A CITY OF SPARKS PROJECT
SPARKS, WASHOE COUNTY, NEVADA

EAST PRATER WAY STORM DRAIN
BID NO. 20/21-002 PWP #WA-2020-319

OWNER:

City of Sparks

CITY OF SPARKS
COMMUNITY SERVICES DEPARTMENT
431 PRATER WAY, SPARKS, NV 89431
PHONE (775) 353-2455

CITY OF SPARKS:

RONALD E. SMITH, MAYOR
KRISTOPHER DAHIR, COUNCIL MEMBER
ED LAWSON, COUNCIL MEMBER
PAUL ANDERSON, COUNCIL MEMBER
DONALD ABBOTT, COUNCIL MEMBER
CHARLENE BYBEE, COUNCIL MEMBER
NEIL C. KRUTZ, CITY MANAGER
JOHN MARTINI, P.E., ASSISTANT CITY MANAGER
JON R. ERICSON, P.E., P.T.O.E., CITY ENGINEER

JON R. ERICSON, P.E., P.T.O.E. — DATE 7/20/2020

ENGINEER:

ATKINS

10509 PROFESSIONAL CIRCLE, SUITE 102
RENO, NV 89521
PHONE (775) 828-1622
FAX (775) 828-1826

BRIAN JANES, P.E. — DATE 7/24/20

VICINITY MAP
N.T.S.

LOCATION MAP
N.T.S.

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I5	INSTRUMENTATION AND CONTROLS
I6	INSTRUMENTATION AND CONTROLS

JOB # 100057174

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OR "ORANGE BOOK" 2012 VERSION, EXCEPT AS MODIFIED BY THESE PLANS AND SPECIAL TECHNICAL SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUOUS DUST CONTROL. THROUGHOUT THE CONSTRUCTION OF ALL ITEMS SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REGULAR CLEANING OF ALL MUD, DIRT, AND DEBRIS, ETC. FROM ANY AND ALL ADJACENT STREETS AND SIDEWALKS. THE CONTRACTOR SHALL MAINTAIN CONFORMITY WITH SECTION 40.030 OF WASHOE COUNTY AIR POLLUTION STANDARDS.
3. TRAFFIC CONTROL AND MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST REVISION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD DATED 2009 OR LATEST EDITION).
4. THE LOCATIONS OF THE EXISTING UTILITIES WERE DETERMINED USING QUALITY LEVEL C AS PROVIDED IN THE ASCE STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION AND THE DEPTHS OF ANY EXISTING UTILITIES PRIOR TO PERFORMING ANY EXCAVATIONS. NEITHER THE ENGINEER NOR THE CITY OF SPARKS ASSUME ANY RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF UTILITIES SHOWN. THE LOCATIONS OF UTILITIES ARE SHOWN ONLY TO AID THE CONTRACTOR DURING CONSTRUCTION. CONTRACTOR SHALL CALL UNDER GROUND SERVICE ALERT (811) 48 HOURS PRIOR TO ANY EXCAVATION.
5. CONTRACTOR SHALL LOCATE, PROTECT, AND PROVIDE REFERENCE INFORMATION OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION.
6. REESTABLISH ALL DISTURBED EXISTING GAS LINES WITH SAND COVER AND TAPE PER NVE VOLUME 15 STANDARDS.
7. ASPHALT CONCRETE PAVING SHALL BE ACCOMPLISHED WITH A MINIMUM LIFT THICKNESS OF 2–INCHES AND A MAXIMUM LIFT THICKNESS OF 4–INCHES. PG64–28NV SHALL BE USED FULL DEPTH.
8. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY AND ALL DISCREPANCIES.
9. ALL EXCESS OR UNSUITABLE MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH THE LATEST CITY OF SPARKS REGULATIONS.
10. ALL EXISTING FEATURES IN CONFLICT WITH PROPOSED SHALL BE REMOVED, RELOCATED, AND/OR REPLACED AS SHOWN ON PLANS. CONTRACTOR SHALL OBTAIN APPROVAL FROM THE ENGINEER AND THE GOVERNING AGENCIES PRIOR TO SUCH REMOVAL, RELOCATION, AND/OR REPLACEMENT.
11. THE CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRICTION FOR THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY: THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY, AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION AND SHORING PROCEDURES AND CONFORM TO THE LATEST O.S.H.A. REQUIREMENTS.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAILY REMOVAL OF ALL CONSTRUCTION MATERIALS SPILLED ON PAVED STREETS, ONSITE OR ADJACENT TO THE SITE. AT THE CLOSE OF EACH DAY, THE CONTRACTOR SHALL LEAVE THE SITE IN A CLEAN AND ORDERLY FASHION.
14. THE CONTRACTOR SHALL PURSUE THE WORK IN A CONTINUOUS AND DILIGENT MANNER, CONFORMING TO ALL THE PERTINENT SAFETY REGULATIONS, TO ENSURE A TIMELY COMPLETION OF THE PROJECT.
15. 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.
16. CONTRACTOR SHALL INVITE TMWA REPRESENTATIVE TO PRECONSTRUCTION MEETING. CONTACT 48 HOURS PRIOR TO CONSTRUCTION. TMWA INSPECTOR TO CLOSE 12" LATERAL VALVE IN PRATER. CONSULT WITH TMWA. TMWA INSPECTOR SHALL BE ONSITE WHEN WORKING NEAR TMWA THRUST BLOCKS AS NOTED ON PLANS. CONTRACTOR SHALL MINIMIZE TRENCH WIDTH AND USE TRENCH PLATE NEXT TO TMWA THRUST BLOCKS. CONTRACTOR TO MONITOR SOILS STABILITY. TMWA INSPECTOR: NEAL MCINTYRE 775–771–5328. TMWA EMERGENCY NUMBER: 775–834–8090.
17. IN THE EVENT OF A CONFLICT BETWEEN THESE DRAWINGS AND SPARKS MUNICIPAL CODE, CODE SHALL PREVAIL.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING THE BMP'S AT ALL TIMES DURING CONSTRUCTION.
19. STORM DRAINS WILL BE INSTALLED WITH WATER TIGHT JOINTS USING EITHER JOINT SEALANTS OR GASKETS WHEN WITHIN 18" VERTICALLY OF WATER LINES OR WITHIN 10 FEET HORIZONTALLY. CENTER STORM DRAIN PIPE SEGMENT LENGTH ON CROSSING. MINIMUM LOCATIONS ARE SHOWN ON PROFILES. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.
20. EXISTING ROADWAY IS 4" ASPHALT ON 8" AGGREGATE BASE. PAVEMENT PATCH (ASPHALT AND BASE) SHALL MATCH EXISTING THICKNESSES.
21. ALL RCP SHALL BE CLASS III UNLESS OTHERWISE STATED.

GENERAL LEGEND

EXISTING FEATURES:

- 033–171–10 — ASSESSORS PARCEL NUMBER
- PROPERTY LINE
- 4395 — MAJOR CONTOUR (5')
- 4397 — MINOR CONTOUR (1')
- MONUMENT
- G — GAS VALVE
- V — WATER VALVE
- FIRE HYDRANT
- DROP INLET/CATCH BASIN
- D — STORM DRAIN MANHOLE
- MANHOLE (PROFILE)
- S — SANITARY SEWER MANHOLE
- EB — ELECTRIC PULL BOX
- E — ELECTRIC MANHOLE
- POWER POLE
- LIGHT POLE
- SIGN
- TS — TRAFFIC SIGNAL PULL BOX
- T — TELEPHONE MANHOLE

EXISTING FEATURES:

- E — ELECTRIC LINE
- FO — FIBER OPTIC LINE
- FUEL — KINDER MORGAN FUEL LINE
- G — GAS LINE
- OHP — OVERHEAD POWER LINE
- STLT — STREET LIGHT CONDUIT
- T — TELEPHONE LINE
- W — WATER LINE
- SS — SANITARY SEWER LINE
- 12" SD — SD — STORM DRAIN LINE
- FENCELINE

PROPOSED FEATURES:

- 12" SD — STORM DRAIN LINE
- 12" SD — STORM DRAIN FORCE MAIN
- D — STORM DRAIN MANHOLE
- CATCH BASIN/DROP INLET

MISCELLANEOUS

- 1 — KEYNOTE
- B–XX — BOREHOLE LOCATION (R–SHTS), SEE GEOTECH REPORT

ABBREVIATIONS

AB	AGGREGATE BASE	FH	FIRE HYDRANT	SD	STORM DRAIN
AC	ASPHALT CEMENT	FO	FIBER OPTIC	SDCB	STORM DRAIN CATCH BASIN
APN	ASSESSOR'S PARCEL NUMBER	G	GAS	SDMH	STORM DRAIN MANHOLE
BM	BENCHMARK	GM	GAS METER	SF	SQUARE FEET
CATV	CABLE TELEVISION	GV	GAS VALVE	SHT	SHEET
CB	CATCH BASIN	HERCP	HORIZONTAL ELLIPTICAL RCP	SS	SANITARY SEWER
C&G	CURB & GUTTER	IE	INVERT ELEVATION	SSMH	SANITARY SEWER MANHOLE
CI	CAST IRON	IRR	IRRIGATION	SSPWC	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION
CIPP	CAST IN PLACE PIPE	LF	LINEAR FEET		
CL	CENTERLINE	LT	LEFT	STA	STATION
CMP	CORRUGATED METAL PIPE	MH	MANHOLE	STD	STANDARD
COR	CITY OF RENO	MON	MONUMENT	STLT	STREET LIGHT CONDUIT
CU	COPPER WATER SERVICE	N	NORTH/NORTHING	SW	SIDEWALK
CY	CUBIC YARD	NDP	NO DIRECT PAYMENT	TBC	TOP BACK OF CURB
ø	DIAMETER	NTS	NOT TO SCALE	TEL	TELEPHONE
DI	DUCTILE IRON/DROP INLET	OHP	OVERHEAD POWER	TR	TRANSITE
DTL	DETAIL	PCC	PORTLAND CEMENT CONCRETE	TS	TRAFFIC SIGNAL
DWY	DRIVEWAY	PIP	PROTECT IN PLACE	TYP	TYPICAL
E	EAST/ELECTRIC/EASTING	PL	PROPERTY LINE	UC	UNREINFORCED CONCRETE PIPE
EB	ELECTRIC BOX	PP	POWER POLE	UGE	UNDERGROUND ELEC
EFF	EFFLUENT	PVC	POLYVINYL CHLORIDE	UPRR	UNION PACIFIC RAILROAD
EG	EXISTING GROUND	R/W	RIGHT OF WAY	VCP	VITRIFIED CLAY PIPE
EP	EDGE OF PAVEMENT	RCB	REINFORCED CONCRETE BOX	W	WEST/WATER
EX.	EXISTING	RCP	REINFORCED CONCRETE PIPE	WM	WATER METER
FES	FLARED END SECTION	RT	RIGHT	XTC	X–TRU–COAT (COATED STEEL)
FG	FINISH GRADE	S	SOUTH		

ABANDONMENT AND REMOVAL FEATURES:

- XXXXXXX EX. PIPE/ MANHOLE TO BE REMOVED
- \\\\\\\\\ EX. PIPE/MANHOLE TO BE ABANDONED

BASIS OF BEARING

HORIZONTAL DATUM

NAD 83(94)
STATE PLANE NEVADA WEST 2703
WASHOE COUNTY GRID TO GROUND COMBINED
SCALE FACTOR OF 1.000197939
DISTANCES ARE IN US SURVEY FEET

VERTICAL DATUM

NAVD88
BASED ON ELEVATION PROVIDED BY CITY OF SPARKS FOR STORM DRAIN MANHOLE #SDN002010
ELEVATION = 4409.13

NOTE: X, Y, & Z COORDINATES ON EXISTING STRUCTURES WITHIN THE PROJECT LIMITS WERE SUPPLIED BY CITY OF SPARKS PROJECT CONTROL WAS CONSTRAINED TO THESE COORDINATES

Avoid cutting underground utility lines. It's costly.
Call before you Dig
1-800-227-2600

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN A JANES — No. 11981 — Exp. 06-30-21 — CIVIL

7-24-2020

SCALE
DESIGN BY BAJ
DRAWN BY BDH
CHECKED BY BM
DATE 7/24/2020
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

GENERAL NOTES

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1022 | Fax: +1.775.851.1687

G1

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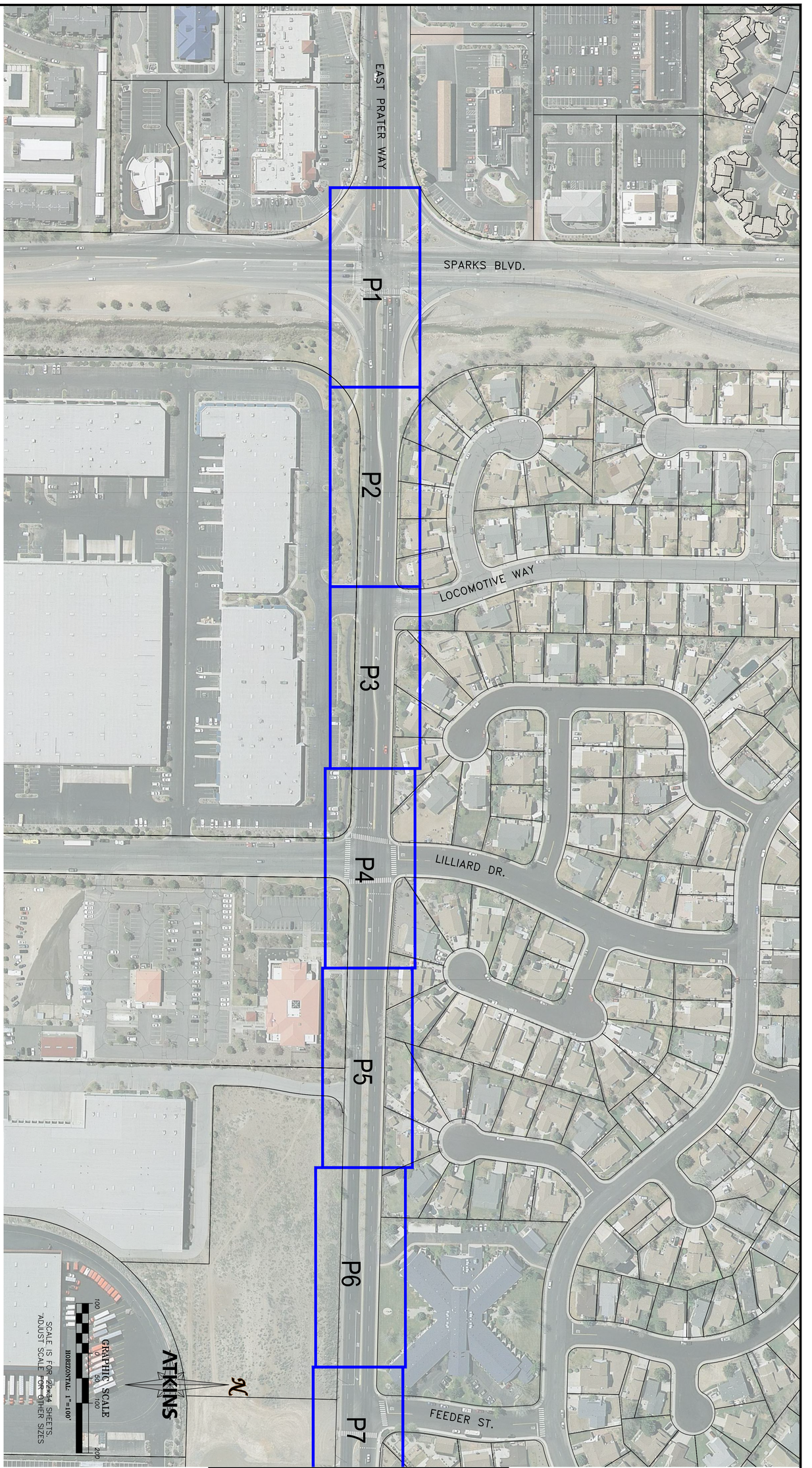

MATCHLINE – SEE SHEET G3

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
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CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

SHEET INDEX

SCALE		
DESIGN BY: BAJ	DRAWN BY: BDH	
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PROFESSIONAL ENGINEER – STATE OF NEVADA
BRIAN A. JANES
Exp. 06-30-21
CIVIL
No. 18611

7-24-2020

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PROFESSIONAL ENGINEER - STATE OF NEVADA
BRIAN A. JANES
No. 18611
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CIVIL

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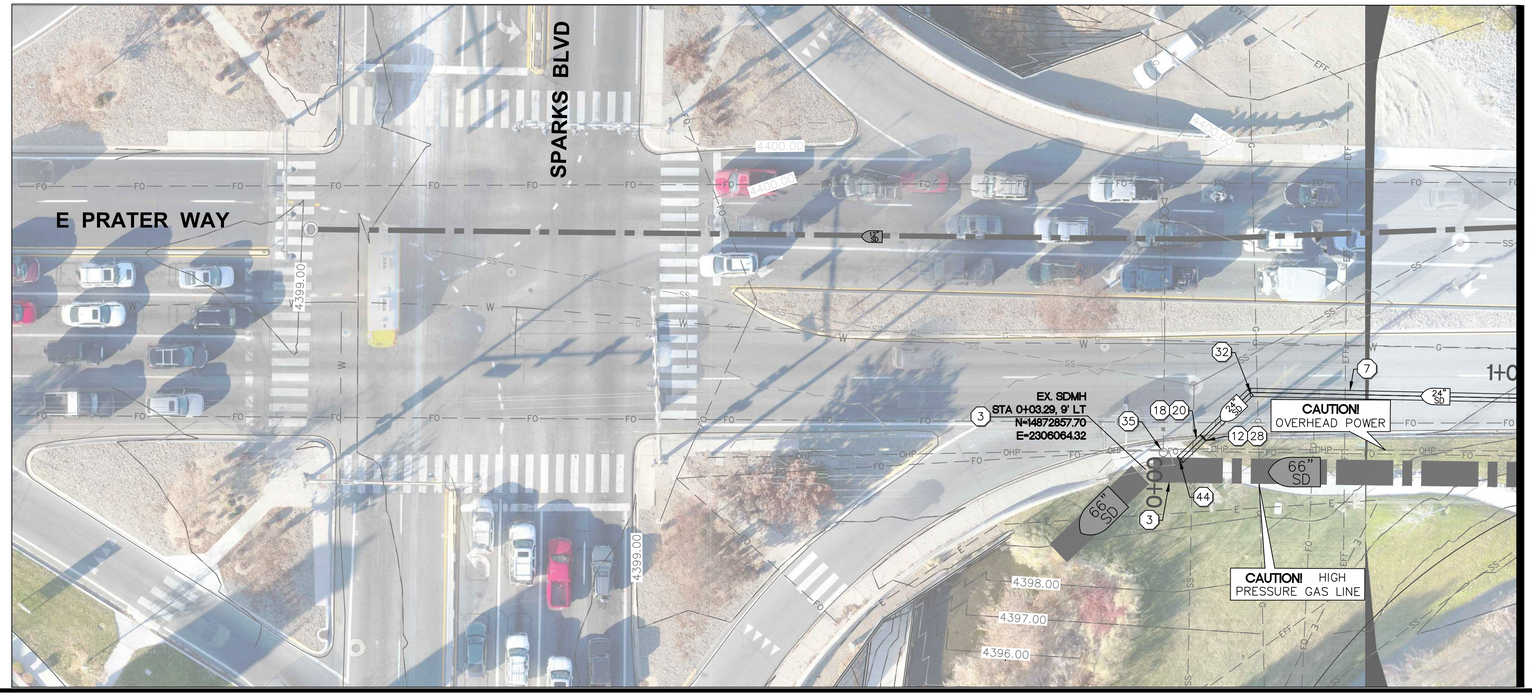

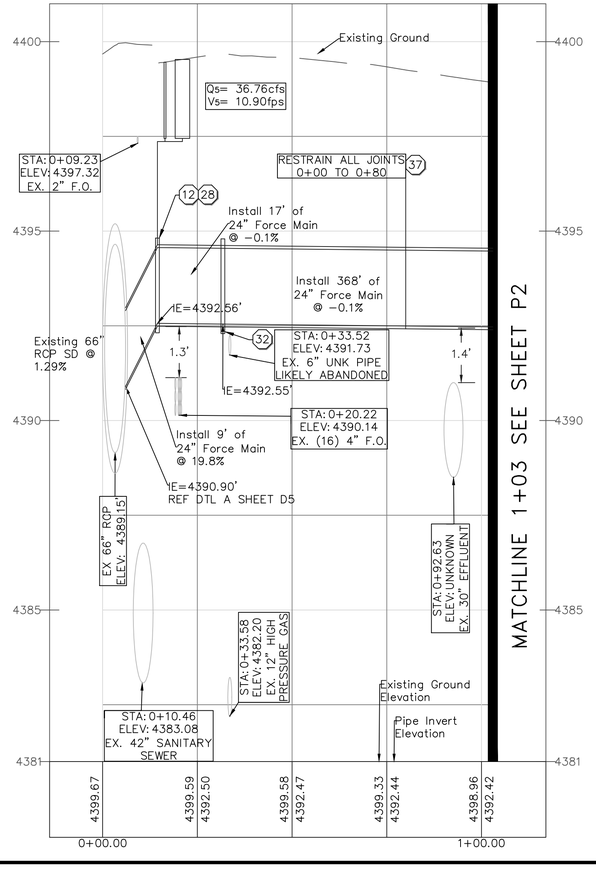

ATKINS

Avoid cutting underground utility lines. It's costly.

Call before you Dig

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GRAPHIC SCALE

0 20' 40'

HORIZONTAL: 1"= 20'
VERTICAL: 1"= 2'

SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

KEY NOTES

(3) PROTECT IN PLACE (NDP).

(7) INSTALL 24" FORCE MAIN PIPE. MATERIAL MAY BE C900 PVC OR CLASS 250 DUCTILE IRON. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.

(12) INSTALL 1" AIR RELEASE VALVE ASSEMBLY. REF. DTL. B SHEET D6.

(18) REMOVE AND REPLACE CURB & GUTTER AS NECESSARY FOR STORM DRAIN CONSTRUCTION. MATCH EXISTING TYPE. REF DTL. S−109 (MODIFIED) SHEET D3.

(20) REMOVE AND REPLACE SIDEWALK AS NECESSARY FOR STORM DRAIN CONSTRUCTION. REF DTL. S−103 SHEET D3.

(28) INSTALL 24" 11.25° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.

(32) INSTALL 24" 45° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.

(35) RELOCATE 4" FLUSH VALVE ASSEMBLY FOR 12" WATER IF NEEDED. REF DTL. 10E−2 SHEET D6.

(37) RESTRAIN ALL JOINTS.

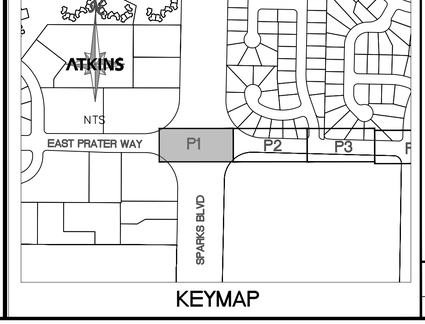
(44) CONNECT FORCE MAIN TO EXISTING STORM DRAIN. REF. DTL. A SHEET D5.

CONSTRUCTION NOTES

1) EXISTING "BLIND CONNECT" STORM DRAIN LATERALS SHOWN ARE APPROXIMATE LOCATIONS BASED ON PREVIOUS SEARCH OF AVAILABLE RECORDS AND HAVE NOT BEEN VERIFIED. CONTRACTOR SHALL VERIFY THAT ALL LATERALS ARE ACTIVE OR INACTIVE PRIOR TO THE INSTALLATION OF ANY MAINLINE PIPE SEGMENT (MH TO MH). EACH ACTIVE LATERAL SHALL BE RECONNECTED.
2) CONTRACTOR SHALL NOTIFY TMWA A MINIMUM OF 48 HOURS PRIOR TO WATER SECTION REPLACEMENT. PRIOR TO CONSTRUCTION OF SECTION REPLACEMENT, CONTRACTOR SHALL POTHOLE & COORDINATE WITH TMWA AND THE ENGINEER TO DETERMINE HORIZONTAL/VERTICAL ALIGNMENT. IF A SECTION REPLACEMENT IS NOT REQUIRED, A SLURRY BACKFILL TO THE SPRINGLINE OF THE WATER PIPE IS REQUIRED.
3) WHEREVER THE STORM DRAIN CROSSES ABOVE A WATER LINE, BELOW A WATER LINE WITH LESS THAN 18" VERTICAL CLEARANCE, OR IS WITHIN 10 FEET HORIZONTALLY, THE STORM DRAIN SHALL BE ENCASED OR RESTRAINED PER THE KEYNOTE DESCRIPTION. THE CONTRACTOR SHALL CENTER THE STORM DRAIN PIPE SEGMENT LENGTH ON CROSSING. ESTIMATED LOCATIONS ARE SHOWN ON PROFILES. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

GENERAL NOTES

1) ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF DROP INLET, CATCH BASIN, OR MANHOLE.
2) STATIONS AND OFFSETS FOR CATCH BASINS AND DROP INLETS ARE LOCATED AT THE TBC AT THE MIDPOINT OF THE INLET AND IS STATIONED FROM THE STORM DRAIN MAIN ALIGNMENT.
3) STATIONS AND OFFSETS FOR STORM DRAIN MANHOLES ARE LOCATED AT THE CENTER OF THE STRUCTURE.
4) EXISTING UTILITIES ARE LOCATED ON THE PLANS FROM A SEARCH OF AVAILABLE RECORDS. CONTRACTOR TO VERIFY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION.
5) CONTRACTOR TO COORDINATE WITH OWNING UTILITY PRIOR TO REMOVAL OR ALTERATION OF ANY UTILITY LINE.
6) SEE SHEETS R1 TO R5 FOR PAVEMENT RESTORATION PLANS.



KEYMAP

REV.	DATE	DESCRIPTION	CHECKED	APPD.
		REVISIONS		

STATE OF NEVADA
ENGINEER
BRIAN A. JANES
No. 11981
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Exp. 06-30-21
CIVIL

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	DATE: 7/24/2020	CHECKED BY: BM	

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 00+00 TO 01+03
PLAN & PROFILE

ATKINS
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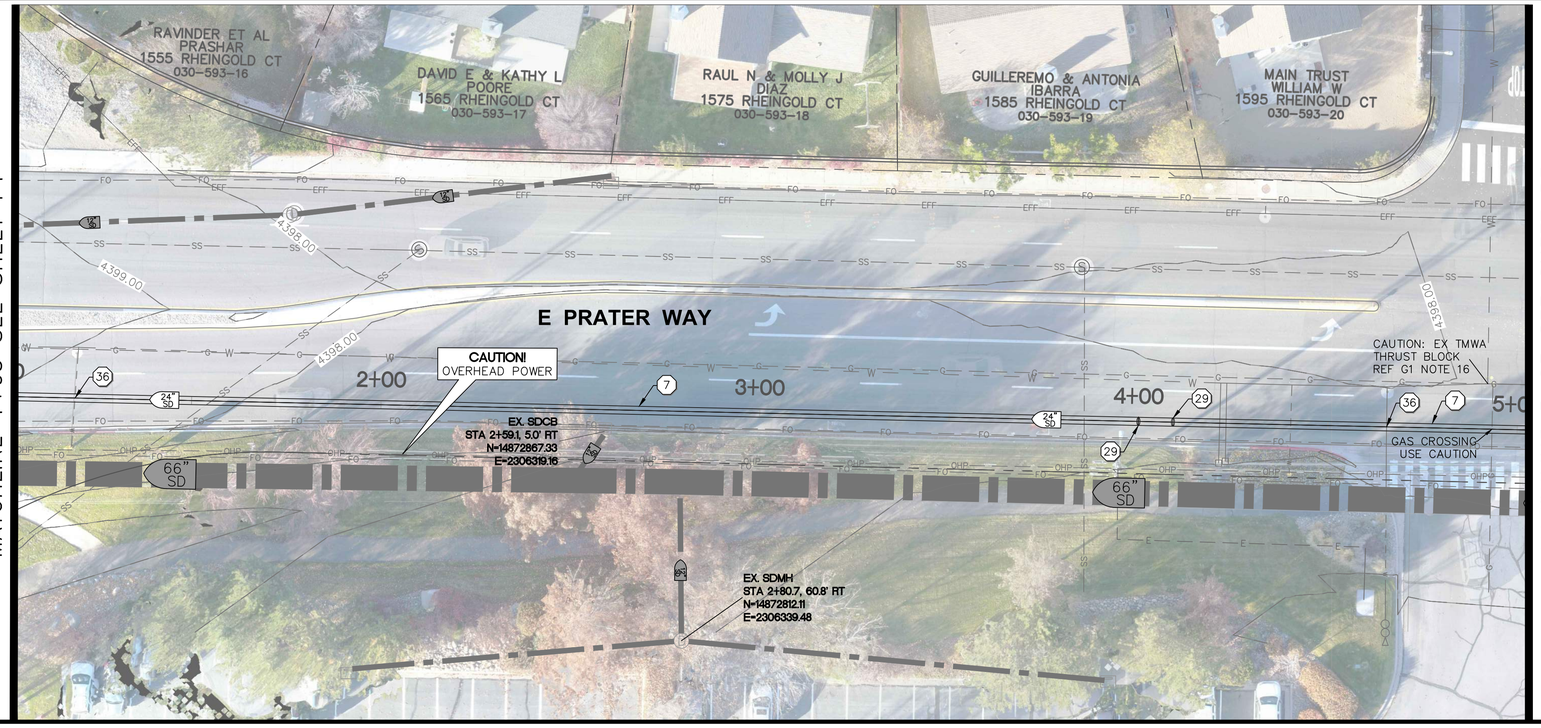
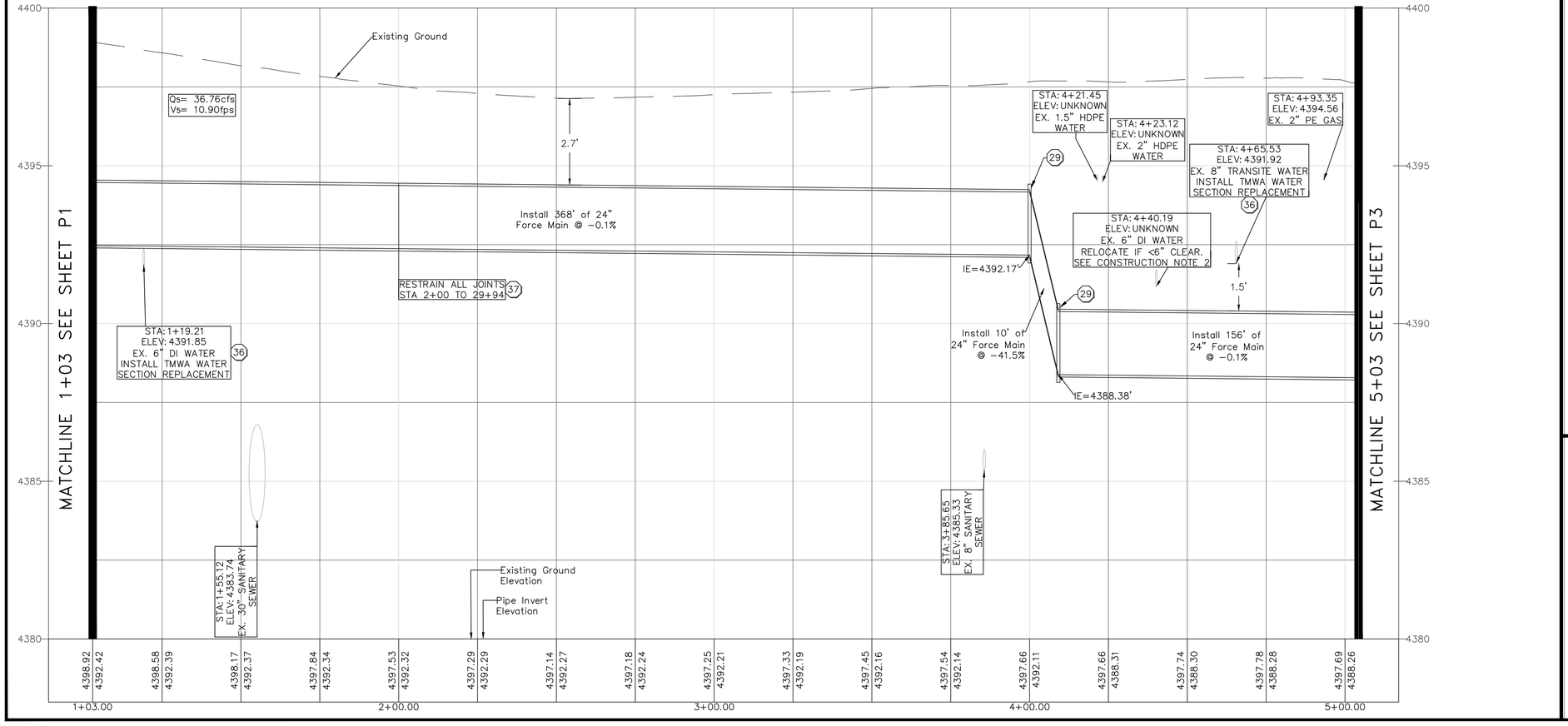
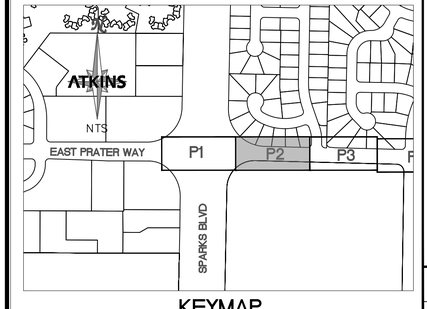
P1

SHEET 5 OF 44







KEYMAP

KEY NOTES

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(29) INSTALL 24" 22.5° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.

(36) INSTALL CLASS 350 DUCTILE IRON PIPE 10' EACH SIDE OF RELOCATION. RESTRAIN ALL JOINTS. REF SHT. D7 DTL 10L-8.

(37) RESTRAIN ALL JOINTS.

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3) WHEREVER THE STORM DRAIN CROSSES ABOVE A WATER LINE, BELOW A WATER LINE WITH LESS THAN 18" VERTICAL CLEARANCE, OR IS WITHIN 10 FEET HORIZONTALLY, THE STORM DRAIN SHALL BE ENCASED OR RESTRAINED PER THE KEYNOTE DESCRIPTION. THE CONTRACTOR SHALL CENTER THE STORM DRAIN PIPE SEGMENT LENGTH ON CROSSING. ESTIMATED LOCATIONS ARE SHOWN ON PROFILES. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

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P2

SHEET 6 OF 44

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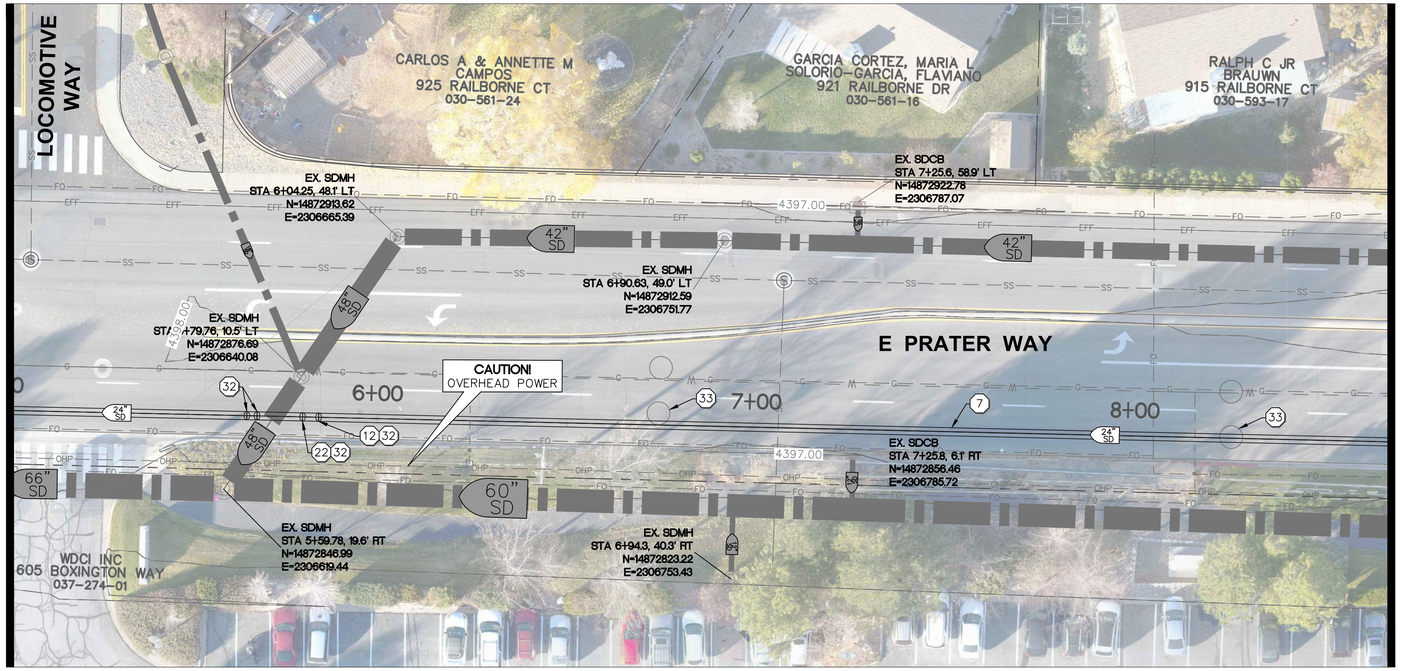
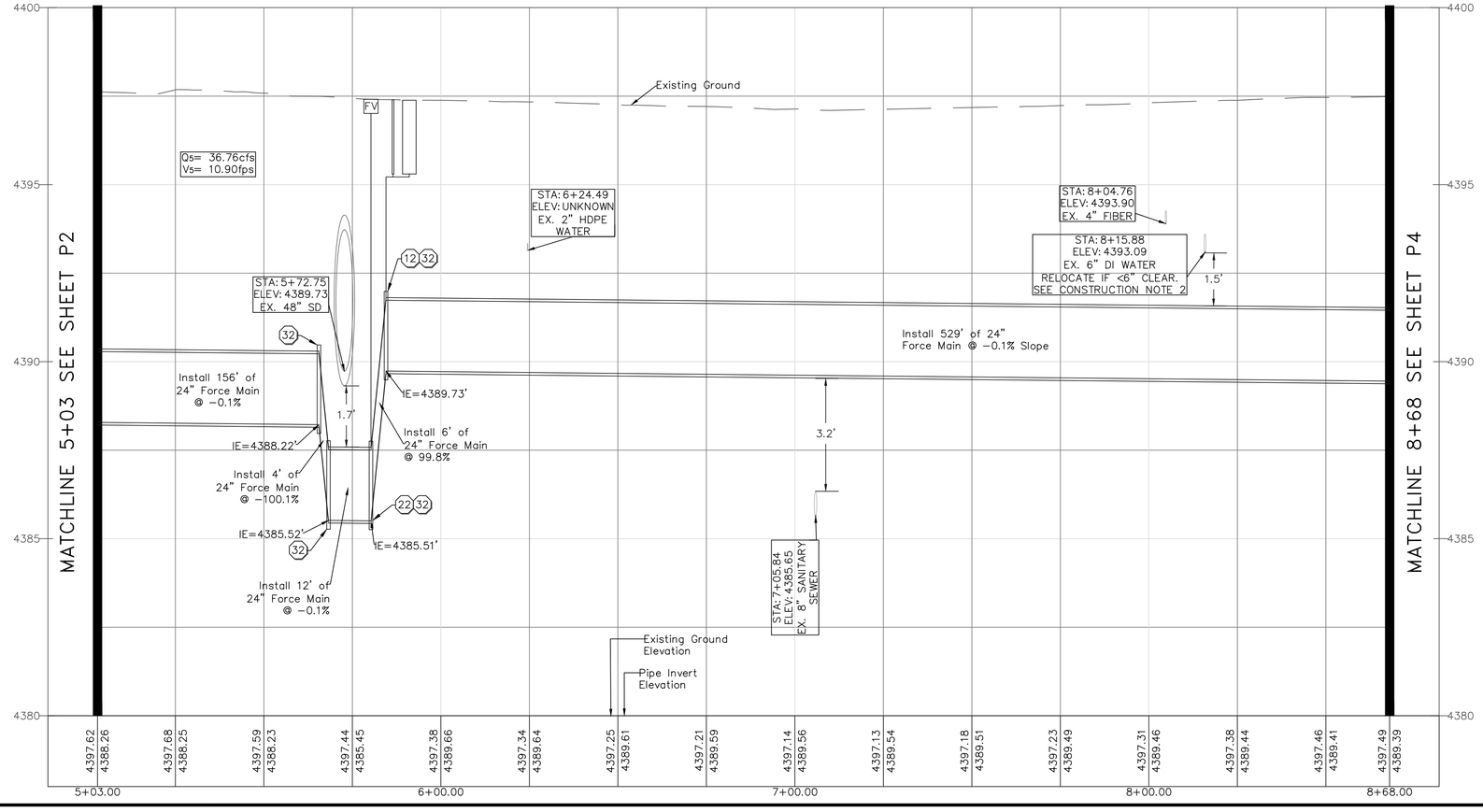
March 6, 2018 - 2:34 PM





KEY NOTES

(7) INSTALL 24" FORCE MAIN PIPE. MATERIAL MAY BE C900 PVC OR CLASS 250 DUCTILE IRON. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.

(12) INSTALL 1" AIR RELEASE VALVE ASSEMBLY. REF. DTL. B SHEET D6.

(22) INSTALL 4" FLUSH VALVE ASSEMBLY. REF. DTL. WR-2.8 SHEET D6.

(32) INSTALL 24" 45° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.

(33) REPLACE ALL DISTURBED TRAFFIC LOOPS.

CONSTRUCTION NOTES

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ATKINS

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GRAPHIC SCALE
0 20' 40'
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SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

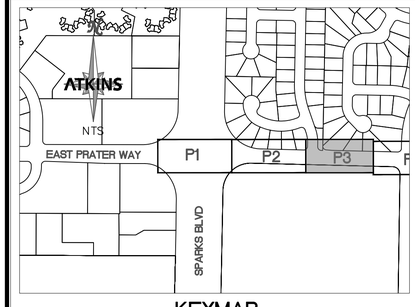
REV.	DATE	DESCRIPTION	CHECKED	APPD.
		REVISIONS		

STATE OF NEVADA
ENGINEER
BRIAN A JANES
No. 08-20
PROFESSIONAL
7-24-2020

SCALE
DESIGN BY: BAJ
DRAWN BY: BDH
DATE: 7/24/2020
CHECKED BY: BM
PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 05+03 TO 08+68
PLAN & PROFILE



KEYMAP

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1087

P3

SHEET 7 OF 44

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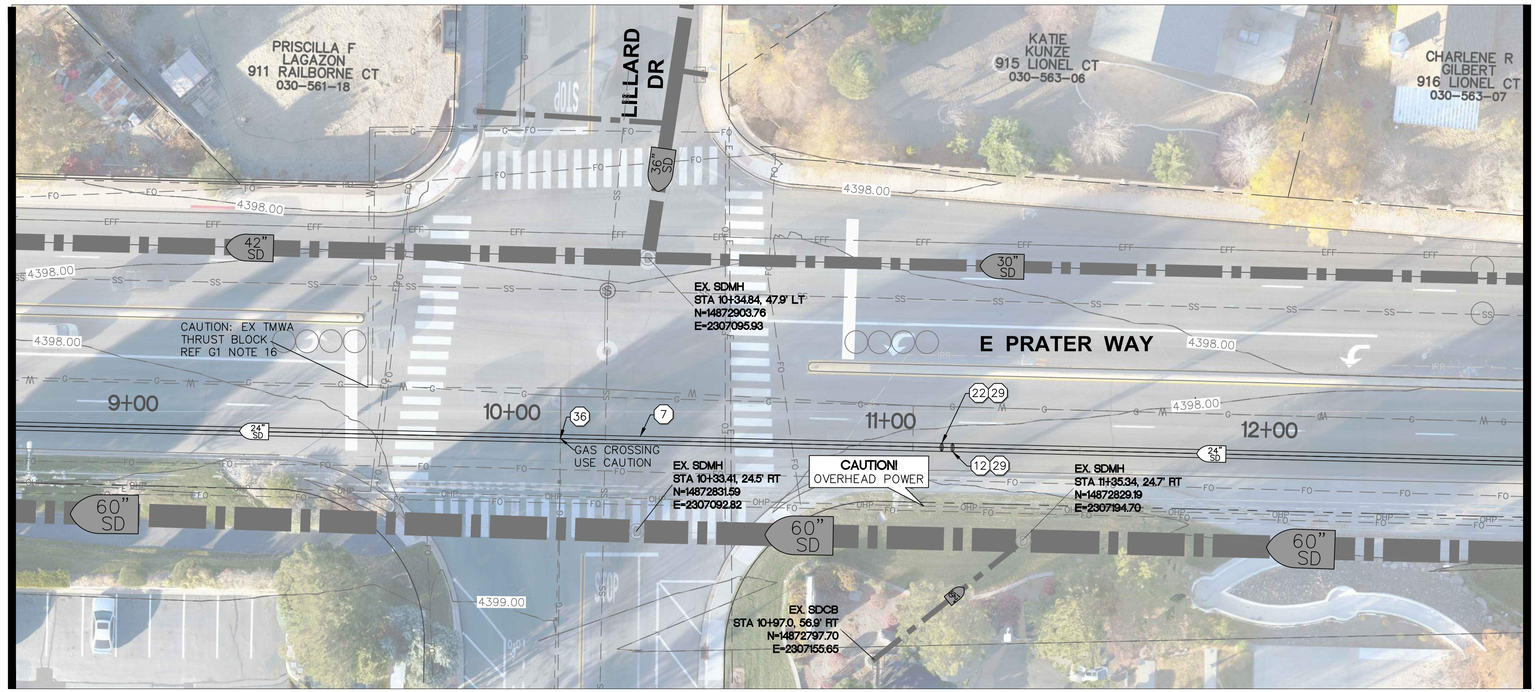

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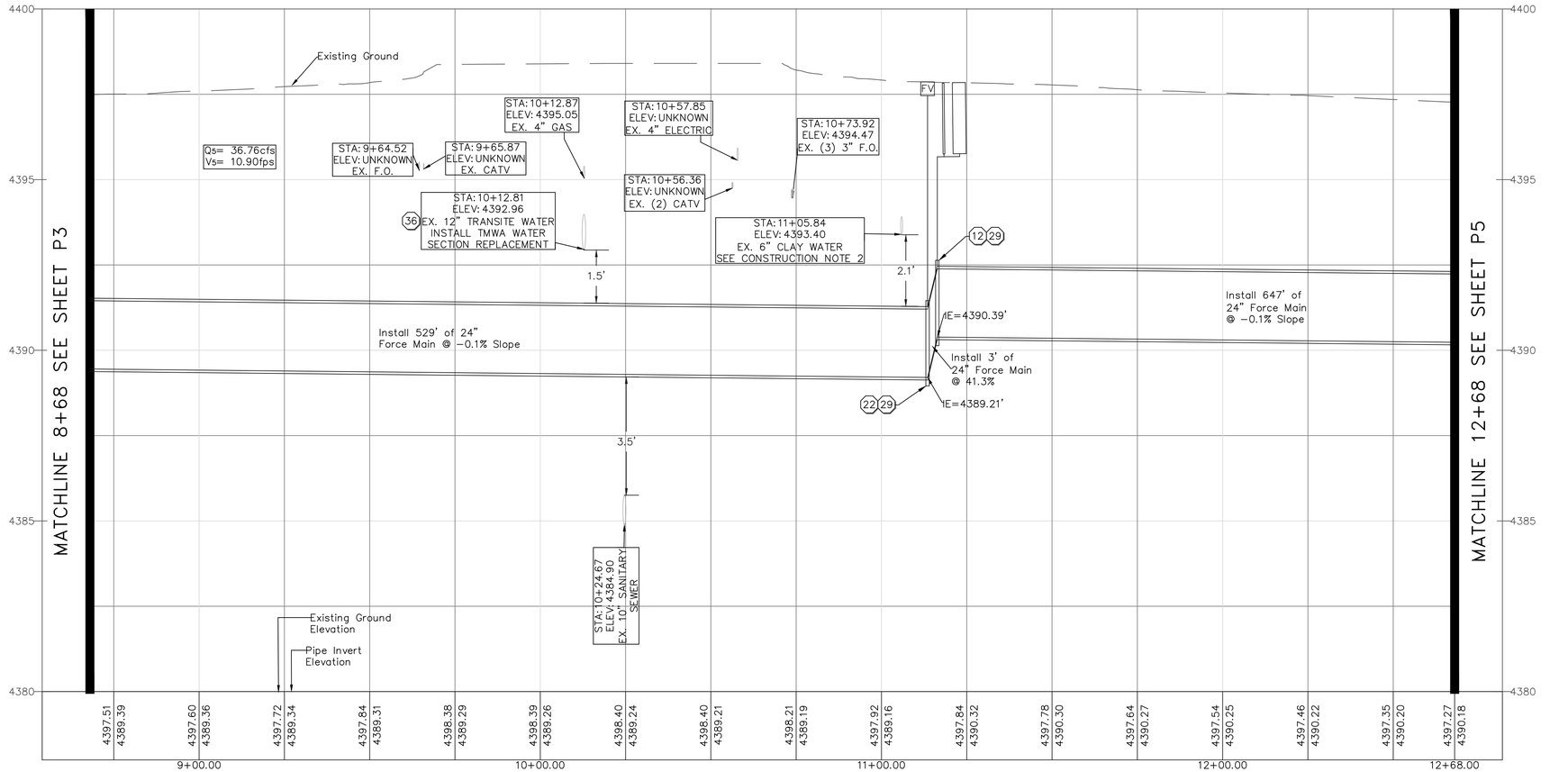

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STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN A. JANES — No. 19811 — Exp. 06-30-21 — CIVIL

7-24-2020

SCALE

DESIGN BY: BAJ
DRAWN BY: BDH
DATE: 7/24/2020
CHECKED BY: BM

PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 08+68 TO 12+68
PLAN & PROFILE

ATKINS
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Tel: +1.775.828.1022 | Fax: +1.775.851.1667

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SHEET 8 OF 44

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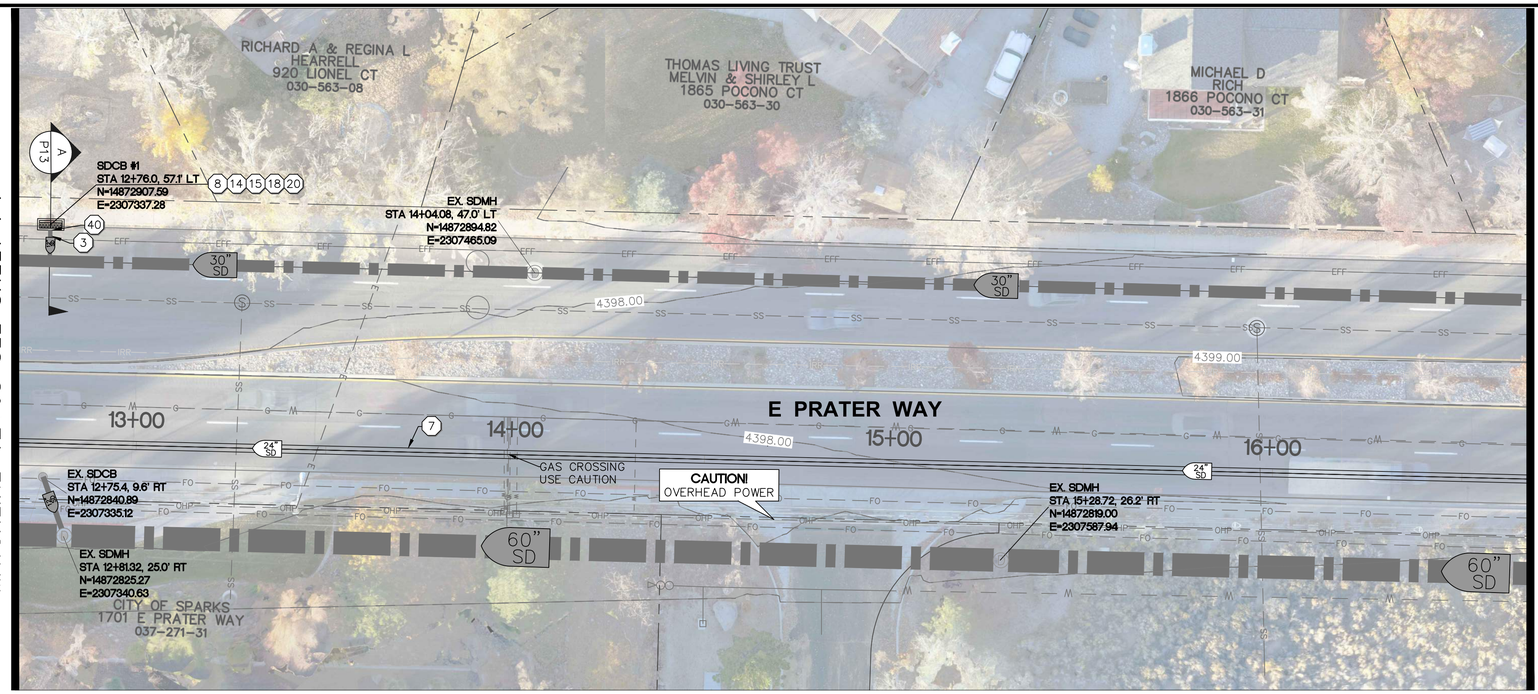

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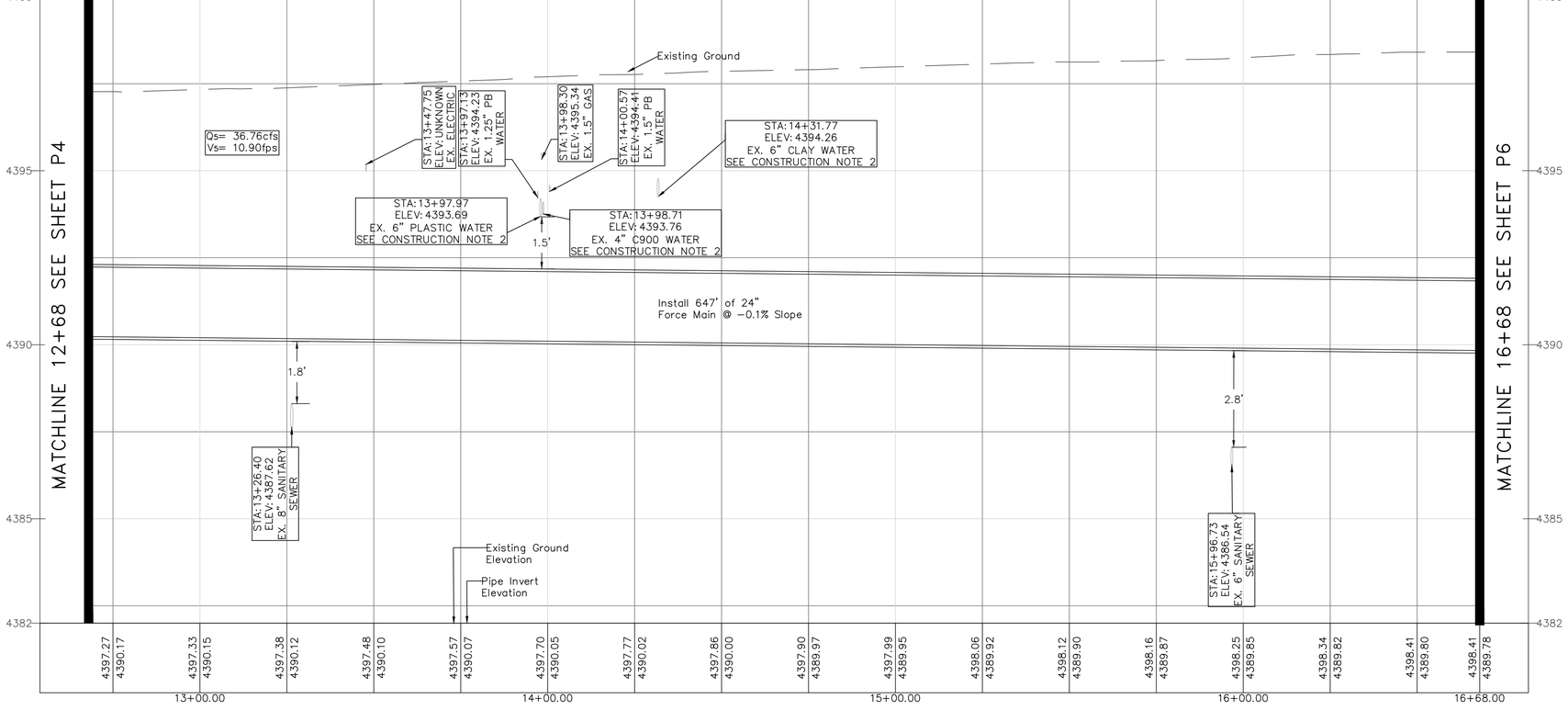

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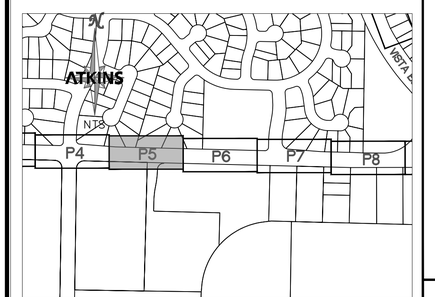

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ENGINEER
BRIAN A JANES
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PROFESSIONAL
Exp. 06-30-21
7-24-2020

SCALE
DESIGN BY BAJ
DRAWN BY BDH
CHECKED BY BM
DATE 7/24/2020
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT
STA. 12+68 TO 16+68
PLAN & PROFILE

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1022 | Fax: +1.775.851.1087

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SHEET 9 OF 44

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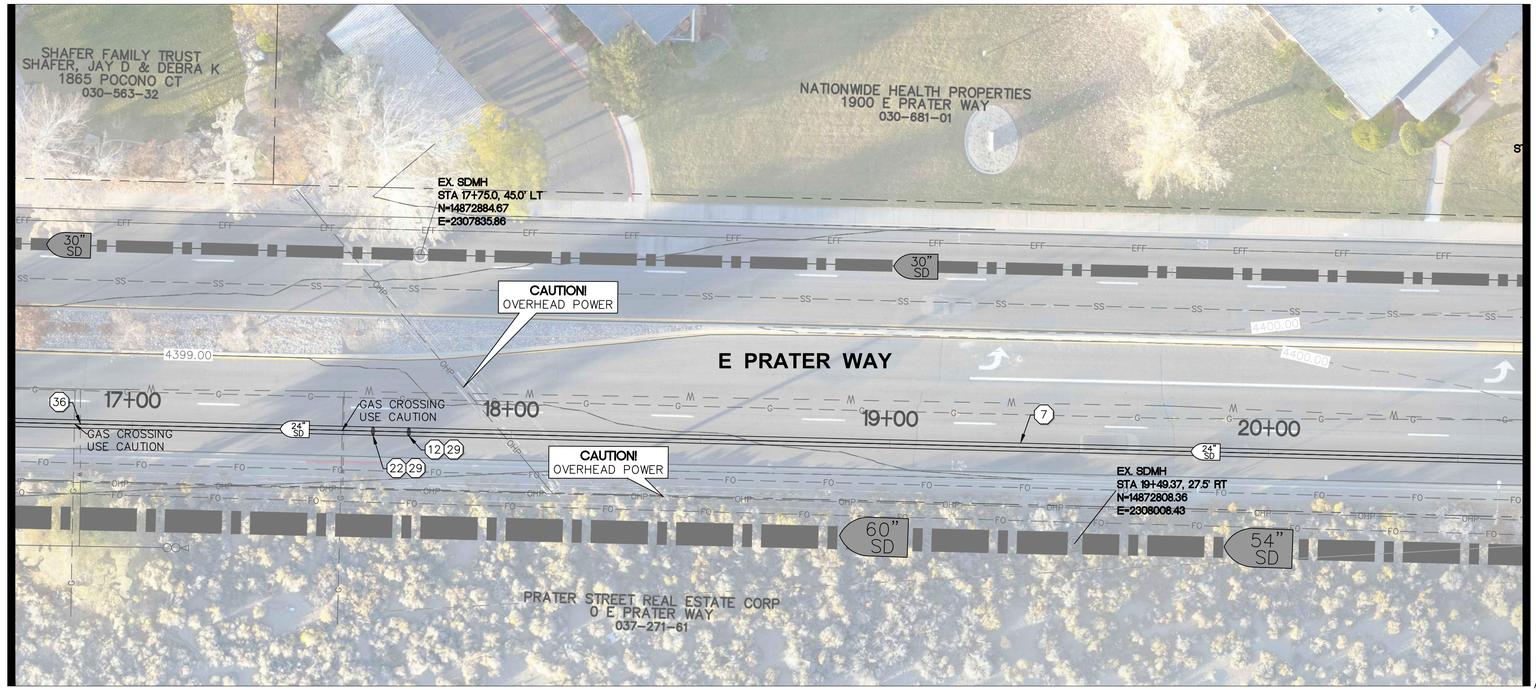

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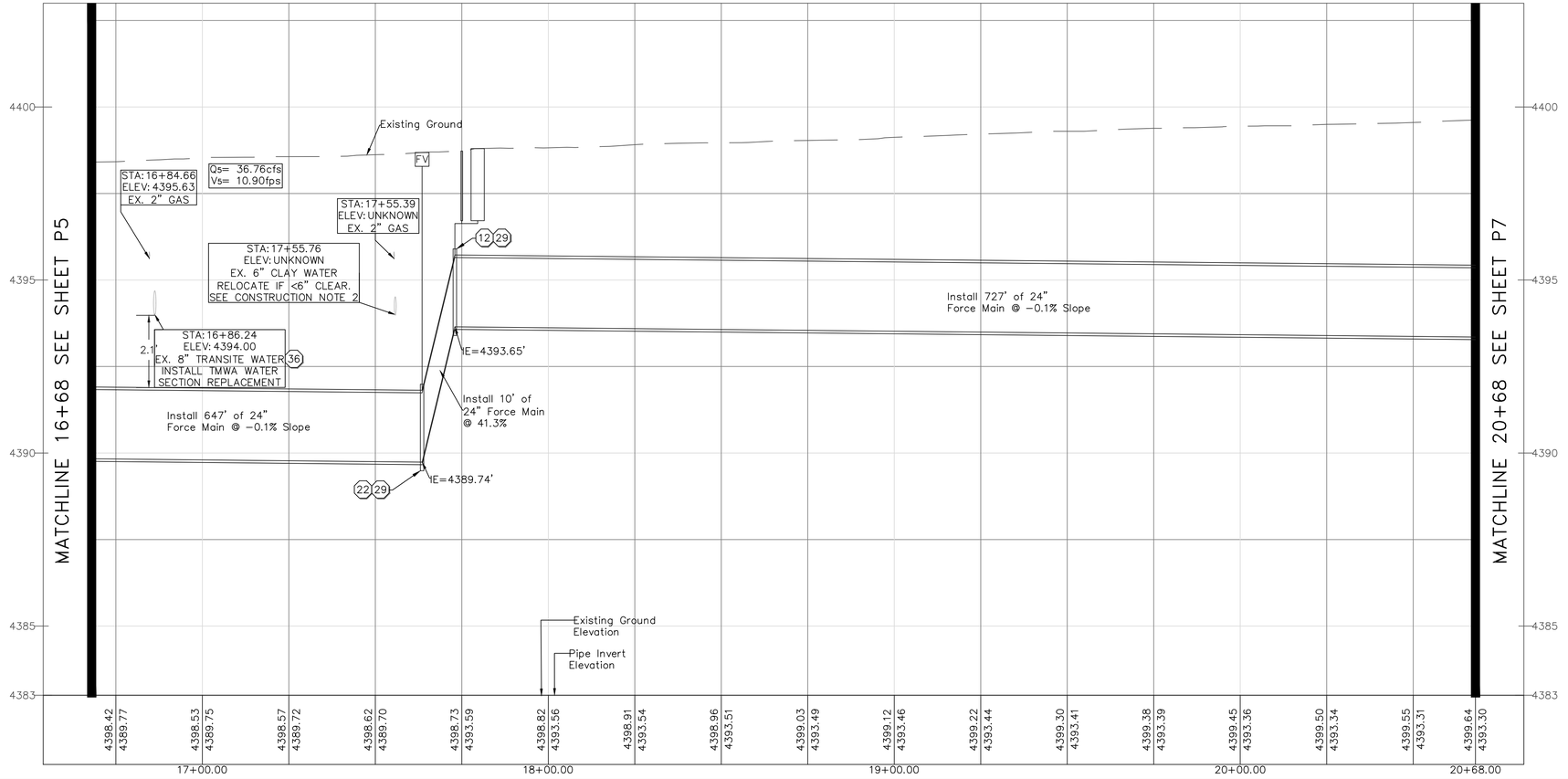

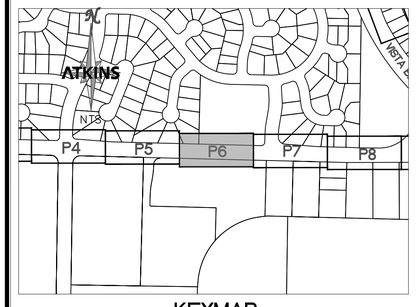

KEYMAP

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STATE OF NEVADA
ENGINEER
BRIAN A JANES
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7-24-2020

SCALE
DESIGN BY BAJ
DRAWN BY BDH
DATE 7/24/2020
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CITY OF SPARKS
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DESIGN PROJECT

STA. 16+68 TO 20+68
PLAN & PROFILE

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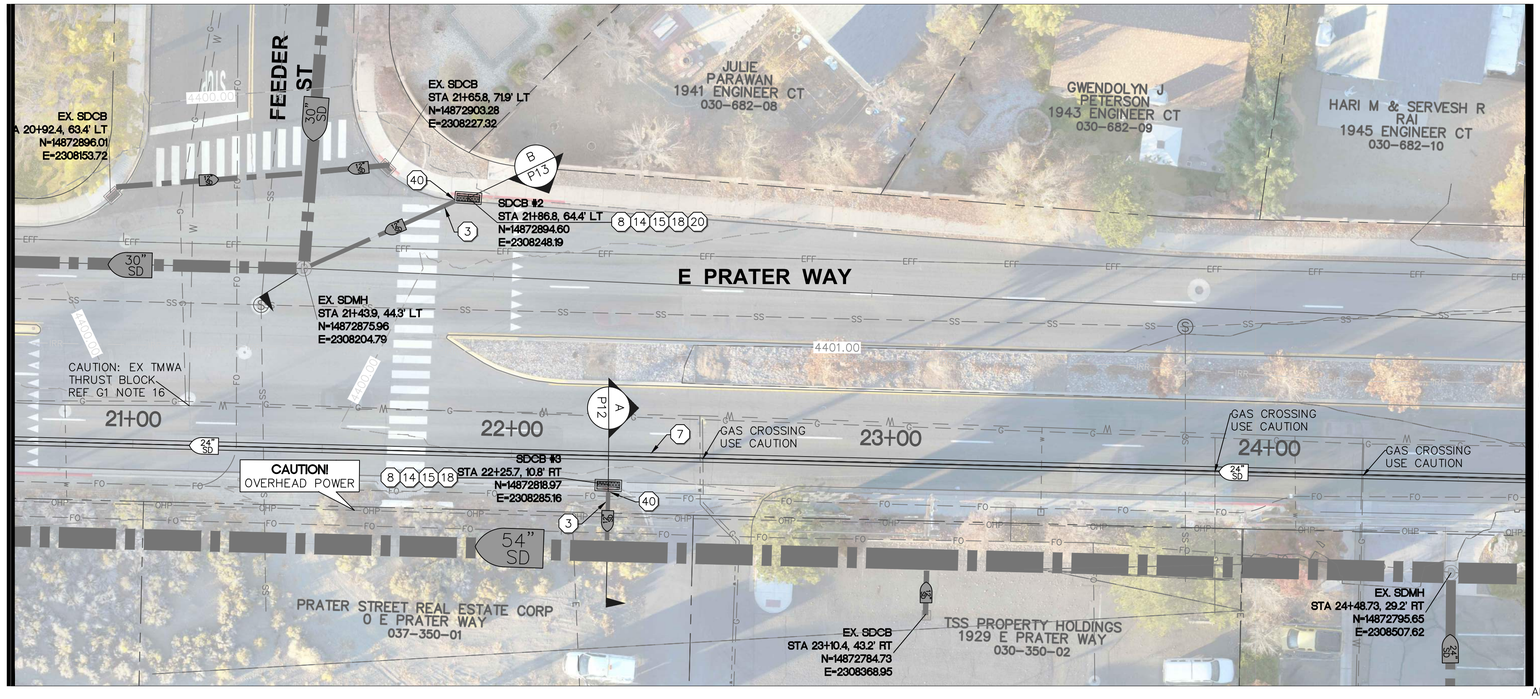
SHEET 10 OF 44



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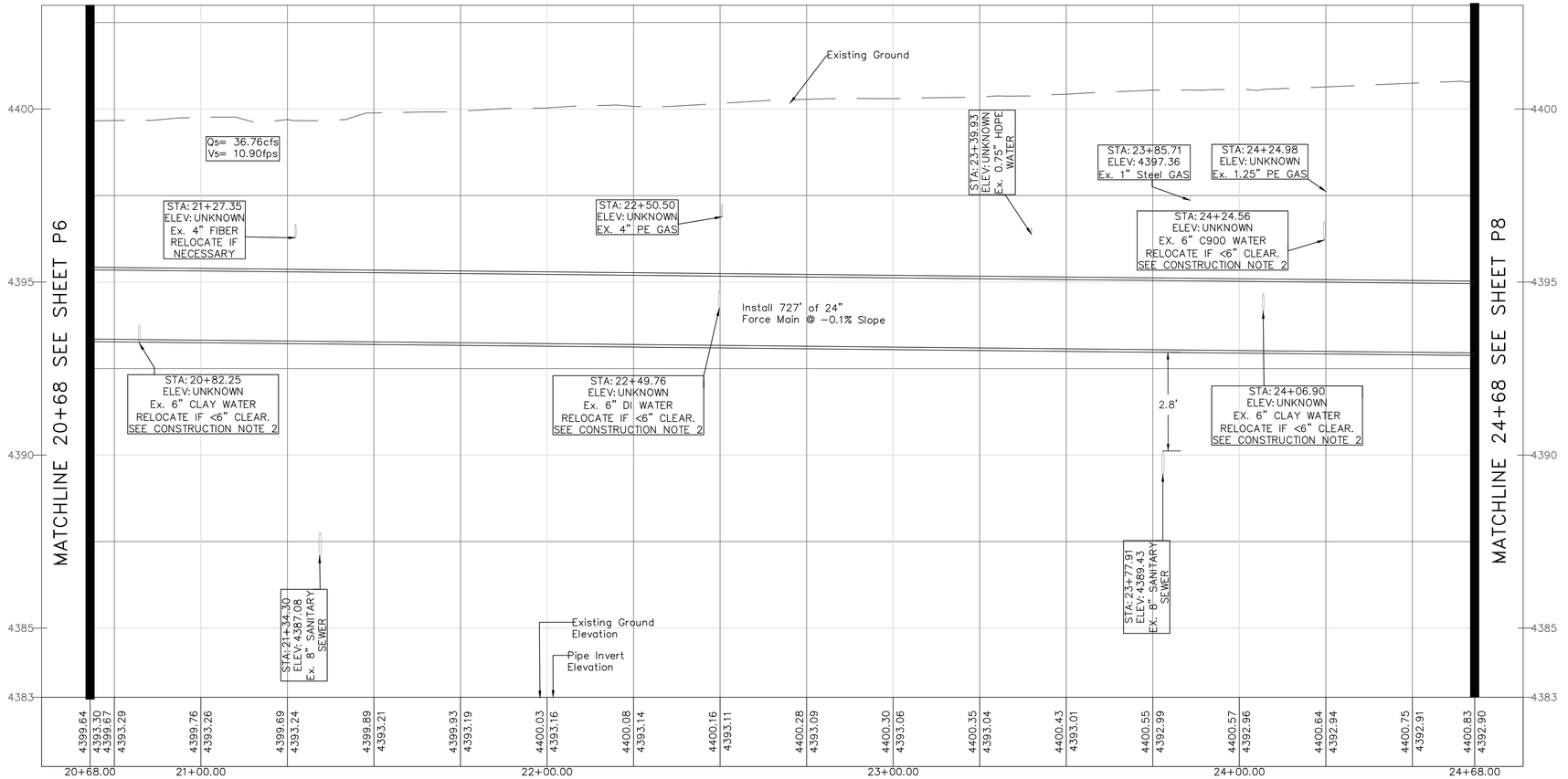

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DESIGN PROJECT

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PLAN & PROFILE

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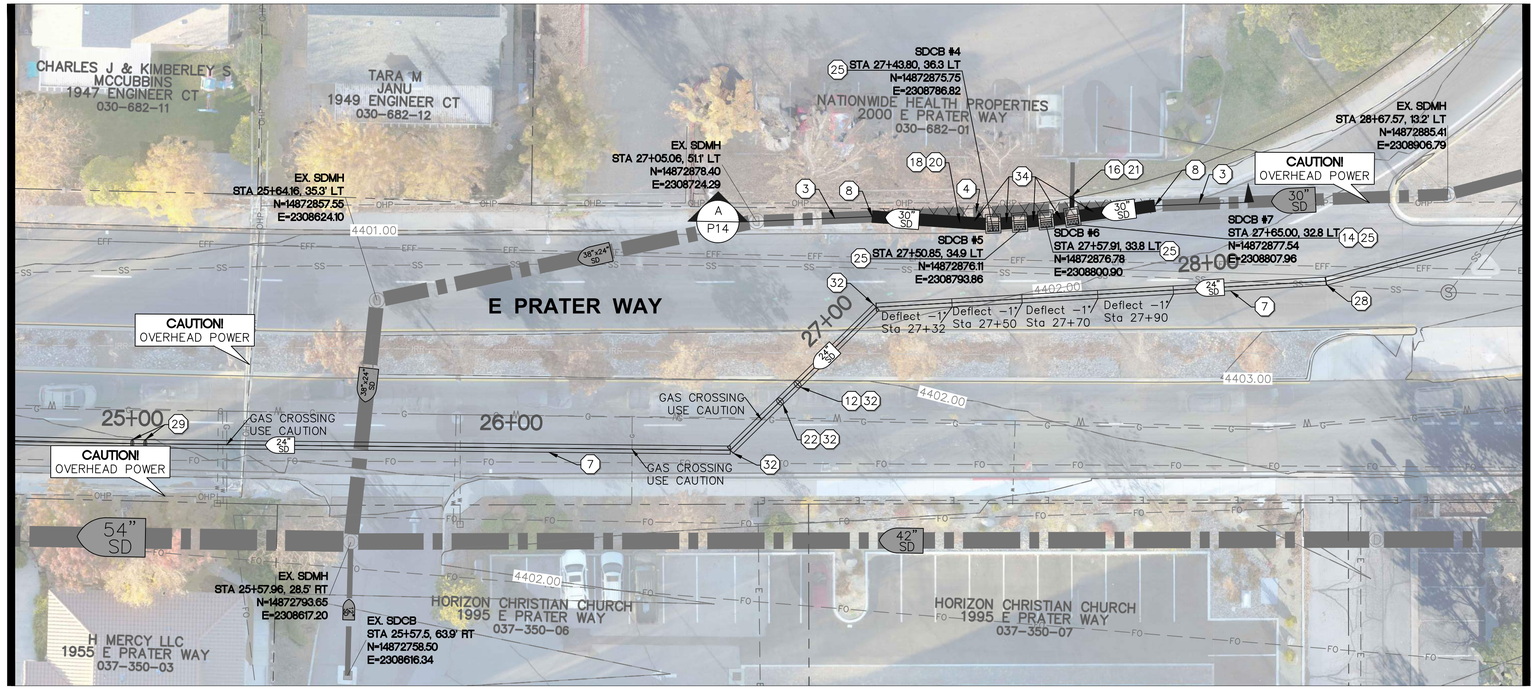

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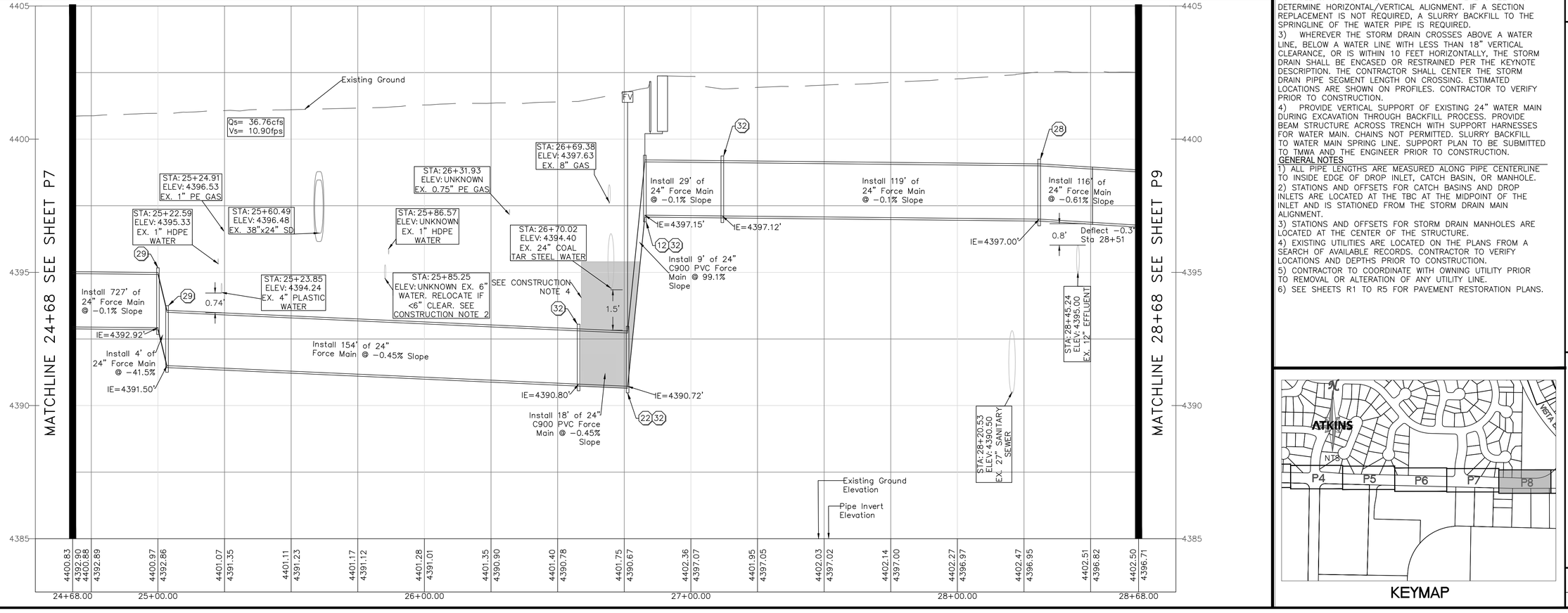
HORIZONTAL: 1"= 20'
VERTICAL: 1"= 2'



KEY NOTES

(3) PROTECT IN PLACE (NDP).
(4) REMOVE EXISTING STORM DRAIN PIPE. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.
(7) INSTALL 24" FORCE MAIN PIPE. MATERIAL MAY BE C900 PVC OR CLASS 250 DUCTILE IRON. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.
(8) CONNECT TO EXISTING STORM DRAIN. REF DTLS A & B SHEET D2.
(12) INSTALL 1" AIR RELEASE VALVE ASSEMBLY. REF. DTL. B SHEET D6.
(14) REMOVE EXISTING STORM DRAIN CATCH BASIN (NDP).
(16) INSTALL 12" SDR-35 PVC STORM DRAIN PIPE. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.
(18) REMOVE AND REPLACE CURB & GUTTER AS NECESSARY FOR STORM DRAIN CONSTRUCTION. MATCH EXISTING TYPE. REF DTL. S-109 (MODIFIED) SHEET D3.
(20) REMOVE AND REPLACE SIDEWALK AS NECESSARY FOR STORM DRAIN CONSTRUCTION. REF DTL. S-103 SHEET D3.
(21) CONSTRUCT CONCRETE COLLAR. REF DTL. B SHEET D2.
(22) INSTALL 4" FLUSH VALVE ASSEMBLY. REF. DTL. WR-2.8 SHEET D6.
(25) CONSTRUCT TYPE CM2 DROP INLET (SINGLE UNIT FRAME) WITH NEENAH R-4999 TYPE D GRATE. REF DTL. A SHEET D6.
(28) INSTALL 24" 11.25° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.
(29) INSTALL 24" 22.5° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.
(32) INSTALL 24" 45° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.
(34) INSTALL 30" RCP STORM DRAIN PIPE. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.

CONSTRUCTION NOTES

1) EXISTING "BLIND CONNECT" STORM DRAIN LATERALS SHOWN ARE APPROXIMATE LOCATIONS BASED ON PREVIOUS SEARCH OF AVAILABLE RECORDS AND HAVE NOT BEEN VERIFIED. CONTRACTOR SHALL VERIFY THAT ALL LATERALS ARE ACTIVE OR INACTIVE PRIOR TO THE INSTALLATION OF ANY MAINLINE PIPE SEGMENT (MH TO MH). EACH ACTIVE LATERAL SHALL BE RECONNECTED.
2) CONTRACTOR SHALL NOTIFY TMWA A MINIMUM OF 48 HOURS PRIOR TO WATER SECTION REPLACEMENT. PRIOR TO CONSTRUCTION OF SECTION REPLACEMENT, CONTRACTOR SHALL POTHOLE & COORDINATE WITH TMWA AND THE ENGINEER TO DETERMINE HORIZONTAL/VERTICAL ALIGNMENT. IF A SECTION REPLACEMENT IS NOT REQUIRED, A SLURRY BACKFILL TO THE SPRINGLINE OF THE WATER PIPE IS REQUIRED.
3) WHEREVER THE STORM DRAIN CROSSES ABOVE A WATER LINE, BELOW A WATER LINE WITH LESS THAN 18" VERTICAL CLEARANCE, OR IS WITHIN 10 FEET HORIZONTALLY, THE STORM DRAIN SHALL BE ENCASED OR RESTRAINED PER THE KEYNOTE DESCRIPTION. THE CONTRACTOR SHALL CENTER THE STORM DRAIN PIPE SEGMENT LENGTH ON CROSSING. ESTIMATED LOCATIONS ARE SHOWN ON PROFILES. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.
4) PROVIDE VERTICAL SUPPORT OF EXISTING 24" WATER MAIN DURING EXCAVATION THROUGH BACKFILL PROCESS. PROVIDE BEAM STRUCTURE ACROSS TRENCH WITH SUPPORT HARNESSES FOR WATER MAIN. CHAINS NOT PERMITTED. SLURRY BACKFILL TO WATER MAIN SPRING LINE. SUPPORT PLAN TO BE SUBMITTED TO TMWA AND THE ENGINEER PRIOR TO CONSTRUCTION.

GENERAL NOTES

1) ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF DROP INLET, CATCH BASIN, OR MANHOLE.
2) STATIONS AND OFFSETS FOR CATCH BASINS AND DROP INLETS ARE LOCATED AT THE TBC AT THE MIDPOINT OF THE INLET AND IS STATIONED FROM THE STORM DRAIN MAIN ALIGNMENT.
3) STATIONS AND OFFSETS FOR STORM DRAIN MANHOLES ARE LOCATED AT THE CENTER OF THE STRUCTURE.
4) EXISTING UTILITIES ARE LOCATED ON THE PLANS FROM A SEARCH OF AVAILABLE RECORDS. CONTRACTOR TO VERIFY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION.
5) CONTRACTOR TO COORDINATE WITH OWNING UTILITY PRIOR TO REMOVAL OR ALTERATION OF ANY UTILITY LINE.
6) SEE SHEETS R1 TO R5 FOR PAVEMENT RESTORATION PLANS.

KEYMAP

REV.	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
ENGINEER
BRIAN A JANES
No. 11981
PROFESSIONAL
Exp. 06-30-21
7-24-2020

SCALE
DESIGN BY BAJ
DRAWN BY BDH
CHECKED BY BM
DATE 7/24/2020
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 24+68 TO 28+68
PLAN & PROFILE

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1687

P8

SHEET 12 OF 44

\\FUSrna1000\DATA\Trans RND\tranproj\East Prater Way SD\Design\Sheets\03PlanAndProfile.dwg
March 6, 2018 - 2:34 PM

MATCHLINE 28+68 SEE SHEET P8

MATCHLINE 33+20 SEE SHEET P10

SDMH #2
STA 30+21.17, 27.8' LT
N=14872962.59
E=2309014.80

EX. SDMH
STA 30+81.19, 20.0' LT
N=14872936.99
E=2309105.96

ELECTRICAL FACILITIES
SEE SHEETS E2 AND E3

SDMH #1
STA 29+52.45, 13.1' LT
N=14872905.99
E=2308986.08

SDMH #3
STA 30+68.70, 10.9' LT
N=14872933.16
E=2309091.14

SDMH #4
STA 30+68.59
N=14872922.74
E=2309087.06

Deflect +1°
Sta 27+21

CAUTION!
OVERHEAD POWER

GAS CROSSING
USE CAUTION

E PRATER WAY

VISTA BLVD

SDMH #6
STA 32+85.91
N=14872865.30
E=2309294.11

SDMH #5
STA 32+25.91
N=14872866.88
E=2309234.14

SDMH #7
STA 32+36.49, 67.8' RT
N=14872798.87
E=2309242.92

EX. SDMH
STA 32+55.56, 66.6' RT
N=14872799.55
E=2309262.02

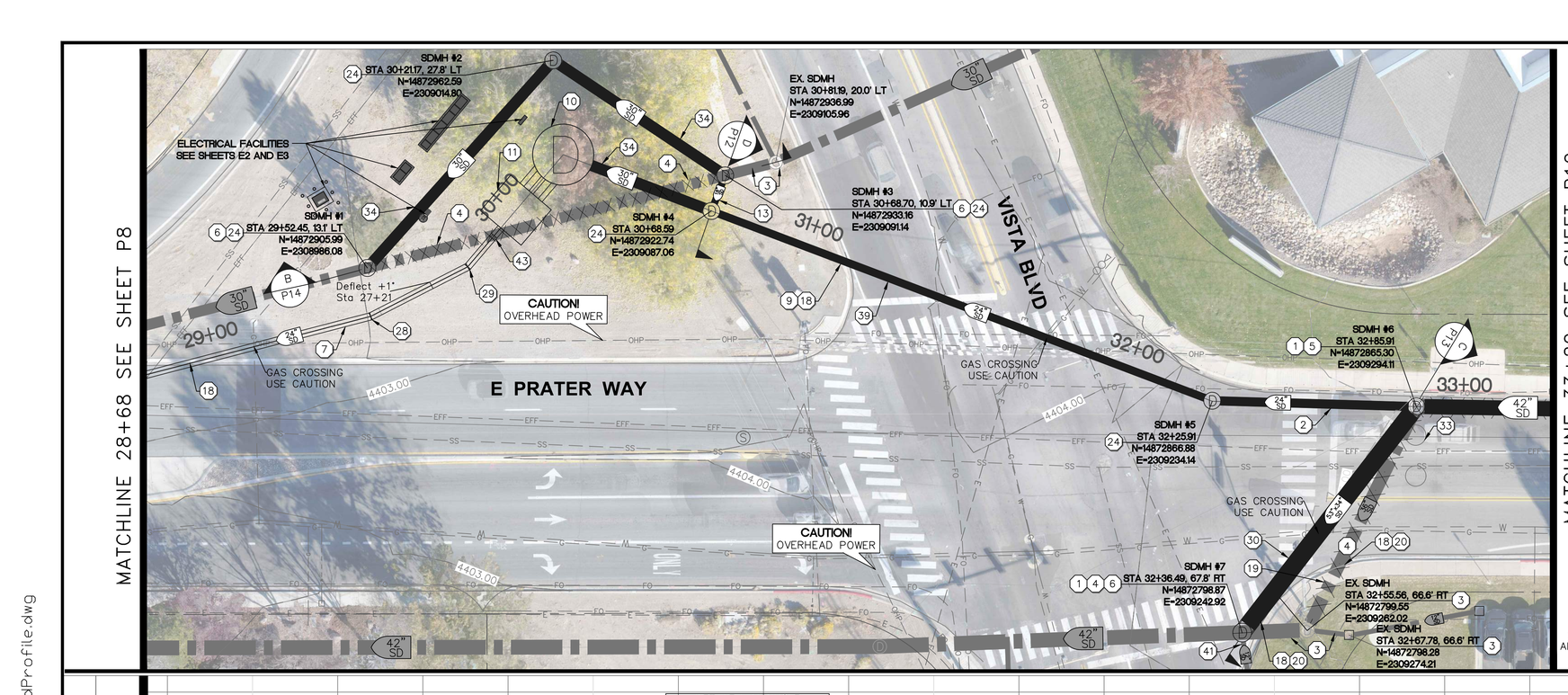
EX. SDMH
STA 32+67.78, 66.6' RT
N=14872798.28
E=2309274.21

29+00 30+00 31+00 32+00 33+00

4403.00 4404.00

30" SD 24" SD 42" SD 53"x34" SD

P12 P13



MATCHLINE 28+68 SEE SHEET P8

MATCHLINE 33+20 SEE SHEET P10

WET WELL MANHOLE
STA: 30+22.08
RIM ELEV= 4403.23' ±
IE IN= 4397.75' (30" E)
IE OUT= 4396.00' (3x 18" SW)
H= 26.75'
SEE GENERAL NOTES 7 & 8

Existing Ground

Existing 5 YR HGL

5 YR HGL

Q5= 35.40cfs
Vs= 11.70fps

Q5= 25.27cfs
Vs= 8.10fps

Q5= 25.28cfs
Vs= 7.80fps

Q5= 36.76cfs
Vs= 10.90fps

RESTRAIN ALL JOINTS
STA 31+30 TO 31+85 (37)

(37) RESTRAIN ALL FORCE MAIN JOINTS STA 2+00 TO 29+94

STA: 29+11.45
ELEV: 4399.44
EX. 8" STEEL GAS

0.85'

Install 116' of
24" Force Main
@ −0.61% Slope

Install 32' of
24" Force Main
@ −0.61% Slope

Install 15' of
24" Force Main
@ −0.61% Slope

Install 47' of
30" RCP SD
@ 1.93% Slope

Install 157' of 24" C900
PVC SD @ 0.99% Slope

Install 58' of 24"
RCP SD @ 1.04%

STA: 28+79.86
ELEV: 4396.83
EX. 8" EFFLUENT
TO BE RELOCATED
1' ABOVE
FORCE MAIN

3.8'

IE=4396.29'

IE=4396.09'

STA: 28+75.37
ELEV: 4390.82
EX. 24" SANITARY
SEWER

PUMP STATION VAULT
STA: 30+00.67
RIM ELEV= 4403.23' ±
IE IN= 4396.00' (3x 18" NE)
IE OUT= 4396.00' (24" SW)
H= 10.0' ±

Existing Ground
Elevation

Pipe Invert
Elevation

BREAKLINE
WET WELL FLOOR
ELEV. = 4376.25'

STA: 30+68.59
RIM ELEV= 4404.25' ±
H= 4.85'
IE IN= 4399.50' (18" N)
IE IN= 4398.75' (24" E)
IE OUT= 4398.65' (30" W)

STA: 31+39.61
ELEV: 4398.47
EX. (2) 4" FIBER

STA: 31+48.40
ELEV: 4396.08
EX. 16" DUCTILE
IRON WATER

STA: 31+66.17
ELEV: UNNKOWN
EX. 1" ELECTRICAL
RELOCATE IF
NECESSARY

STA: 31+71.29
ELEV: UNNKOWN
EX. 4" FIBER
RELOCATE IF
NECESSARY

STA: 31+72.92
ELEV: 4394.52
EX. 12"
TRANSITE WATER

STA: 31+73.90
ELEV: 4396.63
EX. 8" GAS

STA: 32+16.58
ELEV: UNNKOWN
EX. 1" FIBER
RELOCATE IF
NECESSARY

STA: 31+86.67
ELEV: UNNKOWN
EX. 1" ELECTRICAL
RELOCATE IF
NECESSARY

STA: 32+25.91
RIM ELEV= 4404.24' ±
H= 3.9'
IE IN= 4400.40' (24" E)
IE OUT= 4400.30' (24" W)

STA: 32+85.91
RIM ELEV= 4405.04' ±
H= 5.90'
IE IN= 4399.14' (42" E)
IE OUT= 4401.00' (24" W)
IE OUT= 4399.14' (5.3x34" S)

0.57' 2.1' 2.4'

4405 4400 4395 4390 4387

4402.50 4396.71 4402.49 4396.67 4402.70 4396.52 4402.88 4396.37 4403.03 4396.21 4403.22 4396.06 4395.94 4397.21 4398.23 4398.76 4399.00 4403.63 4399.25 4404.21 4399.49 4404.20 4399.74 4404.03 4399.99 4404.20 4400.27 4404.58 4400.59 4404.90 4400.85 4405.16 4399.19 4405.36 4399.34

28+68.00 29+00.00 30+00.00 31+00.00 32+00.00 33+00.00 33+20.00

KEY NOTES

1. CONSTRUCT TYPE 4 STORM DRAIN MANHOLE. REF. DTL. A SHEET D1.
2. INSTALL 24" RCP STORM DRAIN PIPE. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
3. PROTECT IN PLACE (NDP).
4. REMOVE EXISTING STORM DRAIN PIPE. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
5. REMOVE EXISTING STORM DRAIN MANHOLE (NDP).
6. CONNECT MANHOLE TO EXISTING STORM DRAIN. REF DTL. S−211B SHEET D2.
7. INSTALL 24" FORCE MAIN PIPE. MATERIAL MAY BE C900 PVC OR CLASS 250 DUCTILE IRON. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
9. REMOVE AND REPLACE P.C.C. SIDEWALK AS NECESSARY FOR STORM DRAIN CONSTRUCTION. (NDP)
10. INSTALL 16' PRECAST MANHOLE WET WELL. REF. SHEET D8.
11. CONSTRUCT 12'x14'x10' PUMP STATION VAULT. REF. SHEET D8.
13. INSTALL 18" RCP STORM DRAIN PIPE. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
18. REMOVE AND REPLACE CURB & GUTTER AS NECESSARY FOR STORM DRAIN CONSTRUCTION. MATCH EXISTING TYPE. REF DTL. S−109 (MODIFIED) SHEET D3.
19. REMOVE EXISTING AND CONSTRUCT PORTLAND CEMENT CONCRETE PEDESTRIAN RAMP. REF. DTL. S−106 A, F, AND G SHEET D5.
20. REMOVE AND REPLACE SIDEWALK AS NECESSARY FOR STORM DRAIN CONSTRUCTION. REF DTL. S−103 SHEET D3.
24. CONSTRUCT TYPE V STORM DRAIN MANHOLE. REF. DTL. S−208B AND DTL. S−206D SHEET D4.
28. INSTALL 24" 11.25° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.
29. INSTALL 24" 22.5° ELBOW FITTING. RESTRAIN JOINTS EITHER SIDE PER PROFILE NOTE.
30. INSTALL 53"x34" HERCP STORM DRAIN PIPE. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
33. REPLACE ALL DISTURBED TRAFFIC LOOPS.
34. INSTALL 30" RCP STORM DRAIN PIPE. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
37. RESTRAIN ALL JOINTS.
39. INSTALL 24" C900 PVC STORM DRAIN PIPE. REF. DTL. S−115, S−117, AND DTL. A SHEET D4.
41. CONNECT EXISTING STORM DRAIN TO PROPOSED MANHOLE. REPLACE DAMAGED EXISTING STORM DRAIN AS NEEDED WITH PIPE OF SAME SIZE AND MATERIAL. CONNECT TO EXISTING STORM DRAIN WITH CONCRETE COLLAR. REF. DTL. B SHEET D2.
43. INSTALL 24" TRANSITION COUPLING (NDP).

CONSTRUCTION NOTES

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5) CONTRACTOR TO COORDINATE WITH OWNING UTILITY PRIOR TO REMOVAL OR ALTERATION OF ANY UTILITY LINE.
6) SEE SHEETS R1 TO R5 FOR PAVEMENT RESTORATION PLANS.
7) BUOYANCY CALCULATIONS TO BE CHECKED PRIOR TO PRODUCING PUMP STATION.
8) CONTRACTOR TO COORDINATE ENCLOSURE AND CONTROL PANEL SPECIFICATIONS WITH JENSEN PRECAST. IF USING AN APPROVED EQUAL, CONTRACTOR WILL BE RESPONSIBLE FOR

N

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Avoid cutting underground utility lines. It's costly.

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GRAPHIC SCALE
0 20' 40'
HORIZONTAL: 1"=20'
VERTICAL: 1"=2'
SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SHEETS

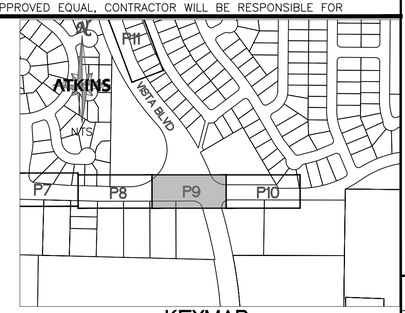
REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
BRIAN A JANES
No. 08-20-21
PROFESSIONAL ENGINEER
7-24-2020

SCALE
DESIGN BY BAJ
DRAWN BY BDH
DATE 7/24/2020
CHECKED BY BM
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 28+68 TO 33+20
PLAN & PROFILE



KEYMAP

P9

SHEET 13 OF 44

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10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1687

7-24-2020

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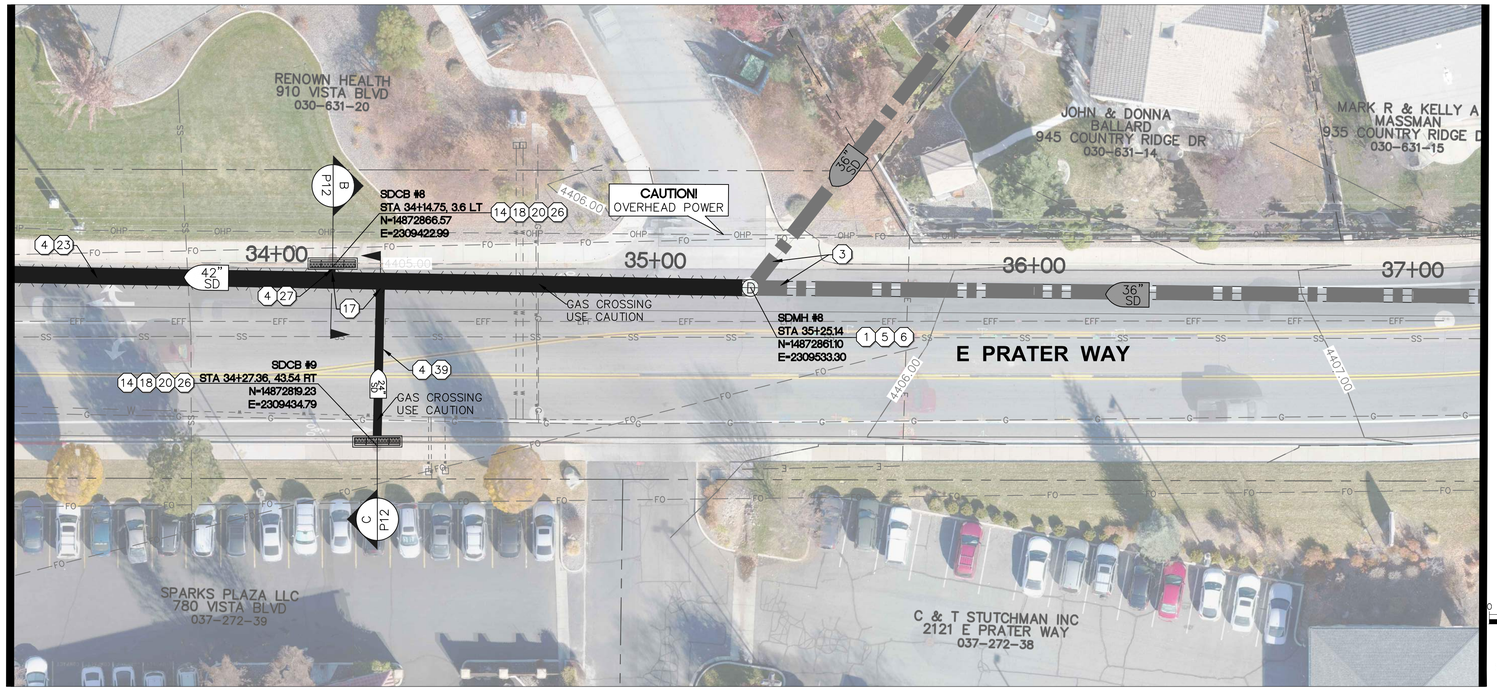
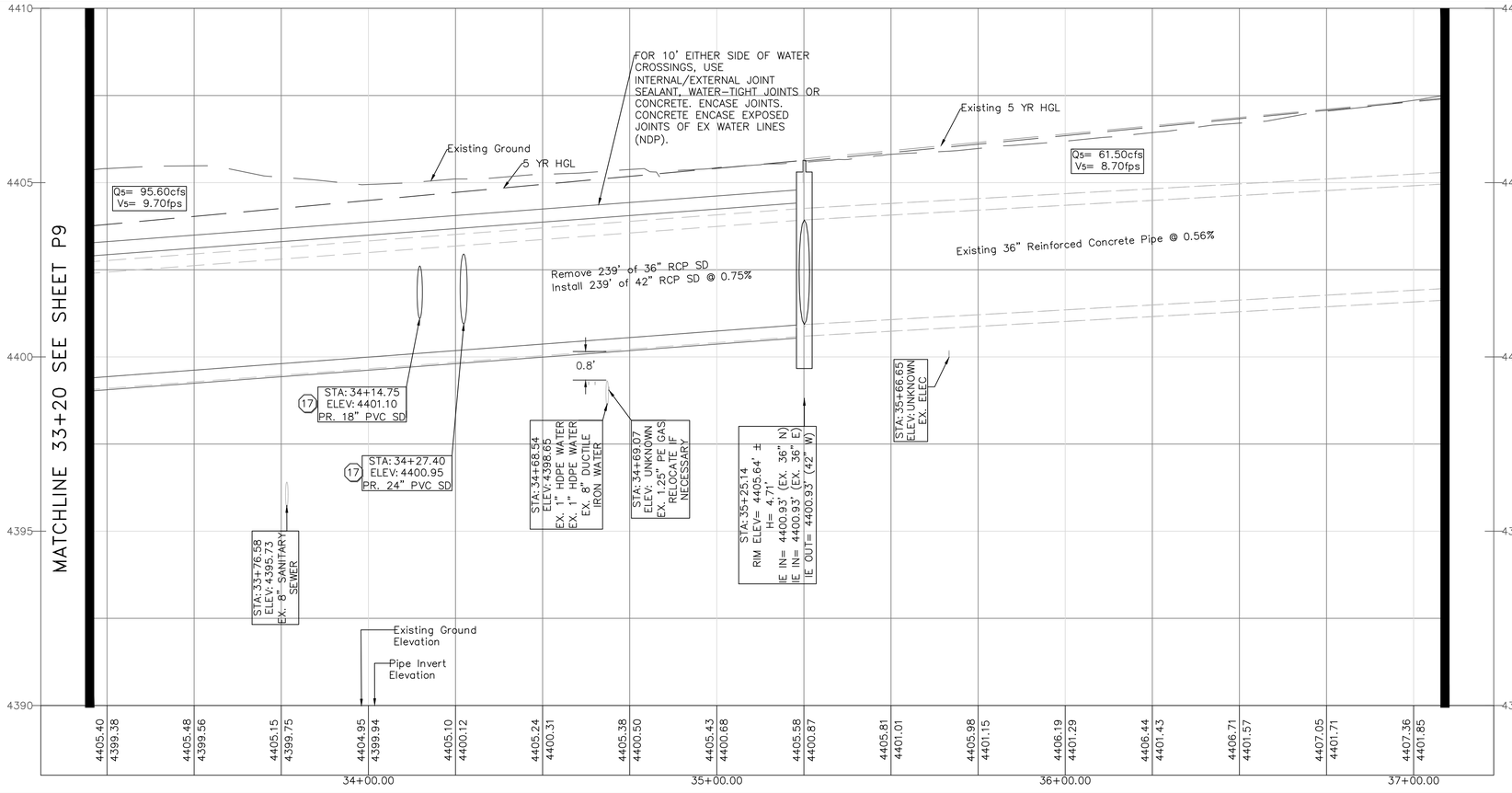
March 6, 2018 - 2:34 PM





KEY NOTES

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3. PROTECT IN PLACE (NDP).
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6. CONNECT MANHOLE TO EXISTING STORM DRAIN. REF DTL. S-211B SHEET D2.
14. REMOVE EXISTING STORM DRAIN CATCH BASIN (NDP).
17. CONNECT TO PROPOSED STORM DRAIN. REF DTL. A SHEET D2.
18. REMOVE AND REPLACE CURB & GUTTER AS NECESSARY FOR STORM DRAIN CONSTRUCTION. MATCH EXISTING TYPE. REF DTL. S-109 (MODIFIED) SHEET D3.
20. REMOVE AND REPLACE SIDEWALK AS NECESSARY FOR STORM DRAIN CONSTRUCTION. REF DTL. S-103 SHEET D3.
23. INSTALL 42" RCP STORM DRAIN PIPE. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.
26. CONSTRUCT HIGH CAPACITY CURB INLET WITH NEENAH R-3295 QUADRUPLE UNIT FRAME, GRATE AND CURB HOOD. REF. DTL. S-205 SHEET D3.
27. INSTALL 18" SDR-35 PVC STORM DRAIN PIPE. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.
39. INSTALL 24" C900 PVC STORM DRAIN PIPE. REF. DTL. S-115, S-117, AND DTL. A SHEET D4.

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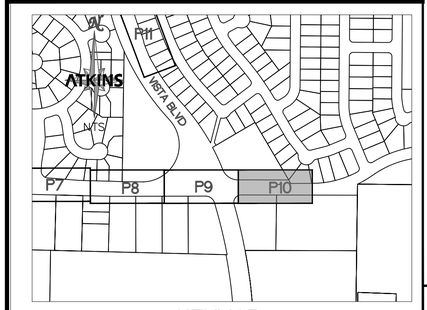
6) SEE SHEETS R1 TO R5 FOR PAVEMENT RESTORATION PLANS.



KEYMAP

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
BRIAN A JANES
No. 11981
PROFESSIONAL ENGINEER
Exp. 06-30-21
7-24-2020

SCALE
DESIGN BY: BAJ
DRAWN BY: BDH
DATE: 7/24/2020
CHECKED BY: BM
PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 33+20 TO 37+09
PLAN & PROFILE

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1622 | Fax: +1.775.851.1687

P10

SHEET 14 OF 44

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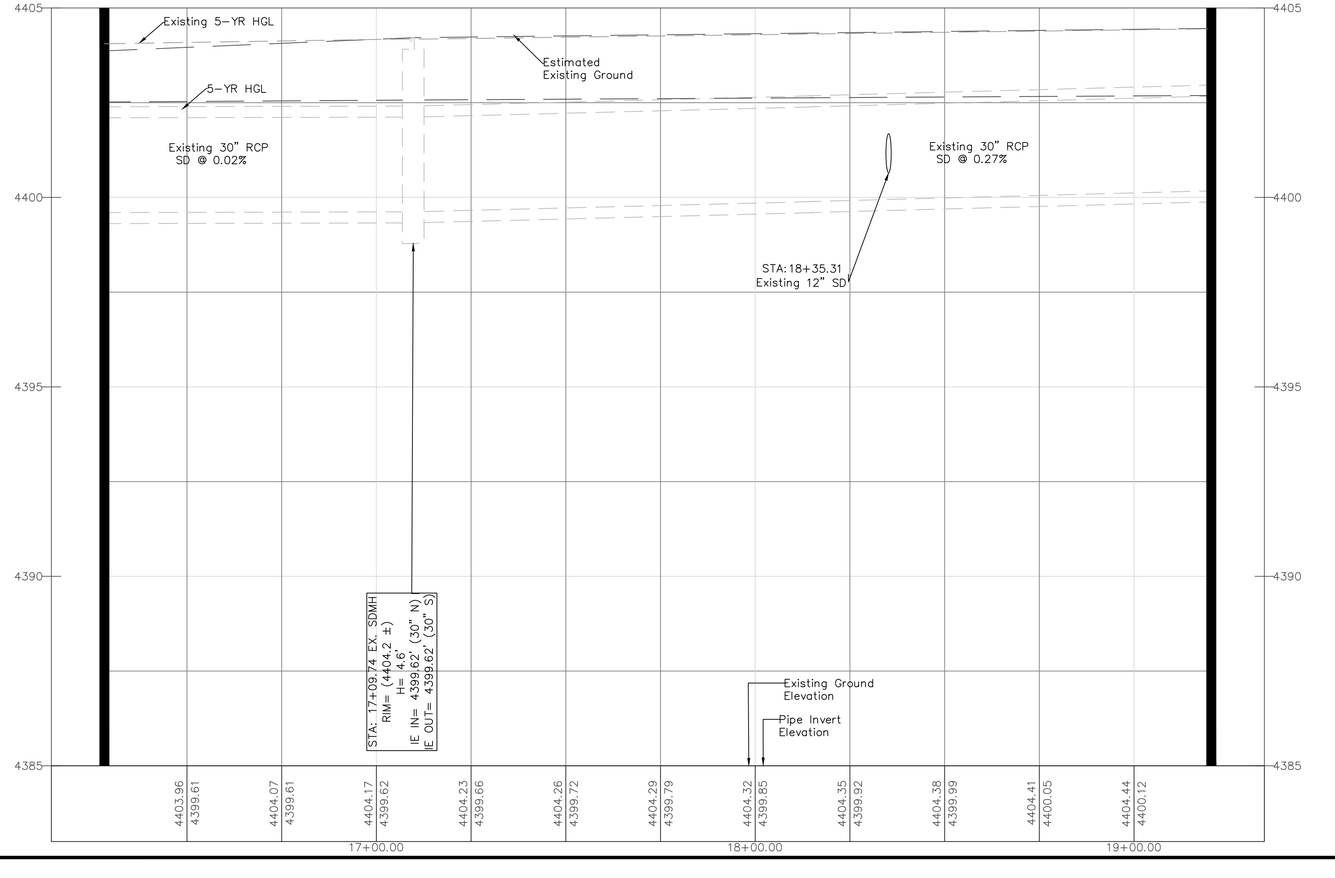
GRAPHIC SCALE

0 20' 40'

HORIZONTAL: 1"= 20'
VERTICAL: 1"= 2'

SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES



KEY NOTES

(3) PROTECT IN PLACE (NDP).

(8) CONNECT TO EXISTING STORM DRAIN. REF DTLS A & B SHEET D2.

(14) REMOVE EXISTING STORM DRAIN CATCH BASIN (NDP).

(15) CONSTRUCT HIGH CAPACITY CURB INLET WITH NEENAH R-3295 DOUBLE UNIT FRAME, GRATE AND CURB HOOD. REF. DTL. S-205 SHEET D3.

(18) REMOVE AND REPLACE CURB & GUTTER AS NECESSARY FOR STORM DRAIN CONSTRUCTION. MATCH EXISTING TYPE. REF DTL. S-109 (MODIFIED) SHEET D3.

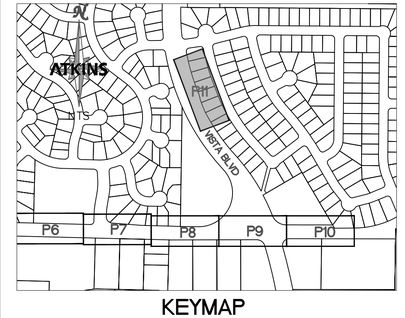
(40) CONNECT SDCB TO EXISTING STORM DRAIN. REPLACE DAMAGED EXISTING STORM DRAIN AS NEEDED WITH PIPE OF SAME SIZE AND MATERIAL. CONNECT TO EXISTING STORM DRAIN WITH CONCRETE COLLAR. REF. DTL. B SHEET D2.

CONSTRUCTION NOTES

1) EXISTING "BLIND CONNECT" STORM DRAIN LATERALS SHOWN ARE APPROXIMATE LOCATIONS BASED ON PREVIOUS SEARCH OF AVAILABLE RECORDS AND HAVE NOT BEEN VERIFIED. CONTRACTOR SHALL VERIFY THAT ALL LATERALS ARE ACTIVE OR INACTIVE PRIOR TO THE INSTALLATION OF ANY MAINLINE PIPE SEGMENT (MH TO MH). EACH ACTIVE LATERAL SHALL BE RECONNECTED.
2) CONTRACTOR SHALL NOTIFY TMWA A MINIMUM OF 48 HOURS PRIOR TO WATER SECTION REPLACEMENT. PRIOR TO CONSTRUCTION OF SECTION REPLACEMENT, CONTRACTOR SHALL POTHOLE & COORDINATE WITH TMWA AND THE ENGINEER TO DETERMINE HORIZONTAL/VERTICAL ALIGNMENT. IF A SECTION REPLACEMENT IS NOT REQUIRED, A SLURRY BACKFILL TO THE SPRINGLINE OF THE WATER PIPE IS REQUIRED.
3) WHEREVER THE STORM DRAIN CROSSES ABOVE A WATER LINE, BELOW A WATER LINE WITH LESS THAN 18" VERTICAL CLEARANCE, OR IS WITHIN 10 FEET HORIZONTALLY, THE STORM DRAIN SHALL BE ENCASED OR RESTRAINED PER THE KEYNOTE DESCRIPTION. THE CONTRACTOR SHALL CENTER THE STORM DRAIN PIPE SEGMENT LENGTH ON CROSSING. ESTIMATED LOCATIONS ARE SHOWN ON PROFILES. CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION.

GENERAL NOTES

1) ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF DROP INLET, CATCH BASIN, OR MANHOLE.
2) STATIONS AND OFFSETS FOR CATCH BASINS AND DROP INLETS ARE LOCATED AT THE TBC AT THE MIDPOINT OF THE INLET AND IS STATIONED FROM THE STORM DRAIN MAIN ALIGNMENT.
3) STATIONS AND OFFSETS FOR STORM DRAIN MANHOLES ARE LOCATED AT THE CENTER OF THE STRUCTURE.
4) EXISTING UTILITIES ARE LOCATED ON THE PLANS FROM A SEARCH OF AVAILABLE RECORDS. CONTRACTOR TO VERIFY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION.
5) CONTRACTOR TO COORDINATE WITH OWNING UTILITY PRIOR TO REMOVAL OR ALTERATION OF ANY UTILITY LINE.
6) SEE SHEETS R1 TO R5 FOR PAVEMENT RESTORATION PLANS.



KEYMAP

REV.	DATE	DESCRIPTION	CHECKED	APPD.
		REVISIONS		

STATE OF NEVADA
No. 19811
PROFESSIONAL ENGINEER
BRIAN A JANES
Exp. 06-30-21
CIVIL

7-24-2020

SCALE

DESIGN BY BAJ | DRAWN BY BDH | CHECKED BY BM
DATE 7/24/2020
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

STA. 16+28 to 19+20
PLAN & PROFILE

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1622 | Fax: +1.775.851.1667

P11

SHEET 15 OF 44

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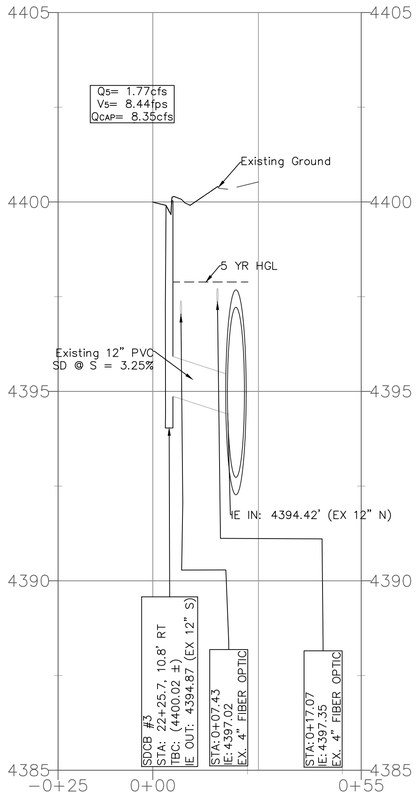
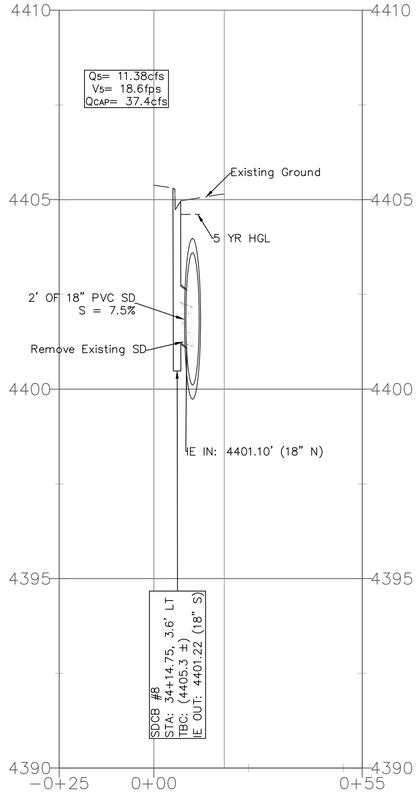
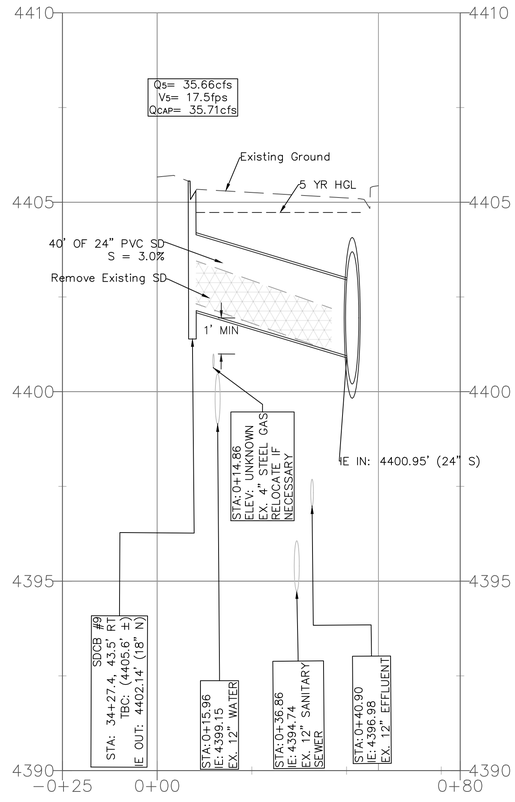


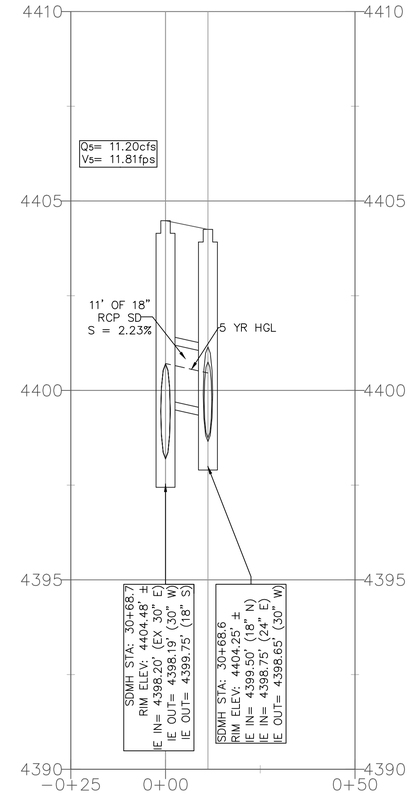
A P12 STA 22+25.7 SEE SHEET P7



B P12 STA 34+14.75 SEE SHEET P10



C P12 STA 34+27.36 SEE SHEET P10



D P12 STA 30+68.70 SEE SHEET P9

GENERAL NOTES

1) ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF DROP INLET, CATCH BASIN, OR MANHOLE.
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3) STATIONS AND OFFSETS FOR STORM DRAIN MANHOLES ARE LOCATED AT THE CENTER OF THE STRUCTURE.
4) EXISTING UTILITIES ARE LOCATED ON THE PLANS FROM A SEARCH OF AVAILABLE RECORDS. CONTRACTOR TO VERIFY LOCATIONS AND DEPTHS PRIOR TO CONSTRUCTION.
5) CONTRACTOR TO COORDINATE WITH OWNING UTILITY PRIOR TO REMOVAL OR ALTERATION OF ANY UTILITY LINE.
6) SEE SHEETS R1 TO R5 FOR PAVEMENT RESTORATION PLANS.

GRAPHIC SCALE
20 0 10 20 40
HORIZONTAL: 1"= 20'
VERTICAL: 1"= 2'
SCALE IS FOR 22x34 SHEETS. ADJUST SCALE FOR OTHER SIZES

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REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN A JANES
No. 11981
Exp. 06-30-21
CIVIL
7-24-2020

SCALE
DESIGN BY BAJ
DRAWN BY BDH
DATE 7/24/2020
CHECKED BY BM
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

LATERAL PROFILES

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1667

P12
SHEET 16 OF 44

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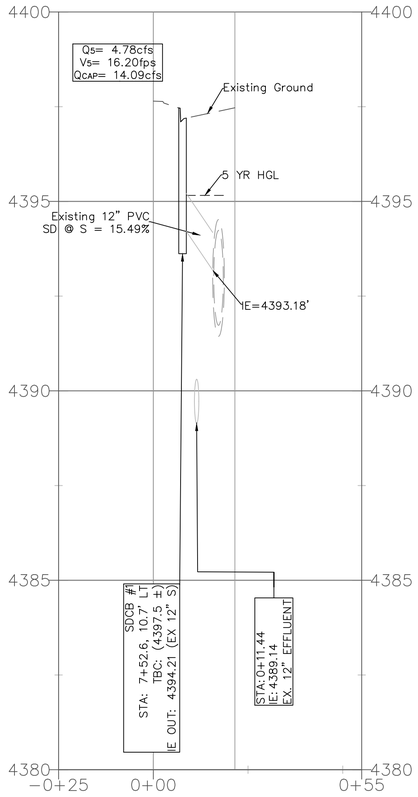

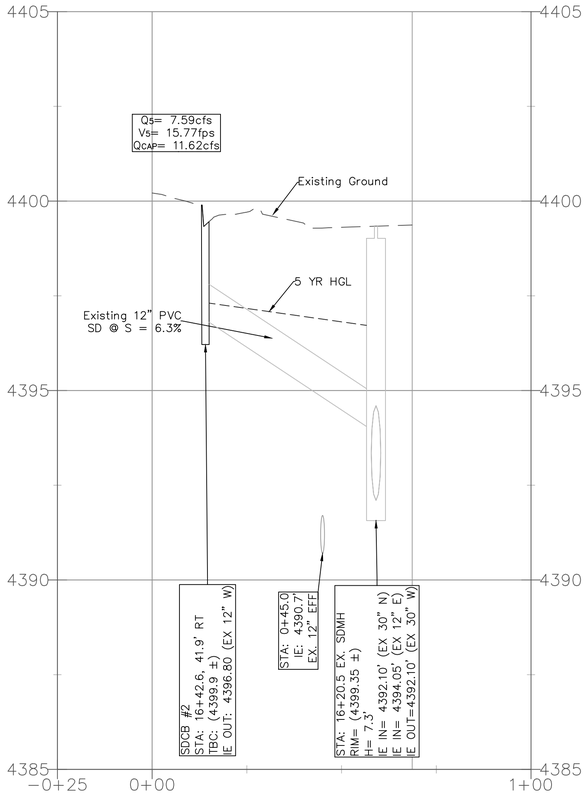

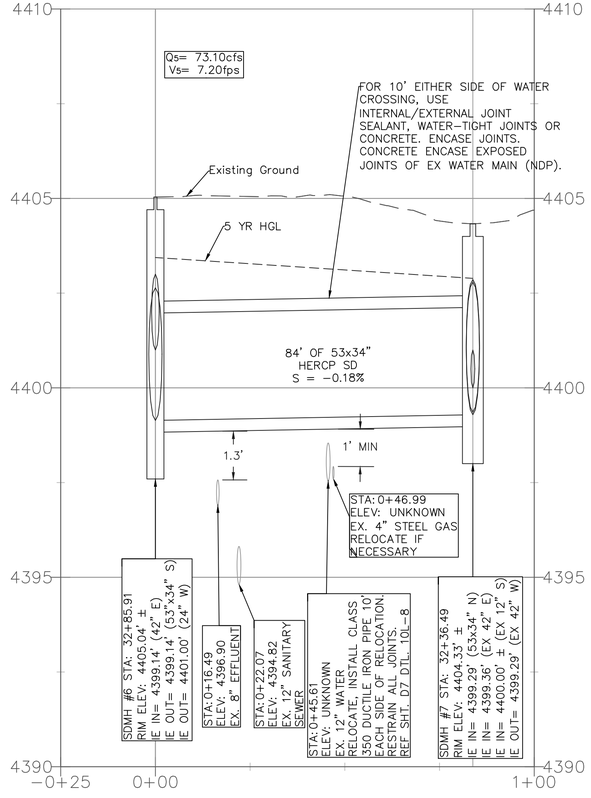

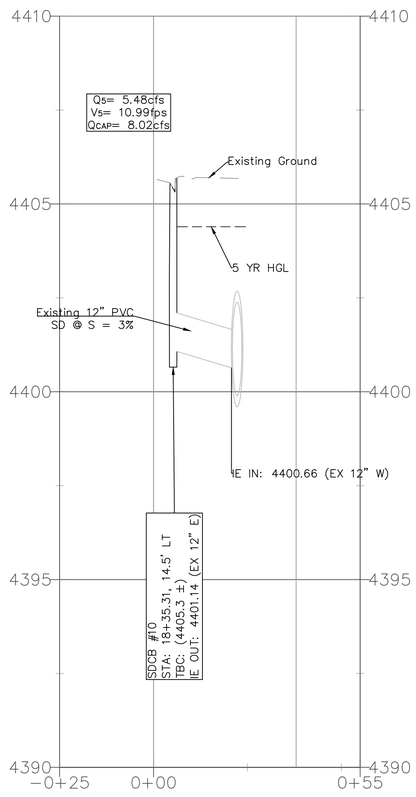

A P13 STA 12+76.0 SEE SHEET P5

B P13 STA 21+86.8 SEE SHEET P7

C P13 STA 32+50.00 SEE SHEET P9

D P13 STA 18+35.31 SEE SHEET P11

GENERAL NOTES

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GRAPHIC SCALE
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HORIZONTAL: 1"= 20 '
VERTICAL: 1"= 2 '
SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

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REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA — ENGINEER — BRIAN A JANES — No. 11981 — PROFESSIONAL — Exp. 06-30-21 — CIVIL

7-24-2020

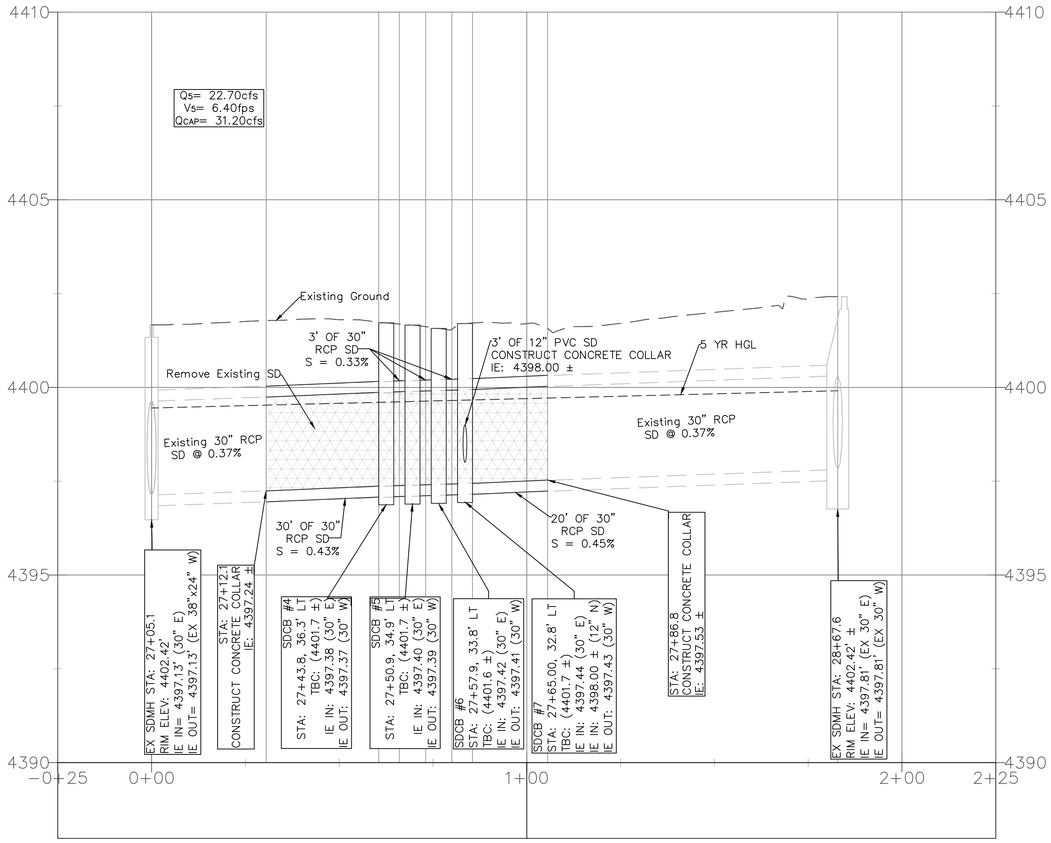
SCALE
DESIGN BY: BAJ
DRAWN BY: BDH
DATE: 7/24/2020
CHECKED BY: BM
PROJECT NUMBER: 100057174

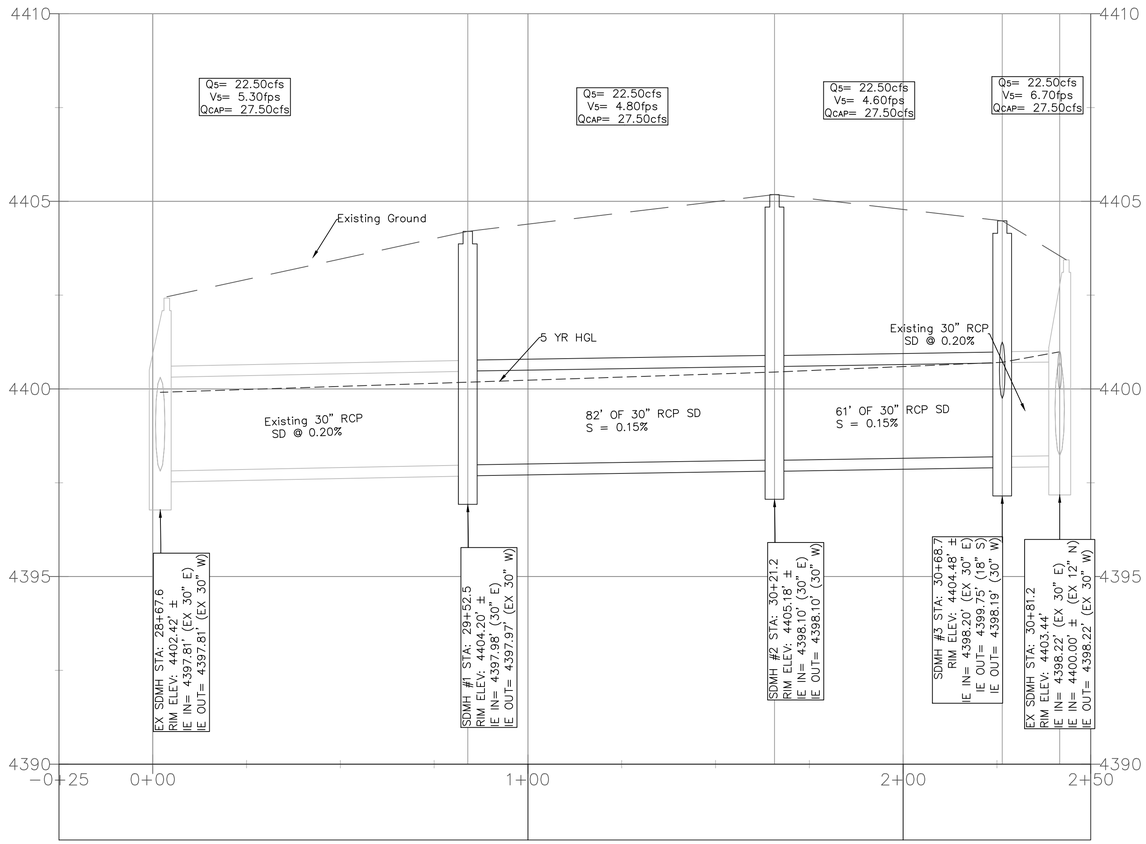
CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

LATERAL PROFILES

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1687

P13





A P14 STA 27+50.00 SEE SHEET P8

B P14 STA 30+00.00 SEE SHEET P9

GENERAL NOTES

1) ALL PIPE LENGTHS ARE MEASURED ALONG PIPE CENTERLINE TO INSIDE EDGE OF DROP INLET, CATCH BASIN, OR MANHOLE.
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20 0 10 20 40
HORIZONTAL: 1"= 20 '
VERTICAL: 1"= 2 '
SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

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REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN A. JANES
No. 09-30-21
7-24-2020

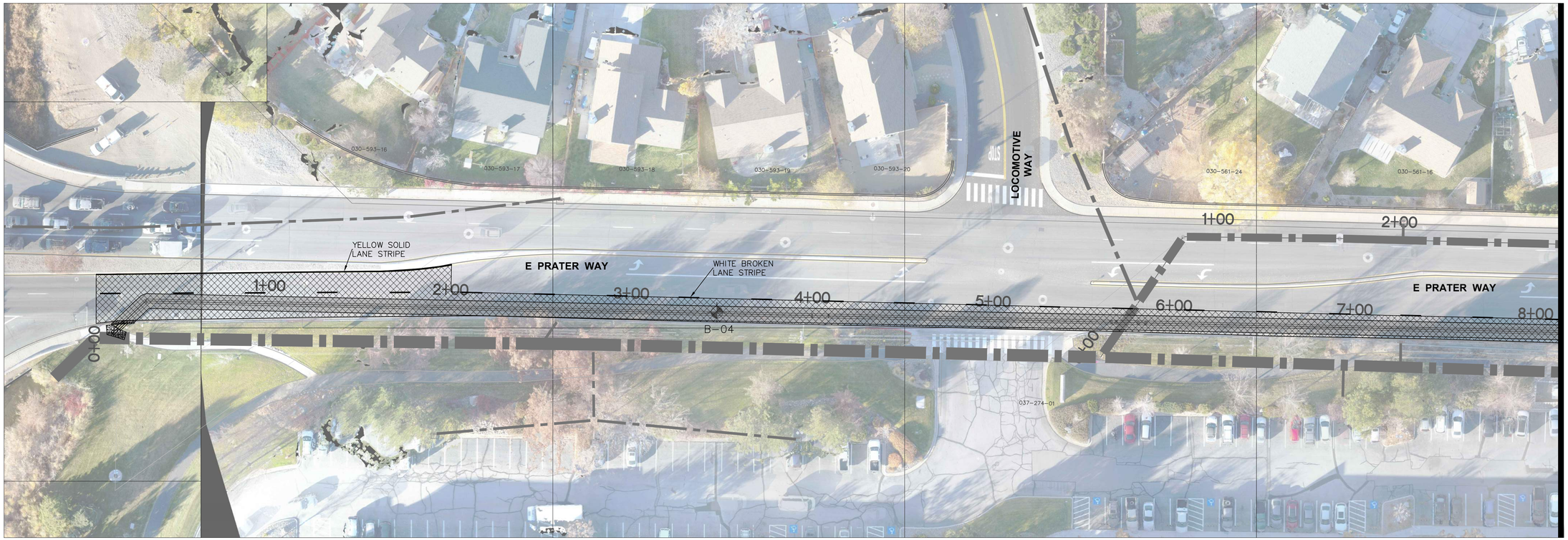
SCALE
DESIGN BY BAJ
DRAWN BY BDH
DATE 7/24/2020
CHECKED BY BM
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

LATERAL PROFILES

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1667

P14
SHEET 18 OF 44



MATCHLINE STA 8+11.10 SEE SHEET R2

LEGEND:

- PERMANENT ASPHALT PATCH (S120 / D4)
- 2" GRIND & OVERLAY, SEE SPECS (S120 / D4)
- LANDSCAPE RESTORATION
- REMOVE & REPLACE SIDEWALK, DRIVEWAY APRON OR VALLEY GUTTER (S104A / D3) (S114A / D3) (S107 / D3)
- REMOVE & REPLACE CURB & GUTTER (S109 / D3)
- STORM DRAIN
- BOREHOLE (SEE BOREHOLE SUMMARY TABLE)

STRIPING LEGEND (NTS):

- DASHED, BROKEN, SOLID, DOUBLE LANE STRIPE
- CROSSWALK STRIPING
- YIELD TRIANGLES
- INTERSECTION STRIPING
- TURN ARROWS
- BIKE LANE MARKINGS

BOREHOLE SUMMARY			
#	STA.	EX. ASPHALT SECTION (IN)	EX. BASE SECTION (IN)
B-04	3+49.0	5.75	6.0

GENERAL NOTES:

1) RE-STRIPE ALL PAVEMENT MARKINGS ON STREETS TO MATCH EXISTING STRIPING. THIS INCLUDES RED CURB. ALL STRIPING SHALL CONFORM TO SSPWC AND THE CONTRACT DOCUMENT SPECIFICATIONS.
2) ALL TEMPORARY PATCHES SHALL BE 3" HOT MIX ASPHALT. COLD MIX NOT APPROVED.
3) WHERE STORM DRAIN/SEWER IMPROVEMENTS ENCROACH ON CURB AND GUTTER, VALLEY GUTTER, MEDIAN CURBS, SIDEWALK, DRIVEWAYS, AND/OR PEDESTRIAN RAMPS, REMOVE AND REPLACE PER DETAILS S104A/D3, S109/D3, S107/D3, S110/D6, S106A/F/G ON D5 AND/OR S114A/D3.
4) SURFACE RESTORATION LIMITS ARE ESTIMATED ON THE PLAN SHEETS AND SHALL NOT BE CONSIDERED A MAXIMUM OR MINIMUM AREA. CONTRACTOR SHALL EVALUATE CONSTRUCTION METHODS, DESIGN DETAILS, EQUIPMENT, SOILS, AND OTHER CONDITIONS TO DETERMINE QUANTITIES. THE COST OF RESTORATION SHALL BE INCLUDED IN PIPE UNIT PRICE, LATERAL UNIT PRICE, MANHOLE UNIT PRICE, AND IN THE LINEAR FOOT PAVING UNIT PRICE REGARDLESS OF THE WIDTH.
5) PROTECT ALL EXISTING STRUCTURES, UTILITIES, FENCING, ETC. IN PLACE.
6) PROTECT AND ADJUST ALL EXISTING UTILITY MANHOLES, VALVE BOXES, SURVEY MONUMENTS, AND VAULT COVERS TO NEW FINISHED GRADE WITHIN RESTORATION LIMITS.
7) EXISTING PAVEMENT AND BASE THICKNESSES VARY THROUGHOUT THE PROJECT; HOWEVER, ALL PERMANENT PAVEMENT PATCH THICKNESS SHALL BE 6" ON 10" OF BASE. REFER TO PATCHING DETAILS ON DETAIL S120/D4 AND/OR S121/D4.
8) HYDROSEED NATIVE RESTORATION AREA WITH AN APPROVED NATIVE SEED MIX.

N

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GRAPHIC SCALE
30 0 15 30 60
HORIZONTAL: 1"= 30 '

SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

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REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN A JANES
No. 09-30-21
7-24-2020

SCALE

DESIGN BY	DRAWN BY	CHECKED BY
BAJ	BDH	BM

DATE 7/24/2020

PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

PAVEMENT RESTORATION

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

R1

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March 6, 2018 - 2:34 PM

MATCHLINE STA 8+11.10 SEE SHEET R1

MATCHLINE STA 16+69.48 SEE SHEET R3

LEGEND:

- PERMANENT ASPHALT PATCH (S120/D4)
- 2" GRIND & OVERLAY, SEE SPECS (S120/D4)
- LANDSCAPE RESTORATION
- REMOVE & REPLACE SIDEWALK, DRIVEWAY APRON OR VALLEY GUTTER (S104A/D3, S114A/D3, S107/D3)
- REMOVE & REPLACE CURB & GUTTER (S109/D3)
- STORM DRAIN
- BOREHOLE (SEE BOREHOLE SUMMARY TABLE)

BOREHOLE SUMMARY			
#	STA.	EX. ASPHALT SECTION (IN)	EX. BASE SECTION (IN)
B-05	11+72.6	5.0	6.0

STRIPING LEGEND (NTS):

- DASHED, BROKEN, SOLID, DOUBLE LANE STRIPE
- CROSSWALK STRIPING
- YIELD TRIANGLES
- INTERSECTION STRIPING
- TURN ARROWS
- BIKE LANE MARKINGS

GENERAL NOTES:

1) RE-STRIPE ALL PAVEMENT MARKINGS ON STREETS TO MATCH EXISTING STRIPING. THIS INCLUDES RED CURB. ALL STRIPING SHALL CONFORM TO SSPWC AND THE CONTRACT DOCUMENT SPECIFICATIONS.
2) ALL TEMPORARY PATCHES SHALL BE 3" HOT MIX ASPHALT. COLD MIX NOT APPROVED.
3) WHERE STORM DRAIN/SEWER IMPROVEMENTS ENCROACH ON CURB AND GUTTER, VALLEY GUTTER, MEDIAN CURBS, SIDEWALK, DRIVEWAYS, AND/OR PEDESTRIAN RAMPS, REMOVE AND REPLACE PER DETAILS S104A/D3, S109/D3, S107/D3, S110/D6, S106A/F/G ON D5 AND/OR S114A/D3.
4) SURFACE RESTORATION LIMITS ARE ESTIMATED ON THE PLAN SHEETS AND SHALL NOT BE CONSIDERED A MAXIMUM OR MINIMUM AREA. CONTRACTOR SHALL EVALUATE CONSTRUCTION METHODS, DESIGN DETAILS, EQUIPMENT, SOILS, AND OTHER CONDITIONS TO DETERMINE QUANTITIES. THE COST OF RESTORATION SHALL BE INCLUDED IN PIPE UNIT PRICE, LATERAL UNIT PRICE, MANHOLE UNIT PRICE, AND IN THE LINEAR FOOT PAVING UNIT PRICE REGARDLESS OF THE WIDTH.
5) PROTECT ALL EXISTING STRUCTURES, UTILITIES, FENCING, ETC. IN PLACE.
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7) EXISTING PAVEMENT AND BASE THICKNESSES VARY THROUGHOUT THE PROJECT; HOWEVER, ALL PERMANENT PAVEMENT PATCH THICKNESS SHALL BE 6" ON 10" OF BASE. REFER TO PATCHING DETAILS ON DETAIL S120/D4 AND/OR S121/D4.
8) HYDROSEED NATIVE RESTORATION AREA WITH AN APPROVED NATIVE SEED MIX.

N

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GRAPHIC SCALE

30 0 15 30 60

HORIZONTAL: 1"= 30 '

SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

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REVISIONS			
REV	DATE	DESCRIPTION	CHECKED	APPD

STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN A JANES
No. 19811
Exp. 06-30-21
CIVIL

7-24-2020

SCALE

DESIGN BY: BAJ
DRAWN BY: BDH
CHECKED BY: BM
DATE: 7/24/2020

PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

PAVEMENT RESTORATION

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1667

R2

SHEET 20 OF 44

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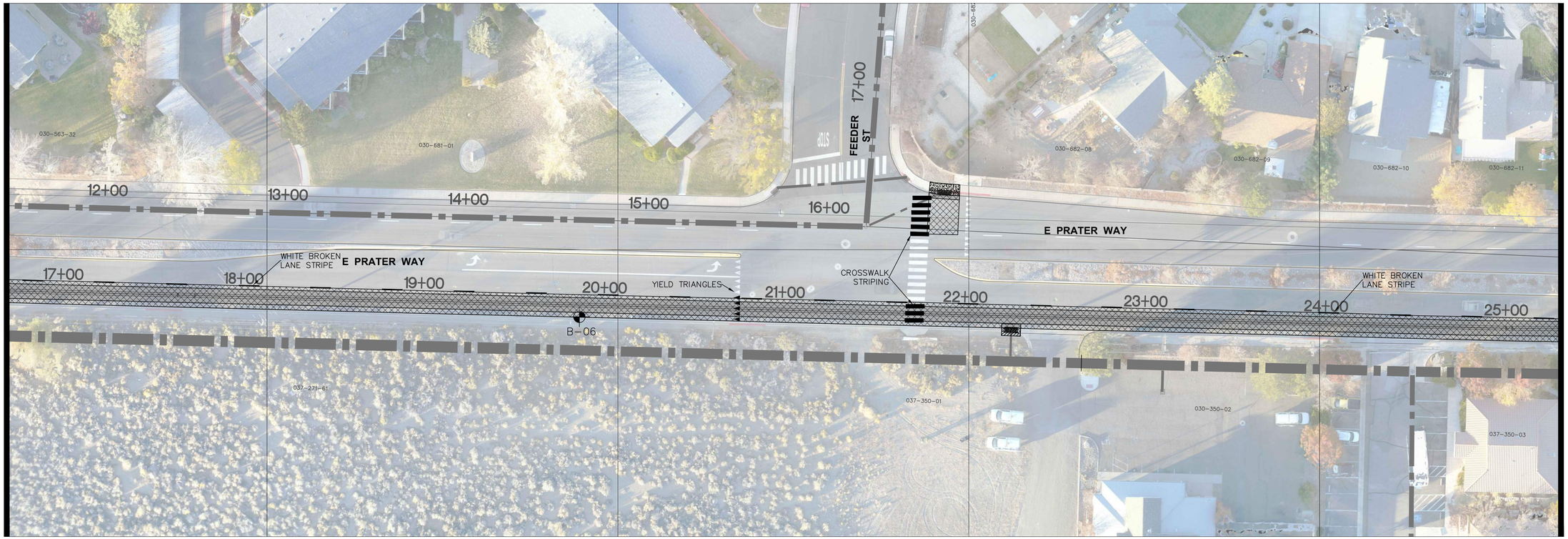
March 6, 2018 - 2:34 PM

MATCHLINE STA 16+69.48 SEE SHEET R2



MATCHLINE 25+27.43 SEE SHEET R4

LEGEND:

- PERMANENT ASPHALT PATCH (S120 / D4)
- 2" GRIND & OVERLAY, SEE SPECS (S120 / D4)
- LANDSCAPE RESTORATION
- REMOVE & REPLACE SIDEWALK, DRIVEWAY APRON OR VALLEY GUTTER (S104A / D3, S114A / D3, S107 / D3)
- REMOVE & REPLACE CURB & GUTTER (S109 / D3)
- STORM DRAIN
- BOREHOLE (SEE BOREHOLE SUMMARY TABLE)

STRIPING LEGEND (NTS):

- DASHED, BROKEN, SOLID, DOUBLE LANE STRIPE
- CROSSWALK STRIPING
- YIELD TRIANGLES
- INTERSECTION STRIPING
- TURN ARROWS
- BIKE LANE MARKINGS

BOREHOLE SUMMARY

#	STA.	EX. ASPHALT SECTION (IN)	EX. BASE SECTION (IN)
B-06	19+87.0	6.0	6.0

GENERAL NOTES:

1) RE-STRIPE ALL PAVEMENT MARKINGS ON STREETS TO MATCH EXISTING STRIPING. THIS INCLUDES RED CURB. ALL STRIPING SHALL CONFORM TO SSPWC AND THE CONTRACT DOCUMENT SPECIFICATIONS.
2) ALL TEMPORARY PATCHES SHALL BE 3" HOT MIX ASPHALT. COLD MIX NOT APPROVED.
3) WHERE STORM DRAIN/SEWER IMPROVEMENTS ENCROACH ON CURB AND GUTTER, VALLEY GUTTER, MEDIAN CURBS, SIDEWALK, DRIVEWAYS, AND/OR PEDESTRIAN RAMPS, REMOVE AND REPLACE PER DETAILS S104A/D3, S109/D3, S107/D3, S110/D6, S106A/F/G ON D5 AND/OR S114A/D3.
4) SURFACE RESTORATION LIMITS ARE ESTIMATED ON THE PLAN SHEETS AND SHALL NOT BE CONSIDERED A MAXIMUM OR MINIMUM AREA. CONTRACTOR SHALL EVALUATE CONSTRUCTION METHODS, DESIGN DETAILS, EQUIPMENT, SOILS, AND OTHER CONDITIONS TO DETERMINE QUANTITIES. THE COST OF RESTORATION SHALL BE INCLUDED IN PIPE UNIT PRICE, LATERAL UNIT PRICE, MANHOLE UNIT PRICE, AND IN THE LINEAR FOOT PAVING UNIT PRICE REGARDLESS OF THE WIDTH.
5) PROTECT ALL EXISTING STRUCTURES, UTILITIES, FENCING, ETC. IN PLACE.
6) PROTECT AND ADJUST ALL EXISTING UTILITY MANHOLES, VALVE BOXES, SURVEY MONUMENTS, AND VAULT COVERS TO NEW FINISHED GRADE WITHIN RESTORATION LIMITS.
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8) HYDROSEED NATIVE RESTORATION AREA WITH AN APPROVED NATIVE SEED MIX.

N

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GRAPHIC SCALE
30 0 15 30 60
HORIZONTAL: 1"= 30 '

SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

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1-800-227-2600

REV.	DATE	DESCRIPTION	CHECKED	APPD.

REVISIONS

STATE OF NEVADA
BRIAN A. JANES
No. 08-20-21
PROFESSIONAL ENGINEER

7-24-2020

SCALE

DESIGN BY: BAJ
DRAWN BY: BDH
CHECKED BY: BM
DATE: 7/24/2020

PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

PAVEMENT RESTORATION

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1687

R3

SHEET 21 OF 44

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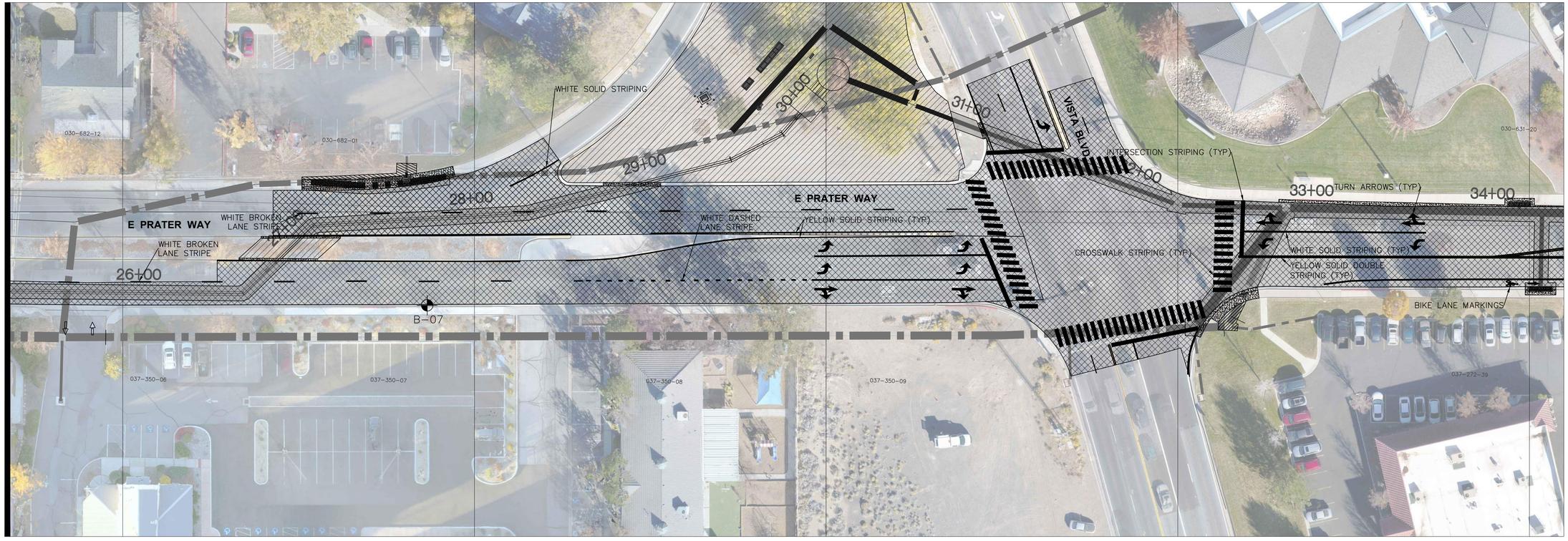
March 6, 2018 - 2:34 PM

MATCHLINE 25+27.43 SEE SHEET R3



MATCHLINE 34+35.46 SEE SHEET R5

LEGEND:

- PERMANENT ASPHALT PATCH (S120 / D4)
- 2" GRIND & OVERLAY, SEE SPECS (S120 / D4)
- LANDSCAPE RESTORATION
- REMOVE & REPLACE SIDEWALK, DRIVEWAY APRON OR VALLEY GUTTER (S104A / S114A / S107 — D3)
- REMOVE & REPLACE CURB & GUTTER (S109 / D3)
- STORM DRAIN
- BOREHOLE (SEE BOREHOLE SUMMARY TABLE)

STRIPING LEGEND (NTS):

- DASHED, BROKEN, SOLID, DOUBLE LANE STRIPE
- CROSSWALK STRIPING
- YIELD TRIANGLES
- INTERSECTION STRIPING
- TURN ARROWS
- BIKE LANE MARKINGS

BOREHOLE SUMMARY			
#	STA.	EX. ASPHALT SECTION (IN)	EX. BASE SECTION (IN)
B-07	27+75.0	6.5	6.0

GENERAL NOTES:

1) RE-STRIPE ALL PAVEMENT MARKINGS ON STREETS TO MATCH EXISTING STRIPING. THIS INCLUDES RED CURB. ALL STRIPING SHALL CONFORM TO SSPWC AND THE CONTRACT DOCUMENT SPECIFICATIONS.
2) ALL TEMPORARY PATCHES SHALL BE 3" HOT MIX ASPHALT. COLD MIX NOT APPROVED.
3) WHERE STORM DRAIN/SEWER IMPROVEMENTS ENCROACH ON CURB AND GUTTER, VALLEY GUTTER, MEDIAN CURBS, SIDEWALK, DRIVEWAYS, AND/OR PEDESTRIAN RAMPS, REMOVE AND REPLACE PER DETAILS S104A/D3, S109/D3, S107/D3, S110/D6, S106A/F/G ON D5 AND/OR S114A/D3.
4) SURFACE RESTORATION LIMITS ARE ESTIMATED ON THE PLAN SHEETS AND SHALL NOT BE CONSIDERED A MAXIMUM OR MINIMUM AREA. CONTRACTOR SHALL EVALUATE CONSTRUCTION METHODS, DESIGN DETAILS, EQUIPMENT, SOILS, AND OTHER CONDITIONS TO DETERMINE QUANTITIES. THE COST OF RESTORATION SHALL BE INCLUDED IN PIPE UNIT PRICE, LATERAL UNIT PRICE, MANHOLE UNIT PRICE, AND IN THE LINEAR FOOT PAVING UNIT PRICE REGARDLESS OF THE WIDTH.
5) PROTECT ALL EXISTING STRUCTURES, UTILITIES, FENCING, ETC. IN PLACE.
6) PROTECT AND ADJUST ALL EXISTING UTILITY MANHOLES, VALVE BOXES, SURVEY MONUMENTS, AND VAULT COVERS TO NEW FINISHED GRADE WITHIN RESTORATION LIMITS.
7) EXISTING PAVEMENT AND BASE THICKNESSES VARY THROUGHOUT THE PROJECT; HOWEVER, ALL PERMANENT PAVEMENT PATCH THICKNESS SHALL BE 6" ON 10" OF BASE. REFER TO PATCHING DETAILS ON DETAIL S120/D4 AND/OR S121/D4.
8) HYDROSEED NATIVE RESTORATION AREA WITH AN APPROVED NATIVE SEED MIX.

N

ATKINS

GRAPHIC SCALE
30 0 15 30 60
HORIZONTAL: 1"= 30 '

SCALE IS FOR 22x34 SHEETS.
ADJUST SCALE FOR OTHER SIZES

Avoid cutting underground utility lines. It's costly.
Call before you Dig
1-800-227-2600

REV.	DATE	DESCRIPTION	CHECKED	APPD.
		REVISIONS		

ENGINEER - STATE OF NEVADA - BRIAN A. JANES - No. 19811 - PROFESSIONAL ENGINEER - Exp. 06-30-21 - CIVIL

7-24-2020

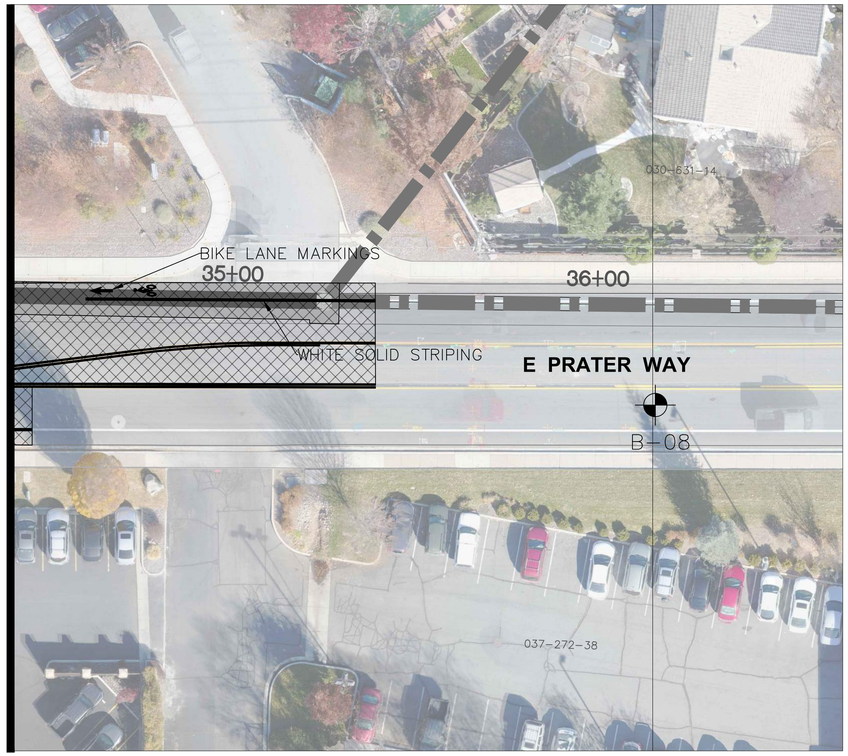
SCALE
DESIGN BY BAJ
DRAWN BY BDH
DATE 7/24/2020
CHECKED BY BM
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

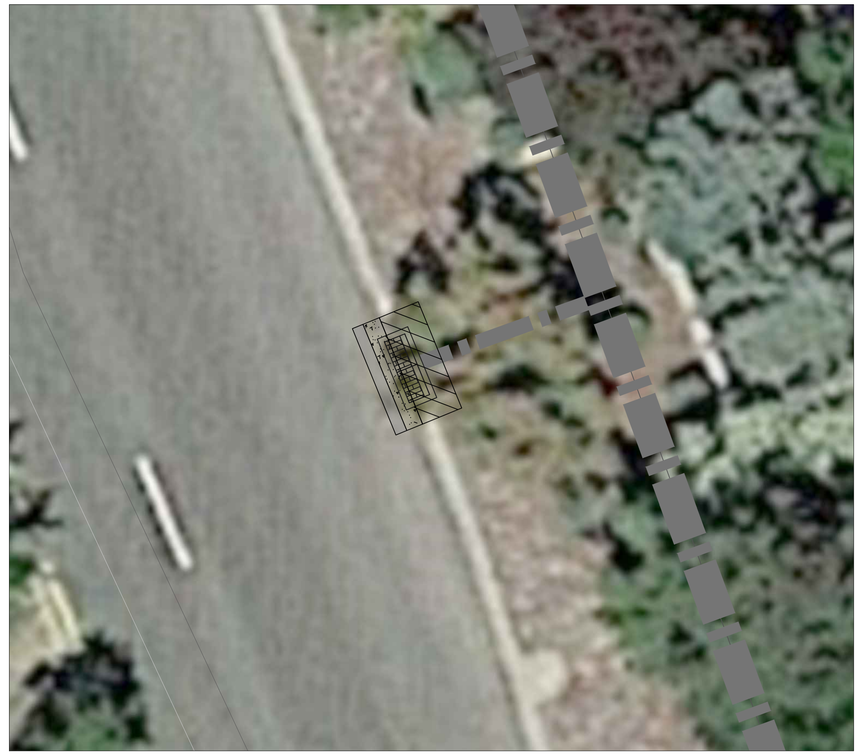
PAVEMENT RESTORATION

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
tel: +1.775.826.1622 | Fax: +1.775.851.1667

R4



MATCHLINE 34+35.46 SEE SHEET R4



SEE SHEET P11
STA 18+35.31, 14.5' LT
NOT TO SCALE

LEGEND:

- PERMANENT ASPHALT PATCH (S120 D4)
- 2" GRIND & OVERLAY, SEE SPECS (S120 D4)
- LANDSCAPE RESTORATION
- REMOVE & REPLACE SIDEWALK, DRIVEWAY APRON OR VALLEY GUTTER (S104A D3, S114A D3, S107 D3)
- REMOVE & REPLACE CURB & GUTTER (S109 D3)
- STORM DRAIN
- BOREHOLE (SEE BOREHOLE SUMMARY TABLE)

BOREHOLE SUMMARY			
#	STA.	EX. ASPHALT SECTION (IN)	EX. BASE SECTION (IN)
B-08	36+15.5	6.5	10.0

STRIPING LEGEND (NTS):

- DASHED, BROKEN, SOLID, DOUBLE LANE STRIPE
- CROSSWALK STRIPING
- YIELD TRIANGLES
- INTERSECTION STRIPING
- TURN ARROWS
- BIKE LANE MARKINGS

GENERAL NOTES:

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5) PROTECT ALL EXISTING STRUCTURES, UTILITIES, FENCING, ETC. IN PLACE.
6) PROTECT AND ADJUST ALL EXISTING UTILITY MANHOLES, VALVE BOXES, SURVEY MONUMENTS, AND VAULT COVERS TO NEW FINISHED GRADE WITHIN RESTORATION LIMITS.
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N

ATKINS

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30 0 15 30 60
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STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN A JANES
No. 11981
Exp. 06-30-21
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CITY OF SPARKS
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PAVEMENT RESTORATION

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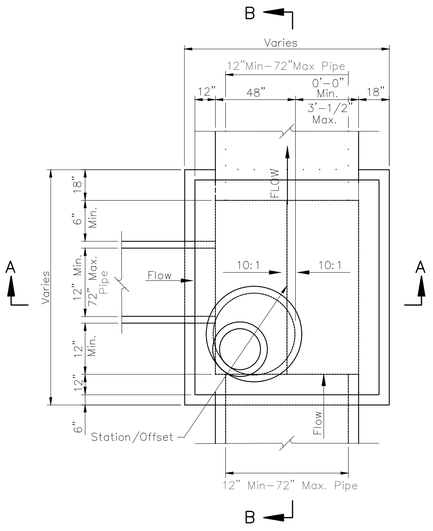
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1022 | Fax: +1.775.851.1687

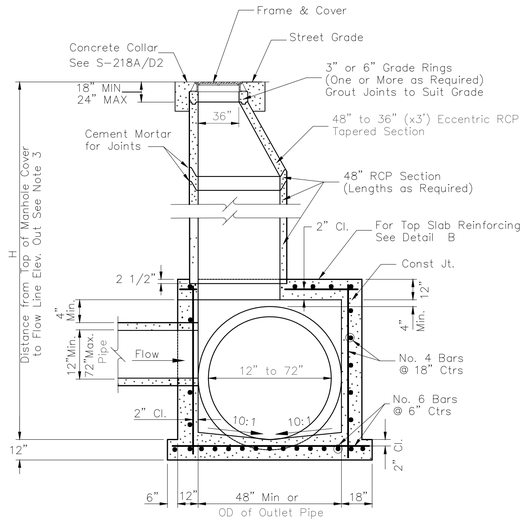
R5

SHEET 23 OF 44

Y:\Trans RND\tranproj\East Prater Way SD\Design\Sheets\05PavementRestoration.dwg
March 6, 2018 - 2:34 PM

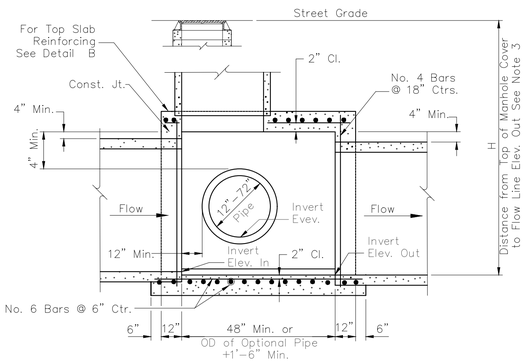


PLAN

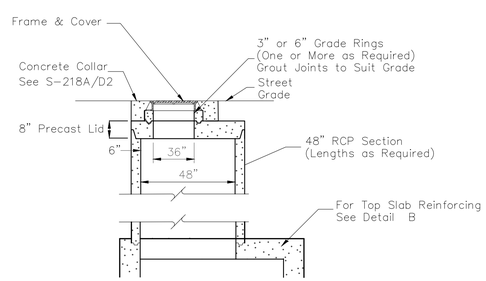


SECTION A–A

For Variable Height Situations

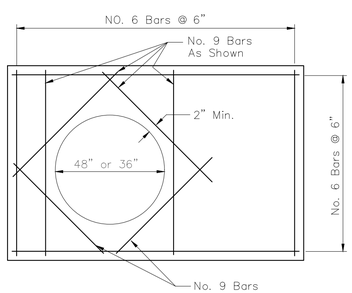


SECTION B–B



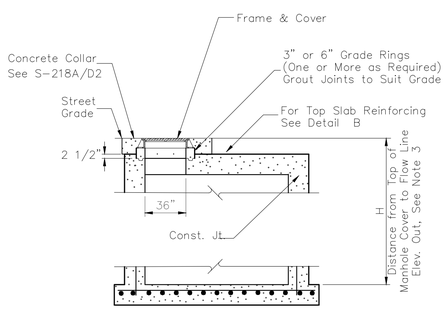
SECTION A–A (FLAT TOP OPTION A)

For Use in Minimum Cover Situation Where
Tapered Section Will Not Fit



DETAIL B

Top Slab Reinforcing



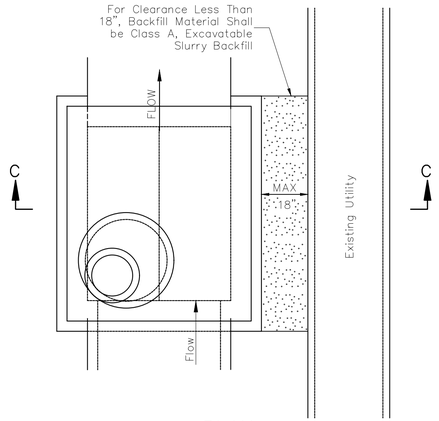
SECTION A–A (FLAT TOP OPTION B)

For Use in Minimum Cover Situation Where
Tapered Section and 48" RCP Section Will Not Fit

A
D1

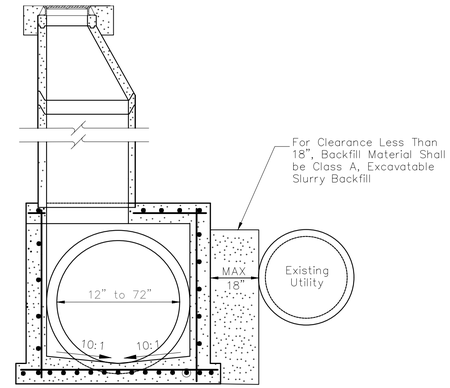
NDOT TYPE 4 STORM DRAIN MANHOLE (MODIFIED)

NTS



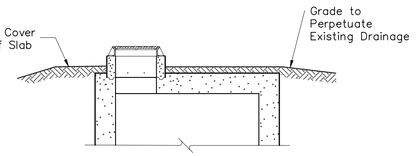
PLAN

For Minimum Horizontal Clearance Situations
(Horizontal Separation <18")



SECTION C–C

For Minimum Horizontal Clearance Situations
(Horizontal Separation <18")



NOTES:

1. ALL CONCRETE SHALL BE CLASS A OR CLASS AA.
2. INFLOW PIPE INVERT ELEVATIONS SHALL BE GREATER THAN OR EQUAL TO 0.1' ABOVE THE OUTFLOW PIPE INVERT ELEVATION.
3. FOR VALUES OF "H", SEE PLANS. "H" IS THE DIFFERENCE IN ELEVATION BETWEEN THE OUTFLOW PIPE INVERT ELEVATION AND THE TOP OF MANHOLE ELEVATION AT STREET GRADE.
4. MANHOLE COVER SHALL BEAR ENTITY IDENTIFICATION AND SYSTEM FUNCTION (IF APPLICABLE).
5. SHAPE FLOWLINE IN MANHOLE TO OUTLET PIPE, AND PROVIDE A 10:1 SLOPE FROM ALL DIRECTIONS TOWARD FLOW LINE.

LOCATION TABLE:

SDMH #	STA.	TYPE	SHEET
6	32+85.91	FLAT TOP TYPE 4	P9
7	32+36.59	FLAT TOP TYPE 4	P9
8	35+25.14	FLAT TOP TYPE 4	P10

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
PROFESSIONAL ENGINEER
No. 19811
BRIAN A JANES
Exp. 06-30-21
CIVIL

7-24-2020

SCALE

DESIGN BY BAJ | DRAWN BY BDH | CHECKED BY BM

DATE 7/24/2020

PROJECT NUMBER 100057174

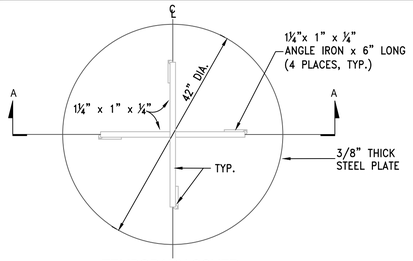
CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS

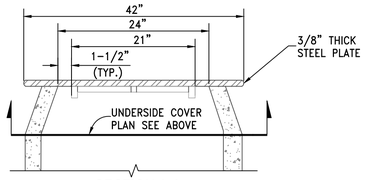
ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1022 | Fax: +1.775.851.1887

D1

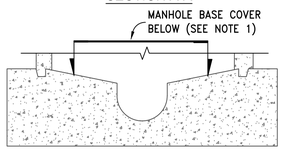
SHEET 24 OF 44



TEMPORARY COVER



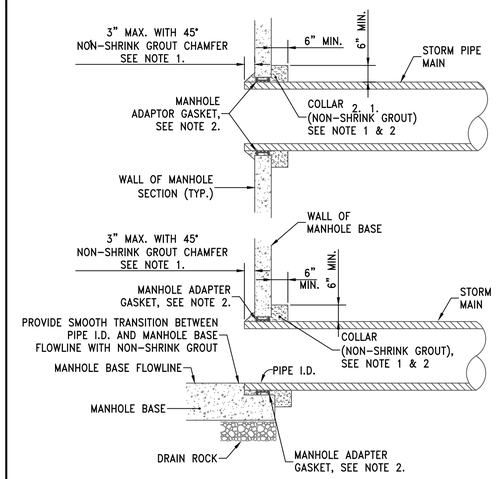
SECTION A-A



NOTES:

1. INSTALL TEMPORARY COVER WITH CONE INSTALLATION WHEN INSTALLING NEW MANHOLE OR PRIOR TO REMOVING EXISTING FRAME & COVER AND GRADE RINGS TO ADJUST TO FINISH GRADE. INSTALL COVER OVER MANHOLE BASE TO PREVENT DEBRIS FROM ENTERING SEWER SYSTEM. THE MANHOLE BASE COVER SHALL BE IN PLACE PRIOR TO PERFORMING ANY ADJUSTMENTS OR GROUTING AND SHALL REMAIN IN PLACE WHILE ADJUSTMENTS OR GROUTING ARE BEING PERFORMED. REMOVE BASE COVER UPON ADJUSTMENT APPROVAL BY CITY OF SPARKS.

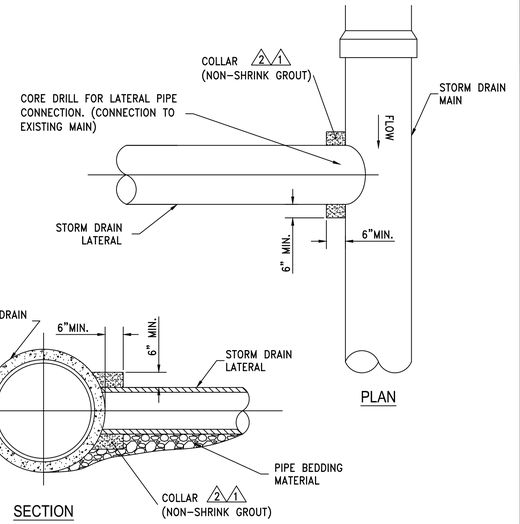
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
TEMPORARY MANHOLE COVER	S-209B
	APPROVED BY: JE | DATE: 1/2020



NOTE:

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 SSPWC SECTION 202, AS ADOPTED BY CITY COUNCIL.
2. STORM DRAIN PIPE CONNECTIONS TO MANHOLE BASES AND SECTIONS REQUIRE AN AGENCY-APPROVED FORM OF SEAL OR WATER STOP AND IS REQUIRED ON ALL STORM DRAIN INSTALLATIONS TO PROVIDE A WATERTIGHT CONNECTION. UTILIZE A ROMAC STYLE "LCT" MANHOLE ADAPTER GASKET OR APPROVED EQUAL IN CONJUNCTION WITH THE NON-SHRINK GROUT.
3. A RESILIENT FLEXIBLE CONNECTOR INSTALLED IN ACCORDANCE WITH STANDARD DETAIL S-211C 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.

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
STORM DRAIN PIPE TO MANHOLE CONNECTION	S-211B
	APPROVED BY: JE | DATE: 1/2020

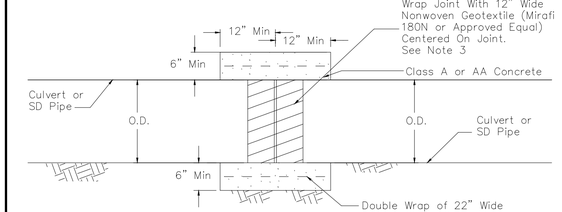


NOTE:

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 SSPWC SECTION 202.
2. STORM DRAIN PIPE CONNECTIONS TO MANHOLE BASES AND SECTIONS REQUIRE AN AGENCY-APPROVED FORM OF SEAL OR WATER STOP AND IS REQUIRED ON ALL STORM DRAIN INSTALLATIONS TO PROVIDE A WATERTIGHT CONNECTION. UTILIZE A ROMAC STYLE "LCT" MANHOLE ADAPTER GASKET OR APPROVED EQUAL IN CONJUNCTION WITH THE NON-SHRINK GROUT.
3. PIPE OPENINGS TO EXISTING PIPE MUST BE CORE DRILLED.

A / D2 STORM DRAIN LATERAL TO STORM DRAIN MAIN CONNECTION

NTS



CONCRETE COLLAR

NOTES:

1. CONCRETE COLLAR TO BE USED FOR MAKING REPAIR CONNECTIONS, CONNECT DISSIMILAR PIPE MATERIALS, EXTEND OR CONNECT SIMILAR PIPE MATERIALS WHERE BELL AND SPIGOT CONNECTIONS AREN'T POSSIBLE, AND WHERE SPECIFIED.
2. MAINTAIN PROPER ALIGNMENT, LINE, AND GRADE ACROSS THE JOINT. SECURE PIPE SECTIONS ADEQUATELY ON EACH SIDE OF JOINT PRIOR TO CASTING CONCRETE TO PREVENT ANY INADVERTENT DISPLACEMENT OR MISALIGNMENT.
3. IN LIEU OF A GEOTEXTILE WRAP, RUBBER BOOT ADAPTERS, COUPLING BANDS, OR OTHER SPECIAL ADAPTERS SPECIFIC TO THE APPLICATION AND AS RECOMMENDED BY THE MANUFACTURER MAY BE USED TO FACILITATE CONSTRUCTION AND MAINTAIN JOINT INTEGRITY. USE APPROPRIATE CONNECTION DEVICES IF REQUIRED BY THE ENGINEER OR SPECIAL PROVISIONS TO PROVIDE A COMPETENT OR WATER TIGHT CONNECTION. MAINTAIN A MINIMUM OF 6 INCHES OF CONCRETE COVER ON THE OUTSIDE OF ANY SPECIAL CONNECTION DEVICES.
4. FOR HDPE PIPE, USE AN EMBEDDED WATERSTOP GASKET ON EACH SIDE OF THE JOINT WHERE WATER TIGHT CONNECTIONS ARE REQUIRED AND WHERE REQUIRED BY THE ENGINEER.
5. NO DIRECT PAYMENT FOR CONCRETE COLLARS OR ASSOCIATED CONNECTION DEVICES. PAYMENT TO BE INCLUDED IN THE PAYMENT FOR PIPE.
6. WHERE ANGLE BENDS ARE SPECIFIED, MITER PIPE ENDS TO PROVIDE A TIGHT JOINT CONNECTION WITH A MAXIMUM 1" GAP TOLERANCE.
7. PROVIDE A MINIMUM OF 1" CONCRETE COVER FROM COLLAR ENDS AND 2" MINIMUM CLEARANCE FROM INNER TO OUTER SURFACE OF CONCRETE COLLAR.

B / D2 CONCRETE COLLAR

NTS

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA — ENGINEER — BRIAN A JANES — No. 11981 — PROFESSIONAL — Exp. 06-30-21 — CIVIL

7-24-2020

SCALE

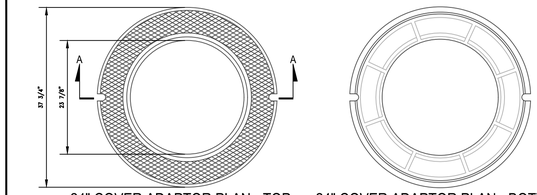
DESIGN BY: BAJ | DRAWN BY: BDH | CHECKED BY: BM

DATE: 7/24/2020

PROJECT NUMBER: 100057174

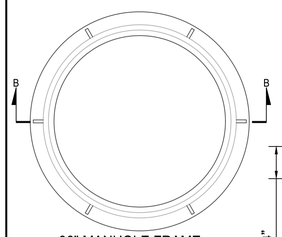
CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS



24" COVER ADAPTOR PLAN - TOP

24" COVER ADAPTOR PLAN - BOTTOM



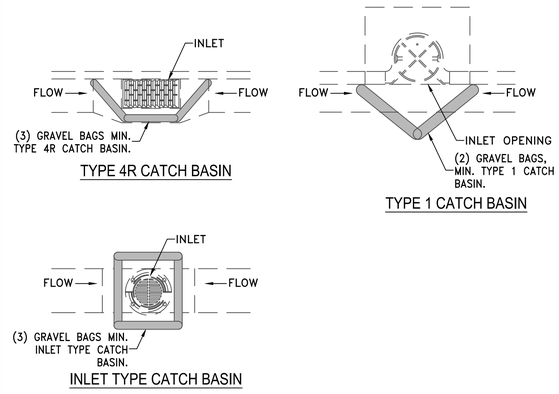
36" MANHOLE FRAME

36" FRAME AND COVER ADAPTOR NOTES:

1. 24" COVER ADAPTOR SHALL BE D&L FOUNDRY A1462-R5, TO ACCEPT D&L FOUNDRY A1032 CITY OF SPARKS MANHOLE COVERS AND TO SET IN D&L FOUNDRY A1462 CITY OF SPARKS FRAME OR APPROVED EQUAL.
2. 36" MANHOLE FRAME SHALL BE D&L FOUNDRY A1462 CITY OF SPARKS FRAME OR APPROVED EQUAL.
3. CASTINGS SHALL BE CAST GRAY IRON, AND MEET THE REQUIREMENTS OF ASTM A-48, CLASS 35B, NO PAINT.
4. FURNISHED WITH MACHINED HORIZONTAL BEARING SURFACE.
5. MANHOLE COVER ADAPTOR SHALL BE FREE OF HOOKS OR PROTRUSIONS THAT MAY HINDER REMOVAL.

C / D2 36" MANHOLE FRAME WITH 24" COVER ADAPTOR

NTS

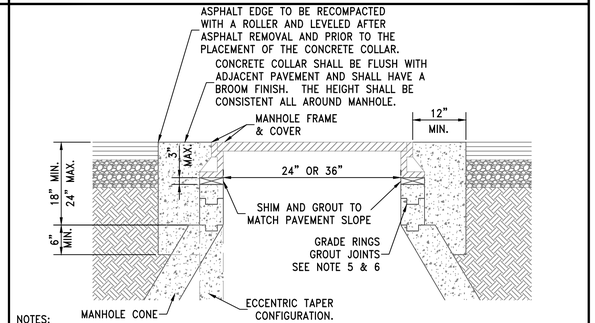


NOTES:

1. ALL STORM DRAIN INLET PROTECTION SHALL BE IN PLACE PRIOR TO COMMENCING CONSTRUCTION. ALL SITE BMP PLACEMENT AND MAINTENANCE SHALL CONFORM TO THE REQUIREMENTS OF THE CONTRACTOR'S STORM WATER POLLUTION PREVENTION PLAN (SWPPP).
2. THE CONTRACTOR SHALL INSPECT THE SITE DAILY, PRIOR TO FORECASTED WEATHER EVENTS AND WITHIN 24 HOURS OF ANY EVENT THAT CREATES RUNOFF AT THE SITE. DISTURBED OR BROKEN BAGS SHALL BE REPLACED. SEDIMENT AND DEBRIS SHALL BE REMOVED AND DISPOSED.
3. GRAVEL BAGS:
   - 3.1. BAGS SHALL BE WOVEN POLYPROPYLENE, POLYETHYLENE OR POLYAMITE FABRIC, MIN. WEIGHT 4oz/SY, MULLEN BURST STRENGTH EXCEEDING 300 PSI AND ULTRA VIOLET STABILITY EXCEEDING 70%.
   - 3.2. EACH GRAVEL-FILLED BAG SHALL HAVE A MIN. LENGTH OF 30", MIN. WIDTH OF 8" AND MIN. THICKNESS OF 4".
   - 3.3. GRAVEL SHALL BE BETWEEN ½" TO 1" IN DIAMETER AND CLEAN AND FREE FROM CLAY BALLS, ORGANIC MATTER AND OTHER DELETERIOUS MATERIALS.
4. AFTER CONSTRUCTION WHEN GRAVEL BAGS ARE REMOVED, ALL CONSTRUCTION MATERIAL, DEBRIS, SEDIMENT, ETC. SHALL BE REMOVED FROM INLET OR CATCH BASIN BY VACUUM TRUCK.

D / D2 STORM DRAIN INLET PROTECTION

NTS



NOTES:

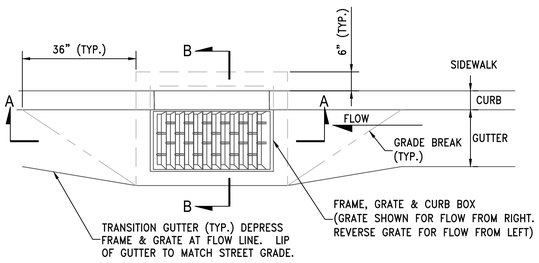
1. PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH MAX. WATER-CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. MIX DESIGN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 337 OF STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION (SSPWC), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL.
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 CITY 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, AS ADOPTED BY CITY COUNCIL.
6. ALL GRADE RINGS SHALL BE PORTLAND CEMENT CONCRETE. PVC GRADE RINGS ARE NOT ALLOWED. CONTRACTOR SHALL USE AS FEW GRADE RINGS AS POSSIBLE TO REACH REQUIRED DEPTH. HOWEVER IN NO CASE SHALL THE QUANTITY EXCEED 4 GRADE RINGS WITHOUT APPROVAL OF THE CITY ENGINEER.
7. P.C.C. COLLARS IN ALL ROADWAYS SHALL BE PROTECTED FROM TRAFFIC LOADS UNTIL MINIMUM 3000 PSI IS ATTAINED.

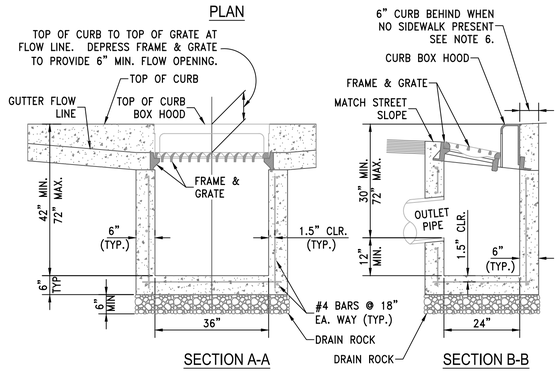
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
MANHOLE COLLAR	S-210A
	APPROVED BY: JE | DATE: 1/2020

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1822 | Fax: +1.775.851.1567

D2

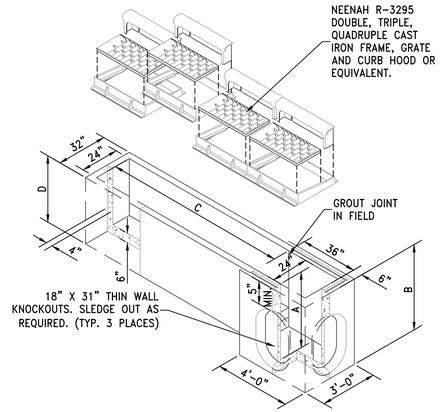
SHEET 25 OF 44





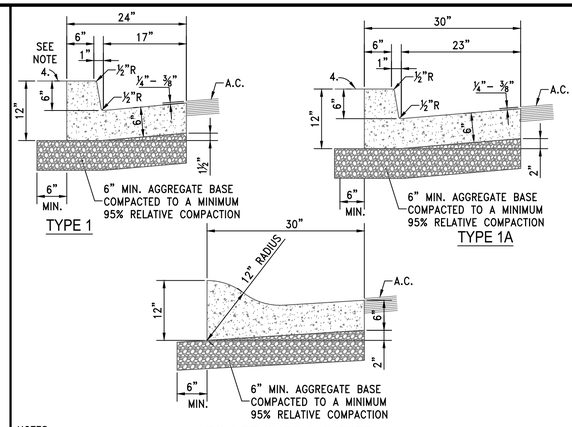
NOTES:

1. P.C.C CURB AND GUTTER TRANSITION SHALL BE PORTLAND CEMENT CONCRETE (P.C.C.) AND 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), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL.
2. REINFORCING STEEL SHALL BE GRADE 40 AND HAVE 1.5" MINIMUM CLEAR COVER.
3. CONCRETE STRUCTURE MAY BE A CAST-IN-PLACE CONCRETE UNIT UPON APPROVAL OF THE CITY ENGINEER. BASE OF CAST-IN-PLACE CONCRETE UNIT SHALL BE PLACED ON 6" COMPACTED DRAIN ROCK.
4. FRAME, GRATE AND CURB BOX HOOD ASSEMBLY SHALL BE D&L I-3519 WITH TYPE L "VANE GRATE" OR APPROVED EQUAL. GRATE SHALL BE INSTALLED WITH PROPER FLOW DIRECTION. EACH CATCH BASIN SHALL BE CAST WITH A FISH IMAGE AND THE WORDS "NO DUMPING! DRAINS TO RIVERS" IN THE TOP OF EACH CURB HOOD.
5. TILT FRAME & GRATE AS REQUIRED TO ATTAIN 6" MIN. FLOW OPENING & INSTALL DURABLE SHIMS BETWEEN THE CURB BOX & FRAME AS REQUIRED TO MATCH CURB BOX TO TOP OF CURB AND FACE OF CURB (SEE SECTION B-B).
6. WHEN SIDEWALK IS PRESENT CONCRETE BEHIND CURB BOX SHALL BE THICKENED TO THE FULL DEPTH OF THE CURB BOX. IF NO SIDEWALK IS PRESENT, POUR 6" CONCRETE CURB STRUCTURE BEHIND GRATE AND TIE BEAM INTO BOX.
7. ALL CATCH BASINS, PUBLIC OR PRIVATE, SHALL BE PROVIDED WITH A "SUR-TRAP" OIL/WATER SEPARATOR OR APPROVED EQUAL.
8. FRAMES AND GRATES SHALL BE MATCHED TO ACHIEVE A CLOSE TOLERANCE FIT WITH MINIMAL GAPS.
9. CATCH BASIN SHALL NOT BE PLACED WITHIN THE RADIUS OF THE CURB UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.



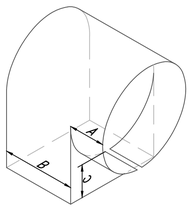
NOTES:

1. A HIGH CAPACITY CURB INLET SHALL BE USED WHEN DESIGN FLOW RATES EXCEED THE CAPACITY OF A SINGLE CATCH BASIN.
2. FOR DIMENSIONS, NOTES, AND DETAILS NOT SHOWN, REFER TO THE APPLICABLE CATCH BASIN DETAIL DRAWINGS.



NOTES:

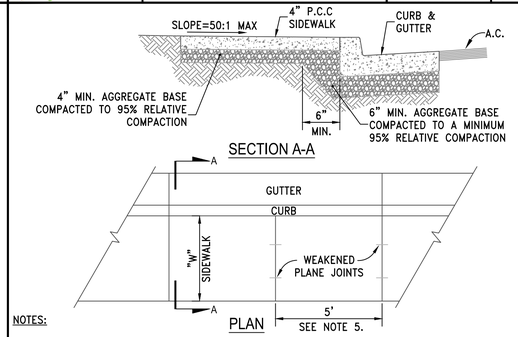
1. PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH MAX. WATER-CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. MIX DESIGN SHALL CONFORM TO THE REQUIREMENTS OF SECTION 337 OF STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION (SSPWC), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL.
2. AGGREGATE BASE MATERIAL UNDER AND BEHIND CURB AND GUTTER SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE BASE. MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
3. WEAKENED PLANE JOINTS SHALL BE EVERY 10 FEET AND LOCATED ON THE BACK, TOP AND FACE OF THE CURB AND THE TOP OF THE GUTTER PAN.
4. CURB & GUTTER SECTIONS SHALL BE PLACED SEPARATELY FROM SIDEWALK SECTIONS. WHEN SIDEWALK IS NOT REQUIRED DIRECTLY BEHIND THE CURB, BACKFILL TO TOP OF CURB FOR A HORIZONTAL DISTANCE OF 12" FROM BACK FACE OF CURB AND COMPACT TO 90% RELATIVE COMPACTION.
5. FOR REPLACEMENT OF EXISTING CURB AND GUTTER, MATCH EXISTING TYPE.



DIMENSIONS			
SIZE	A	B	C
4"	3"	3"	3"
6"	4"	5"	4"
8"	4"	6.5"	4"
10"	4"	8"	4"
12"	5"	10"	4"
15"	6"	10.5"	6.5"

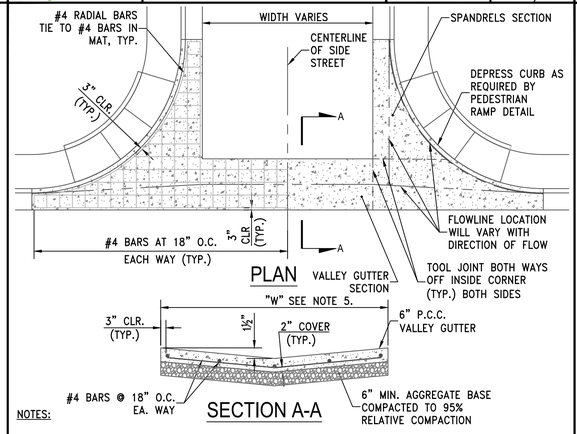
NOTES:

1. ALL CATCH BASINS, PUBLIC OR PRIVATE, SHALL BE PROVIDED WITH A "SUR-TRAP" OIL/WATER SEPARATOR OR APPROVED EQUAL.
2. INSTALL OIL/WATER SEPARATOR WITH THE BOTTOM EDGE PARALLEL TO THE WATER SURFACE AND THE RECTANGULAR OPENING FACING DOWNWARD AND THE CIRCULAR END PLACED INSIDE THE OUTLET PIPE.
3. FOR SIZES LARGER THAN 15", CONTACT MANUFACTURER FOR DETAILS.



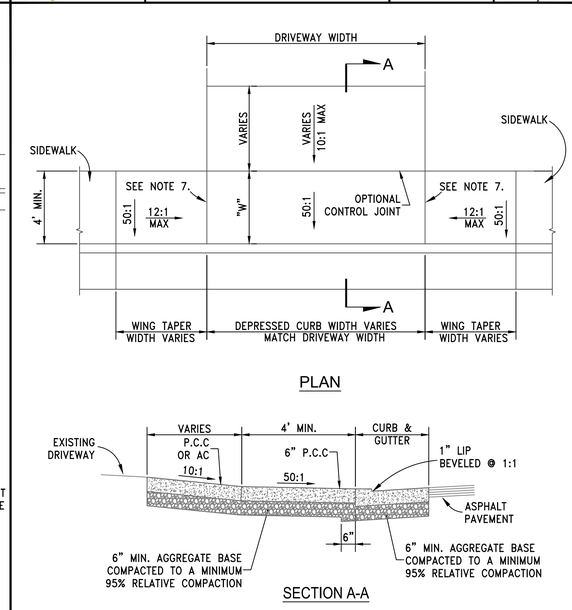
NOTES:

1. 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), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL.
2. AGGREGATE BASE MATERIAL UNDER SIDEWALKS SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE BASE. MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
3. SIDEWALK WIDTH "W" SHALL BE 4 FT MIN. WITH 60" PASSING SPACE EVERY 200' ON RESIDENTIAL STREETS AND 6 FT MIN. ON COLLECTOR AND ARTERIAL STREETS.
4. WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED AT 5 FT INTERVALS AND ACCORDANCE WITH SECTION 312 OF THE SSPWC, AS ADOTED BY CITY COUNCIL.
5. ALL ADJACENT CONCRETE REMOVAL SHALL BE TO NEAT SAW CUT LINES AT RIGHT ANGLES TO NEW SIDEWALK. DOWEL INTO EXISTING ADJACENT CONCRETE SIDEWALK WITH A MINIMUM OF TWO (2) No. 4 REINFORCEMENT BARS EQUALLY SPACED ACROSS WIDTH "W". DOWELS SHALL PENETRATE A MINIMUM OF 4" INTO EXISTING CONCRETE.
6. SIDEWALKS SHALL NOT BE POURED MONOLITHICALLY WITH CURBS.
7. TUNNELING AND/OR BORING IS NOT ALLOWED.



NOTES:

1. 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), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL
2. AGGREGATE BASE UNDER VALLEY GUTTER AND SPANDRELS SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
3. P.C.C VALLEY GUTTER DETAIL FOR RESIDENTIAL OR COMMERCIAL ZONES ONLY FOR OTHER APPLICATIONS AN ENGINEERED DESIGN IS REQUIRED.
4. VALLEY GUTTER SHALL HAVE WEAKENED PLANE JOINTS EVERY 10 FEET.
5. LOCAL AND COLLECTOR STREETS, "W"=6' MIN. ARTERIAL STREETS (DRIVEWAYS ONLY), "W"=10' MIN.
6. VALLEY GUTTER SECTIONS (SPANDRELS) ALONG CURB & GUTTER MAY BE A MONOLITHIC POUR AS SHOWN. DOWELS MATCHING REBAR SPACING SHOWN ARE REQUIRED FROM VALLEY GUTTER SECTION TO SPANDREL SECTION IF POURED SEPARATELY.



REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA — BRIAN A. JANES — No. 18611 — PROFESSIONAL ENGINEER — Exp. 06-30-21 — CIVIL — 7-24-2020

SCALE	DESIGN BY	DRAWN BY	CHECKED BY
	BAJ	BDH	BM
	DATE 7/24/2020		
PROJECT NUMBER 100057174			

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

D3

SHEET 26 OF 44

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
CATCH BASIN TYPE 4-R	S-204A
APPROVED BY: JE	DATE: 1/2020

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
NOTES - CATCH BASIN TYPE 4-R	S-204B
APPROVED BY: JE	DATE: 1/2020

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
HIGH CAPACITY CURB INLET	S-205
APPROVED BY: JE	DATE: 1/2020

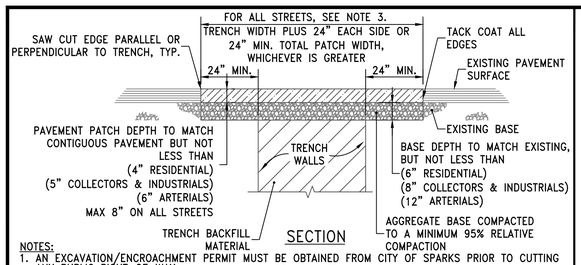
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
P.C.C. CURB & GUTTER	S-109 (MODIFIED)
APPROVED BY: JE	DATE: 1/2020

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
CATCH BASIN OIL/ WATER SEPARATOR	S-208
APPROVED BY: JE	DATE: 1/2020

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
SIDEWALK DETAIL	S-103
APPROVED BY: JE	DATE: 1/2020

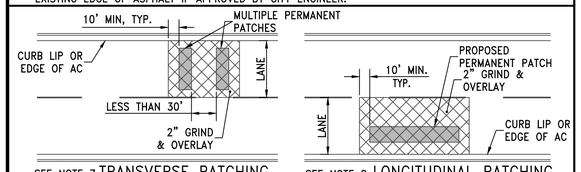
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
P.C.C. VALLEY GUTTER	S-107
APPROVED BY: JE	DATE: 1/2020

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
P.C.C. DRIVEWAY APRON	S-111B
APPROVED BY: JE	DATE: 1/2020



NOTES:

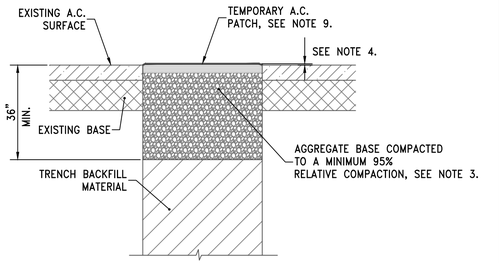
1. AN EXCAVATION/ENCROACHMENT PERMIT MUST BE OBTAINED FROM CITY OF SPARKS PRIOR TO CUTTING ANY PUBLIC RIGHT-OF-WAY.
2. IF SAW CUT IS WITHIN 2 FEET OF AN EXISTING PAVEMENT EDGE OR EXISTING PAVEMENT PATCH, REMOVE EXISTING PAVEMENT TO THAT EDGE AND REPLACE ENTIRE SECTION.
3. ALL PERMANENT PATCH REPLACEMENT REQUIREMENTS ARE MINIMUM WIDTHS ONLY AND INCLUDES ALL AREAS WHERE THE ASPHALT PAVEMENT HAS BEEN UNDERMINED. THE CITY ENGINEER MAY REQUIRE WIDER PATCH SECTIONS OR OTHERWISE ALTER THESE REQUIREMENTS.
4. AGGREGATE BASE MATERIAL UNDER BITUMINOUS PAVEMENT PATCH SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE BASE. MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF LOOP DETECTORS, ADJUSTMENT OF UTILITIES AND SURVEY MONUMENTS TO GRADE AND INSTALLATION OF PERMANENT PAVEMENT MARKINGS.
6. FOR P.C.C. CURB REPLACEMENT, SAW CUT EXISTING PAVEMENT 18 INCHES MIN. FROM GUTTER LIP LINE, REMOVE AND REPLACE PAVEMENT TO SAW CUT EDGES. CONCRETE MAY BE POURED NEAT AGAINST EXISTING EDGE OF ASPHALT IF APPROVED BY CITY ENGINEER.



ALL STREETS WITH PAVEMENT CONDITION INDEX (PCI) GREATER THAN 65:

7. TRANSVERSE PATCHES SHALL INCLUDE A GRIND AND OVERLAY WHEREVER THERE ARE MULTIPLE PATCHES WITHIN 30 FEET OF EACH OTHER. 2" MINIMUM FOR RESIDENTIAL, COLLECTORS & INDUSTRIALS. 3" MINIMUM FOR ARTERIALS.
8. LONGITUDINAL PATCHES SHALL INCLUDE GRIND AND OVERLAY TO THE LANE LINES (BIKE, PARKING, OR TRAVEL). 2" MINIMUM FOR RESIDENTIAL, COLLECTORS & INDUSTRIALS. 3" MINIMUM FOR ARTERIALS.
9. DRIVEWAY & INTERSECTION LIMITS TO BE DETERMINED BY STREET CUT COORDINATOR.

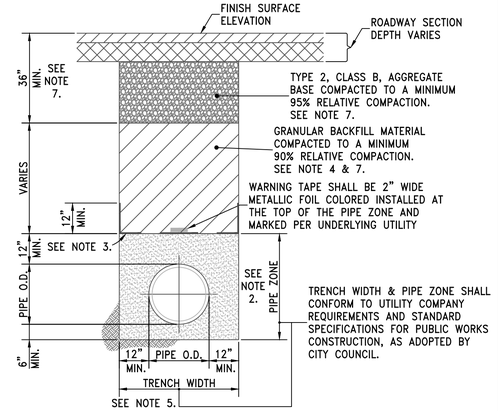
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks — PERMANENT BITUMINOUS PAVEMENT PATCH	S-115
	APPROVED BY: JE | DATE: 1/2020



NOTES:

1. PRIOR TO EXCAVATION, THE OUTLINE OF THE TRENCH SHALL BE VERTICALLY CUT FULL DEPTH THROUGH THE EXISTING ASPHALT SURFACE.
2. CARE SHALL BE EXERCISED TO PREVENT SLOUGHING AND OVERBREAK. IF THE TRENCH SLOUGHS, THE SURFACE SHALL BE WIDENED TO ELIMINATE THE UNDERMINED SECTION OF ASPHALT.
3. AGGREGATE BASE UNDER TEMPORARY PATCH SHALL BE A MINIMUM THICKNESS OF 36 INCHES BELOW THE EXISTING AC SURFACE. AGGREGATE BASE MATERIAL UNDER TEMPORARY PATCH SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE BASE. MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
4. TEMPORARY PATCHES SHALL BE PLACED AND COMPACTED. THE COMPACTED PATCH SHALL BE APPROXIMATELY 1/8" TO 1/4" ABOVE THE LEVEL OF THE ADJACENT PAVEMENT. IF NOT PATCHED WITHIN 24 HOURS AFTER BACKFILLING, THE CITY MAY PATCH AND BACK-CHARGE THE PERMITTEE FOR ALL COSTS.
5. COMPACTION OF BACKFILL, BASE AND A.C. TEMPORARY PATCH SHALL BE PERFORMED WITH APPROVED MECHANICAL TAMPERS. EQUIPMENT WHEEL ROLLING IS NOT PERMITTED.
6. ENTIRE AREA SHALL BE CLEANED OF ALL DIRT, DUST, DEBRIS, ETC. BEFORE LEAVING SITE. ANY SITE LEFT UNCLEANED WILL BE CLEANED BY THE CITY AND ALL COSTS BACK-CHARGED TO THE CONTRACTOR.
7. ALL EXCAVATIONS SHALL BE COMPLETE OR BACKFILLED AT THE END OF THE SHIFT, INCLUDING TEMPORARY PATCH.
8. TEMPORARY PATCH WORK AND PATCH MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
9. ALL TEMPORARY PATCHES ON ALL STREETS SHALL BE HOT-MIX ASPHALT A MINIMUM OF 3" THICK.
10. PLATES MAY BE USED UPON APPROVAL FROM THE CITY ENGINEER.

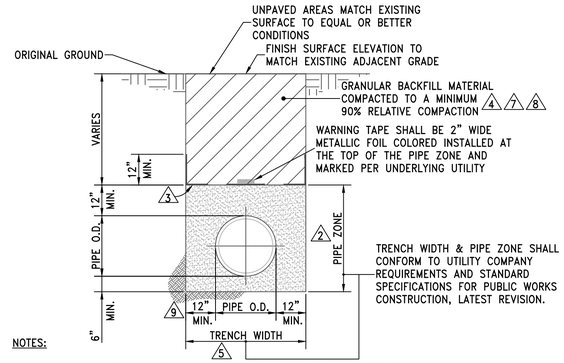
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks — TEMPORARY A.C. TRENCH PATCH	S-116
	APPROVED BY: JE | DATE: 1/2020



NOTES:

1. ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (SSPWC), AS ADOPTED BY CITY COUNCIL.
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, AS ADOPTED BY CITY COUNCIL.
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, AS ADOPTED BY CITY COUNCIL.
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.
7. MINIMUM BACKFILL DEPTH REQUIREMENT IS FOR TRENCHING IN EXISTING PAVED STREETS. TRENCHING FOR NEW DEVELOPMENT WHERE STREETS HAVE NOT YET BEEN CONSTRUCTED, 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, AS ADOPTED BY CITY COUNCIL.

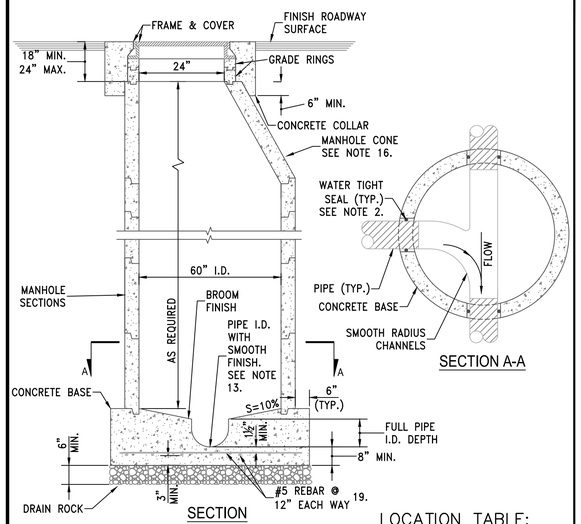
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks — TRENCH EXCAVATION/BACKFILL	S-117
	APPROVED BY: JE | DATE: 1/2020



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 RENO. 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.
7. MINIMUM BACKFILL DEPTH REQUIREMENT IS FOR TRENCHING IN EXISTING PAVED STREETS. TRENCHING FOR NEW DEVELOPMENT WHERE STREETS HAVE NOT YET BEEN CONSTRUCTED, 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.
8. IF EXCAVATION/BACKFILL IS WITHIN NATIVE RIVERBANK/RIVERBED, BACKFILL MATERIAL SHALL BE NATIVE GRAVEL, COBBLE AND BOULDERS COMPACTED TO MINIMUM 85% RELATIVE COMPACTION.
9. FOR PIPES 36" DIA. OR LARGER, DIMENSION FROM OUTSIDE EDGE OF PIPE TO TRENCH WALL SHALL BE 18".

A / D4 TRENCH EXCAVATION/BACKFILL (UNIMPROVED AREAS) NTS



LOCATION TABLE:

SDMH #	STA.	TYPE	SHEET
1	29+52.45	TYPE 5	P9
2	30+21.17	TYPE 5	P9
3	30+68.70	TYPE 5	P9
4	30+68.59	TYPE 5	P9
5	32+25.91	TYPE 5	P9

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks — MANHOLE TYPE V	S-206B
	APPROVED BY: JE | DATE: 1/2020

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 PER STANDARD DETAILS S-211A, S-211B AND S-211C.
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), AS ADOPTED BY CITY COUNCIL. PRECAST CONCRETE BASE MAY BE USED IN LIEU OF CAST-IN-PLACE BASE.
4. TYPE I MANHOLE TO BE UTILIZED FOR PIPE DIAMETERS OF 12" OR SMALLER AND DEPTHS NOT EXCEEDING 18 FEET.
5. TYPE V MANHOLE TO BE UTILIZED FOR PIPE DIAMETERS OF 15" THROUGH 27" OR DEPTHS EXCEEDING 18 FEET.
6. MANHOLE MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF SECTION 204 "MANHOLES AND CATCH BASINS" OF THE STANDARD SPECIFICATIONS.
7. 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.
8. EXCAVATION AND BACKFILL SHALL BE AS SPECIFIED FOR "TRENCH EXCAVATION AND BACKFILL" IN SECTION 305 OF THE STANDARD SPECIFICATIONS.
9. 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.
10. MANHOLE PRECAST SECTION LENGTH SHALL BE ARRANGED TO FIT THE REQUIRED DEPTH.
11. NO LATERALS OR PIPES LESS THAN 8" IN DIAMETER SHALL BE CONNECTED TO THE MANHOLE.
12. PRECAST CONCRETE BASE MAY BE USED IN LIEU OF CAST-IN-PLACE BASE.
13. MATCH PIPE INVERTS TO MANHOLE INVERTS WHERE PIPES CONNECT TO MANHOLE BASE.
14. ALL MANHOLES SHALL BE WATERTIGHT.
15. SEE DETAIL FOR INSIDE DROP MANHOLE FOR SANITARY SEWERS WITH MORE THAN 2 FEET VERTICAL DROP AT THE MANHOLE. THE USE OF "OUTSIDE DROP" MANHOLES IS NOT PERMITTED.
16. THE USE OF FLAT TOP MANHOLE CONES REQUIRES PRIOR APPROVAL FROM THE CITY ENGINEER.
17. PRIOR TO BACKFILLING, ALL MANHOLES SHALL BE VACUUM TESTED PER ASTM C-1244.
18. NO STEPS, LADDERS, OR OTHER CLIMBING DEVICES SHALL BE INSTALLED IN THE MANHOLE.
19. REINFORCING STEEL SHALL BE AS SHOWN, WIRED TIGHTLY AT ALL INTERSECTIONS AND EMBEDDED AT LEAST 1½" CLEAR, UNLESS OTHERWISE NOTED.
20. WHEN PIPE CONNECTIONS TO EXISTING MANHOLES ARE ALLOWED, THEY SHALL BE MADE BY CORE DRILLING THE MANHOLE AND CONNECTING THE PIPE PENETRATION PER DETAIL S-211A & S-211B.
21. TYPE IV MANHOLES SHOULD ONLY BE USED AS APPROVED BY CITY ENGINEER

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks — NOTES - MANHOLE TYPE I, TYPE V & TYPE IV	S-206D
	APPROVED BY: JE | DATE: 1/2020

REV	DATE	DESCRIPTION REVISIONS	CHECKED	APP'D

STATE OF NEVADA — BRIAN A. JANES — No. 17867 — CIVIL — Exp. 06-30-21 — ENGINEER — 7-24-2020

SCALE

DESIGN BY: BAJ | DRAWN BY: BDH | CHECKED BY: BM | DATE: 7/24/2020

PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

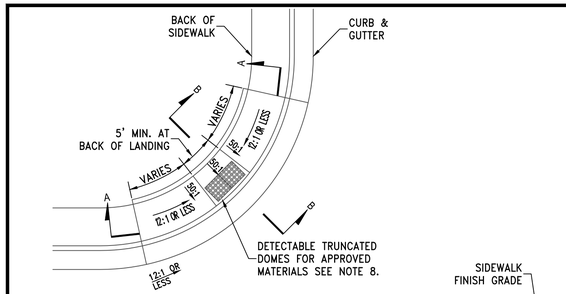
DETAILS

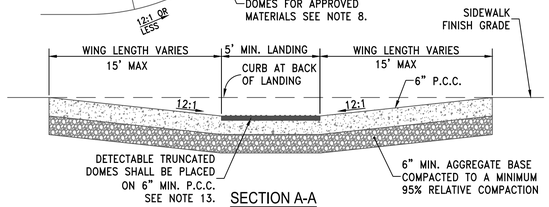
ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

D4

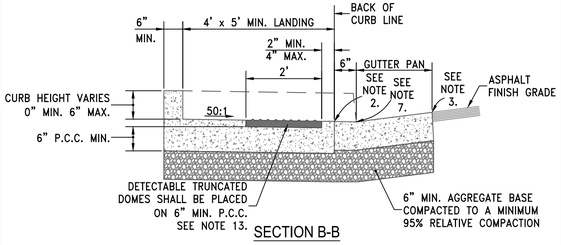
SHEET 27 OF 44

\\FUSrna1000\DATA\Trans RND\tranproj\East Prater Way SD\Design\Sheets\06Details.dwg
March 6, 2018 - 2:34 PM



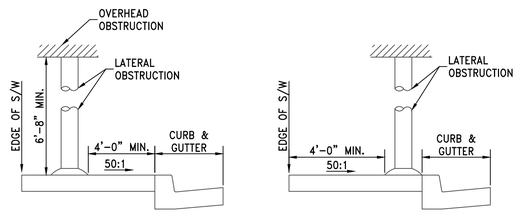


SECTION A-A

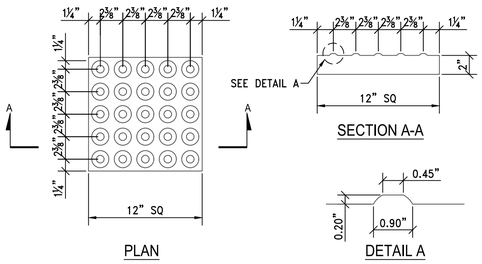


SECTION B-B

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks PEDESTRIAN RAMP - EXISTING SIDEWALKS	S-106A
	APPROVED BY: JE | DATE: 1/2020



TYPICAL SIDEWALK vs OBSTRUCTION CLEARANCE DETAIL



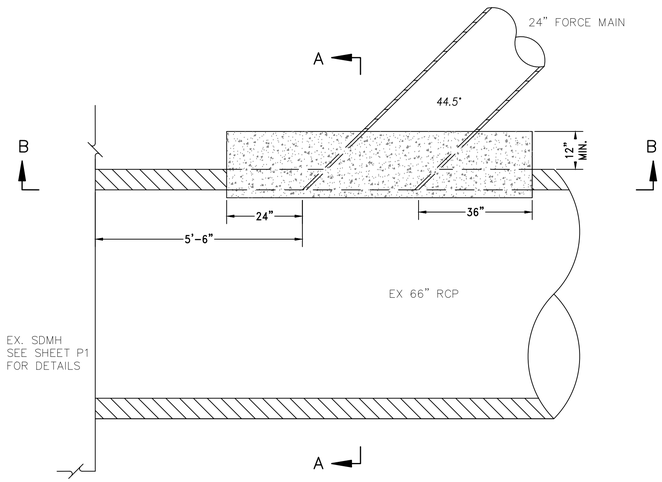
NOTE: FOR DETECTABLE TRUNCATED DOMES APPROVED MATERIALS SEE NOTE 8.

TRUNCATED DOMES DETAIL

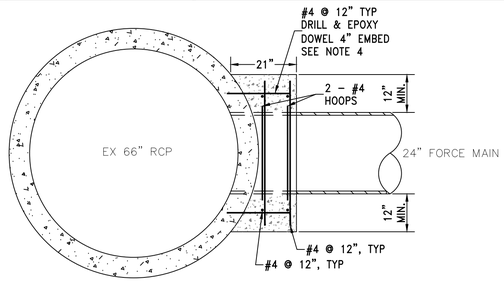
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks PEDESTRIAN RAMP - DETAILS	S-106F
	APPROVED BY: JE | DATE: 1/2020

1. STORM DRAIN INLETS OR SIMILAR ACCESSES SHALL NOT BE LOCATED IN THE AREA AT THE BASE OF THE CURB RAMP OR LANDING AREA. IF OBSTRUCTIONS SUCH AS INLETS, UTILITY POLES, PULL BOXES, FIRE HYDRANTS, ETC. ARE ENCOUNTERED, THE LOCATION AND DIMENSIONS MAY BE ADJUSTED UPON APPROVAL OF THE CITY ENGINEER.
2. NO LIP SHALL BE PERMITTED AT THE CURB RAMP SLOPE TO GUTTER PAN.
3. PLANTMIX BITUMINOUS SURFACE SHALL BE FLUSH WITH THE EDGE OF THE GUTTER PAN IN THE AREA OF THE CURB RAMP.
4. ROUGH BROOM TEXTURE ON CURB RAMPS AND WINGS.
5. DETECTABLE WARNING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SHALL BE PLACED ON MIN. SIX (6") INCHES OF P.C.C.
6. ALL SLOPE RATES ARE RELATIVE TO LEVEL AND SHALL COMPLY WITH THE PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG) STANDARDS.
7. GUTTER SHALL MAINTAIN POSITIVE DRAINAGE TO PREVENT PONDING.
8. DETECTABLE WARNING SHALL CONSIST OF PRECAST WETSET TILES WITH MIN. SIZE OF 2' X 2', COLOR YELLOW. APPROVED PRODUCTS INCLUDE: "CASTinTACT 3", "TEKWAY DOME-TILES", AND "ACCESS TILE". DETECTABLE WARNING SURFACES SHALL EXTEND THE FULL WIDTH OF THE RAMP RUN (EXCLUDING ANY FLARED SIDES), BLENDED TRANSITION, OR TURNING SPACE. DETECTABLE WARNING SHALL BE CONSTRUCTED PER MANUFACTURER'S INSTALLATION GUIDELINES AND CONFORM TO ADAAG.
9. CONCRETE REMOVAL SHALL BE TO NEAT SAW CUT LINES
10. AGGREGATE BASE MATERIAL UNDER PEDESTRIAN RAMPS SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE BASE. MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
11. 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), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL.
12. CONTRACTORS SHALL CORRECT ANY GRADE CONFLICT WITH EXISTING BOXES. THE CITY ENGINEER SHALL MAKE THE FINAL DETERMINATION REGARDING THE DEGREE OF MODIFICATIONS REQUIRED BY THE CONTRACTOR FOR GRADE CONFLICTS BETWEEN EXISTING BOXES AND NEW PEDESTRIAN RAMPS.
13. SIDEWALK AT BOTH SIDES OF RAMP MAY BE RECONSTRUCTED TO MINIMIZE THE GRADE AT A HORIZONTAL DISTANCE TO BE DETERMINED IN THE FIELD, UPON APPROVAL OF THE CITY ENGINEER, SUBJECT TO PROWAG REQUIREMENTS. CURB AT THE BACK OF WALK MAY BE NEEDED. A TRANSITION SECTION OF SIDEWALK MAY BE NECESSARY TO MATCH CROSS SLOPE OF EXISTING SIDEWALK TO PEDESTRIAN RAMP IMPROVEMENTS. TRANSITION SECTIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

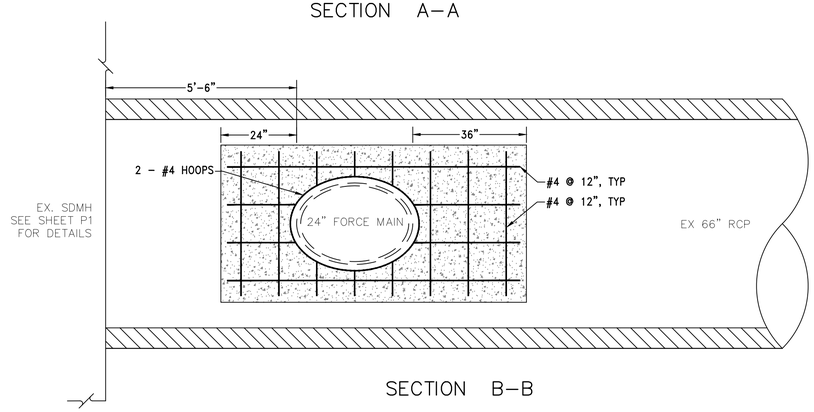
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION	DRAWING No.
City of Sparks NOTES - PEDESTRIAN RAMP	S-106G
	APPROVED BY: JE | DATE: 1/2020



PLAN



SECTION A-A



SECTION B-B

NOTES:
1. *ALL BARS SHALL BE 2" CLEAR.*
2. *CORE INTO EX 66" RCP SHALL BE NO GREATER THAN 4 INCHES IN DIAMETER GREATER THAN THE OUTSIDE DIAMETER OF THE 24" PIPE.*
3. *THE 24" PIPE SHALL BE CENTERED ON CORE HOLE SUCH THAT GAP BETWEEN 24" PIPE AND CORE HOLE IS 2" MAXIMUM.*
4. *BAR DOWELS INTO 66" RCP SHALL BE 4" INTO SIDEWALL. IF INTERIOR OF EX 66" RCP IS DAMAGED, EPOXY COAT DAMAGED PORTION AND ANY EXPOSED REBAR.*

A / D5 FORCE MAIN CONNECTION INTO EXISTING STORM DRAIN
NTS

REV	DATE	DESCRIPTION	CHECKED	APP'D
		REVISIONS		

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN A. JANES — No. 17881 — CIVIL — Exp. 06-30-21

7-24-2020

SCALE | DESIGN BY: BAJ | DRAWN BY: BDH | CHECKED BY: BM | DATE: 7/24/2020 | PROJECT NUMBER: 100057174

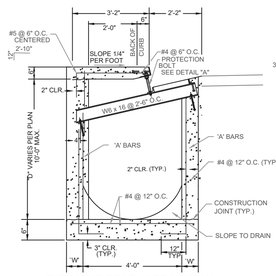
CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS

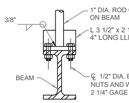
ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

D5

SHEET 28 OF 44

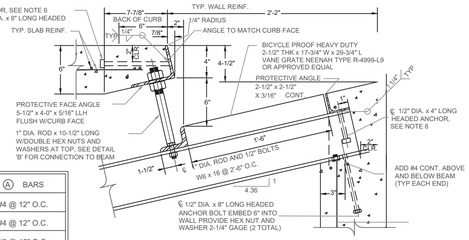


TYPE "CM2" DROP INLET SECTION

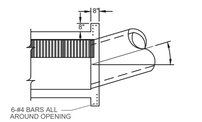


DETAIL "B"

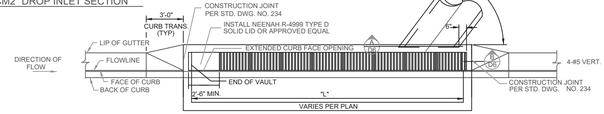
D (MAX)	DIM. 'W'	Ⓐ BARS
4'-0"	6"	#4 @ 12" O.C.
6'-0"	6"	#4 @ 12" O.C.
8'-0"	8"	#5 @ 12" O.C.
10'-0"	8"	#5 @ 6" O.C.



PROTECTIVE FACE & ROD - DETAIL "A"



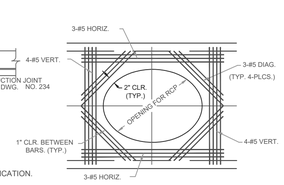
ALTERNATE CONNECTION DETAIL



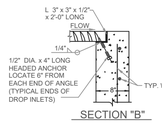
DROP INLET LAYOUT PLAN

NOTES:

1. ALL EXPOSED METALS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. PROVIDE 1/2" (MIN.) CLEARANCE ALL AROUND THE STEEL BEAM, DRY PACK AFTER INSTALLATION.
3. WHEN REQUIRED BY LENGTH OF OPENING, PLATE ANGLE MAY BE DELIVERED IN SECTIONS AND BUTT WELDED IN PLACE.
4. ALL GALVANIZED DAMAGED BY WELDING SHALL RECEIVE TWO COATS OF GALVALLOY OR EQUAL.
5. CONCRETE SHALL BE MODIFIED CLASS DA 4000 PSI, SEE SPECIAL PROVISIONS SECTION 501.
6. ANGLE ANCHORS SHALL BE EMBEDDED MIDPOINT IN EACH ENDWALL AND EVENLY SPACED, (MAXIMUM SPACING OF 2').



SECTION "A"

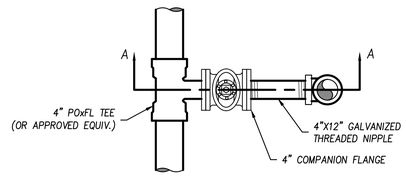


SECTION "B"

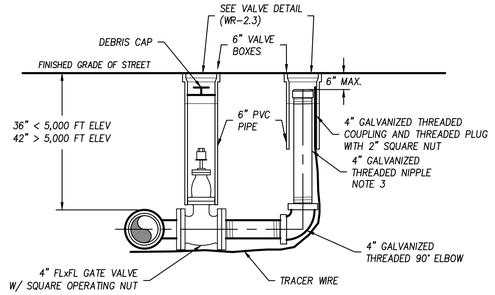
LOCATION TABLE:

SDCB #	STA.	TYPE	SHEET
4	27+43.80	SINGLE UNIT FRAME	P8
5	27+50.85	SINGLE UNIT FRAME	P8
6	27+57.91	SINGLE UNIT FRAME	P8
7	27+65.00	SINGLE UNIT FRAME	P8

A / D6 TYPE CM2 DROP INLET
NTS



PLAN VIEW
Not to Scale



SECTION A-A
Not to Scale

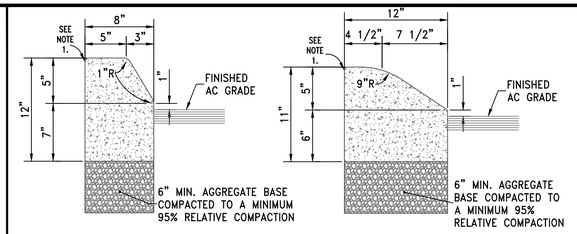
NOTES:
1. COAT ALL EXPOSED METAL WITH MASTIC
2. ALL FITTINGS TO BE POLY WRAPPED PRIOR TO CONCRETE PLACEMENT
3. GALVENIZED NIPPLE SHALL BE CONTINUOUS OR TACK WELDED AT EACH JOINT.
4. FOR SD USE ONLY.

NO.	REVISED	DATE

STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION

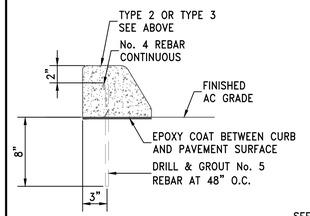
4" FLUSH VALVE ASSEMBLY IN-LINE

SECTION: WASHOE
DRAWING NO: WR-2.8
DATE: 7/09 PAGE: 18



TYPE 2 P.C.C. MEDIAN CURB

TYPE 3 P.C.C. MEDIAN CURB



P.C.C. MEDIAN CURB (ALTERNATE) SEE NOTE 4.

NOTES:

1. RADIUS TO BE 1/2 INCH, OMIT ROUNDING IF CURBS ARE BACK TO BACK.
2. 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), AS ADOPTED BY CITY COUNCIL. 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, AS ADOPTED BY CITY COUNCIL.
3. AGGREGATE BASE MATERIAL UNDER MEDIAN CURBS SHALL BE TYPE 2, CLASS B CRUSHED AGGREGATE BASE. MATERIALS SHALL CONFORM TO SSPWC SECTION 200, AS ADOPTED BY CITY COUNCIL.
4. GLUE DOWN MAY BE ALLOWED WITH APPROVAL OF THE CITY ENGINEER.

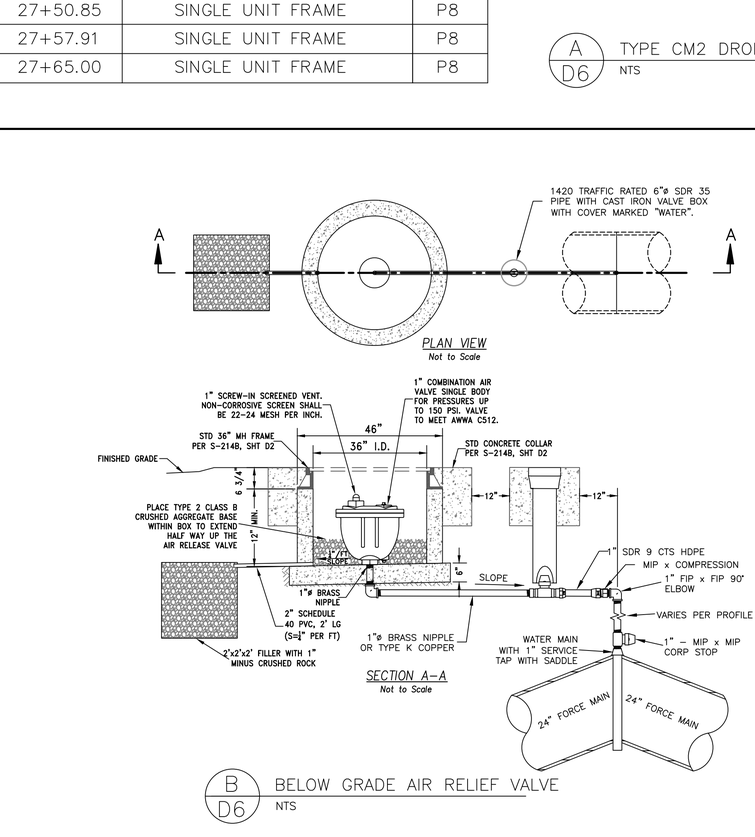
STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION

City of Sparks

P.C.C. MEDIAN CURBS

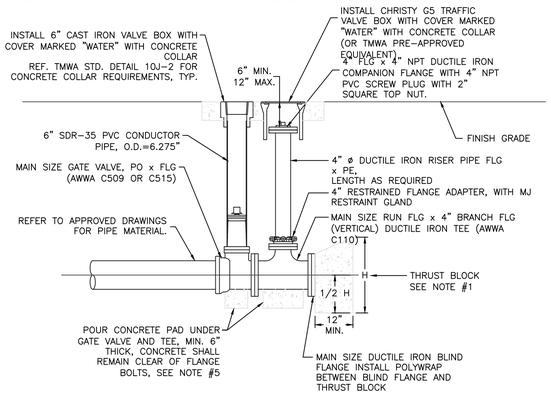
DRAWING No. S-110

APPROVED BY: JE | DATE: 1/2020



B / D6 BELOW GRADE AIR RELIEF VALVE
NTS

NOTES:
1. REFERENCE TMWA STANDARD DETAIL 10L-2 FOR THRUST BLOCK SIZING AND REQUIREMENTS (DEAD END CONDITION).
2. ALL EXPOSED METAL SHALL BE COATED WITH BRUSHED-ON MASTIC.
3. ALL BOLTS AND ASSOCIATED HARDWARE SHALL BE FLUOROPOLYMER COATED.
4. TEE, VALVE, FITTINGS, DUCTILE IRON PIPE, AND OTHER METAL PARTS SHALL BE ENCASED WITH POLYETHYLENE WRAP PER AWWA C105.
5. CONCRETE FOR PADS SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI AFTER 28 DAYS. BAG CONCRETE MIX IS NOT ACCEPTABLE.
6. ALL PIPE AND FITTINGS IN CONTACT WITH WATER SHALL BE NSF-61 CERTIFIED.



MATERIAL LIST

QTY.	DESCRIPTION
1	MAIN SIZE RUN FLG x 4" BRANCH FLG DUCTILE IRON TEE (AWWA C110)
1	MAIN SIZE GATE VALVE, PO x FLG, (AWWA C509 OR C515)
1	MAIN SIZE DUCTILE IRON BLIND FLANGE
1	4" FLG x 4" NPT DUCTILE IRON COMPANION FLANGE
1	4" ø DUCTILE IRON RISER PIPE FLG x PE (LENGTH AS REQUIRED)
1	4" RESTRAINED FLANGED ADAPTER WITH MJ RESTRAINT GLAND
1	4" PVC SCREW PLUG, NPT, WITH 2" SQUARE TOP NUT
1	6" CAST IRON VALVE BOX WITH COVER MARKED "WATER"
1	CHRISTY G5 TRAFFIC VALVE BOX WITH COVER MARKED "WATER"
1	6" SDR-35 PVC CONDUIT PIPE SECTION, O.D.=6.275"
–	CONCRETE BULK – THRUST BLOCKS, PADS, COLLARS

TRUCKEE MEADOWS WATER AUTHORITY

DATE	APPENDIX 10E FLUSH ASSEMBLY INSTALLATIONS FOR PERMANENT DEAD-END LOCATIONS FOR MAIN SIZES 6" TO 12"	DRAWING NUMBER
7/2001		10E-2
REV 9/2016		

REV	DATE	DESCRIPTION	CHECKED	APP'D
		REVISIONS		

STATE OF NEVADA — BRIAN A. JANES — No. 9870 — CIVIL — REGISTERED PROFESSIONAL ENGINEER — 7-24-2020

SCALE | DESIGN BY: BAJ | DRAWN BY: BDH | CHECKED BY: BM | DATE: 7/24/2020 | PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

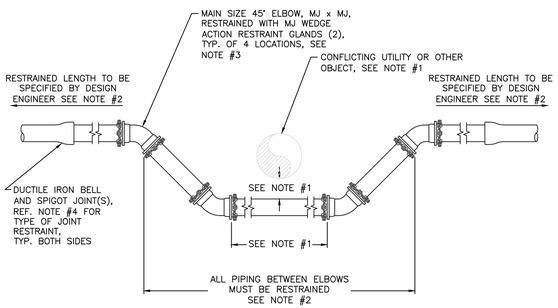
DETAILS

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

D6

SHEET 29 OF 44

NOTES:
1. REFERENCE TMWA ENGINEERING & CONSTRUCTION STANDARDS SECTIONS 7, 8, AND/OR 8A FOR UTILITY SEPARATION REQUIREMENTS.
2. ALL RESTRAINED JOINT PIPING SHALL BE DUCTILE IRON PIPE (RJ–DIP). RESTRAINED LENGTHS OUTSIDE OUTERMOST ELBOWS SHALL BE CALCULATED BY THE DESIGN ENGINEER AND SPECIFIED ON THE WATER IMPROVEMENT PLANS.
3. RESTRAINED JOINT FITTINGS SHALL BE MECHANICAL JOINT (MJ) DUCTILE IRON RESTRAINED WITH MECHANICAL JOINT WEDGE ACTION RESTRAINT GLANDS.
4. BELL AND SPIGOT PUSH–ON JOINTS SHALL BE RESTRAINED USING RUBBER GASKETS WITH STAINLESS STEEL LOCKING SEGMENTS VULCANIZED INTO THE RUBBER GASKET.
5. ALL BOLTS AND EXPOSED METAL SHALL BE COATED WITH BRUSHED–ON MASTIC.
6. FITTINGS, DUCTILE IRON PIPE, AND OTHER METAL PARTS SHALL BE ENCASED WITH POLYETHYLENE WRAP PER AWWA C105.



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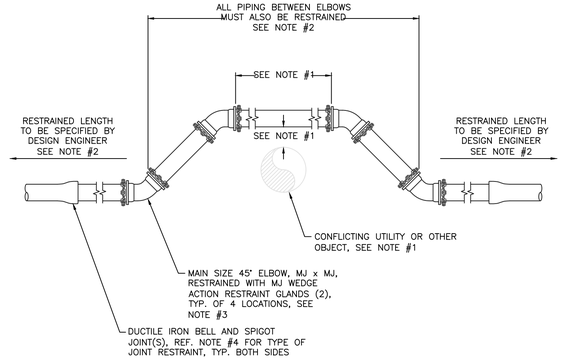
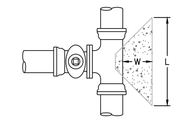
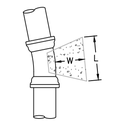
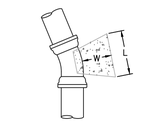




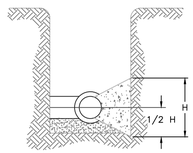
TEE / TAPPING SLEEVE PLAN VIEW



11.25° ELBOW PLAN VIEW

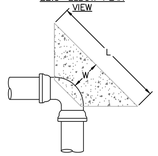


22.5° ELBOW PLAN VIEW



TYPICAL SECTION VIEW

45° ELBOW PLAN VIEW



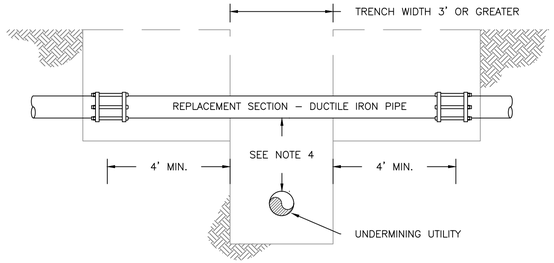
90° ELBOW PLAN VIEW

THRUST BLOCK DIMENSIONS																	
TEE, TAP, OR DEAD END					11.25° ELBOW			22.5° ELBOW			45° ELBOW			90° ELBOW		
BRANCH SIZE (INCHES)	L (FEET)	H (FEET)	W MIN. (FEET)	ELBOW SIZE (INCHES)	L (FEET)	H (FEET)	W MIN. (FEET)	L (FEET)	H (FEET)	W MIN. (FEET)	L (FEET)	H (FEET)	W MIN. (FEET)	L (FEET)	H (FEET)	W MIN. (FEET)
4	1.5	1	1	4	1	1	1	1	1	1	1.5	1	1	2	1	1
6	2	2	1	6	1	1	1	1.5	1	1	2	1.5	1	2.5	2	1
8	3	2	1	8	1.5	1	1	1.5	1.5	1	2.5	2	1	4	2	1
10	3.5	2.5	1	10	2	1	1	2	2	1	3	2.5	1	5	2.5	1
12	4.5	3	1	12	2	1.5	1	2.5	2	1	4	2.5	1	6	3	1

THRUST BLOCK DESIGN CRITERIA:

THRUST BLOCK SIZES HAVE BEEN CALCULATED USING THE METHOD AND EQUATIONS PUBLISHED IN *THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE, SIXTH EDITION 2006* BY THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) UTILIZING THE FOLLOWING DESIGN PARAMETERS:
DESIGN PRESSURE = 150 PSI (SEE NOTE #4 BELOW), SOIL BEARING CAPACITY = 2,000 PSF (SEE NOTE #4 BELOW), SAFETY FACTOR = 1.5, AND NOMINAL PIPE DIAMETER

THRUST BLOCK NOTES:
1. CONCRETE FOR THRUST BLOCKS SHALL HAVE A MINIMUM 28–DAY COMPRESSIVE STRENGTH OF 3,000 PSI. REFERENCE SECTION 1.1.1.3 OF THE TRUCKEE MEADOWS WATER AUTHORITY ENGINEERING & CONSTRUCTION STANDARDS FOR ADDITIONAL REQUIREMENTS. BAG CONCRETE MIX IS NOT ACCEPTABLE.
2. ALL FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE WRAP PER AWWA C105. MASTIC (BRUSH–ON) SHALL BE APPLIED TO ALL BOLTS, ETC.
3. THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL. IN CASES WHERE THIS IS NOT PRACTICAL, BACKFILL AREA BEHIND WHERE THRUST BLOCK WILL BE POURED WITH TYPE 2, CLASS B AGGREGATE BASE (PER SECTION 200.01.03 OF THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION – ORANGE BOOK) COMPACTED TO 95% MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED BY PROCEDURES SET FORTH IN ASTM D 1557, CUT–BACK COMPACTED AGGREGATE BASE TO EXPOSE A FIRM SURFACE, THEN POUR THRUST BLOCK.
4. FOR SOIL BEARING CAPACITY LESS THAN 2,000 PSF AND/OR DESIGN PRESSURE IN EXCESS OF 150 PSI, INCREASE THRUST BLOCK BEARING AREAS ACCORDINGLY. REVISED THRUST BLOCK SCHEDULE FOR SPECIFIC CONDITIONS SHALL BE SUBMITTED BY THE DESIGN ENGINEER.



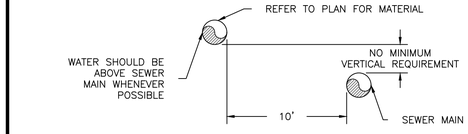
1. COUPLINGS SHALL BE ROMAC STYLE 501, FUSION EPOXY COATING, CENTER RING LENGTH MINIMUM 7".
2. BACKFILL AND COMPACTION REQUIREMENTS SHALL COMPLY WITH SECTION 5, TRENCH BEDDING, BACKFILL & EXCAVATION.
3. REPLACEMENT SECTION OF PIPE SHALL BE DUCTILE IRON.
4. REFER TO TMWA CONSTRUCTION AND DESIGN STANDARDS FOR MINIMUM CLEARANCE REQUIREMENTS.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10I VERTICAL ELBOW INSTALLATION	DRAWING NUMBER
	7/2001	RESTRAINED JOINT VERTICAL OFFSET UNDER UTILITY/OBJECT FOR MAINS 6" TO 12"	10I-2
	REV		
	7/2011		

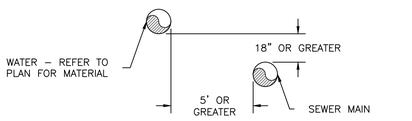
TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10I VERTICAL ELBOW INSTALLATION DOMESTIC USE REDUCED PRESSURE PRINCIPLE	DRAWING NUMBER
	7/2001	RESTRAINED JOINT VERTICAL OFFSET OVER UTILITY/OBJECT	10I-3
	REV		
	7/2011		

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L THRUST BLOCKS	DRAWING NUMBER
	7/2011	TEES, TAPPING SLEEVES, DEAD ENDS 11.25, 22.5, 45 AND 90 DEGREE ELBOWS 4" TO 12"	10L-2
	REV		

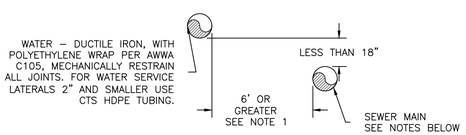
TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L MISCELLANEOUS WATER DETAILS CROSSING UNDER EXISTING TRANSITE OR SMALL DIAMETER CAST IRON MAINS	DRAWING NUMBER
	7/2011		10L-8
	REV		



OPTION 1



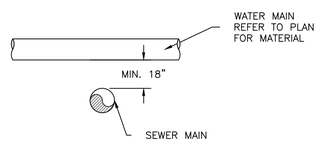
OPTION 2



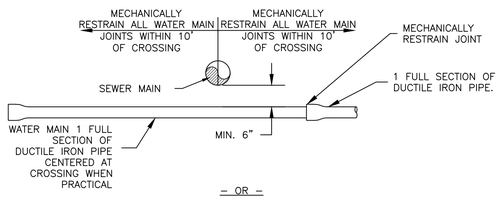
OPTION 3

NOTES:
1. IF SEPARATION IS 10 FEET OR MORE USE OPTION 1.
2. NON–PRESSURIZED SEWER MAINS SHALL BE SDR 35 PVC. IF SEWER MAINS ARE NON SDR 35 PVC, SEWER MAINS SHALL BE ENCASED IN 4" OF EXCAVATABLE SLURRY, USE EXTERNAL JOINT SEALANT OR OTHER MITIGATION TO ENSURE JOINTS ARE WATERTIGHT. WHERE THE SEWER MAINS ARE PRESSURIZED, THE SEWER MAINS SHALL HAVE MECHANICALLY RESTRAINED JOINTS OR SHALL USE WELDED OR FUSED PIPE.
3. FOR STORM SEWER MAINS WITH A DIAMETER OF 24" OR LARGER, THE SEWER MAINS SHALL BE INSTALLED WITH WATER TIGHT JOINTS THAT USE JOINT SEALANTS OR JOINT GASKETS.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER MAIN OR WATER SERVICE LATERAL PARALLEL TO SEWER MAIN	DRAWING NUMBER
	02/2014		10L-10
	REV		



OPTION 1



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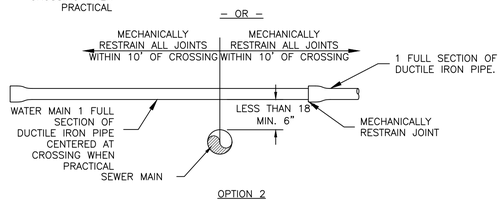

OPTION 2

NOTES:
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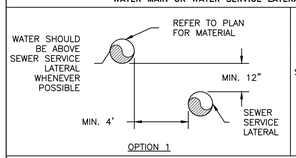
3. ALL MECHANICALLY RESTRAINED WATER PIPES SHALL BE DUCTILE IRON WITH POLYETHYLENE WRAP PER AWWA C105.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER MAIN CROSSING SEWER MAIN	DRAWING NUMBER
	02/2014		10L-11
	REV		

WATER MAIN OR WATER SERVICE LATERAL PARALLEL TO SEWER SERVICE LATERAL



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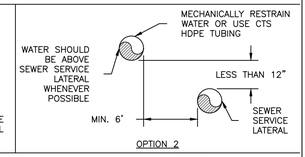
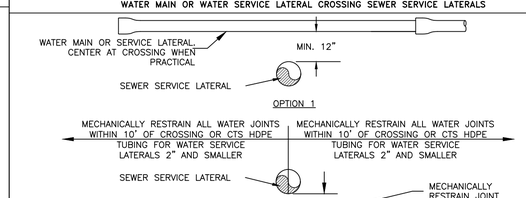


OPTION 2

WATER MAIN OR WATER SERVICE LATERAL CROSSING SEWER SERVICE LATERALS



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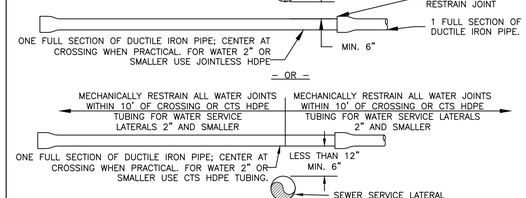

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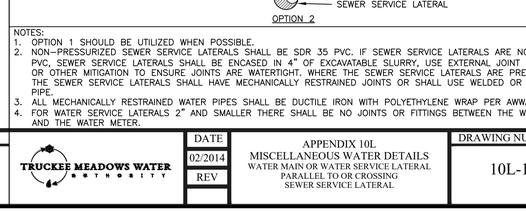

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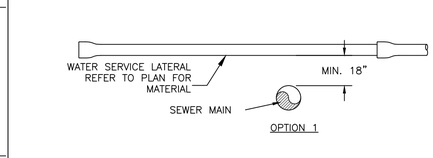
3. ALL MECHANICALLY RESTRAINED WATER PIPES SHALL BE DUCTILE IRON WITH POLYETHYLENE WRAP PER AWWA C105.
4. FOR WATER SERVICE LATERALS 2" AND SMALLER THERE SHALL BE NO JOINTS OR FITTINGS BETWEEN THE WATER MAIN AND THE WATER METER.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER MAIN OR WATER SERVICE LATERAL PARALLEL TO OR CROSSING SEWER SERVICE LATERAL	DRAWING NUMBER
	02/2014		10L-12
	REV		



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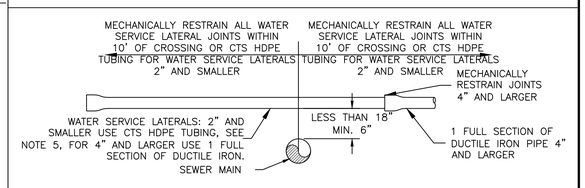

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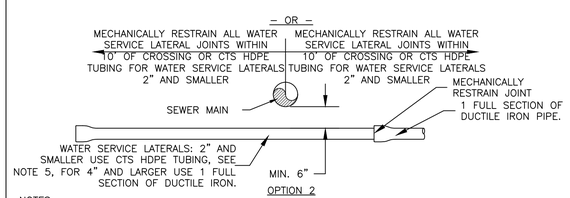

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TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L MISCELLANEOUS WATER DETAILS WATER SERVICE LATERAL CROSSING SEWER MAIN	DRAWING NUMBER
	02/2014		10L-13
	REV		

REVISIONS			
REV	DATE	DESCRIPTION	CHECKED
			APP'D

STATE OF NEVADA – BRIAN A. JANES – No. 9870 – CIVIL – ENGINEER – 7-24-2020

SCALE	DESIGN BY BAJ	DRAWN BY BDH	CHECKED BY BM	DATE 7/24/2020	PROJECT NUMBER 1000057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

D7

SHEET 30 OF 44

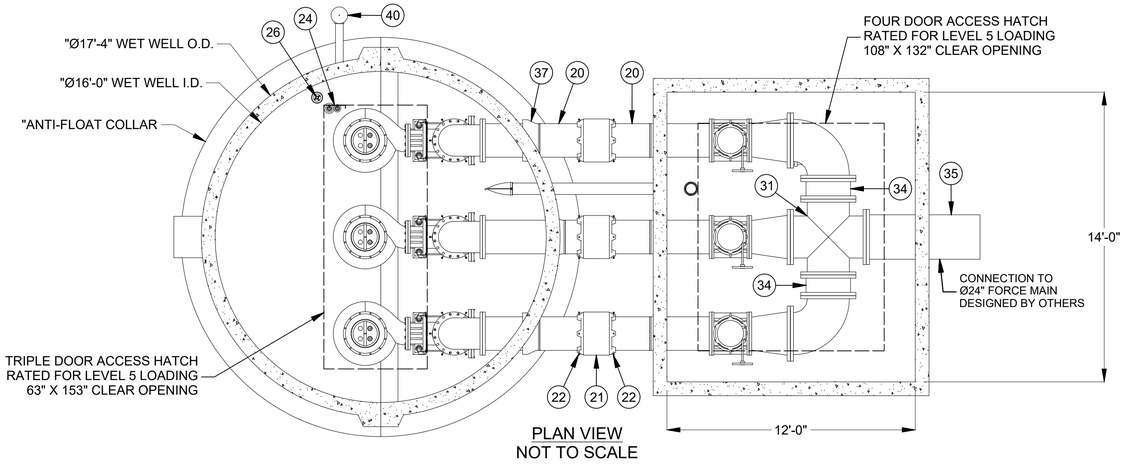
NOTES:

1. WHEN DISCHARGING AT THE HIGHEST DESIGN FLOW RATE OF 16,495 GPM THE VELOCITY IN THE 24" DIA. FORCE MAIN WILL BE APPROX. 11.7 FEET/SEC.

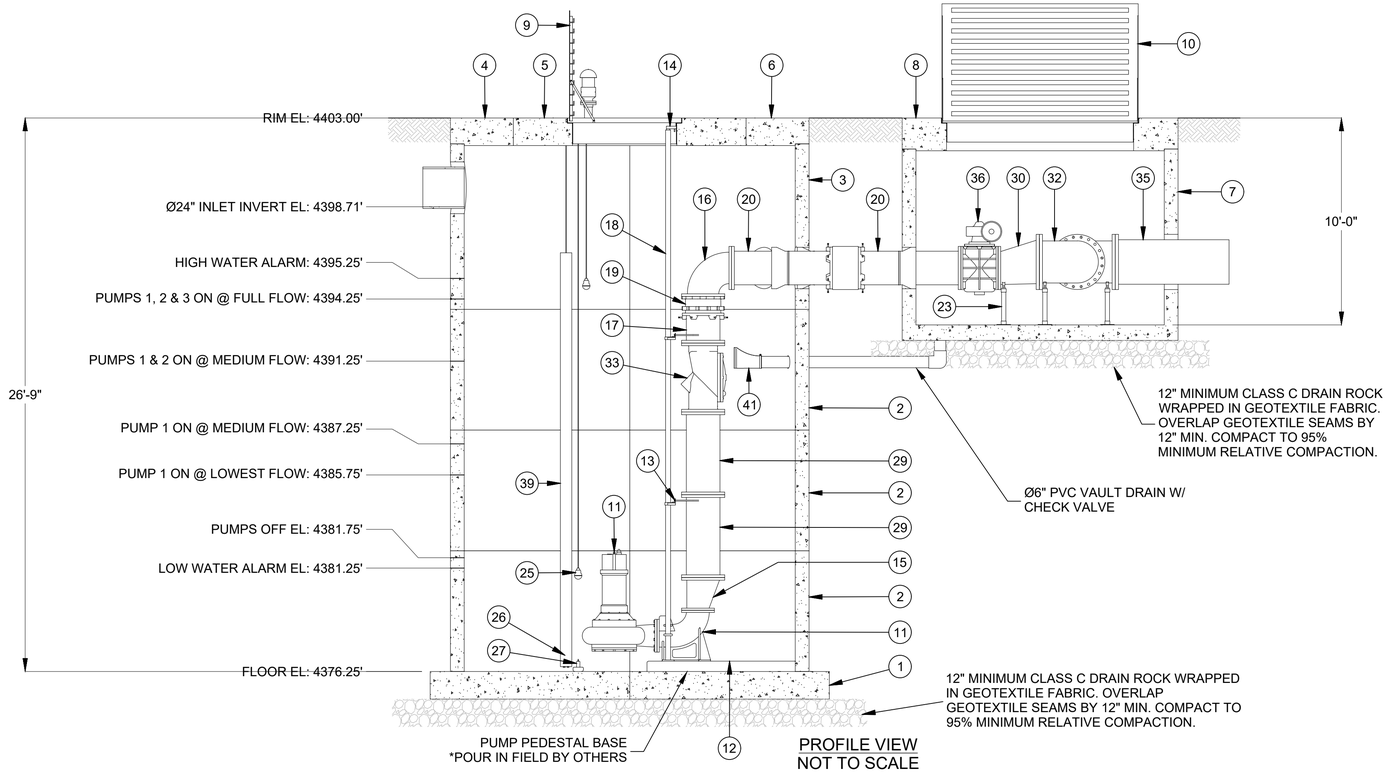
2. SEE ELECTRICAL SHEETS FOR FLOATS, TRANSDUCER, MOUNTING HARDWARE, ANCHOR KIT, STILLING WELL, AND BRACKETS FOR LEVEL DETECTION EQUIPMENT.

3. CONTRACTOR SHALL CONSTRUCT JENSEN PUMP STATION OR APPROVED EQUAL.

4. CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS IN FIELD PRIOR TO INSTALLATION



PLAN VIEW
NOT TO SCALE



PROFILE VIEW
NOT TO SCALE

BILL OF MATERIALS		
ITEM	ITEM QTY	DESCRIPTION
1	2	JENSEN PRECAST BASE SLAB FOR 192IN WET WELL
2	6	JENSEN PRECAST 192IN BARREL SECTION
3	2	JENSEN PRECAST 192IN BARREL SECTION
4	1	JENSEN PRECAST 192IN FLAT TOP
5	1	JENSEN PRECAST 192IN FLAT TOP
6	1	JENSEN PRECAST 192IN FLAT TOP
7	1	JENSEN PRECAST 12FT X 14FT VAULT BASE
8	1	JENSEN PRECAST 12FT X 14FT VAULT FLAT TOP
9	1	ACCESS HATCH W/ 153IN X 63IN CLEAR OPENING
10	1	ACCESS HATCH W/ 132IN X 108IN CLEAR OPENING
11	3	HOMA SUBMERSIBLE NON-CLOG PUMP MODEL # AKX1266-470/170HU FM WITH AUTO COUPLING, THERMAL AND SEAL FAIL SENSORS, STANDARD CABLE LENGTH OF 50FT, EXTERIOR COATED WITH HIGH SOLIDS POLYAMIDE EPOXY.
12	1	PUMP PEDESTAL *SECONDARY POUR IN FIELD BY OTHERS
13	6	304SS INTERMEDIATE GUIDE RAIL BRACKET BY HOMA
14	3	304SS UPPER GUIDE RAIL BRACKET FOR HOMA AKX
15	3	12IN X 18IN FLG DIP ECC REDUCER
16	3	18IN DIP FLG 90DEG ELBOW
17	3	18IN DIP FLG X PE 2FT SPOOL
18	6	PIPE 2-1/2IN SCH40 GUIDE RAIL 304SS
19	3	18IN RFCA W/ SS HARDWARE
20	6	18IN DIP FLG X PE 5FT 6IN SPOOL
21	3	18IN MJ SLEEVE W/ MEGA FLANGE AND HARDWARE
22	6	18IN MJ STARGRIP
23	7	18IN FLG PIPE SUPPORT
24	1	FLOAT BRACKET 3 HOOK TYPE 316SS
25	3	MJK 7030 Float Switch - PN: 202814 - Provided by Systems Integrator
26	1	Submersible Pressure Transducer - 0 - 30 Ft - PN: 209935 - 50' Cable
27	1	ANCHOR 15LB PVC COATED
28	1	SINK WEIGHT SS PMC SW2000
29	6	18IN DIP FLG X FLG 4FT SPOOL
30	3	18IN X 24IN FLG DIP ECC REDUCER
31	1	24IN FLG DIP CROSS
32	2	24IN FLG DIP 90 DEG ELBOW
33	3	18IN SWING-FLEX CHECK VALVE
34	2	24IN DIP FLG X FLG 1FT SPOOL
35	1	24IN DIP FLG X PE 5FT 6IN SPOOL
36	3	18IN PLUG VALVE
37	6	CONNECTOR BOOT S206-24A CORE-SEAL ASTM C923/C1644 HOLE-24 18.00-19.50
38	1	CUSTOM CONTROL PANEL
39	3	STILLING WELL FOR PRESSURE TRANSDUCER. INCLUDES MOUNTING BRACKETS AND HARDWARE
40	1	ODOR CONTROL VENT W/ 4IN PIPING AND FITTINGS
41	1	CHECK VALVE 6IN
42	1	90 DEG ELBOW 6IN SCH 40 PVC SLIP

PUMP CHARACTERISTICS	
DESCRIPTION	VALUE
PUMP 1 DUTY POINT @ 36HZ	4180 GPM @ 22.4' TDH
PUMP 1 DUTY POINT @ 44HZ	5498 GPM @ 28.6' TDH
PUMPS 1 & 2 DUTY POINT @ 51HZ	10,997 GRPM @ 49.8' TDH
PUMPS 1, 2 & 3 DUTY POINT @ 60HZ	16,494 GPM @ 83.0' TDH
MANUFACTURER	HOMA
MODEL NUMBER	AKX1266-470/170HU FM
PUMP TYPE	SUBMERSIBLE NON-CLOG
MOTOR SIZE	170.3 HP / 218A
REQUIRED POWER SUPPLY	480V 3-PH

REVISIONS

REV	DATE	DESCRIPTION	CHECKED	APPD

STATE OF NEVADA — BRIAN A. JANES — No. 17881 — CIVIL — Exp. 06-30-21 — PROFESSIONAL ENGINEER

7-24-2020

SCALE

DESIGN BY: BAJ
DRAWN BY: BDH
CHECKED BY: BM
DATE: 7/24/2020

PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

D8

SHEET 31 OF 44

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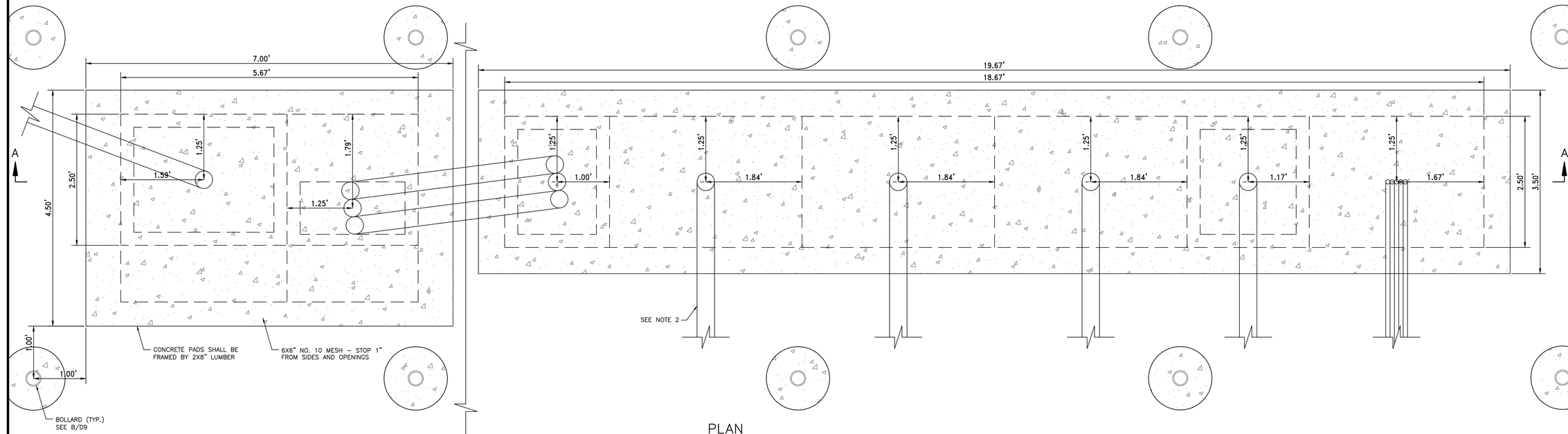
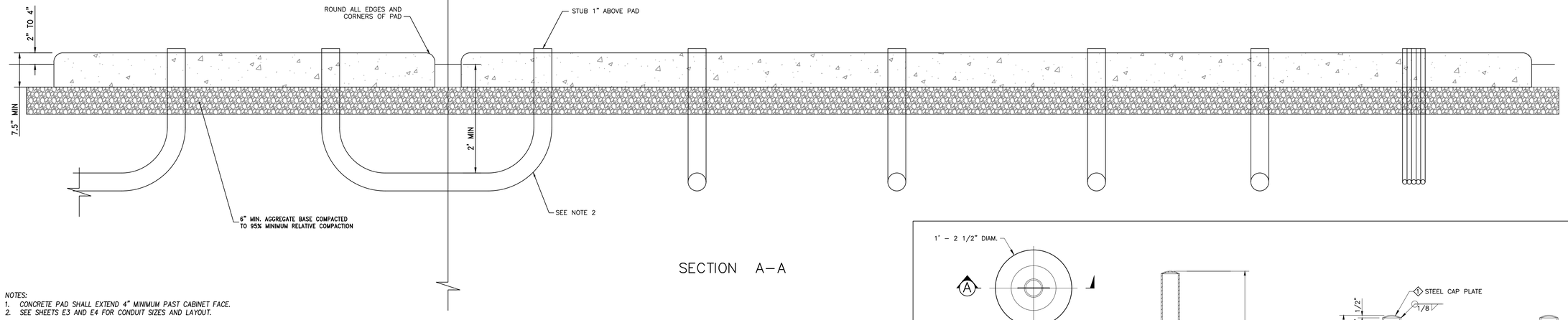
March 6, 2018 - 2:34 PM



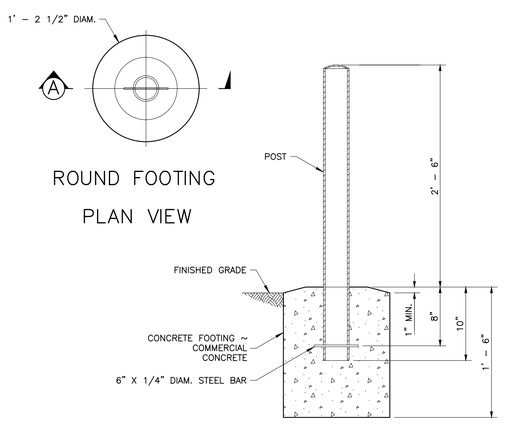
PLAN



SECTION A–A

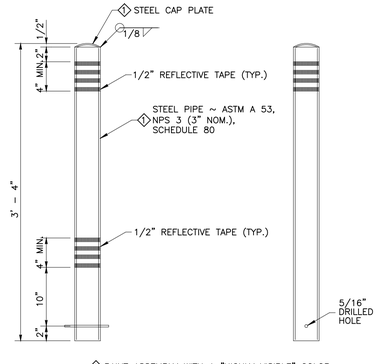
NOTES:
1. CONCRETE PAD SHALL EXTEND 4" MINIMUM PAST CABINET FACE.
2. SEE SHEETS E3 AND E4 FOR CONDUIT SIZES AND LAYOUT.

A / D9 CONCRETE PAD - MAIN ELECTRIC SERVICE EQUIPMENT & MOTOR CONTROL CENTER (SEE SHEET E2)
NTS



ROUND FOOTING
PLAN VIEW

SECTION (A)



POST

B / D9 BOLLARD
NTS

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

STATE OF NEVADA
BRIAN A. JANES
No. 17881
PROFESSIONAL ENGINEER
CIVIL
Exp. 06-30-21
7-24-2020

SCALE
DESIGN BY BAJ
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DATE 7/24/2020
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CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

DETAILS

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D9

SHEET 32 OF 44

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
A / E8	DETAIL IDENTIFICATION: TOP IS DETAIL/BOTTOM IS SHEET NUMBER
2	NOTE IDENTIFICATION: NOTE NO. 1 ON SHEET E-1
E8	EQUIPMENT SCHEDULE IDENTIFICATION
	GFCI TYPE DUPLEX RECEPTACLE
	SPECIAL CONFIGURATION RECEPTACLE (AS NOTED)
ST	WIND UP TIMER SWITCH (60 MIN MAXIMUM)
	JUNCTION BOX
#	MOTOR OUTLET AND CONNECTION (# INDICATES HP.)
	GROUND
M	UTILITY METER
	CIRCUIT BREAKER
PI	POSITION INDICATOR
FM	FLOW METER
PT	PRESSURE TRANSDUCER
DS	DOOR SWITCH
FS	FLOAT SWITCH
DT	OVER-TEMPERATURE AND SEAL-LEAK SENSOR
LT	LEVEL TRANSDUCER
TX	TRANSMITTER
DS	MAGNETIC DOOR SWITCHES
N.T.S.	NOT TO SCALE
C.	CONDUIT
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
A.T.S.	AUTOMATIC TRANSFER SWITCH
B.C.	BARE COPPER
GRS	GALVANIZED RIGID STEEL CONDUIT
F.M.	FLOW METER
P.S.	POWER SUPPLY
FBO	FURNISHED BY OTHERS
RVSS	REDUCED VOLTAGE SOLID STATE
FVNR	FULL VOLTAGE NON-REVERSING
VFD	VARIABLE FREQUENCY DRIVE
	PHASE CONDUCTOR: 3/4" C., #12 THHN U.O.N.
	NEUTRAL CONDUCTOR; 3/4" C., #12 THHN U.O.N.
	EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC TABLE 255.122
	UNDERGROUND FEEDER: CONDUIT AND CONDUCTOR SIZE AS NOTED

GENERAL ELECTRICAL REQUIREMENTS

A. FURNISH ALL LABOR, MATERIAL, EQUIPMENT, TOOLS, ACCESSORIES, ETC. REQUIRED FOR A COMPLETE ELECTRICAL SYSTEM.

B. ALL WORK SHALL CONFORM WITH THE REQUIREMENTS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE, NATIONAL BOARD OF FIRE UNDERWRITERS, APPLICABLE LOCAL CODES, AND POWER COMPANY STANDARDS.

C. ALL MATERIAL SHALL BE NEW AND CONFORM WITH THE REQUIREMENT OF THE UNDERWRITER'S LABORATORIES, INC.

D. WORKMANSHIP AND NEAT APPEARANCE SHALL BE OF THE SAME LEVEL OF IMPORTANCE AS ITS ELECTRICAL AND MECHANICAL EFFICIENCY.

E. COORDINATE ALL WORK WITH THAT OF OTHER CONTRACTORS ON THE JOB AND ALSO WITH THAT OF THE OWNER. ANY COST FOR EXTRA WORK OR MATERIALS RESULTING FROM LACK OF COORDINATION, SHALL BE BORNE BY THIS CONTRACTOR.

F. POWER CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM. #8 AWG AND LARGER SHALL BE STRANDED. ALL CONDUCTORS TO BE TYPE XHHW-2. ALL WIRING SHALL BE INSTALLED IN CONDUIT. CONTROL CONDUCTORS TO BE #14 XHHW-2 STRANDED.

G. ALL CONDUIT WITHIN 18" (ABOVE AND BELOW) OF GRADE OR FINISHED FLOOR TO BE GALVANIZED RIGID STEEL. ALL CONDUIT BELOW 18" OF GRADE TO BE PVC-TYPE SCHEDULE-40. ALL UNDERGROUND ELBOWS TO BE GALVANIZED RIGID STEEL (GRS). ALL METALLIC CONDUITS IN CONTACT WITH EARTH TO BE EITHER PVC-GRSC OR HALF-LAP WRAPPED IN SCOTCH-50 ELECTRICAL TAPE. CONDUITS INSTALLED IN ROOMS SUBJECT TO CORROSIVE (CHEMICAL) ATMOSPHERES TO BE PVC SCHEDULE-80. FOR CONDUITS INSTALLED OUTDOORS, PROVIDE A WATER-TIGHT CONDUIT SYSTEM, (IMC OR GRS ONLY) INCLUDING THREADED HUBS AT EQUIPMENT PENETRATIONS, LIQUID-TIGHT CONNECTORS, & SEALS.

H. WIRING DEVICES SHALL BE HUBBELL, OR EQUAL. ALL DEVICES SHALL BE EQUAL TO THE FOLLOWING AND SHALL HAVE WHITE DEVICE PLATES:
ENCLOSURE SWITCHES:
A. SPST HUBBELL NO. 1221-I
ENCLOSURE RECEPTACLES:
A. GFCI DUPLEX 20A, 125V
HUBBELL NO. GF5262-I

I. THE CONTRACTOR SHALL GUARANTEE TO THE OWNER ALL WORK PERFORMED UNDER THIS CONTRACT TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FINAL ACCEPTANCE.

J. ALL CONDUCTOR CRIMPING ON CONDUCTORS #6 AWG OR GREATER TO BE HYDRAULICALLY CRIMPED, USING FULLY ANNULAR DIE-TYPE CRIMPER (MATCH COLOR TO EQUIPMENT RATING).

K. PROVIDE NEW TYPED PANEL DIRECTORIES FOR ALL NEW AND MODIFIED 120/208/240V LOAD CENTERS AND PANELBOARDS. PROVIDE BLACK PHENOLIC NAMEPLATES FOR BREAKERS INSTALLED IN 277/480V PANELS.

L. SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS AND/OR MANUFACTURERS DESCRIPTIVE DATA ON ALL PROPOSED ELECTRICAL EQUIPMENT FOR APPROVAL WITHIN THIRTY (30) DAYS AFTER AWARD OF CONTRACT. THE CONTRACTOR SHALL REVIEW ALL SHOP DRAWINGS PREPARED BY HIS SUPPLIERS AND SHALL MARK ALL COPIES AS ACCEPTABLE TO HIM. THE CONTRACTOR'S ACCEPTANCE SHALL INCLUDE CERTIFICATION THAT THE REQUIRED ELECTRICAL CONNECTIONS HAVE BEEN NOTED AND THAT EQUIPMENT CAN BE INSTALLED IN THE SPACE AVAILABLE.

M. ELECTRIC EQUIPMENT SHALL BE AS MANUFACTURED BY EATON, SIEMENS, GENERAL ELECTRIC, OR SQUARE-D, OR AS SPECIFIED IN THE EQUIPMENT SCHEDULE (OTHERS ON PRIOR APPROVAL). PANELBOARDS SHALL BE OF THE BOLT-ON CIRCUIT BREAKER TYPE.

N. PROVIDE THE SERVICES OF A FULLY TRAINED AND EQUIPPED TESTING COMPANY (TEST PERFORMED BY CONTRACTOR WILL NOT BE ACCEPTED) TO TEST, CALIBRATE, AND WHERE NECESSARY, PLACE IN OPERATION THE ELECTRICAL SYSTEM:

(A) PHASE OVER-CURRENT DEVICES ON FEEDERS. 200A & ABOVE.
(B) GROUND FAULT PROTECTIVE DEVICES.
(C) GROUND RESISTANCE TEST FOR GROUNDING ELECTRODE SYSTEMS USING FALL OF POTENTIAL METHOD.
(D) CONDUCTOR INSULATION TESTING BY WAY OF 1000VDC MEGGER. FOR FEEDERS 100A & ABOVE

TESTS SHALL BE COMPLETE ENOUGH TO BE CONCLUSIVE AND TO INSURE PROPER OPERATION. THIS SHALL BE CERTIFIED IN TEST REPORTS SUBMITTED TO THE ENGINEER. ALL FAULTY EQUIPMENT SHALL BE REPLACED AND TESTED UNTIL SATISFACTORY RESULTS ARE OBTAINED. TESTS SHALL BE NON-DESTRUCTIVE AND PROCEDURES USED SHALL BE APPROVED BY THE ENGINEERING SERVICE STANDARD SCOPES OF WORK (SSW)" AND "EARTH RESISTANCE TESTING" PUBLISHED BY THE JAMES G. BIDDLE COMPANY.

O. ALL SURFACE OUTLET BOXES TO BE "FS" CAST STEEL WITH MATCHING COVERS.

P. ALL CONCRETE WORK TO BE PER CIVIL AND/OR STRUCTURAL DRAWINGS, SPECIFICATIONS, REQUIREMENTS, AND DIAGRAMS.

Q. FINAL CONDUIT ROUTING FOR NEW CONDUIT SYSTEMS TO BE DETERMINED BY ELECTRICAL CONTRACTOR; HOWEVER SEPARATE DEDICATED CONDUITS SHALL BE PROVIDED FOR ANALOG SIGNAL, DISCRETE SIGNAL, AND POWER. DO NOT USE EQUIPMENT ENCLOSURES AS PASS-THROUGH WIRE-WAY.

R. INSTALL ALL EMPTY CONDUITS WITH PULL STRING.

S. ALL COVER CONTROLS SHALL BE 30.5mm NEMA TYPE.

T. PROVIDE CORD GRIP CONNECTORS FOR INSTRUMENT CABLES WHICH DO NOT HAVE INTEGRAL CONDUIT THREADING/PORT.

U. ALL EQUIPMENT SUPPLIED AND INSTALLED SHALL BE TESTED AND LABELED AS LISTED FOR USE BY A NATIONAL RECOGNIZED TESTING LABORATORY SUCH AS UL OR INTERTEK-ETL (OTHERS ON PRE-APPROVAL ONLY)

V. CONTRACTORS SHALL ASSIST OWNER IN MAKING UTILITY SERVICE APPLICATIONS (CHANGE OF SERVICE, UPGRADES); HOWEVER, OWNER WILL PAY ANY AND ALL FEES ASSOCIATED WITH THE ELECTRICAL POWER UTILITY.

W. CONTRACTORS SHALL COORDINATE WITH CARSON CITY PERSONNEL AS REQUIRED FOR A COMPLETE SYSTEM. CARSON CITY SHALL INTEGRATE PLC AND SCADA SYSTEM COMPONENTS. CONTRACTOR TO PROVIDE RTU BACK PANEL TO CITY EI&C STAFF NO FEWER THAN 60 DAYS PRIOR TO CUTOVER OF THE NEW SYSTEM.

X. CONTRACTORS SHALL DELIVER DEDICATED 20-AMP, 120-VOLT CIRCUIT AND ALL I/O WIRING INTO THE RTU PANEL WITH LABELING. CITY STAFF WILL TERMINATE WIRING ON THE RTU BACK-PANEL. CITY STAFF SHALL WITNESS INSTRUMENT COMMISSIONING.

EQUIPMENT SCHEDULE

E8

ITEM	QUANTITY	DESCRIPTION
1	1	MAIN ELECTRICAL SERVICE EQUIPMENT: 1,000-AMP, 480Y/277 VOLT, 3-PHASE, 4-WIRE, NEMA 3R ENCLOSED, 17kA SHORT CIRCUIT WITHSTAND AND INTERRUPT RATINGS. 1,000-AMP CT METER, 1,000-AMP MAIN-BREAKER WITH AUXILIARY CONTACTS.
2	1	MOTOR CONTROL CENTER: 1,000-AMP, 480Y/277 VOLT, 3-PHASE, 4-WIRE, NEMA 3R ENCLOSED, 16kA SHORT CIRCUIT WITHSTAND RATING WITH INTRUSION DOOR SWITCHES. STRUCTURE 1: INCOMING MAIN POWER SECTION. STRUCTURE 2: PUMP #1 VFD (261 DRIVE AMPS). STRUCTURE 3: PUMP #2 VFD (261 DRIVE AMPS). STRUCTURE 4: PUMP #3 VFD (261 DRIVE AMPS). STRUCTURE #5: TRANSFORMER 'TA' (10 kVA, 480 VOLT, 1-PHASE PRIMARY; 120/240 VOLT, 1-PHASE SECONDARY), PANEL 'LA' (40 AMP, 120/240 VOLT, 1-PHASE, 12 CIRCUIT). STRUCTURE #6: EMPTY CABINET FOR RTU EQUIPMENT.
3	1	LINE VOLTAGE TERMINATION CABINET: 36"Hx36"Wx12"D, NEMA 4 WITH THREE POINT LOCKABLE LATCH. PROVIDE AND INSTALL THREE 275-AMP TERMINATION BLOCKS (ONE LINE SIDE BARREL, TWO LOAD SIDE BARRELS) AND GROUNDING BAR KID. nVENT HOFFMAN #A36H30DLP3PT (ENCLOSURE), EATON #16303-3 (TERMINATION BLOCKS), EATON #GB5K (GROUNDING TERMINATION BLOCK).
4	1	LOW VOLTAGE TERMINATION CABINET: 24"Hx24"Wx8"D, NEMA 4 WITH THREE POINT LOCKABLE LATCH. INSTALL INTRISICALLY SAFE BARRIERS (PROVIDED BY SYSTEM INTEGRATOR). nVENT HOFFMAN #A24H24BLP3PT (ENCLOSURE).

REMARKS: CONTRACTOR TO COORDINATE EQUIPMENT SCHEDULE QUANTITIES WITH ELECTRICAL DRAWINGS AND MODIFY AS REQUIRED.

LABELING REQUIREMENT:

PANELS & EQUIPMENT CABINETS SHALL INCLUDE BLACK PHENOLIC NAMEPLATES WITH 1/2" WHITE ENGRAVED CHARACTERS STATING THE DESIGNATION OF EACH SPECIFIC PIECE OF EQUIPMENT AS FOUND IN THESE DRAWINGS.

POWER & SIGNAL CONDUCTORS SHALL INCLUDE WHITE HEAT-SHRINK LABELING AT EACH END, WITH PRINTED 1/8" CHARACTERS, SHALL CORRESPOND WITH SUBMITTED WIRING DIAGRAMS, AND INDICATE DESIGNATION, ORIGIN, AND DESTINATION OF EACH CONDUCTOR RUN.

LIGHTING FIXTURE SCHEDULE

FIXTURE SYMBOL	FIXTURE TYPE	MANUFACTURER DETAILS NAME	MANUFACTURER DETAILS CATALOG NUMBER	POWER (WATTS)	MOUNTING HEIGHT	MOUNTING CONFIG.	LAMP TYPE	NOTES AND REMARKS	VOLTAGE
	A1	ACUITY LITHONIA	DSXI-P4-40K-TFTM-120-PIR-DDBXD	125	+12'-0"	POLE MOUNT	INTEGRAL LED	POLE-MOUNTED LED AREA LIGHT FORWARD THROW DISTRIBUTION	120
	B1	RIG-A-LITE	AVPH-18L2-U-HF-G-W-50	18	VERIFY	WALL MOUNT	INTEGRAL LED	LED HARSH ENVIRONMENT VAULT LIGHT	120

REVISIONS

REV	DATE	DESCRIPTION	CHECKED	APPD

PROFESSIONAL ENGINEER — STATE OF NEVADA — GEORGE A. JENSEN — EXP: 06-30-2021 — ELECTRICAL — NO. 026469 — 7-20-2020

SCALE
DESIGN BY: GAJ
DRAWN BY: TAS
CHECKED BY: GAJ
DATE: 7/20/2020
PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

ELECTRICAL SYMBOLS, NOMENCLATURE, & SHEET INDEX

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

E1

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SITE ELECTRICAL PLAN NOTES

1. INSPECT PROJECT SITE AND IDENTIFY EXISTING UTILITY COMPANY POLE #XXXXXX. COORDINATE WITH SERVING UTILITY COMPANY AS REQUIRED FOR NEW ELECTRICAL UTILITY SERVICE ENTRANCE. PROVIDE AND INSTALL CONDUIT RISER, STRAPPING, WEATHER-HEAD, ETC. PER UTILITY WORK ORDER DRAWINGS. EXTEND NEW ELECTRICAL UTILITY PRIMARY UNDERGROUND FROM EXISTING POLE TO NEW PAD-MOUNT TRANSFORMER PER UTILITY STANDARDS AND WORK ORDER DRAWINGS.

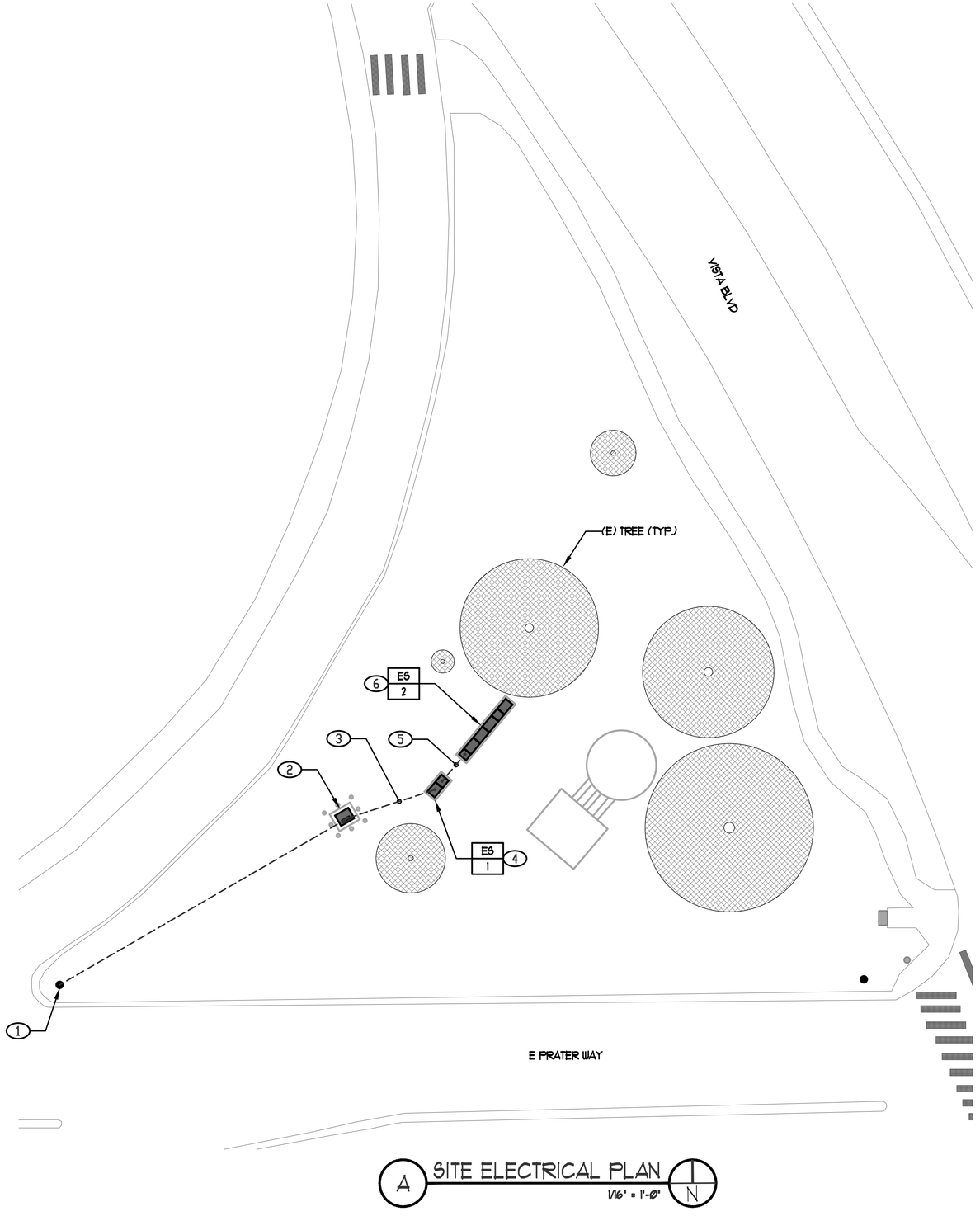
2. COORDINATE WITH SERVING UTILITY COMPANY AS REQUIRED FOR INSTALLATION OF NEW UTILITY TRANSFORMER. PROVIDE AND INSTALL NEW TRANSFORMER PAD PER UTILITY WORK ORDER DRAWINGS. TRANSFORMER AND TRANSFORMER GROUNDING BY UTILITY.

3. COORDINATE WITH SERVING UTILITY COMPANY AS REQUIRED FOR INSTALLATION OF NEW UTILITY SECONDARY. PROVIDE AND INSTALL THREE 4" CONDUIT FROM NEW UTILITY TRANSFORMER TO NEW MAIN ELECTRICAL SERVICE. VERIFY LOCATION WITH UTILITY. INSTALL CONDUITS PER UTILITY WORK ORDER DRAWINGS.

4. COORDINATE WITH SERVING UTILITY COMPANY AND GENERAL CONTRACTOR AS REQUIRED FOR INSTALLATION OF NEW MAIN ELECTRICAL SERVICE EQUIPMENT. PROVIDE AND INSTALL NEW EQUIPMENT INCLUDING SEISMIC CONTROL PER MANUFACTURER'S INSTRUCTIONS.

5. EXTEND NEW ELECTRICAL FEEDER FROM 1,000-AMP MAIN BREAKER IN MAIN ELECTRICAL SERVICE EQUIPMENT TO NEW MOTOR CONTROL CENTER INCOMING COMPARTMENT. CONNECT COMPLETELY PER MANUFACTURER'S INSTRUCTIONS.

6. COORDINATE WITH GENERAL CONTRACTOR AS REQUIRED FOR INSTALLATION OF NEW MOTOR CONTROL CENTER (MCC). PROVIDE AND INSTALL NEW EQUIPMENT INCLUDING SEISMIC CONTROL PER MANUFACTURER'S INSTRUCTIONS.



A SITE ELECTRICAL PLAN
1/16" = 1'-0"

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

PROFESSIONAL ENGINEER
GEORGE A. JENSEN
EXP: 06-30-2021
ELECTRICAL
NO. 026459
STATE OF NEVADA
7-20-2020

SCALE
DESIGN BY: GAJ
DRAWN BY: TAS
CHECKED BY: GAJ
DATE: 7/20/2020
PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

ELECTRICAL SITE PLAN

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4862
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

E2

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March 6, 2018 - 2:34 PM

SITE ELECTRICAL PLAN NOTES

1. COORDINATE WITH LIFT STATION EQUIPMENT SUPPLIER AS REQUIRED FOR CONDUIT ENTRANCE INTO WET-WELL. VERIFY EXACT LOCATION OF PENETRATION POINTS. PASS CONDUITS THROUGH PENETRATIONS AND SEAL OFF PER MANUFACTURER'S INSTRUCTIONS.

2. COORDINATE WITH LIFT STATION EQUIPMENT SUPPLIER AS REQUIRED TO DETERMINE LOCATION OF ACCESS LADDER. PROVIDE AND INSTALL LIGHTING SWITCH ADJACENT ACCESS LADDER, 12" BELOW VAULT CEILING. CONNECT LIGHTING COMPLETELY PER MANUFACTURER'S INSTRUCTIONS.

3. EXTEND ELECTRICAL FEEDERS FOR PUMP MOTORS UNDERGROUND FROM MOTOR CONTROL CENTER SECTIONS TO LINE-VOLTAGE TERMINATION CABINET. TERMINATE CONDUCTORS AT LOAD-SIDE OF VARAIBLE FREQUENCY DRIVE AND LINE-SIDE OF POWER TERMINAL BLOCKS INSIDE CABINET. SEE ELECTRICAL FEEDER SCHEDULE ON SHEET E5. SEE DETAIL 'A', SHEET E6.

4. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL TERMINATION CABINET FOR LINE-VOLTAGE PUMP MOTOR LEADS WITHIN WET WELL. PROVIDE AND INSTALL STRUCTURAL CHANNEL RACK FOR MOUNTING TERMINATION CABINET INCLUDING HARDWARE, NUTS AND BOLTS, ETC. PROVIDE AND INSTALL CONDUIT SEALS FOR ALL CONDUITS ENTERING WET-WELL.

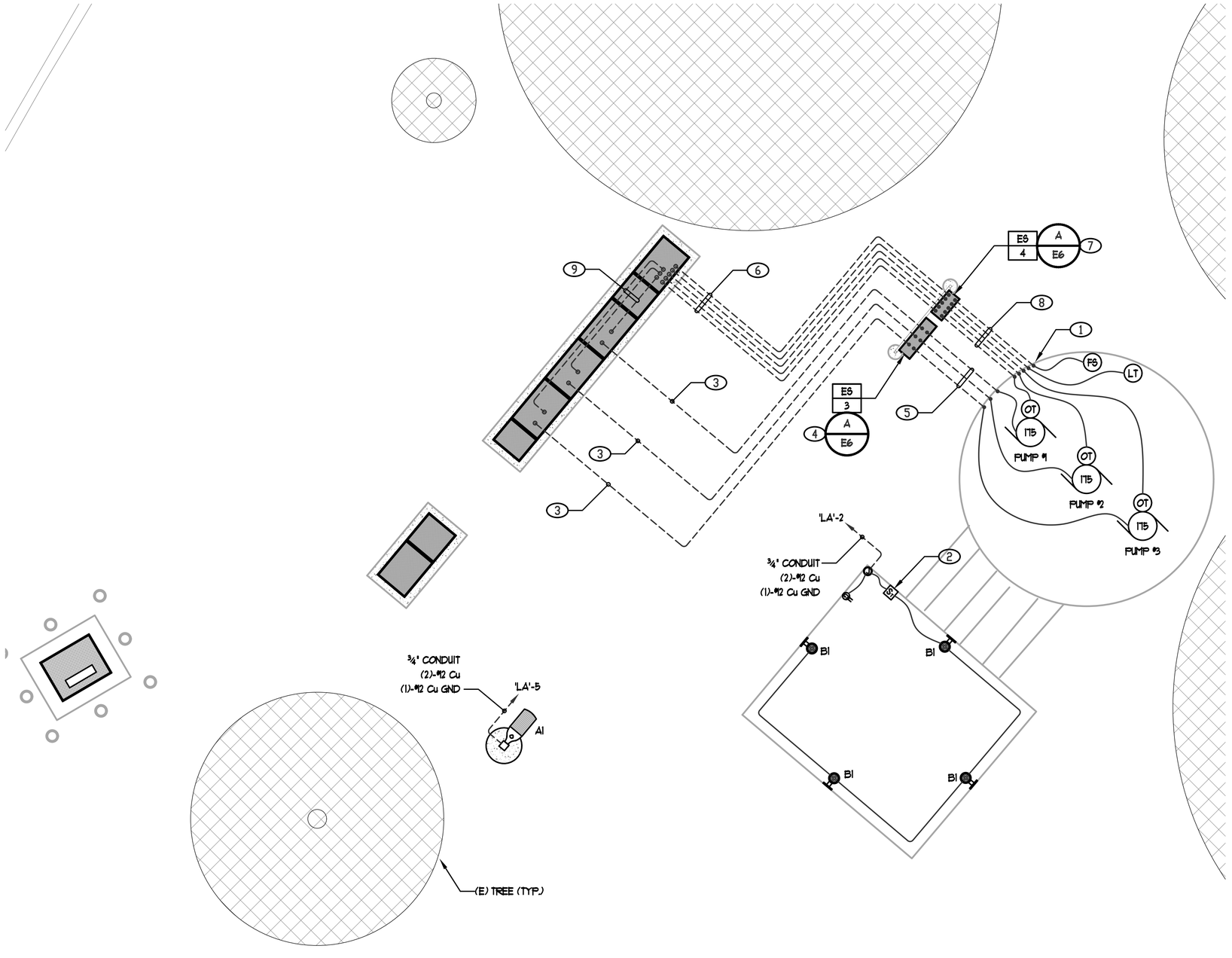
5. EXTEND ELECTRICAL CONDUITS FOR PUMP MOTOR LEADS UNDERGROUND FROM LINE-VOLTAGE TERMINATION CABINET INTO WET-WELL. COORDINATE WITH PUMP SUPPLIER AS REQUIRED TO EXTEND LINE-VOLTAGE MOTOR LEADS FROM PUMP MOTOR TO LINE-VOLTAGE TERMINATION CABINET. TERMINATE LEDS AT LOAD-SIDE OF POWER TERMINAL BLOCK INSIDE CABINET (TYPICAL OF THREE).

6. EXTEND ELECTRICAL CONDUITS FOR LOW-VOLTAGE TELEMETRY ELEMENTS FROM MOTOR CONTROL CENTER RTU CABINET SECTION TO LOW-VOLTAGE TERMINATION CABINET. PULL CONDUCTORS PER RTU DIAGRAM (SHEET E5). TERMINATIONS BY OTHERS. TYPICAL OF FIVE CONDUITS (WITH CONDUCTORS).

7. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL TERMINATION CABINET FOR LOW-VOLTAGE TELEMETRY ELEMENTS WITHIN WET WELL INCLUDING INTRISNICALLY SAFE BARRIERS. PROVIDE AND INSTALL STRUCTURAL CHANNEL RACK FOR MOUNTING TERMINATION CABINET INCLUDING HARDWARE, NUTS AND BOLTS, ETC. PROVIDE AND INSTALL CONDUIT SEALS FOR ALL CONDUITS ENTERING WET-WELL.

8. EXTEND ELECTRICAL CONDUITS FOR LOW-VOLTAGE TELEMETRY ELEMENTS FROM LOW-VOLTAGE TERMINATION CABINET INTO WET-WELL. COORDINATE WITH PUMP SUPPLIER AS REQUIRED TO EXTEND LOW-VOLTAGE MOTOR SEAL LEADS FROM PUMP MOTOR TO LOW-VOLTAGE TERMINATION CABINET. PULL CONDUCTORS PER RTU DIAGRAM (SHEET E5). TERMINATIONS BY OTHERS.

9. PROVIDE AND INSTALL 1" ELECTRICAL CONDUITS FOR LOW-VOLTAGE MONITORING AND CONTROL FROM EACH VFD CABINET TO RTU CABINET (TYPICAL OF THREE CONDUITS). PULL CONDUCTORS PER RTU DIAGRAM (SHEET E5). TERMINATIONS BY OTHERS.



A ENLARGED SITE ELECTRICAL PLAN - LINE VOLTAGE
¼" = 1'-0"

REVISIONS

REV	DATE	DESCRIPTION	CHECKED	APPD

PROFESSIONAL ENGINEER — STATE OF NEVADA — GEORGE A. JENSEN — EXP: 06-30-2021 — ELECTRICAL — NO. 026459 — 7-20-2020

SCALE
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CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

ELECTRICAL SITE PLAN

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4852
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

E3
SHEET 35 OF 44

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SINGLE-LINE DIAGRAM NOTES

1. COORDINATE WITH SERVING UTILITY COMPANY AS REQUIRED FOR INSTALLATION OF NEW UTILITY SERVICE ENTRANCE. VERIFY LOCATION OF EXISTING UTILITY POLE. PROVIDE AND INSTALL WEATHER-HEAD, CONDUIT RISER, STRAPPING, ETC. AS REQUIRED. EXTEND NEW ELECTRICAL SERVICE ENTRANCE UNDERGROUND TO NEW UTILITY TRANSFORMER PER UTILITY WORK ORDER DRAWINGS.

2. COORDINATE WITH SERVING UTILITY COMPANY AS REQUIRED FOR INSTALLATION OF NEW UTILITY TRANSFORMER. VERIFY EXACT LOCATION. PROVIDE AND INSTALL CONCRETE TRANSFORMER PAD AND GROUNDING ROD PER UTILITY WORK ORDER DRAWINGS.

3. COORDINATE WITH SERVING UTILITY COMPANY AS REQUIRED FOR INSTALLATION OF NEW UTILITY SECONDARY. PROVIDE AND INSTALL THREE 4" CONDUITS FROM NEW UTILITY TRANSFORMER TO NEW MAIN ELECTRICAL SERVICE EQUIPMENT. INSTALL CONDUITS PER UTILITY WORK ORDER DRAWINGS.

4. COORDINATE WITH SERVING UTILITY COMPANY AND GENERAL CONTRACTOR AS REQUIRED FOR INSTALLATION OF NEW MAIN ELECTRICAL SERVICE EQUIPMENT. PROVIDE AND INSTALL NEW EQUIPMENT (INCLUDING SEISMIC CONTROL) COMPLETE PER MANUFACTURER'S INSTRUCTIONS. COORDINATE WITH GENERAL CONTRACTOR AS REQUIRED FOR INSTALLATION OF REINFORCED CONCRETE HOUSEKEEPING PAD.

5. ELECTRICAL CONTRACTOR SHALL GROUND MAIN ELECTRICAL SERVICE PER NEC ARTICLE 250. PROVIDE AND INSTALL MAIN BONDING JUMPER SIZED IN ACCORDANCE WITH NEC TABLE 250.102(C)(1) AND BOND SERVICE EQUIPMENT GROUND-BUS TO SERVICE EQUIPMENT NEUTRAL BUS PER NEC 250.28. PROVIDE AND INSTALL #3/0 Cu GROUNDING ELECTRODE CONDUCTOR AND BOND TO SERVICE EQUIPMENT GROUND-BUS AND ALL AVAILABLE APPROVED GROUNDING ELECTRODE SYSTEMS PER NEC 250.53 AS FOLLOWS:
   1. METAL UNDERGROUND WATER PIPING SYSTEMS (250.53(A)(1)).
   2. METAL FRAME OF THE BUILDING OR STRUCTURE (250.53(A)(2)).
   3. CONCRETE ENCASED ELECTRODE (250.53(A)(3)).
   4. GROUNDING RING SYSTEM (250.53(A)(4)).
   5. ROD AND PIPE ELECTRODE SYSTEMS (250.53(1)(5).

6. MAIN CIRCUIT BREAKER SHALL BE PERMANENTLY MARKED/LABELED AS "SERVICE DISCONNECT" IN ACCORDANCE WITH NEC 230.70(B).

7. TERMINATE ELECTRICAL FEEDER AT EACH VFD FOR LIFT STATION PUMPS PER MANUFACTURER'S INSTRUCTIONS.

Main Electrical Service Load Calculation

Position No.	Description	Overcurrent Protection	Electrical Load (kVA)
1	PUMP #1 VFD	INTEGRAL DISCONNECT	216.73
2	PUMP #2 VFD	INTEGRAL DISCONNECT	216.73
3	PUMP #3 VFD	INTEGRAL DISCONNECT	216.73
4	TRANSFORMER 'TA'/PANEL 'LA'	30-AMP, 3-POLE CIRCUIT BREAKER	10.00
	Total Electrical Load (kVA):		**660.20**
	Average Line Current (Amps) @ 480Y/277 Volt, 3ϕ		**795.04**

Three Phase Short Circuit Current Calculation

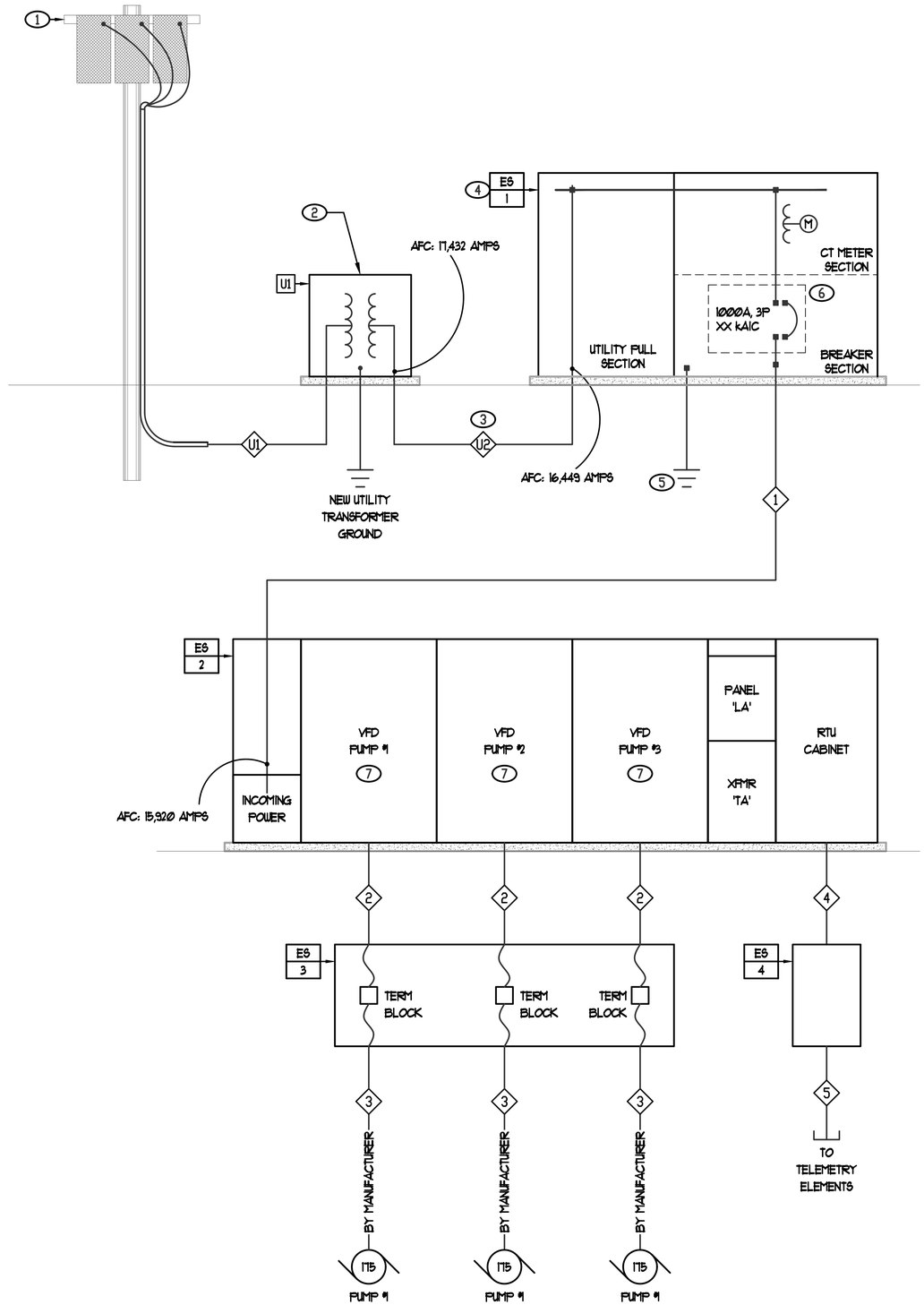
Utility Transformer Secondary[1]	
Transformer Rating (kVA):	750
Transformer Impedance (%Z)[2,3]:	5.75
Transformer Secondary Voltage:	480
Total Available Fault Current at Utility Transformer Secondary (Amps):	**17,432**
Utility Secondary Conductor System	
Secondary Composition (Material):	Aluminum
Secondary Composition (Quantity of conductors per Phase):	2
Secondary Composition (Size of Conductors per Parallel Set - AWG):	750
Secondary Composition (Conduit Material):	PVC
Secondary Resistance (Ohms-to-Neutral/1000-feet)[4]:	0.029
Conductor Reactance (Ohms-to-Neutral/1000-feet)[4]:	0.038
Secondary Length (feet):	50
Total Available Fault Current at Main Electrical Service Equipment (Amps):	**16,449**

Notes:
1. Assumes an infinite current on primary bus.
2. Maximum of -10% tolerance included.
3. Transformer impedances taken from published utility standards.
4. Resistance/Reactance taken from NEC Chapter 9 Table 9.

Electrical Feeder Schedule
by Jensen Engineering, Inc.

Feeder No.	Source	Destination	Length	OCPD Rating	Connected Current	Voltage & Phase	Conduit Qty.	Conduit Size	Conduit Material	Conductors per Conduit Type	Qty.	Size (AWG	Material	Zc (Ω)	Voltage Drop VDROP	Voltage Drop %	Notes
U1	EXISTING UTILITY POWER POLE	NEW UTILITY TRANSFORMER	125 Feet	Amps	Amps		1	4"	PVC	Phase:							CONDUIT ONLY BY CONTRACTOR. CONDUCTORS BY UTILITY.
										Neutral:							
										Ground:							
U2	NEW UTILITY TRANSFORMER	NEW MAIN ELECTRICAL SERVICE EQUIPMENT	30 Feet	Amps	Amps		3	4"	PVC	Phase:							CONDUIT ONLY BY CONTRACTOR. CONDUCTORS BY UTILITY.
										Neutral:							
										Ground:							
1	NEW MAIN ELECTRICAL SERVICE EQUIPMENT	NEW MOTOR CONTROL CENTER	20 Feet	1000 Amps	793 Amps	480Y/277 V, 3ϕ	3	4"	PVC	Phase:	3	400	Copper	0.049	0.45 L - L	0.09	
										Neutral:	1	400					
										Ground:	1	2/0					
2	NEW MOTOR CONTROL CENTER (VFD CABINETS)	NEW LINE-VOLTAGE TERMINATION CABINET	50 Feet	250 Amps	218 Amps	480Y/277 V, 3ϕ	1	3"	PVC	Phase:	3	300	Copper	0.059	1.11 L - L	0.23	TYPICAL OF THREE CONDUITS
										Neutral:	1	300					
										Ground:	1	4					
3	NEW LINE-VOLTAGE TERMINATION CABINET	PUMP MOTOR IN WET-WELL	50 Feet	250 Amps	218 Amps	480Y/277 V, 3ϕ	2	3"	PVC	Phase:							TYPICAL OF THREE CONDUITS. CONDUIT BY CONTRACTOR. CABLES PER PUMP MANUFACTURER.
										Neutral:							
										Ground:					L - L		
4	NEW MOTOR CONTROL CENTER (RTU CABINET)	NEW LOW-VOLTAGE TERMINATION CABINET	50 Feet	Amps	Amps		1	1"	PVC	Phase:							TYPICAL OF FIVE CONDUITS. SEE RTU DIAGRAM FOR CABLING.
										Neutral:							
										Ground:							
5	NEW LOW-VOLTAGE TERMINATION CABINET	WET-WELL TELEMETRY ELEMENTS	50 Feet	Amps	Amps		1	1"	PVC	Phase:							TYPICAL OF FIVE CONDUITS. SEE RTU DIAGRAM FOR CABLING.
										Neutral:							
										Ground:							

Notes:
1. Voltage Drop calculated using Neher-McGrath Method.
2. Impedance taken from NEC/CEC Table 9; assumes power factor of 0.85.
3. Length estimated in feet for voltage drop only and shall not be used for pricing/bidding.
4. Conductors selected from NEC/CEC Table 310.15(b)(16), 75 degree columns.
5. Conduit Size is Trade Size, representing nominal Inside Diameter.



A MAIN ELECTRICAL SERVICE SINGLE-LINE DIAGRAM
NOT TO SCALE

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

PROFESSIONAL ENGINEER — STATE OF NEVADA — GEORGE A. JENSEN — EXP: 06-30-2021 — ELECTRICAL — NO. 026469 — 7-20-2020

SCALE | DESIGN BY: GAJ | DRAWN BY: TAS | CHECKED BY: GAJ | DATE: 7/20/2020 | PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

SINGLE-LINE DIAGRAM & SCHEDULES

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

E4

SHEET 36 OF 44

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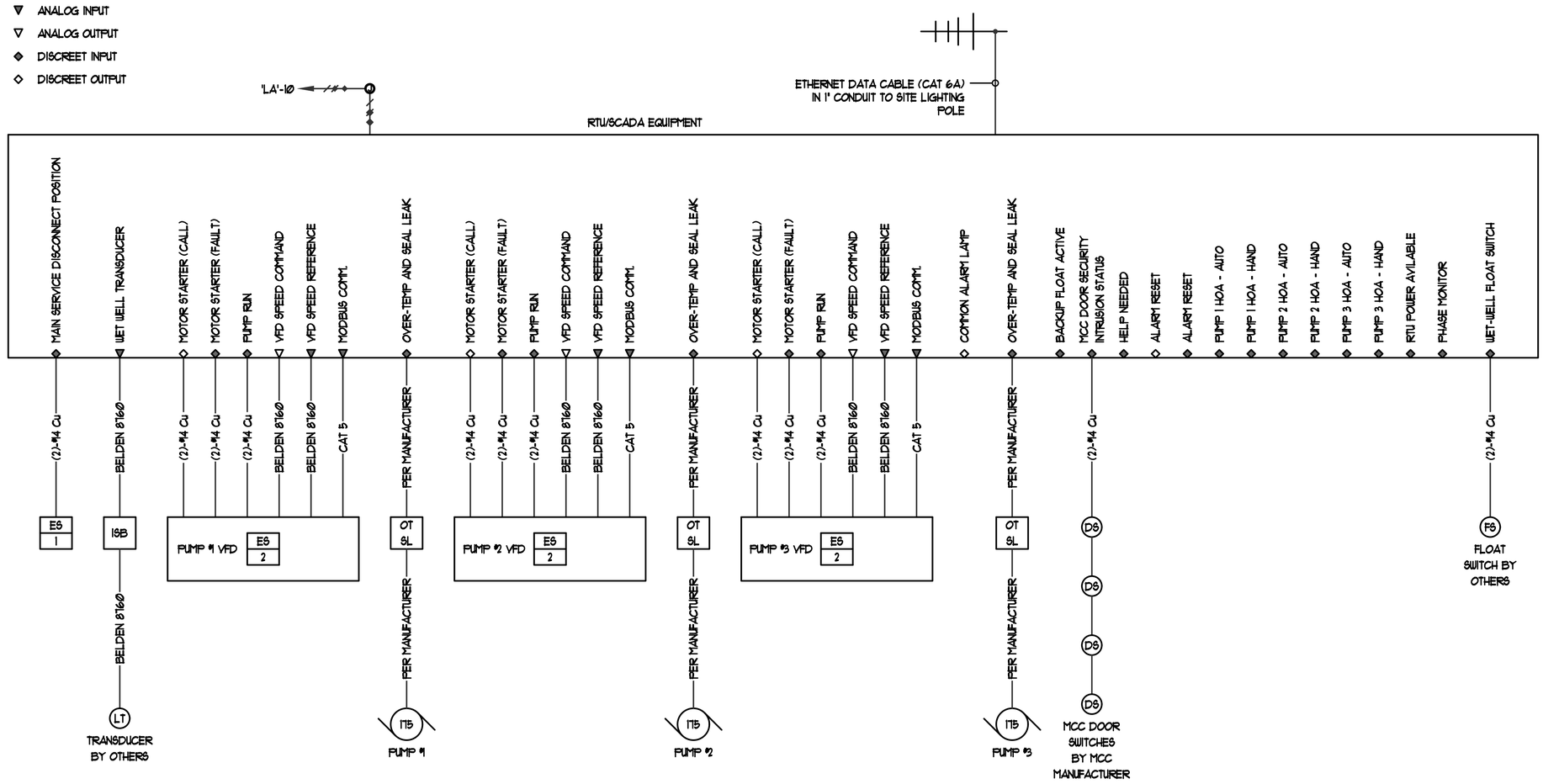
March 6, 2018 - 2:34 PM



A RTU/SCADA SINGLE-LINE DIAGRAM

NOT TO SCALE

SYSTEM COMPONENT REQUIREMENTS

CONTRACTOR SHALL PROVIDE AND INSTALL ALL SIGNAL CABLING/CONDUCTORS IN 1" CONDUIT.

ELECTRICAL CONTRACTOR SHALL PROVIDE ALL COMMISSIONING AND OPERATION/MAINTENANCE/ INSTRUCTION MANUALS AND PROVIDE INSTRUCTION FOR OPERATION OF ALL EQUIPMENT. ELECTRICAL CONTRACTOR SHALL SUBMIT MANUALS TO THIS ENGINEER FOR REVIEW AND APPROVAL.

ELECTRICAL CONTRACTOR AND SYSTEM INTEGRATOR SHALL PROVIDE TRAINING (MINIMUM TWO HOURS) FOR OWNER'S KEY PERSONNEL IN THE OPERATION OF SITE ELECTRICAL COMPONENTS.

ELECTRICAL CONTRACTOR SHALL PROVIDE ELECTRONIC VERSIONS OF ALL MANUFACTURER'S CUT-SHEETS/DATA-SHEETS FOR SCADA EQUIPMENT AND SHALL PROVIDE LAYOUTS, WIRING DIAGRAMS, ETC. FOR ALL NEW EQUIPMENT TO CCPUD FOR REVIEW AND APPROVAL PRIOR TO COMMENCEMENT OF WORK.

SYSTEM PERFORMANCE REQUIREMENTS

SCADA SYSTEM TO BE ALL INCLUSIVE FOR MONITORING, CONTROLLING, ALARM REPORTING, AND COMMUNICATION AS REQUIRED. INCLUDE ALL REQUIRED RELAYS, TERMINATION BLOCKS, WIRING, FUSES, CABINET AND CABINET BACK PANEL (INCLUDING SWING-OUT DOOR KIT), SURFACE MOUNTED NON-METALLIC SLOT WIRING DUCT, POWER SUPPLIES, BATTERY BACKUP (MINIMUM 24-HOURS) WITH CHARGER, CONVENIENCE RECEPTACLE, ETC.

ELECTRICAL COMPONENTS SHALL BE INSTALLED PER MANUFACTURER'S INSTRUCTIONS. ELECTRICAL CONTRACTOR SHALL DEMONSTRATE SATISFACTORY OPERATION OF ELECTRICAL COMPONENTS.

CONTRACTOR RESPONSIBILITY

ELECTRICAL CONTRACTOR SHALL COORDAINTE WITH SYSTEM INTEGRATION TEAM AS REQUIRED FOR A COMPLETE SYSTEM. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL CONDUIT AND CABLING FOR LOW VOLTAGE TELEMETRY INSTRUMENTS. SYSTEM INTEGRATOR SHALL PROVIDE TELEMETRY INSTRUMENTS AND TERMINATION OF CABLING.

ELECTRICAL CONTRACTOR SHALL PROVIDE RTU BACK-PANEL TO OWNER NO FEWER THAN 60 DAYS PRIOR TO SYSTEM STARTUP.

REVISIONS				
REV	DATE	DESCRIPTION	CHECKED	APPD

PROFESSIONAL ENGINEER — STATE OF NEVADA — GEORGE A. JENSEN — EXP: 06-30-2021 — ELECTRICAL — NO. 026469

7-20-2020

SCALE

DESIGN BY: GAJ | DRAWN BY: TAS

DATE: 7/20/2020 | CHECKED BY: GAJ

PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

RTU SYSTEM DIAGRAM

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4822
Tel: +1.775.826.1822 | Fax: +1.775.851.1697

E5

SHEET 37 OF 44

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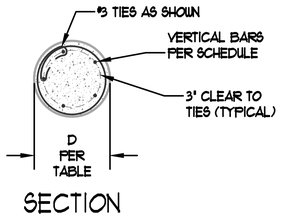

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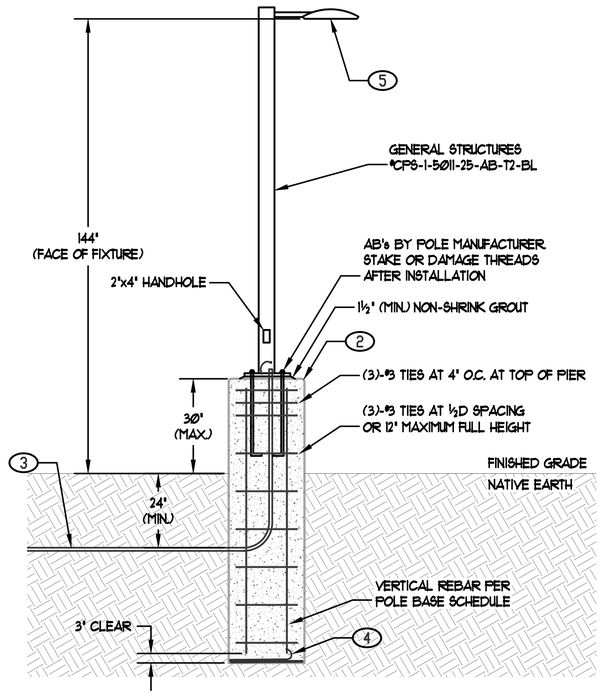


POLE MOUNTED LIGHTING ELECTRICAL DETAIL NOTES

1. COORDINATE WITH GENERAL CONTRACTOR AS REQUIRED FOR COMPLETE INSTALLATION OF NEW POLE-MOUNTED LIGHTING. PROVIDE AND INSTALL CONCRETE POLE BASE, LIGHTING FIXTURE, LIGHTING POLE, ANCHORING, MOUNTING HARDWARE, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION.

2. NEW CONCRETE POLE BASE SHALL BE COMPRISED OF 4500 PSI AIR ENTRAINED CONCRETE. NO SPECIAL INSPECTION REQUIRED BECAUSE 2500 PSI DESIGN STRESS USED. FOOTING SHALL BE DRILLED INTO UNDISTURBED NATIVE SOIL. GEOTECHNICAL ENGINEER TO OBSERVE PRIOR TO PLACEMENT OF REBAR CAGE. SACK AND PATCH SO EXPOSED SURFACE IS SMOOTH.

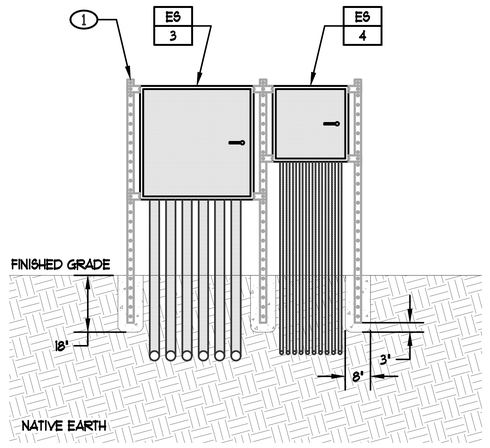
3. COORDINATE WITH GENERAL CONTRACTOR AS REQUIRED FOR INSTALLATION OF NEW UNDERGROUND BRANCH CIRCUIT FOR POLE MOUNTED LIGHTING. CONDUIT SHALL BE INSTALLED 24" BFG. EXTEND BRANCH CIRCUIT WIRING UP LIGHTING POLE TO NEW LIGHT FIXTURE AS REQUIRED. PROVIDE GROUND CONNECTION FOR LIGHTING POLE, REBAR INSIDE CONCRETE BASE, MOUNTING HARDWARE, AND LIGHTING FIXTURE AS REQUIRED.

4. PROVIDE AND INSTALL 15' OF SPIRAL COIL BARE #4 Cu LIGHTNING GROUNDING ELECTRODE BELOW CONCRETE IN DIRECT CONTACT WITH EARTH AND IRREVERSIBLY BOND TO BOTH THE STEEL REINFORCING AND POLE SHAFT.

5. PROVIDE AND INSTALL NEW LIGHTING FIXTURE AND ALL REQUIRED MOUNTING HARDWARE. TOTAL EPA (SINGLE-FIXTURE): 1.01 sq.ft. TOTAL WEIGHT (SINGLE-FIXTURE): 27 lbs. TOTAL COMBINED EPA FOR ALL LIGHTING FIXTURES NOT TO EXCEED 6.0 sq.ft.

B POLE MOUNTED LIGHTING ELECTRICAL DETAIL

½" = 1'-0"



A TERMINATION CABINET DETAILS

1/2" = 1'-0"

TERMINATION CABINET DETAIL NOTES

1. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL TERMINATION CABINET FOR ELECTRICAL ELEMENTS WITHIN WET WELL INCLUDING INSTRINSICALLY SAFE BARRIERS, TERMINAL BLOCKS, ETC. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL STRUCTURAL CHANNEL RACK FOR MOUNTING TERMINATION CABINET INCLUDING HARDWARE, NUTS AND BOLTS, ETC. PROVIDE AND INSTALL CONDUIT SEALS FOR ALL CONDUITS ENTERING WET-WELL AND DRY-WELL.

2. ELECTRICAL CONTRACTOR SHALL EXTEND LINE-VOLTAGE CONDUCTORS FOR SUBMERSIBLE PUMPS FROM VFDs WITHIN MCC TO TERMINATION CABINET AND TERMINATE ON SINGLE-BARREL LINE-SIDE OF TERMINAL BLOCKS. TERMINATE MANUFACTURER'S CABLING FROM SUBMERSIBLE PUMPS TO LOAD-SIDE (TWO-BARREL) OF TERMINAL BLOCKS. TYPICAL OF THREE.

3. ELECTRICAL CONTRACTOR SHALL EXTEND LOW-VOLTAGE CONDUCTORS FOR WET- WELL TELEMETRY ELEMENTS FROM WET-WELL TO TERMINATION CABINET. EXTEND LOW-VOLTAGE CONDUCTORS FOR WET-WELL TELEMETRY ELEMENTS FROM RTU ENCLOSURE (INSIDE MCC) TO TERMINATION CABINET. TERMINATIONS BY SYSTEM INTEGRATOR.

4. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL EYS CONDUIT SEALS FOR ALL CONDUITS ENTERING WET-WELL OR DRY-VAULT.

1-Phase, 3-Wire, Electrical Panelboard Schedule by Jensen Engineering, Inc.

Project Name:	PRATER STORM DRAIN		Line to Neutral Voltage:	120				Bus Material:	COPPER							Short Circuit Withstand Rating:							
Panel Name:	LA		Line to Line Voltage:	240				Bus Rating:	125 AMP							New or Existing:	NEW						
Panel Location:	MOTOR CONTROL CENTER		Main Breaker or Lug Only:	BREAKER				Lug/Breaker Rating:	40 Amp							Mounting:	SURFACE						

Ckt. No.	Load (VA)		Description	Load Power Factor	One-Way Ckt Length (ft)	Wire Size (AWG)	Corrected Z (Ω-to-Neutral)	VDROP (%)	Breaker Poles	Breaker Trip	Phase A	Phase B	Breaker Trip	Breaker Poles	VDROP (%)	Corrected Z (Ω-to-Neutral)	Wire Size (AWG)	One-Way Ckt Length (ft)	Load Power Factor	Description	Load (VA)		Ckt. No.
1			MAIN BREAKER						2	40	●		20	1	0.35	1.25	12	50	0.6	DRY-VAULT LIGHTING/POWER	400		2
3												●	20	1	0.09	1.25	12	25	0.6	RTU POWER SUPPLY		200	4
5	100		POLE MOUNTED LIGHTING	0.7	25	12	1.44	0.05	1	20	●		20	1									6
7									1	20		●	20	1									8
9									1	20	●		20	1									10
11									1	20		●	20	1									12
	100	0	Total Load (VA)	Notes:																			

Total Load (VA)	400	200
Combined Total Load (VA)	500	200
Average Line Current (Amps)	4.17	1.67
Average Total Current (Amps)	2.92	
**Total Connected Load (kVA)	0.70	

REV	DATE	DESCRIPTION	CHECKED	APPD
		REVISIONS		

PROFESSIONAL ENGINEER — STATE OF NEVADA — GEORGE A. JENSEN — EXP: 06-30-2021 — ELECTRICAL — NO. 026469 — 7-20-2020

SCALE | DESIGN BY: GAJ | DRAWN BY: TAS | CHECKED BY: GAJ | DATE: 7/20/2020 | PROJECT NUMBER: 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

RTU SYSTEM DIAGRAM

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

E6

LEGEND SHEET

ABBREVIATIONS

(E)	Existing At Time Of Project
(F)	Future (Not Part Of Project)
A	Ampere
AC	Alternating Current
AI	Analog Input
AO	Analog Output
ATS	Automatic Transfer Switch
BAT	Battery
CB	Circuit Breaker
CP	Control Panel
CR	Control Relay
DC	Direct Current
DI	Discrete Input or Digital Input
DI/O	Configurable Digital Input or Output
DO	Discrete Output or Digital Output
DPDT	Switch, Double Pole, Double Throw
DPST	Switch, Double Pole, Single Throw
FC	Fail Closed
FLP	Fail Last Position
FO	Fail Open
GND	Ground
HMI	Human Machine Interface
HOA	HAND-OFF-AUTO
I/O	Input/Output
ISB	Intrinsically Safe Barrier
ISR	Intrinsically Safe Relay
JB	Junction Box
L/S	Lift Station
LCP	Local Control Panel
LOR	LOCAL-OFF-REMOTE
LOS	LOCAL-OFF-START
LR	LOCAL-REMOTE
mA	Milliamperes
MAX	Maximum
MCC	Motor Control Center
MIN	Minimum
MRTU	Master RTU
NC	Normally Closed
NO	Normally Open
NTS	Not To Scale
OIT	Operator Interface Terminal
OO	OFF-ON
PB	Pushbutton
PC	Personal Computer
PCIS	Process Control & Instrumentation System
PCP	Process Control Panel
PCS	Process Control System
PID	(Control) Proportional/Integral/Derivative
PID	(Diagram)Process & Instrumentation Diagram
PLC	Programmable Logic Controller
POD	Power Output Distribution
POT	Potentiometer
PTT	Push To Test
RTU	Remote Terminal Unit
RVSS	Reduced Voltage Soft Start
SCADA	Supervisory Control and Data Acquisition
SPDT	Switch, Single Pole, Double Throw
SPST	Switch, Single Pole, Single Throw
SS	START-STOP
SV	Solenoid Valve
TB	Terminal Block
TDR	Time Delay Relay
TP	Twisted Pair
TS	Terminal Strip
TSP	Twisted Shielded Pair
TVSS	Transient Voltage Surge Suppressor
TYP	Typical
UPS	Uninterruptible Power Supply
V	Vent
VA	Volt-Ampere
VAC	Volts AC
VDC	Volts DC
VFD	Variable Frequency Drive
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant
XDCR	Transducer
XFMR	Transformer

SYMBOLS

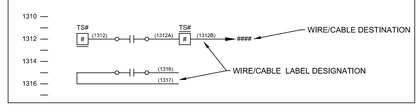
- 3 Phase Motor
- Alarm
- Battery
- Circuit Breaker
- Current Monitor
- Diode
- Earth Ground
- Indicating Lamp, Color as Indicated
- Indicating Lamp, Push to Test, Color as Indicated
- Level - Float
- Relay or Mechanical Contact Normally Open
- Relay or Mechanical Contact Normally Closed
- Overload
- Relay (K1)
- Solenoid
- Varistor
- Push Button, Momentary, Normally Open
- Push Button, Momentary, Normally Closed
- Switch, Normally Open
- Switch, Normally Closed
- Double Pole Switch
- Multipoint Switch
- Selector Switch, 3 Position (H O A)
- Momentary Toggle Switch, 3 Position Return to Center
- Flow Switch, Close on Rise
- Flow Switch, Open on Rise
- Level Switch, Close On Rising
- Level Switch, Open On Rising
- Limit Switch, Close on Rise
- Limit Switch, Open on Rise
- Limit Switch, Held Open, Close on Lower
- Limit Switch, Held Closed, Open on Lower
- Time Delay After energizing, Normally Open
- Time Delay After Energizing, Normally Closed
- Time Delay After De-Energizing, Normally Open
- Time Delay After De-Energizing, Normally Closed
- Pressure Switch, Close on Rise
- Pressure Switch, Open on Rise
- Temperature Switch, Close on Rise
- Temperature Switch, Open on Rise

WIRE COLOR DESIGNATIONS

	DC	1Φ 110-120VAC	3Φ 120-250VAC	3Φ 277-480VAC
RED	+12 VDC POWER		LINE POWER 2 (L2)	
ORANGE	+24 VDC POWER (EXCLUDING VLOOP)			LINE POWER 2 (L2)
PINK	+24 VDC VLOOP			
WHITE	COMMON (-)	NEUTRAL (N)	NEUTRAL (N)	NEUTRAL (N)
YELLOW	FOREIGN SUPPLY OR SWITCHED			LINE POWER 3 (L3)
GREY	EQUIPMENT SPECIFIC			
BLACK		LINE POWER (L)	LINE POWER 1 (L1)	
GREEN	GROUND (G)	GROUND (G)	GROUND (G)	GROUND (G)
BLUE	DC CONTROL OR I/O		LINE POWER 3 (L3)	
BROWN				LINE POWER 1 (L1)

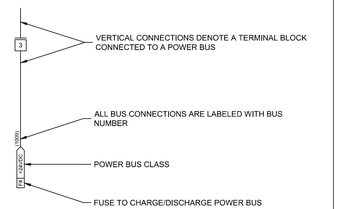
WIRE LABELS

WIRES LABELED BASED ON DRAWING GRID LOCATION FROM LEFT TO RIGHT
WIRE NUMBER ORIGINATES ON FIRST INSTANCE OF DRAWING
ETHERNET SWITCH WIRE NUMBER ORIGINATES BASED ON EQUIPMENT CONNECTION
SHRINK LABELS INSTALLED ON ALL MARKED CONNECTIONS

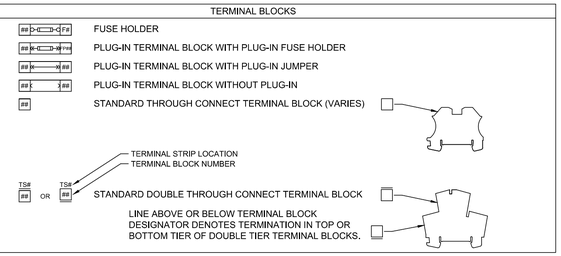


COMMON USAGE OF SYMBOLS FOR POWER BUS

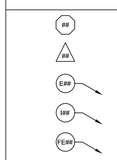
1	+12 VDC (UPPER TIER ON DOUBLE)
2	COMMON (LOWER TIER ON DOUBLE)
3	+24 VDC (UPPER TIER ON DOUBLE)
GB	GROUND BAR
———	INTERNAL EQUIPMENT/TERMINATION
- - - -	FIELD EQUIPMENT/TERMINATION
○	WIRE CONNECTION



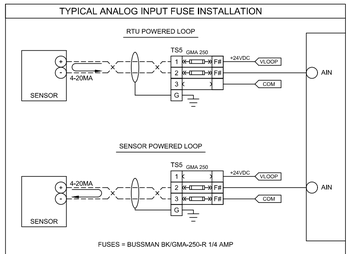
TERMINAL BLOCKS



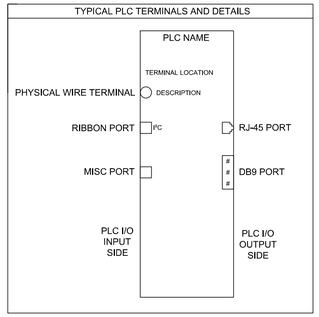
DRAWING CALLOUTS SYMBOLS



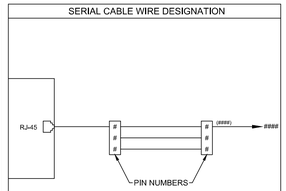
TYPICAL ANALOG INPUT FUSE INSTALLATION



TYPICAL PLC TERMINALS AND DETAILS



SERIAL CABLE WIRE DESIGNATION



REV	DATE	DESCRIPTION	CHECKED	APP'D
		REVISIONS		

PROFESSIONAL ENGINEER - STATE OF NEVADA
D. ANDREW WARD
Exp: 6-30-2022
MECHANICAL
No. 026993
7-22-2020

SCALE
DESIGN BY: DAW
DRAWN BY: MCH
CHECKED BY: DAW
DATE: 4/12/2019
PROJECT NUMBER: 10005771.174

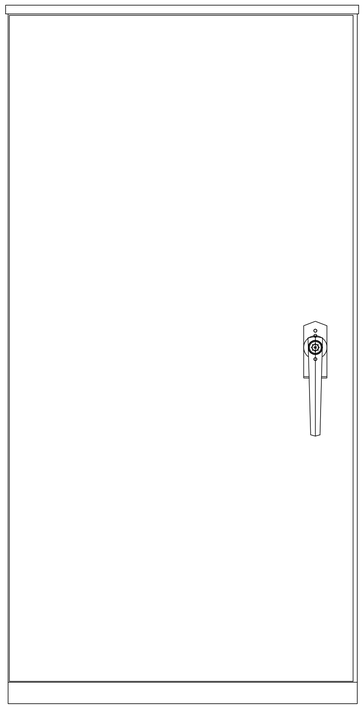
CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

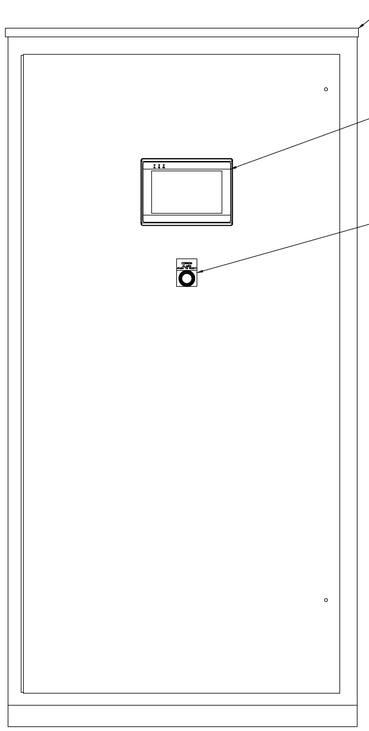
ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1887

11

NOTE: ENCLOSURE VIEWS SHOWN HERE ARE NOT NECESSARILY WHAT IS REQUIRED OR NEEDED FOR THIS PROJECT. RTU WILL BE PLACED IN AVAILABLE SECTION AS TBD.

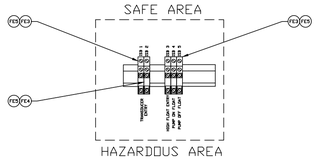
DEADFRONT LAYOUT





BACKPANEL LAYOUT

INTRINSICALLY SAFE AREA
LOCATED IN MCC



EQUIPMENT BILL OF MATERIALS

Item	Description	Manufacturer	Part #	QTY	Notes
E1	ENCLOSURE			1	SEE ELECTRICAL DRAWINGS
E2	BACKPANEL			1	SEE ELECTRICAL DRAWINGS
E3	PLC SCADAPACK 357	SCHNEIDER ELECTRIC	TBUP357-1A20-AB20S	1	
E4	ETHERNET SWITCH MANAGED	MOXA	SDS-3008-T	1	
E5	POWER SUPPLY 1606-XLP100E	ALLEN-BRADLEY	1606-XLP-100E	1	
E6	OIT MAPLE HMI5070P 7" SCREEN	MAPLE SYSTEMS	HMI5070P	1	
E7	BATTERY CHARGER 73-091AA	SCS	73-091AA	1	
E8	BOX DIN MT ACC SPARE PARTS SPE	ITC PRODUCTS	799-103 BC-G	1	
E9	TERMINAL BLOCK 1492-J4Y YELLOW	ALLEN-BRADLEY	1492-J4-Y	1	
E10	TERMINAL BLOCK 1492-J3P PLUGIN	ALLEN-BRADLEY	1492-J3P	41	
E11	FUSE HOLDER 1492-FPK2 PLUG IN	ALLEN-BRADLEY	1492-FPK2	28	
E12	TERMINAL BLOCK 1492-JD3 DOUBL	ALLEN-BRADLEY	1492-JD3	46	
E13	TERMINAL BLOCK 1492-H6 FUSE HO	ALLEN-BRADLEY	1492-H6	8	
E14	TERMINAL BLOCK 1492-JD3Y DOUBL	ALLEN-BRADLEY	1492- JD3Y	8	
E15	TERMINAL BLOCK 1492-EAJ35 END	ALLEN-BRADLEY	1492-EAJ35	10	
E16	TERMINAL BLOCK 1492-JG3 GROUND	ALLEN-BRADLEY	1492-JG3	9	
E17	TERMINAL BLOCK 1492-N37 FUSE P	ALLEN-BRADLEY	1492-N37	4	
E18	TERMINAL BLOCK 1492-J3	ALLEN-BRADLEY	1492-J3	4	
E19	RELAY RH1B-ULCDC24V	IDEC	RH1B-ULCDC24V	9	
E20	RELAY SOCKET SH1B-05	IDEC	SH1B-05	9	
E21	800T EMERGENCY STOP / PUSH PULL	ALLEN-BRADLEY	800TC-FX6A5	1	
E22	RED LED 2 N.O. 2 N.C.	ALLEN-BRADLEY	800T-QTH2RG1	1	
E23	EATON GROUND BAR	EATON	GBK13	1	
E24	AC LINE PROTECTOR EDCO	EDCO	HSP121BT-1RU	1	
E25	PEPWAVE CELLULAR ROUTER	PEPLINK	MAX-BR1-LTE-US-T	1	
E26					

INSTRUMENT BILL OF MATERIALS

Item	Description	Manufacturer	Part #	QTY	Notes
I1	FLOAT SWCH MJK 7030 W/CNTRWT	MJK	202814	3	
I2	LEVEL TRANSDUCER 3400 0-30 FT	MJK	209925	1	

FIELD EQUIPMENT BILL OF MATERIALS

Item	Description	Manufacturer	Part #	QTY	Notes
FE1	BATTERY 12V 35AH	DURACELL	SLAA12-35C	2	
FE2	SWITCH DOOR GRI 200 36HD MAGNE	GRI	200-36HD	TBD	QTY AS REQUIRED - ONE PER DOOR
FE3	BARRIER INTRINSICALLY SAFE	GEMS	114175	4	LOCATED IN PUMP TERMINATION CABINET
FE4	BARRIER INTRINSICALLY SAFE	GEMS	114166	1	LOCATED IN PUMP TERMINATION CABINET
FE5	ISB MOUNTING CLIP	GEMS	113530	3	LOCATED IN PUMP TERMINATION CABINET

REVISIONS				
REV	DATE	DESCRIPTION	CHECKED	APPD

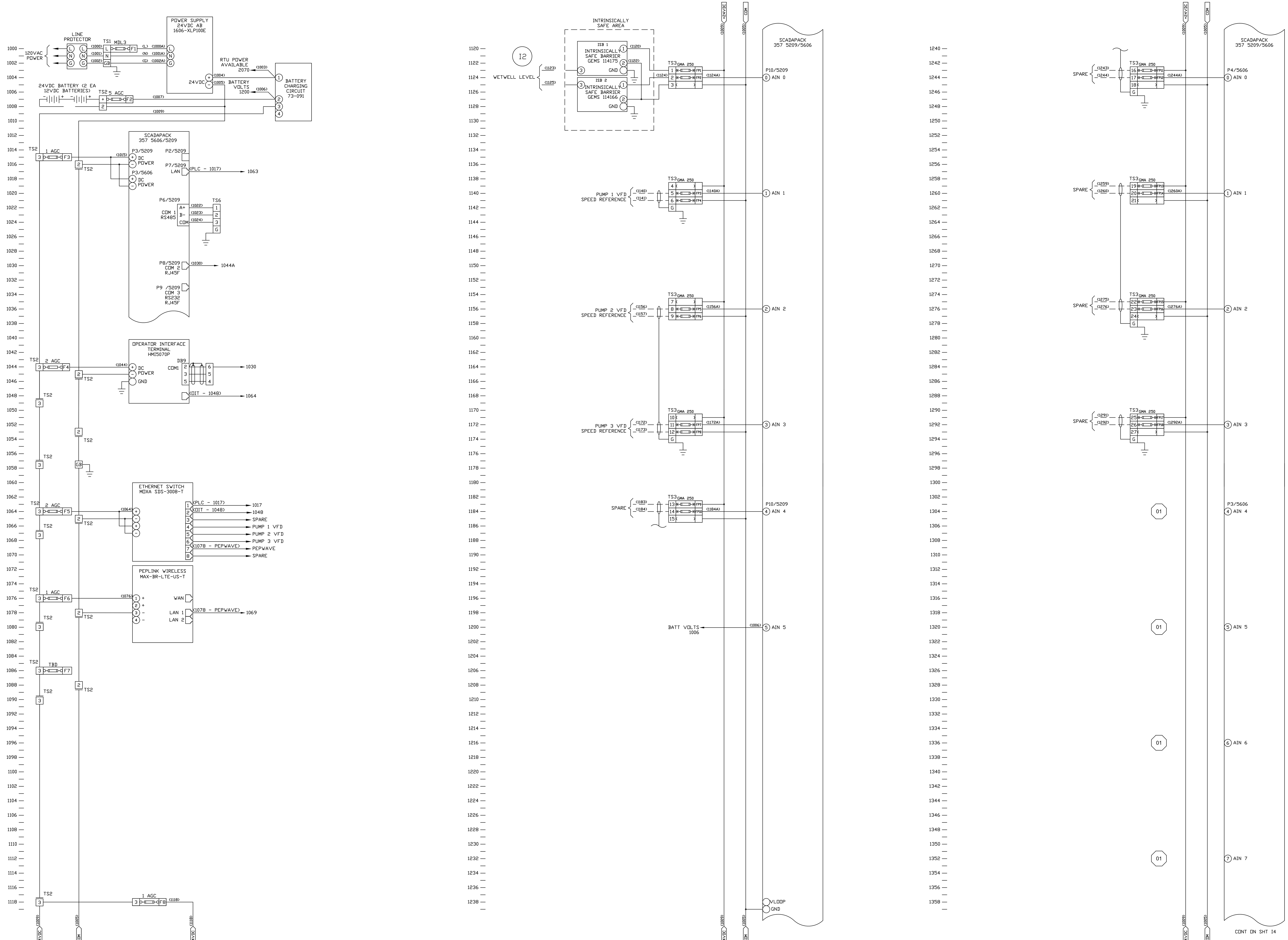
PROFESSIONAL ENGINEER - STATE OF NEVADA
D. ANDREW WARD
Exp: 6-30-2022
MECHANICAL
No. 026951
7-22-2020

SCALE
DESIGN BY DAW
DRAWN BY MCH
CHECKED BY DAW
DATE 4/12/2019
PROJECT NUMBER 1000571174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

ATKINS
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.826.1622 | Fax: +1.775.851.1687

12



01 SPARE ANALOG INPUTS

DESCRIPTION	CHECKED	APPD
REVISIONS		

REV DATE

PROFESSIONAL ENGINEER - STATE OF NEVADA
D. ANDREW WARD
Exp:6-30-2022
MECHANICAL
No. 026992
7-22-2020

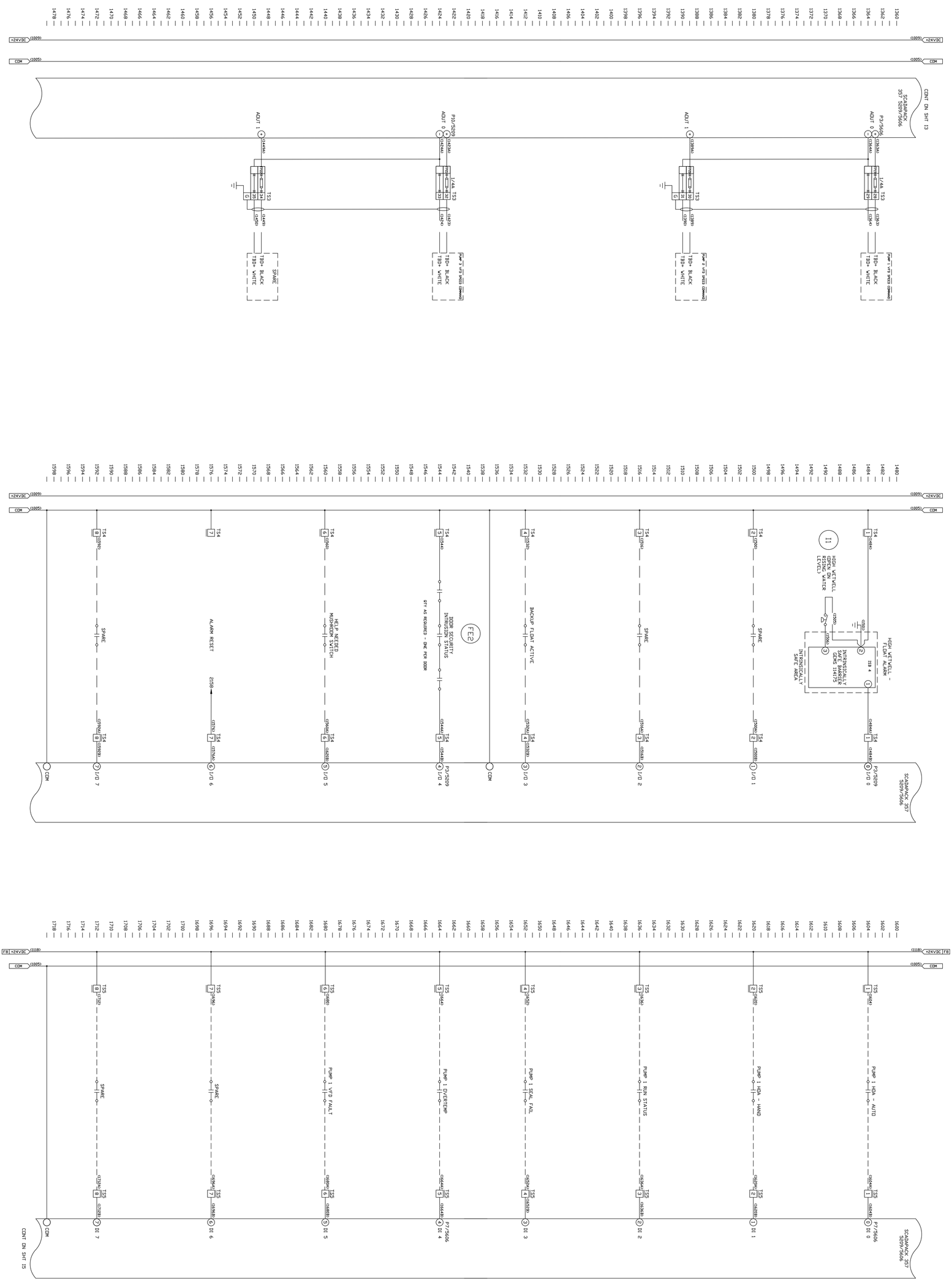
SCALE
DESIGN BY DAW
DRAWN BY MCH
CHECKED BY DAW
DATE 4/12/2019
PROJECT NUMBER 100057174

CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
DESIGN PROJECT

ATKINS

10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882
Tel: +1.775.828.1622 | Fax: +1.775.851.1687

I3



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CITY OF SPARKS
EAST PRATER WAY STORM DRAIN DESIGN PROJECT

SCALE	
DESIGN BY: DAW	DRAWN BY: MCH
DATE: 4/12/2019	CHECKED BY: DAW
PROJECT NUMBER: 100057174	

PROFESSIONAL ENGINEER - STATE OF NEVADA
D. ANDREW WARD
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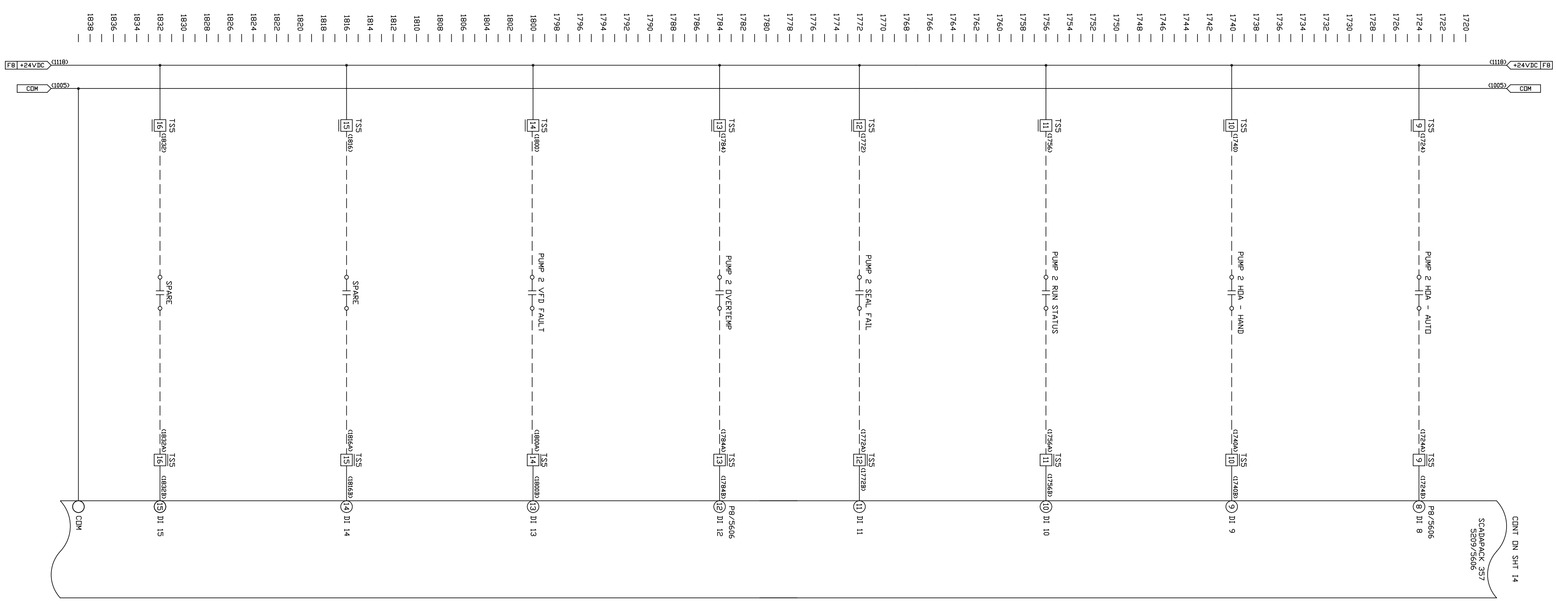
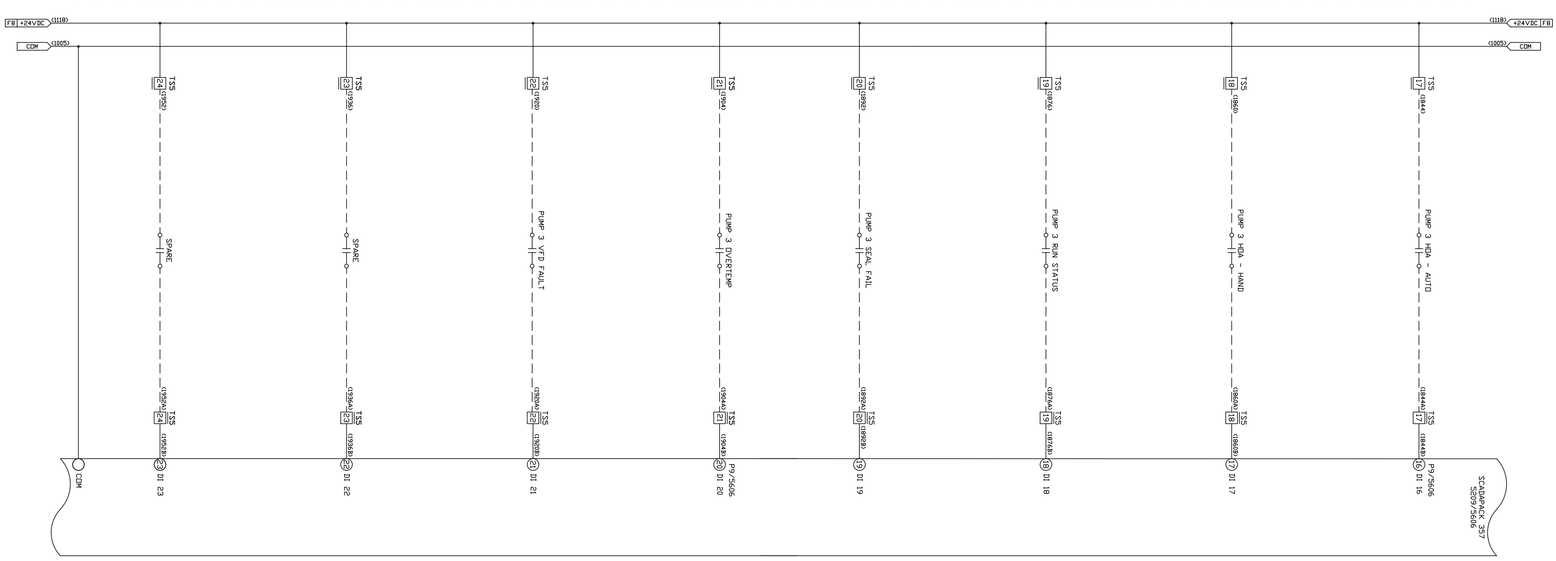
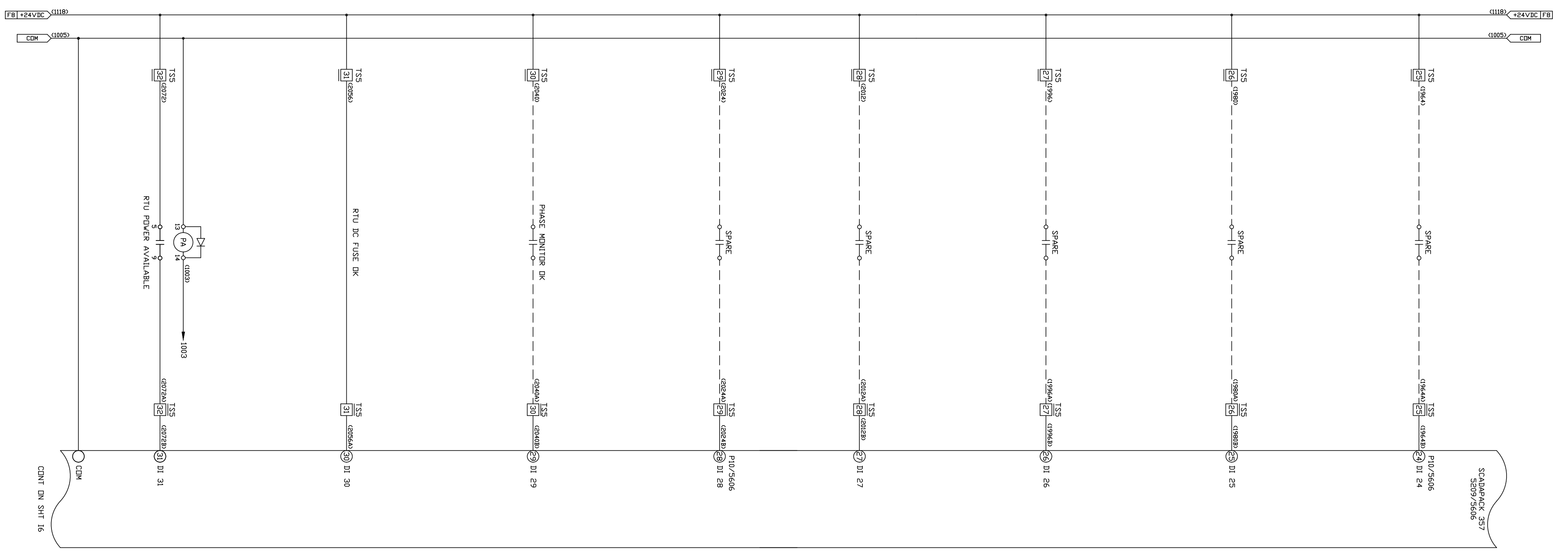
		REVISIONS		







ATKINS	CITY OF SPARKS EAST PRATER WAY STORM DRAIN DESIGN PROJECT
10509 Professional Circle, Suite 102 | Reno, Nevada 89521-4882 Tel: +1,775,828,1622 | Fax: +1,775,851,1687	SCALE DESIGN BY: DAW · DRAWN BY: MCH DATE: 4/12/2019 · CHECKED BY: DAW PROJECT NUMBER: 100057174

D. ANDREW WARD — PROFESSIONAL ENGINEER-STATE OF NEVADA — Exp:6-30-2022 — MECHANICAL — No. 026992

7-22-2020

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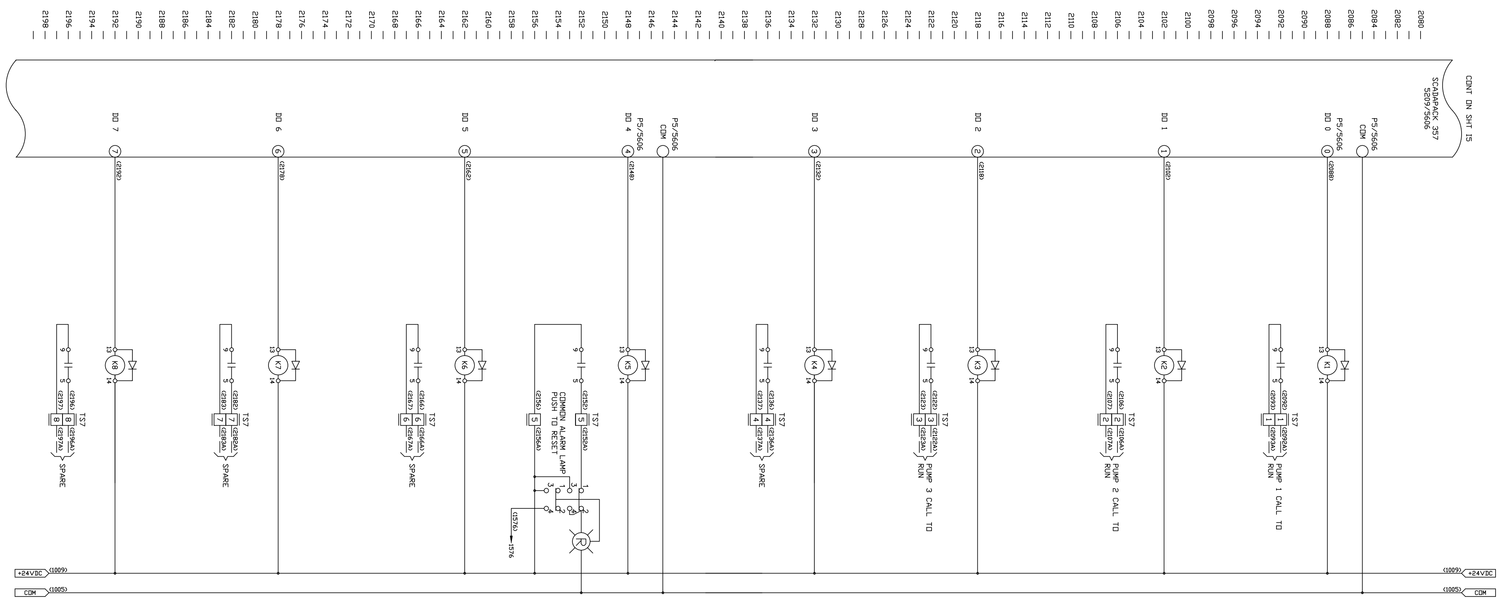
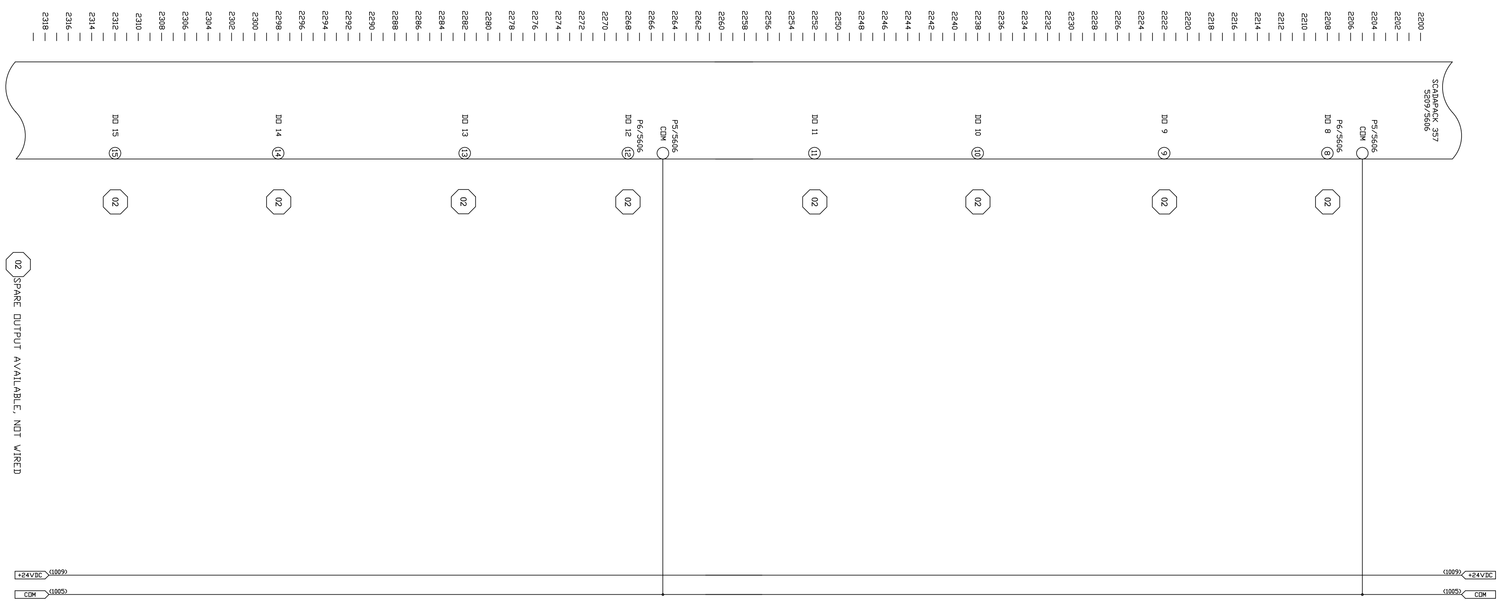
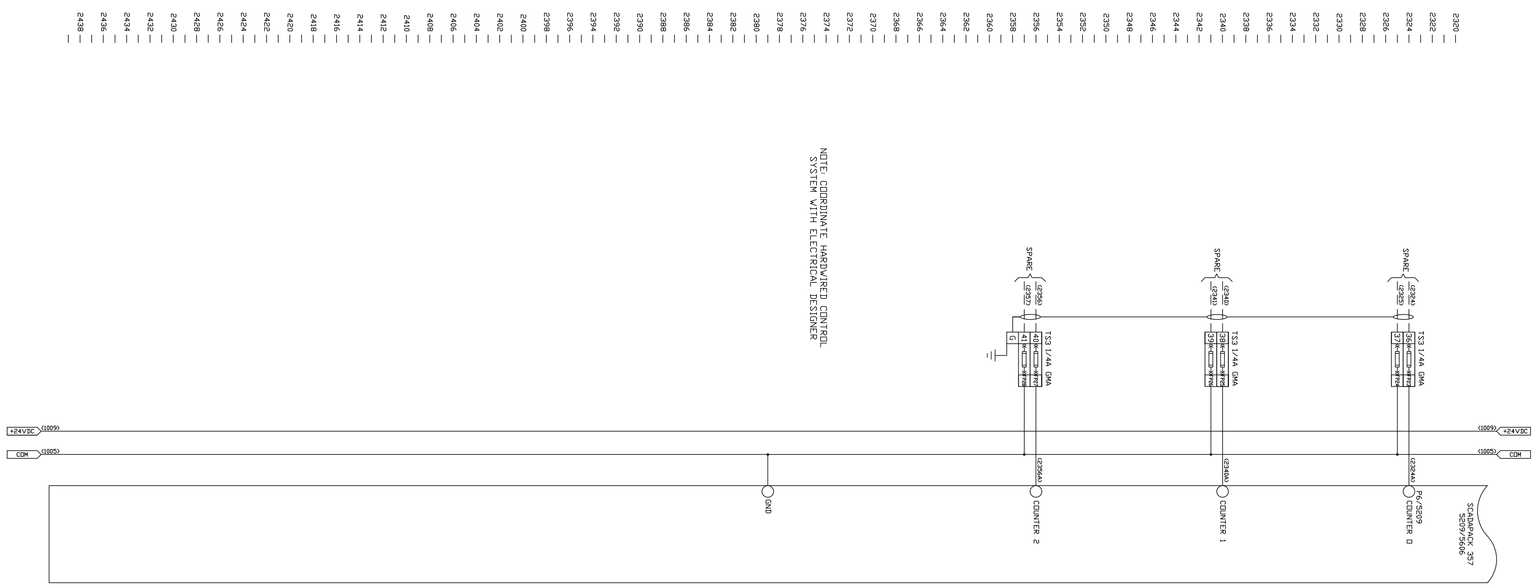
		REVISIONS		







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CITY OF SPARKS
EAST PRATER WAY STORM DRAIN
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