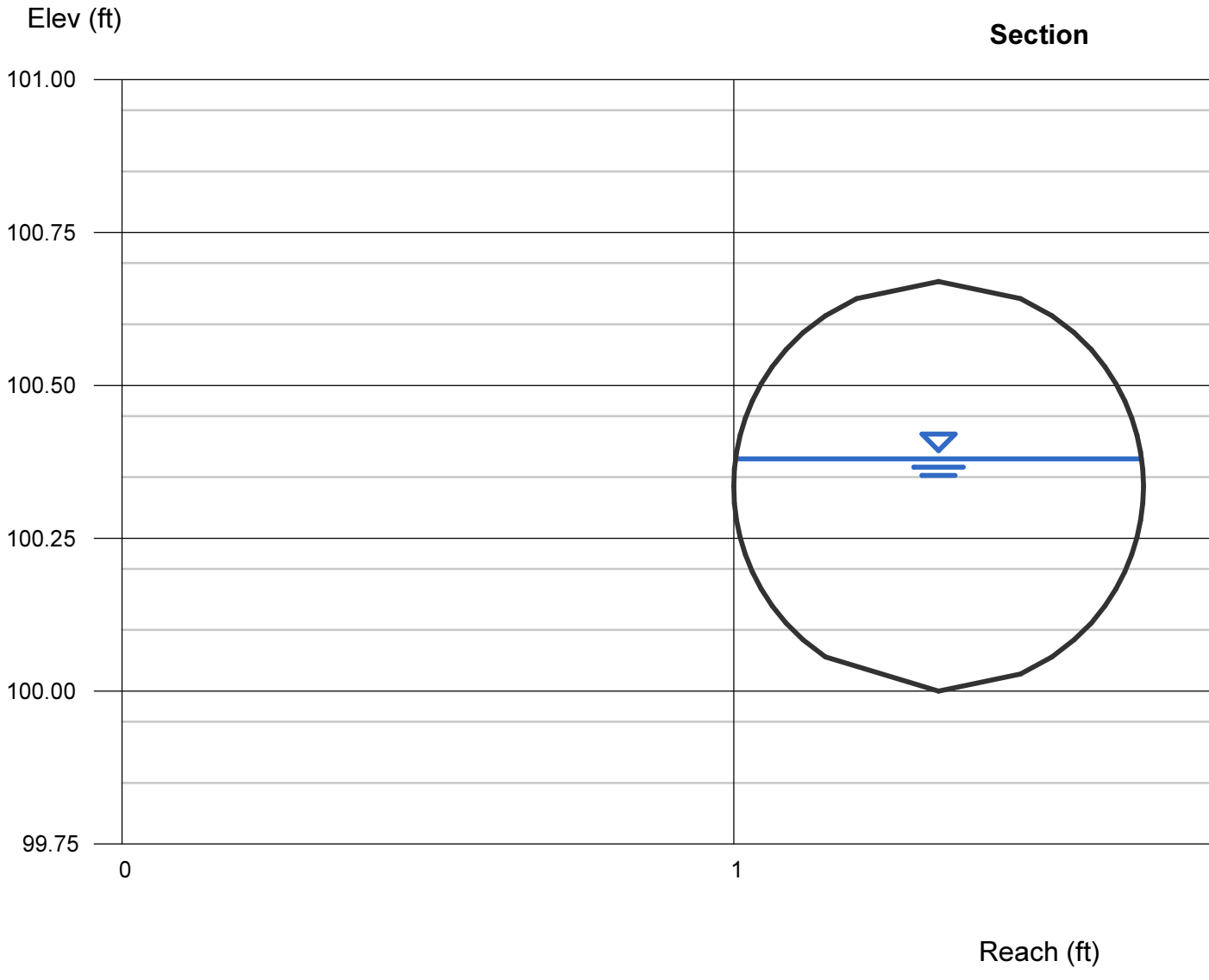
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 0.50
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.56

Highlighted

Depth (ft)	= 0.38
Q (cfs)	= 0.560
Area (sqft)	= 0.21
Velocity (ft/s)	= 2.70
Wetted Perim (ft)	= 1.15
Crit Depth, Yc (ft)	= 0.35
Top Width (ft)	= 0.66
EGL (ft)	= 0.49



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Wednesday, Jan 15 2020

Maximum Sanitary Sewer Pipe Velocity

Circular

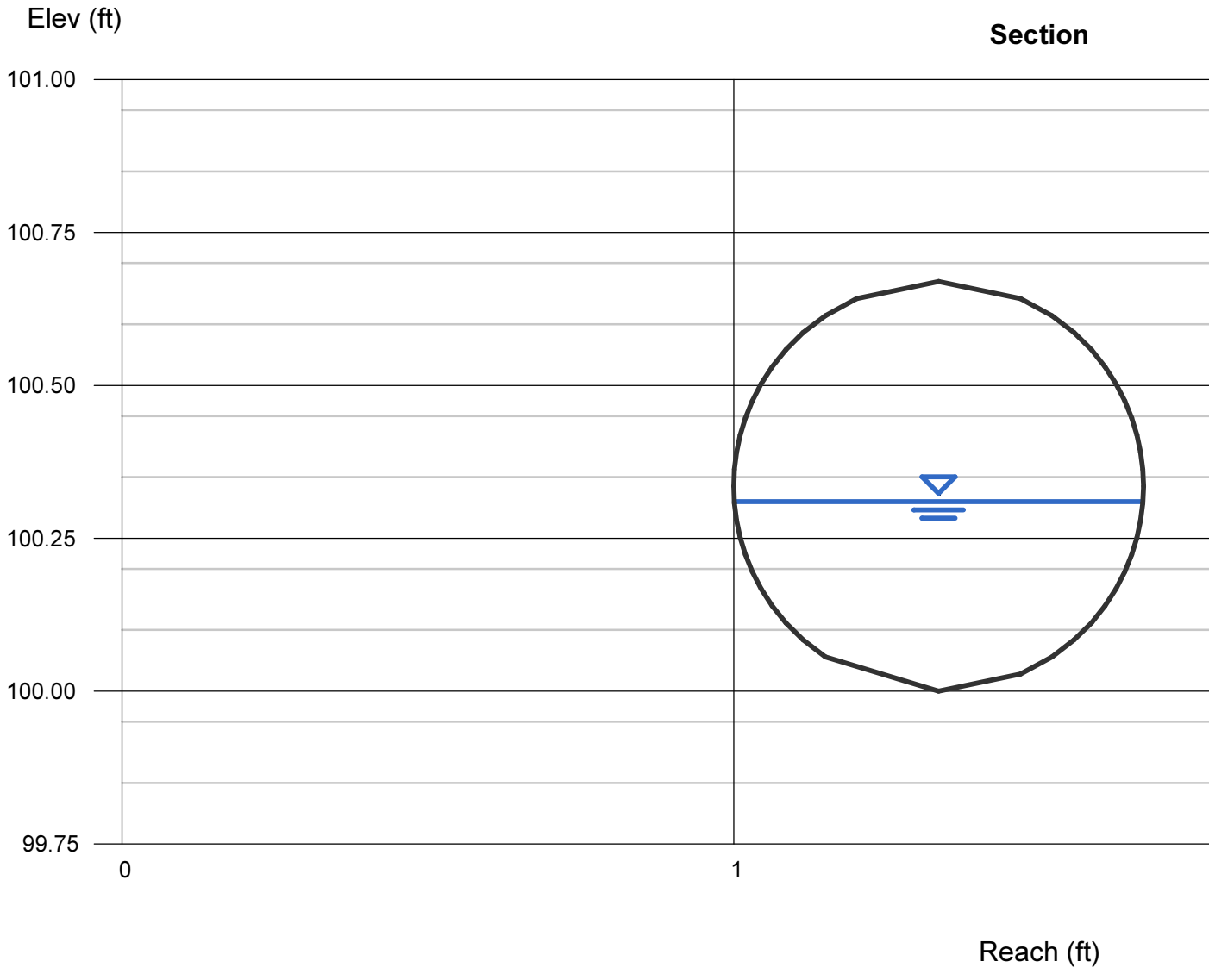
Diameter (ft)	= 0.67
Invert Elev (ft)	= 100.00
Slope (%)	= 1.00
N-Value	= 0.012

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.56

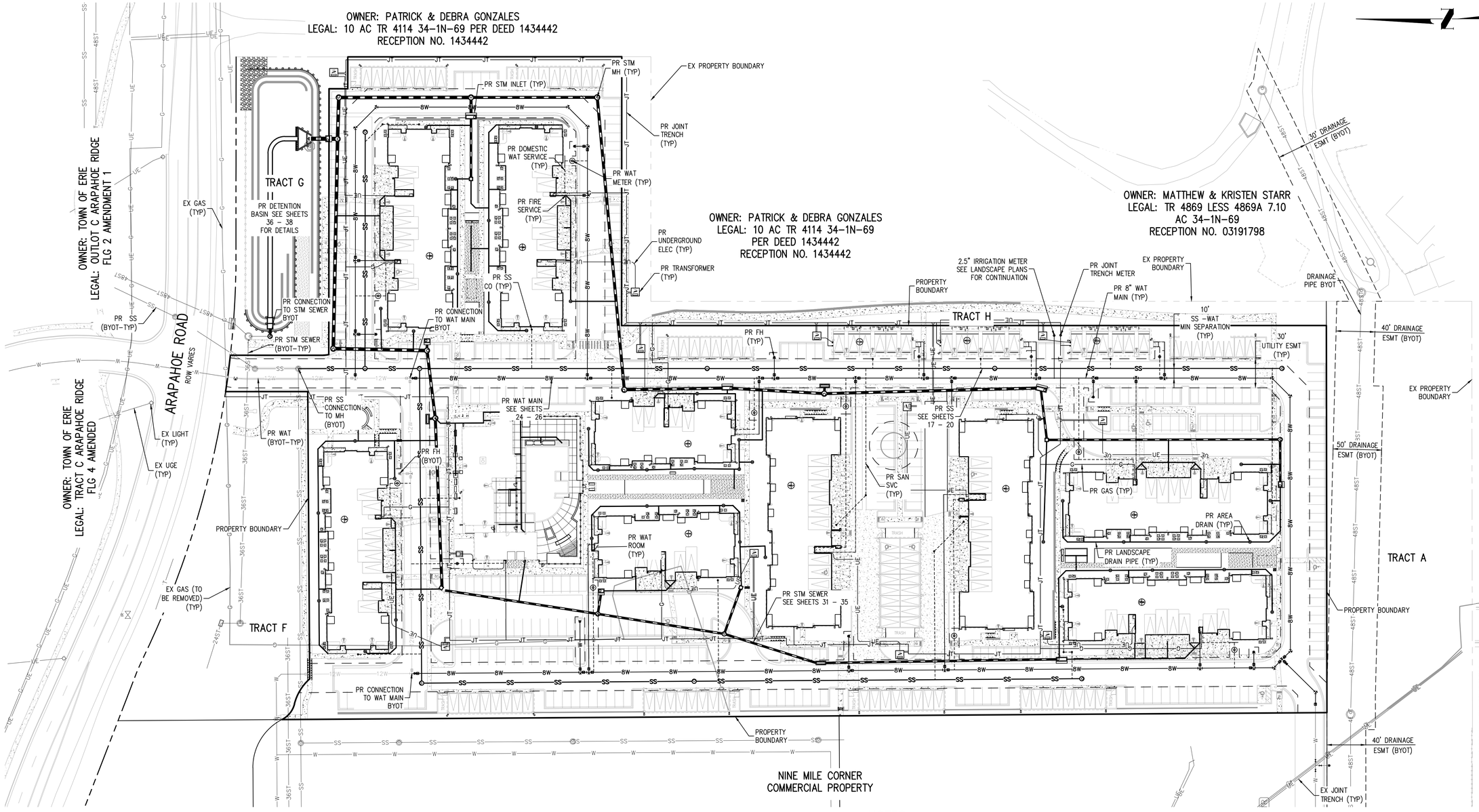
Highlighted

Depth (ft)	= 0.31
Q (cfs)	= 0.560
Area (sqft)	= 0.16
Velocity (ft/s)	= 3.49
Wetted Perim (ft)	= 1.00
Crit Depth, Yc (ft)	= 0.35
Top Width (ft)	= 0.67
EGL (ft)	= 0.50



Appendix E - Proposed Overall Utility Plan

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH



NOTES:

1. OVERALL PLAN DEPICTED IS INTENDED FOR GENERAL REFERENCE OF PROJECT DEVELOPMENT.
2. SEE SANITARY PLAN SHEETS FOR DETAILS REGARDING SANITARY IMPROVEMENTS.
3. SEE WATER PLAN SHEETS FOR DETAILS REGARDING WATER IMPROVEMENTS.
4. SEE STORM SEWER PLAN SHEETS FOR DETAILS REGARDING STORM IMPROVEMENTS.
5. THE LOCATION OF EXISTING UNDERGROUND 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 BEFORE COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTORS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES IN THE VERTICAL/HORIZONTAL LOCATION OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING NOTIFICATION:
   a. UTILITY NOTIFICATION CENTER OF COLORADO, 811. CALL THREE (3) BUSINESS DAYS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.
      - LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION, SUPPORT, PROTECTION AND RESTORATION OF ALL EXISTING UTILITIES AND APPURTENANCES, WHETHER SHOWN OR NOT SHOWN ON THE APPROVED CONSTRUCTION DOCUMENTS.
      - PROVIDING NOTIFICATION AND RECEIVING MARKING OF UNDERGROUND MEMBER UTILITIES IN NO WAY CONSTITUTES PERMISSION TO PERFORM CONSTRUCTION.

811 Know what's below. Call before you dig.

CALL 3 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

50 0 50 100
SCALE: 1" = 50'

DESIGNED BY: TJS
CHECKED BY: MSM
DRAWN BY: TJS

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

Evergreen
Development | Services | Investments

OUTLOOK AT NINE MILE
OVERALL UTILITY PLAN

ISSUE DATE: 11-08-2019	PROJECT #: 160602
DATE	REVISION COMMENTS
01-27-2020	PER TOWN OF ERIE COMMENTS

PRELIMINARY NOT FOR CONSTRUCTION

SHEET NO.
16
16 OF 69

FILEPATH: P:\160602\ENGINEERING\UTILITIES\CD\ OVERALL UTILITY PLAN.DWG LAYOUT: OVERALL UTILITY PLAN
8 XREFs: xd - stamp, xd_evergreen logo, e-base_byoe, e-agpl_byoe[1], e-util, p-base, p-agpl, p-util
PLOTTED: MON 01/27/20 6:56:54P BY: BRAD WEAVERLING

NORRIS DESIGN
Planning | Landscape Architecture | Branding

January 31, 2020

Town of Erie – Department of Planning and Development
Hannah Hippely, Senior Planner
645 Holbrook St.
Erie CO, 80516

Re: Outlook at Nine Mile – Site Plan, 3rd Submittal

Dear Ms. Hippely,

Thank you for your comments which we received on December 27, 2019. We have reviewed all comments and addressed them herein.

Please feel free to contact me directly should you have any comments, questions and/or requests for additional information. We look forward to continuing to work with the Town to make this new community a success.

Sincerely,
Norris Design

Allison Wenlund

Allison Wenlund
Senior Associate

Planning Department Comments

1. Since the site plan relies on the approval of a plat, the legal description can include the tract and lot information in the title (Tract G and Lot 11 Nine Mile Corner).
   Response: The title block has been updated to include the Tracts and Lot to match the plat. The Legal Description on the cover sheet references the Nine Mile Corner plat.

2. Update Sheet 1 tables to reflect changes from the time of submittal, for example I understand that a carriage house was removed and a set of garage located in its place.
   Response: The cover sheet has been updated to reflect the current site configuration.

3. What is the structure west of the clubhouse, it is not identified on the plans and the architecture included for the clubhouse does not seem to match the site plan.
   Response: This structure is part of the clubhouse, connected by a common roof and foundation making it one singular building. The two wings are separated by an open breezeway that provides gated access to the pool.

4. Staff understands a sign is proposed as part of this development. The sign must be located on the same lot as the use it identifies (you may want to amend the lot shape to accommodate the sign).
   Response: This has been resolved through discussion with Town staff.

5. Please see section 10.6.12.F.4.b on page 174 of the UDC related to Residential Development Identification Signs and the size limitation therein. A larger sign could be approved by Planning Commission however, the sign would need to be included as part of the site plan application package.
   Response: This has been resolved through discussion with Town staff.

6. Why has the northern connection between the commercial site and the residential site been removed from the plan? The PD includes language regarding connectivity between these two sites and it actually quite limited. There is now only pedestrian access at the north and south and only vehicular access at the south.
   Response: We have added an additional sidewalk connection along the midpoint of the western PA boundary line, there are now three pedestrian connections across this boundary line and one vehicular cross access at the south. We believe this provides more than sufficient connectivity between the two developments.

7. Please add the setbacks as defined on the PD to an overall site plan.
   Response: Building height restrictions, as well as building setbacks are now shown on the overall site plan.

8. The site plan must include Tract G as the detention pons is being constructed with the residential component. This should be reflected on the site plan documents, for instance Tract G should be within the boundaries of the overall site plan.
   Response: The Site Plan has been updated to include Lot 11, Tracts F, G and H.

9. Update the landscape plans to reflect recent conversations regarding the pocket park.
   Response: The landscape plans have been revised to reflect the changes discussed on our 11/22 conference call with the Town and have been submitted for review.

10. Trees often are located within crusher fine paths on this plan, please move these to another location so the paths may function for pedestrians.

Response: An accessible route is provided on the civil plans and a 2,300 linear foot loop trail is depicted on the landscape plan. Trees that were previously in conflict with this trail have been relocated, however for design intent some trees still exist within crusher fines areas.

11. The landscape plan includes Tract H but the site plan overall boundary does not and the phasing plan provided with the subdivision indicates that Tract H is not part of the Multifamily Construction phase. It isn't clear which set of materials is correct. If Tract H is not a part of the site plan, the landscaping for the tract should not be included in the plans. However, it does not appear that the landscaping of Tract H is included in the Minor Subdivision Landscape plans. Please review all of these materials an revise them as necessary so consistent and accurate information is provided.
    Response: The Site Plan has been updated to include Lot 11, Tracts F, G and H. Tract H is intended to be included with the site plan and is landscaped and shown with this submittal. The title block has been updated to reflect the inclusion of this tract as well as Tract G.

12. Staff is having a difficult time identifying all the bike parking on site, please provide a separate exhibit that shows the location of bike parking. Per the UDC 30 bike parking spaces are required and these must be located within 100 feet from the primary building entrance.
    Response: A separate exhibit has been provided indicating the location of the bike racks. 16 bike racks (32 spaces) are proposed adjacent to building entrances.

Parks and Open Space Division Comments

General Comments:

- The pocket park was not reviewed as part of this referral as it is currently under revision. Comments were previously provided to the applicant from the meeting held on November 22nd 2019. Staff will complete the review of the pocket park once the revised plans have been received.
  Response: The landscape plans have been revised to reflect the changes discussed on our 11/22 conference call with the Town and have been submitted for review.

Landscape Comments:

- Staff recommend mixed grass prairie seed mixture for areas outside of 15' from trails and roads. Areas within 15' of trails and roads should be seeded with the shortgrass prairie seed mixture.
- If an area is to be shortgrass only, please identify this area within the relevant plan sheets.
- Recommended native seed mixtures can be found starting on Page 1000-22 at the following link: https://www.erieco.gov/DocumentCenter/View/10043/Section-1000---2019-Parks-Construction?bidId
  Response: Noted. Due to the location of trails and amenity areas, shortgrass prairie seed mix is used for all native seed areas. The hatch and seed mix specification has been revised on sheet 13.

Engineering Comments

Plat Comments

1. Bump out utility easements are not matching the water line on the CDs. Please verify all utility easements with the CDs of the Multifamily.
   Response: Utility easements have been revised to be consistent throughout the CDs, Site Plan and Plat.

Site Plan Engineering Comments

1. Overall Comments:
2. Sheet 2:
    a. Add sidewalk access to future commercial at midpoint along west side.
       Response: Sidewalk access to the future commercial development has been added.

3. Sheets 6-8:
    a. Update water line valves and bends, see Construction Plan notes.
    Response: Water line valves and bends have been updated per construction plan notes.

4. Sheet 9:
    a. On the grading plans, contours are not shown on the properties to the east and the contours do not appear to tie into the existing grades at the property line. Contours need to be shown for a minimum of 150 feet offsite.
    Response: Galloway has yet to provide this survey information as it is private property. HKS is matching the existing grades along the property boundary as surveyed by Galloway.
    Comment valid until shown.
    Response: Galloway has provided the survey information for this project to HKS. Because of the private property off-site to the east of the project, Galloway has not been able to survey a minimum of 150' offsite. However, we received existing contour information from Galloway for this requested area by GIS information, and these contours are shown throughout the site plan and CD set, for reference. The multi-family piece is tying into the known surveyed elevations along the property line.

    b. Correct, street label, should be Arapahoe "Road."
    Response: Arapahoe Road has been corrected throughout the plan sets.

5. Sheet 18:
    a. Update, 10' separation needed between water line feeding hydrant and canopy tree.
    Response: All trees have been adjusted to be outside 10' of water lines and to avoid any utility conflicts.

    b. Update, 10' separation needed between sanitary service and two canopy trees.
    Response: All trees have been adjusted to be outside 10' of water lines and to avoid any utility conflicts.

6. After Sheet 42:
    a. Correct, next two sheet numbers mislabeled.
    Response: Thank you, sheet numbering has been corrected.

Construction Plans Engineering Comments

1. Overall Comments:
    a. Add, Town of Erie details needed for sanitary and water.
    Response: Sanitary and water details have been added.

    b. Add, Town of Erie Engineer acceptance signature block. S&S 100-25.
    Response: Town of Erie Engineer acceptance signature block has been added to the cover sheet.

    c. Please supply square footage for building footprints, irrigated xeric, irrigated turf landscape, and number of trees in native grass areas.
    Response: These requested values are now shown as a table on the cover sheet.

    d. Correct, key map extent on all sheets.

Response: Key map extents have been revised on all sheets.

e. Add, new 12" water lines proposed will need profiles, see utility report markups and construction drawing markups.
Response: The proposed 12" water line looping through the multifamily site is now being built by the commercial development group. Refer to the commercial site plan for requested profiles. The multifamily plans have been updated to show taps off this main.

2. Sheet 3:
   a. Add note, about all storm sewer is private unless otherwise noted.
   Response: The requested note has been added.

3. Sheet 4:
   a. Add, sidewalk access to future commercial at midpoint along west side.
   Response: A sidewalk connection has been added to the future commercial development.

   b. Add, south signal pole at Beasley intersection. And update on all sheets.
   Response: The south signal pole at the Beasley intersection is now shown.

4. Sheet 5:
   a. Correct, street label, should be Arapahoe "Road".
   Response: The street label has been corrected.

5. Sheet 12:
   a. Provide, engineering for sediment basin (e.g., elevations, hole diameter).
   Response: Sediment basin engineering information is now shown on the Initial Erosion Control Plan.

6. Sheet 16:
   a. Update, existing water line at Beasley Dr does not match minor subdivision plans.
   Response: The "existing" water line at Beasley Drive has been updated to match the latest alignment provided to us by Galloway, as they are responsible for the design of this line.

   b. Update, all 90° bends should be replaced by two 45° bends, 3 locations total.
   Response: Revised as requested.

   c. Shading error, sanitary service to building 1.
   Response: Revised as requested.

   d. Connect southwest corner of water line to commercial to west.
   Response: The water line now connected to the commercial development in southwest corner.

   e. Update, fire line valves, see note 8a.
   Response: Appropriate fire line valves have been added.

   f. Update, water line valves, see note 8b.
   Response: Appropriate valves have been added.

7. Sheet 17:

a. Correct, hash line at STA 8+85.
Response: This line is an irrigation tap that was cut off by labels in the plan view – this has been revised and crossing labels have been added for clarity.

8. Sheets 21-23:
   a. Fire line connections need a valve on the main. The valve layout needs to ensure that fire lines and the nearest fire hydrant are separated by a valve.
   Response: Appropriate valves have been added.

   b. Response: A valve has been added where applicable to ensure that fire lines and the nearest fire hydrant are separated by a valve. All fire lines (including fire services) need a valve on the service line and a valve on the main line. Which side of the service line the main line valve needs to be on can be determine on the location of the nearest hydrant.
   Response: Appropriate valves have been added.

   c. All water line tees need three valves, except those for hydrants. 3 locations.
   Response: Appropriate valves have been added.

   d. Why are water service lines upsized to 2", 5' after meter? Upsize tap sizes.
   Response: Per conversations with the Town of Erie, an upsize 5' past the meters will be allowed.

9. Sheet 22:
   a. What is crossing at STA 22+98?
   Response: Crossing labels have been updated for the current layout. Nothing is crossing at STA 22+98. This was a line denoting the edge of concrete/asphalt pavement.

   b. Information needed at crossing STA 24+29.
   Response: Crossing labels have been updated for the current layout. This crossing now lies in the water loop being built by Galloway, and relevant crossing info should be shown on their plans.

10. Sheet 23:
    a. Callout arrow does not align, STA 5+00.
    Response: Crossing labels have been updated for the current layout.

    b. Missing station identification for domestic tap, STA 4+76.
    Response: Identification info has been added.

    c. Show irrigation tap north of building 13.
    Response: The irrigation tap is now labeled.

11. Sheets 24-28:
    a. Add note, about all storm sewer is private unless otherwise noted.
    Response: This note has been added as note #10.

    b. Show roof drains and inverts if connected to storm sewer.
    Response: Roof (landscape) drains are now shown with inverts at connection points to the storm sewer system.

12. Sheet 26:
    a. Missing, Storm Line O profile referenced in Sheet 29.
    Response: The connection from the proposed EDB and the storm sewer by others has been revised and now consists of Storm line J. This is now reflected on sheets 28 and 29.

13. Sheet 29:
    a. Correct, slopes and elevations shown as "???."
    Response: Elevations and slopes have been revised.

    b. FL info does not match sheet 30, STA 1+14.00.
    Response: Elevations have been revised to match.

    c. FL info does not match sheet 30, STA 3+20.10.
    Response: Elevations have been revised to match.

    d. Missing, basin overflow. Detail also needed.
    Response: Basin overflow and corresponding detail has been added.

    e. Add, riprap on north side of forebay.
    Response: Riprap has been added to the north side of forebay.

    f. On sheet 29, retaining walls for the pond are being shown directly over storm lines.
    Response: The storm line has been revised to not conflict with the pond walls. A wall is still over Storm Line O and the wall and footers are not shown on the profile.
    Response: Storm line O is now storm line J, and the retaining wall has been added to the profile.

    g. Correct, two fences shown on south side of basin.
    Response: Revised.

    h. Add, profiles not shown for A1 to forebay.
    Response: The profile for inlet A1 to the forebay is shown on sheet 24 as referenced in the plans. A callout showing the forebay location has been added to sheet 24 for clarity. The RCP outfall to the forebay has also been added to the trickle channel profile on sheet 29.

    i. Add, fence around outlet structure.
    Response: A fence has been added around the outlet structure.

    j. Missing, show required 1' of freeboard.
    Response: 1' of freeboard is now shown in the overflow spillway detail.

    k. Update, maintenance access to be class 6 road base material.
    Response: Maintenance access is now labeled as Class 6 road base material.

    l. Recommend, gate on maintenance access. Access will be adjacent to heavily foot trafficked path.
    Response: A gate has been added to the pond maintenance access.

14. Sheet 30:
    a. Confirm, all elevations on all details.
    Response: Elevations on all details have been revised.

b. Add, overflow detail.
Response: Overflow detail has been added.

c. Add, retaining wall detail.
Response: A retaining wall detail has been added.

d. Add, access detail.
Response: Access detail has been added.

e. Add, trash rack detail.
Response: A trash rack detail has been added.

f. Section A-A Detail
   i. RCP is going through retaining wall, show this on profile.
   ii. Update, Storm Line A profile referenced on sheet 25 does not show proper extent of Storm Line A to forebay.
   iii. Add, riprap on to detail.
   iv. Trickle Channel Invert does not match sheet 29.

   Response: Retaining walls are now shown on storm sewer profiles for clarity. Storm line A profile has been updated and labels added. Riprap has been added to detail, and the trickle channel invert has been updated to match sheet 29.

g. Section B-B Detail
   i. Add, rebar to detail.
   Response: HKS does not provide any structural design. Under general note number 5, the contractor is responsible for providing shop drawings of all structural elements associated with the pond. The contractor will submit these to the Town of Erie for review and approval, prior to construction.

h. Section C-C Detail
   i. Remove, safety rack. This will help with maintenance of trash rack and will not be needed if fence is in place around outlet structure.
   ii. Trickle Channel Invert does not match sheet 29.
   iii. Redesign, mircopool. The current design does not allow the mircopool to function as intended. The trash rack and orifice plate need to be extended to the bottom of the structure. Why is the west compartment of the structure filled with concrete? The added concrete could be redesigned or removed entirely.
   iv. Add, rebar to the structure.
   Response: Safety rack has been removed, and the invert updated to match sheet 29. The outlet structure has been updated per comments, and please refer to the response above regarding rebar.

i. Water Quality Outlet Structure Plan Detail
   i. Add, top space between orifice plate and trash rack needs to be concrete to prevent trash from falling in between.
   Response: The top space between the orifice plate and trash rack is now shown as concrete on the plan view.

   ii. Add, rebar.

Response: HKS does not provide any structural design. Under general note number 5, the contractor is responsible for providing shop drawings of all structural elements associated with the pond. The contractor will submit these to the Town of Erie for review and approval, prior to construction.

j. Trash Rack Notes
   i. Update, trash rack to aluminum bar grate with larger opening sizes. The Town is having problems with the well screens clogging.
   Response: *The* ***trash rack has been updated to aluminum bar crate per CDOT type C Inlet Close Mesh Grate specifications.***

15. Sheet 31:
    a. Update, FL 5260.71 is a low point.
    Response: The grading has been revised so FL is not a low point.

16. Sheets 33-34, 39-40, 43-44, 47:
    a. On the grading plans, contours are not shown on the properties to the east and the contours do not appear to tie into the existing grades at the property line. Contours need to be shown for a minimum of 150 feet offsite.
    Response: Galloway has yet to provide this survey information as it is private property. HKS is matching the existing grades along the property boundary as surveyed by Galloway.
    Comment valid until shown. Can use LIDAR data if survey level data is shown on site boundaries.
    Response: Galloway has provided the survey information for this project to HKS. Because of the private property off-site to the east of the project, Galloway has not been able to survey a minimum of 150' offsite. However, we received existing contour information from Galloway for this requested area by GIS information, and these contours are shown throughout the site plan and CD set, for reference. The multi-family piece is tying into the known surveyed elevations along the PL.

17. Sheet 48-51:
    a. Add, legend.
    Response: A legend has been added.

    b. Add, radiuses.
    Response: Radiuses have been added.

18. Sheet 52:
    a. Add, pavement direction arrows on the egress onto Arapahoe Rd.
    Response: Pavement direction arrows have been added.

Drainage Report Phase III Engineering Comments

1. 1. General Comments.
   a. Need O&M plan, see 100-39 of Standards and Specs.
   Response: An O&M plan now included in Appendix G of the drainage report.

   b. Need Design Standards Form, see 100-39 of Standards and Specs.
   Response: Design Standards Form now included in Appendix G of the drainage report.

   c. Provide comment that addresses offsite runon.
   Response: Offsite runon comment has been added to section "H."

2. Page 7:
    a. E, Need to discuss wetlands.
    Response: Wetlands discussion has been added.

    b. F, No appendix G attached.
    Response: The previously mentioned Appendix G is now included as Appendix F.

3. Page 8:
    a. G, No appendix G attached.
    Response: The previously mentioned Appendix G is now included as appendix F.

    b. H, Will the detention basin be owned/maintained by Metro district or site owner?
    Response: The detention basin will be in tract G and will be owned and maintained by the Metro District. This information has been added to both page 5 (description of property) and page 8.

4. Page 16:
    a. No appendix F.
    Response: The appendix labels have been revised.

Drainage Comments Provided by Merrick dated 12/12/2019

Phase III Drainage Report:

1. From the drainage map and the report, it appears that there was no consideration for offsite flows that are tributary to the site. Per Town criteria (Section 812), sites must accept peak historic flows from offsite. There are areas south and east of the Outlook site that appear to be tributary. Update the runoff calculations and the design and analysis of the storm sewer system and detention pond sizing to include the offsite tributary areas. Show the offsite tributary basins on the Drainage Plan. Also, on the Drainage Plan show existing contours 150 feet in every direction outside of the site boundary per Section 100 of the Town criteria.
Response: Basins A1 & B1 were provided to account for offsite tributary flows to the south of the property boundary. We were previously lacking elevation data along the eastern edge, but now we are showing GIS contours to the east of the site and have included basin L1 for tributary area east of the proposed development.

2. It appears that the southern boundary of Basin OS-3 is along the edge of curb. However, from the contours it appears the basin divide should be located further north along the top edge of the detention pond retaining wall. Revise runoff and other sizing calculations with corrected areas for Basins M and OS-3.
Response: Runoff and sizing calculations have been updated with corrected areas for Basins M and OS-3.

3. It appears there is an area at the northwest portion of the site (Tract F) that was not included in runoff analysis neither for the Outlook at Nine Mile nor the overall planned development. Clarify how runoff from this area will be managed.
Response: Tract F has been added to the drainage plan as OS-4 and is now discussed in the report.

4. Basins H and K must be subdivided to accurately estimate the runoff tributary to Inlets D1and F1, respectively. Also, provide sizing calculations for inlets D1 and F1 in Appendix D.
Response: Basin H has been subdivided to account for the direct runoff tributary to inlet F1. This is now reflected in the calculations and report. Inlet D1 in basin K was initially proposed as a tie-in point for landscape drains to avoid tearing up the roadway. It has now been eliminated due to its

miniscule tributary area and the ability to tie landscape drains directly to the storm sewer pipe in the adjacent landscaping just east of DP 12a.

5. On the Drainage Plan and in the calculations, include design points at Inlet A12 in Basin A and Inlet C2 in Basin N. These design points will represent the upstream ends of storm sewer line A and line C, respectively, and should have designated design points labeled.
Response: Design points have been added for inlets A12 and C2. This change is now reflected in the report and calculations. A design point has also been added for inlet B8 (basin D) as this is the upstream end of storm sewer line B.

6. In the Rational Method calculations, Inlets C1 and C2 are not shown as line items like other inlets. Identify these inlets in the Rational Method calculations.
Response: Inlets are now identified in the Rational Method Calculations.

7. Sizing for Inlet A10 only considered runoff from Basin F (1.7 cfs in the 100-year event). From the Rational Method calculations, total surface runoff is 3.6 cfs from Basins F and C. Revise inlet sizing to account for the full tributary runoff to Design Point 1. Revise other calculations and construction plans as necessary.
Response: Sizing calculations for Inlet A10 has been updated to account for the full tributary runoff to Design Point 1.

8. Inlet sizing for Inlet A1 (Basin M) shows the major storm event flow as 6.2 cfs. This does not match the value of 5.1 cfs from the Rational Method calculations at this design point. Additionally, the proposed 10' Type R inlet does not have sufficient capacity to capture the 100-year storm event which contradicts the text. Resize the sump inlet to capture the full major storm event.
Response: The flow used for the inlet sizing calculations has been updated to match the rational calculations. Previously, the inlet sizing calculations were not accounting for the allowable 12" water depth above the gutter flowline for the major storm (per Erie Standards & Specs 800-19, table 800-8). With this allowable depth criteria accounted for, the inlet can actually be downsized to a 5' Type R inlet and still capture the 100-year storm event. See calculations in the attached report.

9. In Appendix D, provide a schematic plan view for the StormCAD analysis. On the StormCAD profiles, the labels are difficult to read since they overlap. Reposition labels so manhole and pipe information are easily discernable.
Response: A Schematic plan view of the StormCAD analysis is now included and labels have been repositioned on the StormCAD profiles.

10. The full flow capacities, velocities, and resulting travel times for storm pipe flows used in the Rational Method calculations are incorrect compared to normal depth calculations. Therefore, the combined Rational Method flow values and flows used in the StormCAD analysis are also incorrect. Revise using appropriate values based on normal depth calculations.
Response: Routing calculations have been revised based on normal depth calculations.

11. The following comments relate to the design of the detention pond:
    a. The water surface elevations in the text do not match those shown on Sheet 30 of the Construction Plans. Revise as necessary to match.
    Response: Water surface elevations have been revised.

    b. The 13.23 acres used to estimate the volume and 100-year release rate for the detention pond does not include offsite tributary areas (see comment 1 above). Revise the pond release rate and sizing to include all area tributary to the pond. However, coordination is needed with the design of

the outfall storm sewer system that will be constructed per the Infrastructure plans for Nine Mile Corner since the release rate from this pond will influence the capacity of the downstream system. A maximum release rate of 12.5 cfs from the multi-family site detention pond was used to design the outfall storm sewer system.
Response: The tributary area and release rates have been revised.

c. Although referenced in the text, no detention pond sizing calculations were provided in Appendix D. Provide calculations including sizing of water quality and excess urban runoff volume (EURV) orifices and 100-year restrictor plate.
Response: Detention pond sizing calculations are now included.

d. Provide sizing calculations for the forebay and trickle channel.
Response: Forebay and trickle channel calculations are included as part of the UD-BMP worksheet in appendix D.

e. As shown on Sheet 29 in the Construction Plans, the fence along the maintenance access trail into the pond must be extended until the height of the retaining wall is less than 2.5' high.
Response: The fence along the maintenance access trail has been extended to the end of the wall.

Construction Plans

12. There are several missing references on the storm sewer plan and profile drawings (Sheets 24-28). For example, on Sheet 24, a callout states "Storm Line H See Sheet X" when it should reference Sheet 28. Revise all sheets to provide accurate references to other sheets and details.
Response: Sheets have been revised to show accurate references.

13. On Sheet 24 on the Storm Line A profile, fix the storm sewer pipes to shown them connected to Inlet A7.
Response: Inlet A7 and the connecting pipes have been revised.

14. On Sheet 25 on the Storm Line A profile, fix the downstream pipe to show it connected to Inlet A9.
Response: Inlet A9 and the connecting pipes have been revised.

15. On Sheets 25 and 26, Inlets A12 and B9, respectively, are specified as a "Modified Inlet Type R". Provide details on how these inlets will be modified. Inlet B8 may also need to be modified due to the skew of the outlet pipe.
Response: The inlets marked as "modified" are within sidewalks and are to be modified so that the top of the box matches the sidewalk grades per note #9 on the storm sewer plan & profiles. The callouts for these modified inlets have been updated to include a reference to note #9 for clarity.

16. On Sheet 30, it appears that all of the elevations are approximately 3.8' lower than corresponding elevations on other sheets. For example, the invert of the pipe to the forebay is 5238.47 on Sheet 30 and 5242.30 on Sheet 24. Clarify which elevations are correct and revise plans as necessary.
Response: Elevations have been revised to match.

17. On Sheet 30, the Water Quality Outlet Structure Profile shows the invert of the trickle channel and the micropool water surface elevation at 5236.18. The trickle channel invert is required to be a minimum of 4" above the micropool elevation for initial surcharge depth. Revise design as necessary.
Response: The micropool has been revised so the trickle channel invert is 4" above the micropool water surface elevation.

18. On Sheet 30, the maximum height of the wing walls at the forebay (i.e., Modified Impact Stilling Basin) is 5.5' which exceeds the maximum allowable of 2.5'. Provide a railing or safety grate where the walls exceed 2.5' high.
Response: A railing has been added along the wing walls of the forebay.

Site Plan

19. See above comments and update as needed.
Response: Acknowledged. Updates made as needed for other comments.

Utility Report Engineering Comments

1. Overall Comments:
    a. Add, page numbers.
    Response: Page numbers have been added to the report.

    b. Verify the acreage for the multi-family site are correct on all documents. Some of the plans provided list as 11.65 acres while others note 12.64 acres.
    Response: Acreage has been verified and is 12.96. It has been made consistent on plans as requested. Please note that this acreage does not match the site plan sheets – the site plan's acreage encompasses all lots and tracts (Lot 11 and Tracts F, G and H) associated with its planning area (PA-2). Tract F is to be constructed by the commercial development, please refer to the plans provided by Galloway for design and drainage information.

2. Correct dwelling unit density to 2.79 persons per unit, per the Town's standards. Submit revised calculations.
Response: Dwelling unit density has been updated to 2.79.

3. Fire flow demand was calculated, based on 2018 International Fire Code, as 2125 gpm for a two-hour duration. Based on ISO criteria, the fire flow demand should be rounded up to the nearest 500 gpm – in this case 2500 gpm. Rerun the fire flow scenario with this fire flow demand and using the hydraulic grades (Item 5) and Hazen -Williams coefficient (Item 6) discussed below.
Response: Fire flows have been rounded to nearest 500 GPM and model has been updated with the items discussed above.

4. Service tap, mater, and service line all need to be the same size. Upsizing the service line downstream of the meter will not be allowed.
Response: Per our conversation with David Pasic upsizing service lines 5' past the meter will be acceptable

5. Provide 12-inch water mains between northern offsite connections and first tee. After the tee, the main sizes can be reduced to 8-inch. Provide connection to the 12-inch offsite main in the southwest corner of the site. Refer to marked-up Utility Plan and Construction Drawings (enclosed).
Response: This is now a 12" water main. Galloway is now constructing a portion of the water main on Site (which includes the 12" water main referred to in this comment). The portion Galloway is constructing is shown shaded with this submittal.

6. The flow test information provided is for a fire hydrant in Lafayette and therefore irrelevant. Collect flow test information from a fire hydrant located within the Town of Erie Water System. Use the following hydraulic grades at the development connection points and provide updated hydraulic modeling results.

Connection Point	Maximum Day HGL	Peak Hour HGL
Beasley Drive & Arapahoe Road	5418.1 feet MSL	5406.1 feet MSL
Safeway Shopping Plaza & Arapahoe Road	5417.8 feet MSL	5405.8 feet MSL

Response: Erie fire hydrant information is included with this submittal. They hydraulic grades provided have been used in the model as requested

7. What Hazen-Williams coefficient has been used in the hydraulic model? The value should be C= 120. Provide evidence of the Hazen-Williams value used.
   Response: A Hazen-Williams coefficient of C=100 has been used as it states in the Town of Erie's design standards. Sheets showing this have been included in the appendices of the utility report with this submittal.

8. Revise service lines to match the Town's specifications. Per the Town's Standards (Section 600), for all service lines 3/4-inch through 2 inches, seamless copper tube, designated as "Type K" (soft), shall be used.
   Response: All service lines are now Type K (soft) copper.

9. Include relevant Town's standard detail drawings for water and sanitary sewer utilities in the construction drawing set.
   Response: Standard detail drawings have been added for water and sanitary utilities.

10. Revise wastewater flow projections to reflect the Town's typical population density, i.e. 2.79 persons per dwelling unit.
    Response: Wastewater flow projections have been updated using a population density of 2.79.

11. Provide tabulated pipe capacity and flow velocity calculations for the onsite sanitary sewer. Use a Manning's coefficient of 0.012 and indicate distinct flow contributions from services.
    Response: Pipe capacity and flow calculations are now included.

12. Avoid manhole and sewer depths greater than 15 feet deep. Try 1% slope between manhole A2 and manholes A5 and C3; refer to marked-up construction drawings. Adjust services accordingly.
    Response: The sanitary sewer main has been raised where possible while keeping service lines crossings acceptable.

13. Page 9:
    a. "No wastewater modeling required because anticipated less than Master Report". This needs to be modeled.
       Response: This has been modified as requested.

    b. "Future development of water and/or sanitary infrastructure and service stubs have been incorporated within the design." Future stubs have not been incorporated.
       Response: This has been changed as we have not incorporated future stubs.

Stormwater Quality Permit Review Comments

STORMWATER QUALITY PERMIT APPLICATION COMMENTS:

- Should be submitted and issued prior to the start of construction activities (this includes all required items (Final Plat, SWMP & ECP, Control Measures Cost Opinion Worksheet, Performance Security, and Digital Permitted Area)

Response: Noted, thank you.

SWMP COMMENTS:

- Must be submitted for review prior to issuance of SWQ permit
  Response: Noted, thank you.

CONSTRUCTION PLAN/EROSION CONTROL PLAN COMMENTS:

- Silt fence should not be installed perpendicular to contours
  Response: A note has been added detailing that silt fence shall be installed along contours and "j-hooks" shall be placed at the end of silt fences perpendicular to contours.

- ECP should include directional flow arrows.
  Response: Direction flow arrows now included.

DRAINAGE REPORT COMMENTS:

- Should include all required Appendices as required in Standards and Specs:
  - Project Stormwater Quality Design Standards Form
  - Operations and Maintenance Section

  Response: Project Stormwater Quality Design Standards Form now included.

PLAT COMMENTS

- Add the Following Note:
  - The owners of the lands described herein are responsible for the maintenance and operation of drainage easements shown hereon and related facilities, as provided in the Town of Erie Engineering Standards and Specification, as amended. The owners grants the Town of Erie a perpetual right of ingress and egress from and to adjacent property to inspect, maintain, operate and reconstruct the drainage easements and related facilities covered by the Town of Erie Municipal Code, as amended; and to inspect, maintain, operate and reconstruct the drainage easements and related facilities, when the owner(s) fail to adequately maintain such drainage easements and related facilities, which maintenance, operation and reconstruction shall be at the cost of the owner(s).

  Response: This note has been added to the plat.

Mountain View Fire Rescue Comments

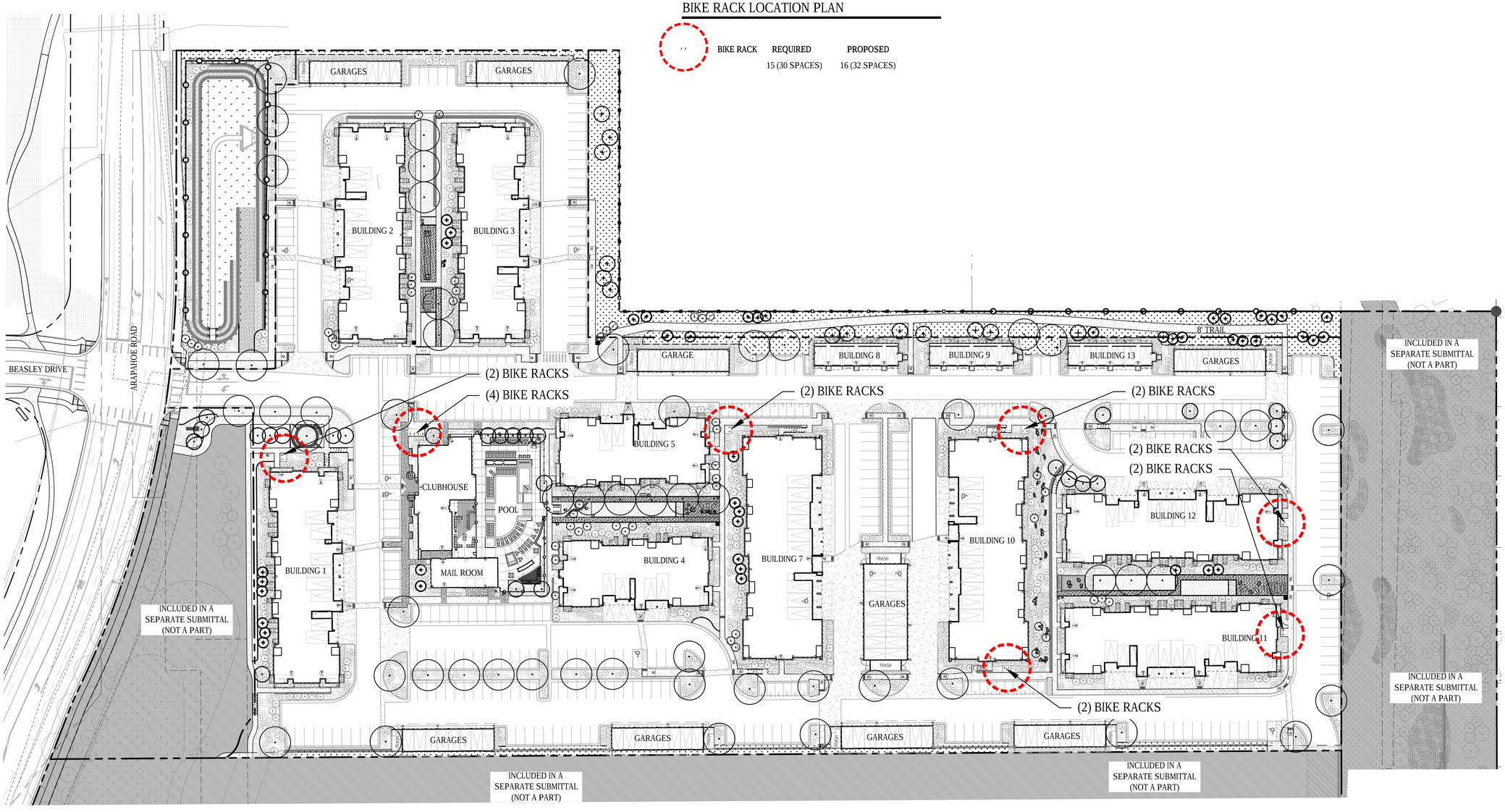
- Fire hydrant spacing appears to be satisfactory as shown on plans submitted.
- Fire apparatus appears to be satisfactory as shown on he plans submitted. Fire Apparatus roads must be designed and maintained to support the imposed loads of fire apparatus (75,000 pounds) and must have a surface that provides all-weather driving capabilities at the time construction begins.
- Building construction plans and fire suppression plan must be submitted to the Fire District prior to the beginning of construction or installation.
  Response: Comments acknowledged.

OUTLOOK NINE MILE

MULTIFAMILY SITE PLAN

BIKE RACK LOCATION PLAN

BIKE RACK	REQUIRED	PROPOSED
	15 (30 SPACES)	16 (32 SPACES)



811

NORTH

0 25 50 100

SCALE 1" = 50'

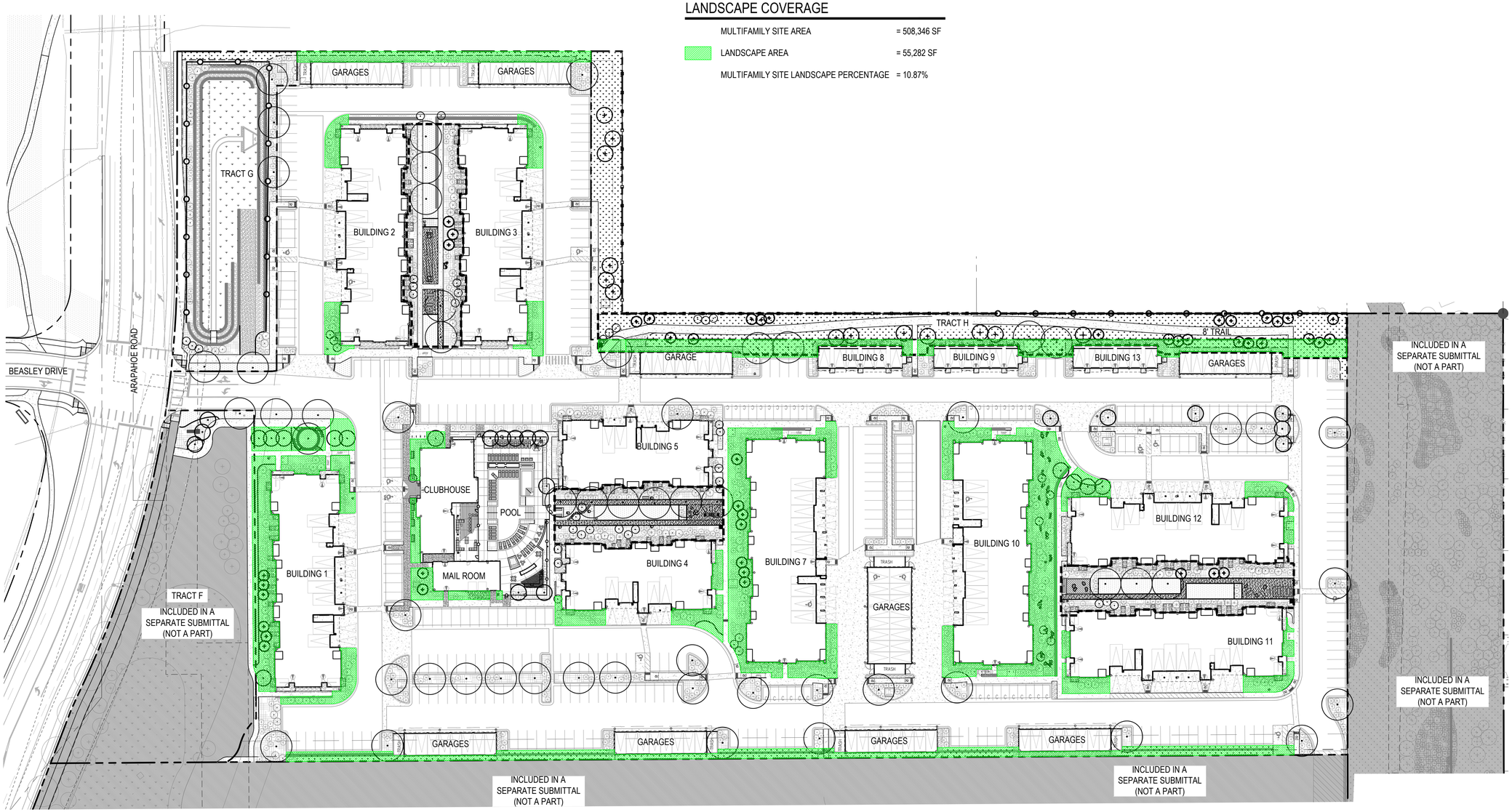
BIKE RACK LOCATION PLAN
DATE:01/30/2020

OUTLOOK NINE MILE

MULTIFAMILY SITE PLAN

LANDSCAPE COVERAGE

MULTIFAMILY SITE AREA	= 508,346 SF
LANDSCAPE AREA	= 55,282 SF
MULTIFAMILY SITE LANDSCAPE PERCENTAGE	= 10.87%



811

NORTH

0 25 50 100

SCALE 1" = 50'

LANDSCAPE COVERAGE
DATE:01/30/2020

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

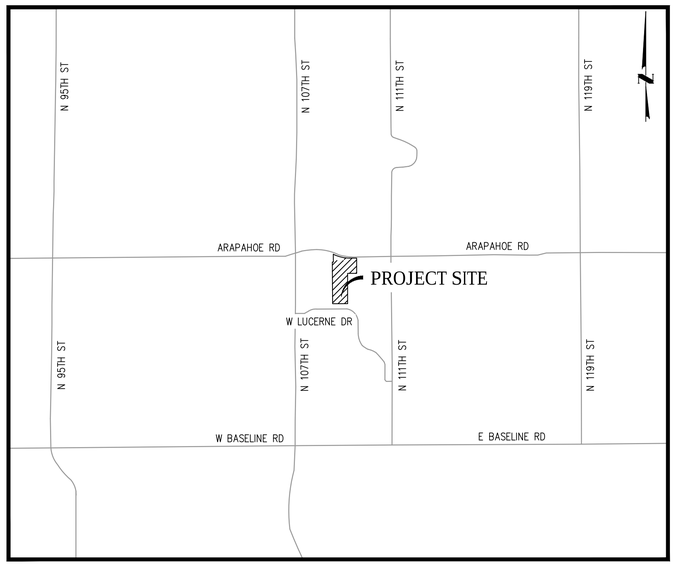
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

SITE DATA SUMMARY CHART		
ZONE DISTRICT: NINE MILE CORNER PD-DEVELOPMENT PLAN		
287 DWELLING UNITS		
ITEM	SQUARE FOOTAGE	% OF GROSS SITE
GROSS SITE AREA	546,151	
BUILDING FOOTPRINT	131,278	24.0%
PARKING/ROADS (INCLUDING PLANTED INTERIOR ISLANDS)	242,627	44.4%
HARDSCAPE TOTAL	373,905	68.5%
PLANTED AREA (EXCLUDING PLANTED INTERIOR PARKING ISLANDS)	129,663	23.7%
EXISTING VEGETATION	0	0.0%
TRAILS, SIDEWALKS AND PLAZAS	42,583	7.8%
LANDSCAPE TOTAL	172,246	31.5%
BUILDING TYPE	SQUARE FOOTAGE	
TYPE A - 18-PLEX	18,388	
TOTAL (2 BUILDINGS)	36,776	
TYPE B - 28-PLEX	27,751	
TOTAL (5 BUILDINGS)	138,755	
TYPE C - 51-PLEX	57,383	
TOTAL (2 BUILDINGS)	114,766	
TYPE D - CARRIAGE	3,753	
TOTAL (3 BUILDINGS)	11,259	
CLUBHOUSE	6,350	
TOTAL (1 BUILDING)	6,350	
GARAGE A	1,898	
TOTAL (8 BUILDINGS)	15,184	
GARAGE B	3,872	
TOTAL (1 BUILDING)	3,872	

PARKING DATA			
		REQUIRED	PROVIDED
REQUIRED VEHICLE PARKING SPACES			
ONE BEDROOM	155 DU X 1.5 SP/DU	233	
TWO BEDROOM	132 DU X 2.0 SP/DU	264	
GUEST SPACES	1 SP/4 DU	72	
TOTAL		569	
PROVIDED VEHICLE PARKING SPACES			
DETACHED GARAGE SPACES			80
ATTACHED GARAGE SPACES			84
TANDEM SPACES			66
SURFACE SPACES			319
SURFACE SPACES (COMPACT)			35
ACCESSIBLE SPACES		12	14
TOTAL PARKING SPACES			584
BICYCLE PARKING SPACES		32	32



VICINITY MAP
SCALE: 1" = 2000'

LEGAL DESCRIPTION

LOT 11, TRACTS F, G AND H
NINE MILE CORNER FILING NO. 1
TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

SHEET INDEX

1	COVER SHEET
2	OVERALL SITE PLAN
3	SITE PLAN
4	SITE PLAN
5	SITE PLAN
6	UTILITY PLAN
7	UTILITY PLAN
8	UTILITY PLAN
9	GRADING PLAN
10	GRADING PLAN
11	GRADING PLAN
12	LANDSCAPE NOTES
13	LANDSCAPE SCHEDULES AND CHARTS
14	OVERALL LANDSCAPE PLAN
15	LANDSCAPE PLAN
16	LANDSCAPE PLAN
17	LANDSCAPE PLAN
18	LANDSCAPE PLAN
19	LANDSCAPE PLAN
20	LANDSCAPE PLAN
21	LANDSCAPE DETAILS
22	LANDSCAPE DETAILS
23	LANDSCAPE DETAILS
24	LANDSCAPE DETAILS
25	IRRIGATION PLAN
26	IRRIGATION PLAN
27	IRRIGATION PLAN
28	IRRIGATION PLAN
29	IRRIGATION PLAN
30	IRRIGATION PLAN
31	BLDG. TYPE A ELEVATIONS
32	BLDG. TYPE A ELEVATIONS
33	BLDG. TYPE A ELEVATIONS
34	BLDG. TYPE B ELEVATIONS
35	BLDG. TYPE B ELEVATIONS
36	BLDG. TYPE B ELEVATIONS
37	BLDG. TYPE B ELEVATIONS
38	BLDG. TYPE C ELEVATIONS
39	BLDG. TYPE C ELEVATIONS
40	BLDG. TYPE C ELEVATIONS
41	BLDG. TYPE D ELEVATIONS
42	BLDG. TYPE D ELEVATIONS
43	BLDG. TYPE D ELEVATIONS
44	BLDG. TYPE D ELEVATIONS
45	CLUBHOUSE ELEVATIONS
46	CLUBHOUSE ELEVATIONS
47	ACCESSORY ELEVATIONS
48	ACCESSORY ELEVATIONS
49	SITE PHOTOMETRIC PLAN 1
50	SITE PHOTOMETRIC PLAN 2
51	PHOTOMETRIC CUT SHEETS

SITE PLAN APPROVAL CERTIFICATE

THIS SITE PLAN HAS BEEN REVIEWED AND FOUND TO BE COMPLETE AND IN ACCORDANCE WITH APPLICABLE TOWN OF ERIE REGULATIONS.

_____ _____
DIRECTOR OF COMMUNITY DEVELOPMENT DATE

_____ _____
PLANNING COMMISSION CHAIR (IF APPLICABLE) DATE

THE UNDERSIGNED AS THE OWNER OR OWNER'S REPRESENTATIVE OF THE LANDS DESCRIBED HEREIN, HEREBY AGREES ON BEHALF OF HIMSELF/HERSELF, THEIR HEIRS, SUCCESSORS, AND ASSIGNS TO DEVELOP AND MAINTAIN THE PROPERTY DESCRIBED HEREON IN ACCORDANCE WITH THIS APPROVED SITE PLAN AND IN COMPLIANCE WITH THE TOWN OF ERIE UNIFIED DEVELOPMENT CODE AND MUNICIPAL CODE.

_____ _____
OWNER SIGNATURE OWNER PRINTED NAME

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2017

BY _____ AS _____.

WITNESS MY HAND AND OFFICIAL SEAL

_____
NOTARY PUBLIC

MY COMMISSION EXPIRES: _____

DEVELOPER:
EVERGREEN DEVCO, INC.
P.O. Box 271066
Littleton, Colorado 80127
Ph: 602-808-8600
Fax: 602-567-7147

ARCHITECT:
KEPHART ARCHITECTS
2555 Walnut Street
Denver, Colorado 80205
Ph: 303-832-4474
Fax: 303-623-6311

CIVIL ENGINEER:
GALLOWAY
6162 S. Willow Drive, Suite 320
Greenwood Village, CO 80111
Ph: 303.770.8884
Fax: 303.770.3636

CIVIL ENGINEER:
HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

LANDSCAPE ARCHITECT:
NORRIS DESIGN
Planning | Landscape Architecture
1101 Bannock Street
Denver, Colorado 80204
P 303.892.1166
F 303.892.1186
www.norris-design.com

PHOTOMETRIC:
KLOK GROUP
801 12TH STREET
GOLDEN, COLORADO 80401
PH: 720-399-2410

HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
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HarrisKocherSmith.com

PROJECT NUMBER: 160602

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

COVER SHEET
SHEET 1 OF 51

OUTLOOK NINE MILE

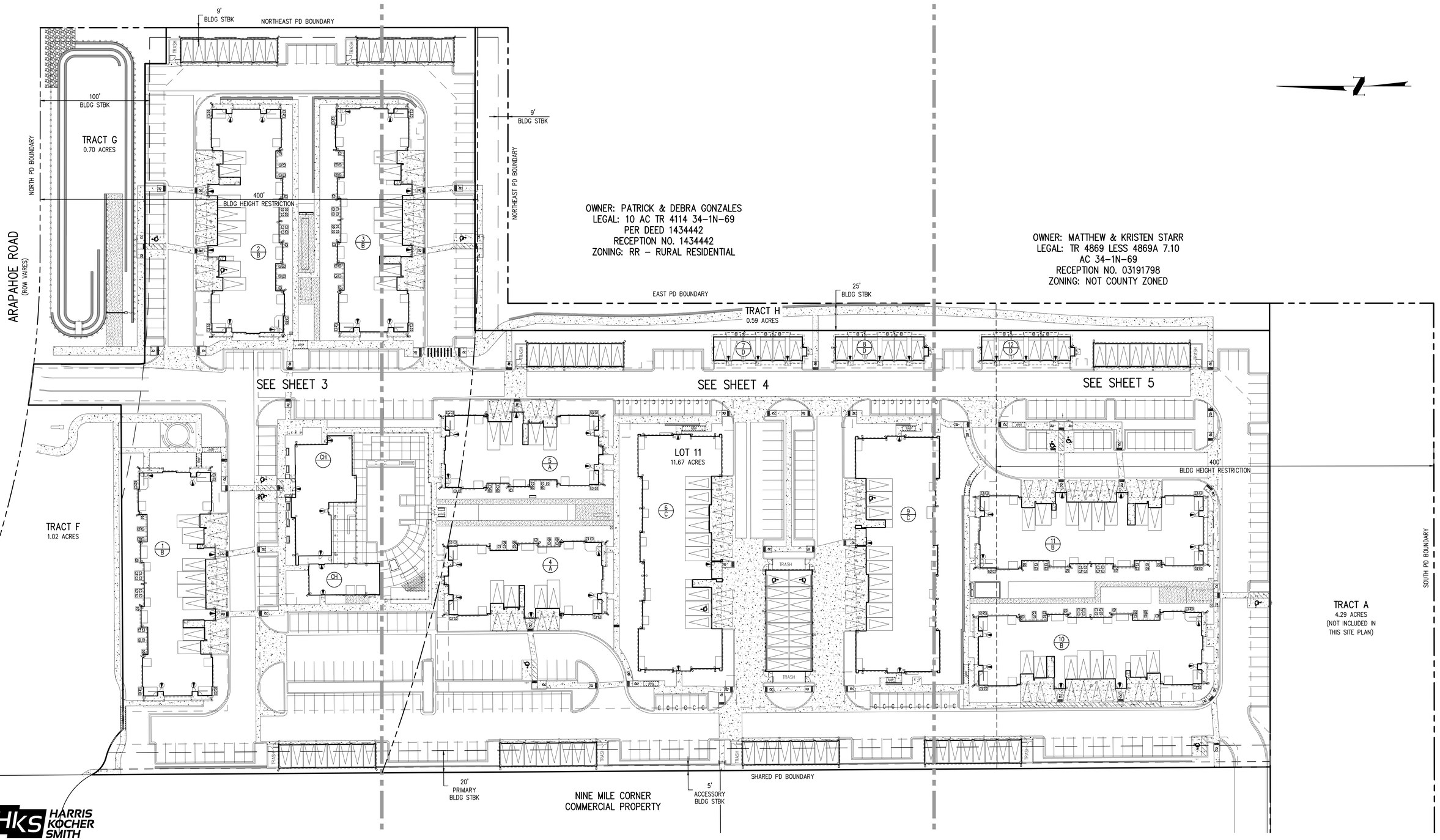
Plotted: WED 01/29/20 2:22:16P By: Rachel Panno
Date/File: P:\160602\ENGINEERING\SITE PLANS\P - COVERDWG Layout: LAYOUT1

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

40 0 40 80
SCALE: 1" = 40'

PROJECT NUMBER: 160602

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

OVERALL SITE PLAN
SHEET 2 OF 51

Dirpath: P:\160602\ENGINEERING\SITE PLAN\SP - OVERALL SITE PLAN\
Xrefs: Layout: OVERALL SITE PLAN.DWG
Plotted: WED 01/29/20 2:25 PM By: Rachel Ponon

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
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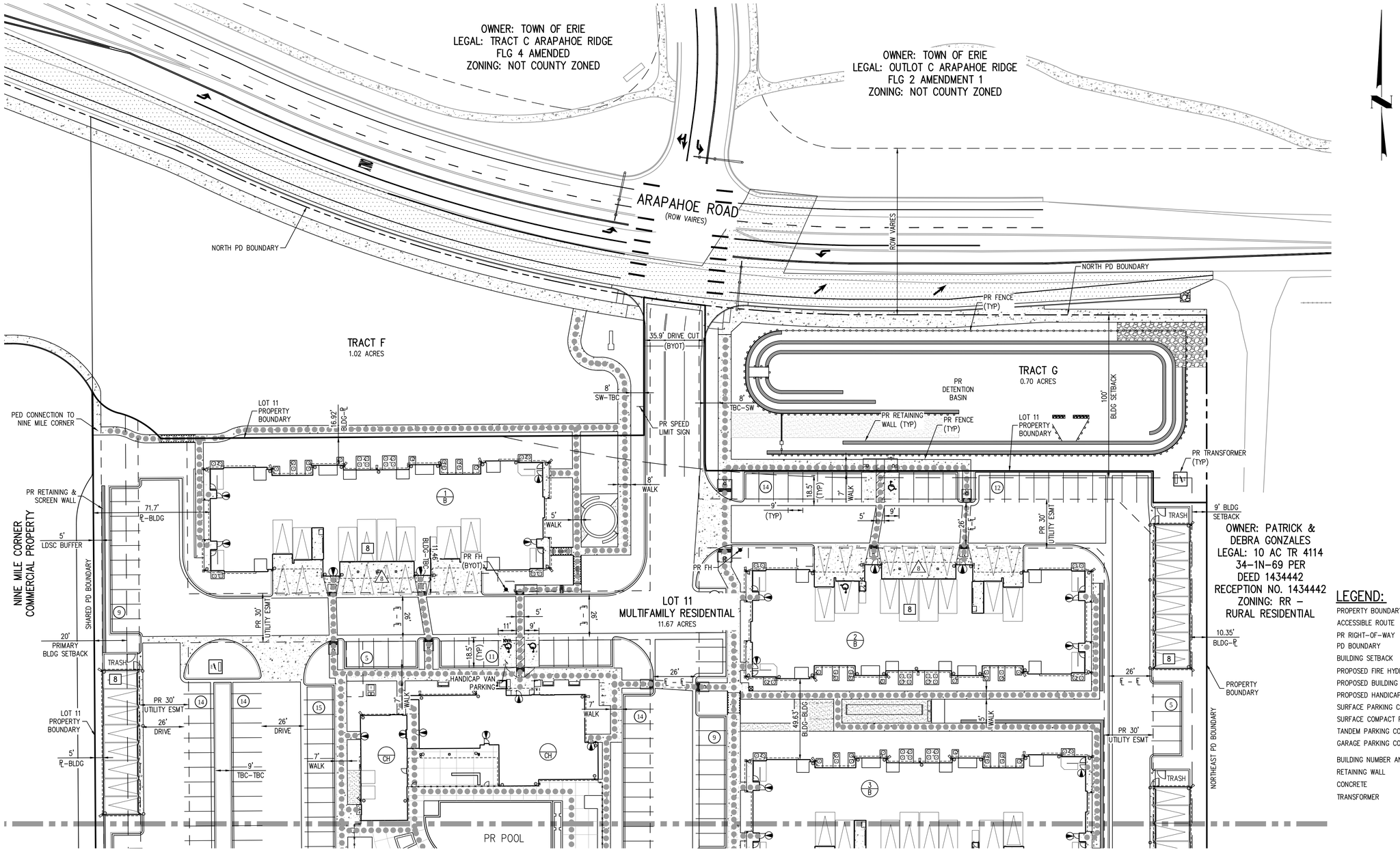
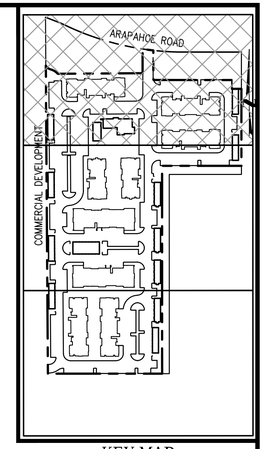
SITE PLAN - SP-000832-2016





KEY MAP
SCALE: 1" = 250'

LEGEND:

- PROPERTY BOUNDARY
- ACCESSIBLE ROUTE
- PR RIGHT-OF-WAY
- PD BOUNDARY
- BUILDING SETBACK
- PROPOSED FIRE HYDRANT
- PROPOSED BUILDING ENTRANCE
- PROPOSED HANDICAP RAMP
- SURFACE PARKING COUNT
- SURFACE COMPACT PARKING COUNT
- TANDEM PARKING COUNT
- GARAGE PARKING COUNT
- BUILDING NUMBER AND TYPE
- RETAINING WALL
- CONCRETE
- TRANSFORMER

MATCHLINE - SEE SHEET 4

NOTES:

1. STANDARD PARKING SPOTS HAVE A WIDTH OF 9' AND LENGTH OF 18.5'.
2. COMPACT PARKING SPOTS HAVE A WIDTH OF 8' AND A LENGTH OF 16'.

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01-27-2020
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30 0 30 60
SCALE: 1" = 30'

SHEET 3 OF 51

OUTLOOK NINE MILE

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Plotted: WED 01/29/20 2:22:25P By: Rachel Peters

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OUTLOOK NINE MILE

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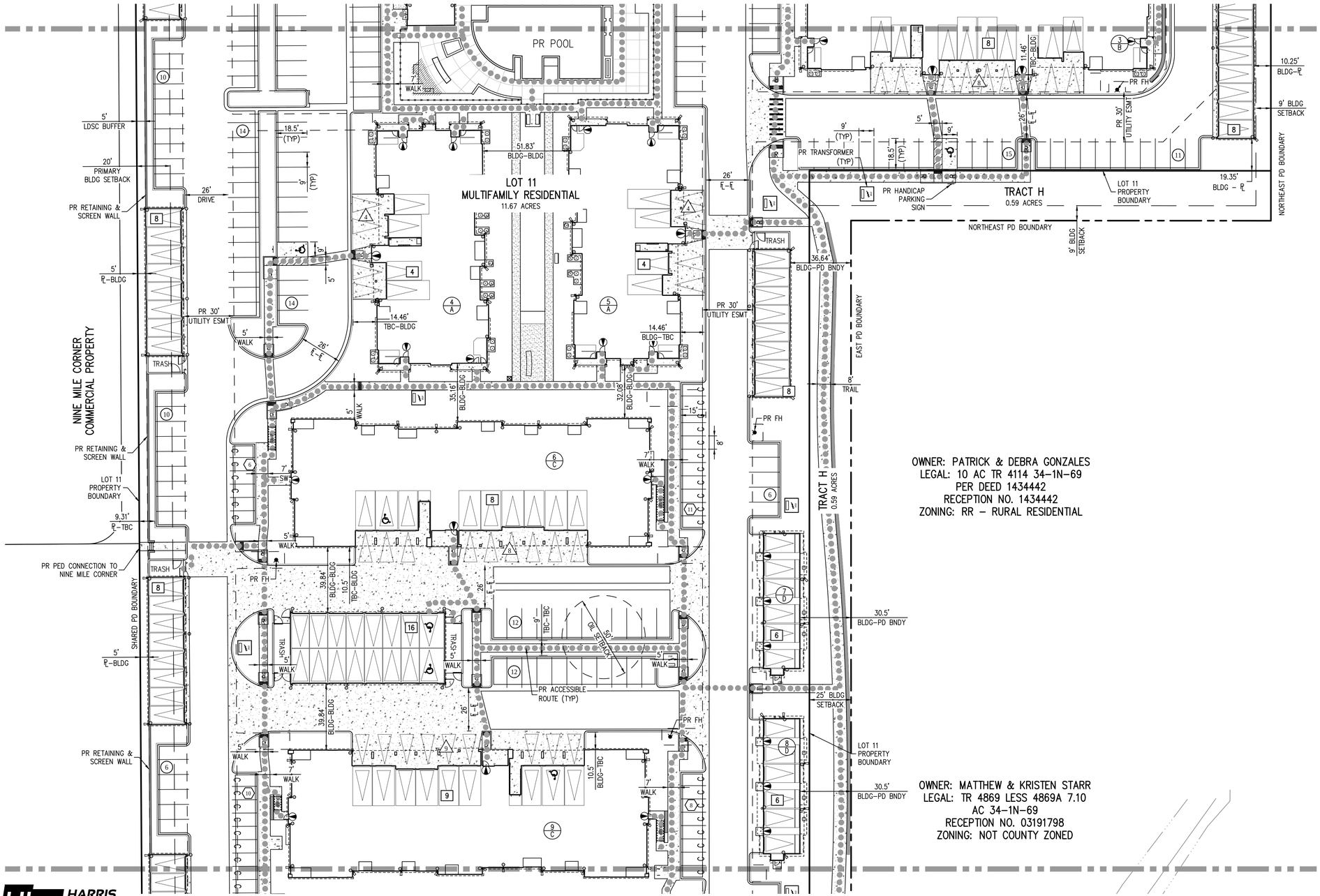
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

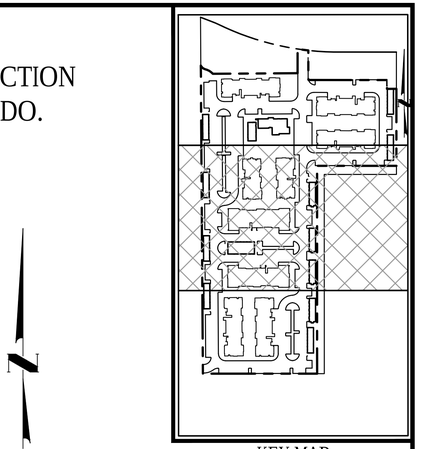
MATCHLINE - SEE SHEET 3



OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

MATCHLINE - SEE SHEET 5



LEGEND:

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- PD BOUNDARY
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- PROPOSED BUILDING ENTRANCE
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30 0 30 60
SCALE: 1" = 30'

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01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017 SHEET 4 OF 51

SITE PLAN

Filepath: P:\160602\ENGINEERING\SITE PLANS\SP - SITE PLAN.DWG Layout: 3 SITE PLAN
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OUTLOOK NINE MILE

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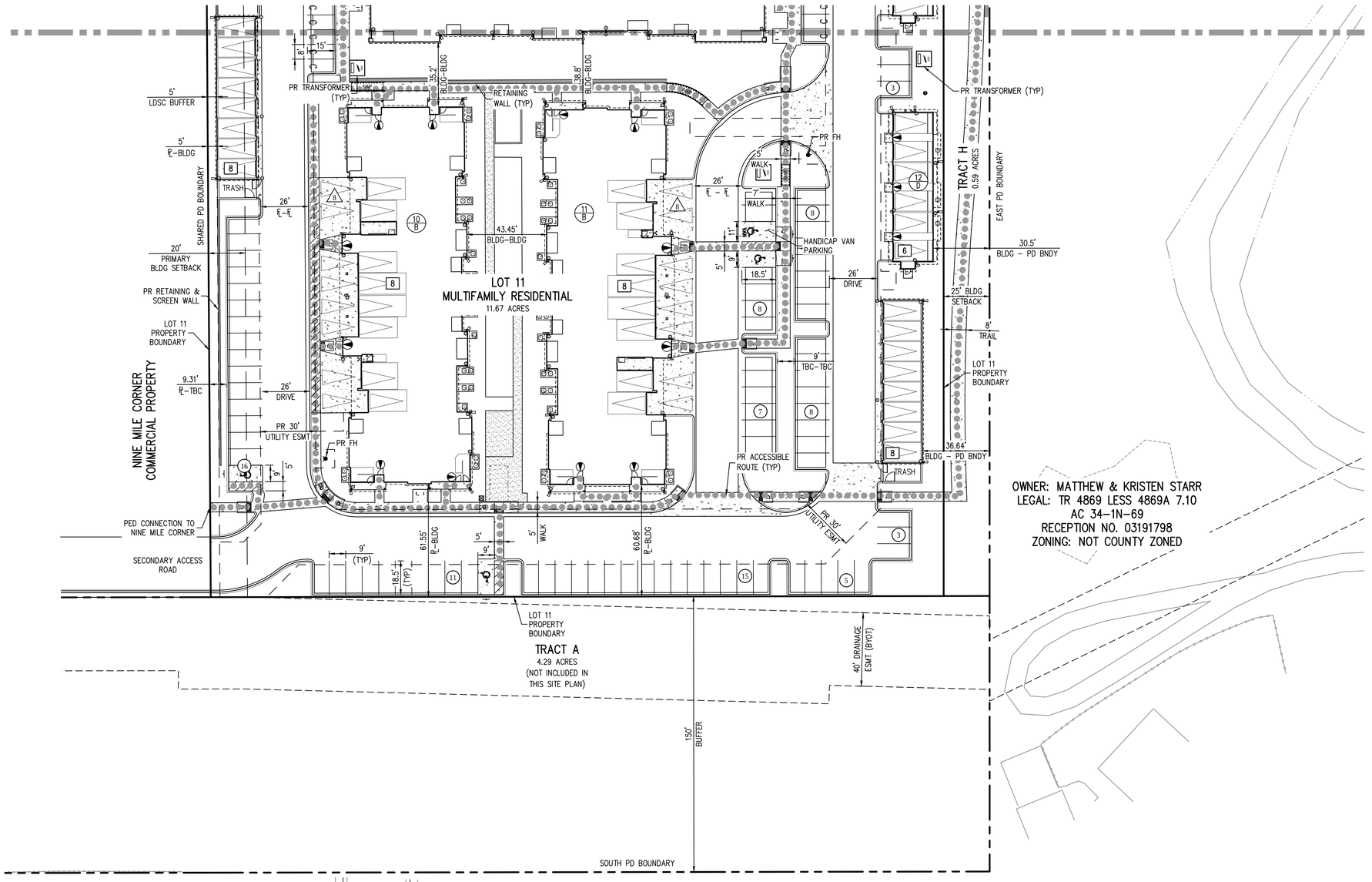
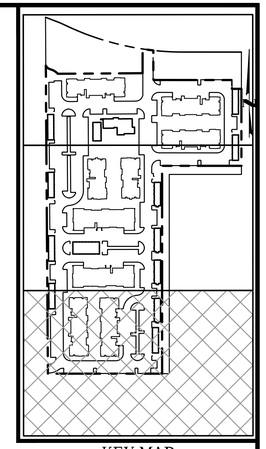
SITE PLAN - SP-000832-2016





LEGEND:

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30 0 30 60
SCALE: 1" = 30'

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PROJECT NUMBER: 160602

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017 SHEET 5 OF 51

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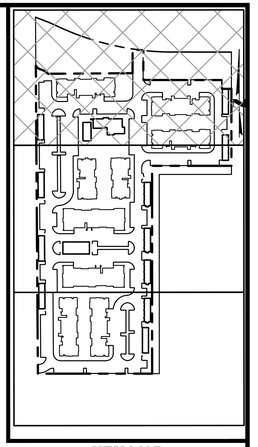
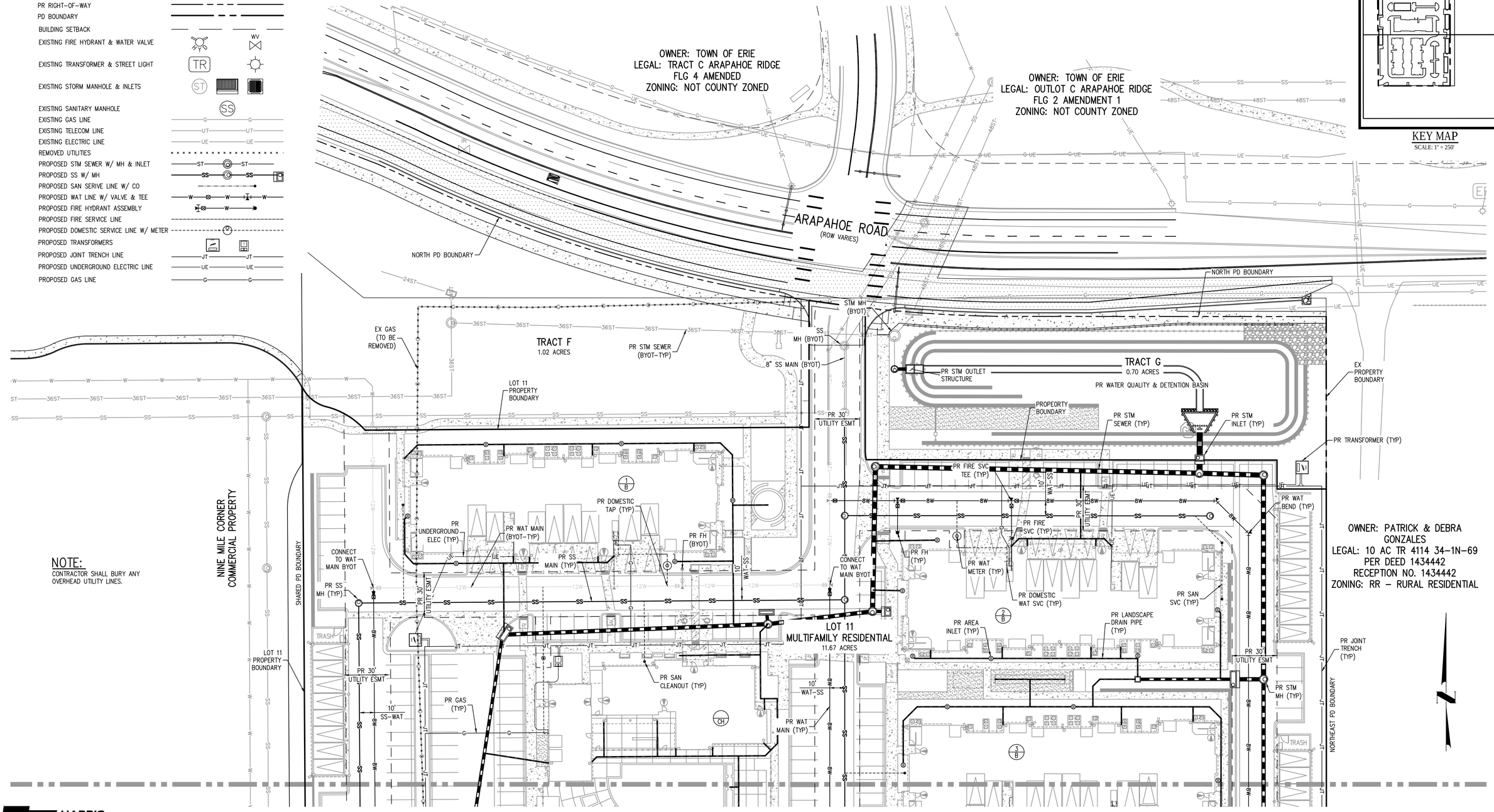
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



LEGEND:
- PROPERTY BOUNDARY
- PR RIGHT-OF-WAY
- PD BOUNDARY
- BUILDING SETBACK
- EXISTING FIRE HYDRANT & WATER VALVE
- EXISTING TRANSFORMER & STREET LIGHT
- EXISTING STORM MANHOLE & INLETS
- EXISTING SANITARY MANHOLE
- EXISTING GAS LINE
- EXISTING TELECOM LINE
- EXISTING ELECTRIC LINE
- REMOVED UTILITIES
- PROPOSED STM SEWER W/ MH & INLET
- PROPOSED SS W/ MH
- PROPOSED SAN SERIVE LINE W/ CO
- PROPOSED WAT LINE W/ VALVE & TEE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED FIRE SERVICE LINE
- PROPOSED DOMESTIC SERVICE LINE W/ METER
- PROPOSED TRANSFORMERS
- PROPOSED JOINT TRENCH LINE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED GAS LINE



NOTE:
CONTRACTOR SHALL BURY ANY OVERHEAD UTILITY LINES.

MATCHLINE - SEE SHEET 7

SCALE: 1" = 30'

HARRIS KOCHER SMITH
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PROJECT NUMBER: 160602

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

UTILITY PLAN
SHEET 6 OF 51

OUTLOOK NINE MILE

Filepath: P:\160602\ENGINEERING\UTILITIES\SP - OVERALL UTILITY PLAN.DWG Layout: OVERALL UTILITY PLAN
PLOTTED: 1/27/2020 8:22:38 AM By: Rachel Pamm
Plotted: WED 01/29/20 2:22:38P By: Rachel Pamm

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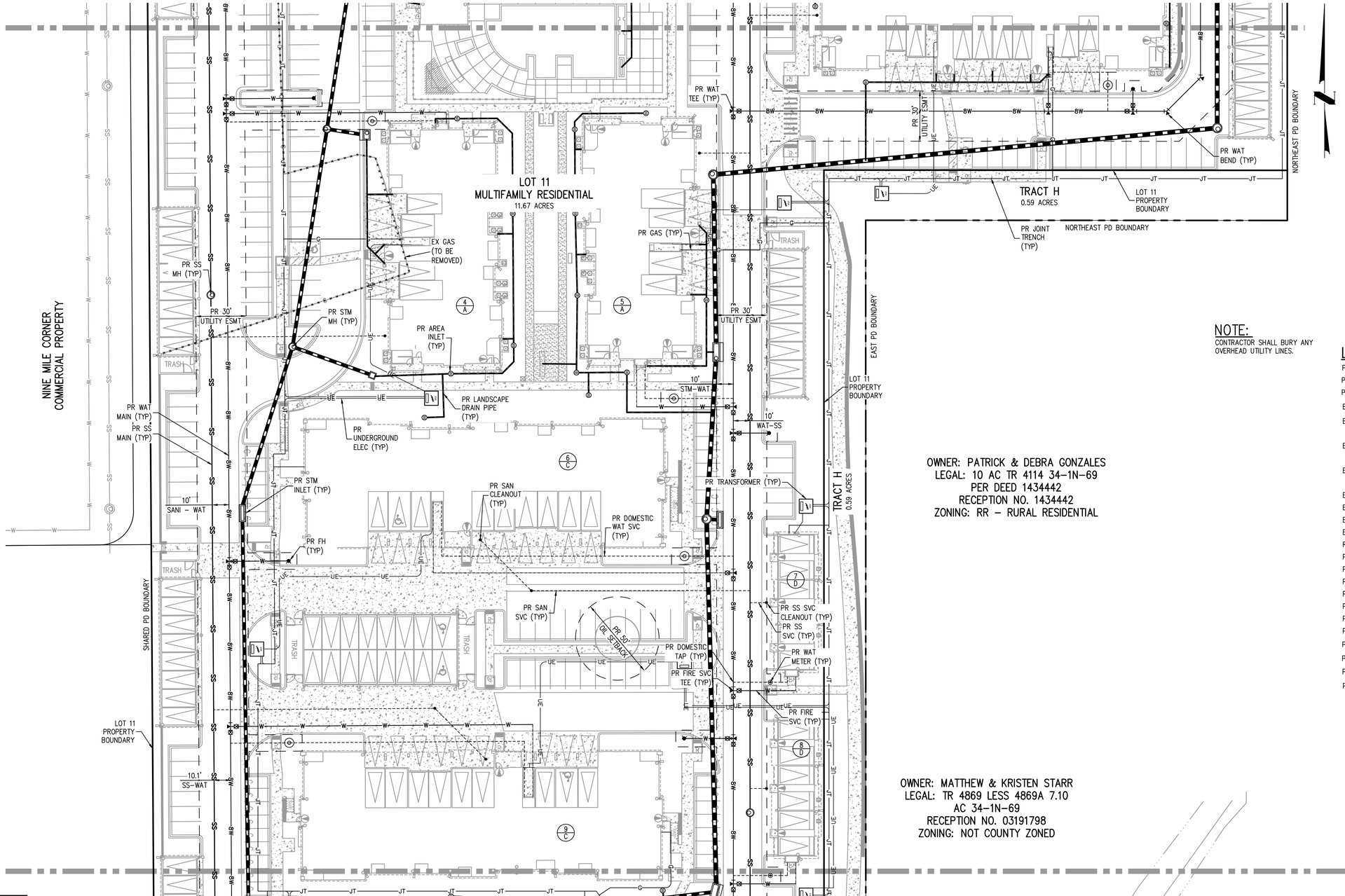
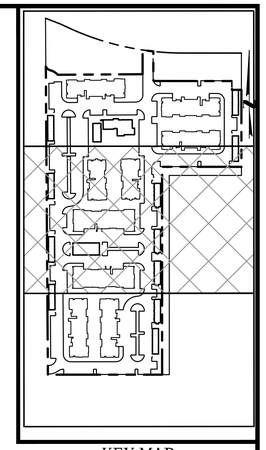
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

MATCHLINE - SEE SHEET 6





KEY MAP
SCALE: 1" = 250'

NOTE:
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OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR - RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

LEGEND:

- PROPERTY BOUNDARY
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- PROPOSED DOMESTIC SERVICE LINE W/ METER
- PROPOSED TRANSFORMERS
- PROPOSED JOINT TRENCH LINE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED GAS LINE

MATCHLINE - SEE SHEET 8

30 0 30 60
SCALE: 1" = 30'

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UTILITY PLAN
SHEET 7 OF 51

Filepath: P:\160602\ENGINEERING\UTILITIES\SP - OVERALL UTILITY PLAN.DWG Layout: 1B OVERALL UTILITY PLAN
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OUTLOOK NINE MILE

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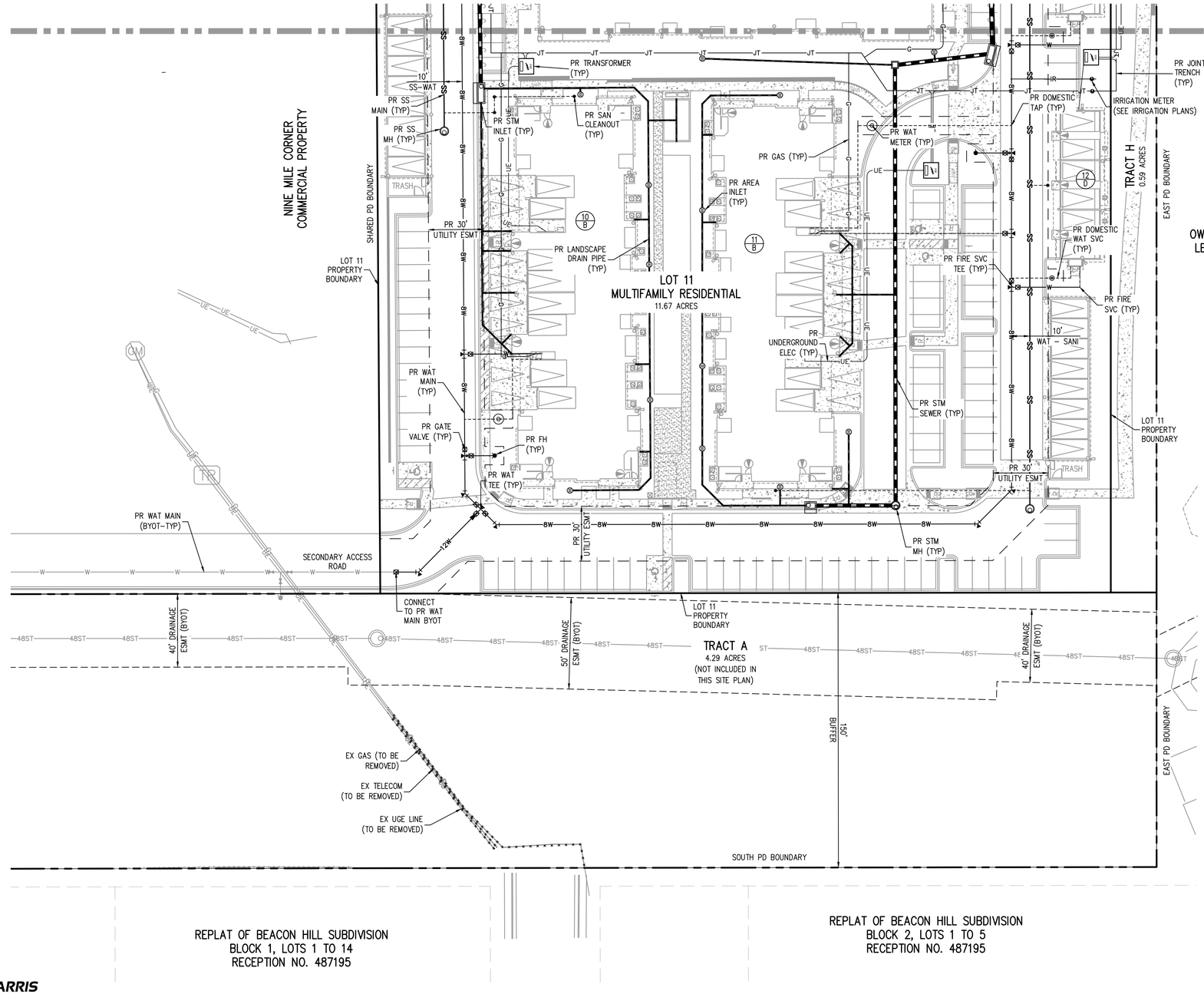
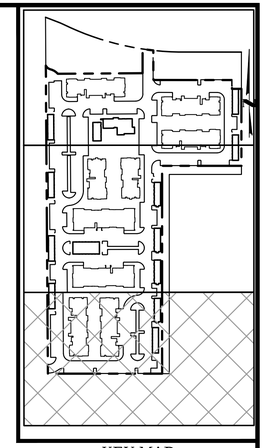
SITE PLAN - SP-000832-2016

MATCHLINE - SEE SHEET 7



REPLAT OF BEACON HILL SUBDIVISION
BLOCK 1, LOTS 1 TO 14
RECEPTION NO. 487195

REPLAT OF BEACON HILL SUBDIVISION
BLOCK 2, LOTS 1 TO 5
RECEPTION NO. 487195



KEY MAP
SCALE: 1" = 250'

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED

NOTE:
CONTRACTOR SHALL BURY ANY OVERHEAD UTILITY LINES.

LEGEND:

- PROPERTY BOUNDARY
- PR RIGHT-OF-WAY
- PD BOUNDARY
- BUILDING SETBACK
- EXISTING FIRE HYDRANT & WATER VALVE
- EXISTING TRANSFORMER & STREET LIGHT
- EXISTING STORM MANHOLE & INLETS
- EXISTING SANITARY MANHOLE
- EXISTING GAS LINE
- EXISTING TELECOM LINE
- EXISTING ELECTRIC LINE
- REMOVED UTILITIES
- PROPOSED STM SEWER W/ MH & INLET
- PROPOSED SS W/ MH
- PROPOSED SAN SERIVE LINE W/ CO
- PROPOSED WAT LINE W/ VALVE & TEE
- PROPOSED FIRE HYDRANT ASSEMBLY
- PROPOSED FIRE SERVICE LINE
- PROPOSED DOMESTIC SERVICE LINE W/ METER
- PROPOSED TRANSFORMERS
- PROPOSED JOINT TRENCH LINE
- PROPOSED UNDERGROUND ELECTRIC LINE
- PROPOSED GAS LINE

HARRIS KOCHER SMITH
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PROJECT NUMBER: 160602

30 0 30 60
SCALE: 1" = 30'

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

UTILITY PLAN
SHEET 8 OF 51

Filepath: P:\160602\ENGINEERING\UTILITIES\SP - OVERALL UTILITY PLAN.DWG Layout: 1SOVERALL UTILITY PLAN
8/8/2019 9:56:06 AM Last Saved By: Rachel Patten
Plotted: WED 01/29/20 2:22:46P By: Rachel Patten

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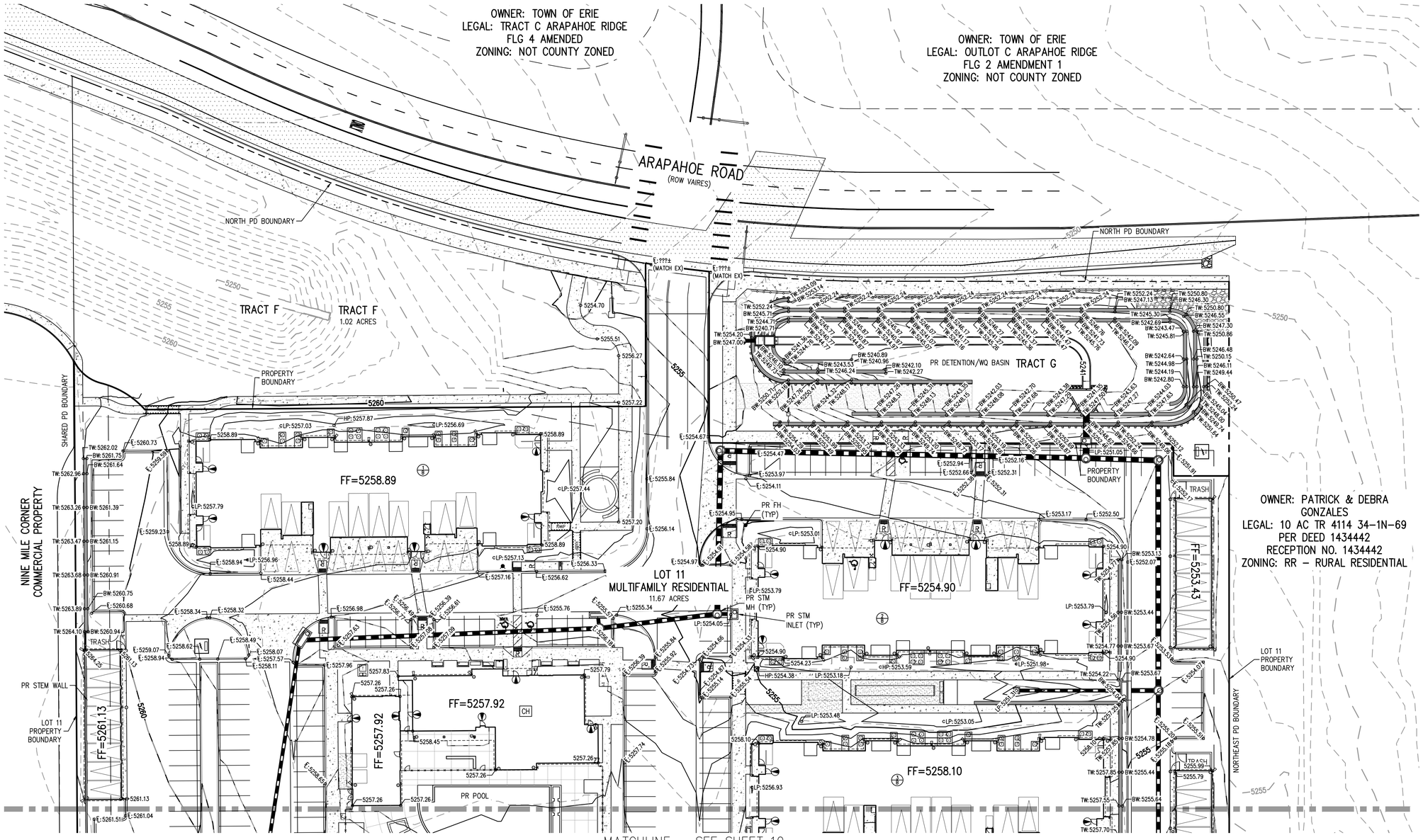
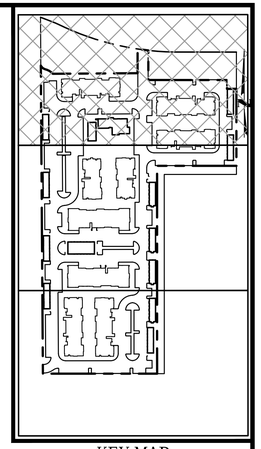
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016





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PROJECT NUMBER: 160602

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

SCALE: 1" = 30'

GRADING PLAN
SHEET 9 OF 51

Filepath: P:\160602\ENGINEERING\GRADING\SP - GRADING.DWG Layout: GRADING PLAN
XREFs:
Plotted: WED 01/29/20 2:22:51P By: Rachel Patton

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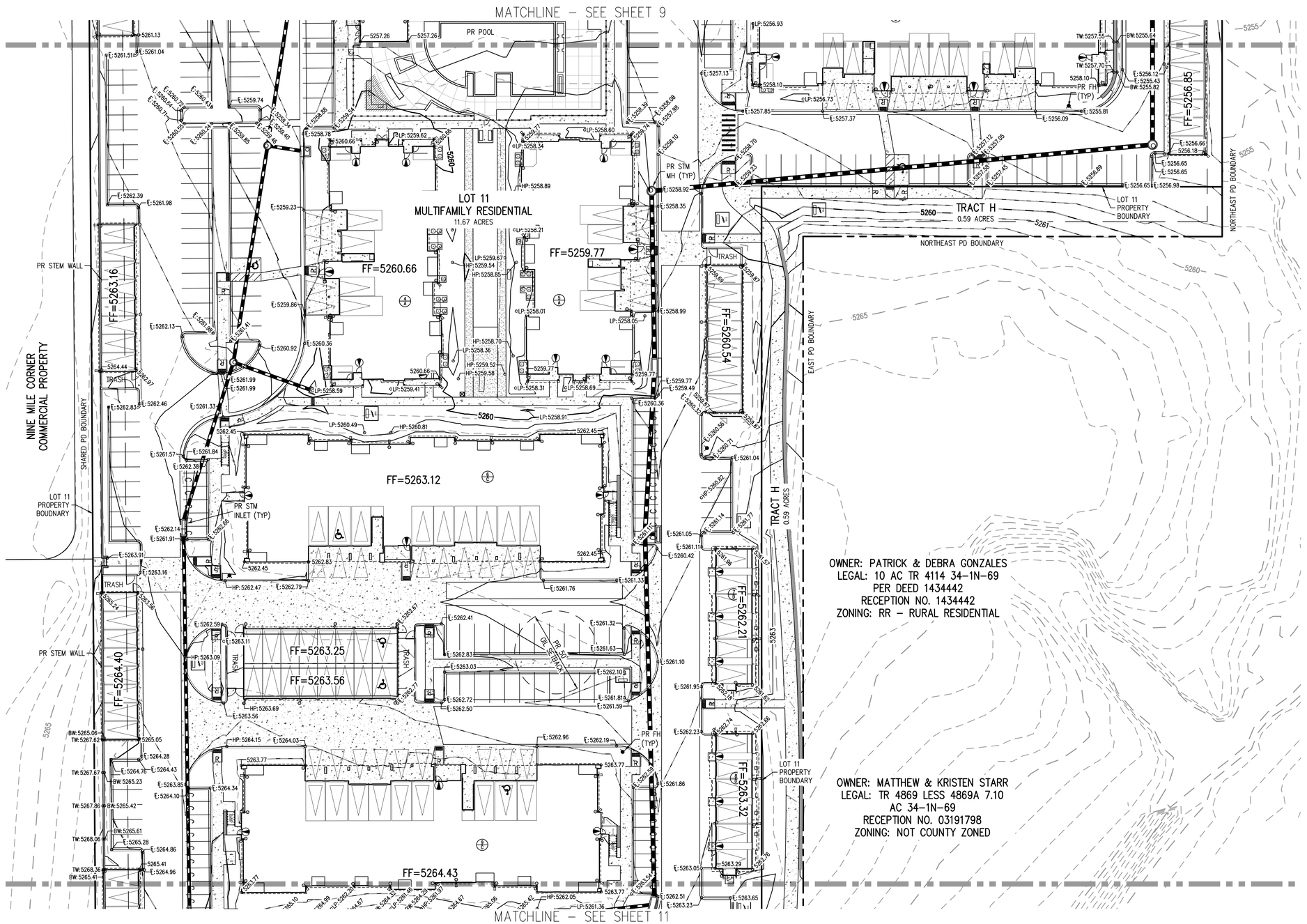
OUTLOOK NINE MILE

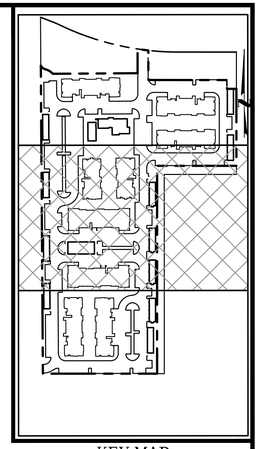
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



OWNER: PATRICK & DEBRA GONZALES
LEGAL: 10 AC TR 4114 34-1N-69
PER DEED 1434442
RECEPTION NO. 1434442
ZONING: RR – RURAL RESIDENTIAL

OWNER: MATTHEW & KRISTEN STARR
LEGAL: TR 4869 LESS 4869A 7.10
AC 34-1N-69
RECEPTION NO. 03191798
ZONING: NOT COUNTY ZONED



KEY MAP
SCALE: 1" = 250'

HARRIS KOCHER SMITH
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PROJECT NUMBER: 160602

Plotted: WED 01/29/20 2:22:53P By: Rachel Panos
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01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

30 0 30 60
SCALE: 1" = 30'

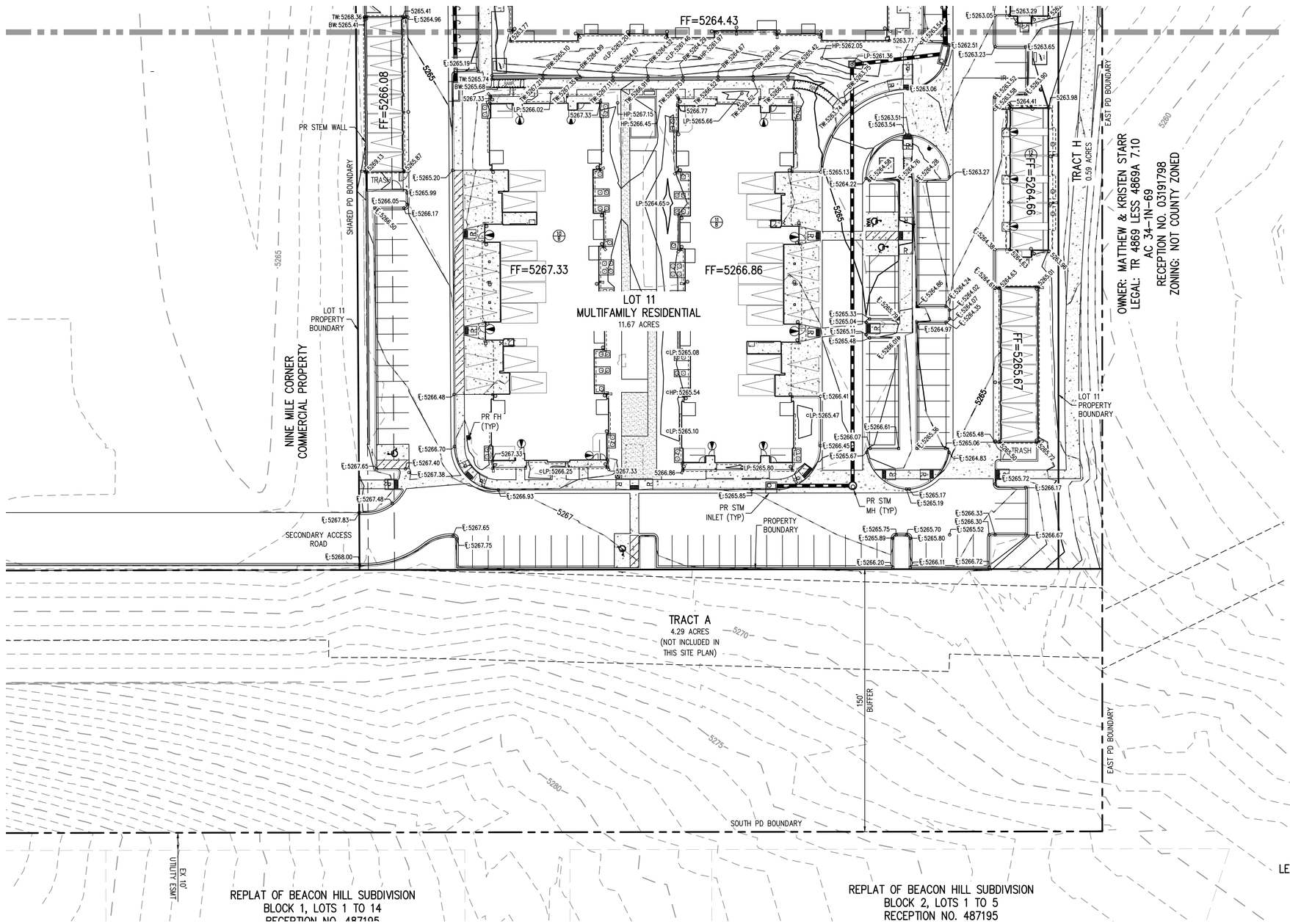
GRADING PLAN
SHEET 10 OF 51

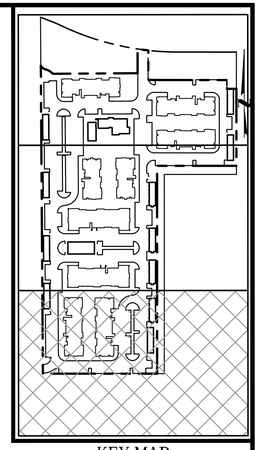
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH.

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016





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PROJECT NUMBER: 160602

30 0 30 60
SCALE: 1" = 30'

01-27-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

GRADING PLAN
SHEET 11 OF 51

OUTLOOK NINE MILE

Plotted: 1/28/2020 2:22:25PM By: Rachel Patton
X:\160602\ENGINEERING\GRADING\SP - GRADING.DWG Layout: 22 GRADING PLAN

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OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

GENERAL NOTES

1. THE CONTRACTOR AND OWNER'S REPRESENTATIVE SHALL CONTACT THE LANDSCAPE ARCHITECT FOR A PRE-CONSTRUCTION MEETING PRIOR TO START OF ANY WORK SHOWN ON THESE PLANS.
2. THESE PLANS SHALL NOT BE UTILIZED FOR CONSTRUCTION OR PERMITTING UNLESS STATED FOR SUCH USE IN THE TITLE BLOCK.
3. DRAWINGS ARE INTENDED TO BE PRINTED ON 24 X 36 PAPER. PRINTING THESE DRAWINGS AT A DIFFERENT SIZE WILL IMPACT THE SCALE. VERIFY THE GRAPHIC SCALE BEFORE REFERENCING ANY MEASUREMENTS ON THESE SHEETS. THE RECIPIENT OF THESE DRAWINGS SHALL BE RESPONSIBLE FOR ANY ERRORS RESULTING FROM INCORRECT PRINTING, COPYING, OR ANY OTHER CHANGES THAT ALTER THE SCALE OF THE DRAWINGS.
4. VERIFY ALL PLAN DIMENSIONS PRIOR TO START OF CONSTRUCTION. NOTIFY THE OWNER'S REPRESENTATIVE TO ADDRESS ANY QUESTIONS OR CLARIFY ANY DISCREPANCIES.
5. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
6. SUBMIT A CHANGE ORDER FOR APPROVAL FOR ANY CHANGES TO WORK SCOPE RESULTING FROM FIELD CONDITIONS OR DIRECTION BY OWNER'S REPRESENTATIVE WHICH REQUIRE ADDITIONAL COST TO THE OWNER PRIOR TO PERFORMANCE OF WORK.
7. THE CONTRACTOR SHALL PROVIDE A STAKED LAYOUT OF ALL SITE IMPROVEMENTS FOR INSPECTION BY THE OWNER'S REPRESENTATIVE AND MAKE MODIFICATIONS AS REQUIRED. ALL LAYOUT INFORMATION IS AVAILABLE IN DIGITAL FORMAT FOR USE BY THE CONTRACTOR.
8. IF A GEOTECHNICAL SOILS REPORT IS NOT AVAILABLE AT THE TIME OF CONSTRUCTION, NORRIS DESIGN RECOMMENDS A REPORT BE AUTHORIZED BY THE OWNER AND THAT ALL RECOMMENDATIONS OF THE REPORT ARE FOLLOWED DURING CONSTRUCTION. THE CONTRACTOR SHALL USE THESE CONTRACT DOCUMENTS AS A BASIS FOR THE BID. IF THE OWNER ELECTS TO PROVIDE A GEOTECHNICAL REPORT, THE CONTRACTOR SHALL REVIEW THE REPORT AND SUBMIT AN APPROPRIATE CHANGE ORDER TO THE OWNER'S REPRESENTATIVE IF ADDITIONAL COSTS ARE REQUESTED.
9. CONTRACTOR SHALL CONFIRM THAT SITE CONDITIONS ARE SIMILAR TO THE PLANS, WITHIN TOLERANCES STATED IN THE CONTRACT DOCUMENTS, AND SATISFACTORY TO THE CONTRACTOR PRIOR TO START OF WORK. SHOULD SITE CONDITIONS BE DIFFERENT THAN REPRESENTED ON THE PLANS OR UNSATISFACTORY TO THE CONTRACTOR, THE CONTRACTOR SHALL CONTACT THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND FURTHER DIRECTION.
10. CONTRACTOR IS RESPONSIBLE TO PAY FOR, AND OBTAIN, ANY REQUIRED APPLICATIONS, PERMITTING, LICENSES, INSPECTIONS AND METERS ASSOCIATED WITH WORK.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO ANY VIOLATIONS OR NON-CONFORMANCE WITH THE PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS, JURISDICTIONAL CODES, AND REGULATORY AGENCIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL UTILITY LOCATES PRIOR TO ANY EXCAVATION. REFER TO ENGINEERING UTILITY PLANS FOR ALL PROPOSED UTILITY LOCATIONS AND DETAILS. NOTIFY OWNER'S REPRESENTATIVE IF EXISTING OR PROPOSED UTILITIES INTERFERE WITH THE ABILITY TO PERFORM WORK.
13. UNLESS IDENTIFIED ON THE PLANS FOR DEMOLITION OR REMOVAL, THE CONTRACTOR IS RESPONSIBLE FOR THE COST TO REPAIR UTILITIES, ADJACENT OR EXISTING LANDSCAPE, ADJACENT OR EXISTING PAVING, OR ANY PUBLIC AND PRIVATE PROPERTY THAT IS DAMAGED BY THE CONTRACTOR OR THEIR SUBCONTRACTOR'S OPERATIONS DURING INSTALLATION, ESTABLISHMENT OR DURING THE SPECIFIED MAINTENANCE PERIOD. ALL DAMAGES SHALL BE REPAIRED TO PRE-CONSTRUCTION CONDITIONS AS DETERMINED BY THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL BE RESPONSIBLE FOR LOGGING ANY DAMAGES PRIOR TO START OF CONSTRUCTION AND DURING THE CONTRACT PERIOD.
14. ALL WORK SHALL BE CONFINED TO THE AREA WITHIN THE CONSTRUCTION LIMITS AS SHOWN ON THE PLANS. ANY AREAS OR IMPROVEMENTS DISTURBED OUTSIDE THESE LIMITS SHALL BE RETURNED TO THEIR ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE. IN THE EVENT THE CONTRACTOR REQUIRES A MODIFICATION TO THE CONSTRUCTION LIMITS, WRITTEN PERMISSION MUST BE OBTAINED FROM THE OWNER'S REPRESENTATIVE PRIOR TO ANY DISTURBANCE OUTSIDE OF THE LIMITS OF WORK.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY OF THEIR TRENCHES OR EXCAVATIONS THAT SETTLE.
16. THE CONTRACTOR SHALL BE RESPONSIBLE TO PREPARE AND SUBMIT A TRAFFIC CONTROL PLAN TO THE APPROPRIATE JURISDICTIONAL AGENCIES AND THE OWNER'S REPRESENTATIVE IF THEIR WORK AND OPERATIONS AFFECT OR IMPACT THE PUBLIC RIGHTS-OF-WAY. OBTAIN APPROVAL PRIOR TO ANY WORK WHICH AFFECTS OR IMPACTS THE PUBLIC RIGHTS-OF-WAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THIS REQUIREMENT DURING THE CONTRACT PERIOD.
17. SIGHT TRIANGLES AND SIGHT LINES SHALL REMAIN UNOBSTRUCTED BY EQUIPMENT, CONSTRUCTION MATERIALS, PLANT MATERIAL OR ANY OTHER VISUAL OBSTACLE DURING THE CONTRACT PERIOD AND AT MATURITY OF PLANTS PER LOCAL JURISDICTIONAL REQUIREMENTS.
18. NO PLANT MATERIAL OTHER THAN GROUND COVER IS ALLOWED TO BE PLANTED ADJACENT TO FIRE HYDRANTS AS STIPULATED BY JURISDICTIONAL REQUIREMENTS.
19. COORDINATE SITE ACCESS, STAGING, STORAGE AND CLEANOUT AREAS WITH OWNER'S REPRESENTATIVE.
20. CONTRACTOR IS RESPONSIBLE FOR PROVIDING TEMPORARY SAFETY FENCING AND BARRIERS AROUND ALL IMPROVEMENTS SUCH AS WALLS, PLAY STRUCTURES, EXCAVATIONS, ETC. ASSOCIATED WITH THEIR WORK UNTIL SUCH FACILITIES ARE COMPLETELY INSTALLED PER THE PLANS, SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THEIR MATERIAL STOCK PILES AND WORK FROM VANDALISM, EROSION OR UNINTENDED DISTURBANCE DURING THE CONSTRUCTION PERIOD AND UNTIL FINAL ACCEPTANCE IS ISSUED.
22. THE CONTRACTOR SHALL KNOW, UNDERSTAND AND ABIDE BY ANY STORM WATER POLLUTION PREVENTION PLAN (SWPPP) ASSOCIATED WITH THE SITE. IF A STORM WATER POLLUTION PREVENTION PLAN IS NOT PROVIDED BY THE OWNER'S REPRESENTATIVE, REQUEST A COPY BEFORE PERFORMANCE OF ANY SITE WORK.
23. MAINTAIN ANY STORM WATER MANAGEMENT FACILITIES THAT EXIST ON SITE FOR FULL FUNCTIONALITY. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ANY NEW STORM WATER MANAGEMENT FACILITIES THAT ARE IDENTIFIED IN THE SCOPE OF WORK TO FULL FUNCTIONALITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER FOR FAILURE TO MAINTAIN STORM WATER MANAGEMENT FACILITIES DURING THE CONTRACT PERIOD.
24. THE CONTRACTOR SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM EXITING THE SITE OR ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION OR CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THESE REQUIREMENTS DURING THEIR CONTRACTED COURSE OF WORK.
25. THE CONTRACTOR SHALL BE RESPONSIBLE TO PREVENT ANY IMPACTS TO ADJACENT WATERWAYS, WETLANDS, OR OTHER ENVIRONMENTALLY SENSITIVE AREAS RESULTING FROM WORK DONE AS PART OF THIS PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THESE STANDARDS DURING THEIR CONTRACTED COURSE OF WORK.
26. THE CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL INSURE THAT ALL LOADS OF CONSTRUCTION MATERIAL IMPORTED TO OR EXPORTED FROM THE PROJECT SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF MATERIAL DURING TRANSPORT. TRANSPORTATION METHODS ON PUBLIC RIGHT-OF WAYS SHALL CONFORM TO JURISDICTIONAL REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY FINES OR PENALTIES ASSESSED TO THE OWNER RELATING TO THESE REQUIREMENTS.
27. THE CLEANING OF EQUIPMENT IS PROHIBITED AT THE JOB SITE UNLESS AUTHORIZED BY THE OWNER'S REPRESENTATIVE IN A DESIGNATED AREA. THE DISCHARGE OF WATER, WASTE CONCRETE, POLLUTANTS, OR OTHER MATERIALS SHALL ONLY OCCUR IN AREAS DESIGNED FOR SUCH USE AND APPROVED BY THE OWNER'S REPRESENTATIVE.
28. THE CLEANING OF CONCRETE EQUIPMENT IS PROHIBITED AT THE JOB SITE EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE IN THE STORM SEWER IS PROHIBITED.
29. THE USE OF REBAR, STEEL STAKES, OR STEEL FENCE POSTS TO STAKE DOWN STRAW OR HAY BALES OR TO SUPPORT SILT FENCING USED AS AN EROSION CONTROL MEASURE IS PROHIBITED.
30. LOCAL, STATE AND FEDERAL JURISDICTIONAL REQUIREMENTS, RESTRICTIONS OR PROCEDURES SHALL SUPERSEDE THESE PLANS, NOTES AND SPECIFICATIONS WHEN MORE STRINGENT. NOTIFY THE OWNER'S REPRESENTATIVE IF CONFLICTS OCCUR.

GENERAL LANDSCAPE NOTES

1. THE CONTRACTOR SHALL FOLLOW THE LANDSCAPE PLANS AND SPECIFICATIONS AS CLOSELY AS POSSIBLE. ANY SUBSTITUTION OR ALTERATION SHALL NOT BE ALLOWED WITHOUT APPROVAL OF THE OWNER'S REPRESENTATIVE. OVERALL PLANT QUANTITY AND QUALITY SHALL BE CONSISTENT WITH THE PLANS.
2. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL PLANT QUANTITIES. GRAPHIC QUANTITIES TAKES PRECEDENCE OVER WRITTEN QUANTITIES.
3. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO INSPECT AND TAG ALL PLANT MATERIAL PRIOR TO SHIPPING TO THE SITE. IN ALL CASES, THE OWNER'S REPRESENTATIVE MAY REJECT PLANT MATERIAL AT THE SITE IF MATERIAL IS DAMAGED, DISEASED, OR DECLINING IN HEALTH AT THE TIME OF ONSITE INSPECTIONS OR IF THE PLANT MATERIAL DOES NOT MEET THE MINIMUM SPECIFIED STANDARD IDENTIFIED ON THE PLANS AND IN THE SPECIFICATIONS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE FOR INSPECTION AND APPROVAL OF ALL MATERIALS AND PRODUCTS PRIOR TO INSTALLATION.
4. THE OWNER'S REPRESENTATIVE MAY ELECT TO UPSIZE PLANT MATERIAL AT THEIR DISCRETION BASED ON SELECTION, AVAILABILITY, OR TO ENHANCE SPECIFIC AREAS OF THE PROJECT. THE CONTRACTOR SHALL VERIFY PLANT MATERIAL SIZES WITH OWNER'S REPRESENTATIVE PRIOR TO PURCHASING, SHIPPING OR STOCKING OF PLANT MATERIALS. SUBMIT CHANGE ORDER REQUEST TO OWNER'S REPRESENTATIVE FOR APPROVAL IF ADDITIONAL COST IS REQUESTED BY THE CONTRACTOR PRIOR TO INSTALLATION. RE-STOCKING CHARGES WILL NOT BE APPROVED IF THE CONTRACTOR FAILS TO SUBMIT A REQUEST FOR MATERIAL CHANGES.
5. THE CONTRACTOR SHALL WARRANTY ALL CONTRACTED WORK AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER SUBSTANTIAL COMPLETION HAS BEEN ISSUED BY THE OWNER'S REPRESENTATIVE FOR THE ENTIRE PROJECT UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS OR SPECIFICATIONS.
6. REFER TO IRRIGATION PLANS FOR LIMITS AND TYPES OF IRRIGATION DESIGNED FOR THE LANDSCAPE. IN NO CASE SHALL IRRIGATION BE EMITTED WITHIN THE MINIMUM DISTANCE FROM BUILDING OR WALL FOUNDATIONS AS STIPULATED IN THE GEOTECHNICAL REPORT. ALL IRRIGATION DISTRIBUTION LINES, HEADS AND EMITTERS SHALL BE KEPT OUTSIDE THE MINIMUM DISTANCE AWAY FROM ALL BUILDING AND WALL FOUNDATIONS AS STIPULATED IN THE GEOTECHNICAL REPORT.
7. LANDSCAPE MATERIAL LOCATIONS SHALL HAVE PRECEDENCE OVER IRRIGATION MAINLINE AND LATERAL LOCATIONS. COORDINATE INSTALLATION OF IRRIGATION EQUIPMENT SO THAT IT DOES NOT INTERFERE WITH THE PLANTING OF TREES OR OTHER LANDSCAPE MATERIAL.
8. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING POSITIVE DRAINAGE EXISTS IN ALL LANDSCAPE AREAS. SURFACE DRAINAGE ON LANDSCAPE AREAS SHALL NOT FLOW TOWARD STRUCTURES AND FOUNDATIONS. MAINTAIN SLOPE AWAY FROM FOUNDATIONS PER THE GEOTECHNICAL REPORT RECOMMENDATIONS. ALL LANDSCAPE AREAS BETWEEN WALKS AND CURBS SHALL DRAIN FREELY TO THE CURB UNLESS OTHERWISE IDENTIFIED ON THE GRADING PLAN. IN NO CASE SHALL THE GRADE, TURF THATCH, OR OTHER LANDSCAPE MATERIALS DAM WATER AGAINST WALKS. MINIMUM SLOPES ON LANDSCAPE AREAS SHALL BE 2%; MAXIMUM SLOPE SHALL BE 25% UNLESS SPECIFICALLY IDENTIFIED ON THE PLANS OR APPROVED BY THE OWNER'S REPRESENTATIVE.
9. PRIOR TO INSTALLATION OF PLANT MATERIALS, AREAS THAT HAVE BEEN COMPACTED OR DISTURBED BY CONSTRUCTION ACTIVITY SHALL BE THOROUGHLY LOOSENED TO A DEPTH OF 8" - 12" AND AMENDED PER SPECIFICATIONS.
10. ALL LANDSCAPED AREAS ARE TO RECEIVE ORGANIC SOIL PREPARATION AT 3 cu.yrds/1,000sf OR AS NOTED IN THE TECHNICAL SPECIFICATIONS.
11. TREES SHALL NOT BE LOCATED IN DRAINAGE SWALES, DRAINAGE AREAS, OR UTILITY EASEMENTS. CONTACT OWNER'S REPRESENTATIVE FOR RELOCATION OF PLANTS IN QUESTIONABLE AREAS PRIOR TO INSTALLATION.
12. THE CENTER OF EVERGREEN TREES SHALL NOT BE PLACED CLOSER THAN 8' AND THE CENTER OF ORNAMENTAL TREES CLOSER THAN 6' FROM A SIDEWALK, STREET OR DRIVE LANE. EVERGREEN TREES SHALL NOT BE LOCATED ANY CLOSER THAN 15' FROM IRRIGATION ROTOR HEADS. NOTIFY OWNER'S REPRESENTATIVE IF TREE LOCATIONS CONFLICT WITH THESE STANDARDS FOR FURTHER DIRECTION.
13. ALL EVERGREEN TREES SHALL BE FULLY BRANCHED TO THE GROUND AND SHALL NOT EXHIBIT SIGNS OF ACCELERATED GROWTH AS DETERMINED BY THE OWNER'S REPRESENTATIVE.
14. ALL TREES ARE TO BE STAKED AND GUYED PER DETAILS FOR A PERIOD OF 1 YEAR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING STAKES AT THE END OF 1 YEAR FROM ACCEPTANCE OF LANDSCAPE INSTALLATION BY THE OWNER'S REPRESENTATIVE. OBTAIN APPROVAL BY OWNER'S REPRESENTATIVE PRIOR TO REMOVAL.
15. ALL TREES INSTALLED ABOVE RETAINING WALLS UTILIZING GEO-GRID MUST BE HAND DUG TO PROTECT GEO-GRID. IF GEO-GRID MUST BE CUT TO INSTALL TREES, APPROVAL MUST BE GIVEN BY OWNER'S REPRESENTATIVE PRIOR TO DOING WORK.
16. ALL TREES IN SEED OR TURF AREAS SHALL RECEIVE MULCH RINGS. OBTAIN APPROVAL FROM OWNER'S REPRESENTATIVE FOR ANY TREES THAT WILL NOT BE MULCHED FOR EXCESSIVE MOISTURE REASONS.
17. SHRUB, GROUNDCOVER AND PERENNIAL BEDS ARE TO BE CONTAINED BY 6" x 14 GAUGE GREEN, ROLL TOP, INTERLOCKING TYPE EDGER, RYERSON OR EQUAL. EDGER IS NOT REQUIRED WHEN ADJACENT TO CURBS, WALLS, WALKS OR SOLID FENCES WITHIN 3" OF PRE-MULCHED FINAL GRADE. EDGER SHALL NOT BE REQUIRED TO SEPARATE MULCH TYPES UNLESS SPECIFIED ON THE PLANS.
18. ALL SHRUB BEDS ARE TO BE MULCHED WITH MIN. 3" DEPTH, LOCAL RIVER ROCK LANDSCAPE MULCH OVER SPECIFIED GEOTEXTILE WEED CONTROL FABRIC. ALL GROUND COVER AND PERENNIAL FLOWER BEDS SHALL BE MULCHED WITH 4 " DEPTH GORILLA HAIR CEDAR LANDSCAPE MULCH. NO WEED CONTROL FABRIC IS REQUIRED IN GROUNDCOVER OR PERENNIAL AREAS.
19. CONTRACTOR SHALL OVER SEED ALL MAINTENANCE OR SERVICE ACCESS BENCHES AND ROADS WITH SPECIFIED SEED MIX UNLESS OTHERWISE NOTED ON THE PLANS.
20. ALL SEEDED SLOPES EXCEEDING 25% IN GRADE (4:1) SHALL RECEIVE EROSION CONTROL BLANKETS. PRIOR TO INSTALLATION, NOTIFY OWNER'S REPRESENTATIVE FOR APPROVAL OF LOCATION AND ANY ADDITIONAL COST IF A CHANGE ORDER IS NECESSARY.
21. WHEN COMPLETE, ALL GRADES SHALL BE WITHIN +/- 1/8" OF FINISHED GRADES AS SHOWN ON THE PLANS.
22. WHEN PLANTER URNS ARE SHOWN ON PLANS, CONTRACTOR SHALL INCLUDE THE FOLLOWING: PLANTER MIX, ANNUAL FLOWER PLANTING PROGRAM (INCLUDES 2 PLANTINGS FOR THE 1ST YEAR (SPRING AND FALL) AND WINTER HAND-WATERING AS NEEDED. UNLESS OTHERWISE SPECIFIED, CONTRACTOR TO PROVIDE ANNUAL PLANTING SELECTION FOR REVIEW BY OWNER. IRRIGATION FOR PLANTERS TO BE ON SEPARATE ZONE(S). CONTRACTOR TO COORDINATE PLACEMENT OF NECESSARY SLEEVING PRIOR TO PLACEMENT OF PAVEMENT.
23. THE CONTRACTOR IS EXPECTED TO KNOW AND UNDERSTAND THE TOWN OF ERIE'S SPECIFICATIONS FOR LANDSCAPE AND IRRIGATION. IN CASES OF DISCREPANCIES THE HIGHER OF THE TWO STANDARDS SHALL HAVE PRECEDENCE.
24. THE DEVELOPER, HIS SUCCESSORS AND ASSIGNS SHALL BE RESPONSIBLE FOR THE INSTALLATION, MAINTENANCE AND REPLACEMENT OF ALL IMPROVEMENTS SHOWN OR INDICATED ON THE APPROVED LANDSCAPE PLAN ON FILE IN THE PLANNING DEPARTMENT.
25. ALL HOA/DISTRICT MAINTAINED LANDSCAPING TO BE INSPECTED BY A COLORADO LANDSCAPE ARCHITECT IN GOOD STANDING AND PAID FOR BY THE DEVELOPER. ALL TOWN OF ERIE LANDSCAPE ACCEPTANCE PROCEDURES SHALL BE FOLLOWED, UNLESS OTHERWISE NOTED IN THE PLANS (SEE NOTES)
26. ALL STREET TREE SPECIES AND THEIR LOCATIONS SHALL BE APPROVED BY PARKS AND RECREATION DIRECTOR OR DESIGNEE FOR TREES PLANTED ADJACENT TO RESIDENTIAL HOMES, WHETHER THEY BE INSTALLED BY THE DEVELOPER/CONTRACTOR OR INDIVIDUAL HOMEOWNER. ASH TREES SHALL NOT BE PLANTED UNDER ANY CIRCUMSTANCES.

TOWN OF ERIE NOTES

1. IF TRANSFORMERS, GROUND MOUNTED HVAC EQUIPMENT, UTILITY PEDESTALS, ETC. ARE NOT SHOWN ON THE SITE IMPROVEMENT PLAN, ADDITIONAL LANDSCAPING/SCREENING MAY BE REQUIRED BASED UPON FIELD CONDITIONS DISCOVERED VIA THE SITE INSPECTION BY STAFF, MADE PRIOR TO THE ISSUANCE OF THE CERTIFICATE OF OCCUPANCY, OR FINAL INSPECTION AS APPLICABLE.

Flepath: P:\EVERGREEN ERIE NINE MILE - MULTI FAMILY - 00384\01-22\5\DRAWINGS\SUBMITTALS\SD-LADS\SP-PLAN.DWG Layout: 6 LANDSCAPE NOTES
Plotted: JUL 01, 20 10:09:00A By: Chris Mair

PROJECT NUMBER: 160602

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE NOTES
SHEET 12 OF 51

OUTLOOK NINE MILE

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

LANDSCAPE PLANT LIST

QTY.	SYM.	BOTANICAL NAME	COMMON NAME	SIZE & COND. (UNLESS OTHERWISE NOTED)
DECIDUOUS TREES				
7	ACE	ACER SACCHARUM 'BAILSTA'	FALL FIESTA SUGAR MAPLE	2.5" CAL. B&B
5	CAL	CATALPA SPECIOSA	WESTERN CATALPA	2.5" CAL. B&B
6	GIN	GINKGO BILOBA 'AUTUMN GOLD'	AUTUMN GOLD GINKGO	2.5" CAL. B&B
4	GRT	KOELREUTERIA PANICULATA	GOLDENRAIN TREE	2.5" CAL. B&B
9	KCT	GYMNOCLADUS DIOICUS	KENTUCKY COFFEETREE	2.5" CAL. B&B
4	OAK	QUERCUS X MACDANIELII 'CLEMONS'	HERITAGE OAK	2.5" CAL. B&B
4	RLI	TILIA CORDATA 'GLENLEVEN'	GLENLEVEN LINDEN	2.5" CAL. B&B
12	SHU	QUERCUS SHUMMARDI	SHUMMARD OAK	2.5" CAL. B&B
6	SCH	SOPHORA JAPONICA 'REGENT'	JAPANESE PAGODA TREE	2.5" CAL. B&B
EVERGREEN TREES				
8	AUS	PINUS NIGRA	AUSTRIAN PINE	6' HT. MIN.
6	BOP	PINUS LEUCODERMIS	BOSNIAN PINE 'MINT TRUFFLE'	6' HT. MIN.
8	BSP	PICEA PUNGENS 'BAKERI'	BAKERI SPRUCE	6' HT. MIN.
20	FSP	PICEA PUNGENS 'FASTIGIATA'	FASTIGATE BLUE SPRUCE	6' HT. MIN.
6	PON	PINUS PONDEROSA	PONDEROSA PINE	6' HT. MIN.
9	PVP	PINUS FLEXILIS 'VANDERWOLF'S PYRAMID'	VANDERWOLF PINE	6' HT. MIN.
ORNAMENTAL TREES				
44	ABS	AMELANCHIER X GRANDIFLORA	AUTUMN BRILLIANCE SERVICEBERRY	6' HT. CLUMP
15	CCH	CRATAEGUS LAEVIGATA 'CRIMSON CLOUD'	CRIMSON CLOUD HAWTHORN	2.0" CAL. B&B
14	CSM	ACER PLATANOIDES 'CRIMSON SENTRY'	CRIMSON SENTRY MAPLE	2.0" CAL. B&B
3	GMT	ACER GINNALA	GINNALA MAPLE	6' HT. CLUMP
9	LTR	SYRINGA RETICULATA	JAPANESE TREE LILAC	2.0" CAL. B&B
DECIDUOUS SHRUBS (3' SPREAD)				
41	ART	CORNUS SERICEA 'ARCTIC FIRE'	ARCTIC FIRE DOGWOOD	#5 CONT.
40	DCM	DAPHNE X BURKWOODI 'CAROL MACKIE'	CAROL MACKIE DAPHNE	#5 CONT.
41	GFS	SPIREA JAPONICA 'GOLDFLAME'	GOLDFLAME SPIREA	#5 CONT.
16	HKO	DIERVILLA X KODIAK ORANGE	KODIAK ORANGE HONEYSUCKLE	#5 CONT.
65	KEL	CORNUS SERICEA 'KELSEYI'	KELSEY DOGWOOD	#5 CONT.
94	LMS	SPIREA X BUMALDA 'LIMEMOUND'	LIMEMOUND SPIREA	#5 CONT.
77	WMM	WEIGELA FLORIDA 'VERWIG'	MY MONET WEIGELA	#5 CONT.
DECIDUOUS SHRUBS (5' SPREAD)				
21	FLA	PRUNUS GLANDULOSA	FLOWERING ALMOND	#5 CONT.
32	FQP	CHAENOMELES JAPONICA 'CAMEO	PINK FLOWERING QUINCE	#5 CONT.
63	GLS	RHUS AROMATICA 'GROW-LOW'	GRO-LOW FRAGRANT SUMAC	#5 CONT.
76	IVO	CORNUS ALBA 'BAIL HALO'	IVORY HALO DOGWOOD	#5 CONT.
73	MKL	SYRINGA PATULA 'MISS KIM'	MISS KIM LILAC	#5 CONT.
31	PBS	PRUNUS BESSEYI 'PAWNEE BUTTES'	PAWNEE BUTTES SANDCHERRY	#5 CONT.
38	URC	ARONIA ARBUTIFOLIA 'ERECTA'	UPRIGHT RED CHOKEBERRY	#5 CONT.
47	WRP	WEIGELA FLORIDA 'RED PRINCE'	RED PRINCE WEIGELA	#5 CONT.
DECIDUOUS SHRUBS (7' SPREAD)				
21	DFV	VIBURNUM PLICATUM TOMENTOSUM 'SUMMER SNOWFLAKE'	DOUBLEFILE VIBURNUM	#5 CONT.
29	MOC	PHILADELPHUS LEWISII 'CHEYENNE'	CHEYENNE MOCKORANGE	#5 CONT.
35	NCG	PHYSOCARPUS OPULIFOLIUS 'CENTER GLOW'	CENTER GLOW NINEBARK	#5 CONT.
30	PLS	PRUNUS X CISTENA	CISTENA PLUM	#5 CONT.
42	VBM	VIBURNUM DENTATUM 'CHRISTOM'	BLUE MUFFIN VIBURNUM	#5 CONT.
EVERGREEN SHRUBS/UPRIGHT JUNIPERS				
208	BCH	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	BLUE CHIP JUNIPER	#5 CONT.
30	BOX	BUXUS 'GREEN VELVET'	GREEN VELVET BOXWOOD	#5 CONT.
125	GMJ	JUNIPERUS PROCUMBENS 'GREEN MOUND'	GREEN MOUND JUNIPER	#5 CONT.
9	BUF	JUNIPERUS SABINA 'BUFFALO'	BUFFALO JUNIPER	#5 CONT.
25	GSP	PICEA PUNGENS 'GLAUCA GLOBOSA'	GLOBE BLUE SPRUCE	#5 CONT.
54	MOO	JUNIPERUS SCOPULORUM 'MOONGLOW'	MOONGLOW JUNIPER	6' HT. MIN.
55	MSL	PINUS MUGO 'SLOWMOUND'	SLOWMOUND MUGO PINE	#5 CONT.
73	SYL	PINUS SYLVESTRIS 'ALBYN PROSTRATA'	SPREADING SCOTS PINE	#5 CONT.
49	YBE	YUCCA FILAMENTOSA 'BRIGHT EDGE'	ADAMS NEEDLE	#5 CONT.
ORNAMENTAL GRASSES				
309	BAG	BOUTELOUA GRACILIS 'BLONDE AMBITION'	BLONDE AMBITION GRASS	#1 CONT.
23	BFE	FESTUCA GLAUCA 'ELIJAH BLUE'	BLUE FESCUE	#1 CONT.
349	FRG	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	#1 CONT.
119	GHM	PANICUM VIRGATUM 'HEAVY METAL'	HEAVY METAL SWITCHGRASS	#1 CONT.
269	HFG	PENNISETUM ALOPECUROIDES 'HAMELN'	HARDY FOUNTAIN GRASS	#1 CONT.
125	PMG	MISCANTHUS SINENSIS 'PURPURASCENS'	PURPLE MAIDEN GRASS	#1 CONT.
96	RSG	PANICUM VIRGATUM 'SHENANDOAH'	RED SWITCHGRASS	#1 CONT.
PERENNIALS				
	AGA	AGASTACHE RUPESTRIS	SUNSET HYSSOP	#1 CONT.
	AQU	AQUILEGIA CHRYSANTHA 'DENVER GOLD'	YELLOW COLUMBINE	#1 CONT.
	CPM	ECHINACEA PURPUREA 'MAGNUS'	MAGNUS CONEFLOWER	#1 CONT.
	GAI	G. ARISTATA	GAILLARDIA/ BLANKET FLOWER	#1 CONT.
	HOS	HOSTA 'ROYAL STANDARD'	ROYAL STANDARD HOSTA	#1 CONT.
	HOV	HOSTA 'UNDULATA ALBOMARGINATA'	VERIGATED HOSTA	#1 CONT.
	HYS	AGASTACHE AURANTIACA 'P012S'	CORONADO HYSSOP	#1 CONT.
	LAV	LAVANDULA ANGUSTIFOLIA 'MUNSTEAD'	ENGLISH LAVENDER	#1 CONT.
	PEN	PENSTEMON BARBATUS 'PRAIRIE DUSK'	ROSE-PURPLE PENSTEMON	#1 CONT.
	RGD	R. FULGIDA 'GOLDSTRUM'	RUDBECKIA/BLACK EYED SUSAN	#1 CONT.
	SMN	S. SYLVESTRIS X 'MAINACHT'	MAY NIGHT SALVIA	#1 CONT.
	VAL	CENTRANTHUS RUBER 'ALBUS'	WHITE VALERIAN	#1 CONT.
	VFA	ARTEMISIA LUDOVICIANA 'VALERIE FINNIS'	VALERIE FINNIS SAGE	#1 CONT.

NOTE: IN THE EVENT OF A DISCREPENCY BETWEEN THE PLAN GRAPHIC AND THE LANDSCAPE LEGEND, THE PLANT MATERIAL QUANTITY AS DETERMINED BY THE PLAN GRAPHIC SHALL TAKE PRECEDENCE.

MOIST SWALE SEED MIX

COMMON NAME	SCIENTIFIC NAME	% OF TOTAL	PLS PER ACRE
WOOLY SEDGE	CAREX LANUGINOSA	3%	.5 LBS.
NEBRASKA SEDGE	CAREX NEBRASCENSIS	.7%	.1 LBS.
BLUE GRAMA	CHONDROSUM GRACILE	10%	1.5 LBS.
BUFFALO GRASS	BUCHLOE DACTYLOIDES	3%	.5 LBS.
INLAND SALTGRASS	DISTICHLIS STRICTA	3%	.5 LBS.
BALTIC RUSH	JUNCUS BALTICUS	.7%	.1 LBS.
PRAIRIE CORDGRASS	SPARTINA PECTINATA	6.5%	1 LBS.
ALKALI SACATON	SPOROBOLUS AIROIDES	19.5%	3 LBS.
SWITCHGRASS	PANICUM VIRGATUM	19.5%	3 LBS.
WESTERN WHEATGRASS	PASCOPYRUM SMITHII	33.2%	5 LBS.
	TOTAL	100%	15.2 LBS.
NATIVE WILDFLOWERS (OPTIONAL)			
ASTER	ASTER LAEVIS	.3%	.05 OZ.
YARROW	ACHILLEA MILLEFOLIUM	.3%	.05 OZ.
PRAIRIE CONEFLOWER	RATIBIDA COLUMNIFERA	.3%	.05 OZ.
	TOTAL	100%	15.35 LBS.

TURF GRASS BLEND: SOD

"90/10 FESCUE/ BLUEGRASS BLEND" BY BITTERSWEET TURF FARMS, INC, OR APPROVED EQUAL

COMMON NAME	% OF TOTAL
EXCALIBER FESCUE	30%
REBEL JR. FESCUE	30%
CREW CUT FESCUE	30%
FREEDOM BLUEGRASS	5%
RAM I BLUEGRASS	5%
TOTAL	100%

SHORTGRASS PRAIRIE NATIVE SEED MIX

COMMON NAME	SCIENTIFIC NAME	OZ PER ACRE	PLS PER ACRE
BUFFALO GRASS	BUCHLOE DACTYLIODES		14 LBS.
SAND DROPSEED	SPOROBOLUS CRYPTANDRUS		12 LBS.
BLUE GRAMA	CHONDROSUM GRACILE		4 LBS.
			30 LBS.
NATIVE WILDFLOWERS (OPTIONAL)			
FRINGED SAGE	ARTEMISIA FRIGIDA	1 OZ.	
PURPLE PRAIRIE CLOVER	DALEA PURPUREA	4 OZ.	
GAYFEATHER	LIATRIS PUNCTATA	4 OZ.	
TANSY ASTER	MACHAERANTHERA TANACETAFOLIA	3 OZ.	
		12 OZ.	0.75 LBS.
	TOTAL		30.75 LBS.

REQUIRED PLANT MATERIAL CHART

LANDSCAPE AREA	AREAS/CALCULATIONS	REQUIRED TREES	PROVIDED TREES	REQUIRED SHRUBS	PROVIDED SHRUBS[1]
PARKING AREA: 1 TREE AND 15 SHRUBS PER 15 PARKING SPACES	354 PARKING SPACES	24	31	354	377[1]
INTERIOR AREA: 1 TREE /1000 SQ FT. 1 SHRUB/ 150 SQ FT.	156,852 SQ FT	157	162	1046	1,543[1]
TREE MITIGATION: REPLACE EXISTING HEALTHY TREES WITH 1 1/2 CALIPER OF EXISTING TREES	TWO 30" CALIPER COTTONWOODS[2]	45 (2" CALIPER TREES) 90" CALIPER[2]	35 (2" CALIPER TREES) 1 (4" CALIPER TREE) 122" CALIPER		
TOTAL		226	229	1,400	1,920

NOTES:
1. SHRUB EQUIVALENT, 3 ORNAMENTAL GRASSES = 1 SHRUB
2. BASED ON THE MARCH 20, 2015 "NATIVE AND TREE VEGETATION SURVEY" BY MIKE MCGILL, TWO LARGE PLAINS COTTONWOODS WERE IDENTIFIED AS SUITABLE FOR PRESERVATION. THE REMAINING VEGETATION ON THE SITE WAS NOTED AS A MIIX OF NATIVE AND NON-NATIVE, UNDESIRABLE, AND IN POOR CONDITION. NO TREE CALIPER WAS SPECIFIED IN THE SURVEY. 30" CALIPER FOR THE TWO COTTONWOODS IS ASSUMED.

LANDSCAPING SHALL BE PLANTED AND MAINTAINED IN A NEAT, CLEAN AND HEALTHY CONDITION BY THE OWNER. THIS SHALL INCLUDE PROPER PRUNING, MOWING AND AERATION OF LAWNS, REPLACEMENT OF MULCH, WEEDING, REMOVAL OF LITTER AND THE REGULAR WATERING OF ALL PLANTINGS. IRRIGATION SHALL BE MAINTAINED TO MAXIMIZE WATER CONSERVATION. SHOULD ANY PLANT MATERIAL DIE, THE OWNER, SUCCESSOR, OR ASSIGNS SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF PLANT(S) WITHIN ONE PLANTING SEASON. REPLACEMENT OF PLANT MATERIALS SHALL OCCUR AT THE FOLLOWING RATE.

TYPE	PLANT REPLACEMENT WITHIN	
	1 YEAR	2+ YEARS
TREE - DECIDUOUS	INCREASE CALIPER BY 1"	INCREASE CALIPER BY 1.5"
TREE - CONIFEROUS	INCREASE HEIGHT BY 1.5'	INCREASE HEIGHT BY 2'
SHRUB	REPLACE WITH PLANTS OF AT LEAST 1/2 MATURE SIZE	REPLACE WITH PLANTS OF AT LEAST 1/2 MATURE SIZE

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019

LANDSCAPE SCHEDULE AND CHARTS

ISSUE DATE: 04-27-2017

PROJECT NUMBER: 160602

Flepath: P:\EVERGREEN EDGE NINE MILE - MULTIFAMILY - 0038-01-2235\DRAWINGS\SUBMITTALS\ND-LSDS-SP-PLAN.DWG Layout: 7 SCHEDULE & CHARTS
Plotted: THU 01/30/20 10:09:01 By: Chris Muir

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OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

REQUIREMENTS PER TOWN OF ERIE POCKET PARK DESIGN STANDARD

LIST A - BENCHES (13); BICYCLE RACKS (16); PET WASTE STATION (5); SHADE STRUCTURE WITH (2) PICNIC TABLES; IRRIGATION, OPEN TURF AREA (4,425 SF); SIDEWALKS; TRASH RECEPTACLES (6);

PLANT TYPE	REQUIRED QTY	PROVIDED QTY
DEC. TREE	5	17
ORN. TREE	3	18
CONF. TREE	2	18
SHRUB	20	228
PER.	24	35
GRASS	3	170

* THESE QUANTITIES DO NOT INCLUDE DISPLAY GARDEN PLANT MATERIALS

LIST B - DISPLAY GARDEN; LOOP WALK (OUTLINED IN RED) (2,300 LF)

LIST C - PERGOLA WITH (2) PICNIC TABLES; BOULDER PLAY; HORSESHOE PITS; BOULDER ART FEATRUE

LIST D - PEDESTAL GAS GRILL (2); LOUNGE CHAIRS (9); ELECTRICITY AND LIGHTING TO PERGOLAS

LIST "A" REQUIRED POCKET PARK PLANT MATERIAL QUANTITIES*

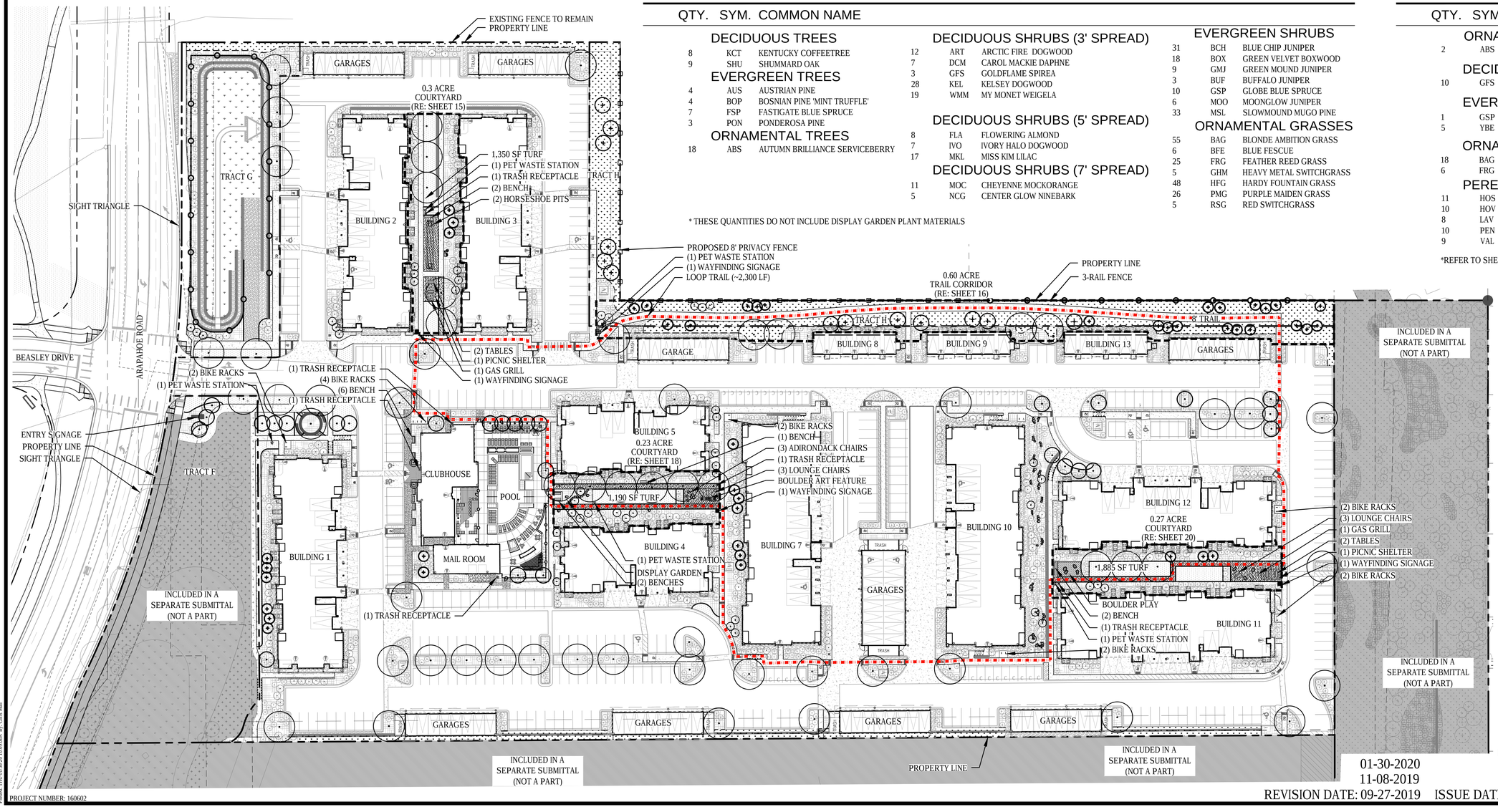
QTY.	SYM.	COMMON NAME
DECIDUOUS TREES		
8	KCT	KENTUCKY COFFEETREE
9	SHU	SHUMMARD OAK
EVERGREEN TREES		
4	AUS	AUSTRIAN PINE
4	BOP	BOSNIAN PINE 'MINT TRUFFLE'
7	FSP	FASTIGATE BLUE SPRUCE
3	PON	PONDEROSA PINE
ORNAMENTAL TREES		
18	ABS	AUTUMN BRILLIANCE SERVICEBERRY
DECIDUOUS SHRUBS (3' SPREAD)		
12	ART	ARCTIC FIRE DOGWOOD
7	DCM	CAROL MACKIE DAPHNE
3	GFS	GOLDFLAME SPIREA
28	KEL	KELSEY DOGWOOD
19	WMM	MY MONET WEIGELA
DECIDUOUS SHRUBS (5' SPREAD)		
8	FLA	FLOWERING ALMOND
7	IVO	IVORY HALO DOGWOOD
17	MKL	MISS KIM LILAC
DECIDUOUS SHRUBS (7' SPREAD)		
11	MOC	CHEYENNE MOCKORANGE
5	NCG	CENTER GLOW NINEBARK
EVERGREEN SHRUBS		
31	BCH	BLUE CHIP JUNIPER
18	BOX	GREEN VELVET BOXWOOD
9	GMJ	GREEN MOUND JUNIPER
3	BUF	BUFFALO JUNIPER
10	GSP	GLOBE BLUE SPRUCE
6	MOO	MOONGLOW JUNIPER
33	MSL	SLOWMOUND MUGO PINE
ORNAMENTAL GRASSES		
55	BAG	BLONDE AMBITION GRASS
6	BFE	BLUE FESCUE
25	FRG	FEATHER REED GRASS
5	GHM	HEAVY METAL SWITCHGRASS
48	HFG	HARDY FOUNTAIN GRASS
26	PMG	PURPLE MAIDEN GRASS
5	RSG	RED SWITCHGRASS

* THESE QUANTITIES DO NOT INCLUDE DISPLAY GARDEN PLANT MATERIALS

DISPLAY GARDEN PLANT MATERIAL QUANTITIES

QTY.	SYM.	COMMON NAME
ORNAMENTAL TREES		
2	ABS	AUTUMN BRILLIANCE SERVICEBERRY
DECIDUOUS SHRUBS (3' SPREAD)		
10	GFS	GOLDFLAME SPIREA
EVERGREEN SHRUBS		
1	GSP	GLOBE BLUE SPRUCE
5	YBE	ADAMS NEEDLE
ORNAMENTAL GRASSES		
18	BAG	BLONDE AMBITION GRASS
6	FRG	FEATHER REED GRASS
PERENNIALS		
11	HOS	ROYAL STANDARD HOSTA
10	HOV	VARIEGATED HOSTA
8	LAV	ENGLISH LAVENDER
10	PEN	ROSE-PURPLE PENSTEMON
9	VAL	WHITE VALERIAN

*REFER TO SHEET 24, DETAIL 2 FOR DISPLAY GARDEN ENLARGMENT



PROJECT NUMBER: 160602

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

811 NORTH 0 25 50 100 SCALE 1" = 50'

OVERALL PARK AREA PLAN
SHEET 14 OF 51

OUTLOOK NINE MILE

Flepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003849-2235\DRAWINGS\SUBMITTALS\SD-LSDS-MF-PLAN.DWG Layout: 8 OVERALL
Plotted: TIU 01/30/20 10:09:08A By: Chris Muir

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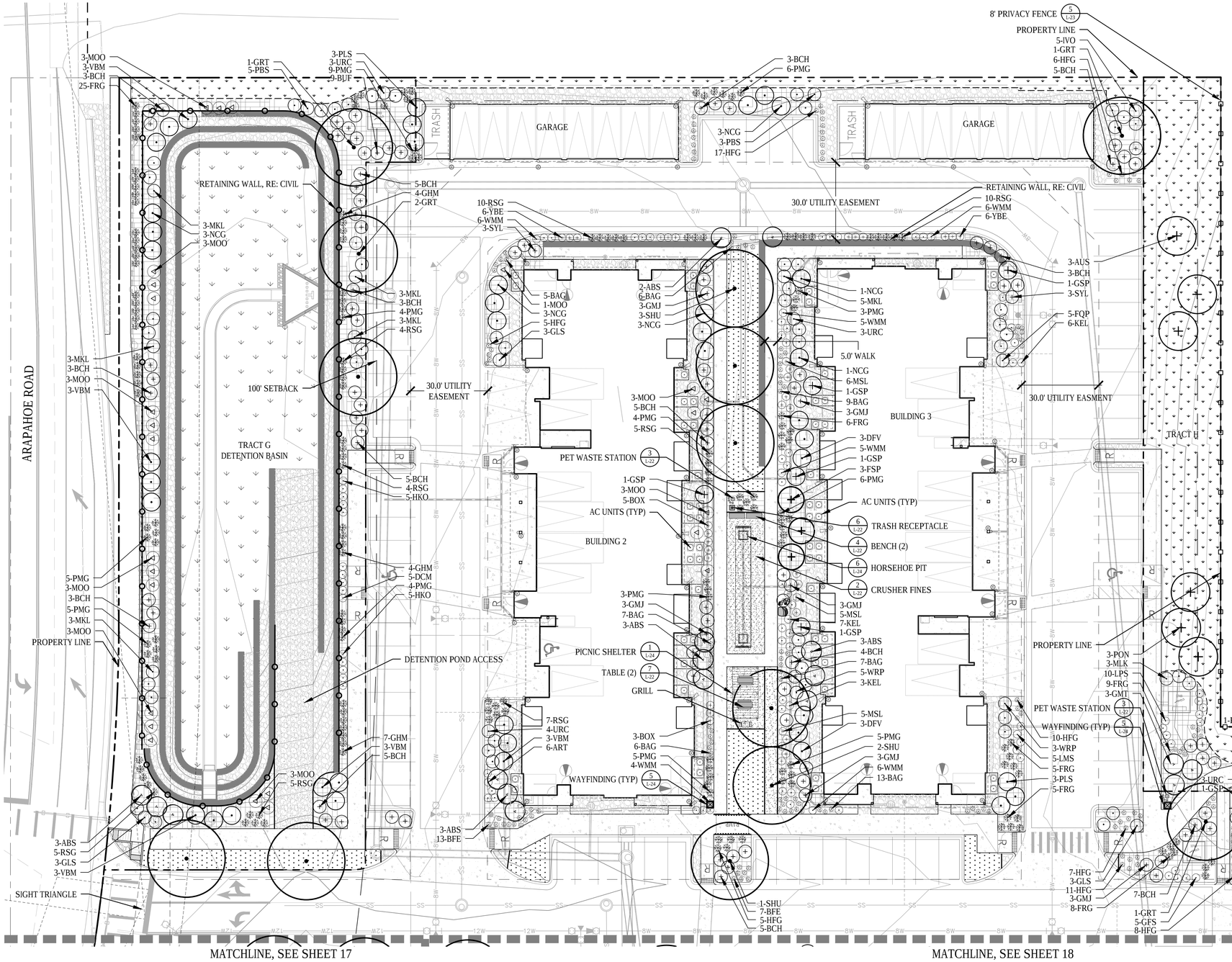
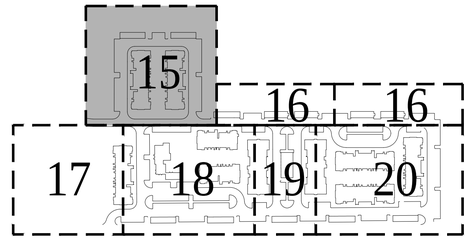
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- ORNAMENTAL GRASSES
- PERENNIALS
- STEEL EDGER
- POOL FENCE (RE: DET. 2/23)
- 3 RAIL FENCE (RE: DET. 6/23)
- 8' PRIVACY FENCE (RE: DET. 5/23)
- MATCHLINE
- PROPERTY LINE
- R.O.W.
- LIMIT OF WORK
- WETLAND SEED
- SOD
- NATIVE SEED
- 4"-6" RIVER COBBLE
- CRUSHER FINES
- LANDSCAPE BED
- FIBAR PLAY SURFACE
- BENCH (RE: DET.4/22)
- TABLE (RE: DET. 7/22)
- LOUNGE CHAIR (RE: DET. 8/22)
- BIKE RACK (RE: DET. 5/22)
- PET WASTE STATION (RE: DET. 3/22)
- LANDSCAPE BOULDERS (RE: DET. 6/21)
- STEPPERS (RE: DET. 7/21)
- TRASH RECEPTACLE (RE: DET. 6/22)
- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40
SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN
SHEET 15 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

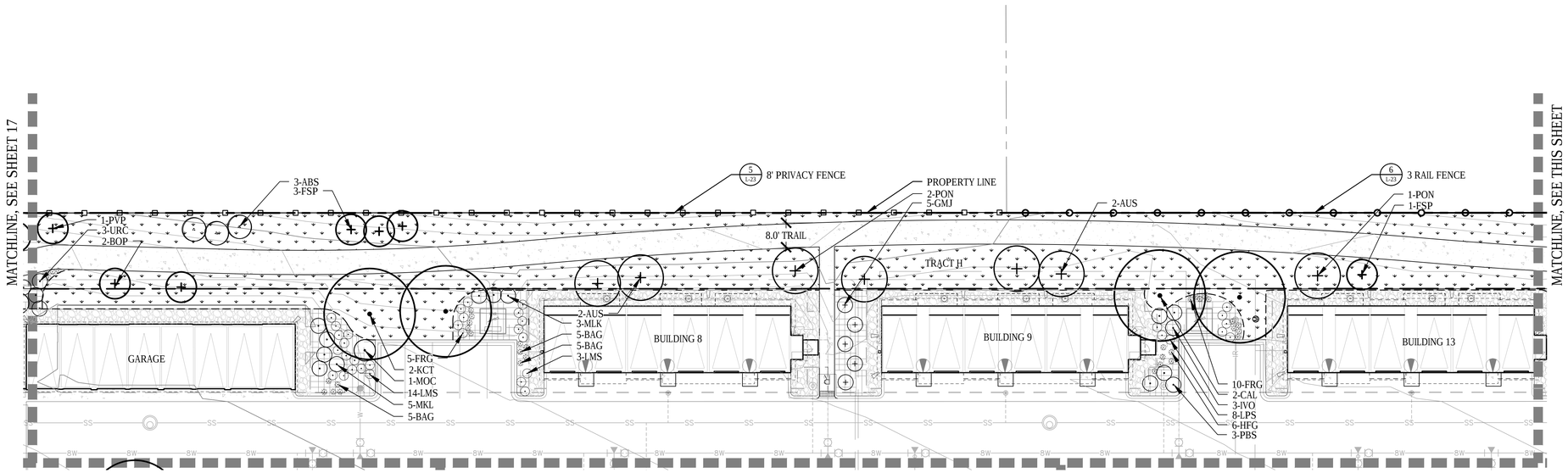
Flepath: P:\ERG\GREEN ERIE NINE MILE - MULTIFAMILY - 60(R4)\1.2235\DRAWINGS\SUBMITTALS\ND-ADS\ADS-MP-PLAN.DWG Layout: 9 LS PLAN
Plotted: THU 01/30/20 10:09:14A By: Chris Mar

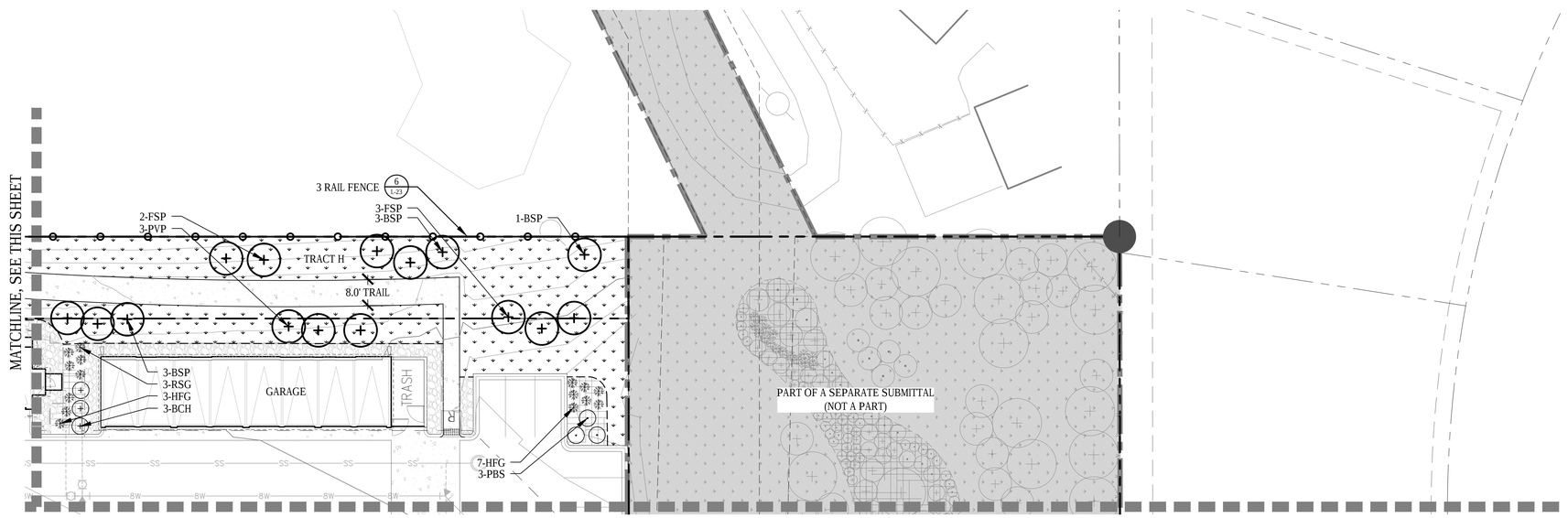
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

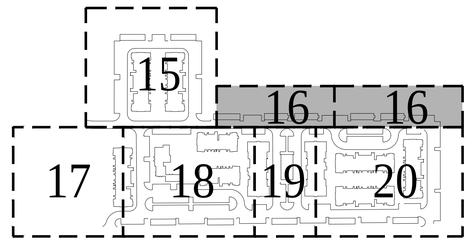
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016





KEY MAP



LEGEND

- CANOPY TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUB
- EVERGREEN SHRUB
- ORNAMENTAL GRASSES
- PERENNIALS
- STEEL EDGER
- POOL FENCE (RE: DET. 2/23)
- 3 RAIL FENCE (RE: DET. 6/23)
- 8' PRIVACY FENCE (RE: DET. 5/23)
- MATCHLINE
- PROPERTY LINE
- R.O.W.
- LIMIT OF WORK
- WETLAND SEED
- SOD
- NATIVE SEED
- 4"-6" RIVER COBBLE
- CRUSHER FINES
- LANDSCAPE BED
- FIBAR PLAY SURFACE
- BENCH (RE: DET.4/22)
- TABLE (RE: DET. 7/22)
- LOUNGE CHAIR (RE: DET. 8/22)
- BIKE RACK (RE: DET. 5/22)
- PET WASTE STATION (RE: DET. 3/22)
- LANDSCAPE BOULDERS (RE: DET. 6/21)
- STEPPERS (RE: DET. 7/21)
- TRASH RECEPTACLE (RE: DET. 6/22)
- PLANTER (RE: DET. 4/23)

811

NORTH

0 10 20 40
SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN
SHEET 16 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

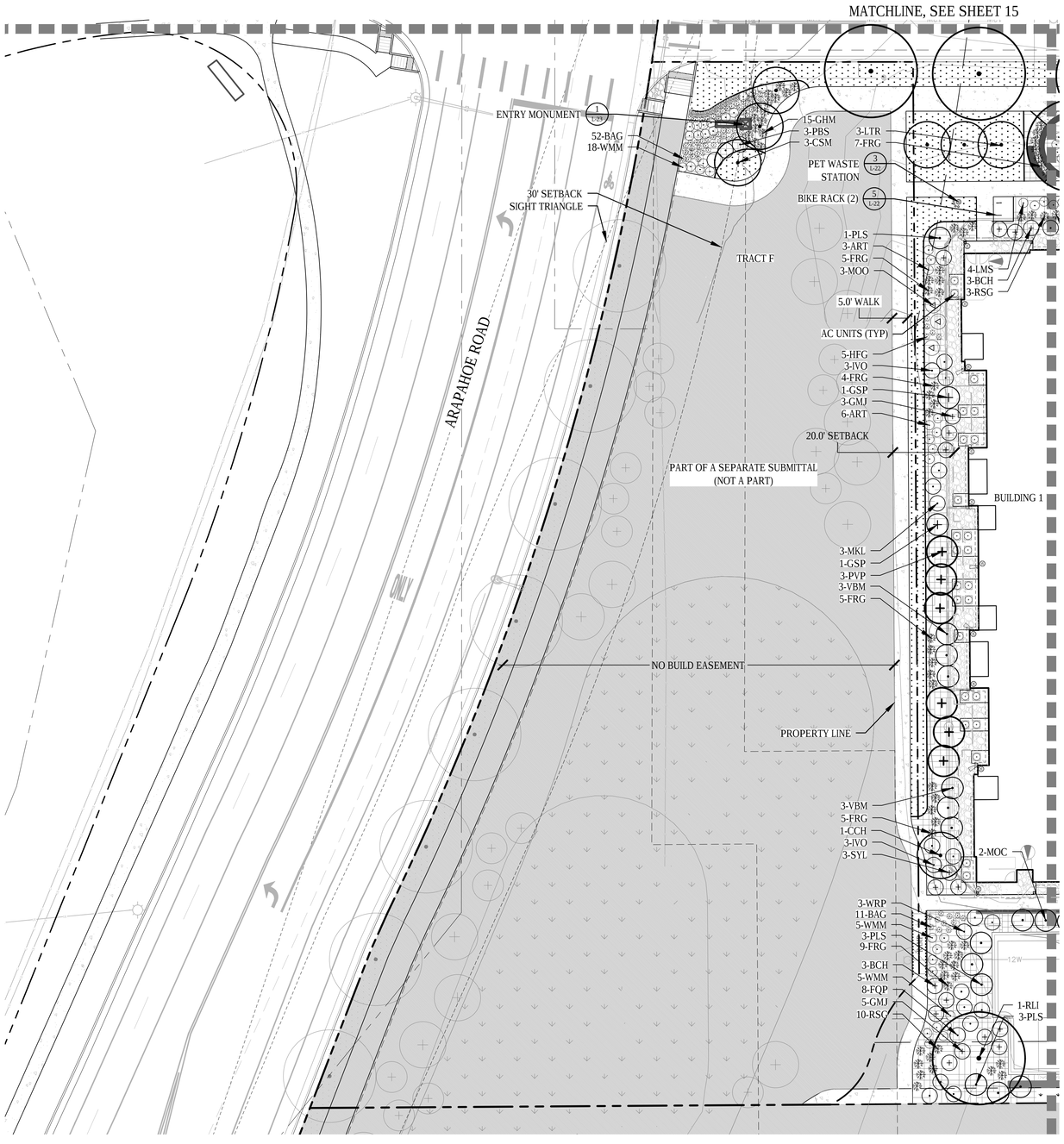
Flepath: P:\EVERGREEN FIRE NINE MILE - MULTIFAMILY - 00\30-01-2235\DRAWINGS\SUBMITTALS\SD-LSDS-MF-PLAN.DWG Layout: 10 LS PLAN
Plotted: THU 01/30/20 10:09:22A By: Chris Mair

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



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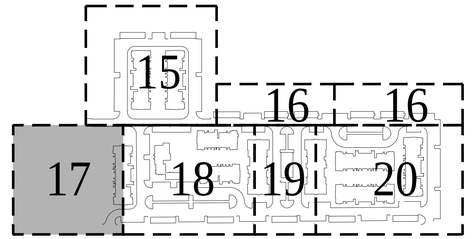

LEGEND

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811 NORTH 0 10 20 40 SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN
SHEET 17 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Filepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003841-2253\DRAWINGS\SUBMITTALS\SD-LNDS-SHT-PLAN.DWG Layout: 11 LS PLAN
Plotted: THU 01/30/20 10:09:27A By: Chris Muir

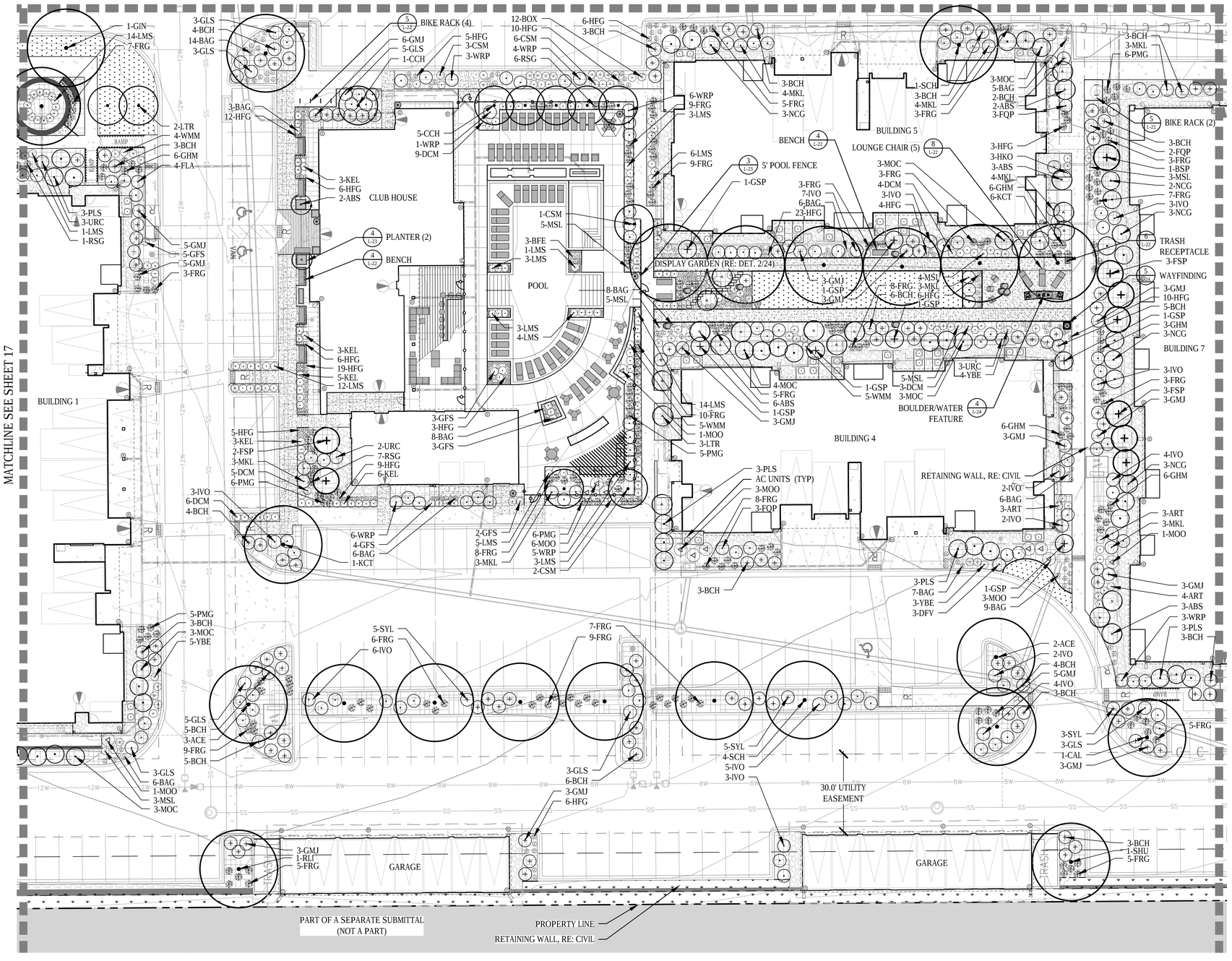
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



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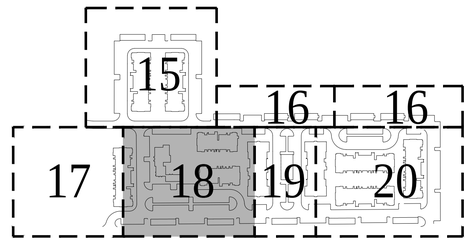

LEGEND

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811

NORTH

0 10 20 40

SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN
SHEET 18 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Filepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003840\2255\08\WINGS\SUBMITTALS\ND\LSDS-MP-PLAN.DWG Layout: 12 LS PLAN
Plotted: THU 01/30/20 10:09:24A By: Chris Mair

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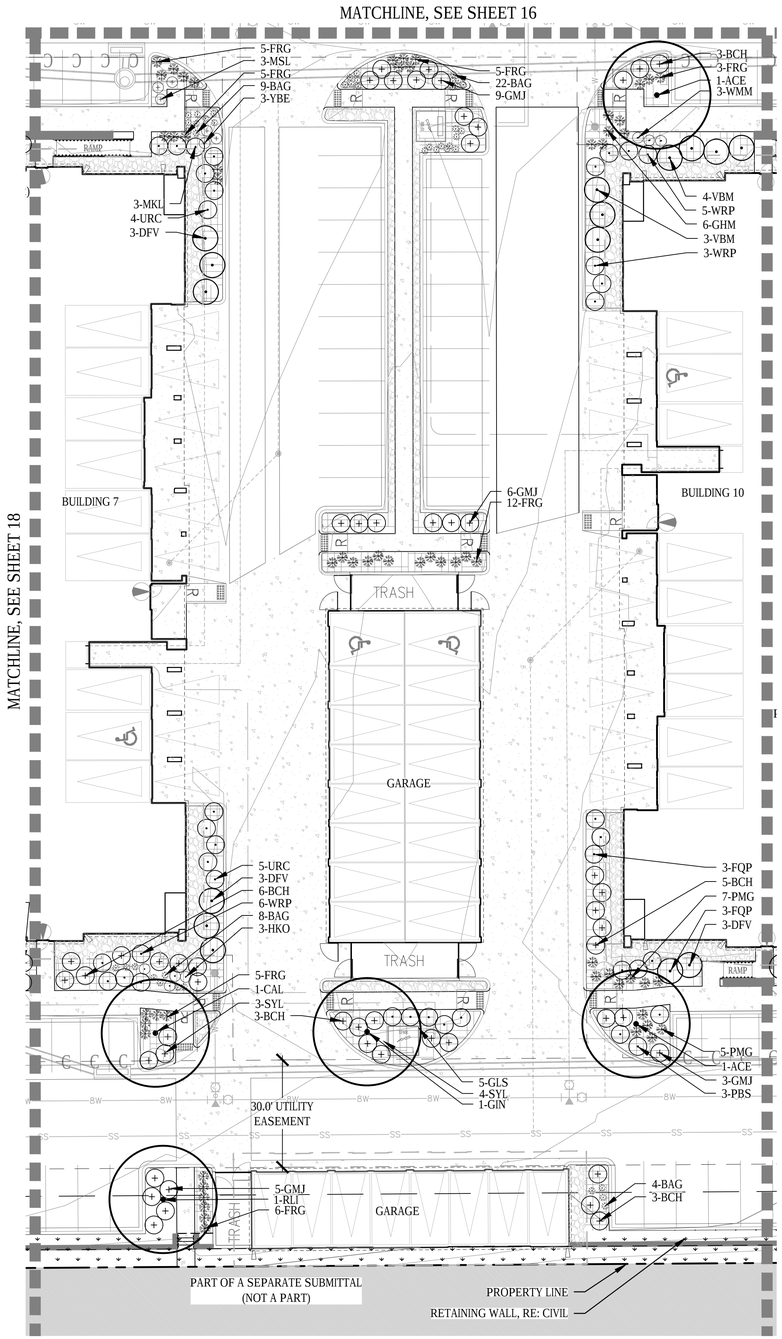
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



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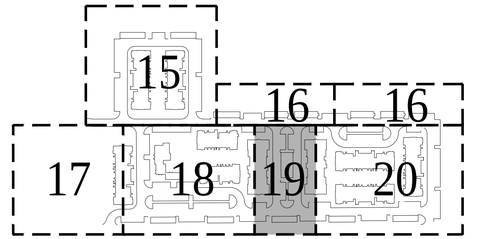

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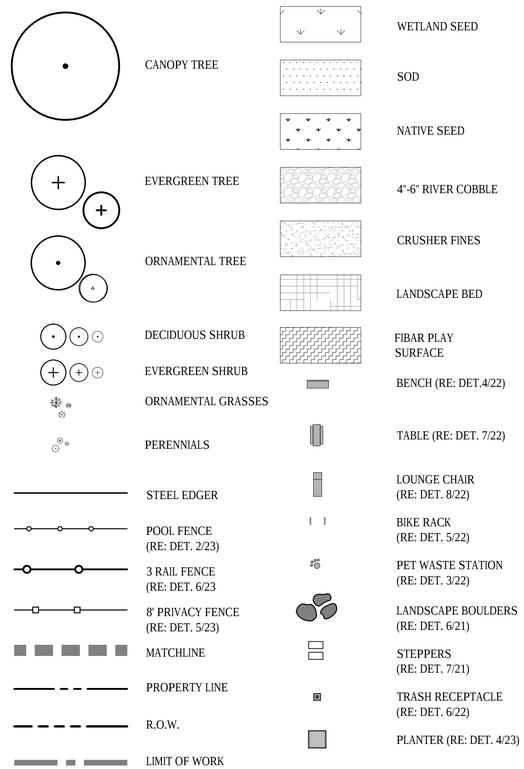

811

NORTH

0 10 20 40
SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN
SHEET 19 OF 51

PROJECT NUMBER: 160602

OUTLOOK NINE MILE

Filepath: P:\ERIE\GREEN ERIE NINE MILE - MULTIFAMILY - 00/SD-01-22/SD\DRAWINGS\SUBMITTALS\SD-LADS-SP-PLAN.DWG Layout: 13.5 PLAN
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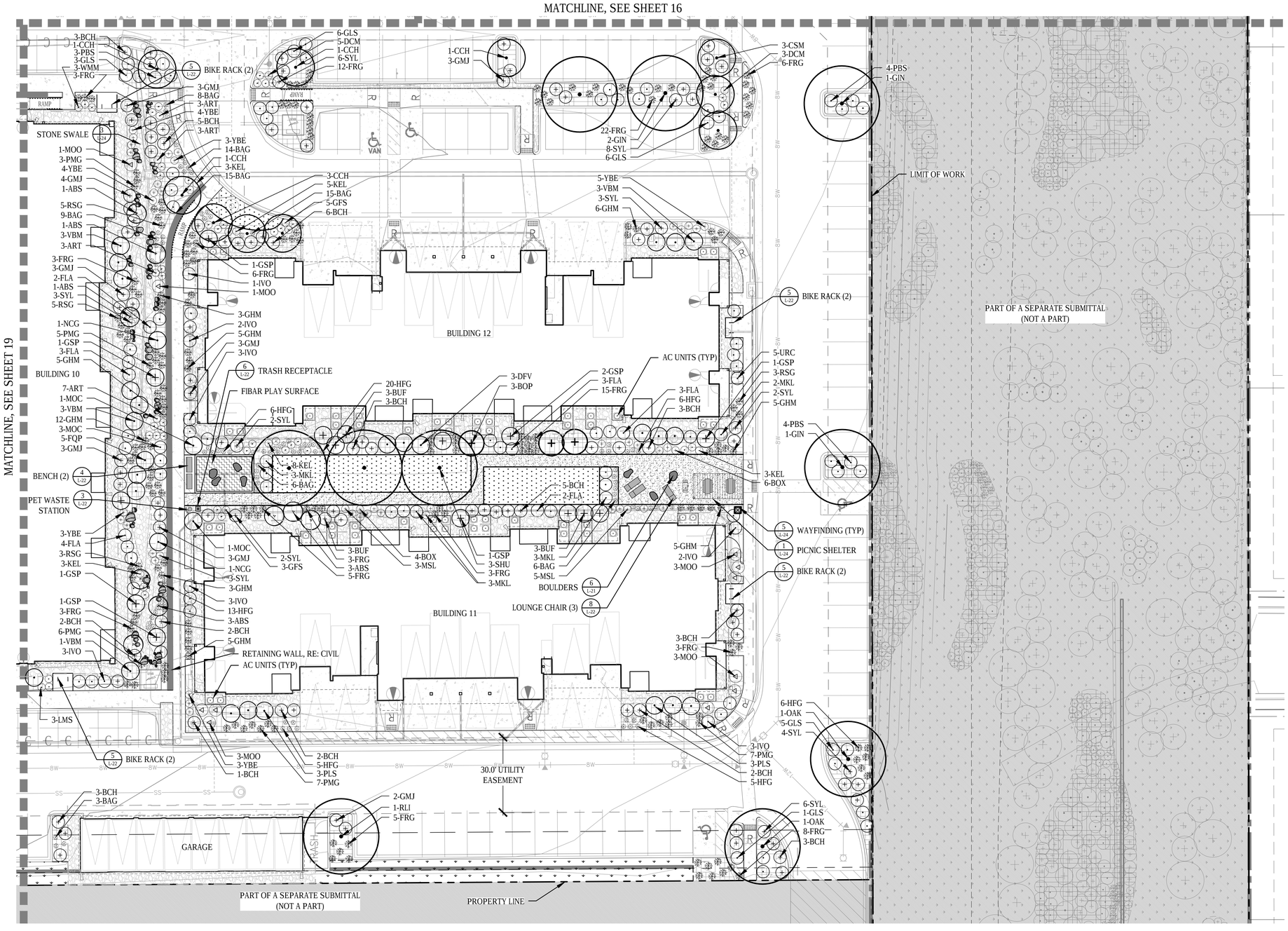
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



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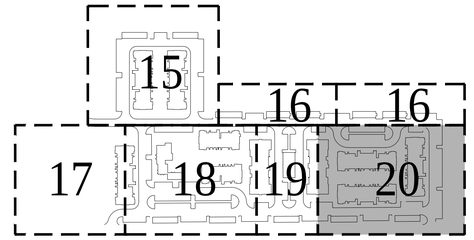

LEGEND

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811

NORTH

0 10 20 40
SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE PLAN
SHEET 20 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

Filepath: P:\EVERGREEN ERIE NINE MILE - MULTIFAMILY - 003810\1-225\5PRA\WDCS\SUBMITTALS\SD-LSDS-MF-PLAN.DWG Layout: 14 LS PLAN
Printed: THU 01/30/20 10:09:44A By: Chris Marr

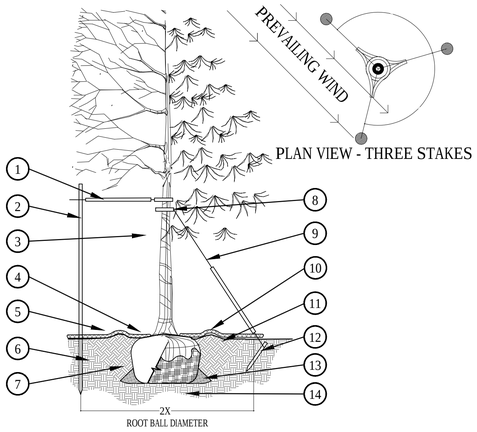
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



PLAN VIEW - THREE STAKES

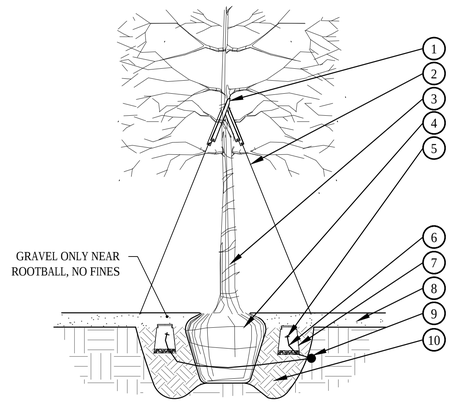
PRUNING NOTES:
1. ALL PRUNING SHALL COMPLY WITH ANSI A300 STANDARDS.
2. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS AND BROKEN BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED. HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.

STAKING NOTES:
1. STAKE TREES PER FOLLOWING SCHEDULE, THEN REMOVE AT END OF FIRST GROWING SEASON.
   - 1.1 1-½" CALIPER SIZE - MIN. 1 STAKE ON SIDE OF PREVAILING WIND (GENERALLY N.W. SIDE)
   - 1.2 1-½" - 3" CALIPER SIZE - MIN. 2 STAKES - ONE ON N.W. SIDE, ONE ON S.W. SIDE (OR PREVAILING WIND SIDE AND 180° FROM THAT SIDE)
   - 1.3 3" CALIPER SIZE AND LARGER - 3 STAKES PER DIAGRAM
2. WIRE OR CABLE SHALL BE MIN. 12 GAUGE, TIGHTEN WIRE OR CABLE ONLY ENOUGH TO KEEP FROM SLIPPING. ALLOW FOR SOME TRUNK MOVEMENT. NYLON STRAPS SHALL BE LONG ENOUGH TO ACCOMMODATE 1-½" OF GROWTH AND BUFFER ALL BRANCHES FROM WIRE.

1. PLACE MIN. 4" PVC PIPE AROUND EACH WIRE. EXPOSED WIRE SHALL BE MAX. 2" EACH SIDE
2. 6 FT. UNTREATED WOOD POST (MIN. 1.5" DIAMETER). ALL SHALL BE DRIVEN OUTSIDE ROOTBALL AND IN UNDISTURBED SOIL.
3. TREE WRAP TO BE INSTALLED ONLY FROM OCTOBER 1 THROUGH APRIL 30. (DECIDUOUS ONLY)
4. PLANT TREE SO THAT FIRST ORDER MAJOR ROOT IS 1"-2" ABOVE FINAL GRADE.
5. 3" DEEP MULCH RING PLACED A MINIMUM OF 4 FT. IN DIAMETER. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK (FINISHED GRADE REFERENCES TOP OF MULCH).
6. 1:1 SLOPE ON SIDES OF PLANTING HOLE.
7. REMOVE ALL TWINE, ROPE, BURLAP AND WIRE FROM ENTIRE ROOT BALL AND TRUNK
8. GROMMETED NYLON STRAPS
9. GALVANIZED WIRE, MIN. 12 GAUGE CABLE - TWIST WIRE ONLY TO KEEP FROM SLIPPING.
10. 4-6" HIGH WATER SAUCER IN NON-TURF AREAS.
11. BACKFILL WITH BLEND OF EXISTING SOIL AND A MAXIMUM 20% (BY VOLUME) ORGANIC MATERIAL. WATER THOROUGHLY WHEN BACKFILLING
12. 2 FT. STEEL T-POST. ALL SHALL BE DRIVEN BELOW GRADE AND OUTSIDE ROOTBALL IN UNDISTURBED SOIL.
13. PLACE SOIL AROUND ROOT BALL FIRMLY, DO NOT COMPACT OR TAMP. SETTLE SOIL WITH WATER TO FILL ALL AIR POCKETS.
14. PLACE ROOT BALL ON UNDISTURBED SOIL TO PREVENT SETTLEMENT.

1 TREE PLANTING DETAIL

SCALE: 3/16" = 1'-0"

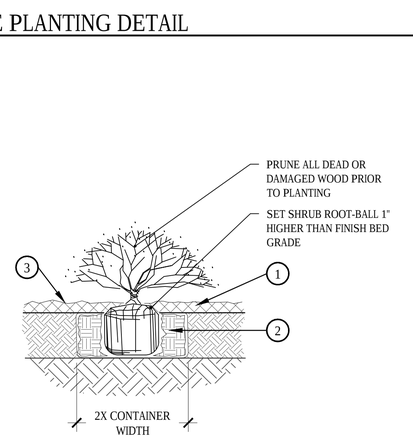


1. USE NYLON TREE STRAPS AT END OF WIRE.
2. 12 GAUGE GALVANIZED WIRE USE TWO PER TREE
3. 4" TREE TAPE (DECIDUOUS TREES ONLY). WRAP ENTIRE TRUNK TO SECOND BRANCH SECURED AT 2" INTERVALS WITH GRAFTING CORD OR STAPLES.
4. REMOVE WIRE BASKET AFTER TREE IS IN THE PIT. REMOVE TWINE, & PULL BURLAP FROM TREE TRUNK.
5. DRIP EMITTER
6. DRIP EMITTER MICRO TUBING
7. EMITTER BOX (6" RD.)
8. SPECIFIED CRUSHER FINES
9. POLY DRIP TUBING
10. 1/3 BACKFILL MIX AND 2/3 PIT SOIL.

NOTE: SET TOP OF ROOT BALL 2"-3" ABOVE GRADE. ANY BROKEN OR CRUMBLING ROOTBALL WILL BE REJECTED.

2 TREE IN CRUSHER FINES

SCALE: 1/2" = 1'-0"

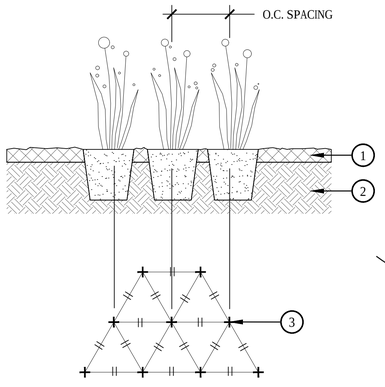


1. SPECIFIED MULCH
2. AMENDED SOIL IN PLANTING BED PER SPECIFICATIONS. TILL SOIL TO A DEPTH OF EIGHT INCHES.
3. FINISH GRADE (TOP OF MULCH)

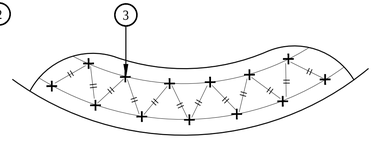
NOTE:
1. BROKEN OR CRUMBLING ROOT-BALLS WILL BE REJECTED
2. CARE SHOULD BE TAKEN NOT TO DAMAGE THE SHRUB OR ROOT-BALL WHEN REMOVING IT FROM ITS CONTAINER
3. ALL JUNIPERS SHOULD BE PLANTED SO THE TOP OF THE ROOT-BALL OCCURS ABOVE THE FINISH GRADE OF THE MULCH LAYER
4. DIG PLANT PIT TWICE AS WIDE AND HIGH AS THE CONTAINER

3 SHRUB PLANTING

SCALE: 1-1/2" = 1'-0"



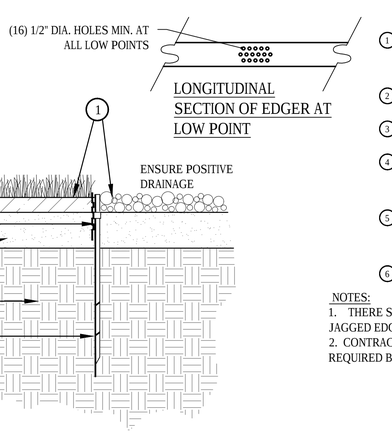
1. SPECIFIED MULCH
2. AMENDED PLANTING BED TILLED TO A DEPTH OF 6"
3. CENTER OF PLANT



WHEN PLANTED ON A CURVE ORIENT ROWS TO FOLLOW THE LONG AXIS OF AREAS WHERE PLANTS ARE MASSED.

4 PERENNIAL PLANT LAYOUT

SCALE: 1" = 1'-0"

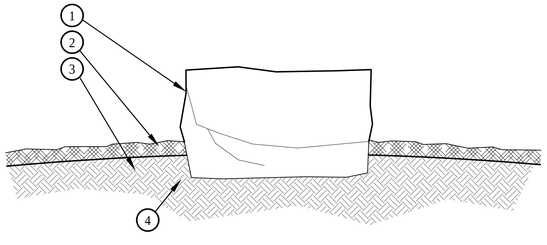


1. FINISHED GRADE - TOP OF SOD THATCH LAYER AND TOP OF MULCH OR CRUSHER FINES SHALL BE FLUSH WITH TOP OF EDGER
2. TURF THATCH
3. AMENDED SOIL PER SPECIFICATIONS
4. SUBGRADE
5. STEEL EDGER - DRILL (16) 1/2" DIA. HOLES 1" O.C. MIN. AT ALL LOW POINTS OR POORLY DRAINING AREAS IN ORDER TO ENSURE ADEQUATE DRAINAGE
6. EDGER STAKE

NOTES:
1. THERE SHALL BE NO EXPOSED SHARP / JAGGED EDGES.
2. CONTRACTOR SHALL INSTALL STAKES AS REQUIRED BY THE MANUFACTURER.

5 STEEL EDGER

SCALE: 1" = 1'-0"

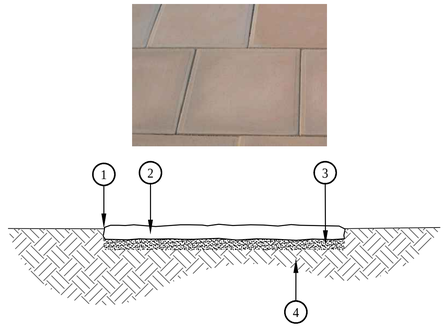


1. SILOAM STONE. CONTRACTOR SHALL SUBMIT PHOTOS FOR APPROVAL.
2. SPECIFIED MULCH, COBBLE OR CRUSHER FINES, RE: PLAN
3. AMENDED TOPSOIL
4. PARTIALLY BURY BOULDER FOR NATURAL APPEARANCE

REQUIRED BOULDERS:
(7) : 18-24" TALL x 18-24" WIDE x 2.5'-4' LONG

6 BOULDER

SCALE: 3/4" = 1'-0"



1. SET EDGE OF STONE 2 1/2" ABOVE GRADE IN BED AREAS
2. SANDSTONE COLORED CONCRETE PAVER - 1' x 2' x 3" THICK
3. 2" DEEP BED OF SAND
4. COMPACTED SUBGRADE
5. MANUFACTURER: STONEBILT CONCEPTS
6. CONTACT: STONEBILT CONCEPTS P: 1.303.867.6700

7 PAVER STEPPER

SCALE: 1" = 1'-0"

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019

ISSUE DATE: 04-27-2017

LANDSCAPE DETAILS

SHEET 21OF 51

PROJECT NUMBER: 160602

OUTLOOK NINE MILE

Filepath: P:\ETERGREEN ERIE NINE MILE - MULTIFAMILY - 0038-01 2235\DRAWINGS\SUBMITTALS\SD-LADS\SD-LADS-MF-PLAN.DWG Layout: 15 DETAILS
Printed: THU 01/30/20 10:09:47A By: Chris Mair

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

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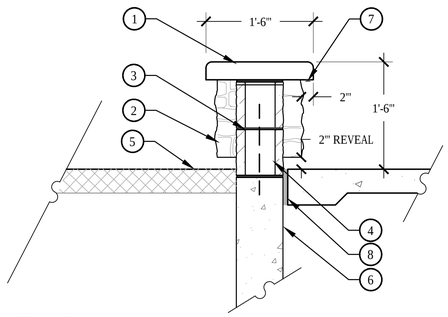
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



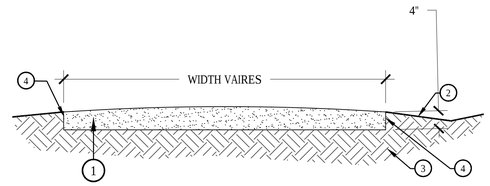
1. PRECAST CONCRETE CAP (COLOR TO MATCH ARCHITECTURE)
2. STONE VENEER - TO MATCH ARCHITECTURE
3. 3/8" GROUTED JOINTS
4. CMU CORE
5. FINISHED GRADE. REFER TO LANDSCAPE PLANS FOR MATERIAL
6. CONCRETE FOOTER, RE: STRUCTURAL
7. STRIP LIGHTING, ADHERED AND PERMANENTLY SECURE TO CAP PER MANUFACTURES SPECIFICATIONS. STRIP LIGHTING ON WALL SHALL BE INSTALLED ON WALKWAY SIDE.
8. EXPANSION JOINT

NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS
2. REFER TO STRUCTURAL DRAWINGS FOR CMU DESIGN.
3. NORRIS DESIGN HAS PROVIDED THIS DETAIL FOR REFERENCE PURPOSE, THIS DETAIL HAS NOT BEEN ENGINEERED.
4. NORRIS DESIGN IS NOT RESPONSIBLE FOR STRUCTURAL DESIGN AND CALCULATIONS.

1 FREE STANDING SEATWALL

SCALE: 1" = 1'-0"



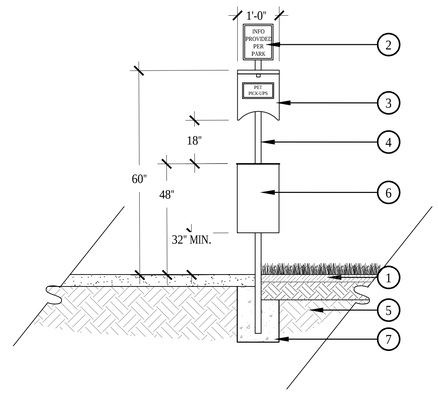
1. COMPACTED CRUSHER FINES
2. SLOPE ADJACENT GRADE AWAY
3. COMPACTED SUBGRADE
4. 4" STEEL EDGER

COMPACTION NOTES:

1. COMPACT WET FOR BEST RESULTS.
2. USE A SMALL (4') RIDING ROLLER TO COMPACT
3. CROWN TRAIL IN FLAT AREAS (AS SHOWN).
4. CROSS-SLOPE TRAIL AT 1-2% WITH GRADE WHERE TOPOGRAPHY DICTATES.

2 CRUSHER FINES DETAIL

SCALE: 3/4" = 1'-0"



1. SURFACING VARIES, RE: PLAN SHEETS
2. REFLECTIVE ALUMINUM SIGN
3. TRASH BAG DISPENSER
4. SQUARE TUBING
5. COMPACTED SUBGRADE
6. PET WASTE RECEPTACLE
7. SECURE POST IN FOOTING PER MANUFACTURER'S RECOMMENDATIONS

NOTES:
1.REFER TO PLAN FOR PET STATION LOCATION AND SURFACING MATERIAL

MANUFACTURER: LIVIN THE DOG LIFE
MODEL: PET WASTE STATION
COLOR: NATURAL

OR APPROVED EQUAL

3 PET WASTE STATION

SCALE: 1/2" = 1'-0"

1. MANUFACTURER: VICTOR STANLEY
2. MODEL: EVA BENCH, WITH ARM REST
3. FINISH: BLACK POWDERCOAT SUPPORTS, IPE WOOD
4. SURFACE MOUNT
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

4 BENCH

SCALE: N.T.S.

1. MANUFACTURER: VICTOR STANLEY
2. MODEL: BRHS-101, 2 BIKE CAPACITY
3. FINISH: BLACK POWDERCOAT
4. MOUNT PER MANUFACTURER'S INSTRUCTIONS
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

5 BIKE RACK

SCALE: N.T.S.

1. MANUFACTURER: VICTOR STANLEY
2. MODEL: S-42
3. FINISH: BLACK POWDERCOAT
4. SURFACE MOUNT
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

6 TRASH RECEPTACLE

SCALE: N.T.S.

1. MANUFACTURER: VICTOR STANLEY
2. MODEL: CAMILLE TABLE, REVERIE COLLECTION, 6'
3. FINISH: BLACK POWDERCOAT SUPPORTS, IPE WOOD
4. SURFACE MOUNT
5. CONTACT: VICTOR STANLEY
   P: 1.800.368.2573
   E: INFO@VICTORSTANLEY.COM

7 TABLE

SCALE: N.T.S.

1. MANUFACTURER: LANDSCAPE FORMS
2. MODEL: 35 COLLECTION — CHILL
3. MATERIAL: ROTATIONALLY MOLDED POLYETHYLENE IN A HABANERO RED COLOR
4. ANCHOR SURFACE MOUNT
5. CONTACT: LANDSCAPE FORMS
   P: 1.800.430.6209
   E: comments@landscapeforms.com

8 LOUNGE CHAIR

SCALE: N.T.S.

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE DETAILS

SHEET 22 OF 51

OUTLOOK NINE MILE

PROJECT NUMBER: 160602

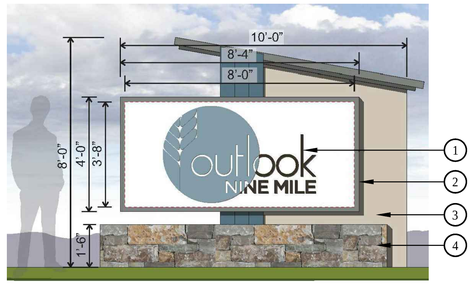
Filepath: P:\ERIE\GREEN ERIE NINE MILE - MULTIFAMILY - 0038-01-2235\DRAWINGS\SUBMITTALS\ND-LRDS-MF-PLAN.DWG Layout: 16 DETAILS
Plotted: THU 01/30/20 10:09:49A By: Chris Mair

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF FORBES KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



1. OUT LOOK NINE MILE LOGO
2. ALUMINUM CABINET, COLOR: CITYSCAPE SW7067 (SMOOTH FINISH)
3. ALUMINUM CABINET, COLOR: ACCESSIBLE BEIGE SW7036 (SMOOTH FINISH)
4. STONE VENEER, ENVIRONMENTAL STONE, NANTUCKET COBBLE LEDGESTONE

ELEVATION

NOTES:
1. THIS DETAIL SHOWS DESIGN INTENT ONLY AND IS NOT INTENDED TO BE AN ENGINEERED DRAWING
2. CONTRACT TO SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION
3. REFER TO THE APPROVED COMPREHENSIVE SIGN PLAN FOR FINAL MATERIALS AND COLORS

1 ENTRY MONUMENT

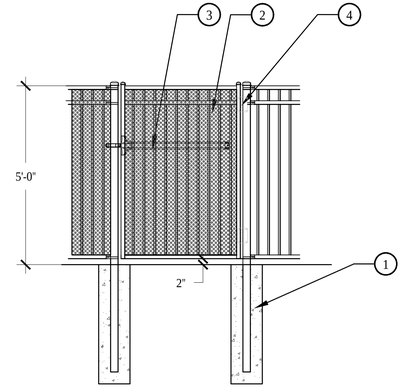
SCALE: 1/4" = 1'-0"

1. MANUFACTURER: TOURNESOL SITEWORKS
2. MODEL: URBAN COLLECTION
   SQUARES:
   UR-4800 (48"Tx42"Bx42H")
   UR-3600 (36"Tx30"Bx34H")
   RECTANGLES:
   UR-602424 (60"Lx24"Wx24"T)
3. FINISH: FRP SHADOW
4. CONTACT: JOHN DENMAN
   T: 925-286-1784
   E:JDENMAN@TOURNESOLSITEWORKS.COM

NOTES:
1. PLANTER TYPE SHOWN OR APPROVED EQUAL.
2. WHEN PLANTER URNS ARE SHOWN ON PLANS, CONTRACTOR SHALL INCLUDE THE FOLLOWING: PLANTER MIX, ANNUAL FLOWER PLANTING PROGRAM (INCLUDES 2 PLANTINGS FOR THE 1ST YEAR (SPRING AND FALL) AND WINTER HAND-WATERING AS NEEDED. UNLESS OTHERWISE SPECIFIED, CONTRACTOR TO PROVIDE ANNUAL PLANTING SELECTION FOR REVIEW BY OWNER. IRRIGATION FOR PLANTERS TO BE ON SEPARATE ZONE(S). CONTRACTOR TO COORDINATE PLACEMENT OF NECESSARY SLEEVING PRIOR TO PLACEMENT OF PAVEMENT.

2 POOL FENCE GATE

SCALE: 1/2" = 1'-0"

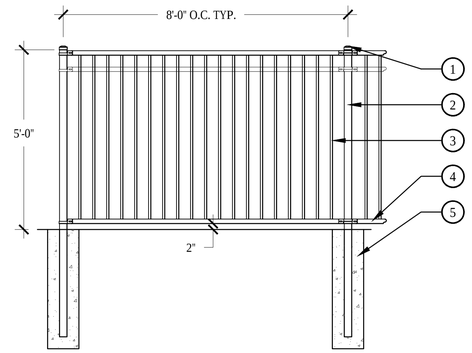


1. CONCRETE FOOTING PER MANUFACTURER, SLOPE CONCRETE AWAY FROM POST FOR POSITIVE DRAINAGE
2. PERFORATED METAL PANEL POWDER COATED TO MATCH FENCE
3. PANIC BAR ON POOL GATES, DETEX V40xERxWx711xFC WITH 81-800 POWER SUPPLY, REF. DCE-18133 LINE ITEM 1. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
4. SELF-CLOSING HINGES

NOTES:
1. ENSURE GATES MEET ALL APPLICABLE CODES
2. KEY FOB HARDWARE AT POOL GATES

3 POOL FENCE

SCALE: 1/2" = 1'-0"



1. 2½" POST CAP
2. 2½" SQ. POST
3. ¾" PICKET, 3" O.C.
4. 1½" X 1½" TOP AND BOTTOM RAILS
5. CONCRETE FOOTING PER MANUFACTURER, SLOPE CONCRETE AWAY FROM POST FOR POSITIVE DRAINAGE
6. FINISH: POWERCOATED BLACK

1. 2"X4" CEDAR RAILS ON BACK OF FENCE (TOP, MIDDLE, & BOTTOM)
2. 1"X6" CEDAR PICKETS WITH 'DOG EAR TOPS'
3. 4"X4" CEDAR POSTS ON BACK OF FENCE 8' O.C.
4. CONC. FOOTING 10" MIN. DIAMETER 36" DEPTH

4 PLANTER

SCALE: N.T.S.

5 8' PRIVACY FENCE

SCALE: 1/2" = 1'-0"

1. OPTIONAL 2"x2" WOVEN WIRE MESH (SANDWICH FENCE BETWEEN POST AND RAIL)
2. SLOPE AWAY FROM POST AND TROWEL SMOOTH
3. 6"x6" ROUGH SAWN CEDAR POST
4. CONCRETE FOOTING
5. 4" DEPTH, ¾" GRAVEL BASE
6. 2"x6" ROUGH SAWN CEDAR RAILS ATTACHED WITH A MINIMUM TWO WOOD SCREWS PER RAIL PER POST

6 3 RAIL FENCE

SCALE: 1/2" = 1'-0"

PROJECT NUMBER: 160602

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

LANDSCAPE DETAILS
SHEET 23 OF 51

OUTLOOK NINE MILE

Flepath: P:\ETRACIGREEN ERIE NINE MILE - MULTIFAMILY - 003849-01 2235\DRAWINGS\SUBMITTALS\ND-ADS-MF PLAN.DWG Layout: 17 DETAILS
Printed: THUR 01/30/20 10:09:51A By: Chris Mair

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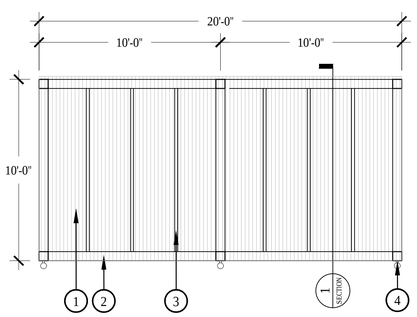
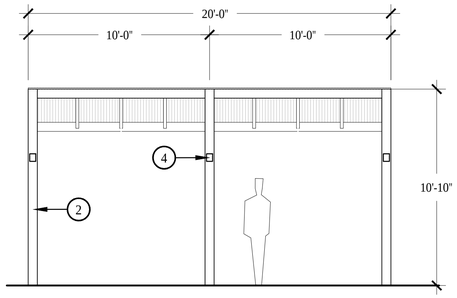
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

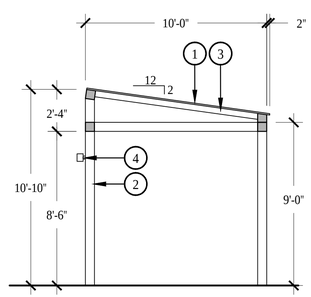
SITE PLAN - SP-000832-2016



PLAN VIEW



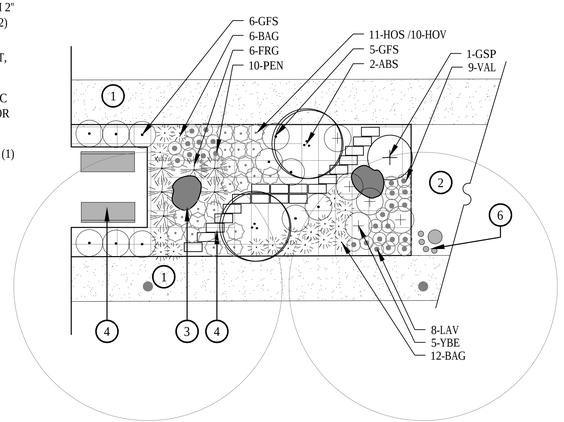
ELEVATION



SECTION 1

1. METAL STANDING SEAM ROOF WITH 2" OVERHANG, COLOR AND PITCH (2:12) TO MATCH ARCH
2. 6"X6" SQUARE TUBE, POWDER COAT, COLOR TO MATCH ARCH
3. 2" X 4" TUBE STEEL SLATS, METALLIC POWDER COAT MATCH ARCH, COLOR TO MATCH ARCH
4. DOWN LIGHTING MOUNTED 6' HIGH, (1) PER FRONT POST OF EACH POST

NOTES:
1. CONTRACTOR TO PROVIDE SHOP DRAWINGS.

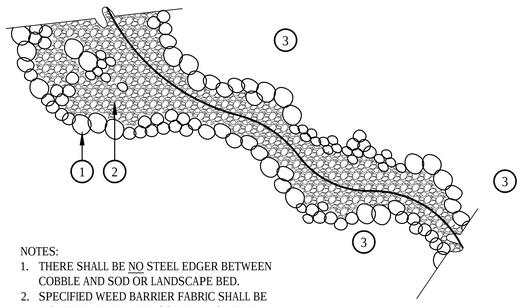


1. CRUSHER FINES
2. ADJACENT LANDSCAPE (RE: LANDSCAPE PLANS)
3. LANDSCAPE BOULDER (RE: DET. 6/21)
4. PAVER STEPPERS (RE: DET. 7/21)
5. BENCH (TYP) (RE: DET. 4/22)
6. PET WASTE STATION (RE: DET. 3/22)

NOTE: ALL PLANT SPECIES WITHIN THE DISPLAY GARDEN SHALL HAVE A PLANT IDENTIFYING SIGN INDICATING BOTANICAL NAME, COMMON NAME AND A BRIEF CHARACTERISTIC DESCRIPTION.

1 PICNIC SHLETER

SCALE: 1/4" = 1'-0"

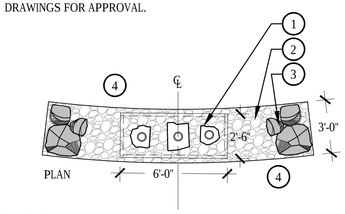


NOTES:
1. THERE SHALL BE NO STEEL EDGER BETWEEN COBBLE AND SOD OR LANDSCAPE BED.
2. SPECIFIED WEED BARRIER FABRIC SHALL BE INSTALLED UNDER ALL COBBLE. NO WEED BARRIER FABRIC SHALL BE VISIBLE.

1. 4"-6" TAN COBBLE - SET ON EDGE OF SWALE AS WELL AS IN A FEW INTERIOR AREAS TO CREATE A LOOSE, NATURALISTIC BORDER AS SHOWN.
2. ¾" TAN STONE IN INTERIOR AREAS OF SWALE. 4"-5" DEPTH.
3. LANDSCAPE BED, RE: LANDSCAPE PLAN

CHARACTER IMAGE

NOTES:
1. CONTRACTOR TO SUPPLY AUTO-FILL ASSEMBLY WITH FLOAT LEVEL CONTROL ON OWN WATER SUPPLY, NOT CONNECTED TO IRRIGATION SYSTEM, COORDINATE WITH MECHANICAL.
2. CONTRACTOR SHALL PROVIDE PUMP AND FILTER WITH FLOW CONTROL AS REQUIRED TO ACHIEVE SHEET FLOW OVER THE ENTIRE BOULDER SURFACE.
3. CONTRACTOR SHALL SUBMIT CUT SHEETS FOR PUMP, FILTER, DRAIN, EPDM LINER, AND AUTO-FILL COMPONENTS.
4. REFERENCE ELECTRICAL WATER DRAINAGE AND WATER SUPPLY WITH MECHANICAL
5. WATER FEATURE CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL.

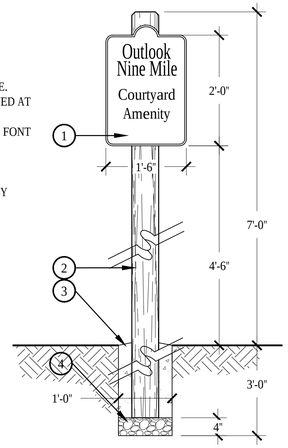


1. MANUFACTURER: STONE FOREST 60" TRIPLE BASALT FOUNTAINS #GF50-72, OWNER'S REPRESENTATIVE TO CHOOSE STONE FINISH
2. SMOOTH RIVER ROCK, COLOR TBD
3. BOULDERS, BURIED FOR MORE NATURAL APPEARANCE
4. ADJACENT LANDSCAPING (REFER TO PLANS)

2 DISPLAY GARDEN

SCALE: 1/8" = 1'-0"

NOTES:
1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS.
2. ALL COLORS AND FONTS SHALL MATCH ARCHITECTURE AND BUILDING SIGNAGE.
3. FINAL SIGN LOCATION TO BE DETERMINED AT TIME OF CONSTRUCTION
4. TEXT IS SHOWN CONCEPTUALLY. FINAL FONT AND LETTERING TO BE DETERMINED.
5. SIGNAGE SHALL INDICATE COURTYARD AMENITY/IDENTIFICATION .
6. FINAL SIGN DESIGN TO BE APPROVED BY OWNER AT TIME OF INSTALLATION.



1. WAYFINDING SIGNAGE
2. 4X6 SMOOTH CEDAR WOOD POST - STAIN TO MATCH ARCHITECTURE
3. FOOTING DESIGN BY CONTRACOR
4. 3/4" ANGULAR ROCK

3 STONE SWALE

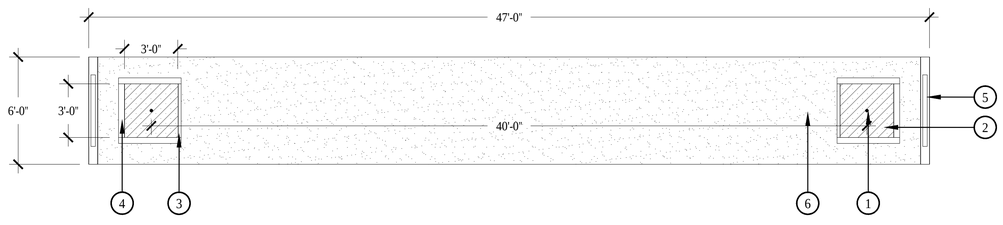
SCALE: 1/4" = 1'-0"

4 BOULDER/WATER FEATURE

SCALE: 1/4" = 1'-0"

5 WAYFINDING SIGN

SCALE: 3/4" = 1'-0"



1. 1/2" REBAR
2. SAND PIT
3. 2 X 6 WOOD DIVIDER, MECHANICALLY ANCHORED
4. 4 X 4 TREATED LUMBER, MECHANICALLY ANCHORED
5. WOOD BACKSTOP
6. GRAY CRUSHER FINES

6 HORSESHOE PITS

SCALE: 1/4" = 1'-0"

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017 SHEET 24 OF 51

LANDSCAPE DETAILS

PROJECT NUMBER: 160602

Filepath: P:\ETG\GREEN ERIE NINE MILE - MULTIFAMILY - 0038-01-2235\DRAWINGS\SUBMITTALS\ND-LSDS-MF-PLAN.DWG Layout: 18 DETAILS
Plotted: THU 01/30/20 10:09:52A By: Chris Muir

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

IRRIGATION SCHEDULE

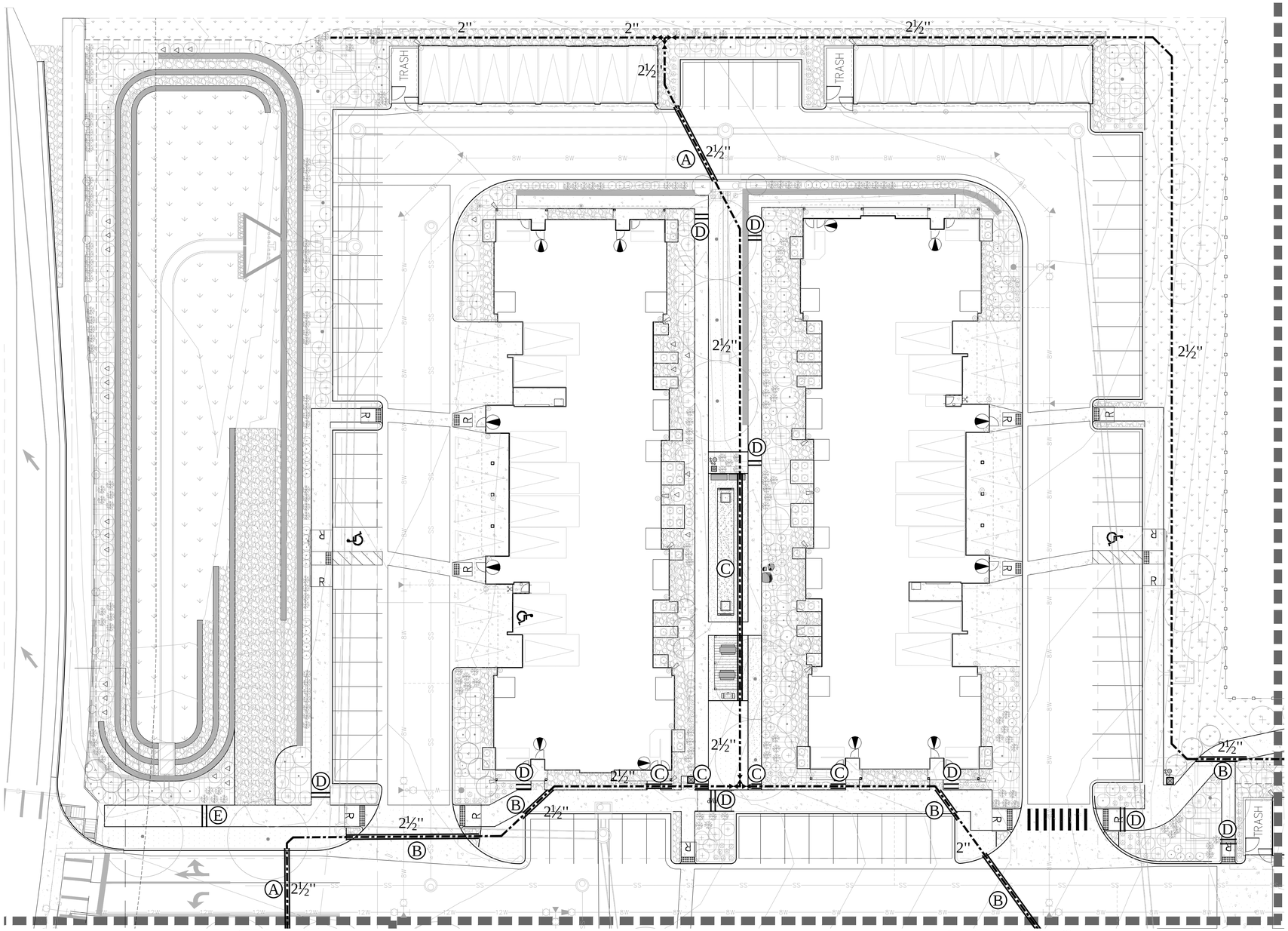
SYMBOL	DESCRIPTION
(A)	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
(M)	WATER METER - PER WATER DEPARTMENT

SLEEVE LEGEND

SYMBOL	SLEEVE (COUNT) SIZE
(A)	(1)6" & (1)2"
(B)	(1)6" & (2)2"
(C)	(1)6" & (3)2"
(D)	(1)2"
(E)	(2)2"
(F)	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

IRRIGATION DESIGN STRATEGY

HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP


2"
2"
2½"
TRASH
TRASH
2½"
A
2½"
D
D
2½"
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R

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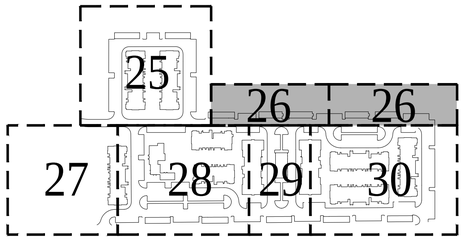
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

KEY MAP



IRRIGATION DEVELOPMENT DESIGN NOTES

1. THE IRRIGATION SYSTEM SHALL BE DESIGNED TO PROVIDE PEAK SEASON IRRIGATION WITHIN AN THREE NIGHT, SIX HOUR PER NIGHT WATERING PERIOD IRRIGATION SHALL OCCUR BETWEEN THE HOURS OF 10:00 PM AND 6:00 AM.
2. THE MAINLINE SYSTEM WILL BE DESIGNED SUCH THAT VELOCITIES WITHIN THE MAINLINE PIPING DO NOT EXCEED FIVE FEET PER SECOND.
3. THE MAXIMUM FLOW RATE REQUIRED FOR THE SITE IS 41 GPM. THE STATIC PRESSURE AVAILABLE AT THE SITE IS APPROXIMATELY 63 PSI. REQUIRED PRESSURE FOR THE IRRIGATION SYSTEM IS 85 PSI. A BOOSTER PUMP WILL BE REQUIRED.
4. THE IRRIGATION INFORMATION SHOWN ON THESE PLANS IS CONCEPTUAL.
5. AREAS WITH A 3:1 SLOPE OR GREATER CAN NOT AND WILL NOT BE PERMANENTLY IRRIGATED.
6. ALL IRRIGATION SYSTEMS MUST BE EQUIPPED WITH A BACKFLOW PREVENTION ASSEMBLY.
7. IRRIGATION SYSTEM SHALL BE FULLY AUTOMATIC AND INCLUDE A WEATHER SENSING DEVICE.
8. THE SIZE OF THE IRRIGATION LINE MUST BE THE SAME FROM THE TAP AT THE WATER MAIN THROUGH THE METER AND THE BACKFLOW PREVENTER, TO A DISTANCE OF 10 PIPE DIAMETERS PAST THE WINTERIZATION TEE.

IRRIGATION SCHEDULE

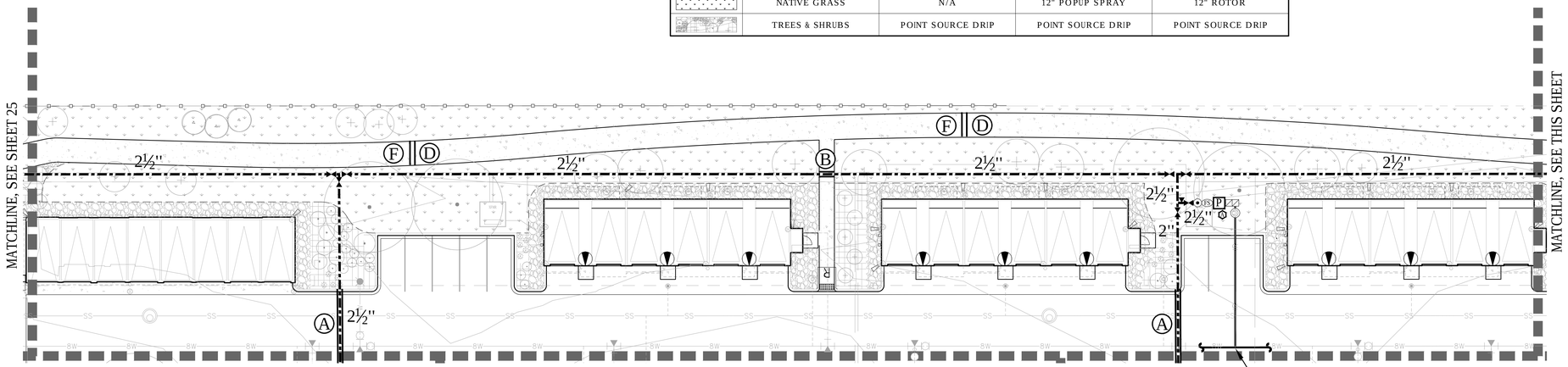
SYMBOL	DESCRIPTION
Ⓐ	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
Ⓜ	WATER METER - PER WATER DEPARTMENT

SLEEVE LEGEND

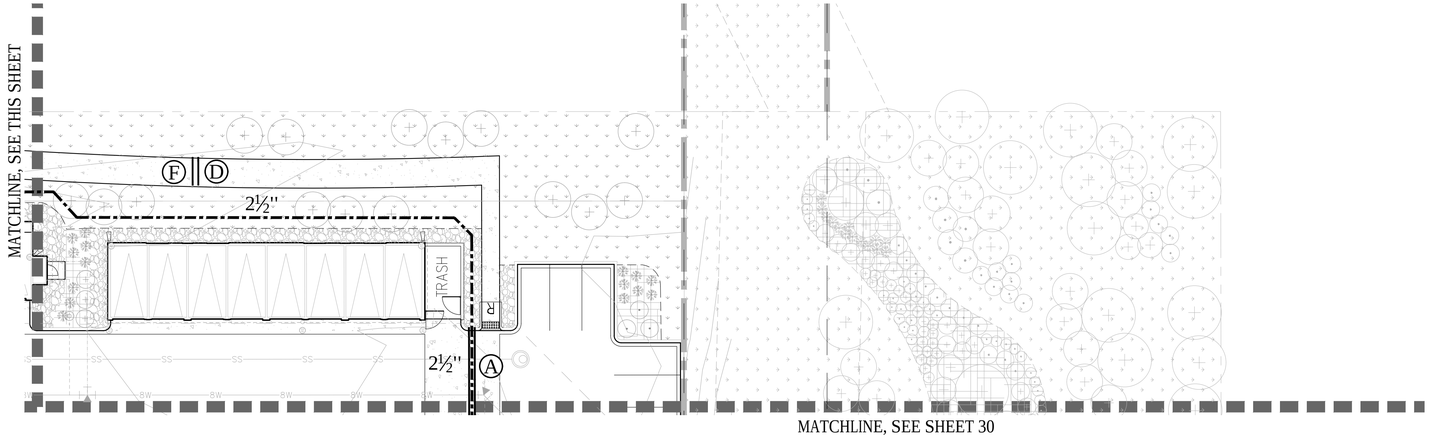
SYMBOL	SLEEVE (COUNT) SIZE
Ⓐ	(1)6" & (1)2"
Ⓑ	(1)6" & (2)2"
Ⓒ	(1)6" & (3)2"
Ⓓ	(1)2"
Ⓔ	(2)2"
Ⓕ	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

IRRIGATION DESIGN STRATEGY

HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP



Nine Mile Multi-Family		
TAP # 1	85	PRESSURE REQUIRED
	63	PRESSURE AVAILABLE
TAP/METER SIZE 1.5"	41	GPM MAXIMUM FLOW



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860 Tabor Street, Suite 200 Lakewood, Colorado 80401
o: 303.980.5327 www.hydrosystemskdi.com

811 NORTH 0 10 20 40 SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

IRRIGATION PLAN
SHEET 26 OF 51
OUTLOOK NINE MILE

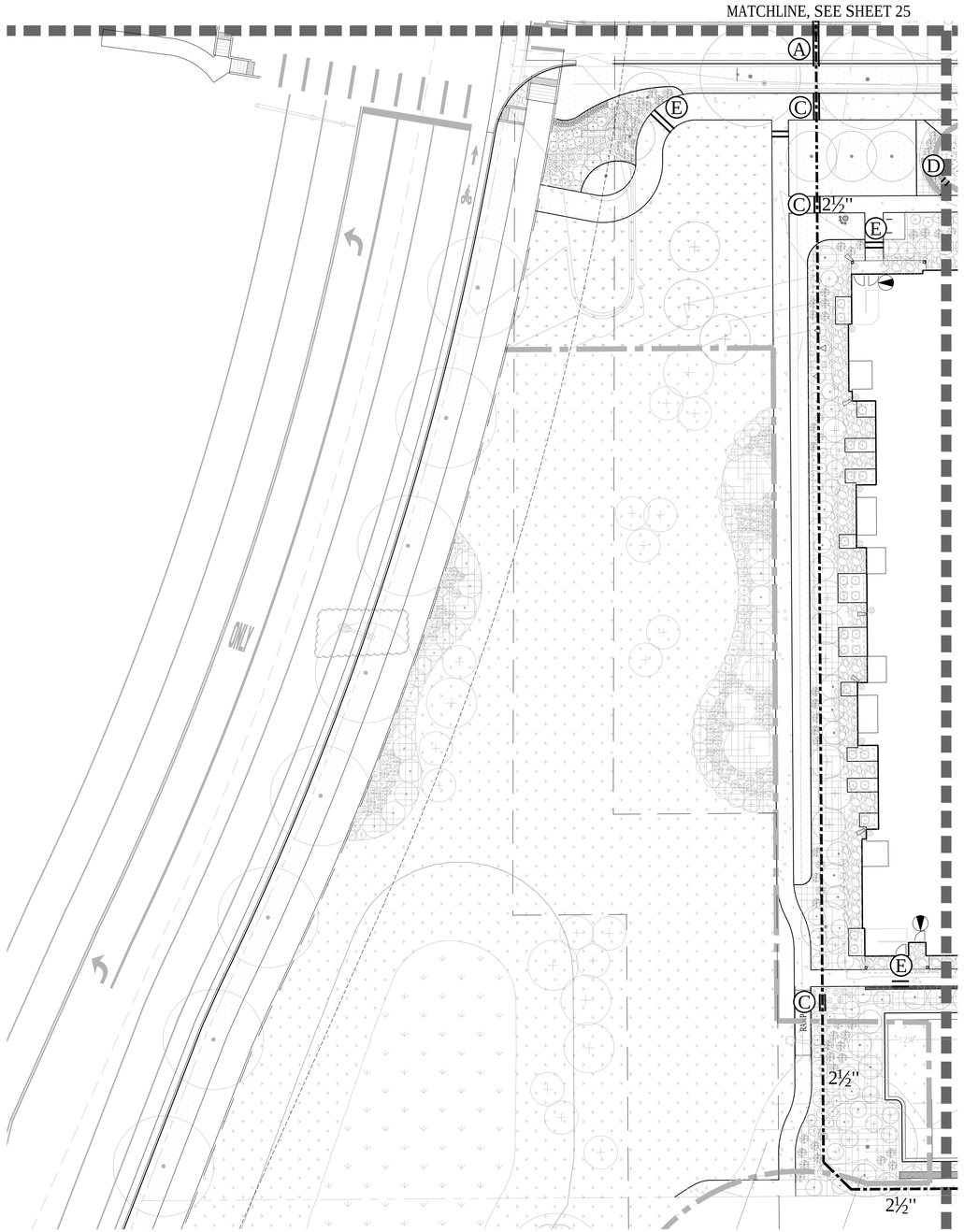
PROJECT NUMBER: 160602

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

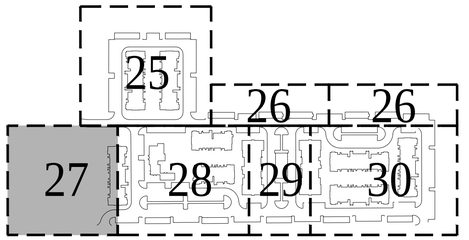
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



KEY MAP



IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
A	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
M	WATER METER - PER WATER DEPARTMENT

IRRIGATION DESIGN STRATEGY				
HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP

IRRIGATION DEVELOPMENT DESIGN NOTES

1. THE IRRIGATION SYSTEM SHALL BE DESIGNED TO PROVIDE PEAK SEASON IRRIGATION WITHIN AN THREE NIGHT, SIX HOUR PER NIGHT WATERING PERIOD IRRIGATION SHALL OCCUR BETWEEN THE HOURS OF 10:00 PM AND 6:00 AM.
2. THE MAINLINE SYSTEM WILL BE DESIGNED SUCH THAT VELOCITIES WITHIN THE MAINLINE PIPING DO NOT EXCEED FIVE FEET PER SECOND.
3. THE MAXIMUM FLOW RATE REQUIRED FOR THE SITE IS 41 GPM. THE STATIC PRESSURE AVAILABLE AT THE SITE IS APPROXIMATELY 63 PSI. REQUIRED PRESSURE FOR THE IRRIGATION SYSTEM IS 85 PSI. A BOOSTER PUMP WILL BE REQUIRED.
4. THE IRRIGATION INFORMATION SHOWN ON THESE PLANS IS CONCEPTUAL.
5. AREAS WITH A 3:1 SLOPE OR GREATER CAN NOT AND WILL NOT BE PERMANENTLY IRRIGATED.
6. ALL IRRIGATION SYSTEMS MUST BE EQUIPPED WITH A BACKFLOW PREVENTION ASSEMBLY.
7. IRRIGATION SYSTEM SHALL BE FULLY AUTOMATIC AND INCLUDE A WEATHER SENSING DEVICE.
8. THE SIZE OF THE IRRIGATION LINE MUST BE THE SAME FROM THE TAP AT THE WATER MAIN THROUGH THE METER AND THE BACKFLOW PREVENTER, TO A DISTANCE OF 10 PIPE DIAMETERS PAST THE WINTERIZATION TEE.

SLEEVE LEGEND	
SYMBOL	SLEEVE (COUNT) SIZE
A	(1)6" & (1)2"
B	(1)6" & (2)2"
C	(1)6" & (3)2"
D	(1)2"
F	(2)2"
E	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

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811 NORTH 0 10 20 40 SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

IRRIGATION PLAN
SHEET 27 OF 51

PROJECT NUMBER: 160602

OUTLOOK NINE MILE

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

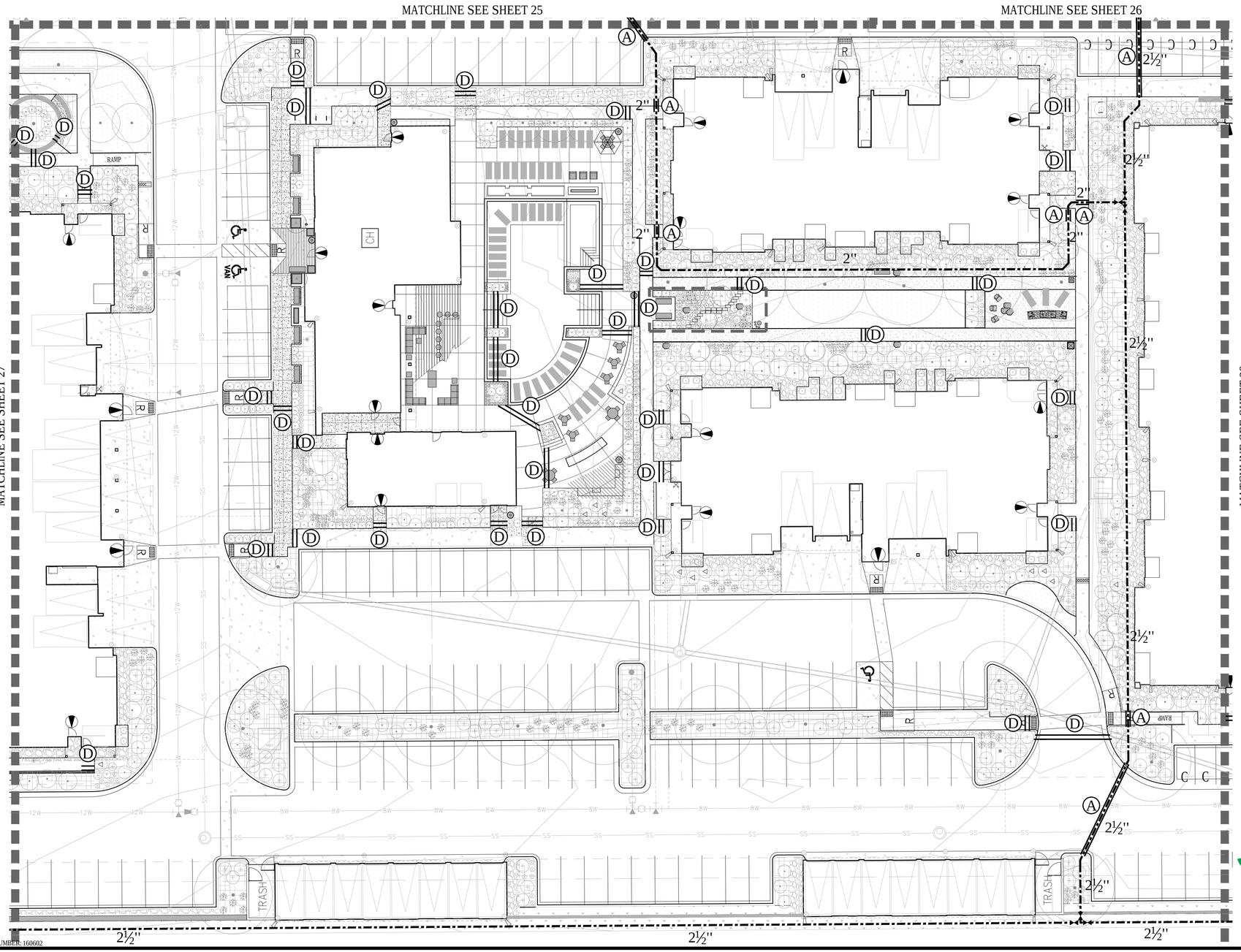
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.

13.97 ACRES (LOT 11, TRACTS F, G & H)

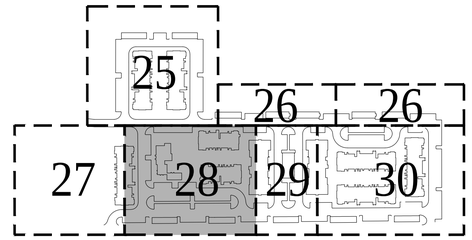
SITE PLAN - SP-000832-2016

IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
(A)	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
M	WATER METER - PER WATER DEPARTMENT

IRRIGATION DESIGN STRATEGY				
HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP



KEY MAP



SLEEVE LEGEND	
SYMBOL	SLEEVE (COUNT) SIZE
A	(1)6" & (1)2"
B	(1)6" & (2)2"
C	(1)6" & (3)2"
D	(1)2"
E	(2)2"
F	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

IRRIGATION DEVELOPMENT DESIGN NOTES

1. THE IRRIGATION SYSTEM SHALL BE DESIGNED TO PROVIDE PEAK SEASON IRRIGATION WITHIN AN THREE NIGHT, SIX HOUR PER NIGHT WATERING PERIOD IRRIGATION SHALL OCCUR BETWEEN THE HOURS OF 10:00 PM AND 6:00 AM.
2. THE MAINLINE SYSTEM WILL BE DESIGNED SUCH THAT VELOCITIES WITHIN THE MAINLINE PIPING DO NOT EXCEED FIVE FEET PER SECOND.
3. THE MAXIMUM FLOW RATE REQUIRED FOR THE SITE IS 41 GPM. THE STATIC PRESSURE AVAILABLE AT THE SITE IS APPROXIMATELY 63 PSI. REQUIRED PRESSURE FOR THE IRRIGATION SYSTEM IS 85 PSI. A BOOSTER PUMP WILL BE REQUIRED.
4. THE IRRIGATION INFORMATION SHOWN ON THESE PLANS IS CONCEPTUAL.
5. AREAS WITH A 3:1 SLOPE OR GREATER CAN NOT AND WILL NOT BE PERMANENTLY IRRIGATED.
6. ALL IRRIGATION SYSTEMS MUST BE EQUIPPED WITH A BACKFLOW PREVENTION ASSEMBLY.
7. IRRIGATION SYSTEM SHALL BE FULLY AUTOMATIC AND INCLUDE A WEATHER SENSING DEVICE.
8. THE SIZE OF THE IRRIGATION LINE MUST BE THE SAME FROM THE TAP AT THE WATER MAIN THROUGH THE METER AND THE BACKFLOW PREVENTER, TO A DISTANCE OF 10 PIPE DIAMETERS PAST THE WINTERIZATION TEE.

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811

NORTH

0 10 20 40
SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

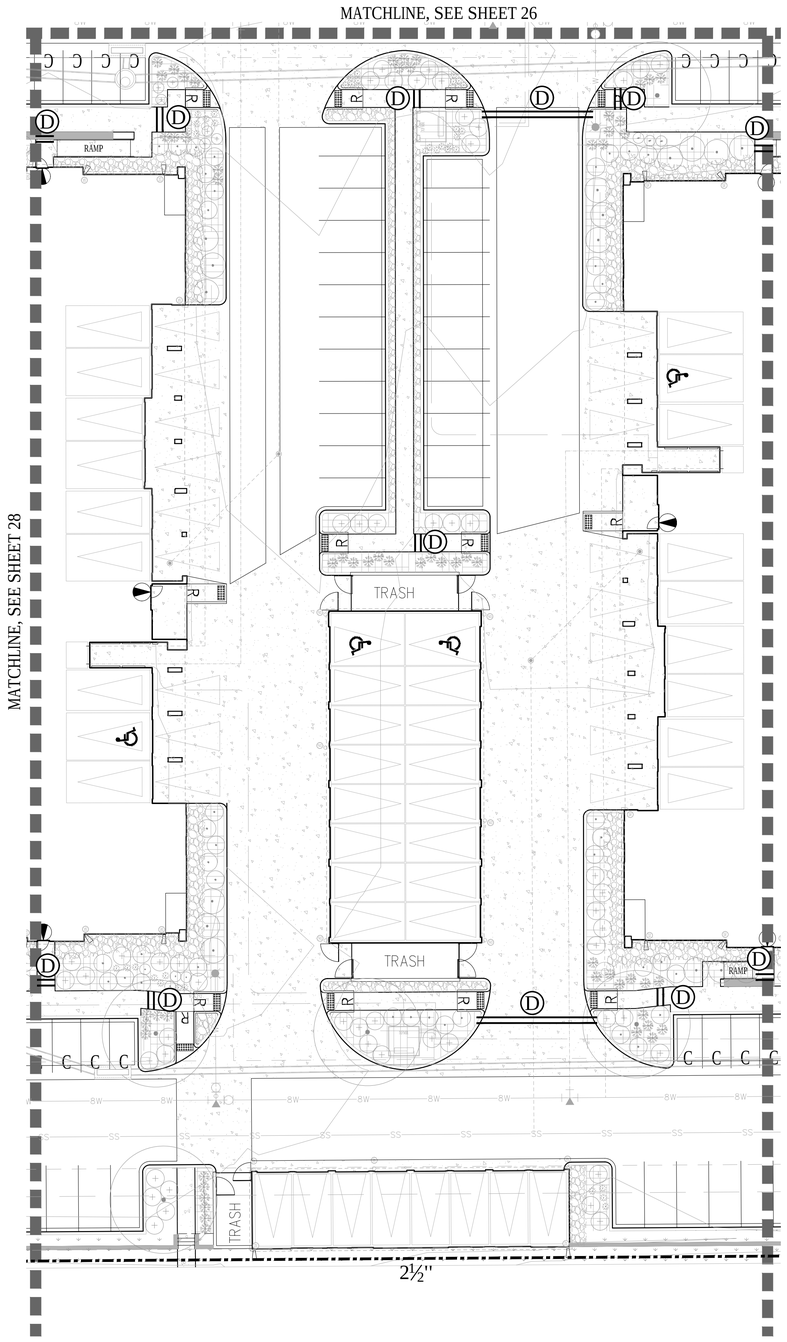
IRRIGATION PLAN
SHEET 28 OF 51

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

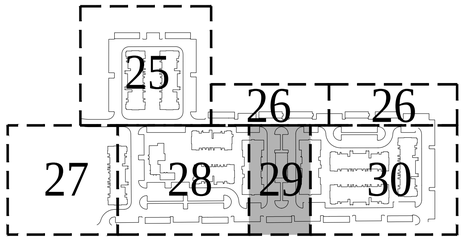
OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



KEY MAP



IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
A	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
M	WATER METER - PER WATER DEPARTMENT

IRRIGATION DESIGN STRATEGY				
HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP

IRRIGATION DEVELOPMENT DESIGN NOTES

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SLEEVE LEGEND	
SYMBOL	SLEEVE (COUNT) SIZE
A	(1)6" & (1)2"
B	(1)6" & (2)2"
C	(1)6" & (3)2"
D	(1)2"
E	(2)2"
F	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

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11-08-2019
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IRRIGATION PLAN
SHEET 29 OF 51

PROJECT NUMBER: 160602

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF HARRIS KOCHER SMITH

OUTLOOK NINE MILE

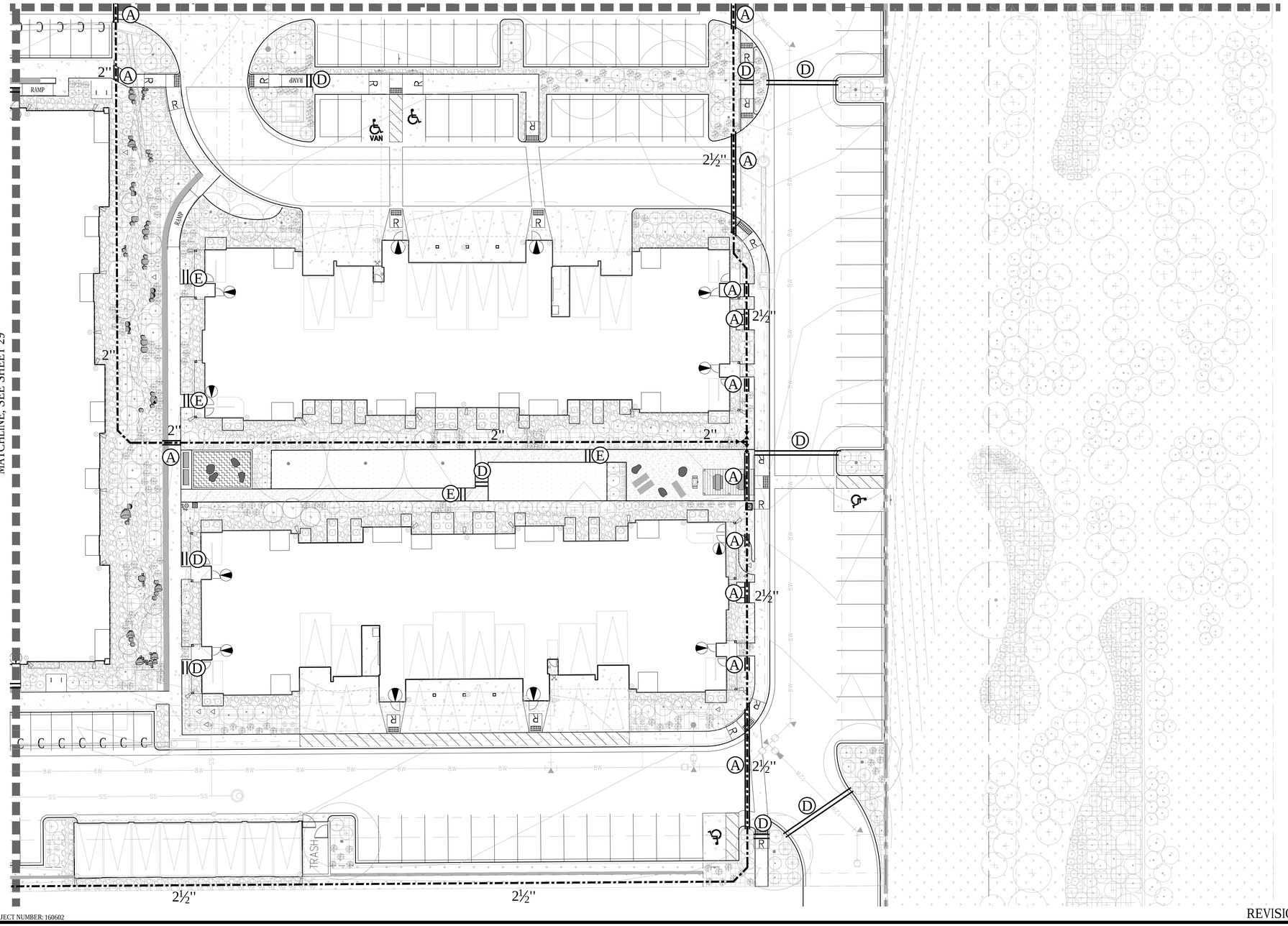
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

IRRIGATION SCHEDULE	
SYMBOL	DESCRIPTION
Ⓐ	TWO-WIRE ELECTRIC CONTROLLER - 120 VAC
	PVC MAINLINE - CL200
	PVC SLEEVING - CL200
P	BOOSTER PUMP
M	WATER METER - PER WATER DEPARTMENT

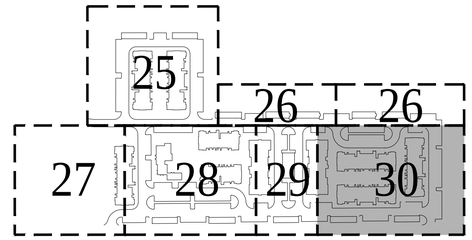
IRRIGATION DESIGN STRATEGY				
HATCH	DESCRIPTION	AREAS < 6'	AREAS 6'-25'	AREAS > 25'
	TURF GRASS	INLINE SUBSURFACE DRIP	6" POPUP SPRAY	6" ROTOR
	NATIVE GRASS	N/A	12" POPUP SPRAY	12" ROTOR
	TREES & SHRUBS	POINT SOURCE DRIP	POINT SOURCE DRIP	POINT SOURCE DRIP

MATCHLINE, SEE SHEET 26



MATCHLINE, SEE SHEET 29

KEY MAP



IRRIGATION DEVELOPMENT DESIGN NOTES

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SLEEVE LEGEND	
SYMBOL	SLEEVE (COUNT) SIZE
Ⓐ	(1)6" & (1)2"
Ⓑ	(1)6" & (2)2"
Ⓒ	(1)6" & (3)2"
Ⓓ	(1)2"
Ⓔ	(2)2"
Ⓕ	(1)4"
PIPE MATERIAL	CL. 160 PVC
INSTALLATION DEPTH	24"

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811

NORTH

0 10 20 40
SCALE 1" = 20'

01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

IRRIGATION PLAN
SHEET 30 OF 51

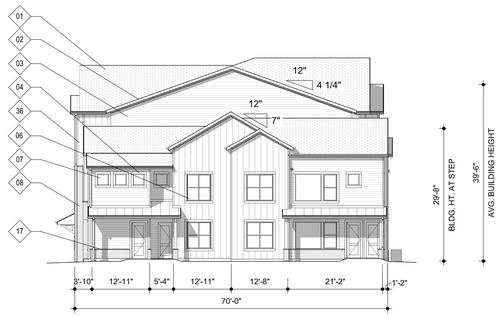
PROJECT NUMBER: 160602

OUTLOOK NINE MILE

OUTLOOK NINE MILE

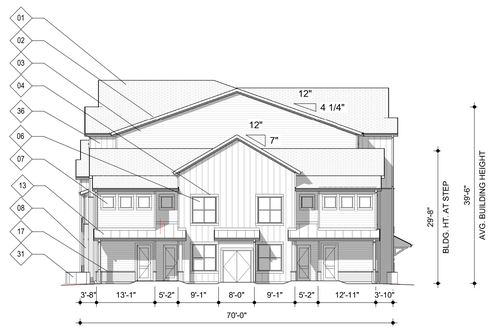
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



4 BLDG. TYPE A - RIGHT ELEVATION
1/16" = 1'-0"

3 BLDG. TYPE A - REAR ELEVATION
1/16" = 1'-0"



2 BLDG. TYPE A - LEFT ELEVATION
1/16" = 1'-0"

1 BLDG. TYPE A - FRONT ELEVATION
1/16" = 1'-0"

KEYNOTES	
#	Keynote Text
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
14	BUILDING NUMBER SIGNAGE LOCATION
17	STONE SILL/CAP
23	SECURITY GATE
31	GROUND-MOUNTED A/C CONDENSING UNIT
36	CEMENTITIOUS BOARD AND BATTEN SIDING

EXTERIOR COLOR SCHEME 1

• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2

• BOARD AND BATTEN SIDING	SW 7662 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE A - ELEVATIONS
SHEET 31 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 BLDG. TYPE A - FRONT ELEVATION - COLOR
1/16" = 1'-0"

7 BLDG. TYPE A - LEFT ELEVATION - COLOR
1/16" = 1'-0"

6 BLDG. TYPE A - REAR ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE A - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE A - FRONT-LEFT CORNER

3 BLDG. TYPE A - FRONT-RIGHT CORNER

2 BLDG. TYPE A - REAR-LEFT CORNER

1 BLDG. TYPE A - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 6012 BROWSE BROWN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

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01-30-2020
11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE A - ELEVATIONS
SHEET 32 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 BLDG. TYPE A - FRONT ELEVATION - COLOR
1/16" = 1'-0"

6 BLDG. TYPE A - REAR ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE A - FRONT-LEFT CORNER

2 BLDG. TYPE A - REAR-LEFT CORNER

7 BLDG. TYPE A - LEFT ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE A - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

3 BLDG. TYPE A - FRONT-RIGHT CORNER

1 BLDG. TYPE A - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7622 HOMBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7622 HOMBURG GRAY

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

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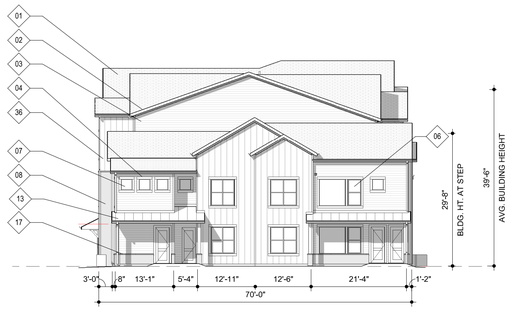
BLDG. TYPE A - ELEVATIONS
SHEET 33 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

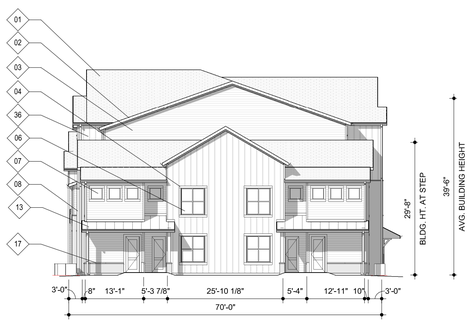
A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016



4 BLDG. TYPE B - RIGHT ELEVATION
1/16" = 1'-0"

3 BLDG. TYPE B - REAR ELEVATION
1/16" = 1'-0"



2 BLDG. TYPE B - LEFT ELEVATION
1/16" = 1'-0"

1 BLDG. TYPE B - FRONT ELEVATION
1/16" = 1'-0"

KEYNOTES	
#	Keynote Text
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
14	BUILDING NUMBER SIGNAGE LOCATION
17	STONE SILL/CAP
23	SECURITY GATE
36	CEMENTITIOUS BOARD AND BATTEN SIDING

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7662 HORNBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

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BLDG. TYPE B - ELEVATIONS
SHEET 34 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 BLDG. TYPE B - FRONT ELEVATION - COLOR
1/16" = 1'-0"

7 BLDG. TYPE B - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

6 BLDG. TYPE B - REAR ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE B - LEFT ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE B - FRONT-LEFT CORNER

3 BLDG. TYPE B - FRONT-RIGHT CORNER

2 BLDG. TYPE B - REAR-LEFT CORNER

1 BLDG. TYPE B - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7646 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GREY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 6012 BROWSE BROWN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

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REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE B - ELEVATIONS
SHEET 35 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 BLDG. TYPE B - FRONT ELEVATION - COLOR
1/16" = 1'-0"

7 BLDG. TYPE B - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

6 BLDG. TYPE B - REAR ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE B - LEFT ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE B - FRONT-LEFT CORNER

3 BLDG. TYPE B - FRONT-RIGHT CORNER

2 BLDG. TYPE B - REAR-LEFT CORNER

1 BLDG. TYPE B - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7622 HOMBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7622 HOMBURG GRAY

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

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11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE B - ELEVATIONS
SHEET 36 OF 51

KA PROJECT #216002

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 BLDG. TYPE B - FRONT ELEVATION - COLOR
1/16" = 1'-0"

7 BLDG. TYPE B - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

6 BLDG. TYPE B - REAR ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE B - LEFT ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE B - FRONT-LEFT CORNER

3 BLDG. TYPE B - FRONT-RIGHT CORNER

2 BLDG. TYPE B - REAR-LEFT CORNER

1 BLDG. TYPE B - REAR-RIGHT CORNER

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BRONZE
• GARAGE DOORS	7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• STANDING SEAM METAL ROOF	BERRIDGE METALS "CHARCOAL GRAY"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	POWDER COAT FLAT BLACK BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7674 PEPPERCORN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

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REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE B - ELEVATIONS
SHEET 37 OF 51

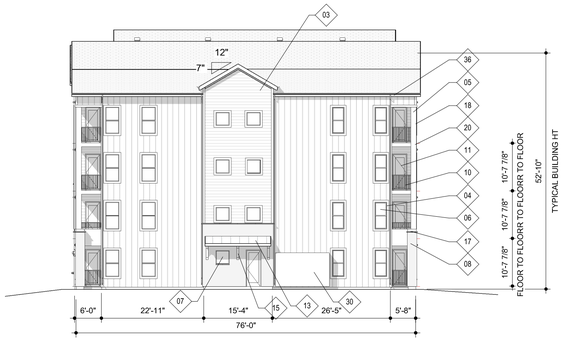
KA PROJECT #216002

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

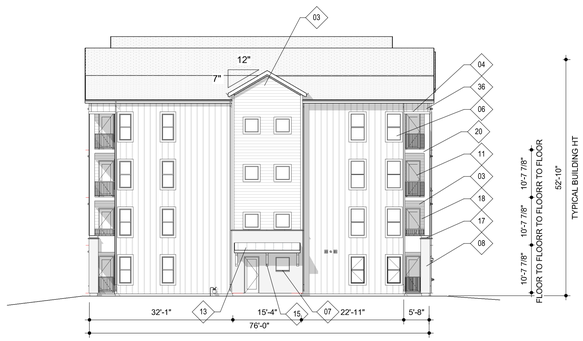
SITE PLAN - SP-000832-2016

KEYNOTES	
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
05	CEMENTITIOUS PANEL SIDING
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
11	FULL-LITE UNIT BALCONY DOOR
12	BUILDING ENTRY DOOR, MAINTAIN ACCESSIBLE ROUTE TO THIS LOCATION
13	STANDING SEAM METAL ROOF
15	DECORATIVE ROOF BRACKET
17	STONE SILL/CAP
18	LOW-PROFILE METAL CORNER TRIM
20	5/4" X 10" PAINTED CEMENTITIOUS ACCENT TRIM
22	STOREFRONT
28	ELECTRIC METER
30	MAIN DISTRIBUTION PANEL
32	ROOFTOP MECHANICAL SCREENING; HEIGHT TO MATCH CURB-MOUNTED EQUIPMENT; CEMENTITIOUS PANEL; PAINT TO MATCH ROOF COLOR
36	CEMENTITIOUS BOARD AND BATTEN



4 RIGHT ELEVATION - BLDG TYPE B
1/16" = 1'-0"

3 REAR ELEVATION - BLDG TYPE B
1/16" = 1'-0"



2 LEFT ELEVATION - BLDG TYPE B
1/16" = 1'-0"

1 FRONT ELEVATION - BLDG TYPE
1/16" = 1'-0"

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 67674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

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BLDG. TYPE C - ELEVATIONS
SHEET 38 OF 51

KA PROJECT #215093

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

1 BLDG. TYPE C - FRONT ELEVATION - COLOR
1/16" = 1'-0"

2 BLDG. TYPE C - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

3 BLDG. TYPE C - REAR ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE C - LEFT ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE C - FRONT LEFT CORNER

6 BLDG. TYPE C - FRONT RIGHT CORNER

7 BLDG. TYPE C - REAR-LEFT CORNER

8 BLDG. TYPE C - REAR RIGHT CORNER

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 6012 BROWSE BROWN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

KA PROJECT #215093

01-30-2020
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BLDG. TYPE C - ELEVATIONS
SHEET 39 OF 51

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

1 BLDG. TYPE C - FRONT ELEVATION - COLOR
1/16" = 1'-0"

2 BLDG. TYPE C - RIGHT ELEVATION - COLOR
1/16" = 1'-0"

3 BLDG. TYPE C - REAR ELEVATION - COLOR
1/16" = 1'-0"

4 BLDG. TYPE C - LEFT ELEVATION - COLOR
1/16" = 1'-0"

5 BLDG. TYPE C - FRONT LEFT CORNER

6 BLDG. TYPE C - FRONT RIGHT CORNER

7 BLDG. TYPE C - REAR-LEFT CORNER

8 BLDG. TYPE C - REAR RIGHT CORNER

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 67674 PEPPERCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• STOREFRONT	BERRIDGE METALS CHARCOAL GREY
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	CARDINAL PWDR. COAT BLACK FLAT BK247

NOTES:

ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED

RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7674 PEPPERCORN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

KA PROJECT #215093

01-30-2020
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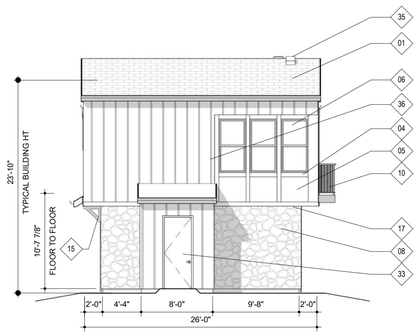
BLDG. TYPE C - ELEVATIONS
SHEET 40 OF 51

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

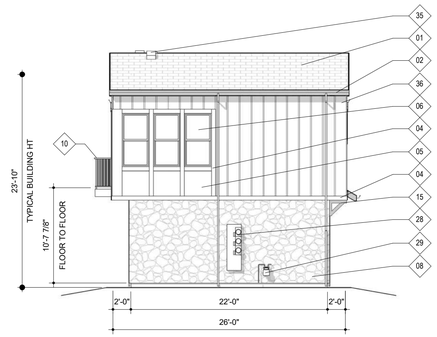
SITE PLAN - SP-000832-2016

KEYNOTES	
#	DESCRIPTION
01	ARCHITECTURAL COMPOSITE SHINGLE ROOF
02	5/4" X 8" PAINTED FASCIA
03	6" CEMENTITIOUS LAP SIDING
04	5/4" X 6" PAINTED CEMENTITIOUS ACCENT TRIM
05	CEMENTITIOUS PANEL SIDING
06	VINYL SINGLE-HUNG WINDOW
07	VINYL FIXED WINDOW
08	STONE VENEER
09	OVERHEAD GARAGE DOOR; STEEL
10	42" HIGH GUARD RAIL
11	FULL-LITE UNIT BALCONY DOOR
15	DECORATIVE ROOF BRACKET
17	STONE SILL/CAP
28	ELECTRIC METER
29	GAS METER
31	GROUND-MOUNTED A/C CONDENSING UNIT
33	RISER ROOM DOOR
35	ROOF VENT; MATCH ROOF COLOR
36	CEMENTITIOUS BOARD AND BATTEN

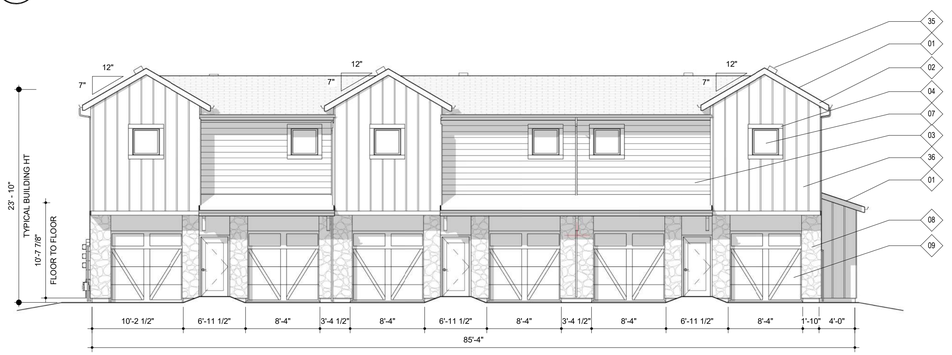


4 CARRIAGE RIGHT ELEVATION
1/8" = 1'-0"

3 CARRIAGE REAR ELEVATION
1/8" = 1'-0"



2 CARRIAGE LEFT ELEVATION
1/8" = 1'-0"



1 CARRIAGE FRONT ELEVATION
1/8" = 1'-0"

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7622 HOMBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

EXTERIOR COLOR SCHEME 3	
• BOARD AND BATTEN SIDING	SW 7674 PEPEPRCORN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

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REVISION DATE: 09-27-2019

BLDG. TYPE D - ELEVATIONS
ISSUE DATE: 04-27-2017 SHEET 41 OF 51

KA PROJECT #215093

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 CARRIAGE FRONT ELEVATION - COLOR
1/8" = 1'-0"

7 CARRIAGE RIGHT ELEVATION - COLOR
1/8" = 1'-0"

6 CARRIAGE REAR ELEVATION - COLOR
1/8" = 1'-0"

5 CARRIAGE LEFT ELEVATION - COLOR
1/8" = 1'-0"

4 CARRIAGE - REAR-RIGHT CORNER

3 CARRIAGE - REAR-LEFT CORNER

2 CARRIAGE - FRONT-RIGHT CORNER

1 CARRIAGE - FRONT-LEFT CORNER

EXTERIOR COLOR SCHEME 1	
• BOARD AND BATTEN SIDING	SW 6012 BROWSE BROWN
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 6012 BROWSE BROWN

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

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11-08-2019
REVISION DATE: 09-27-2019 ISSUE DATE: 04-27-2017

BLDG. TYPE D - ELEVATIONS

KA PROJECT #215093

OUTLOOK NINE MILE

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 1 NORTH, RANGE 69 WEST, AND THE SOUTHEAST QUARTER OF SECTION 27, TOWNSHIP 1 NORTH, RANGE 69 WEST OF THE 6TH PRINCIPAL MERIDIAN, TOWN OF ERIE, COUNTY OF BOULDER, STATE OF COLORADO.
13.97 ACRES (LOT 11, TRACTS F, G & H)

SITE PLAN - SP-000832-2016

8 CARRIAGE FRONT ELEVATION - COLOR
1/8" = 1'-0"

7 CARRIAGE RIGHT ELEVATION - COLOR
1/8" = 1'-0"

6 CARRIAGE REAR ELEVATION - COLOR
1/8" = 1'-0"

5 CARRIAGE LEFT ELEVATION - COLOR
1/8" = 1'-0"

EXTERIOR COLOR SCHEME 2	
• BOARD AND BATTEN SIDING	SW 7622 HOMBURG GRAY
• 6" CEMENTITIOUS LAP SIDING	SW 7649 SILVERPLATE
• ACCENT TRIM	SW 7069 IRON ORE
• DOORS	TYPICAL: SW 6991 BLACK MAGIC UTILITY DOORS: MATCH FIELD
• GRARAGE DOORS	SW 7069 IRON ORE
• ASPHALT ROOF	TAMKO "RUSTIC BLACK"
• MASONRY	SUNSET STONE LIMESTONE "WINTERSKY"
• METAL RAILINGS	PWDR. COAT BLACK FLAT BK247

NOTES:
ALL PAINT COLORS BY SHERWIN WILLILAMS UNLESS OTHERWISE NOTED
RETURN WALLS TO MATCH EXTERIOR WALLS

ROOF
TAMKO: RUSTIC BLACK

METAL ROOF
BERRIDGE: CHARCOAL GREY

BODY 1
SHERWIN WILLIAMS: 7622 HOMBURG GRAY

TRIM
SHERWIN WILLIAMS: 7069 IRON ORE

BODY 2
SHERWIN WILLIAMS: 7649 SILVERPLATE

ENTRY
SHERWIN WILLIAMS: 6991 BLACK MAGIC

GARAGE
SHERWIN WILLIAMS: 7069 IRON ORE

RAILINGS
CARDINAL: POWDER COATING BLACK FLAT BK247

MASONRY
SUNSET STONE: LIMESTONE WINTERSKY

WINDOWS
WHITE

4 CARRIAGE - REAR-RIGHT CORNER

3 CARRIAGE - REAR-LEFT CORNER

2 CARRIAGE - FRONT-RIGHT CORNER

1 CARRIAGE - FRONT-LEFT CORNER

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BLDG. TYPE D - ELEVATIONS
SHEET 43 OF 51

KA PROJECT #215093

OUTLOOK NINE MILE