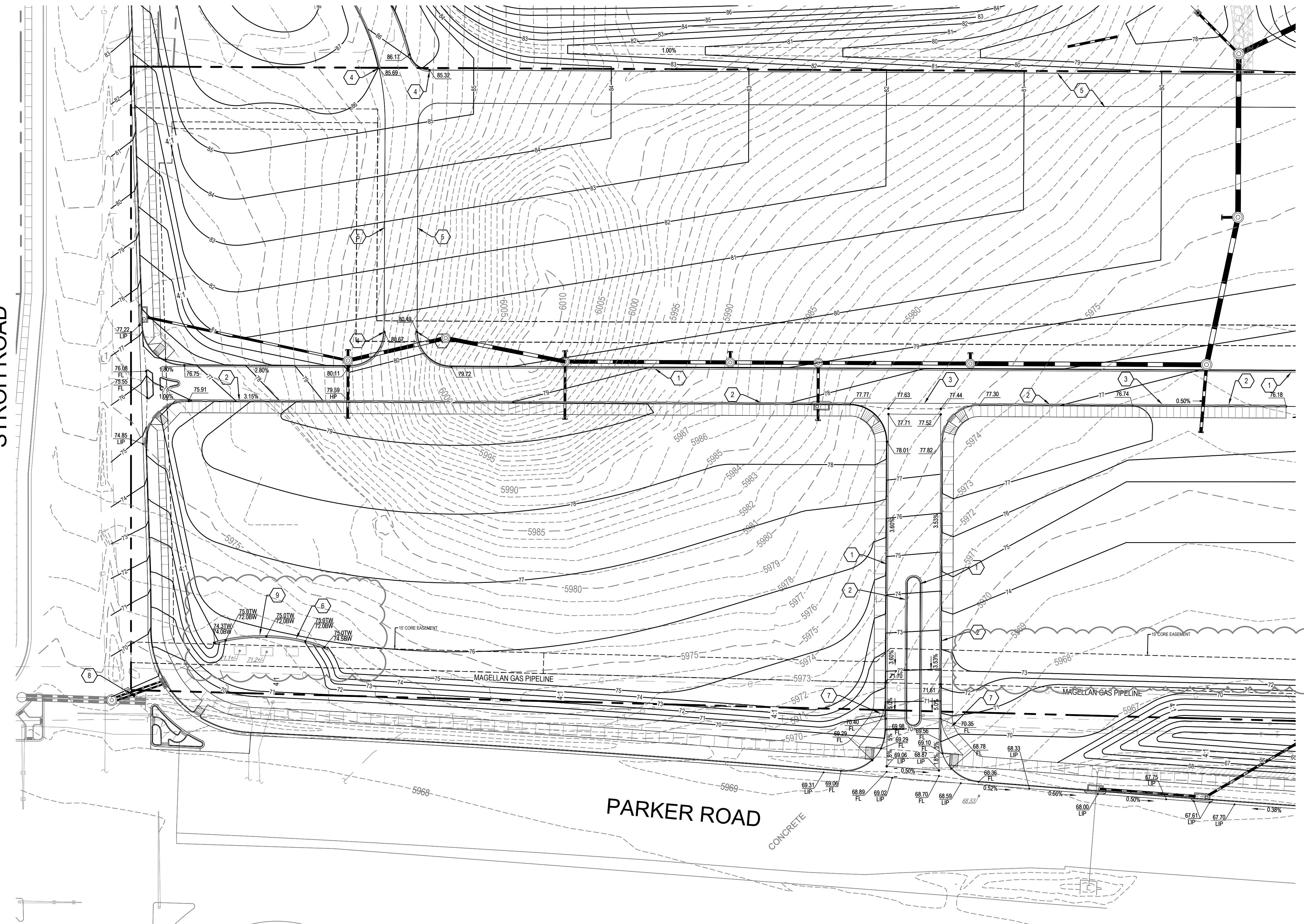


SEE SHEET C2.12

STROH ROAD

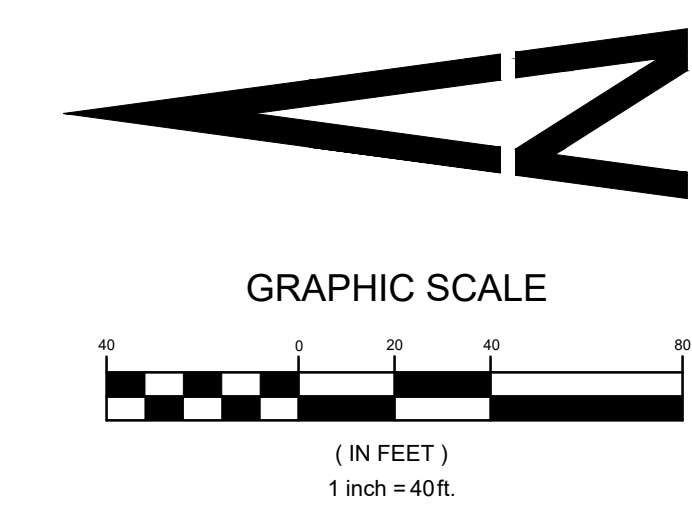


SEE SHEET C2.11

**CONSTRUCTION NOTES**

- 1 CONSTRUCT CONCRETE CURB AND GUTTER WITH SPILL PAN. RE: SHEET C5.90.
- 2 CONSTRUCT CONCRETE CURB AND GUTTER WITH CATCH PAN. RE: SHEET C5.90.
- 3 CONSTRUCT 8' WIDE CONCRETE CROSS PAN.
- 4 END CURB AND GUTTER.
- 5 EDGE OF ASPHALT. NO CURB.
- 6 CONSTRUCT MODULAR BLOCK RETAINING WALL. WALL AND SAFETY RAIL, DESIGN BUILD BY CONTRACTOR. KEYSTONE STRAIGHT FACE 8"x18" TAN BLOCK OR APPROVED EQUAL.
- 7 RE-SET UTILITY COVER / BOX TO PROPOSED GRADE.
- 8 RE-LOCATE UTILITY BOX TO LANDSCAPE AREA ADJACENT TO SIDEWALK.
- 9 CORE REQUIRES 10' FRONT ACCESS AND 3' SIDE ACCESS TO ALL EQUIPMENT. FIELD ADJUST WALL LOCATION IF REQUIRED.

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 MAGELLAN PIPELINE COMPANY.



NOTE: ANY WALL OVER 4 FEET WILL REQUIRE A BUILDING PERMIT

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 CENTER OF COLORADO  
 1-800-922-1987  
 CALL 2-BUSINESS DAYS IN ADVANCE  
 BEFORE YOU DIG, GRADE, OR EXCAVATE  
 FOR THE MARKING OF UNDERGROUND  
 MEMBER UTILITIES.

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**BENCHMARK**

BENCHMARK: DOUGLAS COUNTY SURVEY CONTROL MONUMENT TT15A - 3" DIAMETER DOUGLAS COUNTY GIS ALUMINUM CAP AT THE NE CORNER OF STROH ROAD AND SOUTH PARKER ROAD (US HIGHWAY 63)  
 ELEVATION: 5970.79 FEET (NAVD 1988 DATUM)

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TOWN OF PARKER, DIRECTOR OF ENGINEERING

DATE

**GRADING PLAN NORTH**

PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

NO.	DATE	DESCRIPTION	REVISIONS
03/11/24		FOURTH CDOT NTP SUBMITTAL	
01/31/24		THIRD CDOT NTP SUBMITTAL	
01/15/24		2ND RE-PLAT SUBMITTAL	
08/01/23		SECOND CDOT NTP SUBMITTAL	
04/21/23		CDOT NTP SUBMITTAL / RE-PLAT SUBMITTAL	
04/15/22		RESUBMITTAL	
11/01/18		SIXTH SUBMITTAL	

PARKER POINTE  
 LOTS 1 THRU 15 AND TRACTS A AND B, PARKER POINTE FILING NO. 1  
 SOUTHEAST CORNER PARKER ROAD AND STROH ROAD  
 PARKER, COLORADO

design by: JWD  
 approved by: JWD  
 project no.: 2015-015

date: 10/01/17

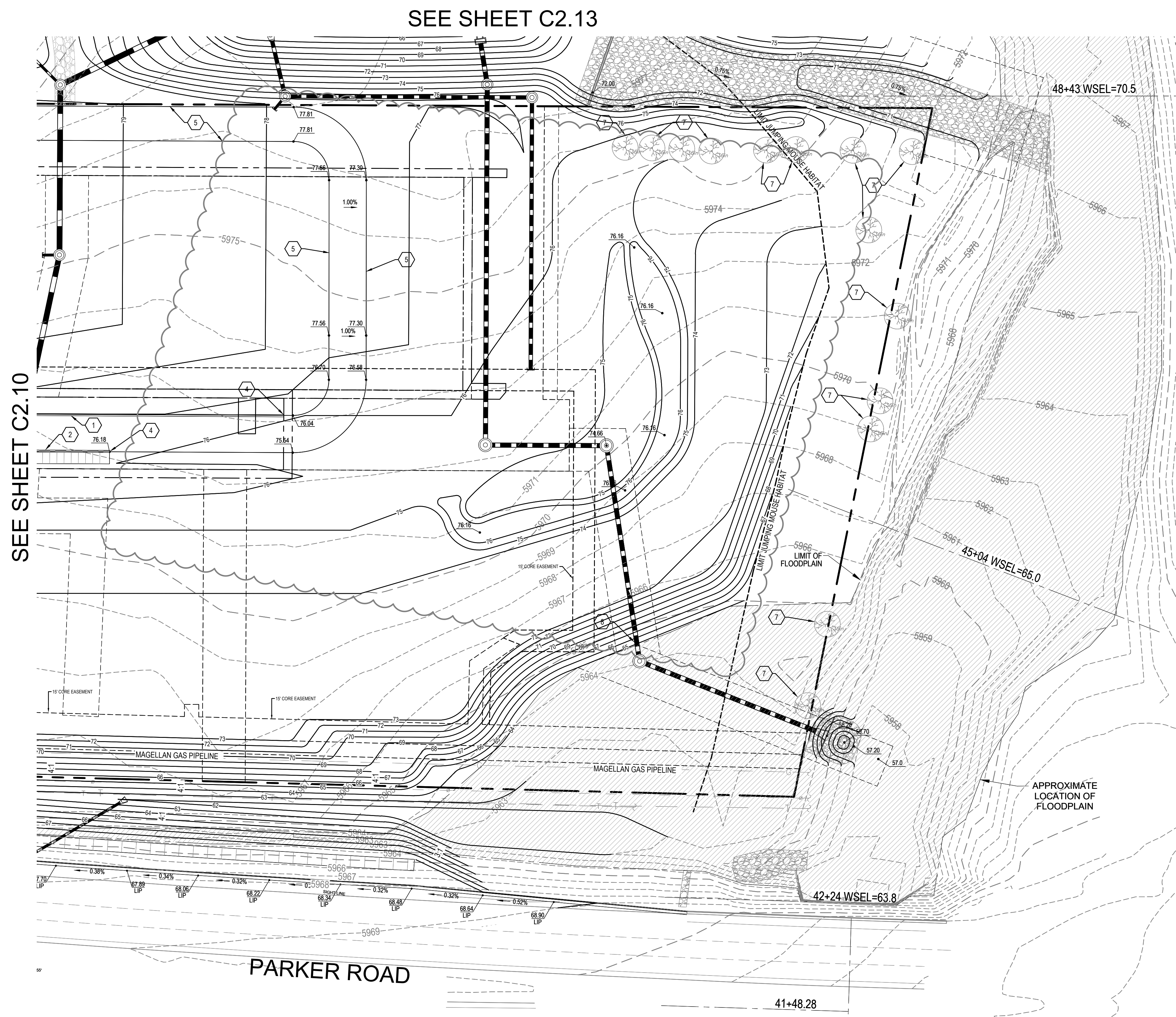
SHEET

**C2.10**



PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

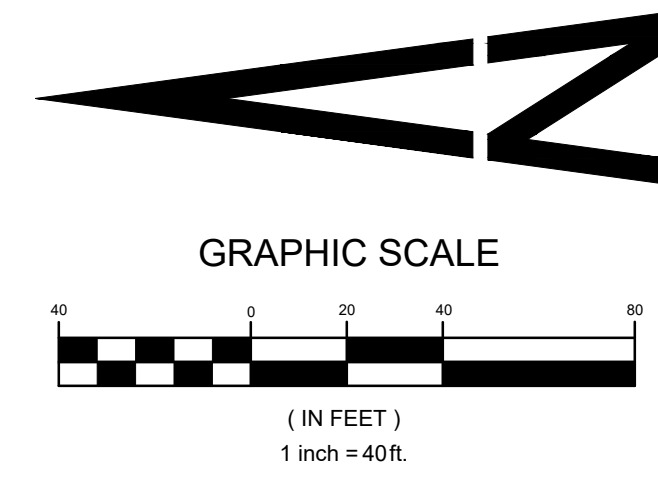
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- ③ CONSTRUCT 8' WIDE CONCRETE CROSS PAN.
- ④ END CURB AND GUTTER.
- ⑤ EDGE OF ASPHALT. NO CURB.
- ⑥ CONSTRUCT MODULAR BLOCK RETAINING WALL. WALL AND SAFETY RAIL, DESIGN BUILD BY CONTRACTOR. KEYSTONE STRAIGHT FACE 8"x18" TAN BLOCK OR APPROVED EQUAL.
- ⑦ PROTECT EXISTING TREES.
- ⑧ PROVIDE BRIDGING TO PROTECT UNDERLYING PIPE.

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ELEVATION: 5970.79 FEET (NAVD 1988 DATUM)

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TOWN OF PARKER, DIRECTOR OF ENGINEERING DATE

**GRADING PLAN SOUTH**

PARKER POINTE  
LOTS 1 THRU 15 AND TRACTS A AND B, PARKER POINTE FILING NO. 1  
SOUTHEAST CORNER PARKER ROAD AND STROH ROAD  
PARKER, COLORADO

design by: JWD  
approved by: JWD  
project no.: 2015-015

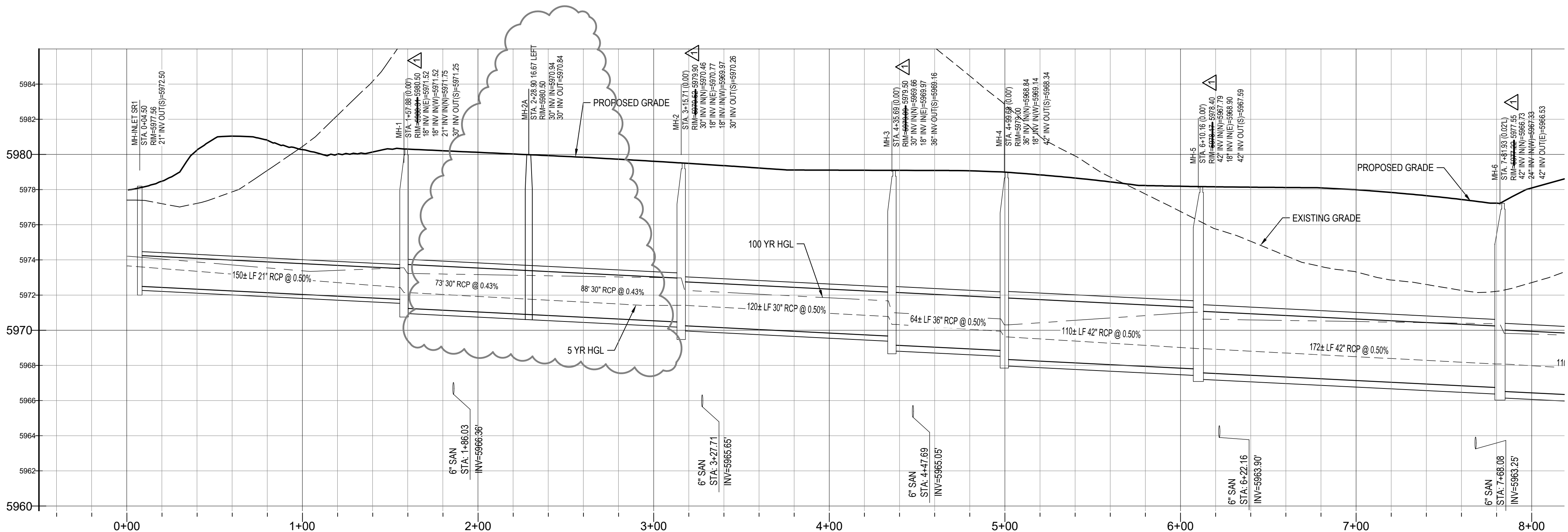
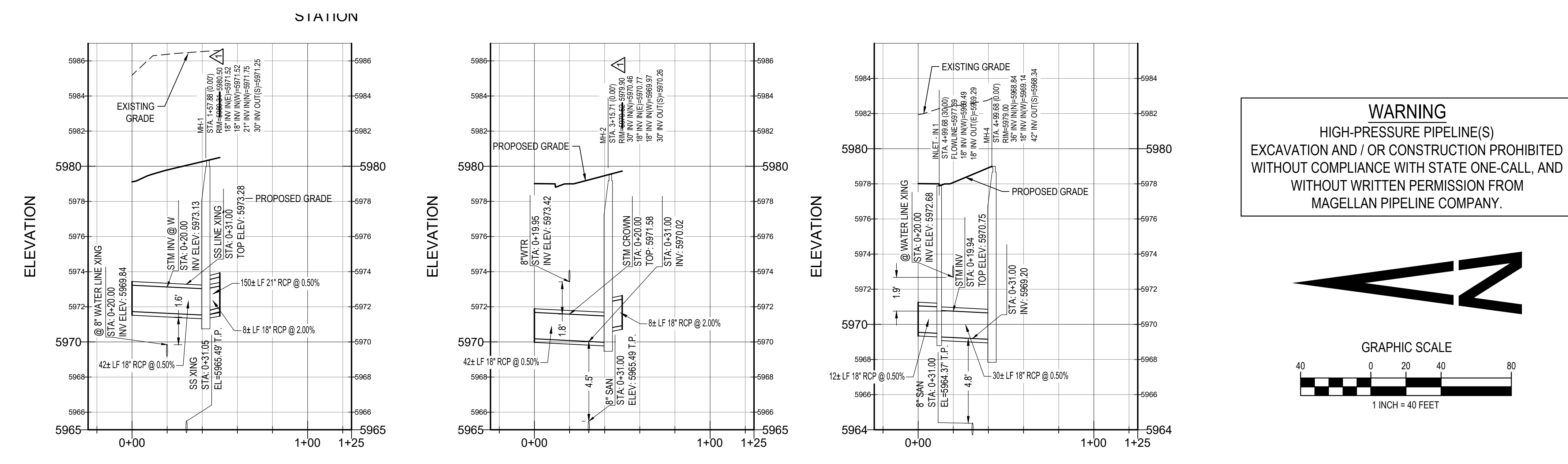
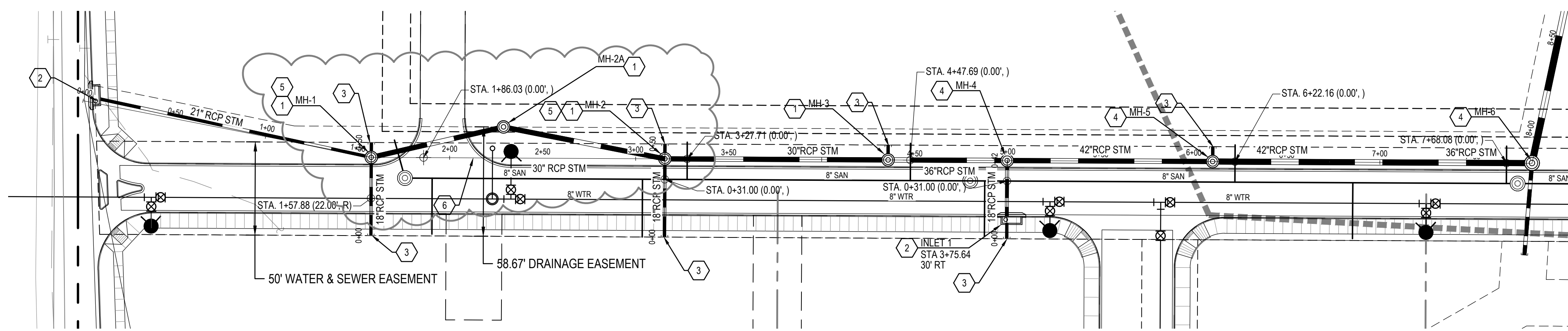
date: 10/01/17

SHEET  
**C2.11**

**CONSTRUCTION NOTES**

- 1 CONSTRUCT 5' DIAMETER MANHOLE. SEE SHEET C4.90.
- 2 CONSTRUCT 10" TYPE R INLET. SEE SHEET C4.91.
- 3 STUB 18" RCP FOR THE FUTURE CONNECTION. PLUG AND MARK FOR FUTURE CONNECTION.
- 4 CONSTRUCT 6' DIAMETER MANHOLE. SEE SHEET C4.90.
- 5 RE-FORM BASE TO ACCOMMODATE NEW PIPE ALIGNMENT.
- 6 REMOVE EX PIPE.

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CENTER OF COLORADO  
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3. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE PARKER WATER AND SANITATION DISTRICT THE DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.
4. THE CONTRACTOR SHALL NOTIFY THE TOWN OF PARKER PUBLIC WORKS AND PARKER WATER AND SANITATION DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO STARTING CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES. EXISTING UTILITIES SHOWN ON THIS PLANS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND DO NOT REFLECT A COMPLETE SURVEY OF EXISTING UTILITIES. CONTACT THE ENGINEER WITH DISCREPANCIES.
6. CONTRACTOR SHALL VERIFY THE STUB TIE IN ELEVATION PRIOR TO START OF CONSTRUCTION. THE ELEVATION OF THE STUB SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO SANITARY SEWER CONSTRUCTION.
7. SAWCUT OF EXISTING STREETS SHALL BE IN CONFORMANCE WITH TOWN STANDARDS. CUTS SHALL STRAIGHT WITH CLEAN EDGES. REMOVE EXISTING CURB AND GUTTER TO NEAREST JOINT RETURN ALONG EXISTING LINE AND GRADE.
8. THE OWNER AND OR THEIR REPRESENTATIVE SHALL BE RESPONSIBLE FOR COORDINATION WITH EXISTING FRANCHISE UTILITIES TO INCLUDE COMCAST, XCEL, CENTURY LINK OR OWNERS OF EXISTING DRY UTILITY LINES.
9. EXISTING UTILITY SURFACE APPURTENANCES SHALL BE RAISED TO FINISHED GRADE, THIS INCLUDES BUT IS NOT LIMITED TO MANHOLE LIDS, VALVE COVERS.
10. SITE SURVEY IS PROVIDED BY ESC DATED 2-8-2016.
11. THE CONTRACTOR SHALL HAVE AN APPROVED SET OF CONSTRUCTION PLANS ON SITE AT ALL TIMES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THE CONSTRUCTION, NOTIFYING AND SCHEDULING LOCAL AGENCIES INSPECTIONS.
12. ALL PIPE LENGTHS ARE MEASURED FROM CENTER OF MANHOLE AND FLOWLINE X CENTER OF INLETS.
13. ELEVATIONS ARE FINISHED GRADE ELEVATION UNLESS OTHER WISE NOTED.

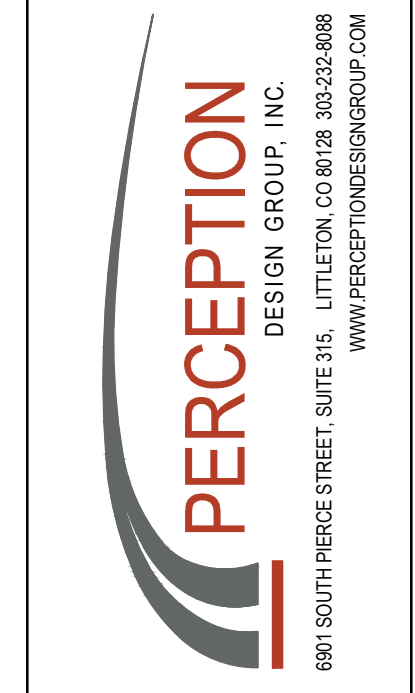
**BENCHMARK**

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TOWN OF PARKER, DIRECTOR OF ENGINEERING



PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

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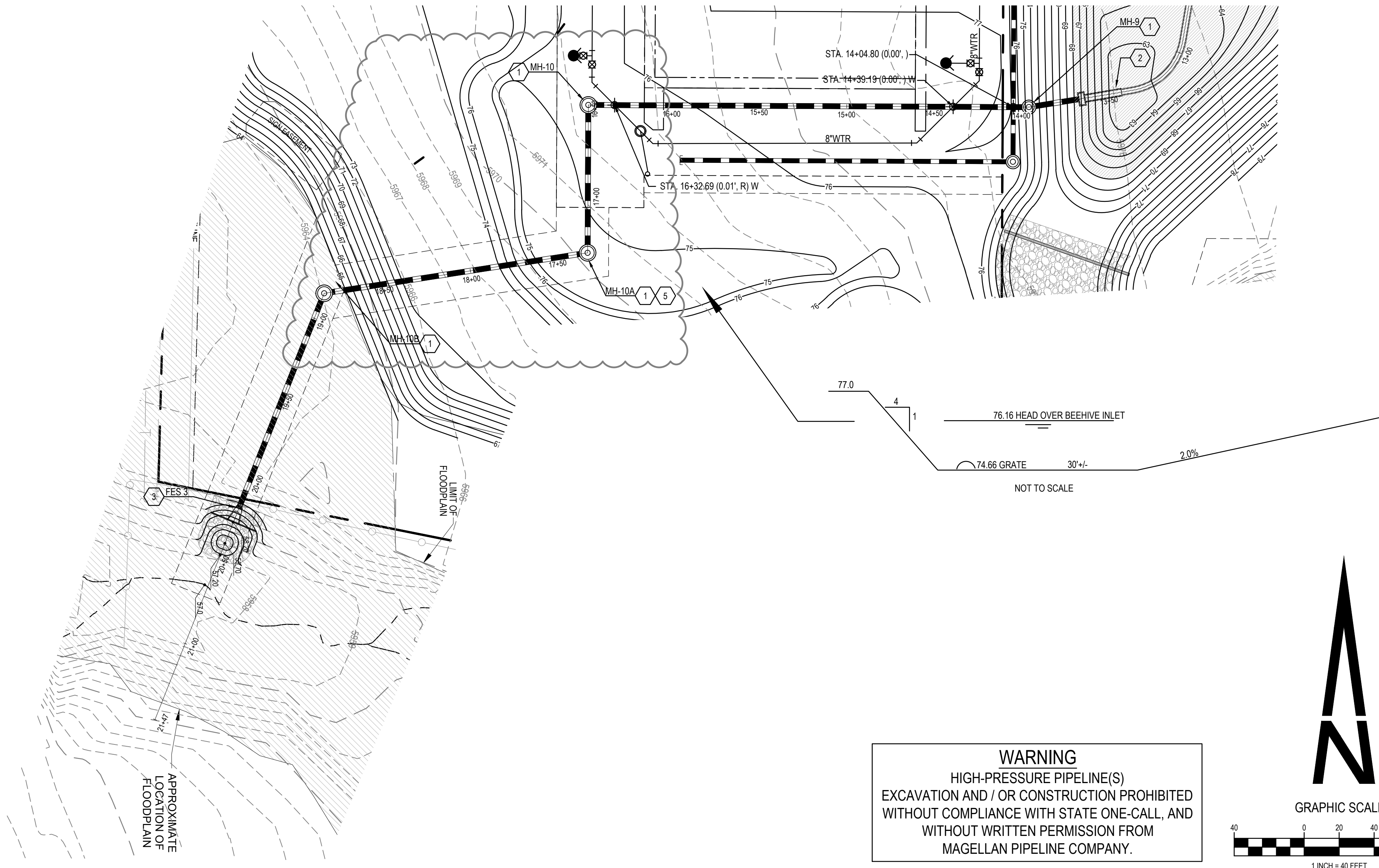
**STORM SEWER PLAN AND PROFILE**

design by: JWD  
approved by: JWD  
project no.: 2015-015

date: 10/01/17

SHEET  
**C4.10**

PARKER POINTE  
LOTS 1 THRU 15 AND TRACTS A AND B, PARKER POINTE FILING NO. 1  
SOUTHEAST CORNER PARKER ROAD AND STROH ROAD  
PARKER, COLORADO



**CONSTRUCTION NOTES**

1. CONSTRUCT 5' DIAMETER MANHOLE. SEE SHEET C4.90.
2. CONSTRUCT OUTLET STRUCTURE. SEE SHEET C4.15
3. INSTALL 36" FES WITH JOINT RESTRAINTS AND TOE WALL. SEE SHEET C4.91
4. INSTALL RIP RAP OUTLET PROTECTION. SEE SHEET C4.92
5. INSTALL GRATED LID ON MANHOLE. NOTE MANHOLE IS IN A SUMP CONDITION. SEE GRADING PLAN. NEEMAH R 4353 BEEHIVE GRATE.

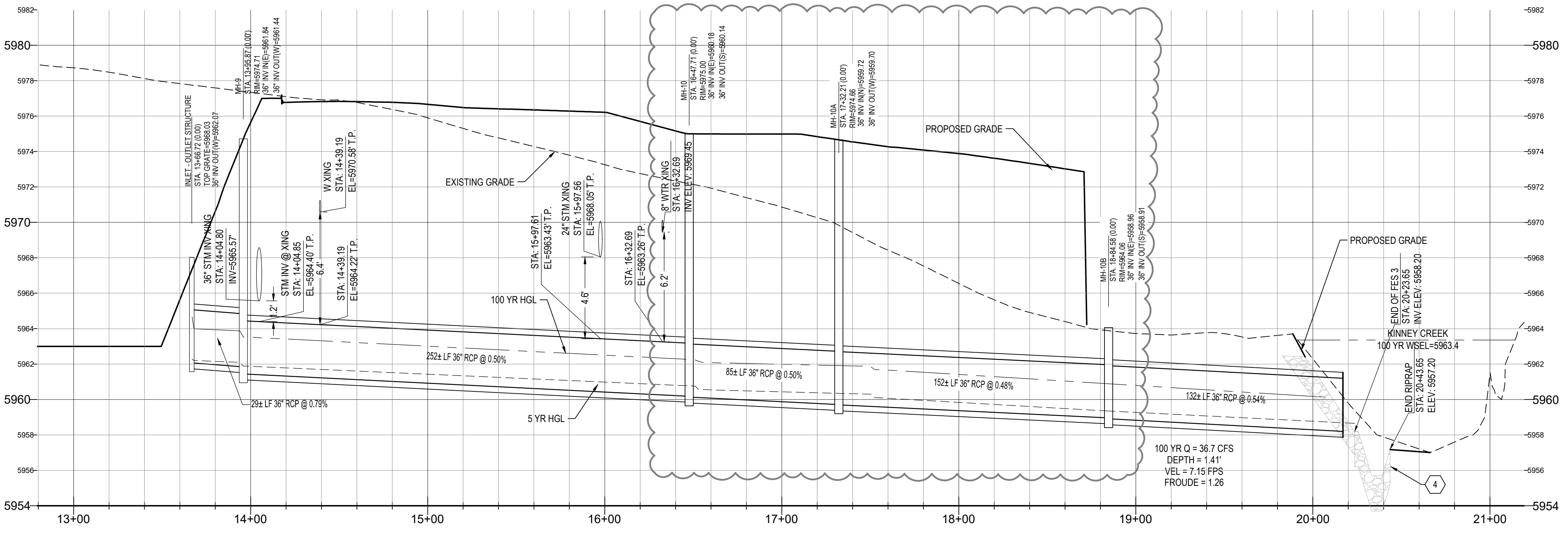
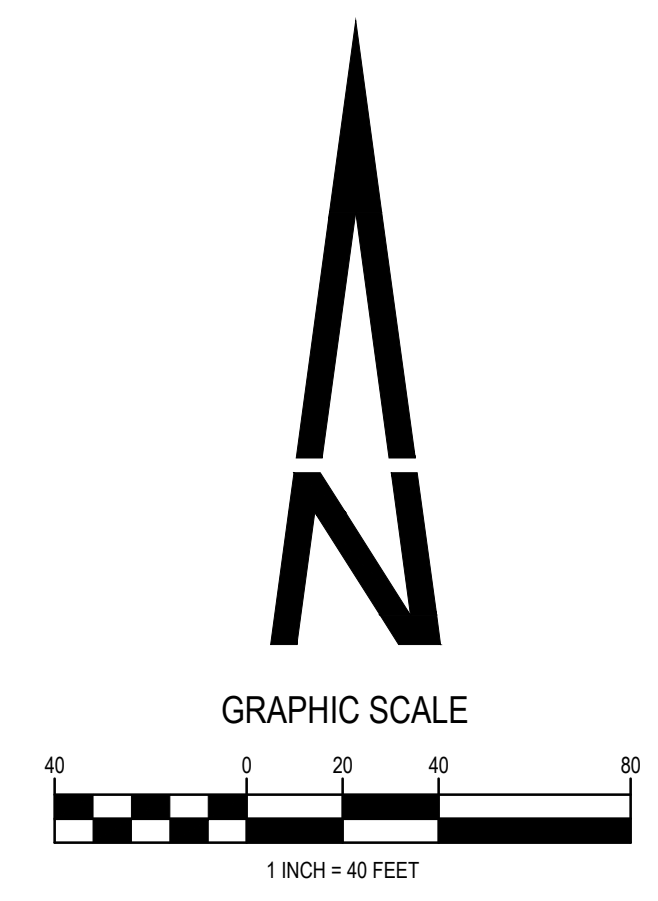
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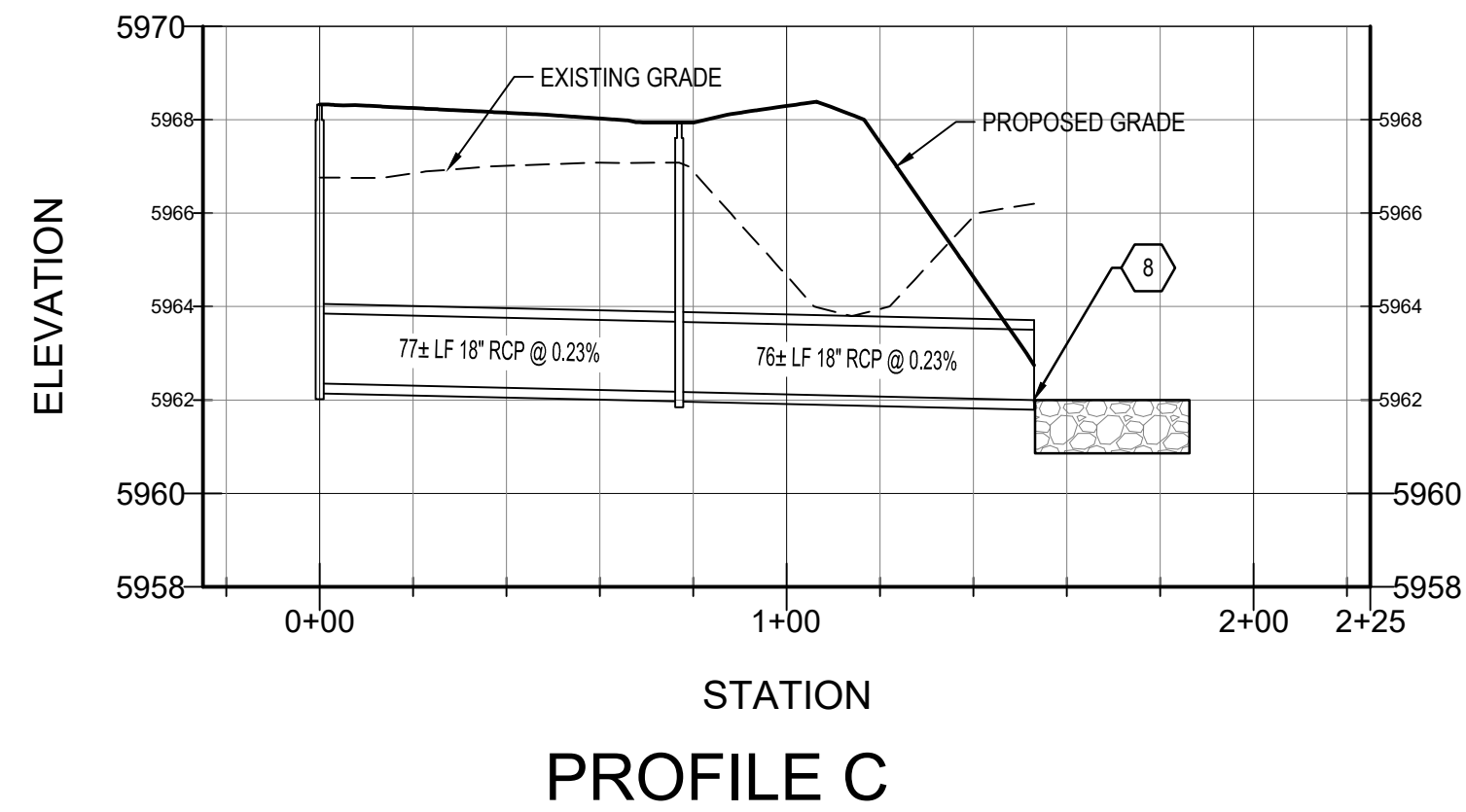
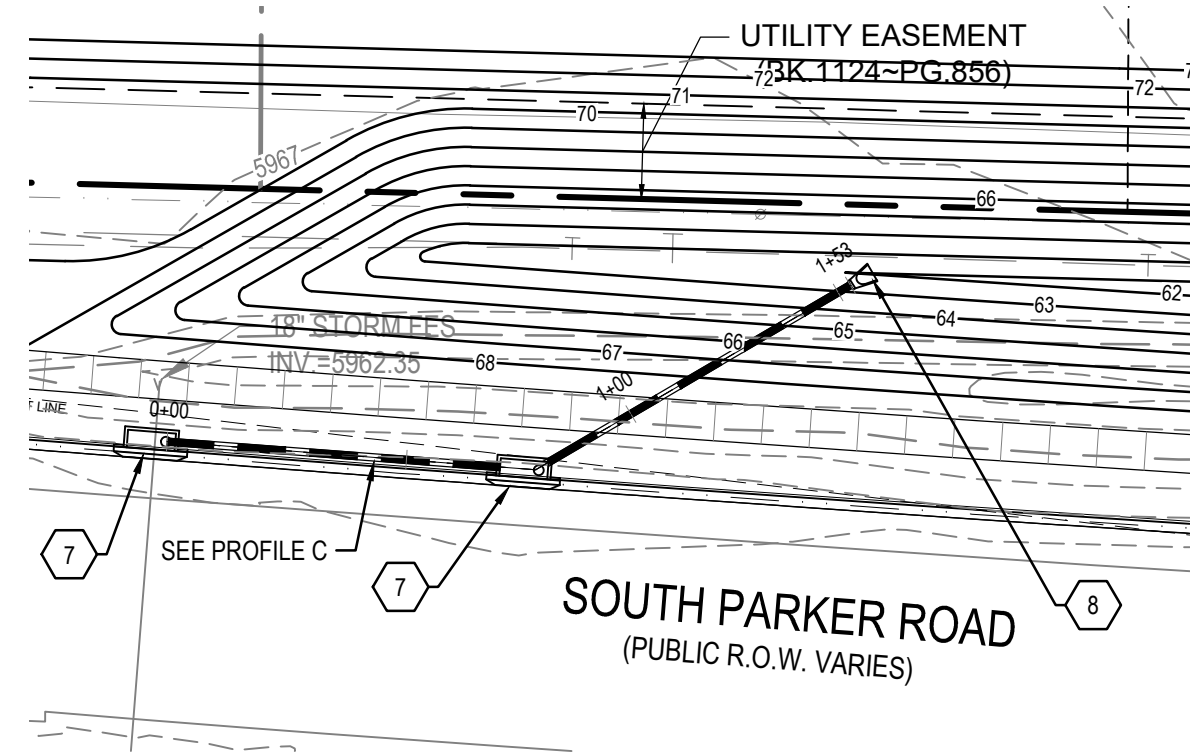
**STORM SEWER PLAN AND PROFILE**

PARKER POINTE  
 LOTS 1 THRU 15 AND TRACTS A AND B, PARKER POINTE FILING NO. 1  
 SOUTHEAST CORNER PARKER ROAD AND STROH ROAD  
 PARKER, COLORADO

design by: JWD  
 approved by: JWD  
 project no.: 2015-015

date: 10/01/17

SHEET  
**C4.12**



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**CONSTRUCTION NOTES**

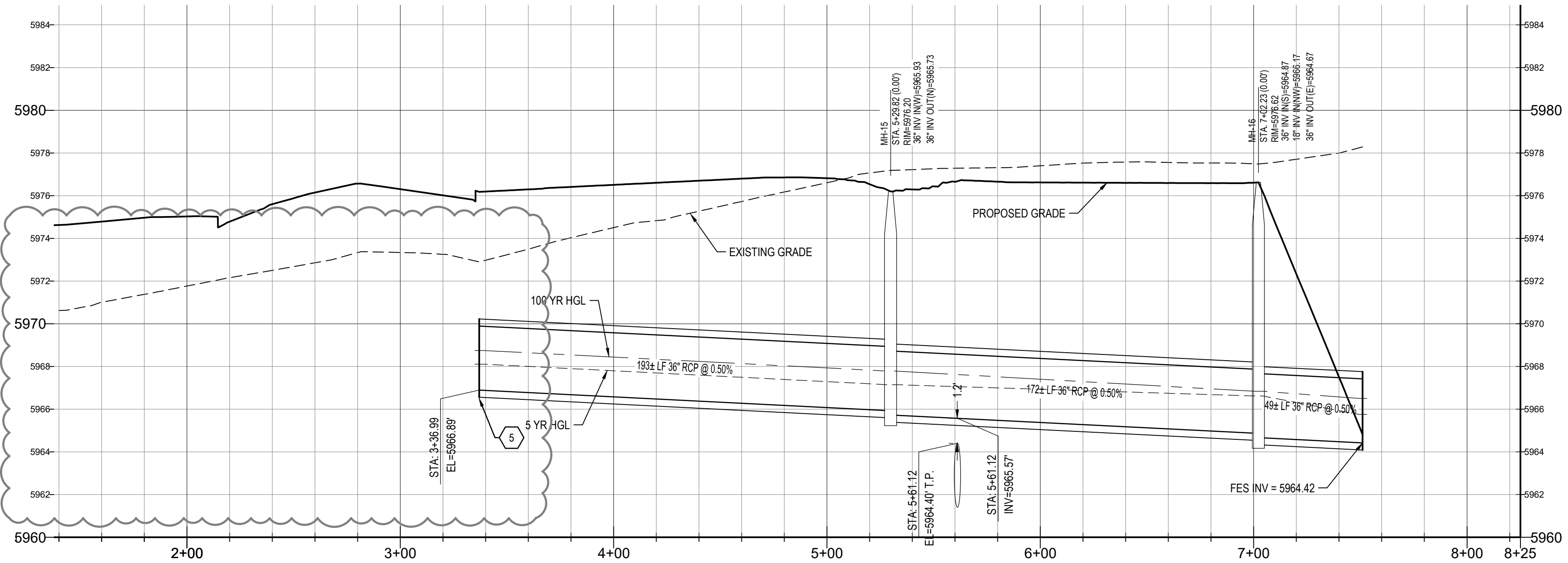
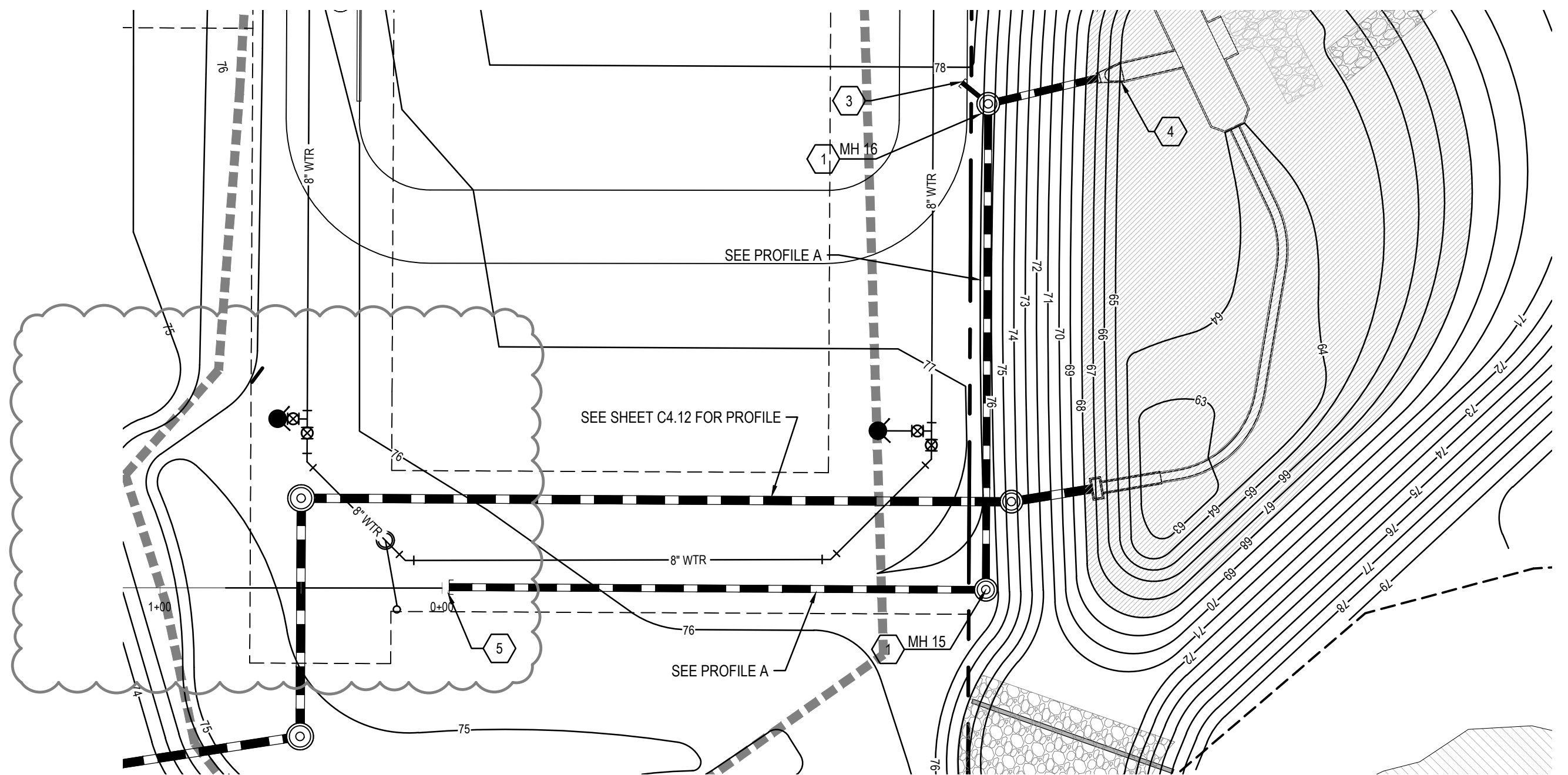
- ① CONSTRUCT 5' DIAMETER MANHOLE. SEE SHEET C4.90.
- ② CONSTRUCT 5' TYPE R INLET. SEE SHEET C4.91.
- ③ STUB 18" RCP 8LF @ 0.50%. SEE PROFILE FOR STARTING INVERT. PLUG AND MARK FOR FUTURE CONNECTION.
- ④ INSTALL 36" FES WITH JOINT RESTRAINTS.
- ⑤ PLUG AND MARK FOR FUTURE CONNECTION.
- ⑥ CONSTRUCT 6' DIAMETER MANHOLE WITH NEENAH R-3031-B COMBINATION INLET GRATE INSTEAD OF STANDARD RIM AND COVER.
- ⑦ CONSTRUCT 10' TYPE R INLET. SEE SHEET C4.91.
- ⑧ INSTALL 18" FES WITH CUTOFF WALL AND 4' X 10' LONG BURIED TYPE L RIPRAP OVER FILTER FABRIC.

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 CENTER OF COLORADO  
 1-800-922-1987**  
 CALL 2-BUSINESS DAYS IN ADVANCE  
 BEFORE YOU DIG, GRADE, OR EXCAVATE  
 FOR THE MARKING OF UNDERGROUND  
 MEMBER UTILITIES.

CAUTION: NOTICE TO CONTRACTOR THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

**UTILITY NOTES**

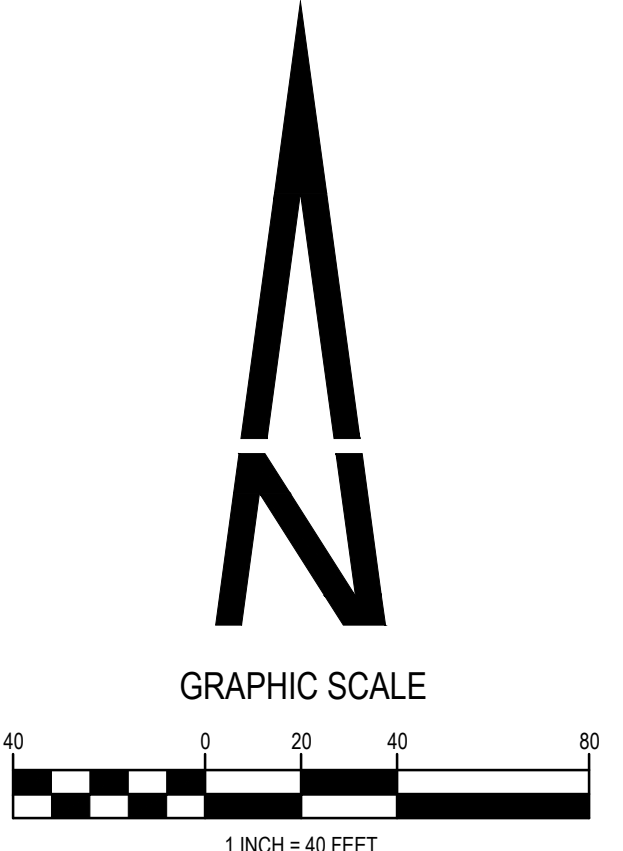
1. ROADWAY DIMENSIONS ARE FROM FL-FL. 1-FOOT PAN IS PROPOSED ONSITE.
2. ALL UTILITY CONSTRUCTION SHALL CONFORM TO PARKER WATER AND SANITATION DISTRICT AND CRITERIA REFERENCE. LOCAL AGENCY INFRASTRUCTURE DESIGN AND CONSTRUCTION STANDARDS.
3. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE PARKER WATER AND SANITATION DISTRICT THE DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.
4. THE CONTRACTOR SHALL NOTIFY THE TOWN OF PARKER PUBLIC WORKS AND PARKER WATER AND SANITATION DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO STARTING CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES. EXISTING UTILITIES SHOWN ON THESE PLANS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND DO NOT REFLECT A COMPLETE SURVEY OF EXISTING UTILITIES. CONTACT THE ENGINEER WITH DISCREPANCIES.
6. CONTRACTOR SHALL VERIFY THE STUB TIE IN ELEVATION PRIOR TO START OF CONSTRUCTION. THE ELEVATION OF THE STUB SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO SANITARY SEWER CONSTRUCTION.
7. SAWCUT OF EXISTING STREETS SHALL BE IN CONFORMANCE WITH TOWN STANDARDS. CUTS SHALL STRAIGHT WITH CLEAN EDGES. REMOVE EXISTING CURB AND GUTTER TO NEAREST JOINT RETURN ALONG EXISTING LINE AND GRADE.
8. THE OWNER AND OR THEIR REPRESENTATIVE SHALL BE RESPONSIBLE FOR COORDINATION WITH EXISTING FRANCHISE UTILITIES TO INCLUDE COMCAST, XCEL, CENTURY LINK OR OWNERS OF EXISTING DRY UTILITY LINES.
9. EXISTING UTILITY SURFACE APPURTENANCES SHALL BE RAISED TO FINISHED GRADE, THIS INCLUDES BUT IS NOT LIMITED TO MANHOLE LIDS, VALVE COVERS.
10. SITE SURVEY IS PROVIDED BY ESC DATED 2-8-2016.
11. THE CONTRACTOR SHALL HAVE AN APPROVED SET OF CONSTRUCTION PLANS ON SITE AT ALL TIMES. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS FOR THE CONSTRUCTION, NOTIFYING AND SCHEDULING LOCAL AGENCIES INSPECTIONS.
12. ALL PIPE LENGTHS ARE MEASURED FROM CENTER OF MANHOLE AND FLOWLINE X CENTER OF INLETS.
13. ELEVATIONS ARE FINISHED GRADE ELEVATION UNLESS OTHER WISE NOTED.



**PROFILE A**

**BENCHMARK**

BENCHMARK: DOUGLAS COUNTY SURVEY CONTROL MONUMENT TT15A - 3" DIAMETER DOUGLAS COUNTY GIS ALUMINUM CAP AT THE NE CORNER OF STROH ROAD AND SOUTH PARKER ROAD (US HIGHWAY 83)  
 ELEVATION: 5970.79 FEET (NAVD 1988 DATUM)



THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER

TOWN OF PARKER, DIRECTOR OF ENGINEERING



PREPARED UNDER THE DIRECT SUPERVISION OF JERRY W. DAVIDSON, P.E. COLORADO REG # 30226 FOR AND ON BEHALF OF PERCEPTION DESIGN GROUP, INC.

DATE	DESCRIPTION	REVISIONS
03/11/24	FOURTH CDOT NTP SUBMITTAL	
01/31/24	THIRD CDOT NTP SUBMITTAL	
01/15/24	2ND REPEAT SUBMITTAL	
08/01/23	SECOND CDOT NTP SUBMITTAL	
04/21/23	CDOT NTP SUBMITTAL / RE-PLAT SUBMITTAL	
04/15/22	RESUBMITTAL	
11/01/18	SIXTH SUBMITTAL	

**STORM SEWER PLAN AND PROFILE**

design by: JWD  
 approved by: JWD  
 project no.: 2015-015

date: 10/01/17

SHEET  
**C4.13**



## ORIFICE FLOW

(Determines how much water flows through the grate)

### CAPACITY OF NEENAH GRATES FOR PONDING CONDITIONS

For flow through a grate under ponding conditions, orifice type flow occurs. If the net open area is used as the orifice area, the discharge can be computed using the orifice equation  $Q = CA\sqrt{2gh}$  where  $C$  has a value of 0.60,  $A$  = area in square feet,  $g$  = the constant value 32.2, and  $h$  = depth in feet of water over the grate.

The orifice equation is most accurate when large depths of ponding are encountered. At shallower depths, the equation loses its accuracy. The determining factor is the grate's free open area. The orifice equation remains accurate for grates of smaller area when depths are in the .4 to .3 foot range. Grates of larger free open area are not able to sustain ponding conditions at shallow depths, and therefore flow reverts to weir or one directional flow.

Since this equation contains three variables, two must be known to make a determination of the third. To facilitate rapid solution of the equation a nomograph (see page 45) is used. Please note the nomograph is limited to depths of .3 foot.

To use the nomograph, a line is drawn through the two known values on their respective axis. The third value will be obtained at the intersection of this line with the third axis. For example, if the area of a grate required to pass 6.7 cubic feet/second under a .5 feet head is desired, a line is projected from the .5 unit point on the right axis through the 6.7 unit point on the center axis. This line intersects the left axis at approximately 2.0 units indicating that a grate with a net open area of 2.0 square feet is required. Selection of this grate can be made by referring to the size table for the various Neenah grates.

It should be left to the designer to make any necessary reductions in the discharge due to trash accumulation or clogging.

For an example of the relationship between the weir and orifice equations and the expected flow through a grate under varying conditions see page 53.

#### Note on BEEHIVE grates:

To determine orifice flow capacities for beehive grates, the ponding depth is zero at the top of the grate. This is conservative, but it is usually better to underestimate than overestimate the grate capacity.

# Discharge vs Depth On Grate

