

CITY OF SPARKS WINGFIELD HILLS RD DRAINAGE IMPROVEMENTS BID #18/19-022

MAY 2019

ENGINEER



681 EDISON WAY - RENO, NEVADA 89502
PH 775-771-5554 / FX 775-856-3951

SHEET INDEX

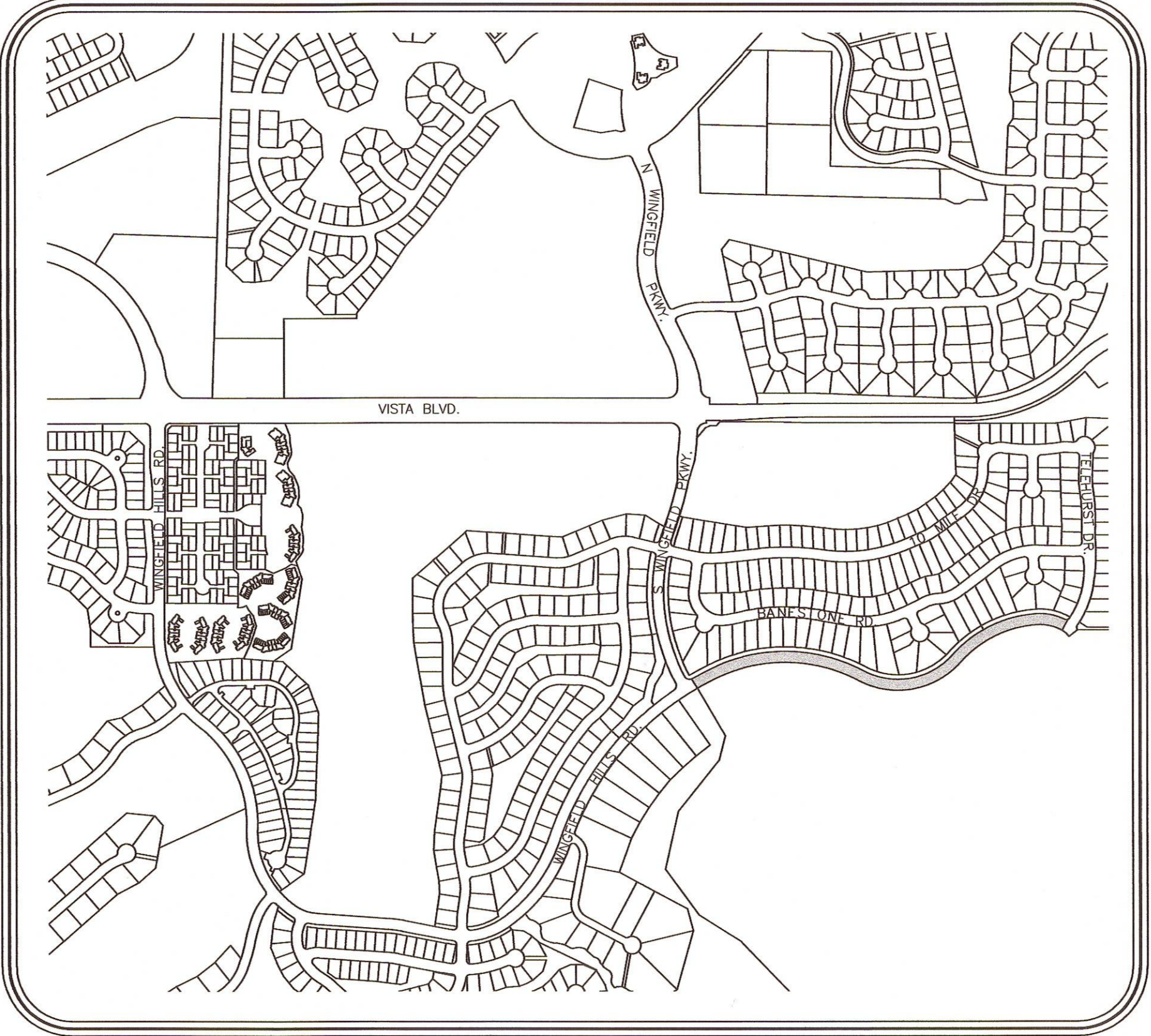
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ABBREVIATIONS

AC	ASPHALT CEMENT	LF	LINEAR FEET
BC	BEGINNING OF CURVE	LP	LOW POINT
BF	.....	BOTTOM OF FOOTING	M.D.D.	.....	MAXIMUM DRY DENSITY
BFC	.....	BACK FACE OF CURB	MIN.	.....	MINIMUM
BVC	.....	BEGINNING OF VERTICAL CURVE	MPOC	.....	MID POINT OF CURVE
CB	.....	CATCH BASIN	PI	.....	POINT OF INTERSECTION
CL	.....	CENTERLINE	PCC	.....	POINT OF COMPOUND CURVATURE
DI	.....	DROP INLET	PRC	.....	POINT OF REVERSE CURVATURE
ELEV.	.....	ELEVATION	PVC	.....	POLYVINYL CHLORIDE
EC	.....	END OF CURVE	R	.....	RADIUS
EP	.....	EDGE OF PAVEMENT	REF.	.....	REFERENCE
EVC	.....	END OF VERTICAL CURVE	RET.	.....	RETURN
EXIST.	.....	EXISTING	RCP	.....	REINFORCED CONCRETE PIPE
(e)	.....	EXISTING	RT.	.....	RIGHT
FF	.....	FINISH FLOOR	R/W	.....	RIGHT OF WAY
FBD	.....	FLAT BOTTOM DITCH	SD	.....	STORM DRAIN
FFC	.....	FRONT FACE OF CURB	SS	.....	SANITARY SEWER
FG	.....	FINISH GRADE	SF	.....	SQUARE FEET
FHA	.....	FIRE HYDRANT ASSEMBLY	SSMH	.....	SANITARY SEWER MANHOLE
FL	.....	FLOW LINE	SDMH	.....	STORM DRAIN MANHOLE
G	.....	GAS	S	.....	SLOPE
GB	.....	GRADE BREAK	STA.	.....	STATION
HORIZ	.....	HORIZONTAL	TC	.....	TOP OF CURB
IE	.....	INVERT ELEVATION	VC	.....	VERTICAL CURB
LAT.	.....	LATERAL	VPI	.....	VERTICAL POINT OF INTERSECTION
LT.	.....	LEFT			

CITY OF SPARKS OFFICIALS

RON SMITH	.....	MAYOR
DONALD ABBOTT	.....	COUNCIL MEMBER WARD 1
ED LAWSON	.....	COUNCIL MEMBER WARD 2
PAUL ANDERSON	.....	COUNCIL MEMBER WARD 3
CHARLENE BYBEE	.....	COUNCIL MEMBER WARD 4
KRISTOPHER DAHIR	.....	COUNCIL MEMBER WARD 5
NEIL KRUTZ	.....	CITY MANAGER



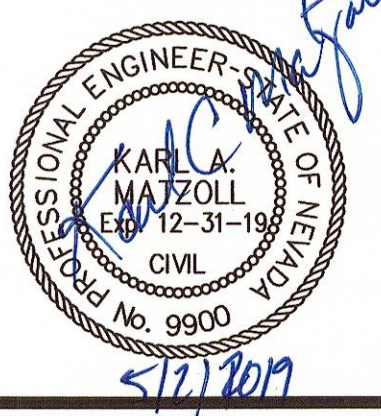
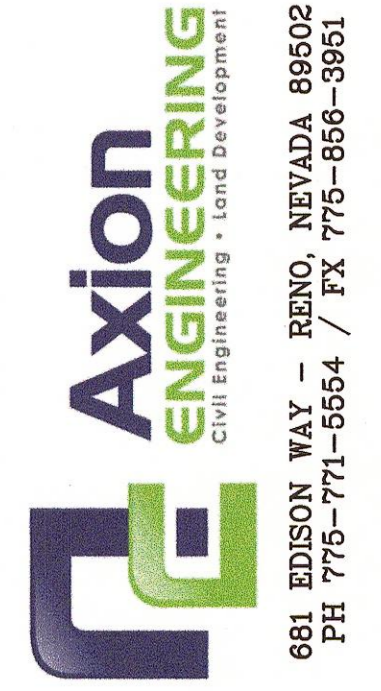
VICINITY MAP



SITE PLAN

APPROVED BY: _____ DATE: _____
JON R. ERICSON, P.E., P.T.O.E.
CITY ENGINEER

APPROVED BY: *Karl A. Matzoll* _____ DATE: *5/12/2019*
KARL A. MATZOLL, P.E.
AXION ENGINEERING



**CITY OF SPARKS
WINGFIELD HILLS RD
DRAINAGE IMPROVEMENTS
SPARKS, NEVADA**

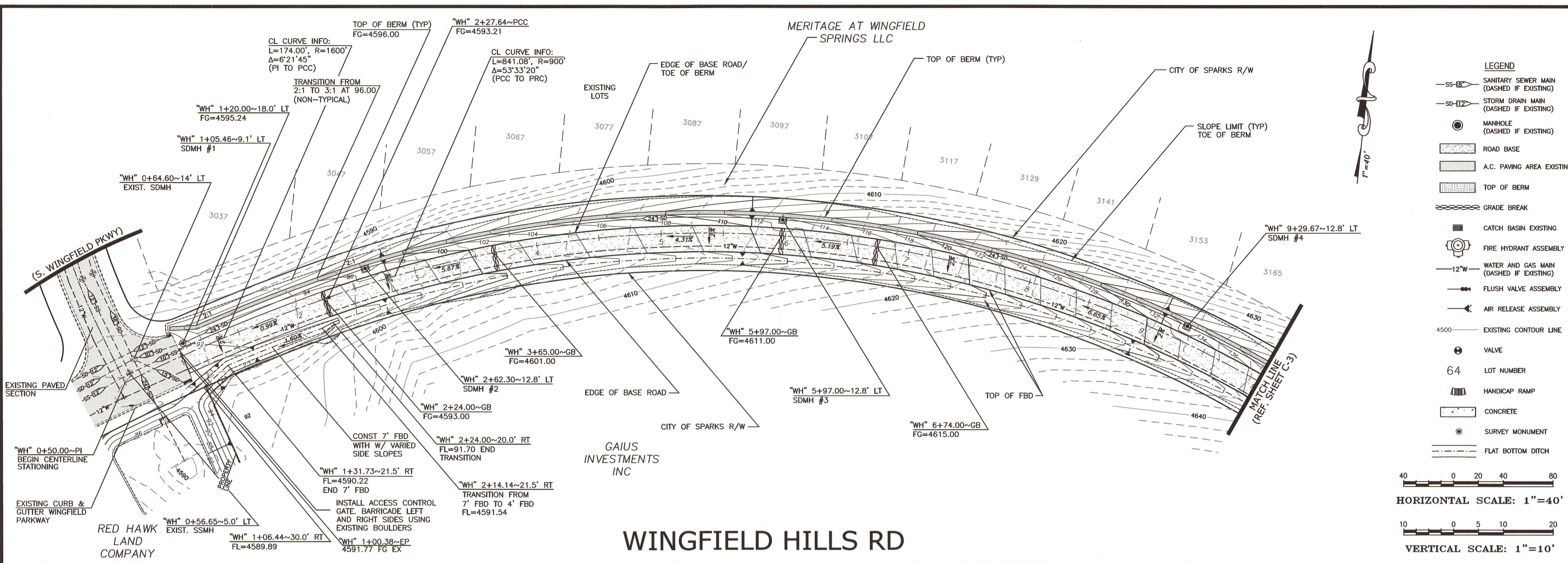
revisions	

drawn: KW
checked: GK
date: MAY 2019
scale:
project no: 17020

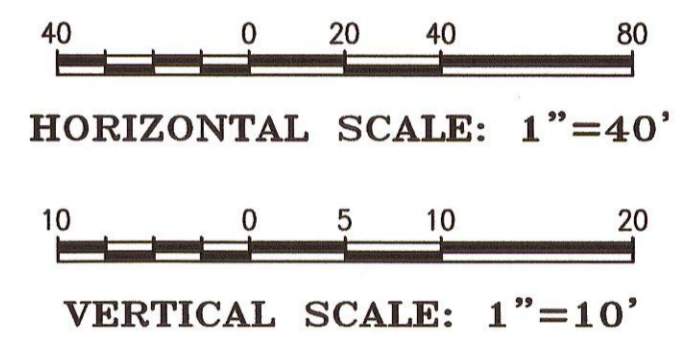
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C-1

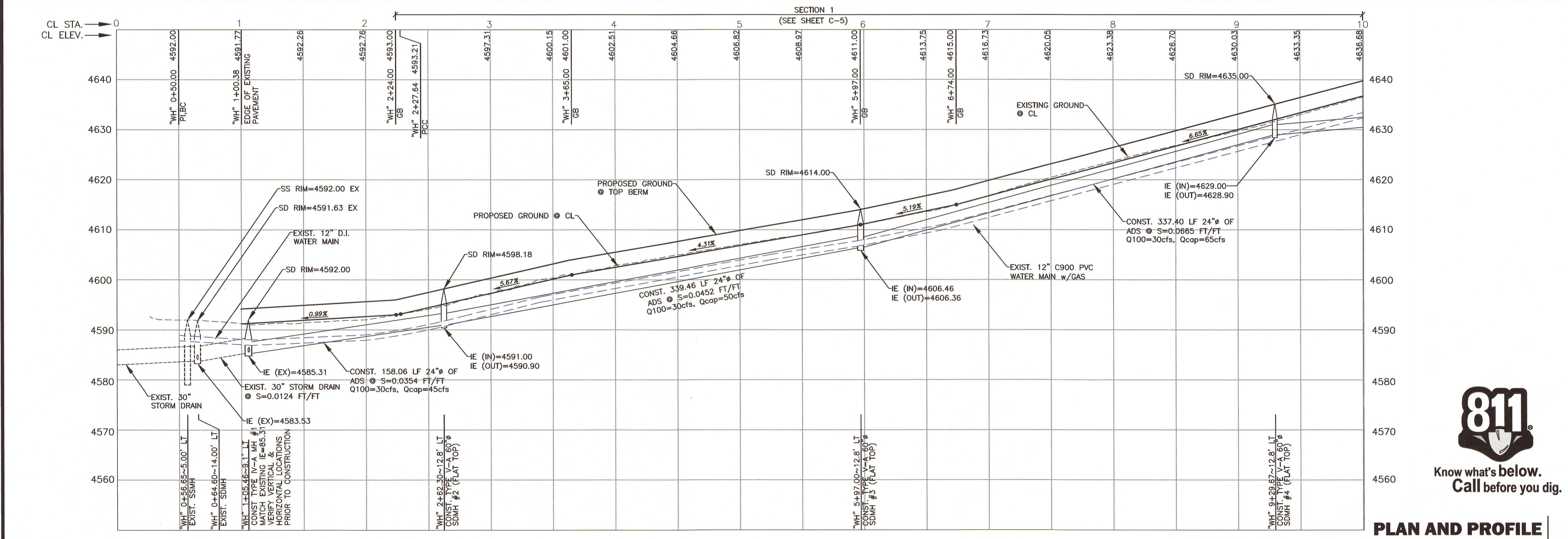
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- LEGEND**
- SS-18 SANITARY SEWER MAIN (DASHED IF EXISTING)
 - SD-12 STORM DRAIN MAIN (DASHED IF EXISTING)
 - MANHOLE (DASHED IF EXISTING)
 - ROAD BASE
 - A.C. PAVING AREA EXISTING
 - TOP OF BERM
 - GRADE BREAK
 - CATCH BASIN EXISTING
 - FIRE HYDRANT ASSEMBLY
 - 12\"/>



**CITY OF SPARKS
 WINGFIELD HILLS RD
 DRAINAGE IMPROVEMENTS
 SPARKS, NEVADA**



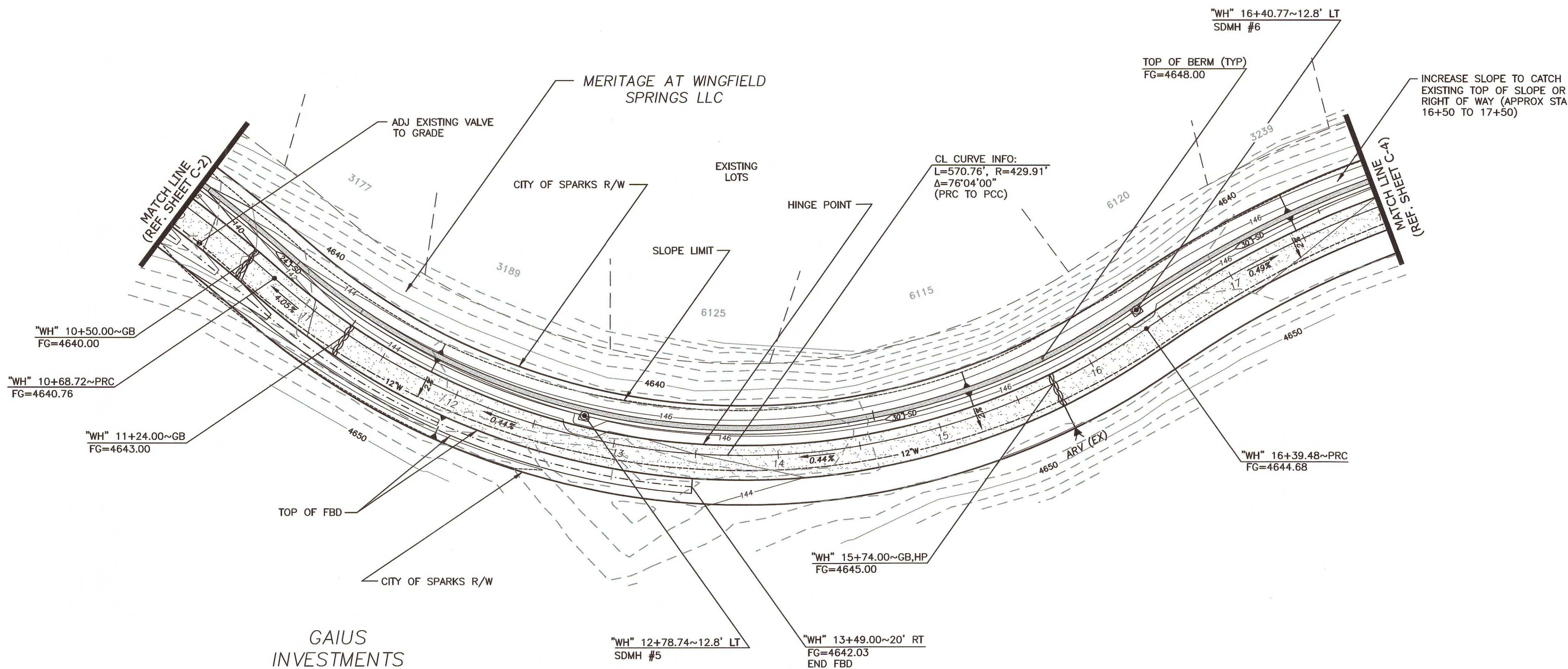
Know what's below.
 Call before you dig.

PLAN AND PROFILE

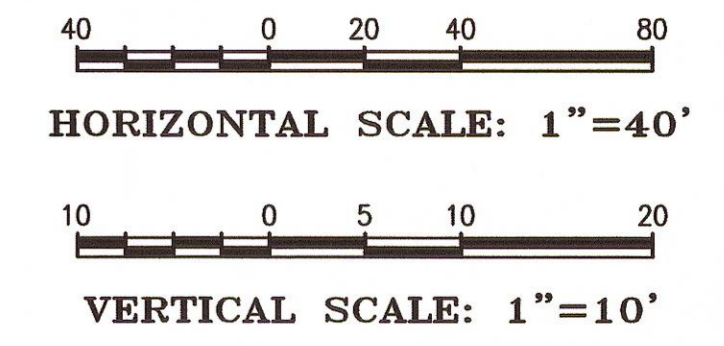
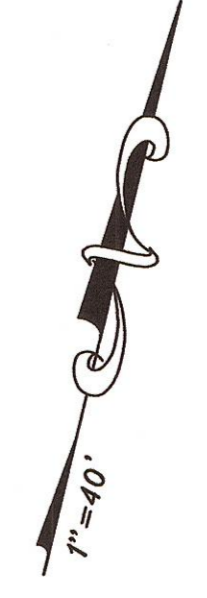
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drawn: KM
checked: GKG
date: MAY 2019
scale: 1"=40'
project no: 17020

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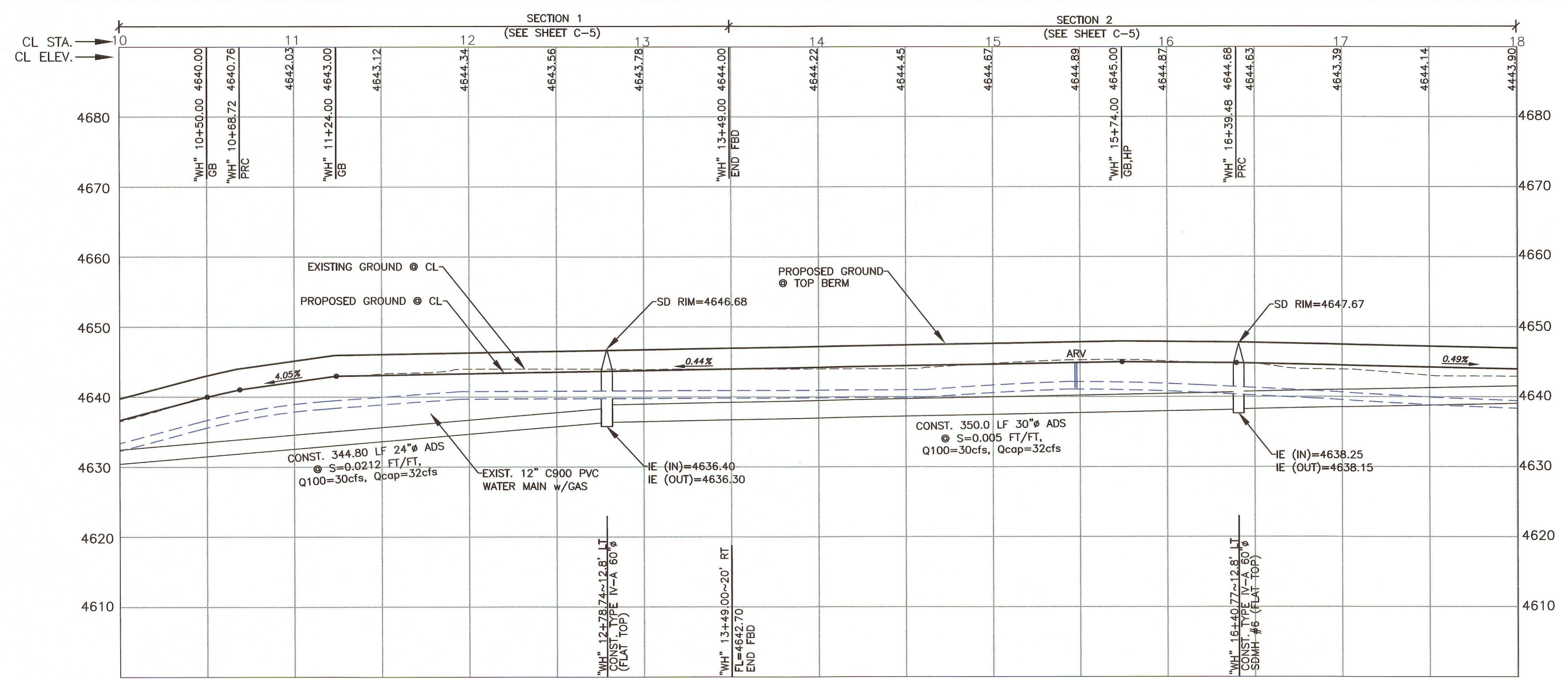


- LEGEND**
- SS—(B) SANITARY SEWER MAIN (DASHED IF EXISTING)
 - SD—(T) STORM DRAIN MAIN (DASHED IF EXISTING)
 - MANHOLE (DASHED IF EXISTING)
 - ▨ ROAD BASE
 - ▨ A.C. PAVING AREA EXISTING
 - ▨ TOP OF BERM
 - ~ GRADE BREAK
 - ▣ CATCH BASIN EXISTING
 - ⊕ FIRE HYDRANT ASSEMBLY
 - 12" W (DASHED IF EXISTING)
 - ⊕ FLUSH VALVE ASSEMBLY
 - ⊕ AIR RELEASE ASSEMBLY
 - 4500 EXISTING CONTOUR LINE
 - ⊕ VALVE
 - 64 LOT NUMBER
 - ▨ HANDICAP RAMP
 - ▨ CONCRETE
 - ⊕ SURVEY MONUMENT
 - FLAT BOTTOM DITCH



GAIUS INVESTMENTS INC

WINGFIELD HILLS RD



Know what's below.
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PLAN AND PROFILE

AXION ENGINEERING
Civil Engineering • Land Development
881 EDISON WAY - RENO, NEVADA 89502
PH 775-771-5654 / FX 775-868-3951



CITY OF SPARKS
WINGFIELD HILLS RD
DRAINAGE IMPROVEMENTS
SPARKS, NEVADA

revisions

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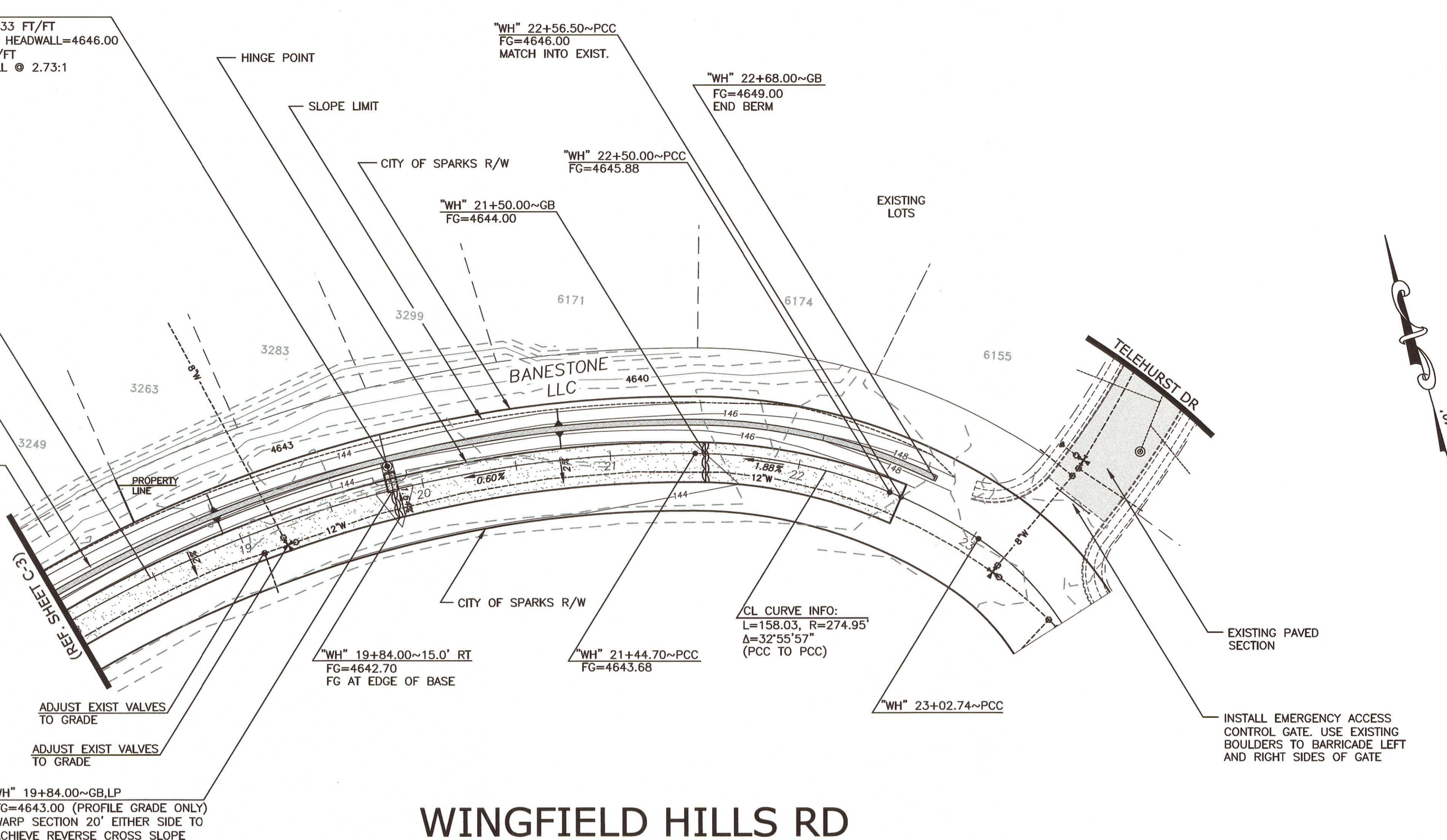
"WH" 19+84.00~12.8' LT SDMH#7
 CONSTRUCT 1 LF OF 30" ADS @ S=0.0833 FT/FT
 IE(OUT)=4640.00 IE(IN)=4642.30 TOP OF HEADWALL=4646.00
 HEADWALL APRON=9.68' @ S=0.0164 FT/FT
 END APRON @ 4642.46 SLOPE WING WALL @ 2.73:1
 REFERENCE DETAIL SHEETS

CL CURVE INFO:
 L=505.22', R=649.87'
 Δ=44°32'34"
 (PRC TO PCC)

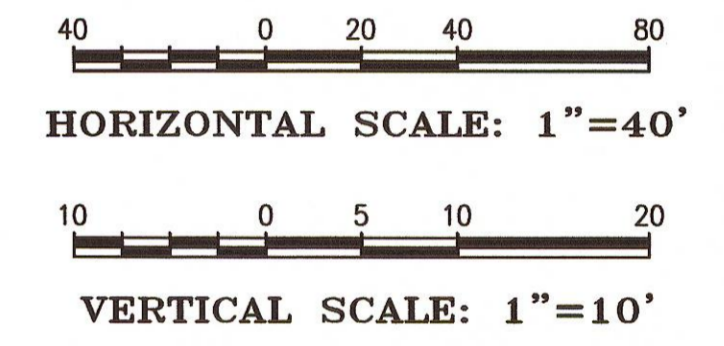
INCREASE SLOPE TO CATCH
 EXISTING TOP OF SLOPE OR
 RIGHT OF WAY (APPROX STA
 16+50 TO 17+50)

MERITAGE AT WINGFIELD
 SPRINGS LLC

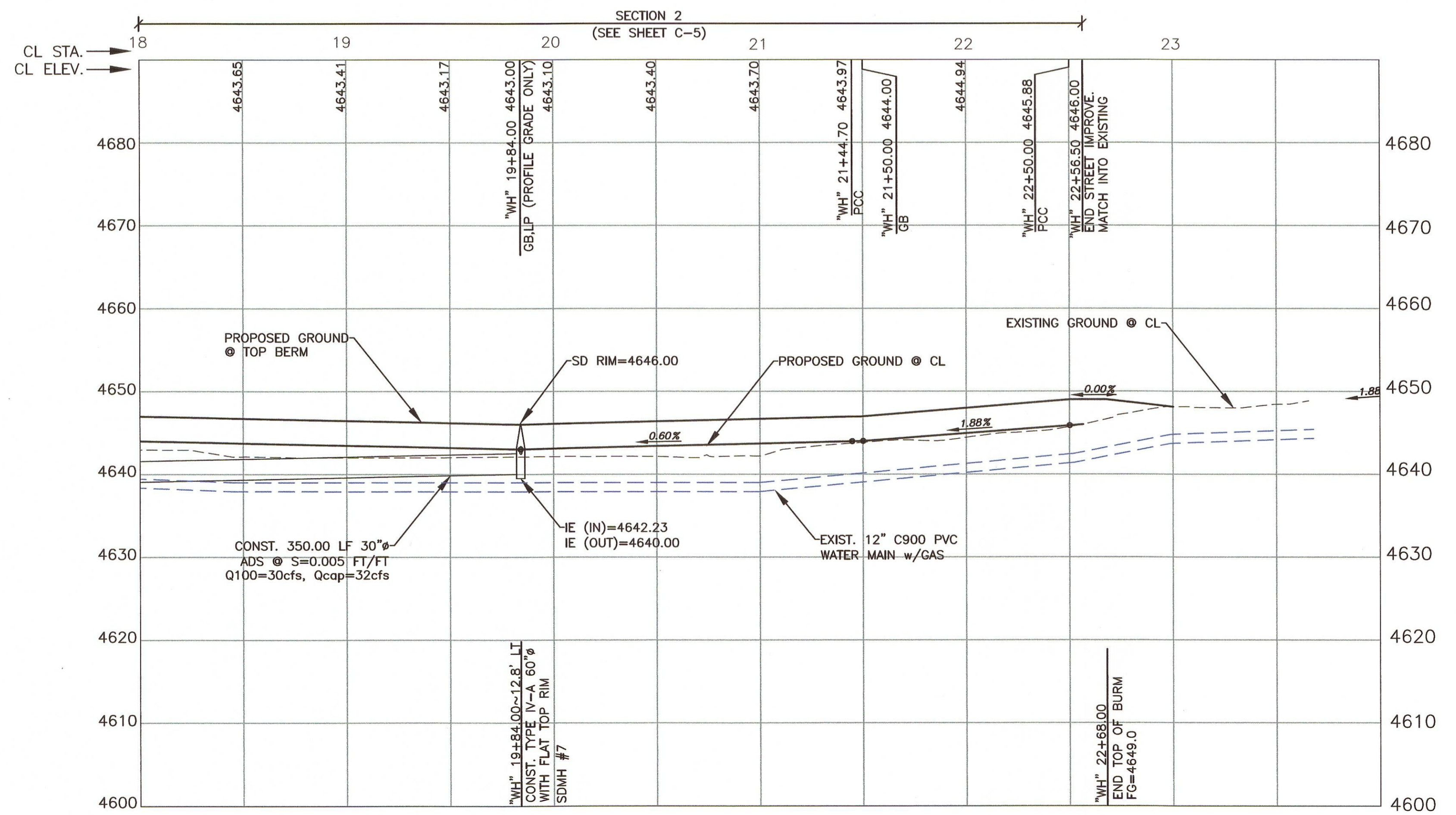
"WH" 19+84.00~GB.LP
 FG=4643.00 (PROFILE GRADE ONLY)
 WARP SECTION 20' EITHER SIDE TO
 ACHIEVE REVERSE CROSS SLOPE



- LEGEND**
- SS-18 SANITARY SEWER MAIN (DASHED IF EXISTING)
 - SO-12 STORM DRAIN MAIN (DASHED IF EXISTING)
 - MANHOLE (DASHED IF EXISTING)
 - ROAD BASE
 - A.C. PAVING AREA EXISTING
 - TOP OF BERM
 - GRADE BREAK
 - CATCH BASIN EXISTING
 - FIRE HYDRANT ASSEMBLY
 - 12"W WATER AND GAS MAIN (DASHED IF EXISTING)
 - FLUSH VALVE ASSEMBLY
 - AIR RELEASE ASSEMBLY
 - 4500 EXISTING CONTOUR LINE
 - VALVE
 - 64 LOT NUMBER
 - HANDICAP RAMP
 - CONCRETE
 - SURVEY MONUMENT
 - FLAT BOTTOM DITCH

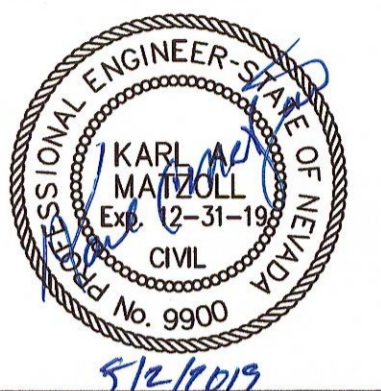


WINGFIELD HILLS RD



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PLAN AND PROFILE

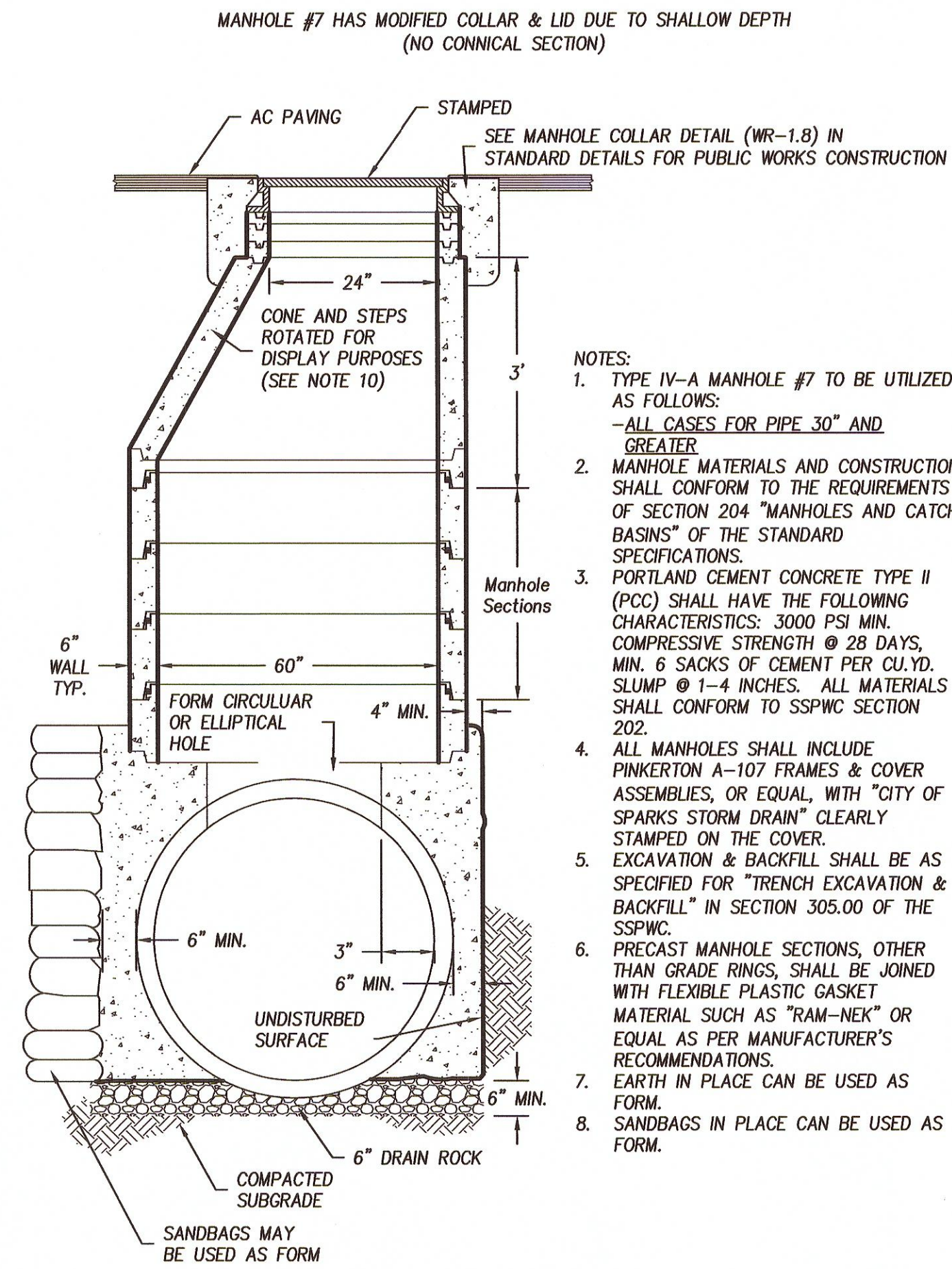


CITY OF SPARKS WINGFIELD HILLS RD DRAINAGE IMPROVEMENTS SPARKS, NEVADA

revisions

NO.	DESCRIPTION	DATE

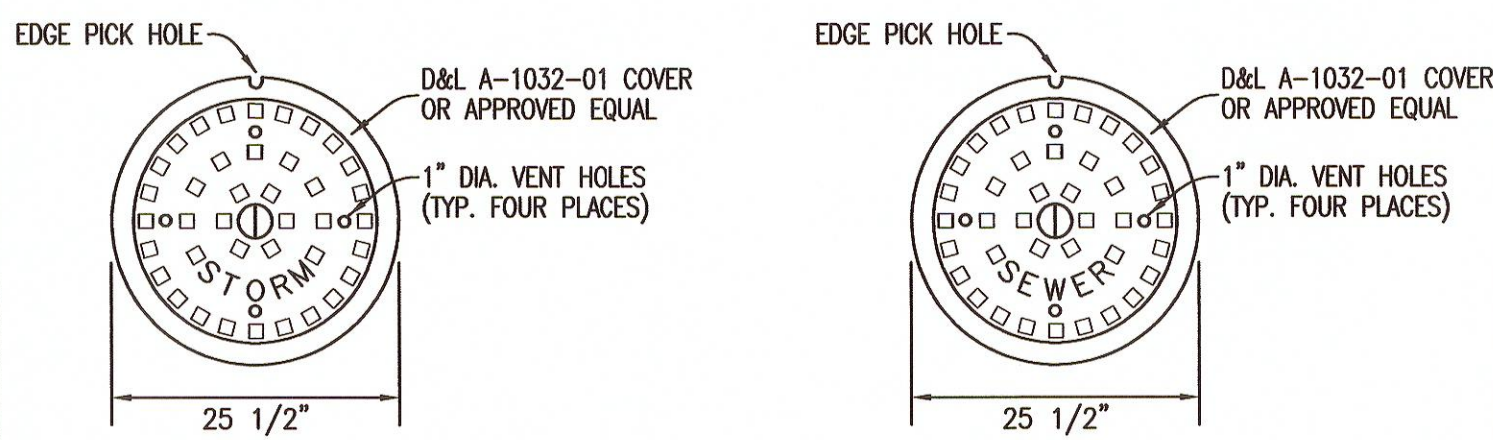
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MANHOLE TYPE IV-A

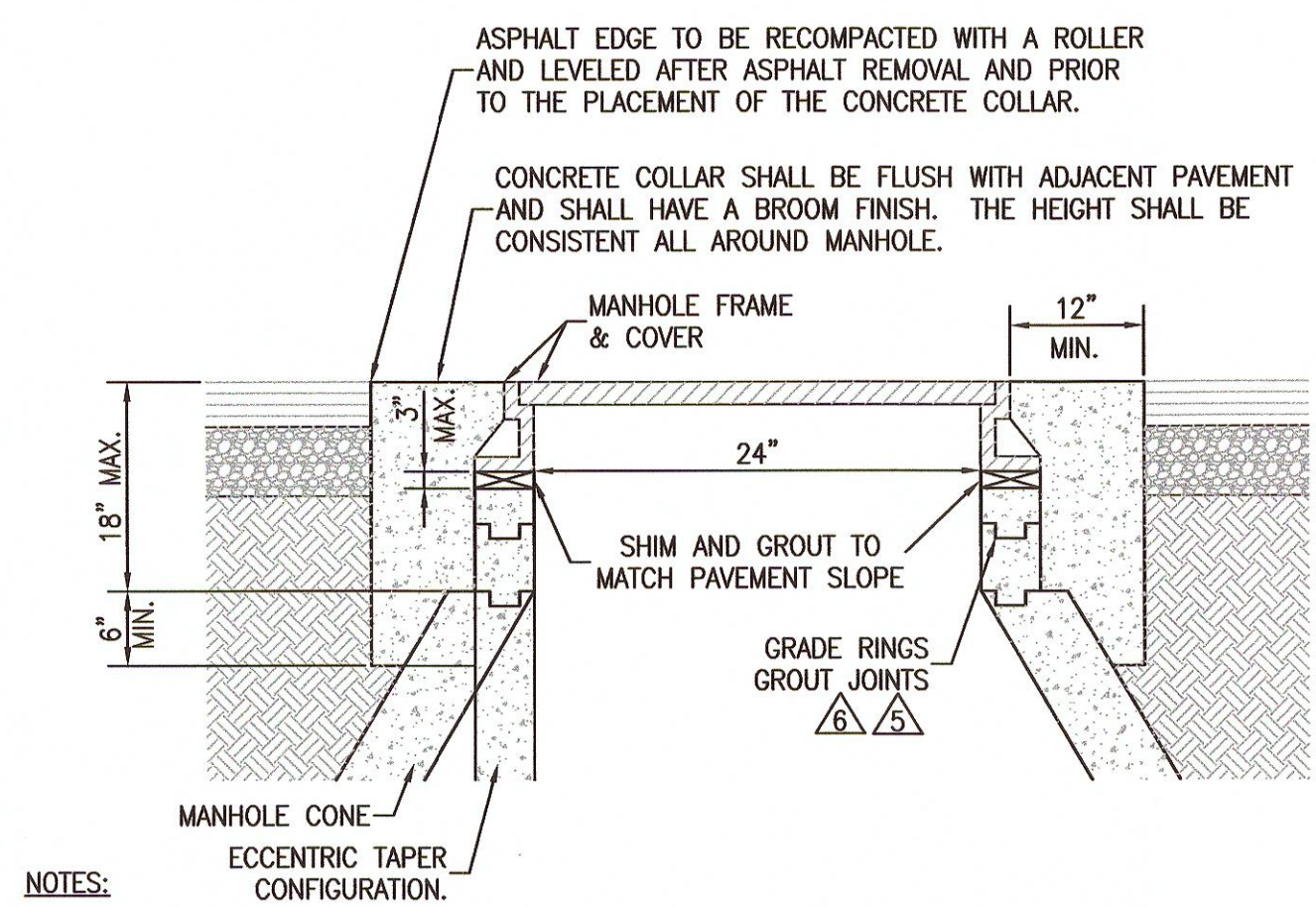
- GENERAL MANHOLE NOTES**
1. ALL PRECAST MANHOLE COMPONENTS SHALL CONFORM TO ASTM C-478.
 2. PIPES SHALL NOT PROTRUDE MORE THAN 3" INSIDE MANHOLE SECTION AS MEASURED AT THE OUTSIDE EDGES OF THE PIPE, VERTICALLY ALIGNED WITH THE SPRINGLINE. PIPE CONNECTION TO MANHOLE SHALL BE WATERTIGHT.
 3. MANHOLE BASE SHALL BE PORTLAND CEMENT CONCRETE (P.C.C.) AND SHALL HAVE THE FOLLOWING CHARACTERISTICS: 3000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, MINIMUM 6 SACKS OF CEMENT PER CUBIC YARD WITH SLUMP AT 1 TO 4 INCHES. ALL MATERIAL SHALL CONFORM TO STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION (SSPWC). PRECAST CONCRETE BASE MAY BE USED IN LIEU OF CAST-IN-PLACE BASE.
 4. MANHOLE MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF SECTION 204 "MANHOLES AND CATCH BASINS" OF THE STANDARD SPECIFICATIONS.
 5. PRECAST MANHOLE SECTIONS, OTHER THAN GRADE RINGS, SHALL BE JOINED WITH FLEXIBLE GASKET MATERIAL SUCH AS "RAM-NEK" OR EQUAL AS PER MANUFACTURER'S RECOMMENDATIONS.
 6. EXCAVATION AND BACKFILL SHALL BE AS SPECIFIED FOR "TRENCH EXCAVATION AND BACKFILL" IN SECTION 305 OF THE STANDARD SPECIFICATIONS.
 7. EXCAVATION SHALL BE AS NEARLY VERTICAL AS POSSIBLE (SHEET AND SHORE IF SOIL CONDITIONS REQUIRE) IN EXISTING STREET SECTIONS, ALLEY SECTIONS, AND CONFINED AREAS, SUCH AS LIMITED EASEMENTS OR ADJACENT STRUCTURES.
 8. MANHOLE PRECAST SECTION LENGTH SHALL BE ARRANGED TO FIT THE REQUIRED DEPTH.
 9. NO LATERALS OR PIPES LESS THAN 8" IN DIAMETER SHALL BE CONNECTED TO THE MANHOLE.
 10. PRECAST CONCRETE BASE MAY BE USED IN LIEU OF CAST-IN-PLACE BASE.
 11. MATCH PIPE INVERTS TO MANHOLE INVERTS WHERE PIPES CONNECT TO MANHOLE BASE.
 12. ALL MANHOLES SHALL BE WATERTIGHT.
 13. PRIOR TO BACKFILLING, ALL MANHOLES SHALL BE VACUUM TESTED PER ASTM C-1244.
 14. NO STEPS, LADDERS, OR OTHER CLIMBING DEVICES SHALL BE INSTALLED IN THE MANHOLE.
 15. REINFORCING STEEL SHALL BE AS SHOWN, WIRED TIGHTLY AT ALL INTERSECTIONS AND EMBEDDED AT LEAST 1 1/2" CLEAR, UNLESS OTHERWISE NOTED.
 16. WHEN PIPE CONNECTIONS TO EXISTING MANHOLES ARE ALLOWED, THEY SHALL BE MADE BY CORE DRILLING THE MANHOLE AND CONNECTING THE PIPE PENETRATION PER CONNECTION DETAIL THIS SHEET.

NOTES - MANHOLE



STORM DRAIN LID

SEWER LID



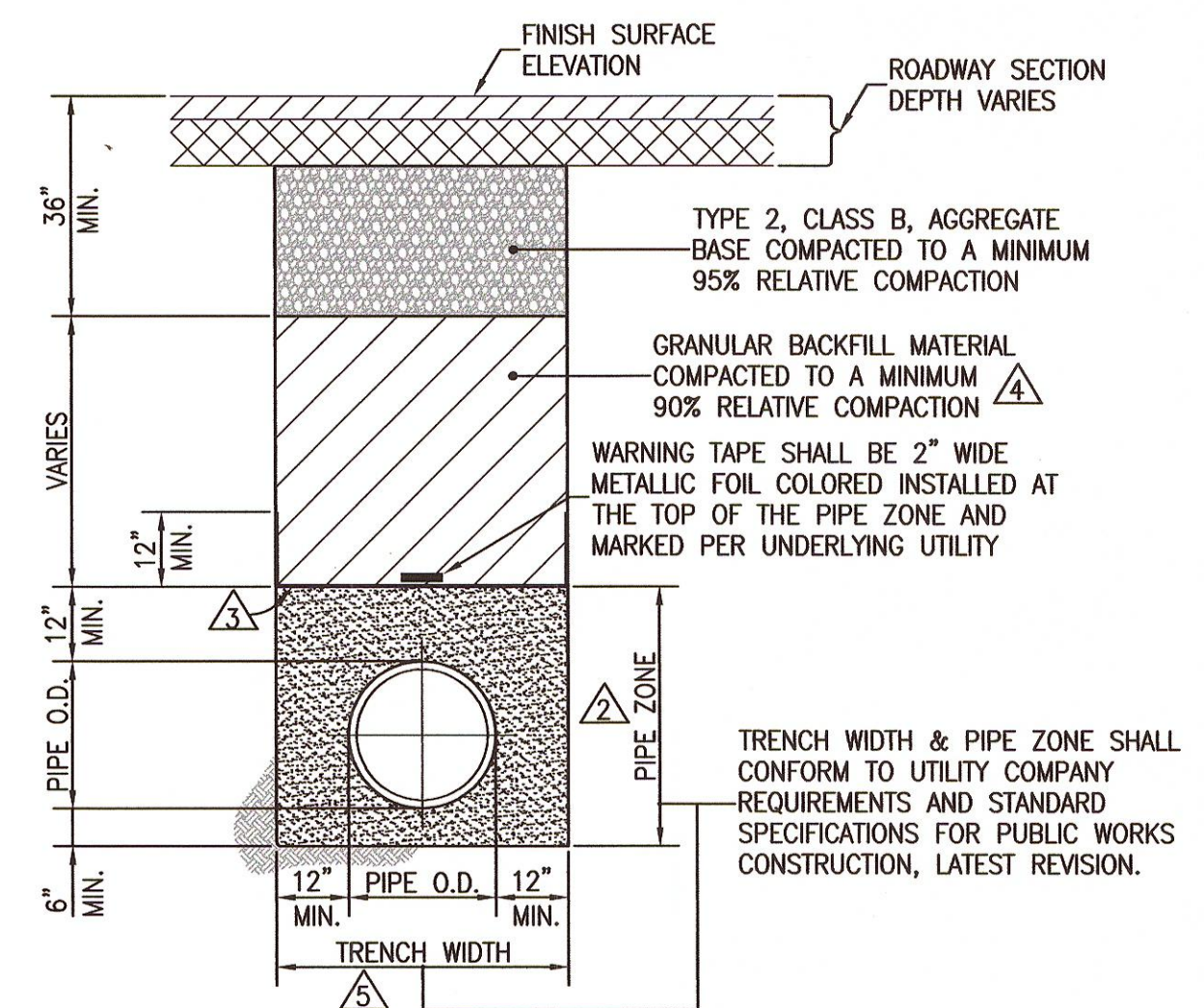
NOTES:

1. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH MAX. WATER-CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. MIX DESIGN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 337 OF STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION (SSPWC). CEMENT SHALL BE TYPE II. ALL CEMENT CONCRETE SHALL HAVE A COARSE AGGREGATE GRADATION CONFORMING TO SIZE No. 67. ALL MATERIALS SHALL CONFORM TO SSPWC.
2. CIRCUMSTANCES MAY REQUIRE THE NEED FOR SPECIAL TYPES OF TOP OF MANHOLE CONFIGURATIONS SUCH AS FLAT TOP, ABOVE GROUND, ETC. AS DIRECTED BY THE CITY OF SPARKS. DETAILED PLANS OF ANY SPECIAL TOP OF MANHOLE CONFIGURATIONS AND ASSOCIATED COLLARS MUST BE APPROVED BY THE ENGINEER.
3. IN UNPAVED AREAS, IT SHALL BE NECESSARY TO SET THE MANHOLE RIM APPROXIMATELY 6 INCHES ABOVE THE SURROUNDING AREA. INSTALL A 6 INCH THICK RING OF CONCRETE, TAPERED AT A 3:1 SLOPE, FROM THE TOP, OUTSIDE EDGE OF THE COLLAR TO THE EXISTING GROUND SURFACE.
4. EXISTING SANITARY SEWER MANHOLE LIDS LOCATED IN GUTTER PANS, SHALL HAVE NEW WATER TIGHT FRAMES AND COVERS.
5. ALL GRADE RING JOINTS ARE TO BE GROUTED WITH NON-SHRINK GROUT HAVING THE FOLLOWING CHARACTERISTICS: 3000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD AND SLUMP AT 1 TO 4 INCHES. ALL MATERIAL SHALL CONFORM TO SSPWC.
6. ALL GRADE RINGS SHALL BE PORTLAND CEMENT CONCRETE. PVC GRADE RINGS ARE NOT ALLOWED.

MANHOLE COLLAR

GENERAL NOTES

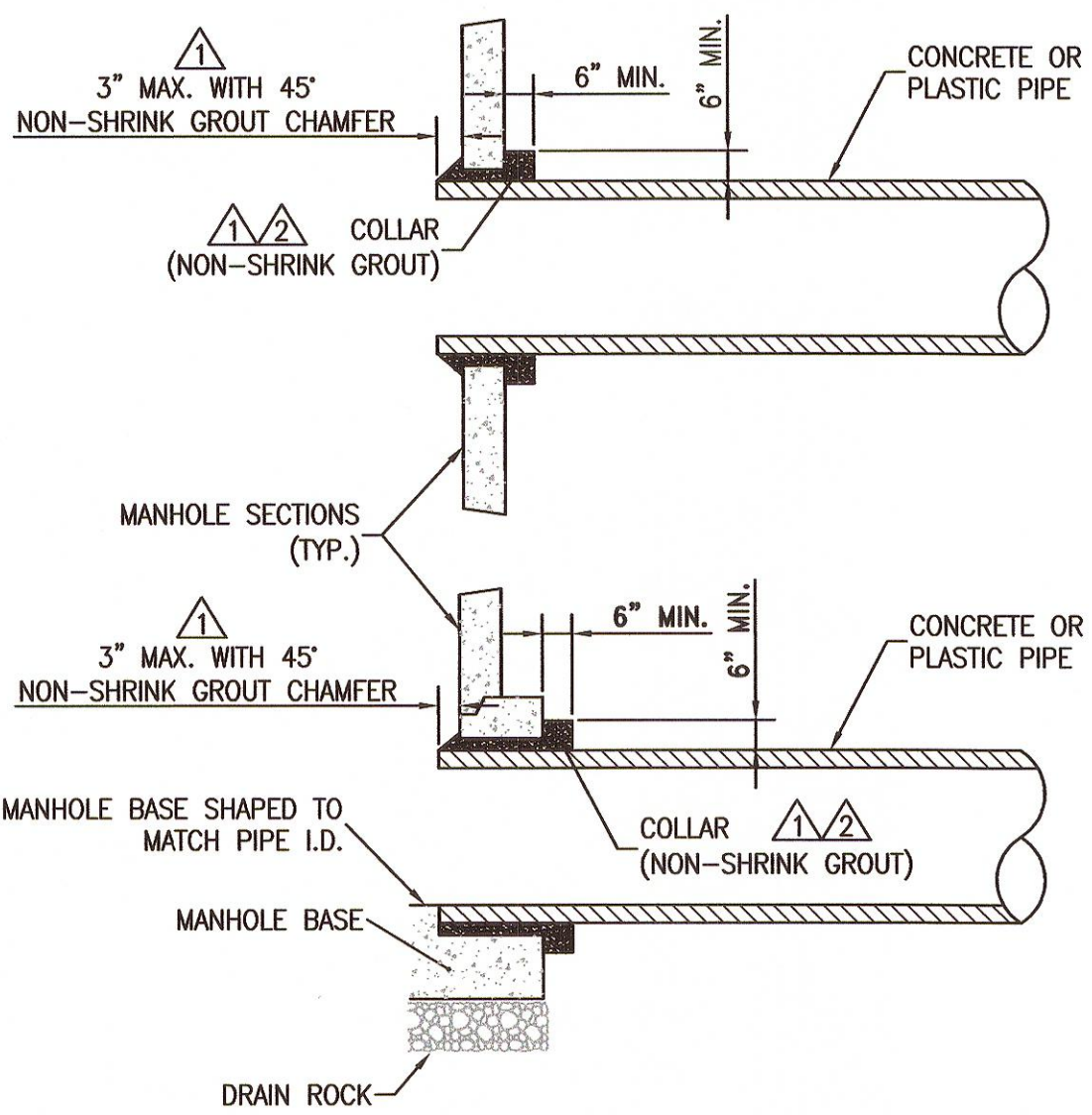
1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE BOOK "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" (CURRENT EDITION), AND THE "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION", AS ADOPTED AND MODIFIED BY THE CITY OF SPARKS AND DISTRIBUTED BY WASHOE COUNTY, INCLUDING ANY ADDITIONS OR MODIFICATIONS THAT ARE SET FORTH IN THE DRAWINGS OR SPECIFICATIONS.
2. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION FOR THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND NOT BE LIMITED TO NORMAL WORKING HOURS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION AND SHORING PROCEDURES AND CONFORM TO THE LATEST OSHA REQUIREMENTS.
4. THE CONTRACTOR SHALL MAINTAIN AN ON-GOING DUST CONTROL PROGRAM, INCLUDING WATERING OF OPEN AREAS, IN ORDER TO CONFORM WITH THE LATEST FEDERAL, STATE, AND COUNTY AIR POLLUTION REGULATIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY REMOVAL OF ALL CONSTRUCTION MATERIALS SPILLED ON PAVED STREETS, ON-SITE OR OFF-SITE. AT THE CLOSE OF EACH DAY, THE CONTRACTOR SHALL INSPECT THE SITE FOR ANY DEBRIS OR TRASH AND PROPERLY DISPOSE OF IT.
6. THE CONTRACTOR SHALL NOTIFY THE DESIGN PROFESSIONAL, ALL GOVERNING AGENCIES HAVING JURISDICTION OVER THE WORK, UTILITY COMPANIES, TELEPHONE COMPANIES, CABLE TELEVISION COMPANIES, AND ANY OTHER ENTITY IMPACTED BY THE WORK 48 HOURS PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL GIVE 48 HOURS PRIOR NOTICE FOR ALL CONSTRUCTION STAKING AND INSPECTIONS REQUIRED DURING CONSTRUCTION.
7. THE CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND FEES REQUIRED FOR CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION SIGNING, BARRICADES, AND TRAFFIC DELINEATION TO CONFORM TO THE STATE OF NEVADA, DEPARTMENT OF TRANSPORTATION "NEVADA WORK ZONE TRAFFIC CONTROL MANUAL" AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
9. THE CONTRACTOR SHALL PROTECT FROM DAMAGE EXISTING UTILITY STRUCTURES ON AND AROUND THE SITE INCLUDING, BUT NOT LIMITED TO, PAVEMENT, CURB AND GUTTER, SIDEWALK, LANDSCAPING, IRRIGATION LINES, SIGNAGE, STORM AND SANITARY SEWERS, UTILITIES, TELEPHONE, TRAFFIC CONTROL, AND CABLE TELEVISION. THE CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR THE REPAIR AND/OR REPLACEMENT OF ANY IMPROVEMENTS (NEW OR EXISTING) DAMAGED THROUGHOUT THE COURSE OF CONSTRUCTION EITHER AS A DIRECT RESULT OF THE ACTIVITIES OR THE FAILURE TO ADEQUATELY PROTECT THE IMPROVEMENT.
10. THE CONTRACTOR SHALL, DURING THE COURSE OF THE PROJECT, MAINTAIN RECORD DRAWINGS INDICATING BY DIMENSION AND DESCRIPTION ANY FACILITY CONSTRUCTED CONTRARY TO THAT SHOWN ON THE DRAWINGS OR DESCRIBED IN THE SPECIFICATIONS. AT THE END OF CONSTRUCTION, THE RECORD DRAWINGS SHALL BE TURNED OVER TO THE ENGINEER.
11. PRIOR TO THEIR INCORPORATION INTO THE WORK, THE CONTRACTOR SHALL SUBMIT FOR THE ENGINEER'S APPROVAL SHOP DRAWINGS AND MATERIAL SPECIFICATIONS FOR ALL MATERIALS TO BE USED ON THE PROJECT.
12. ANY DAMAGED ASPHALT OR CONCRETE BEYOND THAT SHOWN ON THE PLANS WILL BE THE CONTRACTOR'S RESPONSIBILITY TO REPLACE.



TRENCH EXCAVATION/BACKFILL

NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC), LATEST REVISION.
2. BEDDING MATERIAL SHALL CONFORM TO OWNING-UTILITY COMPANY REQUIREMENTS AS APPROVED BY THE CITY OF SPARKS. FOR CITY-OWNED UTILITIES, BEDDING MATERIAL SHALL BE CLASS A OR C, COMPACTED TO MINIMUM 90% RELATIVE COMPACTION. MATERIALS SHALL CONFORM TO SSPWC SECTION 200.
3. CLASS C BEDDING REQUIRES INSTALLATION OF GEOTEXTILE FABRIC BETWEEN PIPE ZONE AND BACKFILL MATERIAL. GEOTEXTILE FABRIC SHALL BE MIRAFI 180N OR APPROVED EQUAL.
4. BACKFILL MATERIAL SHALL BE TYPE 2, CLASS B OR CLASS E AND COMPACTED TO MINIMUM 90% RELATIVE COMPACTION. MATERIALS SHALL CONFORM TO SSPWC SECTION 200.
5. ALL EXCAVATIONS SHALL CONFORM TO THE LATEST O.S.H.A. REQUIREMENTS.
6. EXISTING PIPE TO BE ABANDONED SHALL BE GROUT FILLED OR COMPLETELY REMOVED.

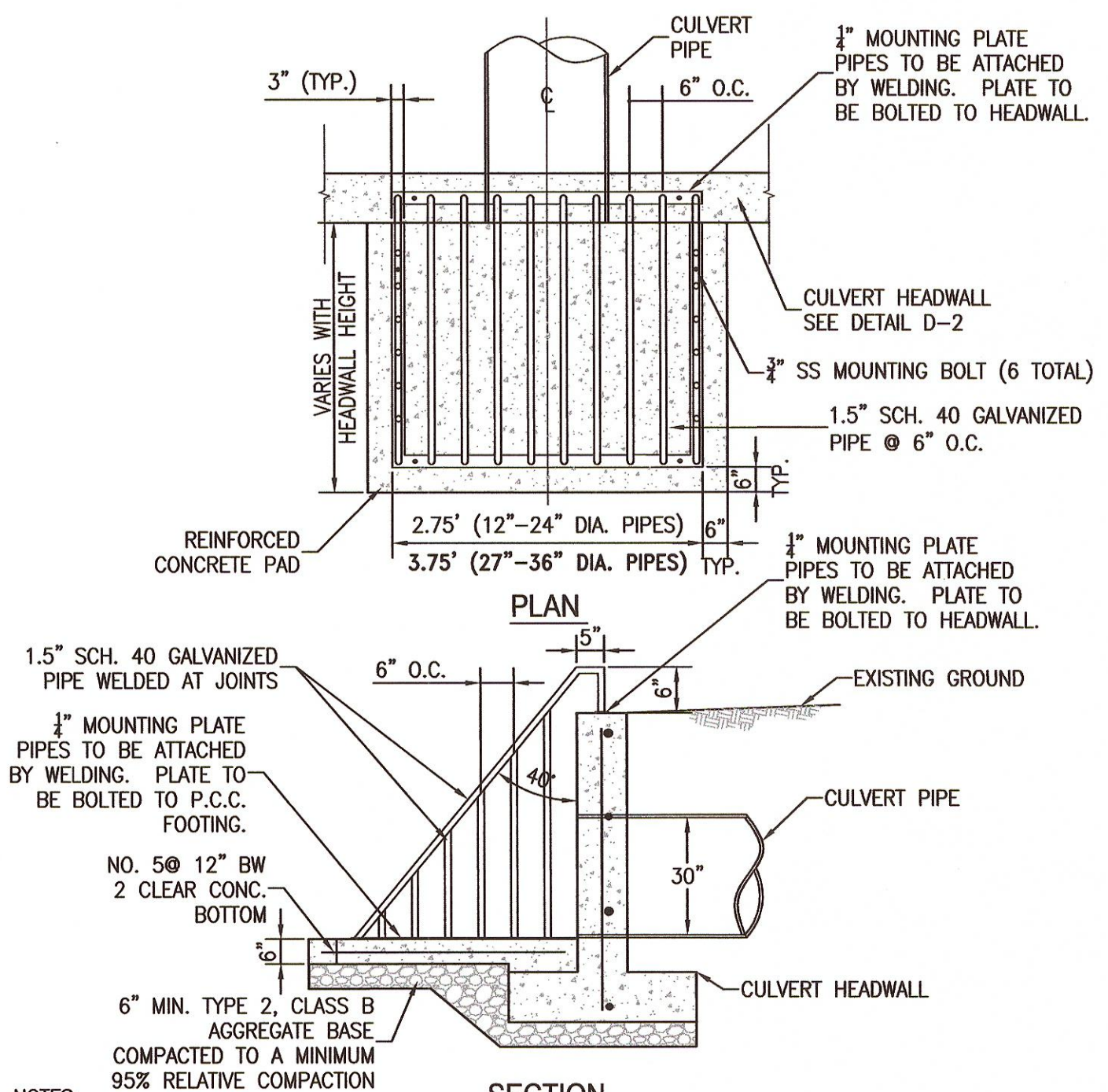


SECTION

NOTES:

1. NON-SHRINK GROUT SHALL HAVE THE FOLLOWING CHARACTERISTICS: 3000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD AND SLUMP AT 1 TO 4 INCHES. ALL MATERIAL SHALL CONFORM TO STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION (SSPWC) SECTION 202.
2. AN AGENCY-APPROVED FORM OF SEAL OR WATER STOP IS REQUIRED ON ALL STORM DRAIN INSTALLATIONS.
3. A RESILIENT FLEXIBLE CONNECTOR INSTALLED IN ACCORDANCE WITH STD. CONNECTION DETAIL A OF STD. DETAIL R-223B MAY BE USED TO SATISFY THE REQUIREMENTS OF NOTE 2 ABOVE.
4. ALL PIPE OPENINGS TO NEW MANHOLES MUST BE EITHER CAST-IN-PLACE OR PRE-FORMED AND PIPE OPENINGS TO EXISTING MANHOLES MUST BE CORE DRILLED.

SANITARY SEWER OR STORM PIPE TO MANHOLE CONNECTION



HEADWALL TRASH RACK

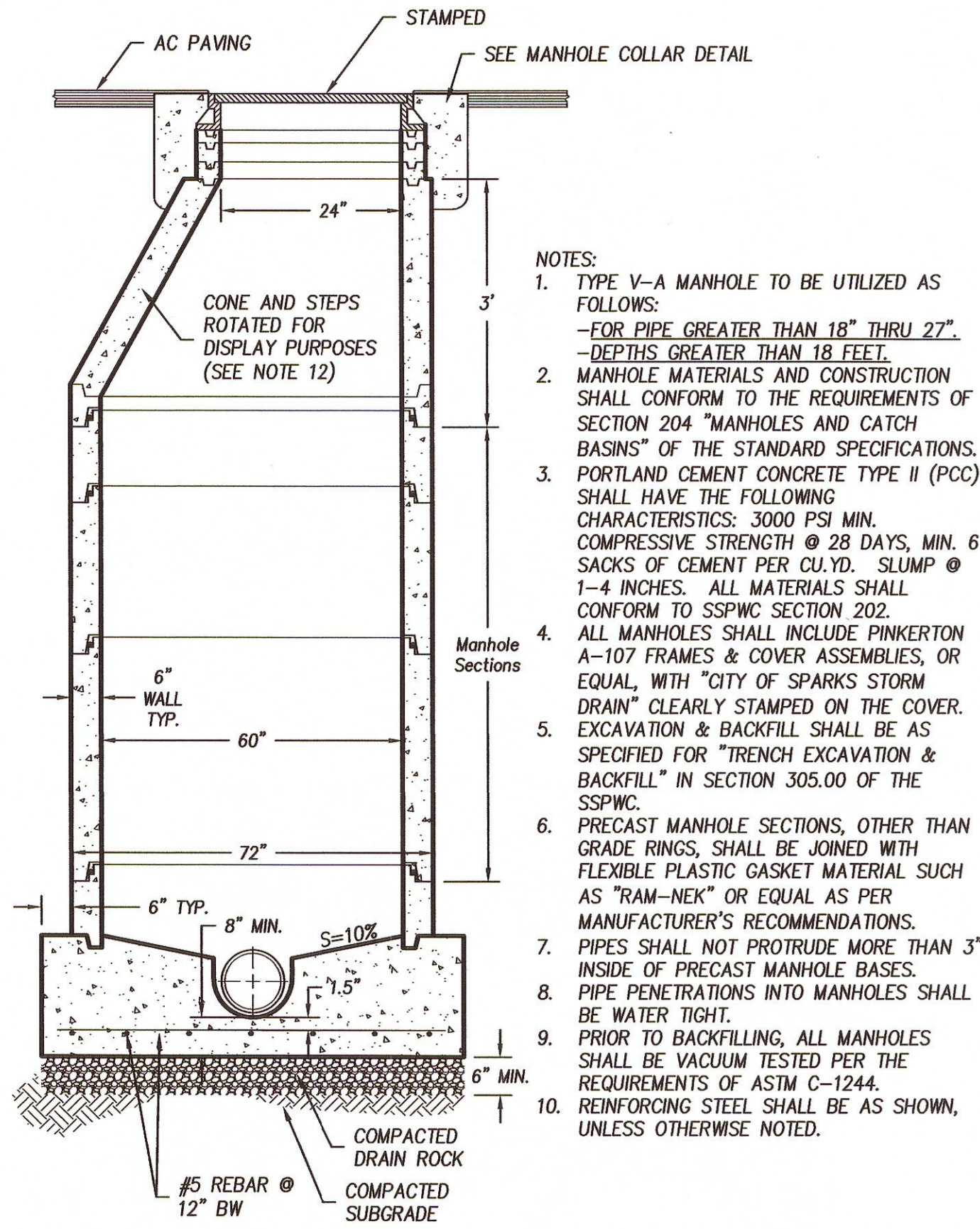
DETAIL SHEET



CITY OF SPARKS
WINGFIELD HILLS RD
DRAINAGE IMPROVEMENTS
SPARKS, NEVADA

revisions

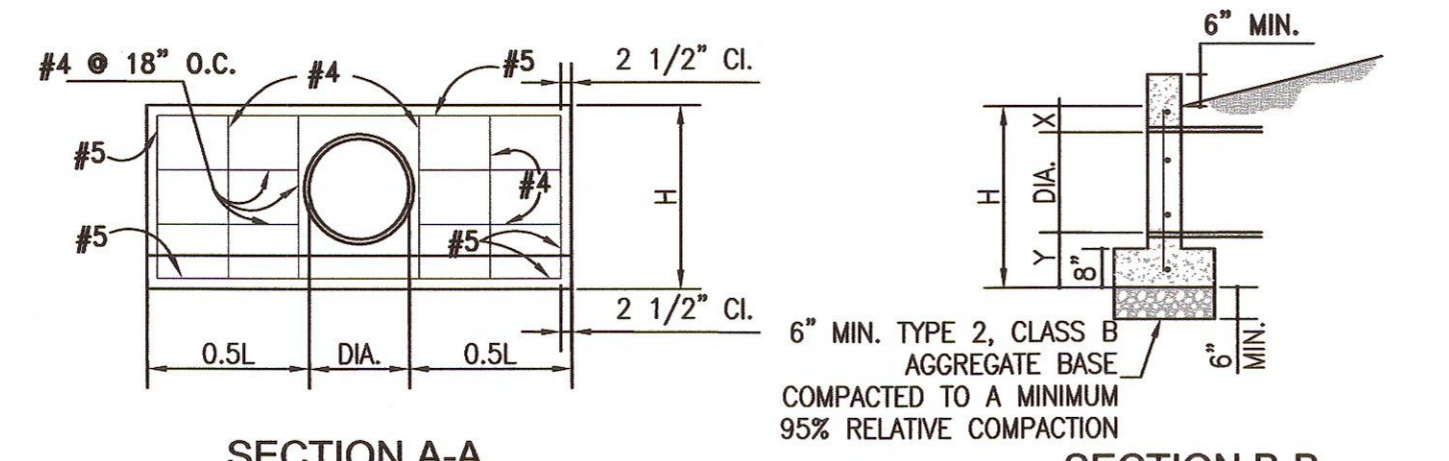
drawn:	KW
checked:	GKG
date:	MAY 2019
scale:	
project no:	17020



- NOTES:
1. TYPE V-A MANHOLE TO BE UTILIZED AS FOLLOWS:
-FOR PIPE GREATER THAN 18" THRU 27",
-DEPTHS GREATER THAN 18 FEET.
 2. MANHOLE MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF SECTION 204 "MANHOLES AND CATCH BASINS" OF THE STANDARD SPECIFICATIONS. PORTLAND CEMENT CONCRETE TYPE II (PCC) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 3000 PSI MIN. COMPRESSIVE STRENGTH @ 28 DAYS, MIN. 6 SACKS OF CEMENT PER CU.YD. SLUMP @ 1-4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
 3. ALL MANHOLES SHALL INCLUDE PINKERTON A-107 FRAMES & COVER ASSEMBLIES, OR EQUAL, WITH "CITY OF SPARKS STORM DRAIN" CLEARLY STAMPED ON THE COVER. EXCAVATION & BACKFILL SHALL BE AS SPECIFIED FOR "TRENCH EXCAVATION & BACKFILL" IN SECTION 305.00 OF THE SSPWC.
 4. PRECAST MANHOLE SECTIONS, OTHER THAN GRADE RINGS, SHALL BE JOINED WITH FLEXIBLE PLASTIC GASKET MATERIAL SUCH AS "RAM-NEK" OR EQUAL AS PER MANUFACTURER'S RECOMMENDATIONS.
 5. PIPES SHALL NOT PROTRUDE MORE THAN 3" INSIDE OF PRECAST MANHOLE BASES.
 6. PIPE PENETRATIONS INTO MANHOLES SHALL BE WATER TIGHT.
 7. PRIOR TO BACKFILLING, ALL MANHOLES SHALL BE VACUUM TESTED PER THE REQUIREMENTS OF ASTM C-1244.
 8. REINFORCING STEEL SHALL BE AS SHOWN, UNLESS OTHERWISE NOTED.

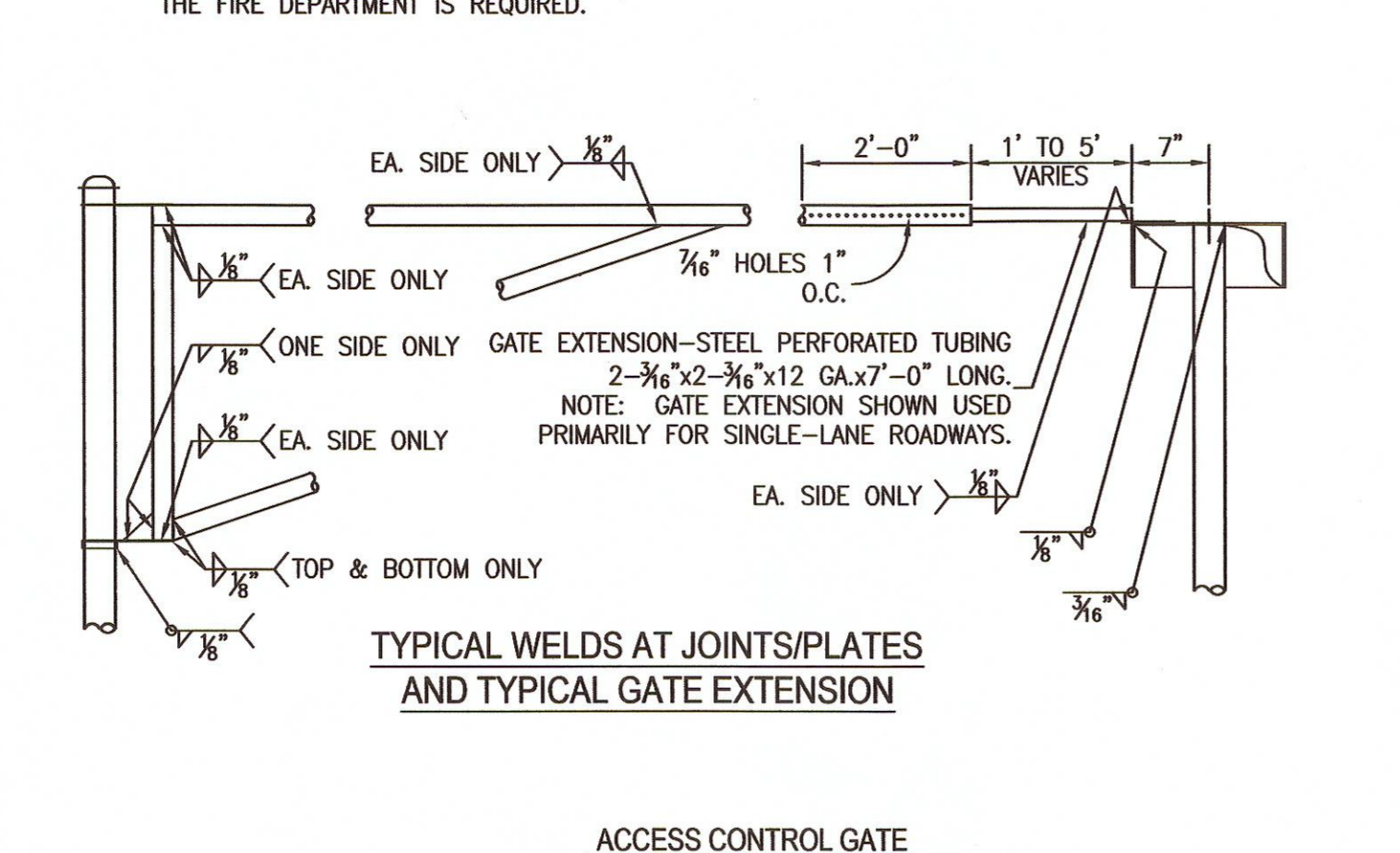
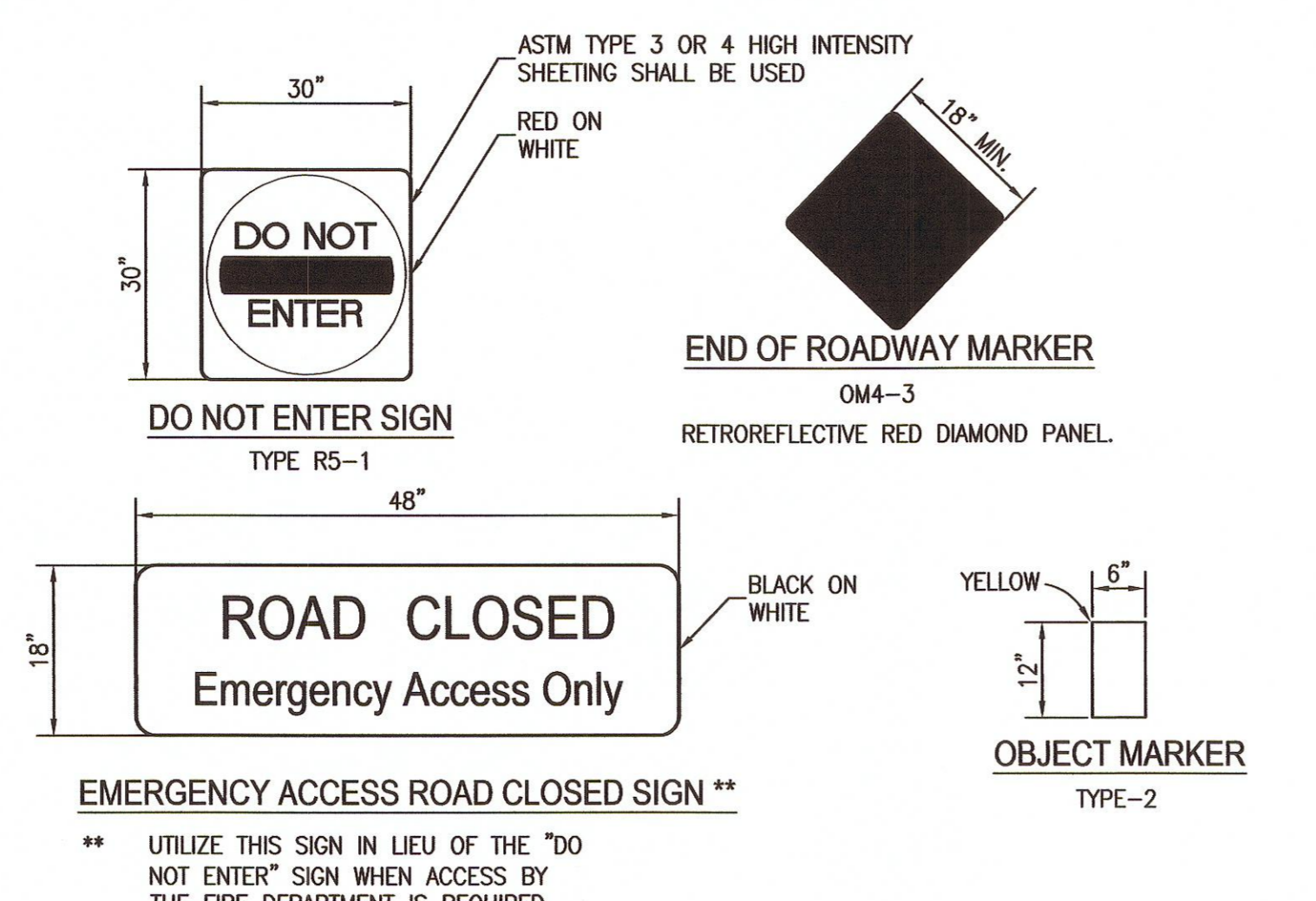
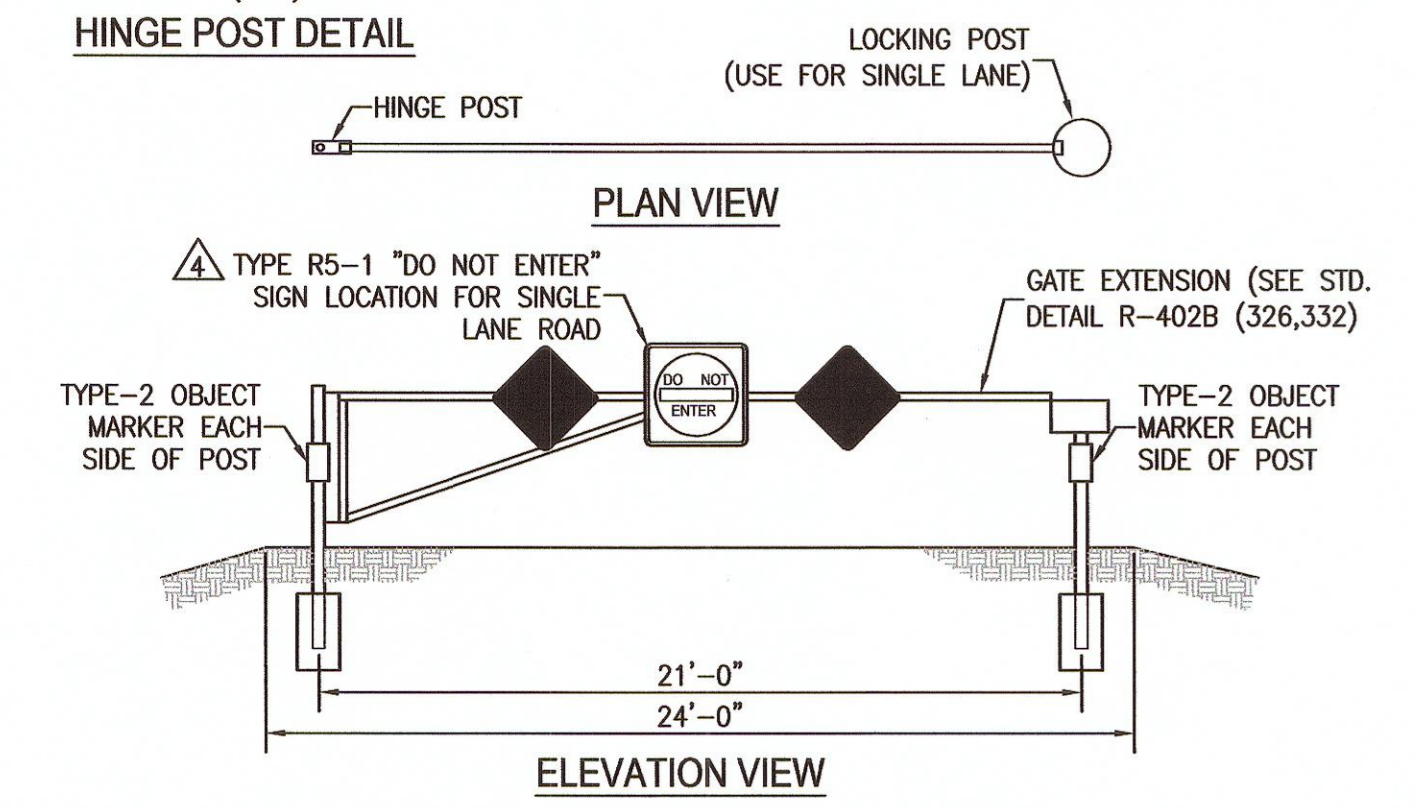
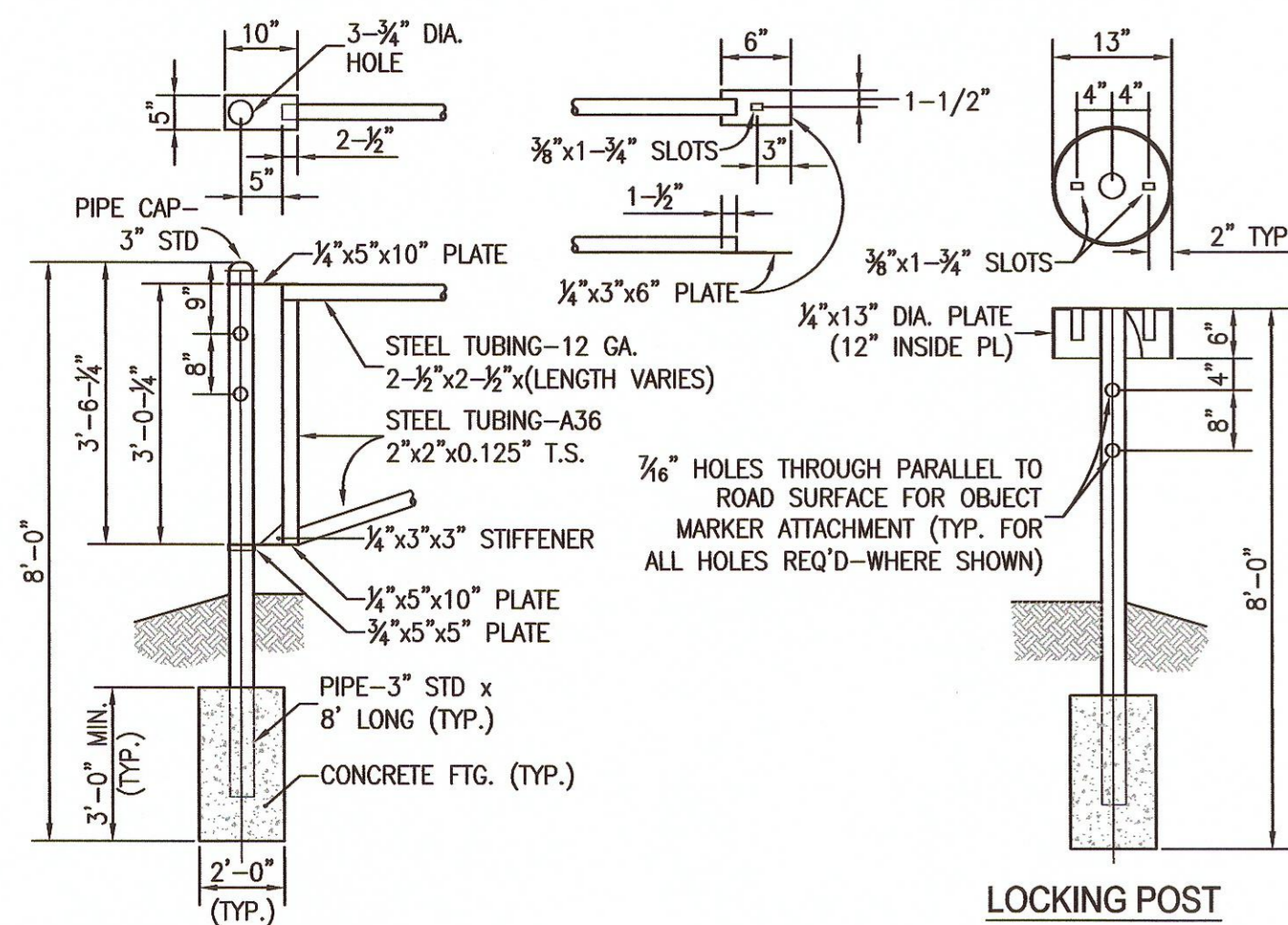
MANHOLE TYPE V-A

PIPE DIA.	X	Y	L	H
12"	0'-10"	1'-2"	4'-0"	3'-0"
15"	0'-10 1/4"	1'-2 1/4"	5'-0"	3'-3 1/2"
18"	0'-10 1/2"	1'-2 1/2"	5'-9"	3'-7"
21"	0'-10 3/4"	1'-2 3/4"	6'-6"	3'-10 1/2"
24"	0'-11"	1'-3"	7'-3"	4'-2"
27"	0'-11"	1'-3"	8'-0"	4'-5"
30"	0'-11 1/2"	1'-3 1/2"	9'-0"	4'-9"
33"	0'-11 3/4"	1'-3 3/4"	4'-0"	5'-1/2"
36"	1'-0"	1'-4"	10'-6"	5'-4"

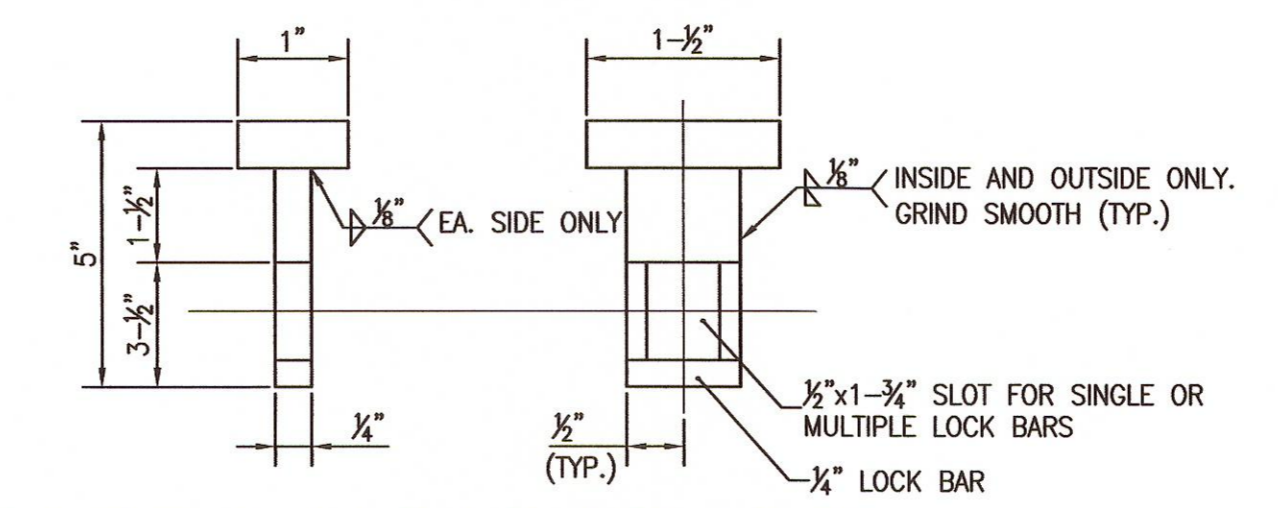


- NOTES:
1. FIBER-REINFORCED PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH MAX. WATER-CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. MIX DESIGN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 337 OF STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION (SSPWC). CEMENT SHALL BE TYPE II. ALL CEMENT CONCRETE SHALL HAVE A COARSE AGGREGATE GRADATION CONFORMING TO SIZE No. 67. POLYPROPYLENE OR CELLULOSE FIBERS SHALL BE ADDED TO THE P.C.C. AT 1.5 LBS. PER CUBIC YARD. ALL MATERIALS SHALL CONFORM TO SSPWC.
 2. REINFORCING STEEL SHALL BE DEFORMED BARS WITH MAXIMUM SPACING OF 18" SET 2 1/2" CLEAR OF SURFACE OF CONCRETE EXCEPT AS NOTED. BAR ENDS SHALL BE KEPT 1 1/2" CLEAR OF SURFACE OF CONCRETE. REINFORCING BARS MAY BE CUT AND BENT IN FIELD.
 3. FOOTINGS SHOWN ARE OF MINIMUM DEPTH AND SHALL BE EXTENDED IF SOIL IS UNSUITABLE OR LIABLE TO SCOUR.
 4. CULVERT PIPES TO BE SET ON A SKEW SHALL BE MITERED WHEN HEADWALLS ARE CONSTRUCTED.
 5. DIMENSIONS X, Y, L, AND H TO REMAIN CONSTANT REGARDLESS OF MINOR VARIATIONS IN WALL THICKNESS DUE TO CLASS OF PIPE USED.
 6. SKEWED HEADWALLS, HEADWALLS FOR DOUBLE PIPES OR FOR PIPES GREATER THAN 36" SHALL BE DESIGNED BY A STRUCTURAL ENGINEER AND SUBMITTED TO THE CITY FOR APPROVAL.

CULVERT HEADWALL



ACCESS CONTROL GATE



- NOTES: (APPLY TO STD. DETAIL DWG. NOS. R-402A, R-402B AND R-402C)
1. ALL HOLES DRILLED THROUGH TO BE 7/16" DIAMETER. HOLES TYPICALLY DRILLED VERTICAL OR HORIZONTAL TO TRAVELED WAY SURFACE.
 2. ALL THREADS OF ALL BOLTS USED ARE TO BE PEENED AFTER INSTALLATION/USAGE TO PREVENT BOLT REMOVAL.
 3. ALL MEMBERS OF THE GATE ASSEMBLY SHALL BE FABRICATED FROM THE STANDARD STEEL SECTIONS. FABRICATED MEMBERS SHALL RECEIVE ONE SHOP COAT OF ALUMINUM PAINT AFTER FABRICATION. ALUMINUM PAINT SHALL CONFORM TO A.A.S.H.T.O. SPECIFICATION M69-70. HARDWARE SHALL BE CADMIUM PLATED.
- △ SUBSTITUTE ITEM NO. 11 SIGN FOR ITEM NO. 6 SIGN WHEN ACCESS BY THE FIRE DEPARTMENT IS REQUIRED.

MATERIALS LIST

ITEM NO.	NO. REQ'D	DESCRIPTION
1	1	GATES AND GATE EXTENSIONS
2	1	HINGE POST, WITH PIPE CAPS
3	1	MASTER LOCKING PINS
4	1	LOCKING POST
5	2	OM4-3 END OF ROADWAY MARKER
6	1	18"x30" ROAD CLOSED SIGN △
7	4	6"x12" TYPE-2 OBJECT MARKERS
8	2	3/8"x3" MACHINE BOLT FOR GATE EXTENSIONS
9	6	3/8"x4" CARRIAGE BOLT WITH 1 CUT AND 1 LOCK WASHER FOR SIGNS ON GATES
10	6	3/8"x6" CARRIAGE BOLT WITH 1 CUT AND 1 LOCK WASHER FOR OBJECT MARKERS
11	1	18"x48" ROAD CLOSED EMERGENCY ACCESS ONLY SIGN △



CITY OF SPARKS
WINGFIELD HILLS RD
DRAINAGE IMPROVEMENTS
SPARKS, NEVADA

revisions

NO.	DATE	DESCRIPTION

drawn: KW
checked: GKG
date: MAY 2019
scale:
project no: 17020

DETAIL SHEET