

# CITY OF SPARKS

## C STREET SEWER REHABILITATION PROJECT

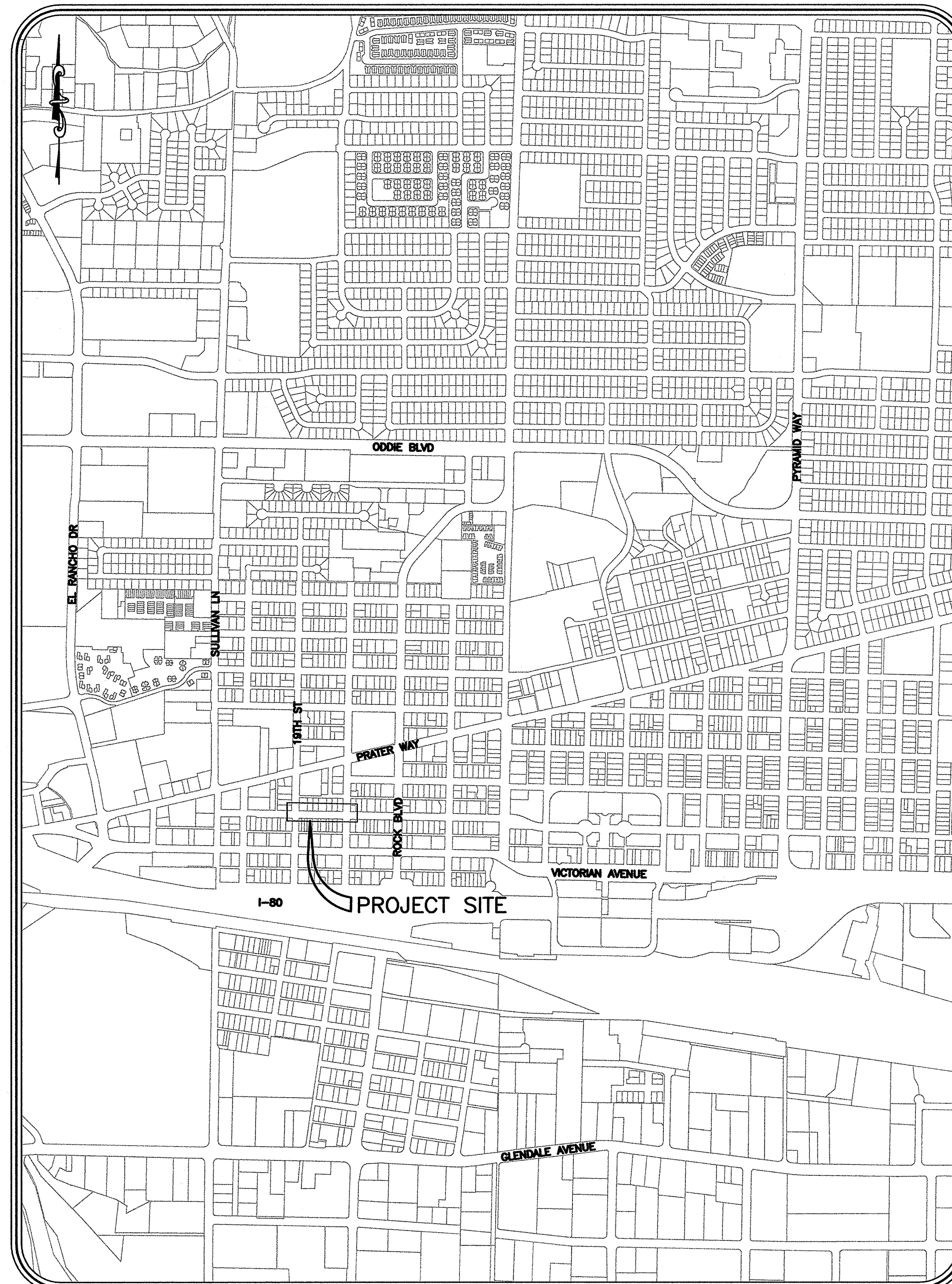
### 18TH STREET TO 19TH STREET

### PWP#WA-2013-096

### MAY, 2013

#### CITY OF SPARKS OFFICIALS

GENO MARTINI	.....	MAYOR
JULIA RATTI	.....	COUNCIL MEMBER WARD 1
ED LAWSON	.....	COUNCIL MEMBER WARD 2
RON SMITH	.....	COUNCIL MEMBER WARD 3
MIKE CARRIGAN	.....	COUNCIL MEMBER WARD 4
RON SCHMITT	.....	COUNCIL MEMBER WARD 5
SHAUN CAREY	.....	CITY MANAGER

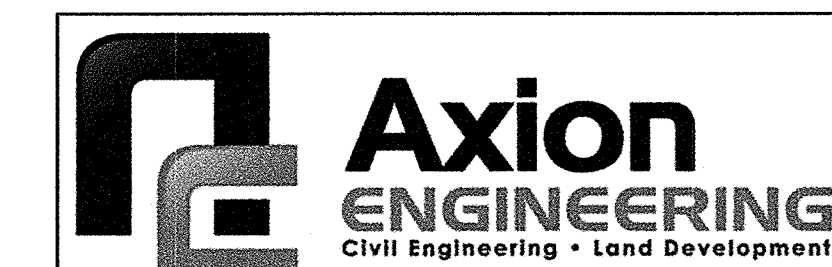


**VICINITY MAP**

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#### ENGINEER



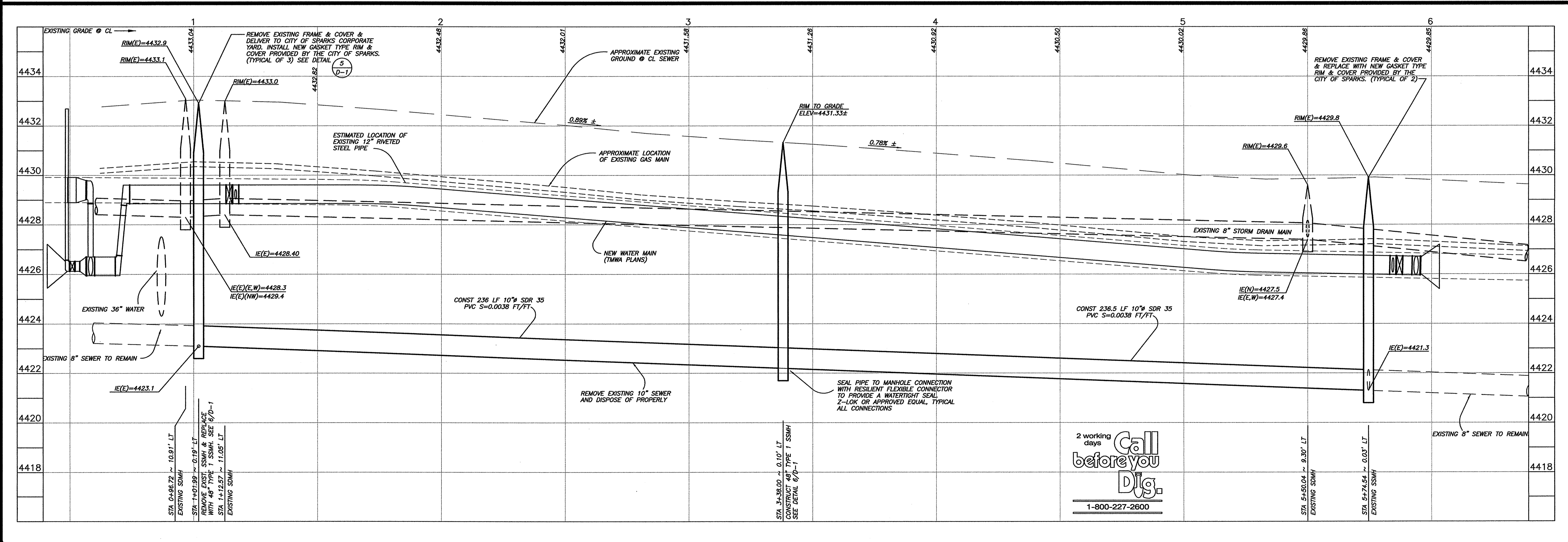
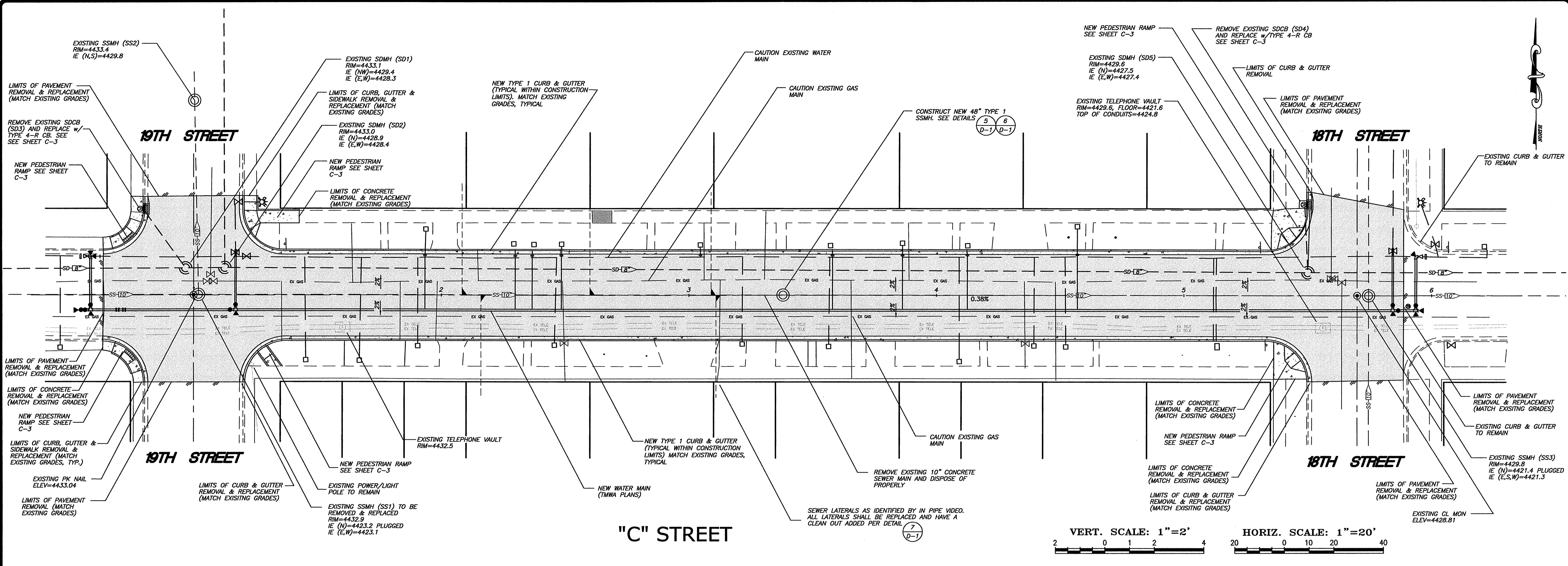
681 EDISON WAY - RENO, NEVADA 89502  
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APPROVED BY: *Neil Krutz* DATE: 5/29/13  
NEIL KRUTZ, P.E.  
DEPUTY CITY MANAGER

APPROVED BY: *Andy Hummel* DATE: 5-29-13  
ANDY HUMMEL, P.E.  
UTILITY MANAGER

APPROVED BY: \_\_\_\_\_ DATE: 5/28/13

GARY K. GUZELIS, P.E.  
AXION ENGINEERING

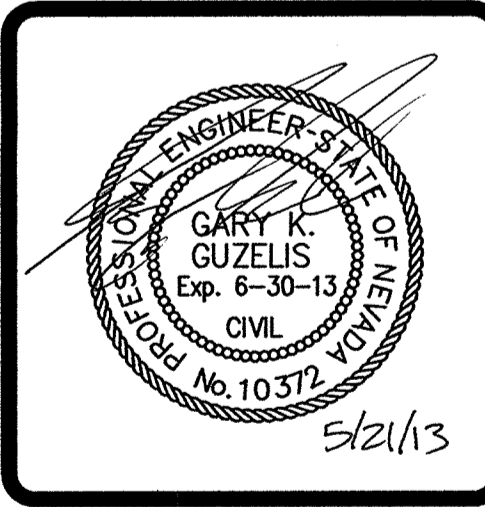


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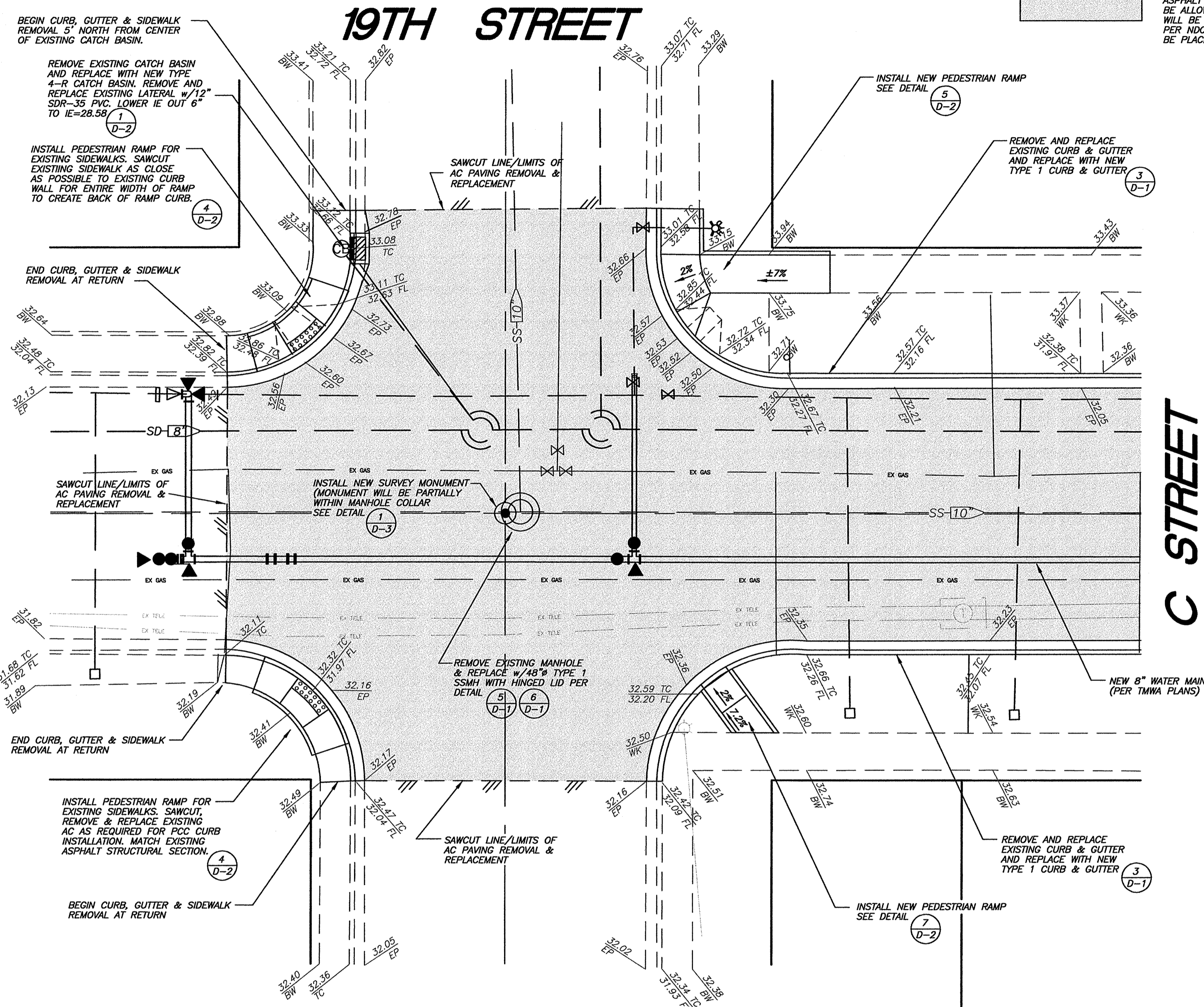
CITY OF SPARKS  
"C" STREET SEWER REHABILITATION  
SEWER MAIN  
PLAN & PROFILE



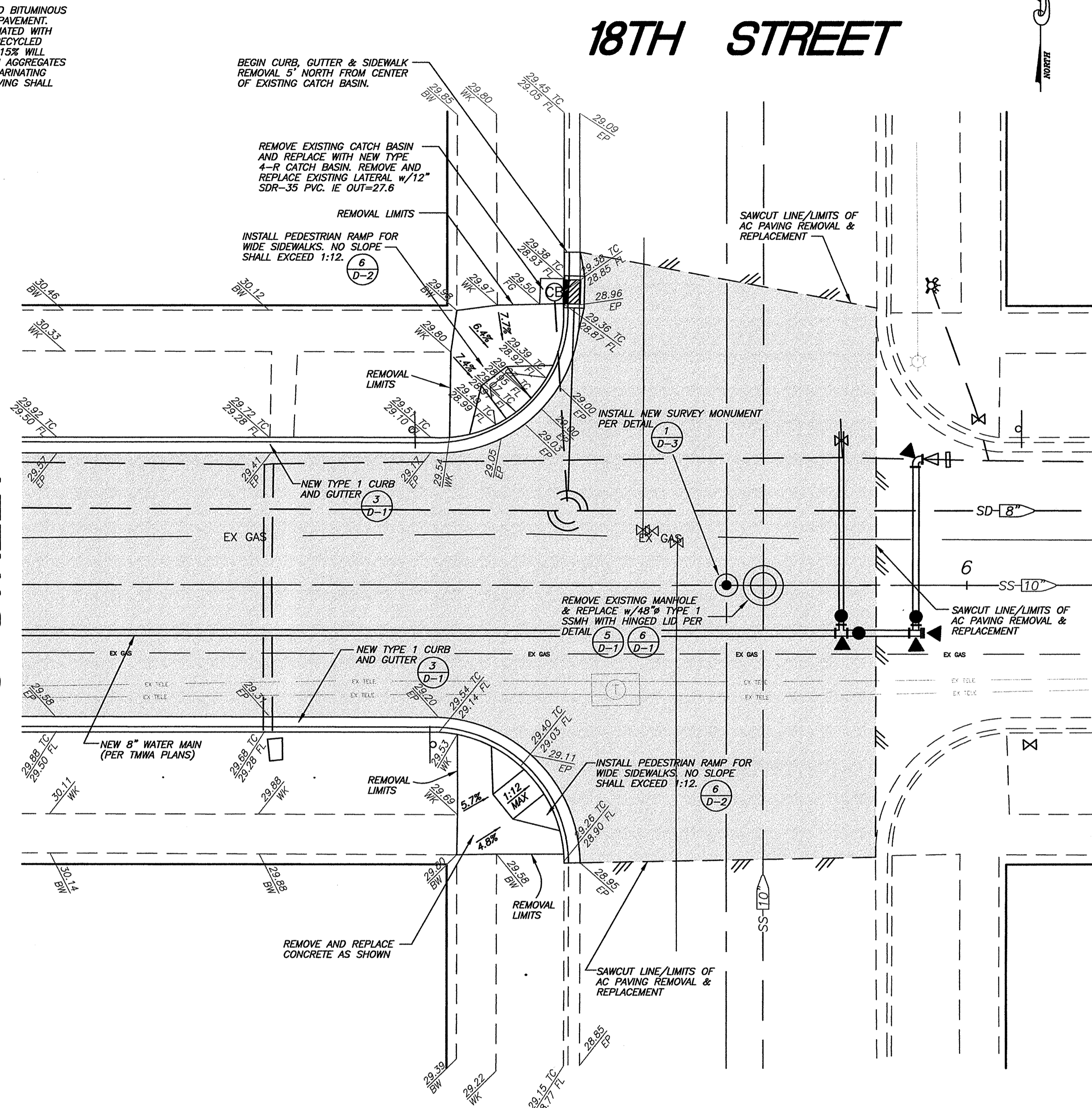
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DESIGNED BY: GKG  
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DATE: 5/21/2013 10:55 AM  
JOB NO. 12031

SHEET NUMBER  
**C-2**  
2 OF 6

4" TYPE 3, 50 BLOW, 3% AIR VOID BITUMINOUS PLANT MIX PG64-28NV ASPHALTIC PAVEMENT. AGGREGATES SHALL BE PRE-MARINATED WITH LIME PER NDOT SPECIFICATIONS. RECYCLED ASPHALT PAVEMENT (RAP) UP TO 15% WILL BE ALLOWED; HOWEVER ALL VIRGIN AGGREGATES WILL BE SUBJECT TO LIME PRE-MARINATING PER NDOT SPECIFICATIONS. AC PAVING SHALL BE PLACED IN TWO LIFTS.



### C STREET / 19TH STREET INTERSECTION



### C STREET / 18TH STREET INTERSECTION

**NOTES:**

IT IS POSSIBLE THAT SOME UTILITIES NOT IDENTIFIED ON THE PLANS MAY BE ENCOUNTERED DURING EXCAVATION. THE CONTRACTOR SHALL EXERCISE CAUTION DURING THE COURSE OF CONSTRUCTION TO NOT DAMAGE EXISTING UTILITIES. REPAIR AND/OR REPLACEMENT OF ANY DAMAGED UTILITIES SHALL BE INCLUDED IN THE SCOPE OF WORK.

CONTRACTOR SHALL HAVE ALL UTILITIES LOCATED WITHIN THE LIMITS OF THE PROPOSED WORK.

ALL WORK SHALL BE IN ACCORDANCE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2012 EDITION & ANY APPURTENANT SUPPLEMENTS) SPONSORED AND DISTRIBUTED BY RENO, SPARKS, AND WASHOE COUNTY.

THE CONTRACTOR SHALL PROVIDE A VIDEO INSPECTION OF THE NEWLY CONSTRUCTED SEWER LINE ONCE COMPLETED AND PRIOR TO PAVING & PROVIDE A DVD COPY TO THE CITY OF SPARKS & THE ENGINEER FOR REVIEW.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL DURING THE CONSTRUCTION OF ALL ITEMS HEREON. DUST CONTROL SHALL BE CONTINUOUS DURING CONSTRUCTION, 24 HOURS PER DAY, 7 DAYS PER WEEK. THE CONTRACTOR SHALL FOLLOW BEST MANAGEMENT PRACTICES WHILE IMPLEMENTING EROSION PROTECTION MEASURES.

CONTRACTOR SHALL MAINTAIN VEHICLE ACCESS TO THE EXISTING RESIDENCES, COORDINATE ANY ACCESS RESTRICTIONS WITH THE CITY OF SPARKS AND THE AFFECTED RESIDENTS.

REMOVED MANHOLE FRAMES AND GRATES AND CATCH BASIN COMPONENTS SHALL BE DELIVERED TO THE CITY OF SPARKS MAINTENANCE YARD, 221 S. 21ST STREET, SPARKS, NEVADA.

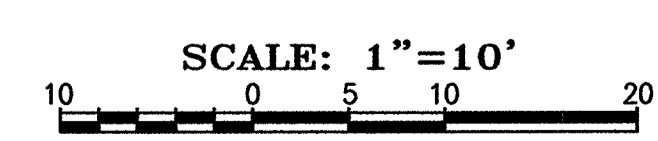
PROTECT TREES, TREE ROOTS, VEGETATION LANDSCAPING AND ANY OTHER PHYSICAL FEATURES IN AS MUCH AS POSSIBLE. REPLACEMENT OF DAMAGED ITEMS SHALL BE AT THE CONTRACTORS EXPENSE.

BASIS OF ELEVATION: NAVD 88, PROJECT BENCHMARK - CITY OF SPARKS BENCHMARK No. 56 PER RECORD OF SURVEY MAP No. 3885 HAVING AN ELEVATION OF 4429.19'. BENCHMARK LOCATED ON THE TOP OF CURB IN THE NORTHEAST RETURN OF ROCK BOULEVARD AND PRATER WAY.

BASIS OF BEARINGS: NEVADA COORDINATE SYSTEM OF 1983, WEST ZONE, NAD 83/94. DISTANCES SHOWN ARE GROUND DISTANCES USING A GRID TO GROUND COMBINED SCALE FACTOR OF 1.000197939.

ALL UTILITY BOXES/LIDS OR OTHER STRUCTURES SHALL BE ADJUSTED TO TO FINISH GRADE AS NECESSARY PER SECTION 323.00 OF THE ORANGE BOOK STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION. ALL CONCRETE COLLARS SHALL BE REPLACED TO CURRENT CITY OF SPARKS STANDARDS AND TO THAT OF THE UTILITY OWNERS STANDARDS.

EXISTING SURVEY MONUMENTS SHALL HAVE THEIR POSITIONS LOCATED BY SETTING REFERENCE MONUMENTS. THIS WORK SHALL BE DONE PRIOR TO ANY WORK THAT MAY DISTURB THE EXISTING MONUMENTS. THE REFERENCE MONUMENTS MUST BE SUFFICIENT TO REESTABLISH THE LOCATION OF THE EXISTING MONUMENTS.

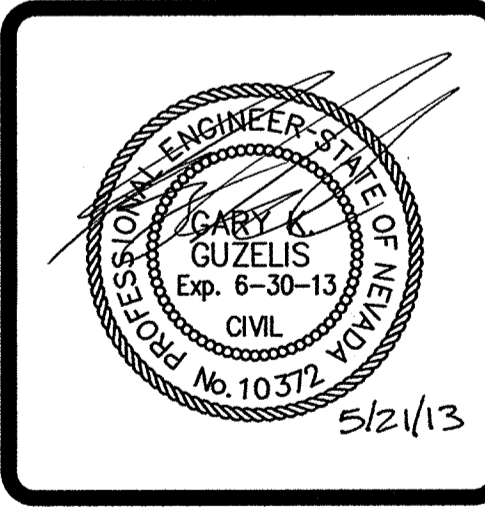


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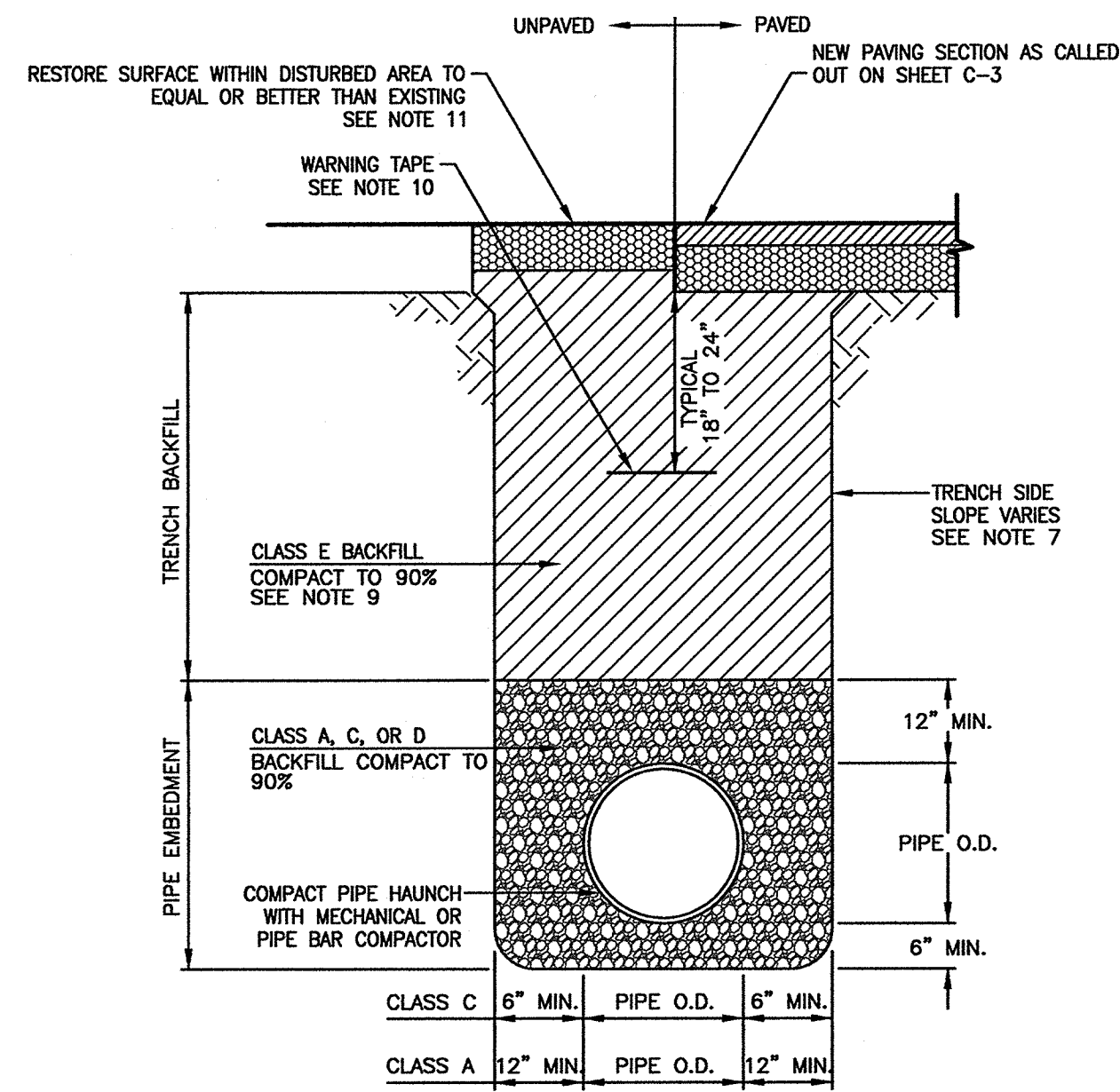
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CITY OF SPARKS  
"C" STREET SEWER REHABILITATION  
18TH STREET TO 19TH STREET  
INTERSECTION PLAN



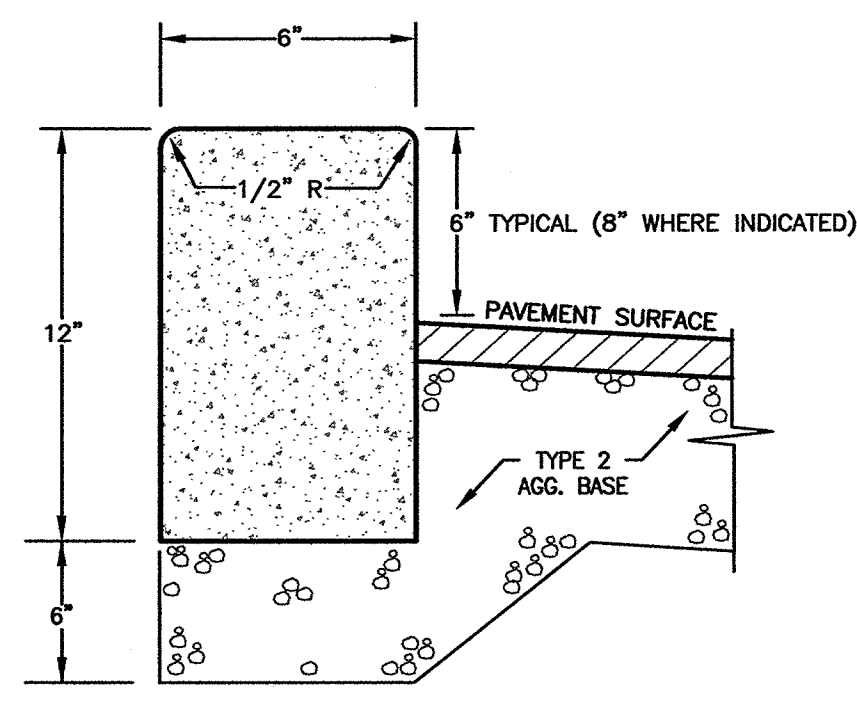
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SHEET NUMBER  
**C-3**  
3 OF 6



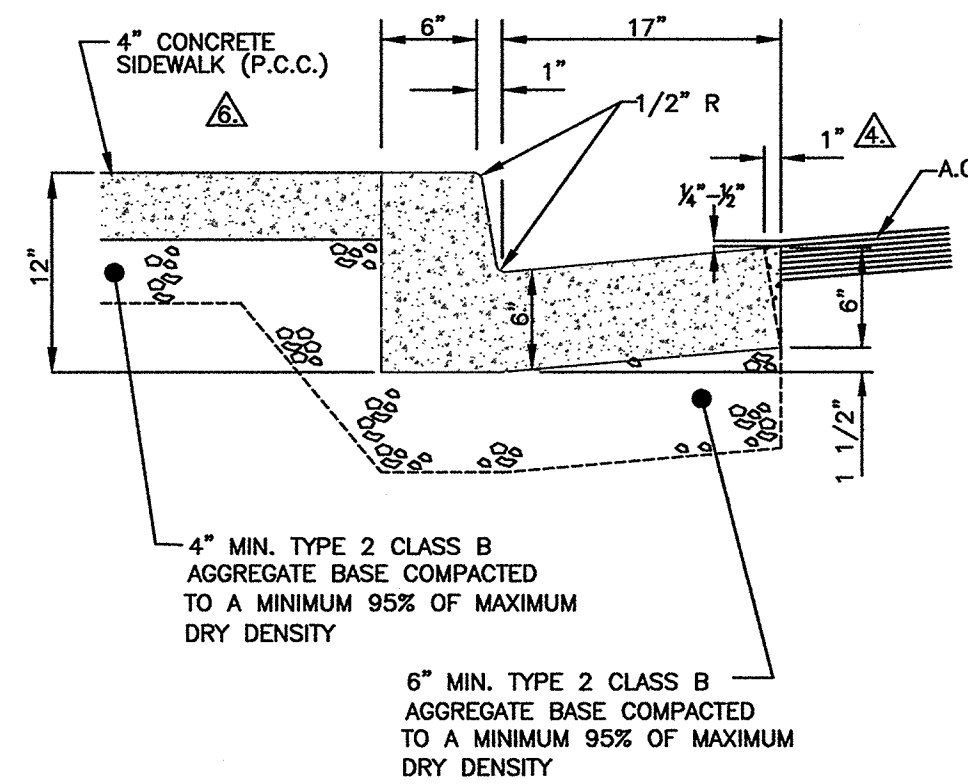
- NOTES:**
- ALL MATERIALS AND INSTALLATION PROCEDURES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST REVISION.
  - ANY CONDITIONS OF AN ENCROACHMENT OR RIGHT-OF-WAY PERMIT WHICH MAY DIFFER FROM THE ABOVE WILL GOVERN IN APPLICABLE AREAS.
  - ALL EXCAVATIONS SHALL CONFORM TO THE LATEST O.S.H.A. REQUIREMENTS. SHORING OR SLOPED CUT MAY BE NECESSARY, BUT THERE WILL BE NO PAYMENT FOR ADDITIONAL EXCAVATION, BEDDING, OR SHORING.
  - FOR UNSUPPORTED TRENCHES, OR THOSE TRENCHES SUPPORTED BY HYDRAULIC JACKS, THE ALLOWABLE TRENCH WIDTH SHALL BE LIMITED TO THE PIPE DIAMETER PLUS 12 INCHES MINIMUM OR THE PIPE DIAMETER PLUS 24 INCHES MAXIMUM. WHEN MOVABLE TYPE TRENCH SHIELDS ARE USED, THE SHIELD SHALL REST ON TOP OF A SHELF CONSTRUCTED ABOVE THE TOP OF THE PIPE AND TO THE SIDE. THE TRENCH WIDTH FROM THE TOP OF THE PIPE DOWN SHALL BE THE SAME AS FOR UNSUPPORTED TRENCHES. THE TRENCH WIDTH ABOVE THE TOP OF THE PIPE SHALL BE AS REQUIRED FOR THE MOVABLE SHIELD AND SHELF. WHERE MOVABLE TRENCH SHIELDS ARE USED BELOW THE TOP OF PIPE, THE TRENCH WIDTH SHALL BE LIMITED TO THE PIPE DIAMETER PLUS 12 INCHES MINIMUM OR THE PIPE DIAMETER PLUS 24 INCHES MAXIMUM. ADDITIONAL COMPACTION WILL BE REQUIRED FOLLOWING MOVEMENT OF THE TRENCH SHIELD TO ENSURE COMPACTED BACKFILL WITHIN THE PIPE EMBEDMENT ZONE.
  - DEWATER TRENCH EXCAVATION THROUGHOUT PIPE PLACEMENT, BEDDING AND BACKFILL OPERATIONS SO AS TO PROVIDE A DRY AND STABLE CONSTRUCTION PLATFORM AND TO ENSURE BEDDING AND BACKFILL MATERIALS DO NOT BECOME SATURATED PRIOR TO COMPLETION OF COMPACTION EFFORTS.
  - ENGINEER SHALL MONITOR FOUNDATION ZONE THROUGHOUT CONSTRUCTION. SATURATED, UNSTABLE MATERIALS SHALL BE REMOVED AND REPLACED WITH CLASS D BACKFILL.
  - TRENCH SIDE SLOPE DEPENDING ON IN-SITU SOIL TYPES, SHORING AND SHEETING AND CONSTRUCTION METHODS, COMPLY WITH OSHA STANDARDS.
  - WHERE GROUNDWATER IS ENCOUNTERED, PROVIDE GEOTEXTILE FABRIC BETWEEN CLASS B OR C BACKFILL AND CLASS E TRENCH BACKFILL ABOVE.
  - THE TOP 2 FEET OF TRENCH BACKFILL WITHIN EXISTING ROADWAY RIGHT OF WAY SHALL CONSIST OF CLASS E BACKFILL THAT WILL ACHIEVE AN R VALUE OF AT LEAST 30.
  - PROVIDE GREEN WARNING TAPE MARKED SEWER.
  - RESTORE SURFACE WITHIN DISTURBED AREA AS TO A CONDITION EQUAL OR BETTER THAN EXISTED PRIOR TO CONSTRUCTION, INCLUDING PAVEMENTS, GRAVEL, TOPSOIL, LANDSCAPE, OR REVEGETATION. REPLACE AC OR PG PAVEMENTS PER DETAILS HEREIN, RESEED AND REVEGETATE PER PLANS AND SPECIFICATIONS.

**SEWER TRENCH SECTION & NOTES** 1  
D-1  
N/S



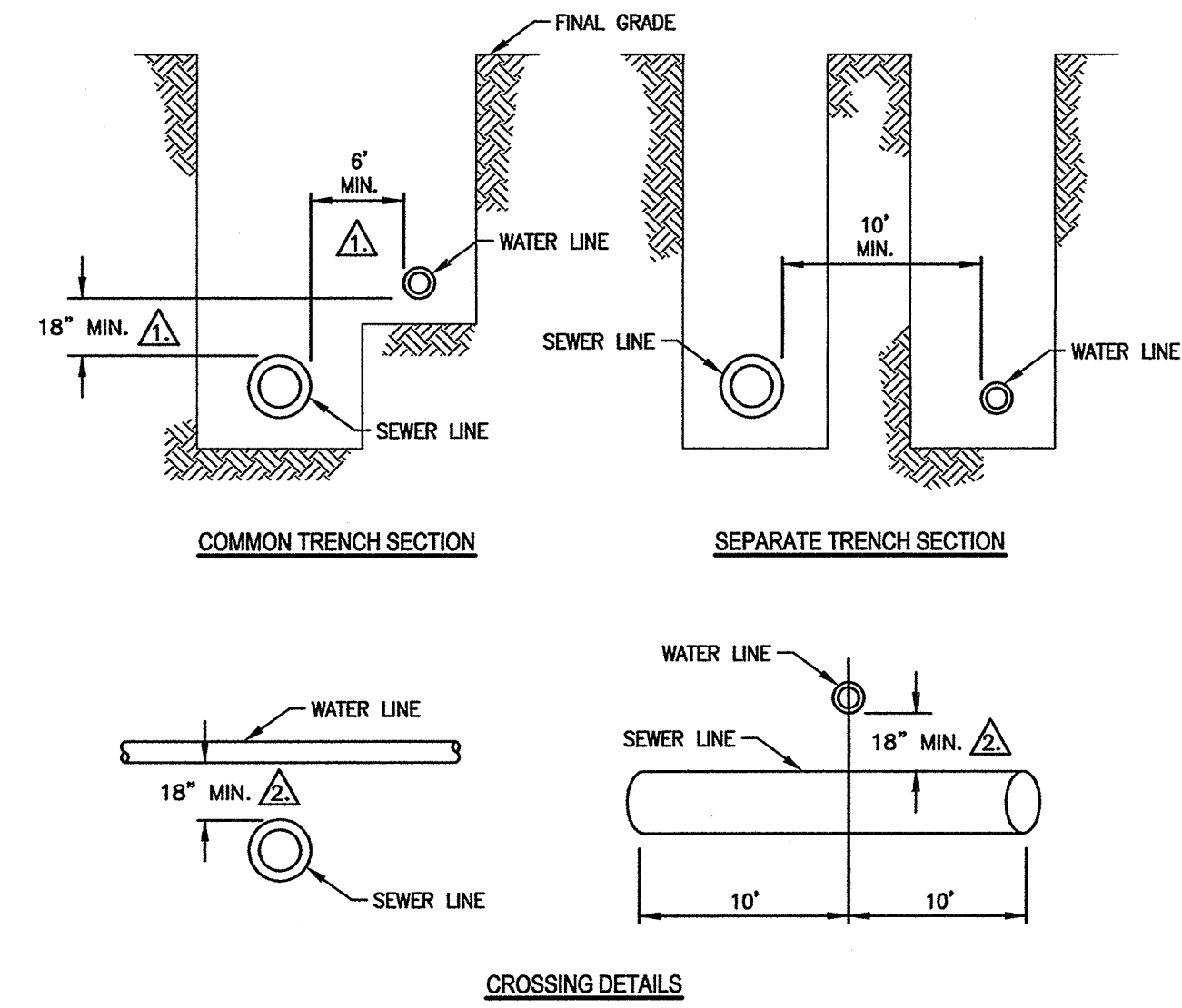
- NOTES:**
- ALL P.C.C. CURB/GUTTER/SIDEWALK SHALL BE FIBER REINFORCED P.C.C. AND MEET 4,000 PSI MIN. AT 28 DAYS.
  - ALL CONCRETE CURB/GUTTER/SIDEWALK/VALLEY GUTTER SHALL HAVE 1/2" EXPANSION JOINTS EVERY 30 FEET (UNLESS APPROVED OTHERWISE BY THE ENGINEER) AND AT ALL CURB RETURNS AND SHALL HAVE WEAKENED PLANE JOINTS EVERY 10 FEET.
  - AGGREGATE BASE MATERIAL SHALL CONFORM TO THE SPECIFICATIONS FOR TYPE 2 AGGREGATE BASE AND BE COMPACTED TO MIN. 95% MAXIMUM DRY DENSITY (M.D.D.).
  - ALL MATERIALS SHALL CONFORM TO SSPWC CURRENT EDITION.

**P.C.C. POST CURB** 2  
D-1  
N/S



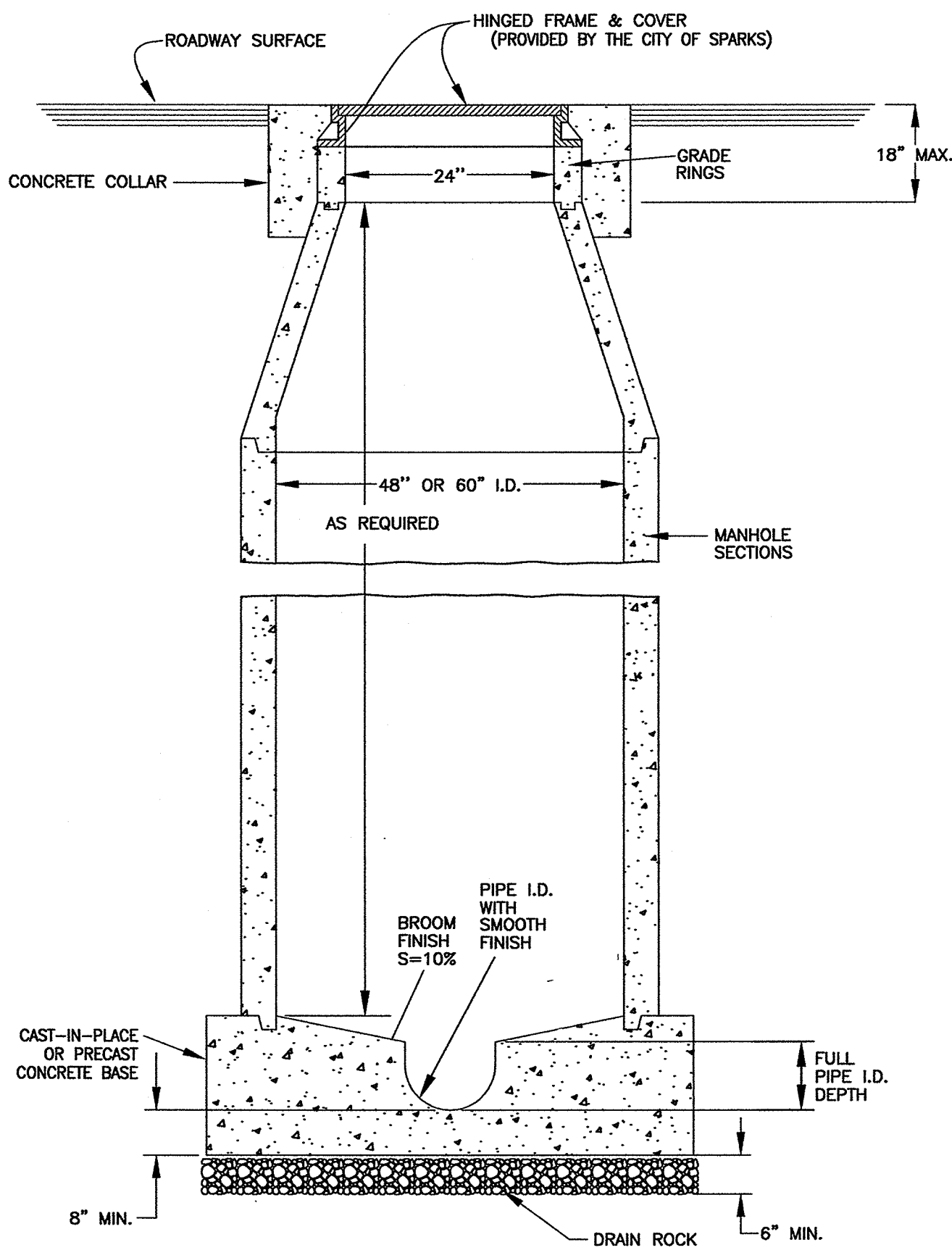
- NOTES:**
- PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH @ 28 DAYS, MIN. 6 SACKS OF CEMENT PER CU. YD w/ A MAX. WATER CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6%±1.5% SLUMP AT 1 TO 4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
  - EXPANSION JOINTS 1/2" WIDE SHALL BE LOCATED IN CURBS AND GUTTERS AT EACH SIDE OF STRUCTURES, AT THE ENDS OF ALL CURB RETURNS, AND ABUTTING HARDENED IN-PLACE CURB AND GUTTER. EXPANSION JOINTS SHALL NOT BE INSTALLED WITHIN 20 FEET OF AN ISLAND NOSE. EXPANSION JOINTS SHALL BE 1/2" THICK, SHAPED TO THE CROSS SECTION OF THE CURB AND GUTTER, AND CONSTRUCTED AT RIGHT ANGLES TO THE CURB AND GUTTER. JOINT FILLER MATERIAL SHALL CONFORM TO SSPWC SECTION 202.10. 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.
  - CURB & GUTTER SECTIONS SHALL BE PLACED SEPARATELY FROM SIDEWALK SECTIONS.
  - "BATTERED" CONSTRUCTION ALLOWED FOR NEW CONSTRUCTION, WHILE "VERTICAL" CONSTRUCTION PERMITTED FOR RECONSTRUCTION.
  - WHERE ALTERNATE STANDARDS OF CURB AND GUTTER EXIST, AND THE REPLACEMENT CURB AND GUTTER IS GREATER THAN 20 CONTINUOUS FEET IN LENGTH, TYPE 1 CURB AND GUTTER SHALL BE INSTALLED WITH THE APPROPRIATE TRANSITIONS TO MATCH INTO THE EXISTING CURB AND GUTTER, IF DIRECTED BY THE CITY ENGINEER.
  - WHEN SIDEWALK IS NOT REQUIRED, BACKFILL BEHIND THE CURB TO THE TOP FOR A HORIZONTAL DISTANCE OF 12" FROM BACK FACE OF CURB, WITH A MATCH TO EXISTING GRADE OF NOT EXCEEDING A 3:1 SLOPE.

**TYPE 1 CURB & GUTTER** 3  
D-1  
N/S



- NOTES:**
- IF WATER LINE IS LOCATED 18" OR MORE ABOVE THE SEWER, THE DISTANCE BETWEEN LINES CAN BE REDUCED TO A MINIMUM OF 6 FEET.
  - LESS THAN 18" CLEARANCE REQUIRES THE SEWER TO BE DUCTILE IRON OR REINFORCED CONCRETE ENCASED TO A LENGTH OF 10 FEET IN EITHER DIRECTION FROM THE WATER MAIN.
  - REFER TO STANDARD DETAIL DRAWING NO. 2-19 (OF THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, AKA "THE ORANGE BOOK") FOR MORE SANITARY SEWER CROSSING CRITERIA.

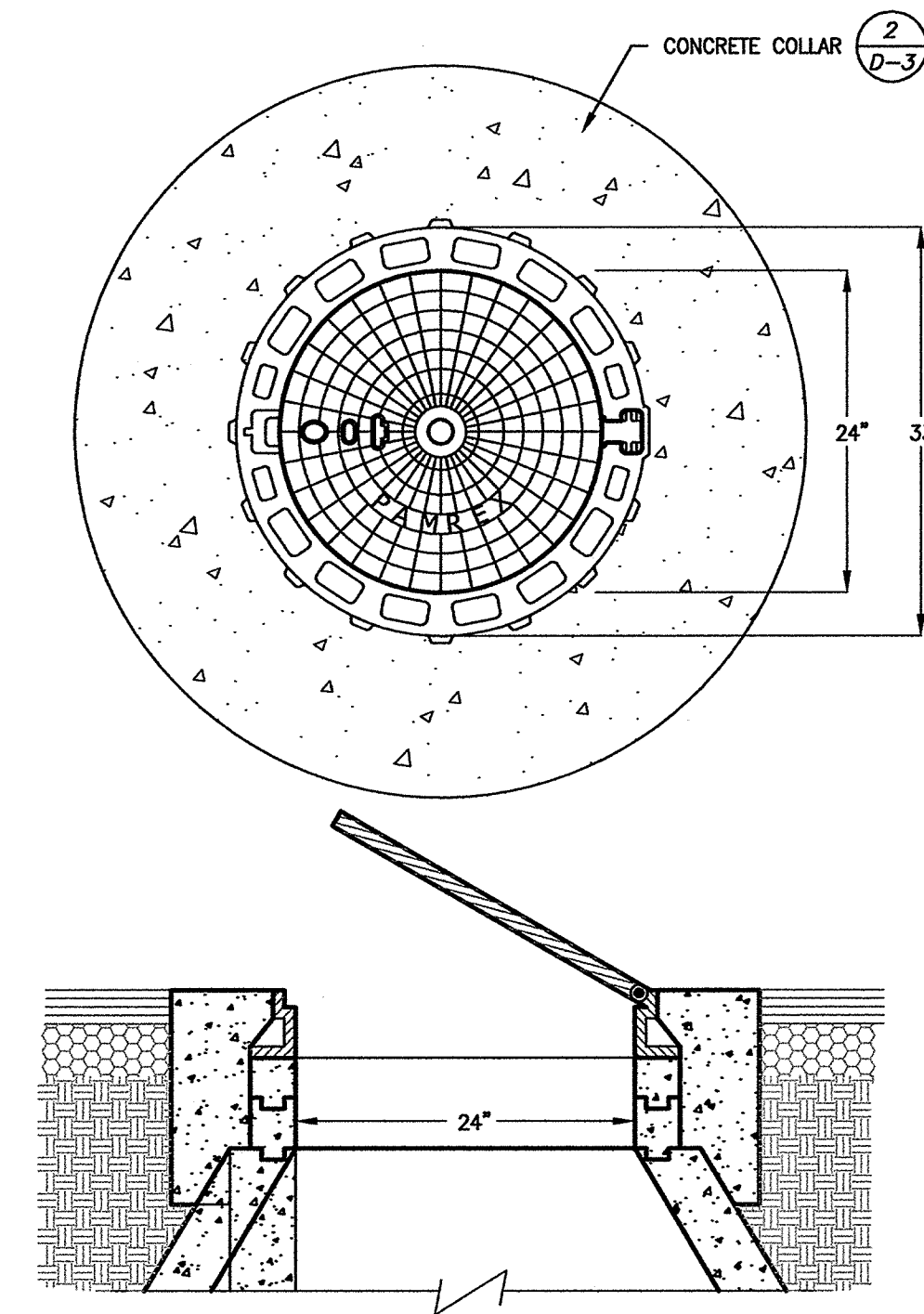
**TYPICAL UTILITY CROSSING DETAIL** 4  
D-1  
N/S



- PRECAST MANHOLE COMPONENTS SHALL CONFORM TO ASTM C-478.
- PIPES SHALL NOT PROTRUDE MORE THAN 3" INSIDE MANHOLE SECTION AS MEASURED AT THE OUTSIDE EDGES OF THE PIPE, VERTICALLY ALIGNED WITH THE SPRINGLINE. CONSTRUCT WATER-TIGHT CONNECTION TO MANHOLE.
- 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 SSPWC SECTION 202.
- MANHOLE MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF SECTION 204 "MANHOLES AND CATCH BASINS" OF THE SSPWC.
- PRECAST MANHOLE SECTIONS, OTHER THAN GRADE RINGS, SHALL BE JOINED WITH FLEXIBLE PLASTIC GASKET MATERIAL SUCH AS "RAM-NEK" OR EQUAL AS PER MANUFACTURER'S RECOMMENDATIONS.
- EXCAVATION AND BACKFILL SHALL BE AS SPECIFIED FOR "TRENCH EXCAVATION AND BACKFILL" IN SECTION 305 OF THE SSPWC.
- 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. NATURAL ANGLE OF REPOSE WILL BE ALLOWED IN ALL OTHER AREAS.
- MANHOLE PRECAST SECTION LENGTHS SHALL BE ARRANGED TO FIT THE REQUIRED DEPTH.
- NO SEWER LINE PIPE DIAMETERS OF LESS THAN 8" IN DIAMETER SHALL BE CONNECTED TO THE MANHOLE UNLESS NOTED OTHERWISE.
- PRECAST CONCRETE BASE MAY BE USED IN LIEU OF CAST-IN-PLACE BASE.
- MATCH PIPE INVERTS TO MANHOLE INVERTS WHERE PIPES CONNECT TO MANHOLE BASE.
- ALL MANHOLES SHALL BE WATER-TIGHT. WRAP ALL JOINTS WITH JOINT WRAP.
- PRIOR TO BACKFILLING, ALL MANHOLES SHALL BE VACUUM TESTED PER THE REQUIREMENTS OF ASTM C-1244.
- NO STEPS, LADDERS OR OTHER CLIMBING DEVICES SHALL BE INSTALLED IN THE MANHOLE.
- FOR CAST-IN-PLACE CONCRETE BASE OR ANY CORED CONNECTIONS, PROVIDE WATER-TIGHT CONNECTION. FILL ANNULUS WITH EPOXY GROUT.
- PRECAST BASE CONNECTION SHALL USE CAST-IN-BOOT CONNECTOR SUCH AS THAT MANUFACTURED BY A LOK PRODUCTS INC OR EQUAL.

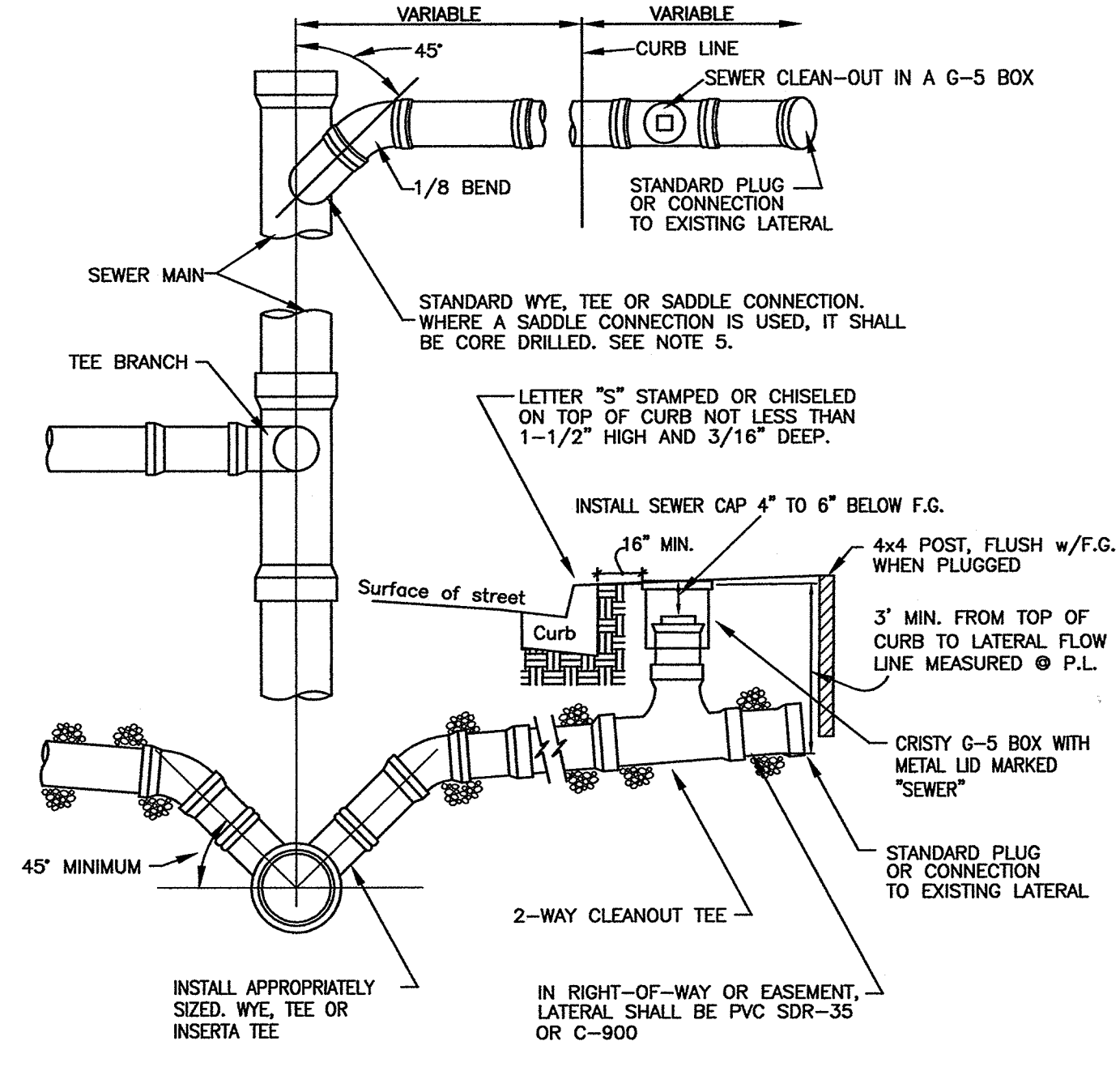
**MANHOLE NOTES**  
N/S

**TYPE 1 MANHOLE DETAIL** 6  
D-1  
N/S



- NOTES:**
- HINGED MANHOLE COVER SHALL BE EAST JORDAN "ERGO" OR PAMREX 24-INCH MODEL.
  - COVER TO BE HINGED AND INCORPORATE A 90 DEGREE BLOCKING SYSTEM TO PREVENT ACCIDENTAL CLOSURE.
  - FRAME AND COVER SHALL BE ELASTOMER GASKETED.
  - ALL COMPONENTS SHALL BE BLACK COATED.
  - LID SHALL BE STAMPED "SANITARY SEWER".
  - FRAME AND COVER SHALL BE PROVIDED BY THE CITY OF SPARKS

**HINGED FRAME & COVER** 5  
D-1  
N/S



- GENERAL NOTES:**
- IN NO CASE SHALL A LATERAL CONNECT TO THE SEWER MAIN DIRECTLY ON TOP OF THE PIPE OR BELOW THE CENTERLINE OF THE PIPE.
  - SEWER LATERALS SHALL HAVE A MINIMUM SLOPE OF 2%.
  - ALL JOINTS ON SEWER LATERAL PIPE WITHIN THE RIGHT-OF-WAY SHALL BE COMPRESSION TYPE.
  - LATERAL SHALL EXTEND TO PROPERTY LINE UNLESS OTHERWISE SHOWN ON PLANS.
  - SADDLE CONNECTION SHALL BE PVC SADDLE WITH STAINLESS STEEL STRAPS. ??? INSERTA TEE ???
  - ENTITY REQUESTING SEWER LATERAL ABANDONMENT SHALL CUT, CAP OR PLUG THE EXISTING SEWER LATERAL TO BE ABANDONED WITHIN 6 INCHES OF THE SEWER MAIN. INSPECTION BY CITY OF SPARKS PUBLIC WORKS IS REQUIRED PRIOR TO BACKFILL.
  - ALL SEWER CLEAN-OUTS SHALL TO BE SET 16" TO 24" BEHIND CURB OR SIDEWALK OR AS OTHERWISE DIRECTED BY THE CITY OF SPARKS.
  - BUTT FUSION LATERAL PIPE SHALL BE SAME SIZE AS EXISTING LATERAL BUT IN NO CASE LESS THAN 4"

**SEWER LATERAL DETAIL** 7  
D-1  
N/S

No.	REVISIONS	
	DESCRIPTION	DATE

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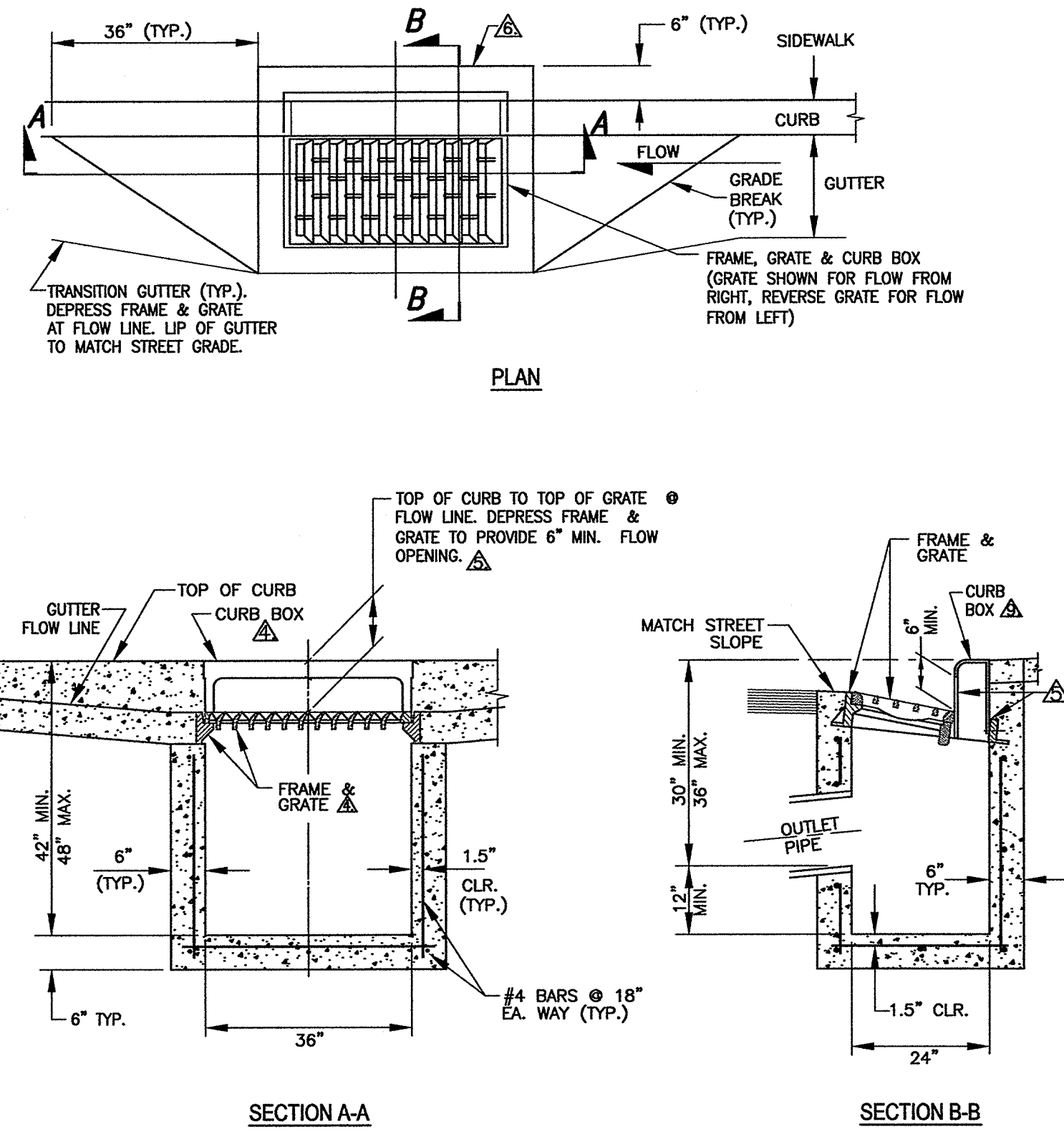
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CITY OF SPARKS PUBLIC WORKS  
"C" STREET SEWER REHABILITATION  
18TH STREET TO 19TH STREET  
DETAIL SHEET

PROFESSIONAL ENGINEER - STATE OF NEVADA  
BART G. GUZELIS  
Exp. 6-30-13  
CIVIL  
NO. 10372  
5/20/13

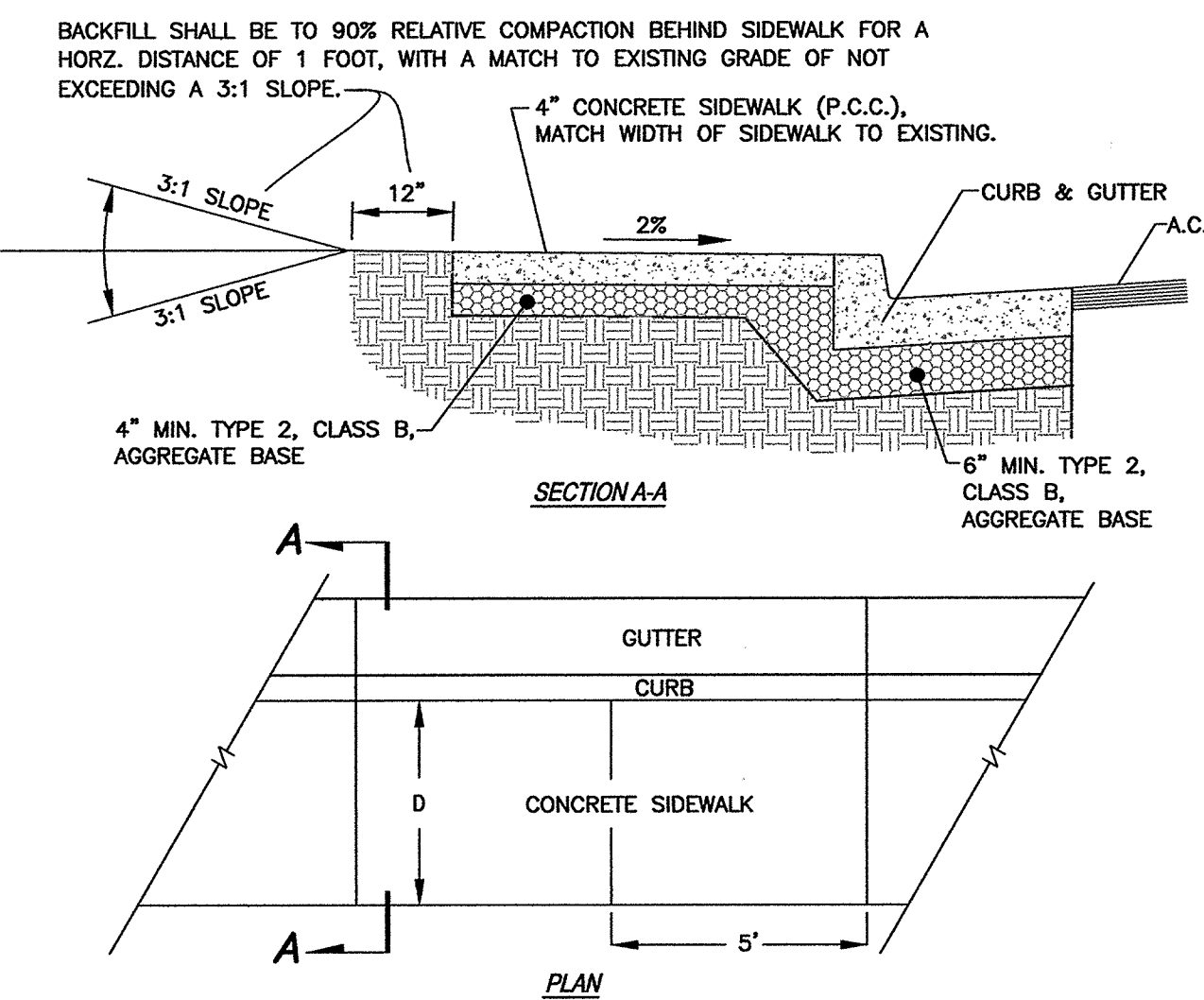
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DATE:	5/29/2013
JOB NO.	011004

SHEET NUMBER  
**D-1**  
4 OF 6



TYPE 4-R CATCH BASIN  
N/S  
1  
D-2

- NOTES:**
- PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH @ 28 DAYS (CURB AND GUTTER TRANSITION ONLY, ALL UNEXPOSED CONCRETE MAY BE 3000 PSI), MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER/CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
  - REINFORCING STEEL SHALL BE GRADE 40 AND HAVE 1.5" MINIMUM CLEAR COVER.
  - CONCRETE STRUCTURE MAY BE A PRE-CAST CONCRETE UNIT UPON APPROVAL OF THE CITY ENGINEER. BASE OF PRE-CAST CONCRETE UNIT SHALL BE PLACED ON 6" COMPACTED DRAIN ROCK.
  - FRAME SHALL BE NEEDHAM R-3294, R-3295 OR R-3067 SINGLE CURB UNIT WITH A TYPE L "VANE GRATE" AND CURB BOX, SOUTH BAY FOUNDRY VANE GRATE SBF 1947 OR APPROVED EQUAL, INSTALLED WITH PROPER FLOW DIRECTION.
  - 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).
  - IF NO SIDEWALK IS PRESENT, POUR 6" CONCRETE CURB STRUCTURE BEHIND GRATE AND THE BEAM INTO BOX.
  - INSTALL GREASE TRAP PER STANDARD DETAIL DRAWING NO. R-213 (311).
  - DUAL CATCH BASINS ARE TO BE WET SET IN 6" OF CONCRETE IN LIEU OF DRAIN ROCK AND TIED TOGETHER WITH A MINIMUM OF 3 ONE INCH STAINLESS STEEL STRAPS. CONNECTION PIPE MUST BE GROUTED IN PLACE AND ALSO MECHANICALLY RESTRAINED.
  - EACH CATCH BASIN SHALL BE CAST WITH A FISH IMAGE AND THE WORDS "NO DUMPING! DRAINS TO WATERWAYS" IN THE TOP OF THE CURB BOX.
  - FRAMES AND GRATES SHALL BE MATCHED TO ACHIEVE A CLOSE TOLERANCE FIT, WITH MINIMAL GAPS, AS APPROVED BY THE CITY ENGINEER.

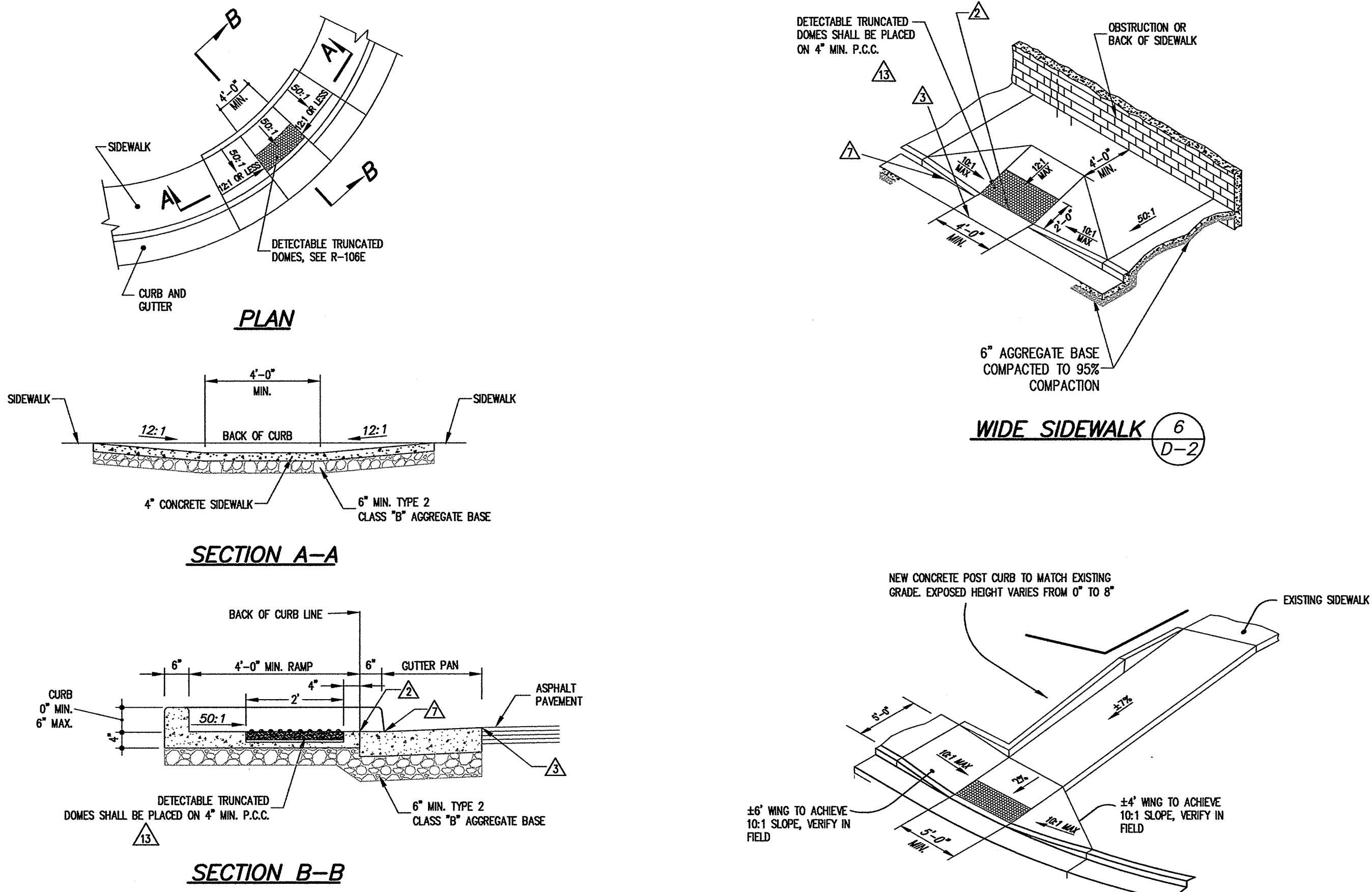


TYPICAL SIDEWALK DETAIL  
N/S  
2  
D-2

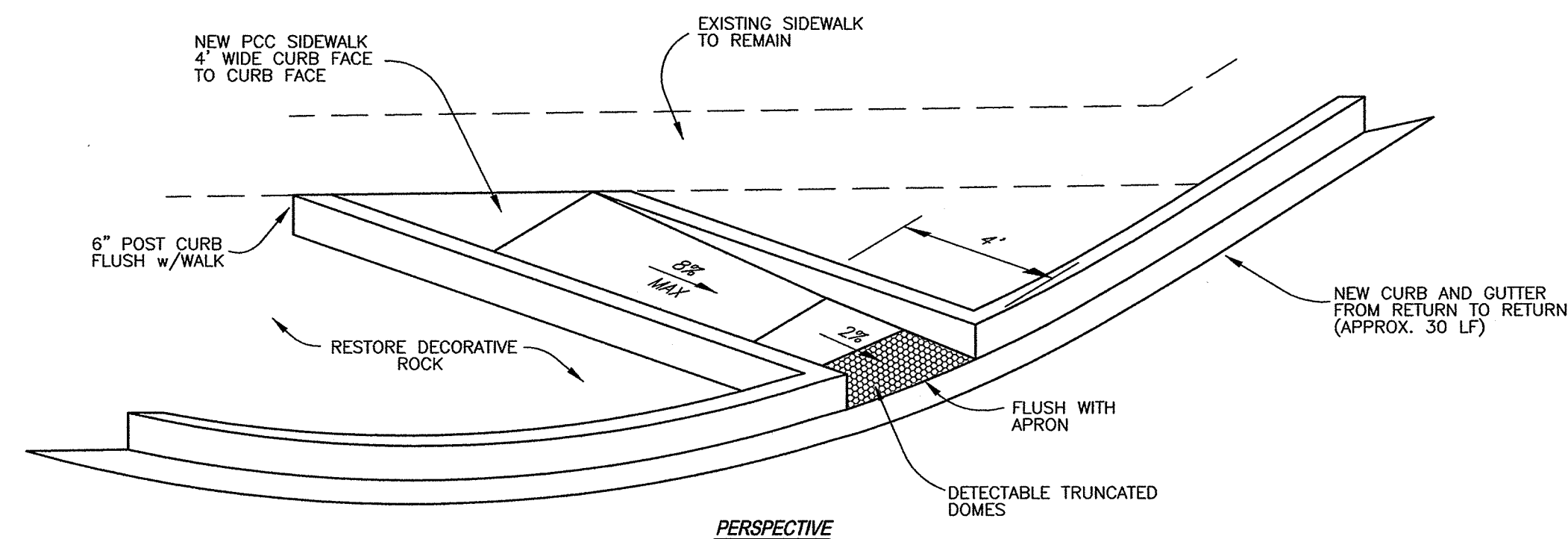
- NOTES:**
- MINIMUM CURB RADIUS SHALL BE 20 FEET, UNLESS OTHERWISE SPECIFIED.
  - WEAKENED PLANE JOINTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLAN VIEW AND SECTION 312.09.02 OF THE SSPWC.
  - TRANSVERSE EXPANSION JOINTS 1/2" WIDE SHALL BE CONSTRUCTED AT ALL SIDEWALK RETURNS, OPPOSITE EXPANSION JOINTS IN ADJACENT CURBS, AT REGULAR INTERVALS NOT EXCEEDING 30'. ISOLATION JOINTS SHALL BE INSTALLED AROUND ALL STRUCTURES. EXPANSION AND ISOLATION JOINTS SHALL BE FILLED WITH JOINT FILLER STRIPS 1/2" THICK. JOINT MATERIAL SHALL CONFORM TO SSPWC SECTION 202.10.
  - COLOR CONCRETE IS NOT ALLOWED, UNLESS APPROVED BY THE CITY ENGINEER.
  - ON SIDEWALKS WIDER THAN 5', JOINTING PATTERN SHALL BE .8 TO 1.2 TIMES THE WIDTH OF THE SIDEWALK.
  - SIDEWALK WIDTH "D" SHALL BE 4' MIN. ON RESIDENTIAL STREETS AND 6' MIN. ON COLLECTOR AND ARTERIAL STREETS.
  - 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. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
  - NO CONCRETE SHALL BE PLACED UNTIL FORMS AND SUBGRADE ARE INSPECTED BY THE CITY EXCAVATION PERMIT INSPECTOR OR APPLICABLE ENGINEER OF RECORD.
  - CONCRETE REMOVAL SHALL BE TO NEAT SAW CUT LINES.

PEDESTRIAN RAMP NOTES  
N/S  
3  
D-2

- NOTES:**
- GRATINGS OR SIMILAR ACCESSORIES SHALL NOT BE LOCATED IN THE AREA AT THE BASE OF THE CURB RAMP OR LANDING AREA. IF OBSTRUCTIONS SUCH AS GRATINGS, INLETS, UTILITY POLES, PULL BOXES, FIRE HYDRANTS, ETC. ARE ENCOUNTERED, THE LOCATION AND DIMENSIONS MAY BE ADJUSTED UPON APPROVAL OF THE CITY ENGINEER. LATERAL OBSTRUCTION MAY REQUIRE ADDITIONAL RIGHT OF WAY AS DIRECTED BY THE CITY ENGINEER.
  - NO LIP SHALL BE PERMITTED AT THE CURB RAMP SLOPE TO GUTTER PAN.
  - PLANTMIX BITUMINOUS SURFACE SHALL BE FLUSH WITH THE EDGE OF THE GUTTER PAN IN THE AREA OF THE CURB RAMP.
  - ROUGH BROOM TEXTURE ON CURB RAMPS AND WINGS.
  - CURB RAMP WINGS DO NOT HAVE TO BE WITHIN CROSSWALK, HOWEVER, THE RAMP ITSELF HAS TO BE INSIDE CROSSWALK, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.
  - ALL SLOPE RATES ARE RELATIVE TO LEVEL AND SHALL MEET ADAAG STANDARDS.
  - GUTTER SHALL MAINTAIN POSITIVE DRAINAGE TO PREVENT PONDING.
  - DETECTABLE WARNING SHALL CONSIST OF "CAST-IN-PLACE" OR "NAVIPLATE" DETECTABLE WARNING PANELS, 12" X 12" PAVERS, OR AN APPROVED EQUIVALENT. DETECTABLE WARNING SHALL BE CONSTRUCTED PER MANUFACTURER'S INSTALLATION GUIDELINES AND CONFORM TO ADAAG (4.29.2).
  - ALL CONCRETE TO BE REMOVED TO SAW CUT OR EXPANSION JOINTS.
  - FIBER-REINFORCED PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH @ 28 DAYS, MIN. OF 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAXIMUM WATER/CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202. POLYPROPYLENE FIBERS SHALL BE ADDED TO THE P.C.C. PER THE MANUFACTURER'S RECOMMENDATIONS.
  - CONTRACTORS SHALL CORRECT ANY CONFLICT WITH EXISTING PULL BOXES EXISTING BOXES AND INSTALLATION OF NEW PEDESTRIAN RAMPS. THE CITY ENGINEER SHALL MAKE THE FINAL DETERMINATION REGARDING THE DEGREE OF MODIFICATIONS REQUIRED BY THE CONTRACTOR FOR CONFLICTS BETWEEN EXISTING PULL BOXES AND NEW PEDESTRIAN RAMPS.
  - 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 ADAAG 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.
  - DETECTABLE WARNING SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SHALL BE PLACED ON FOUR (4) INCHES OF P.C.C.



PEDESTRIAN RAMP DETAILS  
N/S  
4  
D-2



SOUTHEAST RETURN 19TH & C STREETS  
7  
D-2

PEDESTRIAN RAMP DETAILS  
N/S

NO.	REVISIONS	DESCRIPTION	DATE	BY

**Axion ENGINEERING**  
Civil Engineering • Land Development

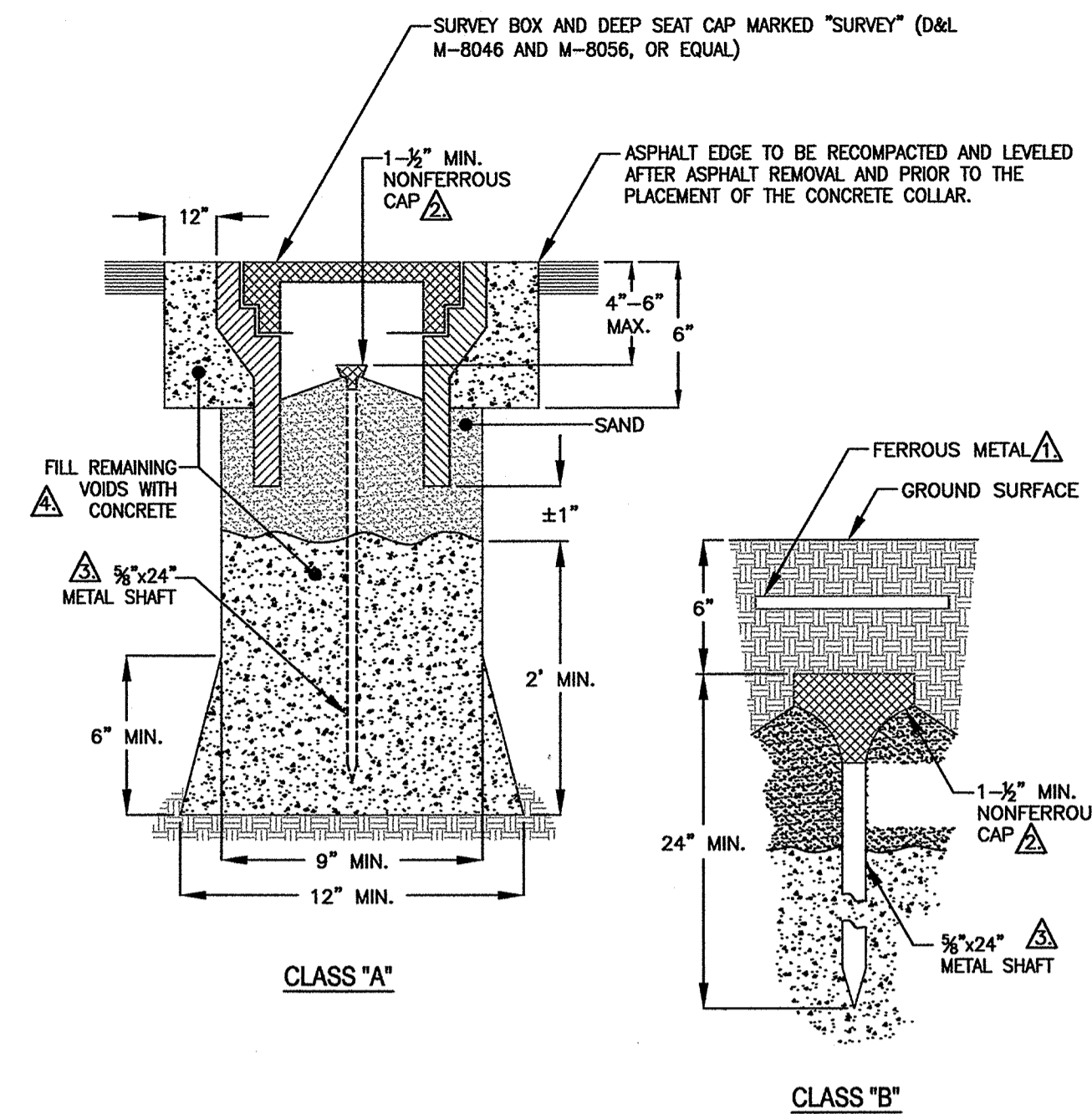
681 EDISON WAY - RENO, NEVADA 89502  
PH 775-771-5554 / FX 775-856-3951

CITY OF SPARKS PUBLIC WORKS  
"C" STREET SEWER REHABILITATION  
18TH STREET TO 19TH STREET  
DETAIL SHEET

PROFESSIONAL ENGINEER STATE OF NEVADA  
CLAYTON GUZELIS  
Exp. 6-30-13  
No. 10372  
CIVIL  
5/21/13

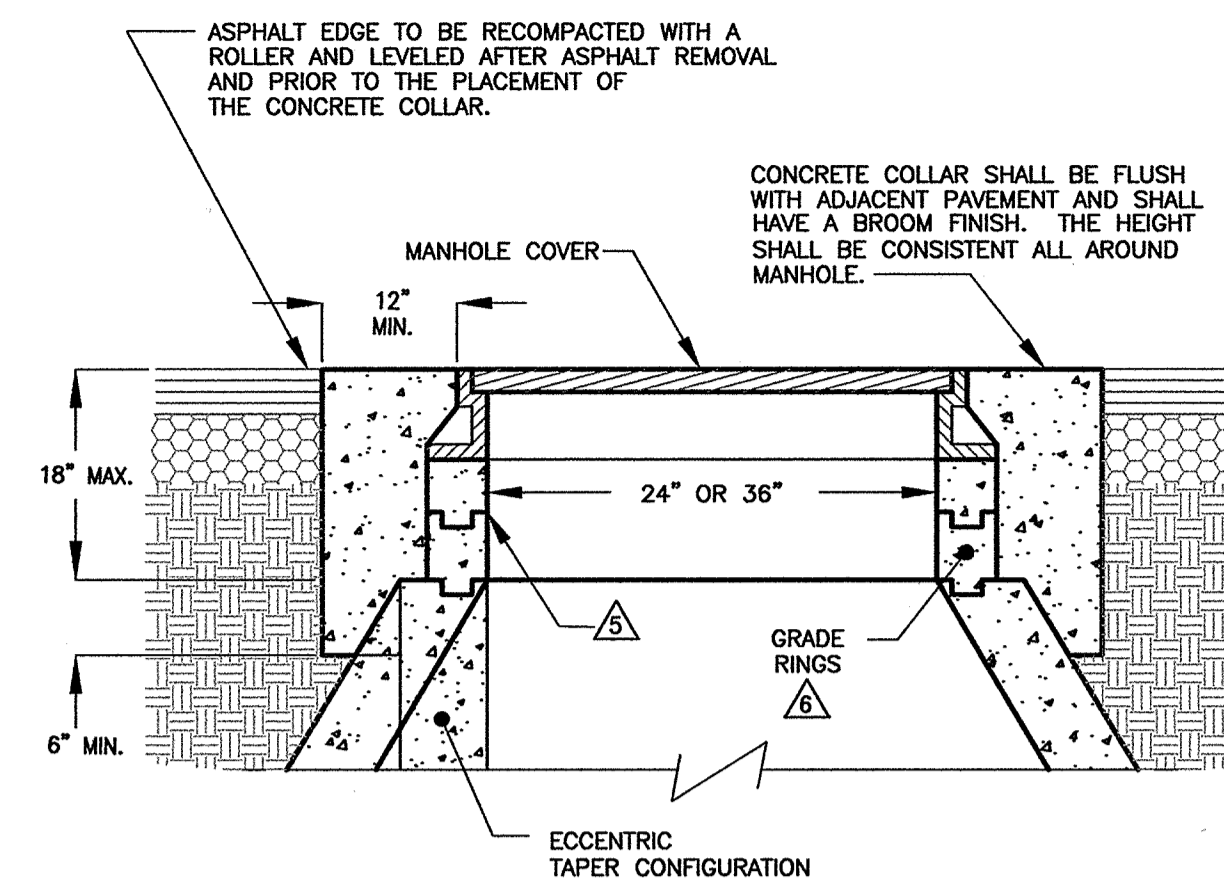
DRAWN BY:	GKG
DESIGNED BY:	GKG
CHECKED BY:	GKG
DATE:	5/21/2013
JOB NO.:	011004

SHEET NUMBER  
**D-2**  
5 OF 6



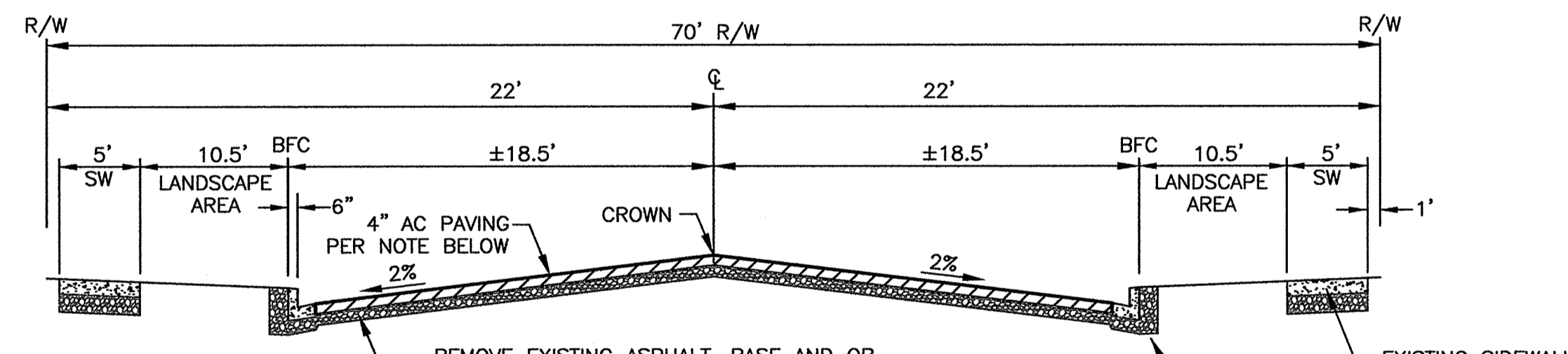
- NOTES:**
- ▲ FERROUS METAL OVER MONUMENT FOR RECOVERY BY DIP NEEDLE OR MAGNETIC INSERT IN CAP.
  - ▲ 1-1/2" MIN. NONFERROUS CAP WITH PROFESSIONAL LAND SURVEYOR NO. PERMANENTLY ATTACHED PRIOR TO PLACEMENT.
  - ▲ 3/8" METALLIC SHAFT (SMOOTH SHAFTS TO BE DEFORMED).
  - ▲ PORTLAND CEMENT CONCRETE (P.C.C.) SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER/CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. ALL MATERIALS SHALL CONFORM TO SSPWC SECTION 202.
  - 5. PRE-PUNCHED CAPS SHALL NOT BE PERMITTED.

**SURVEY MONUMENT** 1  
NTS D-3



- NOTES:**
- ▲ CONCRETE COLLAR TO BE PORTLAND CEMENT CONCRETE (P.C.C.) WITH THE FOLLOWING CHARACTERISTICS: 4000 PSI MIN. COMPRESSIVE STRENGTH AT 28 DAYS, MIN. 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAX. WATER/CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5% AND SLUMP AT 1 TO 4 INCHES. ALL MATERIAL SHALL CONFORM TO SSPWC SECTION 202.
  - 2. CIRCUMSTANCES MAY REQUIRE THE NEED FOR SPECIAL TYPES OF TOP OF MANHOLE CONFIGURATIONS SUCH AS FLAT TOP, ABOVE GROUND, ETC. AS DIRECTED BY THE CITY OF SPARKS. DETAILED PLANS OF ANY SPECIAL TOP OF MANHOLE CONFIGURATIONS AND ASSOCIATED COLLARS MUST BE APPROVED BY THE ENGINEER.
  - 3. IN UNPAVED AREAS, IT SHALL BE NECESSARY TO SET THE MANHOLE RIM APPROXIMATELY 6 INCHES ABOVE THE SURROUNDING AREA. INSTALL A 6 INCH THICK RING OF CONCRETE, TAPERED AT A 3:1 SLOPE, FROM THE TOP, OUTSIDE EDGE OF THE COLLAR TO THE EXISTING GROUND SURFACE.
  - 4. MANHOLE LIDS SHALL NOT BE LOCATED IN GUTTER PANS, UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
  - ▲ 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 SECTION 202.
  - ▲ ALL GRADE RINGS SHALL BE PORTLAND CEMENT CONCRETE. PVC GRADE RINGS ARE NOT ALLOWED.

**MANHOLE COLLAR** 2  
NTS D-3



REMOVE EXISTING ASPHALT, BASE AND OR SUBGRADE TO A DEPTH OF 5" BELOW PROPOSED PAVEMENT SURFACE. PLACE NEW STRUCTURAL SECTION CONSISTING OF 1" OF TYPE 2 CLASS B AGGREGATE BASE COURSE AND 4" OF ASPHALTIC PAVEMENT AS DESCRIBED IN THE NOTES BELOW. COMPACT AGGREGATE BASE TO 95% COMPACTION PER ASTM-D1557. COMPACT PAVEMENT TO 96% MARSHALL.

EXISTING CURB AND GUTTER TO BE REMOVED AND REPLACED WITH NEW TYPE 1 CURB & GUTTER PER DETAIL 3/D1. MATCH EXISTING GRADES AND SLOPES.

- NOTES:**
1. 4" TYPE 3, 50 BLOW, 3% AIR VOID BITUMINOUS PLANTMIX PG64-28NV ASPHALTIC PAVEMENT. AGGREGATES SHALL BE PRE-MARINATED WITH LIME PER NDOT SPECIFICATIONS. RECYCLED ASPHALT PAVEMENT (RAP) UP TO 15% WILL BE ALLOWED; HOWEVER ALL VIRGIN AGGREGATES WILL BE SUBJECT TO LIME PRE-MARINATING PER NDOT SPECIFICATIONS. AC PAVING SHALL BE PLACED IN TWO LIFTS.
  2. MINIMUM DESIGN LIFE OF STRUCTURAL SECTION = 20 YEARS.
  3. MINIMUM CORRECTED SUBGRADE (R)VALUE = 30.
  4. PAVEMENT DESIGN BASED ON EQUIVALENT SINGLE AXLE LOAD OF 145,000 LBS.
  5. ANY DISTURBED LANDSCAPING OR OTHER SURFACE OR SUBSURFACE IMPROVEMENTS SHALL BE RESTORED TO EQUAL OR BETTER CONDITION.

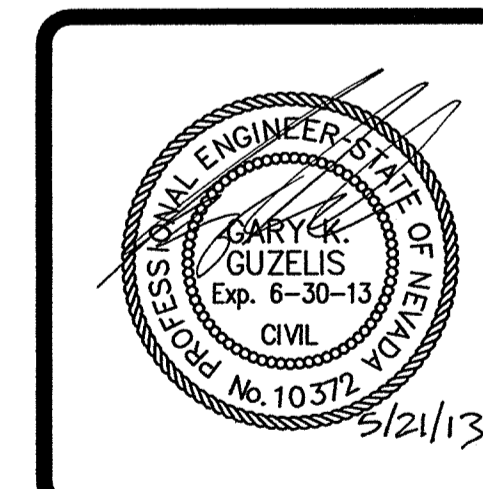
**C STREET ROAD CROSS SECTION** 3  
NTS D-3

REVISIONS	BY	DATE
	No.	DESCRIPTION

**Axion ENGINEERING**  
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PH 775-771-5554 / FX 775-856-3951

CITY OF SPARKS PUBLIC WORKS  
"C" STREET SEWER REHABILITATION  
18TH STREET TO 19TH STREET  
DETAIL SHEET



DRAWN BY:	GKG
DESIGNED BY:	GKG
CHECKED BY:	GKG
DATE:	5/21/2013
JOB NO.	011004

SHEET NUMBER  
**D-3**  
6 OF 6

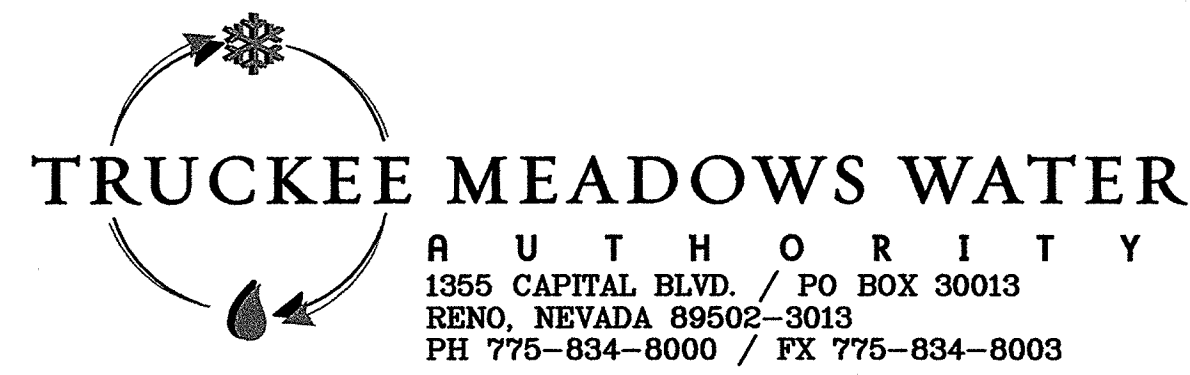
# TRUCKEE MEADOWS WATER AUTHORITY C STREET 8" WATER MAIN REPLACEMENT PROJECT 18TH STREET TO 19TH STREET

SPARKS, WASHOE COUNTY, NEVADA

TMWA WORK ORDER #10.0001.016

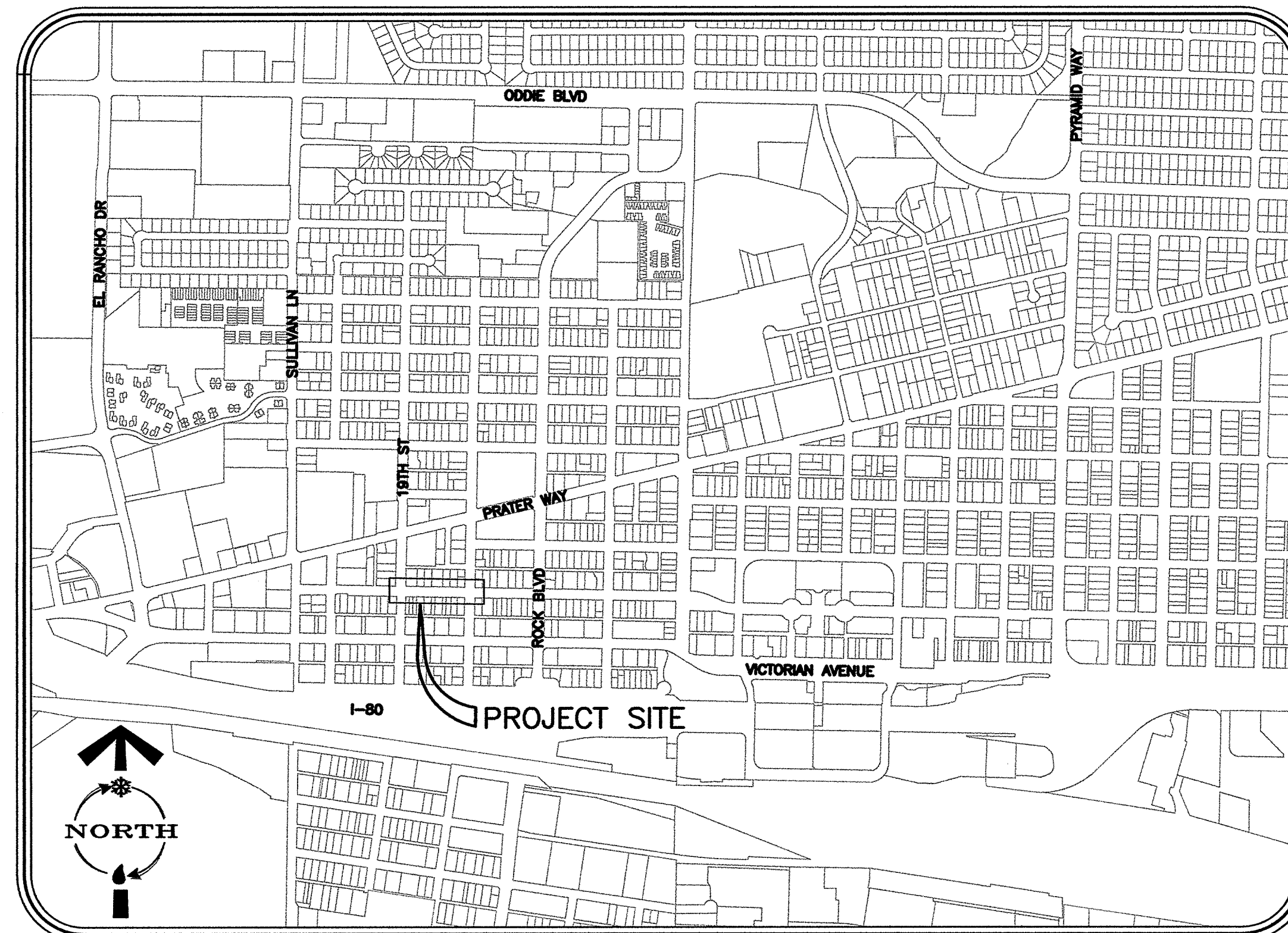
## TMWA CONTACT

STEVE VOLK, P.E.  
PROJECT MANAGER  
1355 CAPITAL BLVD.  
RENO, NV 89520-3013  
775-834-8024

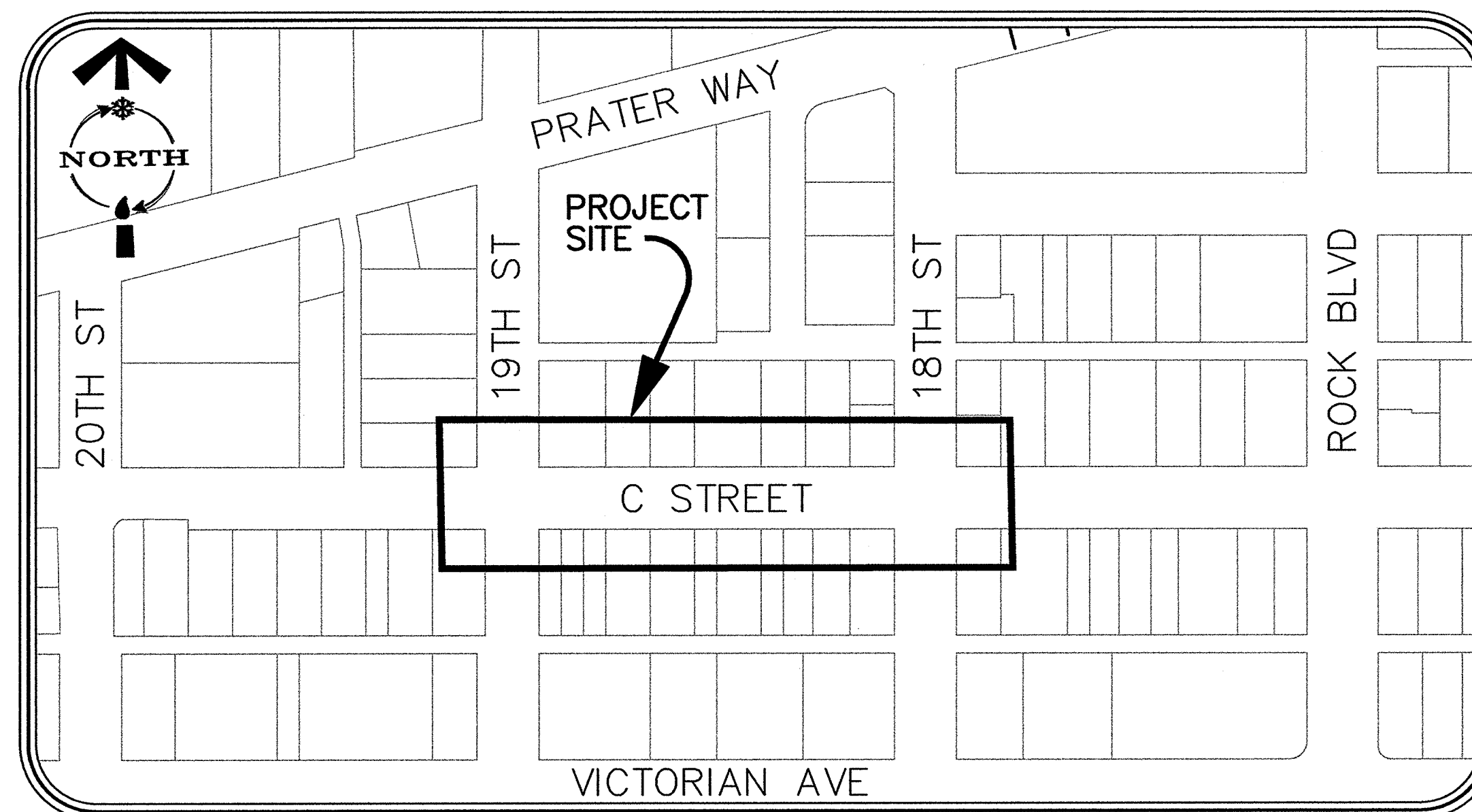


**NOT REPRODUCIBLE**  
PROPERTY OF  
TRUCKEE MEADOWS WATER  
AUTHORITY, RETURN UPON  
COMPLETION OF PROJECT  
(Per Homeland Security Act)

2 working days  
**Call before you Dig.**  
1-800-227-2600



VICINITY MAP NTS



SITE MAP NTS

## SHEET INDEX

SHEET NO.	DRAWING NO.	DESCRIPTION
1	C-1	TITLE SHEET
2	C-2	GENERAL NOTES
3	C-3	"C" STREET PLAN & PROFILE
4	C-4	VERTICAL OFFSETS/DETAIL SHEET
5	C-5	DETAIL SHEET
6	C-6	DETAIL SHEET

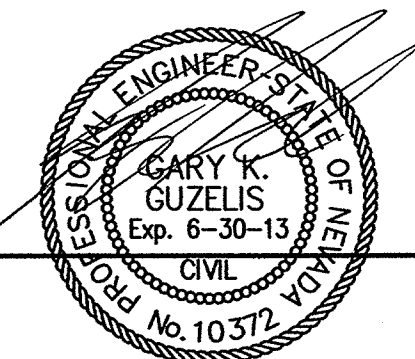
## ENGINEER



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

APPROVED BY:

GARY K. GUZELIS, P.E.  
AXION ENGINEERING



DATE: 5/21/13

C-1



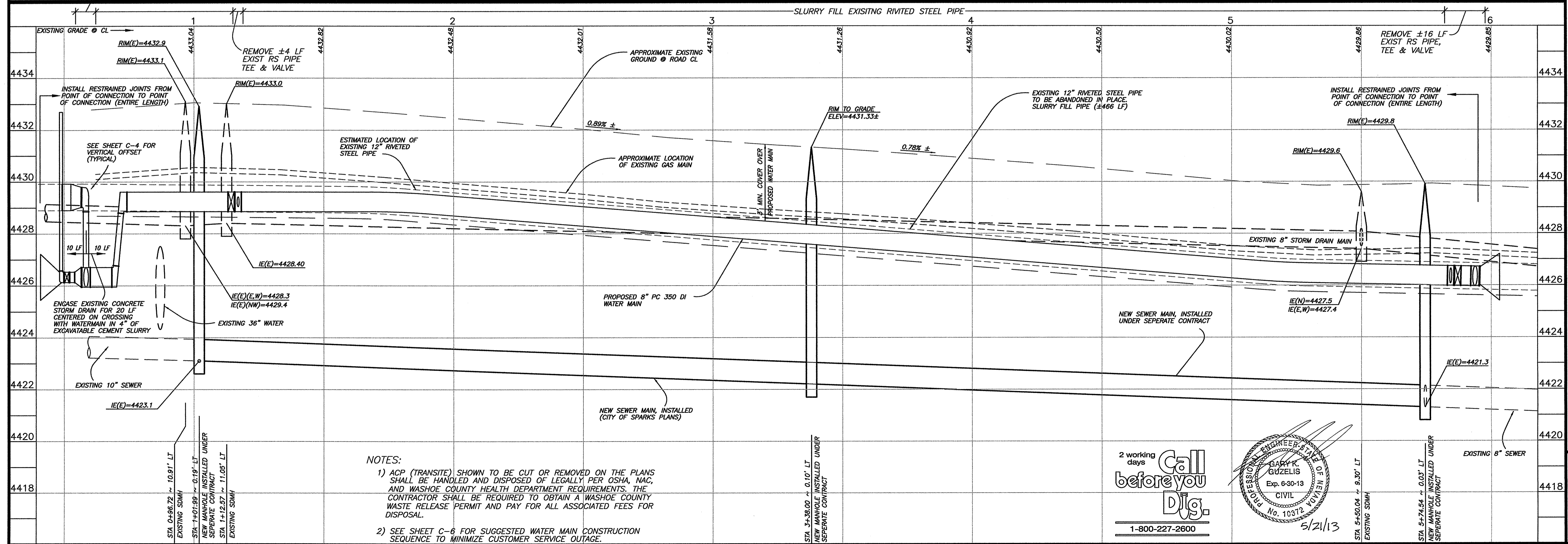
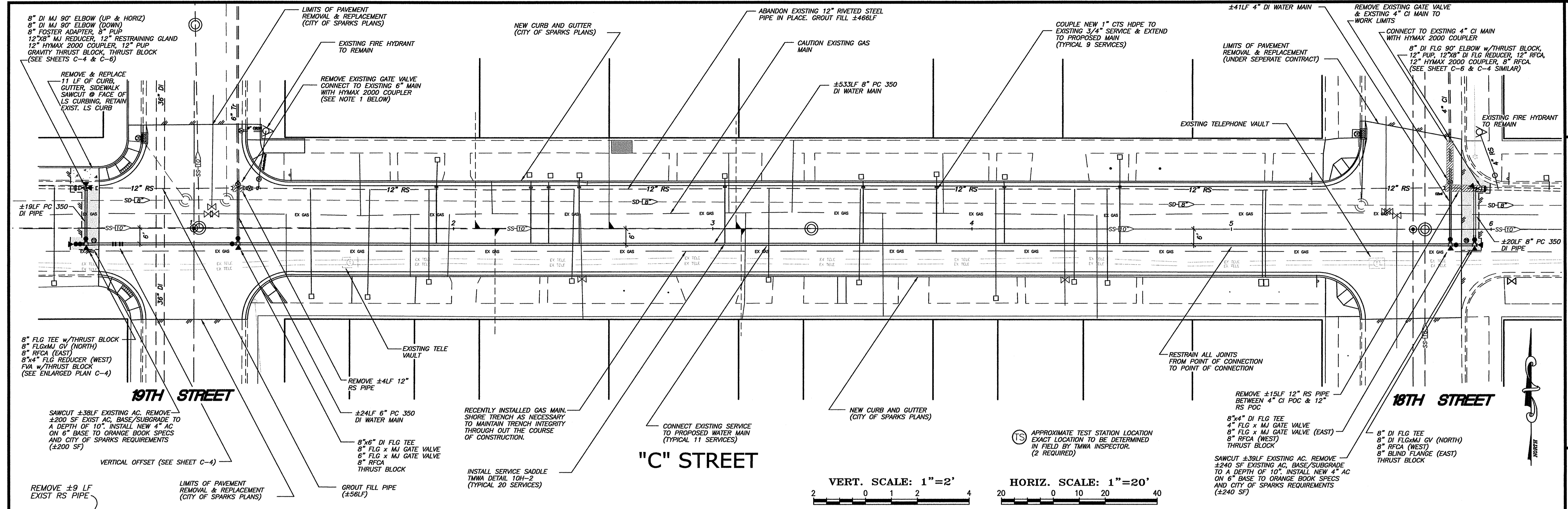


WORK ORDER NO. 10.0001.016  
 DESIGNED: GSK  
 DRAWN: GSK  
 DATE: APRIL 2013  
 CHECKED: [Signature]  
 SUBMITTED: [Signature]  
 APPROVED: [Signature]

TRUCKEE MEADOWS WATER  
 U T H O R I T Y  
 1805 CAPITAL BLVD., PO BOX 50013  
 TRUCKEE, NV 89409  
 PH 775-954-8000 / FX 775-954-8003

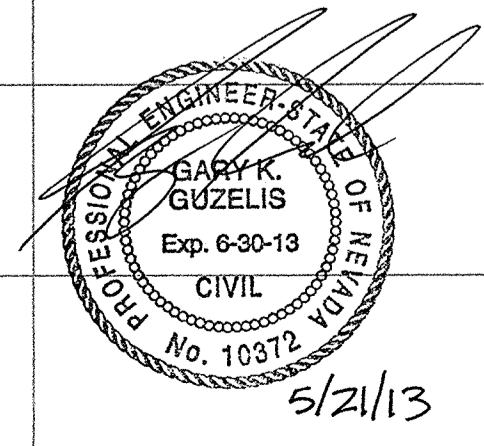
**C STREET 8" WATER MAIN  
 REPLACEMENT PROJECT  
 PLAN & PROFILE 18TH - 19TH ST**

SHEET NUMBER  
**C-3**  
 3 OF 6



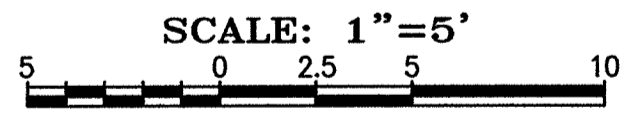
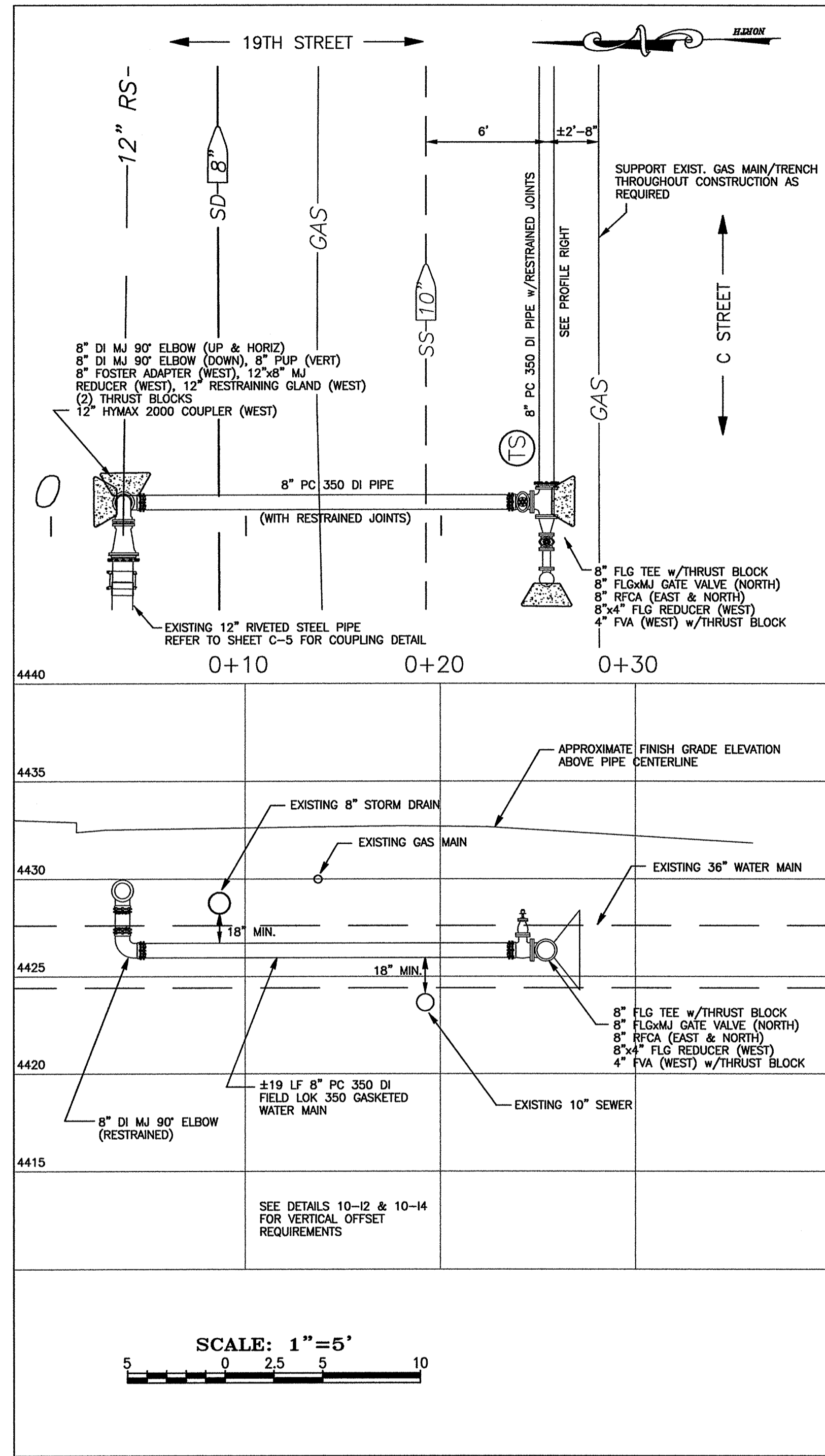
**NOTES:**  
 1) ACP (TRANSITS) SHOWN TO BE CUT OR REMOVED ON THE PLANS SHALL BE HANDLED AND DISPOSED OF LEGALLY PER OSHA, NAC, AND WASHOE COUNTY HEALTH DEPARTMENT REQUIREMENTS. THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN A WASHOE COUNTY WASTE RELEASE PERMIT AND PAY FOR ALL ASSOCIATED FEES FOR DISPOSAL.  
 2) SEE SHEET C-6 FOR SUGGESTED WATER MAIN CONSTRUCTION SEQUENCE TO MINIMIZE CUSTOMER SERVICE OUTAGE.

2 working days  
**Call before you Dig.**  
 1-800-227-2600

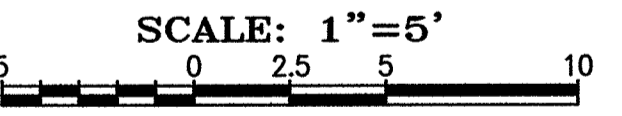
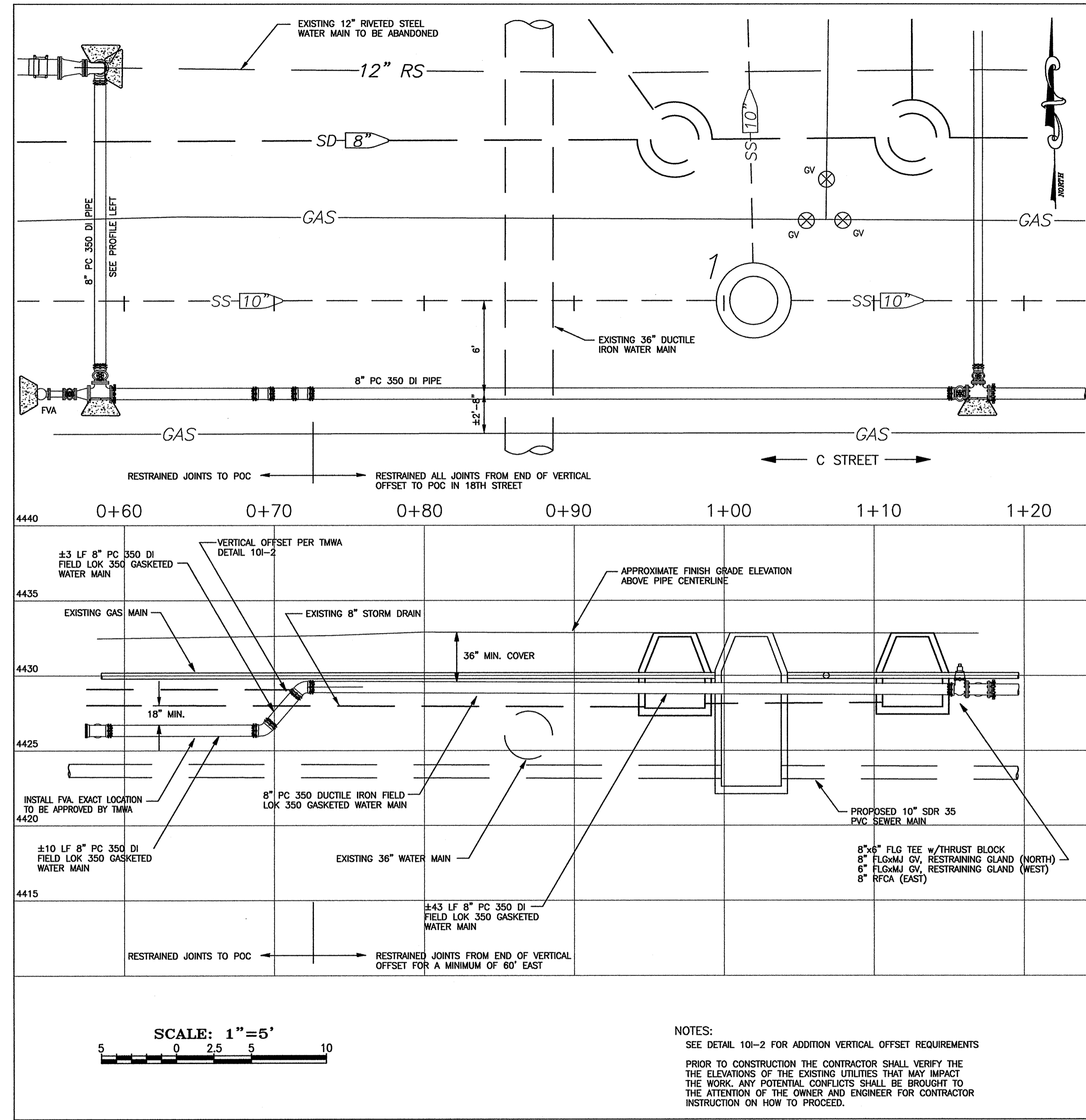


STA 3+38.00 ± 0.10' LT  
 NEW MANHOLE INSTALLED UNDER SEPARATE CONTRACT  
 STA 1+01.99 ± 0.19' LT  
 NEW MANHOLE INSTALLED UNDER SEPARATE CONTRACT  
 STA 1+12.97 ± 11.05' LT  
 EXISTING SDMM

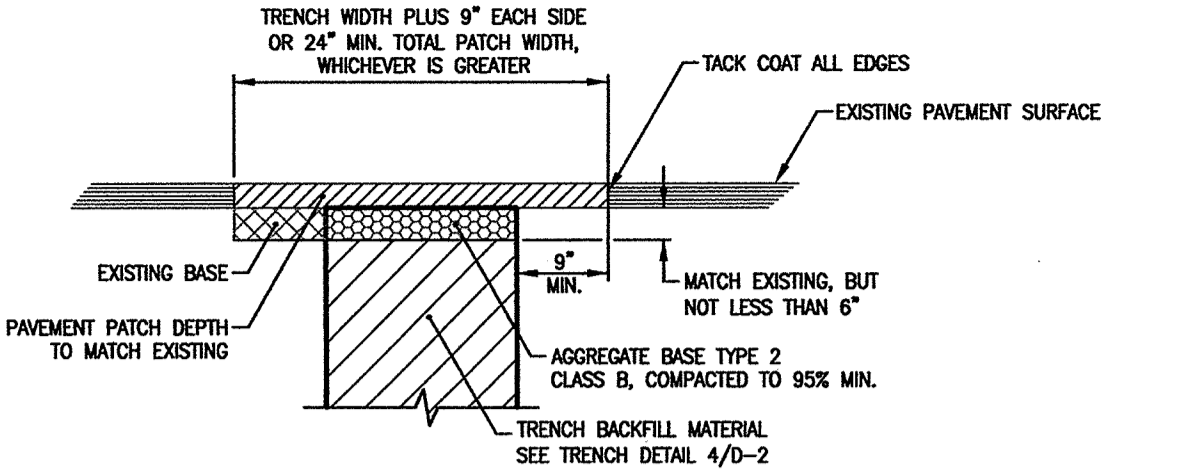
STA 5+50.04 ± 9.30' LT  
 EXISTING SDMM  
 STA 5+74.54 ± 0.03' LT  
 NEW MANHOLE INSTALLED UNDER SEPARATE CONTRACT



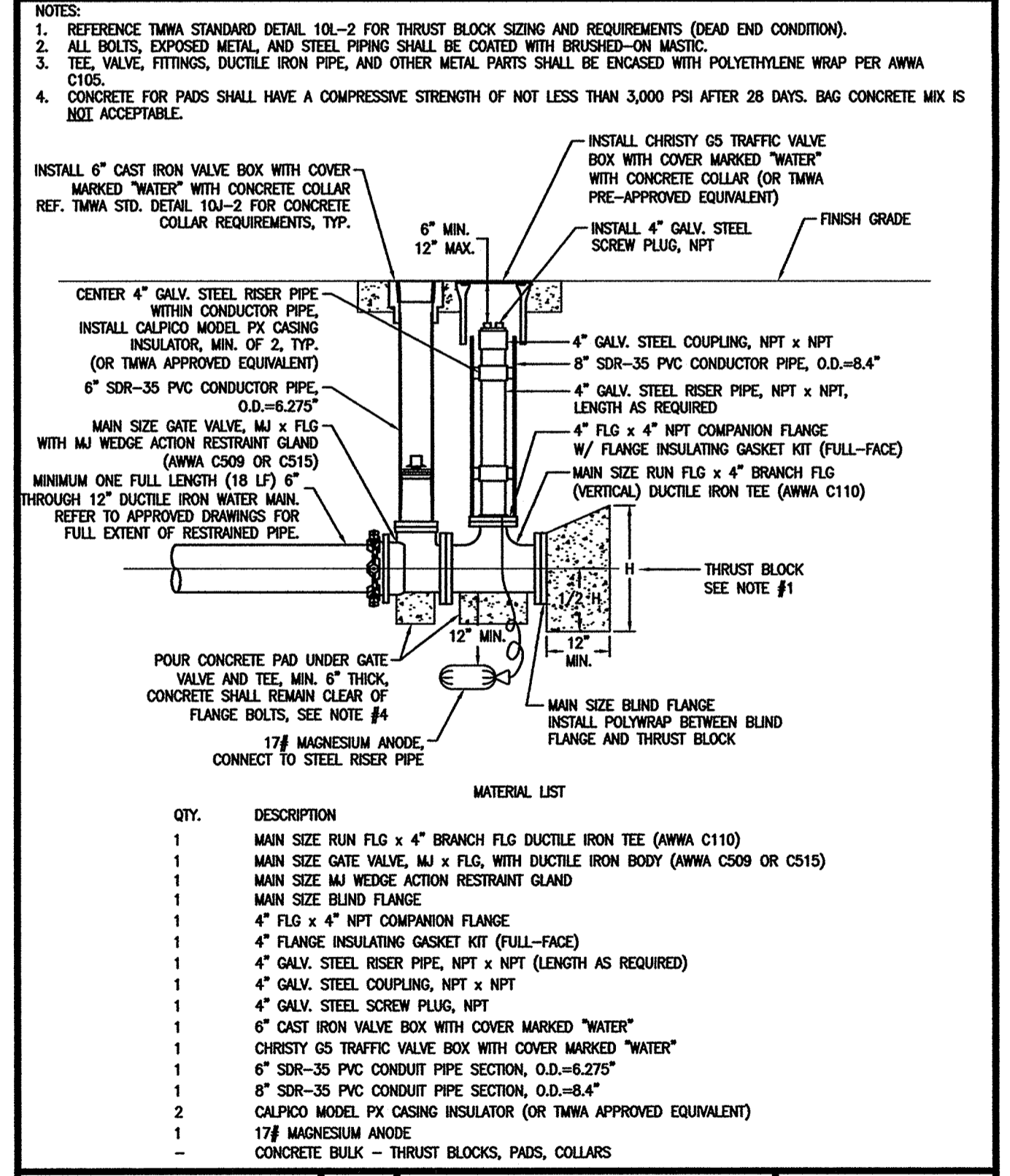
2 working days  
Call before you Dig.  
1-800-227-2600



NOTES:  
SEE DETAIL 101-2 FOR ADDITION VERTICAL OFFSET REQUIREMENTS  
PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL VERIFY THE ELEVATIONS OF THE EXISTING UTILITIES THAT MAY IMPACT THE WORK. ANY POTENTIAL CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR CONTRACTOR INSTRUCTION ON HOW TO PROCEED.



- NOTES:
- A PERMIT MUST BE OBTAINED FROM THE CITY ENGINEER PRIOR TO CUTTING ANY PUBLIC RIGHT-OF-WAY. 24 HOURS PRIOR TO TRENCH EXCAVATION, THE PERMITTEE MUST NOTIFY THE CITY EXCAVATION PERMIT INSPECTOR OR APPLICABLE ENGINEER OF RECORD.
  - 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.
  - ALL A.C. REPLACEMENT REQUIREMENTS ARE MINIMUM WIDTHS ONLY. THE CITY ENGINEER MAY REQUIRE WIDER PATCH SECTIONS OR OTHERWISE ALTER THESE REQUIREMENTS.
  - EDGE OF 4" RIB WHEEL TRENCHES FOR CONDUIT SHALL BE LOCATED A MIN. OF 9" FROM GUTTER LIP AND SHALL BE PATCHED AS PER THE ABOVE DETAIL.
  - AGGREGATE BASE AND BITUMINOUS PAVEMENT SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, LATEST REVISION.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF LOOP DETECTORS, ADJUSTMENT OF UTILITIES AND SURVEY MONUMENTS TO GRADE AND INSTALLATION OF TEMPORARY PAVEMENT MARKERS.
  - FOR P.C.C. CURB REPLACEMENT, SAW CUT EXISTING PAVEMENT 18-INCHES MINIMUM 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.
  - NO TEMPORARY PATCHING IS REQUIRED WITHIN THE CITY OF SPARKS ROAD RECONSTRUCTION AREA. MATCH ADJACENT STREET GRADE WITH AGGREGATE BASE.



QTY.	DESCRIPTION	DATE	DRAWING NUMBER
1	MAIN SIZE RUN FLG x 4" BRANCH FLG DUCTILE IRON TEE (AWWA C110)	7/2001	APPENDIX 10E
1	MAIN SIZE GATE VALVE, MJ x FLG WITH DUCTILE IRON BODY (AWWA C509 OR C515)	REV	FLUSH ASSEMBLY INSTALLATIONS
1	MAIN SIZE MJ WEDGE ACTION RESTRAINT GLAND	7/2011	TYPE "B" FLUSH ASSEMBLY
1	MAIN SIZE BLIND FLANGE		FOR MAIN SIZES 6" TO 12"
1	4" FLG x 4" NPT COMPANION FLANGE		
1	4" FLG x 4" NPT COMPANION FLANGE		
1	4" FLANGE INSULATING GASKET KIT (FULL-FACE)		
1	4" GALV. STEEL RISER PIPE, NPT x NPT (LENGTH AS REQUIRED)		
1	4" GALV. STEEL COUPLING, NPT x NPT		
1	4" GALV. STEEL SCREW PLUG, NPT		
1	6" CAST IRON VALVE BOX WITH COVER MARKED "WATER"		
1	CHRISTY GS TRAFFIC VALVE BOX WITH COVER MARKED "WATER"		
1	6" SDR-35 PVC CONDUIT PIPE SECTION, O.D.=8.4"		
1	8" SDR-35 PVC CONDUIT PIPE SECTION, O.D.=8.4"		
2	CALPICO MODEL PX CASING INSULATOR (OR TMWA APPROVED EQUIVALENT)		
1	17# MAGNESIUM ANODE		
-	CONCRETE BULK - THRUST BLOCKS, PADS, COLLARS		

REVISION	DESCRIPTION	DATE	BY

WORK ORDER NO. 10.0001.016  
DESIGNED: GKG  
DRAWN: GKG  
DATE: 5/21/2013  
CHECKED BY: \_\_\_\_\_  
SUBMITTED: \_\_\_\_\_  
RECOMMENDED: \_\_\_\_\_  
APPROVED: \_\_\_\_\_

**TRUCKEE MEADOWS WATER AUTHORITY**  
1855 CAPITAL BLVD. / PO BOX 30013  
RENO, NEVADA 89520-3013  
PH 775-834-8000 / FX 775-834-8003

**NOT REPRODUCIBLE**  
PROPERTY OF TRUCKEE MEADOWS WATER AUTHORITY, RETURN UPON COMPLETION OF PROJECT  
(Per Homeland Security Act)

**TRUCKEE MEADOWS WATER AUTHORITY**  
C-STREET 8" WATER MAIN REPLACEMENT  
18TH STREET TO 19TH STREET  
VERTICAL OFFSETS/DETAILS

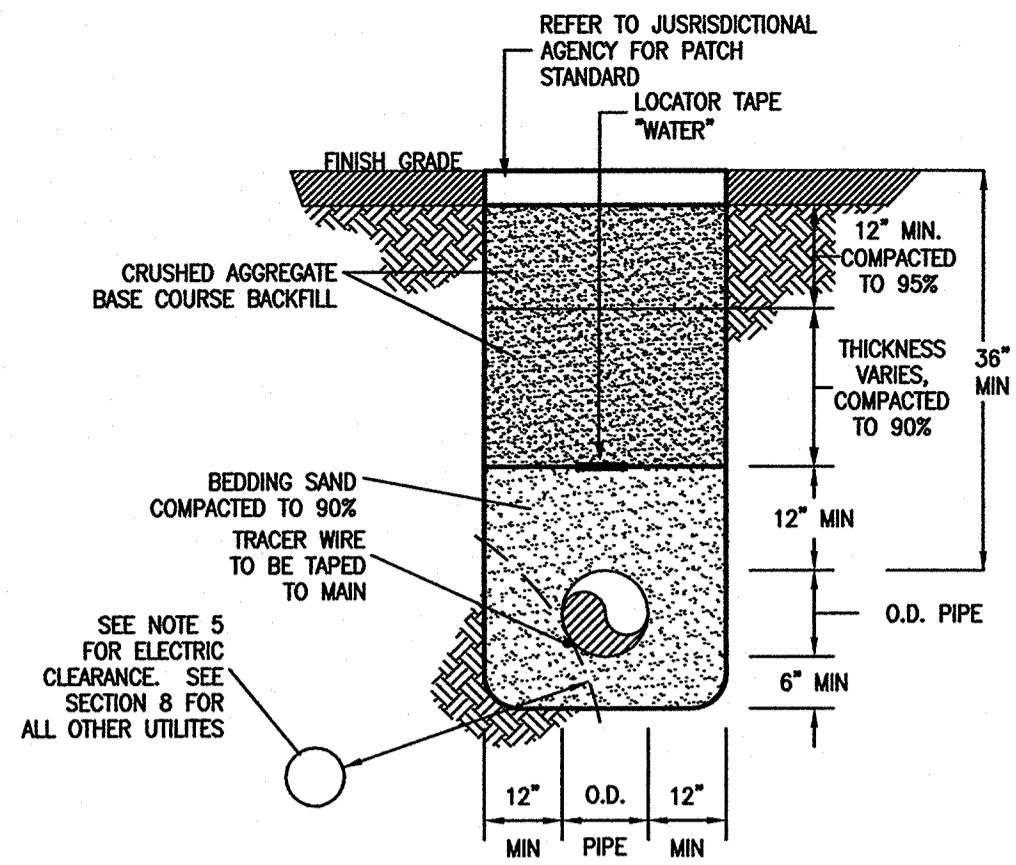
**PROFESSIONAL ENGINEER STATE OF NEVADA**  
GARY K. GUZELIS  
Exp. 6-30-13  
CIVIL  
No. 10372  
5/21/13

SHEET NUMBER  
**C-4**  
4 OF 6

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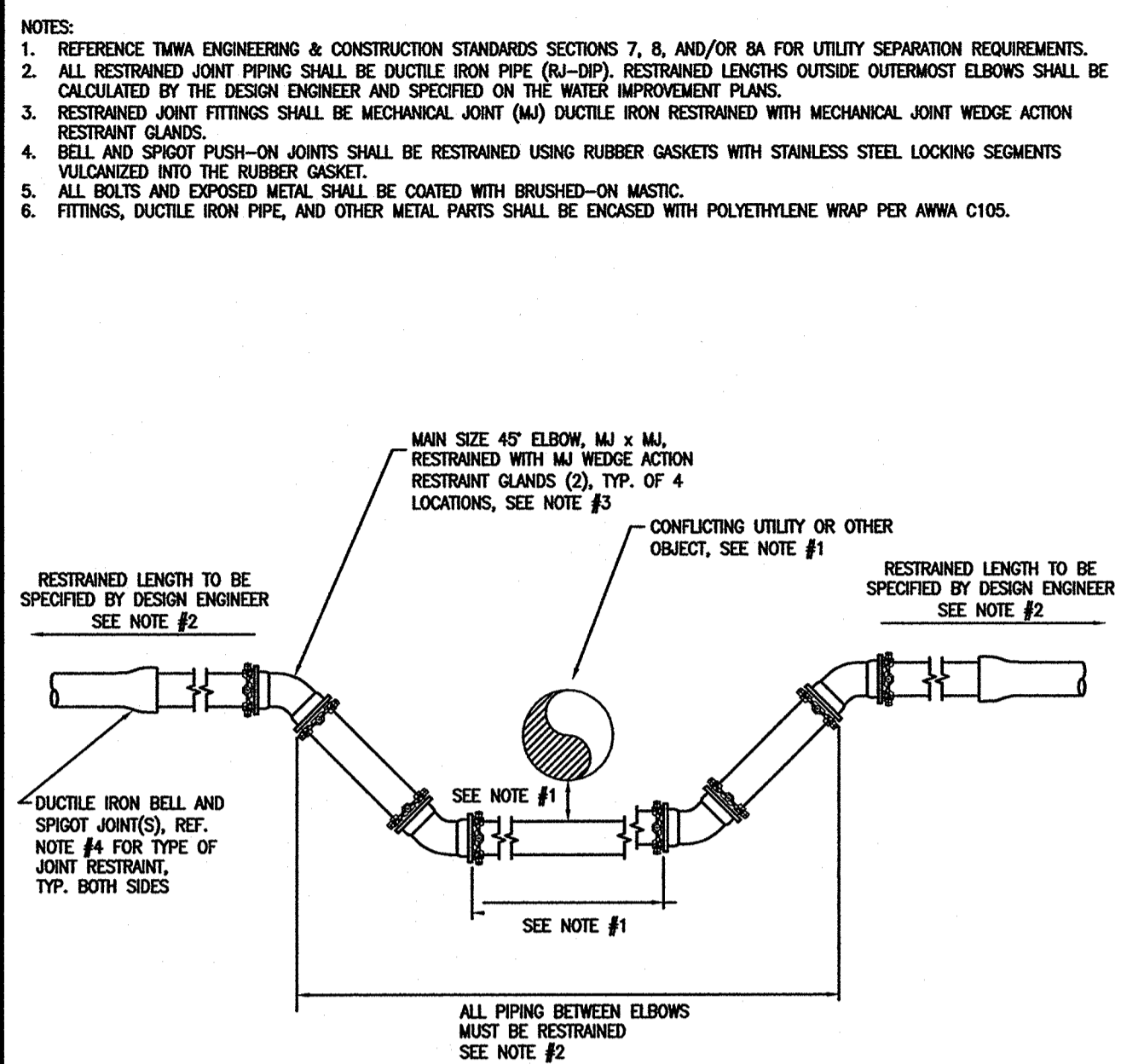
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PH 775-771-5554 / FX 775-856-3951

AXION JOB NUMBER: 13004



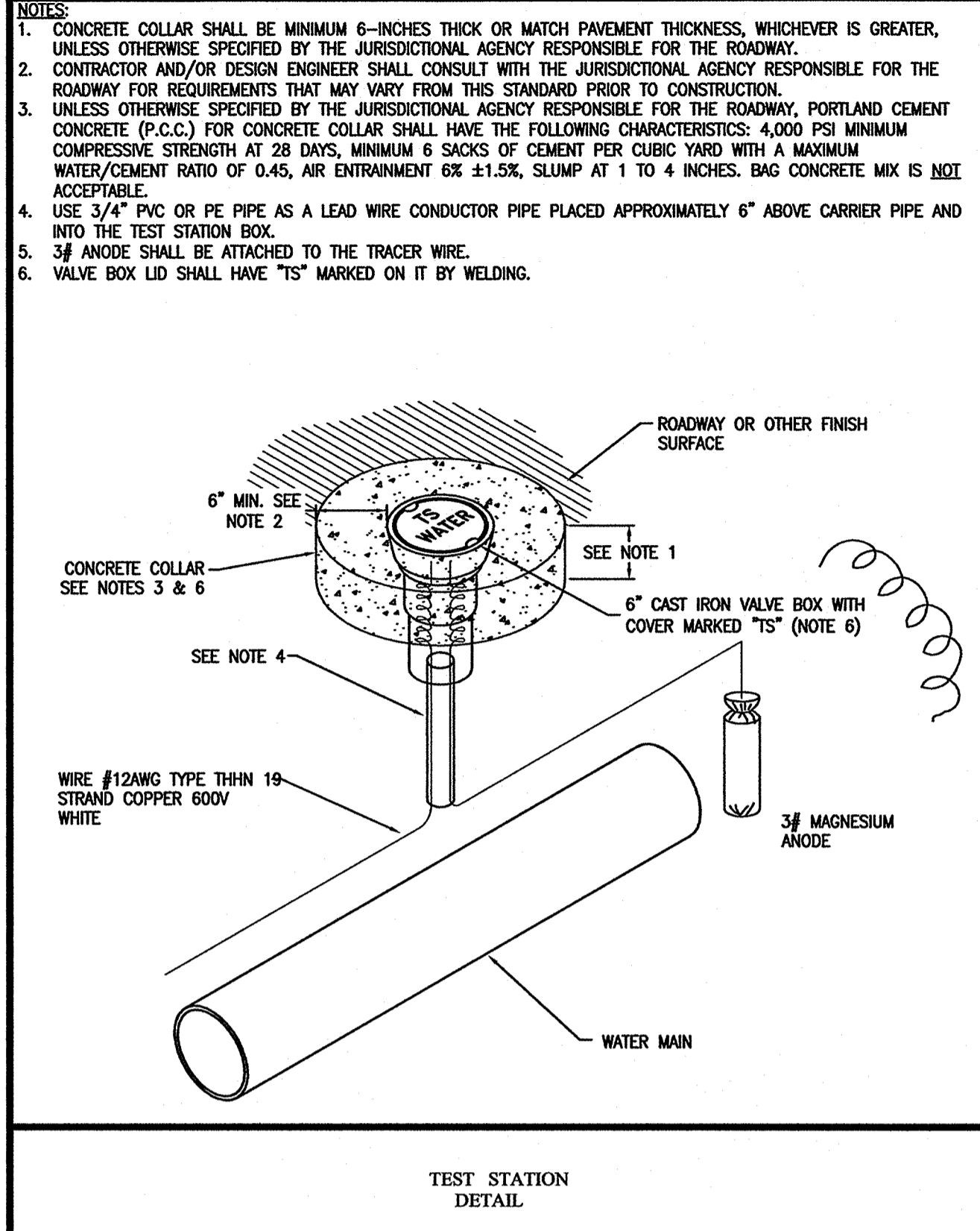
- NOTES:
1. ALL TRENCHES MUST CONFORM TO APPLICABLE T.M.W.A. CITY, STATE, COUNTY, AND OSHA SPECIFICATIONS AND REQUIREMENTS. IN THE CASE OF CONFLICT, THE MORE RIGID SPECIFICATION OR STANDARD SHALL APPLY.
  2. BEDDING SAND SHALL BE COMPACTED TO 90% MAXIMUM DENSITY PER SECTION 5.05.03 AND SHALL BE A MINIMUM OF 12" ABOVE AND 6" BELOW THE MAIN. PER SECTION 5 OF T.M.W.A. STANDARDS.
  3. CRUSHED AGGREGATE BASE COURSE BACKFILL SHALL BE PLACED IN 12" MAXIMUM LOOSE LIFTS. THE TOP 12" SHALL BE COMPACTED TO 90% MAXIMUM DENSITY. THE AREA ABOVE THE BEDDING SAND & BELOW 12" FROM FINISH GRADE SHALL BE COMPACTED TO 90% MAXIMUM DENSITY. PER SECTION 5 OF T.M.W.A. STANDARDS.
  4. NON-METALLIC BLUE WARNING TAPE SHALL BE PLACED IN ALL TRENCHES AT LEAST 12" ABOVE THE WATER MAIN. METALLIC WARNING TAPE MUST BE UTILIZED WITH WATER FACILITIES WHEN THERE IS NO OTHER DETECTABLE MEANS AVAILABLE.
  5. ELECTRIC UTILITIES MUST BE LOCATED BELOW WATER & MAINTAIN 2" MINIMUM RADIAL CLEARANCE FROM T.M.W.A. WATER FACILITIES. IF 2" RADIAL CLEARANCE CAN NOT BE MET ELECTRIC CONDUIT MUST BE CONCRETE ENCASED AT LEAST 18" EACH SIDE OF WATER CROSSING. FIBER OPTIC AND/OR COMMUNICATION CONDUITS SHALL NOT BE PLACED IN THE SAME TRENCH AS WATER.
  6. ALL CHANGES MUST BE APPROVED BY THE T.M.W.A. INSPECTOR AND/OR THE T.M.W.A. ENGINEER.
  7. SEPARATION FOR PIPES IN A JOINT TRENCH SHALL BE A MINIMUM OF 12".

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10L	DRAWING NUMBER
	7/2001	MISCELLANEOUS WATER DETAILS	
	REV	TRENCH DETAIL WATER ONLY	
			10L-6



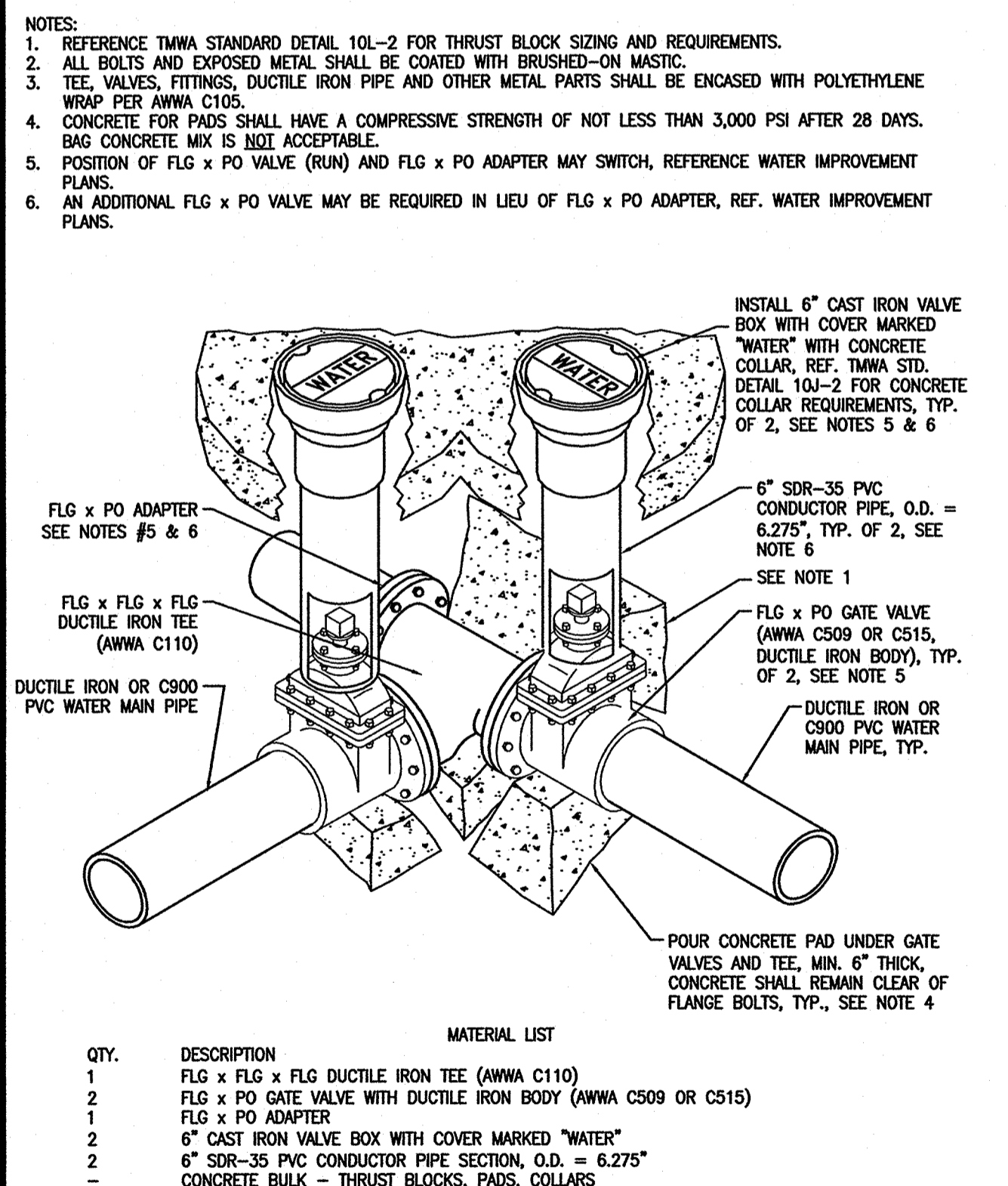
- NOTES:
1. REFERENCE T.M.W.A. ENGINEERING & CONSTRUCTION STANDARDS SECTIONS 7, 8, AND/OR 8A FOR UTILITY SEPARATION REQUIREMENTS.
  2. ALL RESTRAINED JOINT PIPING SHALL BE DUCTILE IRON PIPE (DIP). RESTRAINED LENGTHS OUTSIDE OUTERMOST ELBOWS SHALL BE CALCULATED BY THE DESIGN ENGINEER AND SPECIFIED ON 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 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 ANWA C105.

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



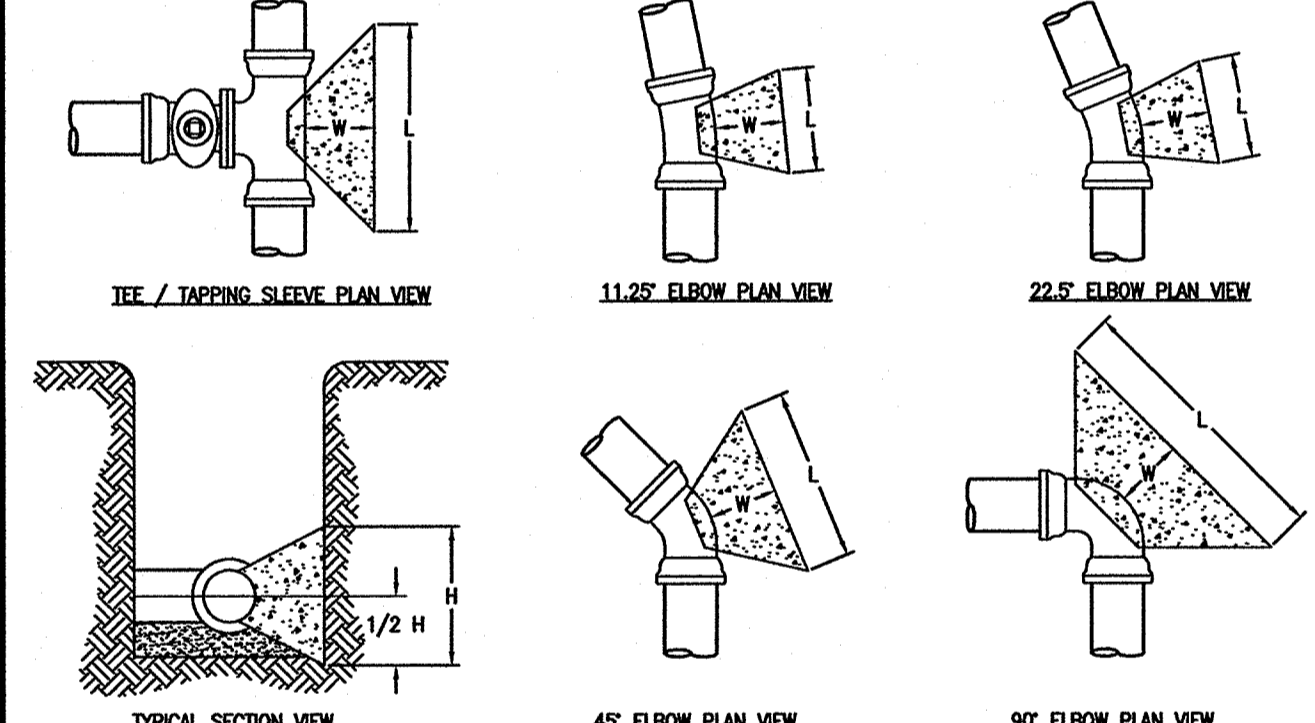
- NOTES:
1. CONCRETE COLLAR SHALL BE MINIMUM 6-INCHES THICK OR MATCH PAVEMENT THICKNESS, WHICHEVER IS GREATER, UNLESS OTHERWISE SPECIFIED BY THE JURISDICTIONAL AGENCY RESPONSIBLE FOR THE ROADWAY.
  2. CONTRACTOR AND/OR DESIGN ENGINEER SHALL CONSULT WITH THE JURISDICTIONAL AGENCY RESPONSIBLE FOR THE ROADWAY FOR REQUIREMENTS THAT MAY VARY FROM THIS STANDARD PRIOR TO CONSTRUCTION.
  3. UNLESS OTHERWISE SPECIFIED BY THE JURISDICTIONAL AGENCY RESPONSIBLE FOR THE ROADWAY, PORTLAND CEMENT CONCRETE (P.C.C.) FOR CONCRETE COLLAR SHALL HAVE THE FOLLOWING CHARACTERISTICS: 4,000 PSI MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, MINIMUM 6 SACKS OF CEMENT PER CUBIC YARD WITH A MAXIMUM WATER/CEMENT RATIO OF 0.45, AIR ENTRAINMENT 6% ±1.5%, SLUMP AT 1 TO 4 INCHES. BAG CONCRETE MIX IS NOT ACCEPTABLE.
  4. USE 3/4" PVC OR PE PIPE AS A LEAD WIRE CONDUCTOR PIPE PLACED APPROXIMATELY 6" ABOVE CARRIER PIPE AND INTO THE TEST STATION BOX.
  5. 3# ANODE SHALL BE ATTACHED TO THE TRACER WIRE.
  6. VALVE BOX LID SHALL HAVE "TS" MARKED ON IT BY WELDING.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10I	DRAWING NUMBER
	7/2001	VERTICAL ELBOW INSTALLATION	
	REV	RESTRAINED JOINT SINGLE OFFSET FOR MAINS 6" TO 12"	
			10I-4



- NOTES:
1. REFERENCE T.M.W.A. STANDARD DETAIL 10L-2 FOR THRUST BLOCK SIZING AND REQUIREMENTS.
  2. ALL BOLTS AND EXPOSED METAL SHALL BE COATED WITH BRUSHED-ON MASTIC.
  3. TEE, VALVES, FITTINGS, DUCTILE IRON PIPE AND OTHER METAL PARTS SHALL BE ENCASED WITH POLYETHYLENE WRAP PER ANWA C105.
  4. CONCRETE FOR PADS SHALL HAVE A COMPRESSIVE STRENGTH OF NOT LESS THAN 3,000 PSI AFTER 28 DAYS. BAG CONCRETE MIX IS NOT ACCEPTABLE.
  5. POSITION OF FLG x PO VALVE (RUN) AND FLG x PO ADAPTER MAY SWITCH, REFERENCE WATER IMPROVEMENT PLANS.
  6. AN ADDITIONAL FLG x PO VALVE MAY BE REQUIRED IN LIEU OF FLG x PO ADAPTER, REF. WATER IMPROVEMENT PLANS.

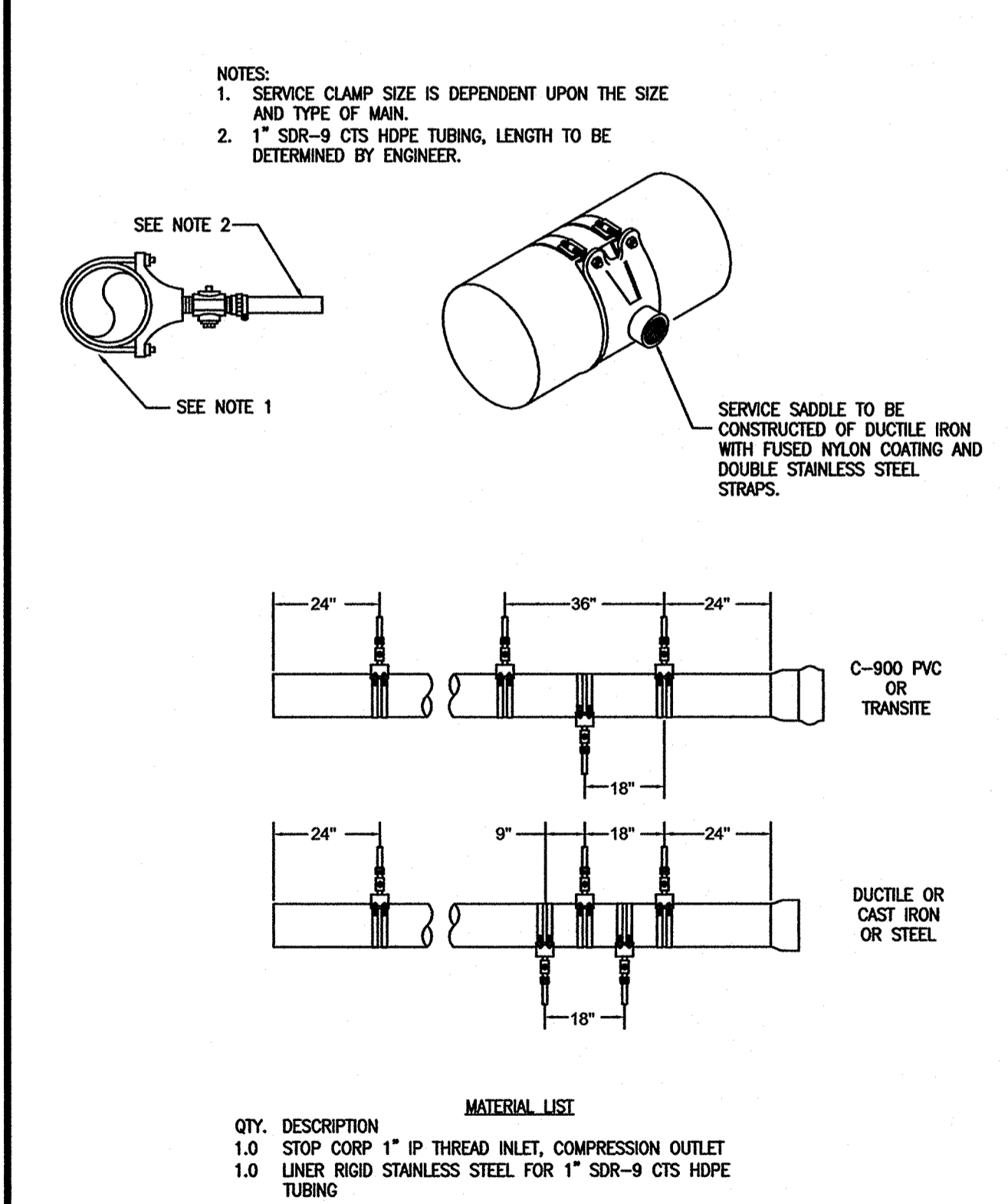
TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10B	DRAWING NUMBER
	7/2011	DISTRIBUTION BRANCH INSTALLATIONS	
	REV	FLANGED TEES FLG x PO GATE VALVES	
			10B-3



TEE, TAP, OR DEAD END BRANCH SIZE (INCHES)	THRUST BLOCK DIMENSIONS													
	11.25\"/>													
4	1.5	1	1	4	1	1	1	1	1	1.5	1	2	1	1
6	2	2	1	6	1	1	1	1	1.5	1	1	2	1.5	2
8	3	2	1	8	1.5	1	1	1.5	1.5	1	2.5	2	1	4
10	3.5	2.5	1	10	2	1	1	2	2	1	3	2.5	1	5
12	4.5	3	1	12	2	1.5	1	2.5	2	1	4	2.5	1	6

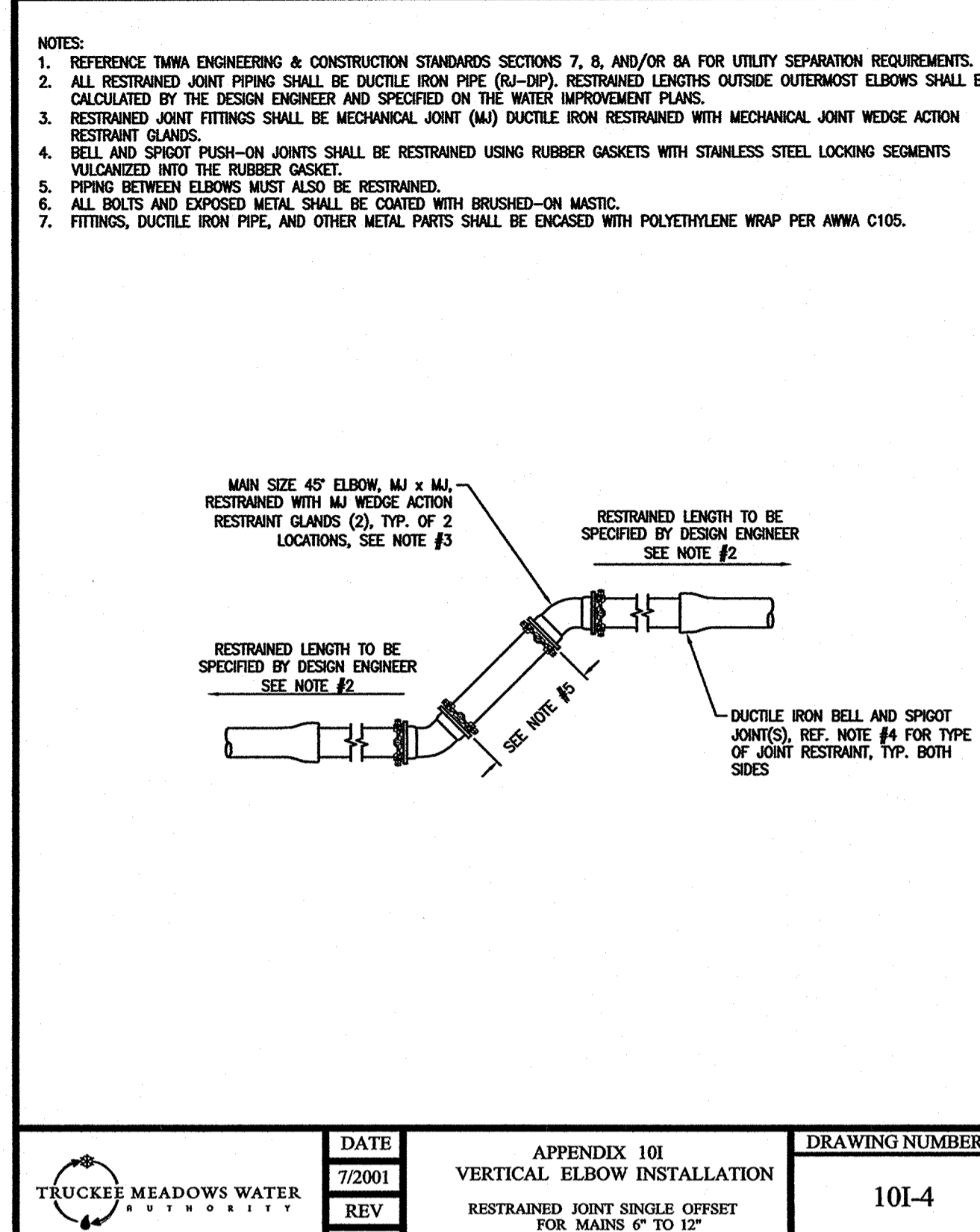
- THRUST BLOCK DESIGN CRITERIA:
- THRUST BLOCK SIZES HAVE BEEN CALCULATED USING THE METHOD AND EQUATIONS PUBLISHED IN THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE, SIXTH EDITION 2006 BY THE DUCTILE IRON PIPE RESEARCH ASSOCIATION (DIPRA) UTILIZING THE FOLLOWING DESIGN PARAMETERS: DESIGN PRESSURE = 150 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 1.1.13 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 ANWA 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 90% 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.

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



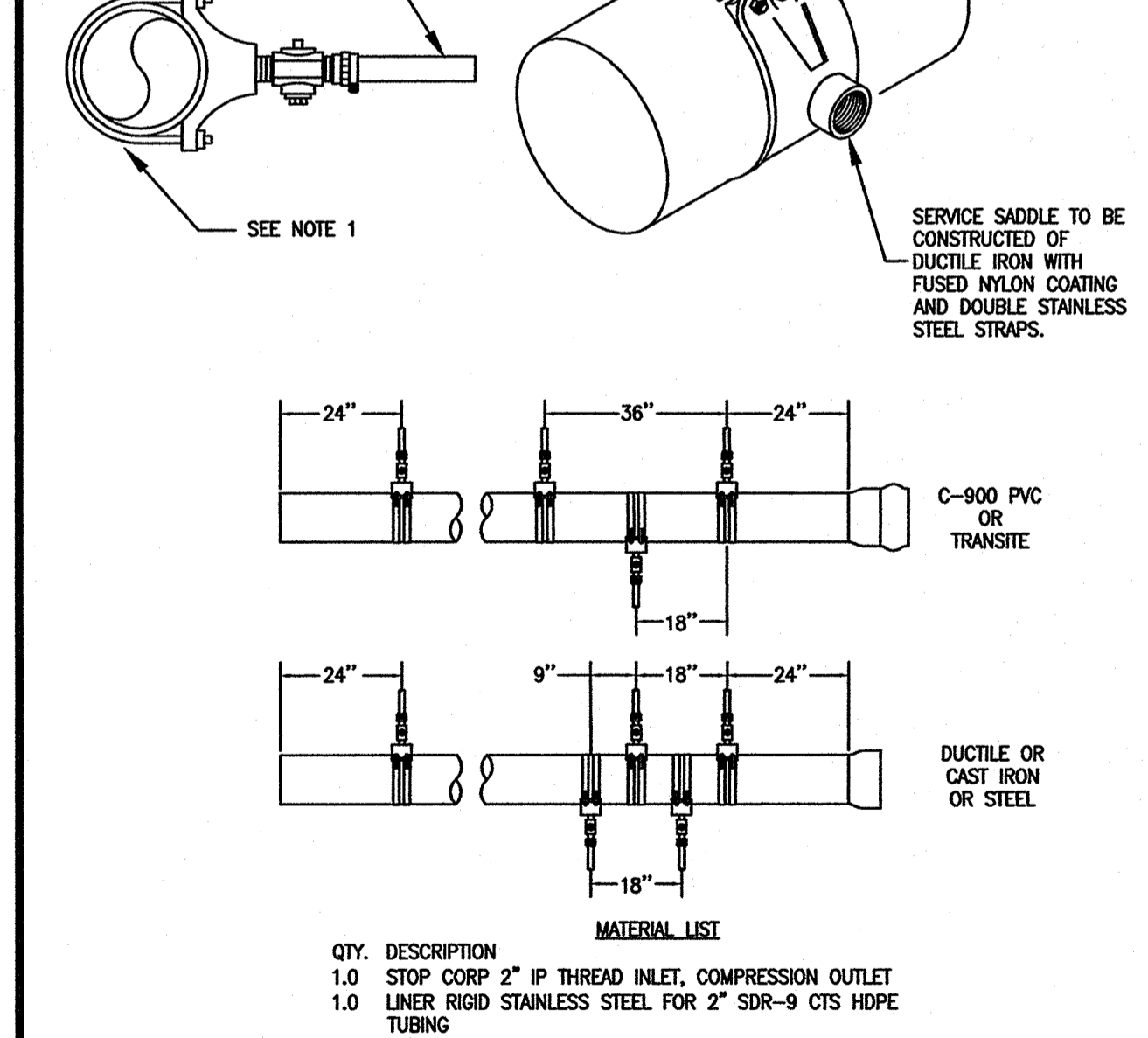
- NOTES:
1. SERVICE CLAMP SIZE IS DEPENDENT UPON THE SIZE AND TYPE OF MAIN.
  2. 1" SDR-9 CTS HDPE TUBING, LENGTH TO BE DETERMINED BY ENGINEER.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10H	DRAWING NUMBER
	7/2001	SERVICE TAP INSTALLATIONS	
	REV	1" SERVICE TAP	
			10H-2



- NOTES:
1. REFERENCE T.M.W.A. ENGINEERING & CONSTRUCTION STANDARDS SECTIONS 7, 8, AND/OR 8A FOR UTILITY SEPARATION REQUIREMENTS.
  2. ALL RESTRAINED JOINT PIPING SHALL BE DUCTILE IRON PIPE (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. PIPING BETWEEN ELBOWS MUST ALSO BE RESTRAINED.
  6. ALL BOLTS AND EXPOSED METAL SHALL BE COATED WITH BRUSHED-ON MASTIC.
  7. FITTINGS, DUCTILE IRON PIPE, AND OTHER METAL PARTS SHALL BE ENCASED WITH POLYETHYLENE WRAP PER ANWA C105.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10I	DRAWING NUMBER
	7/2001	VERTICAL ELBOW INSTALLATION	
	REV	RESTRAINED JOINT SINGLE OFFSET FOR MAINS 6" TO 12"	
			10I-4



- NOTES:
1. SERVICE CLAMP SIZE IS DEPENDENT UPON THE SIZE AND TYPE OF MAIN.
  2. 2" SDR-9 CTS HDPE TUBING, LENGTH TO BE DETERMINED BY ENGINEER.

TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10H	DRAWING NUMBER
	7/2001	SERVICE TAP INSTALLATIONS	
	REV	2" SERVICE TAP	
			10H-5

REVISION	DESCRIPTION	DATE	BY

WORK ORDER NO. 10.0001.016  
 DESIGNED: GKG  
 DRAWN: GKG  
 DATE: 5/21/2013  
 CHECKED BY:  
 SUBMITTED:  
 RECOMMENDED:  
 APPROVED:

**TRUCKEE MEADOWS WATER AUTHORITY**  
 1555 CAPITAL BLVD. / PO BOX 30013  
 RENO, NEVADA 89520-3013  
 PH 775-834-8000 / FX 775-834-8003

**NOT REPRODUCIBLE**  
 PROPERTY OF TRUCKEE MEADOWS WATER AUTHORITY, RETURN UPON COMPLETION OF PROJECT  
 (Per Homeland Security Act)

**TRUCKEE MEADOWS WATER AUTHORITY**  
 C-STREET 8" WATER MAIN REPLACEMENT  
 18TH STREET TO 19TH STREET  
 DETAIL SHEET

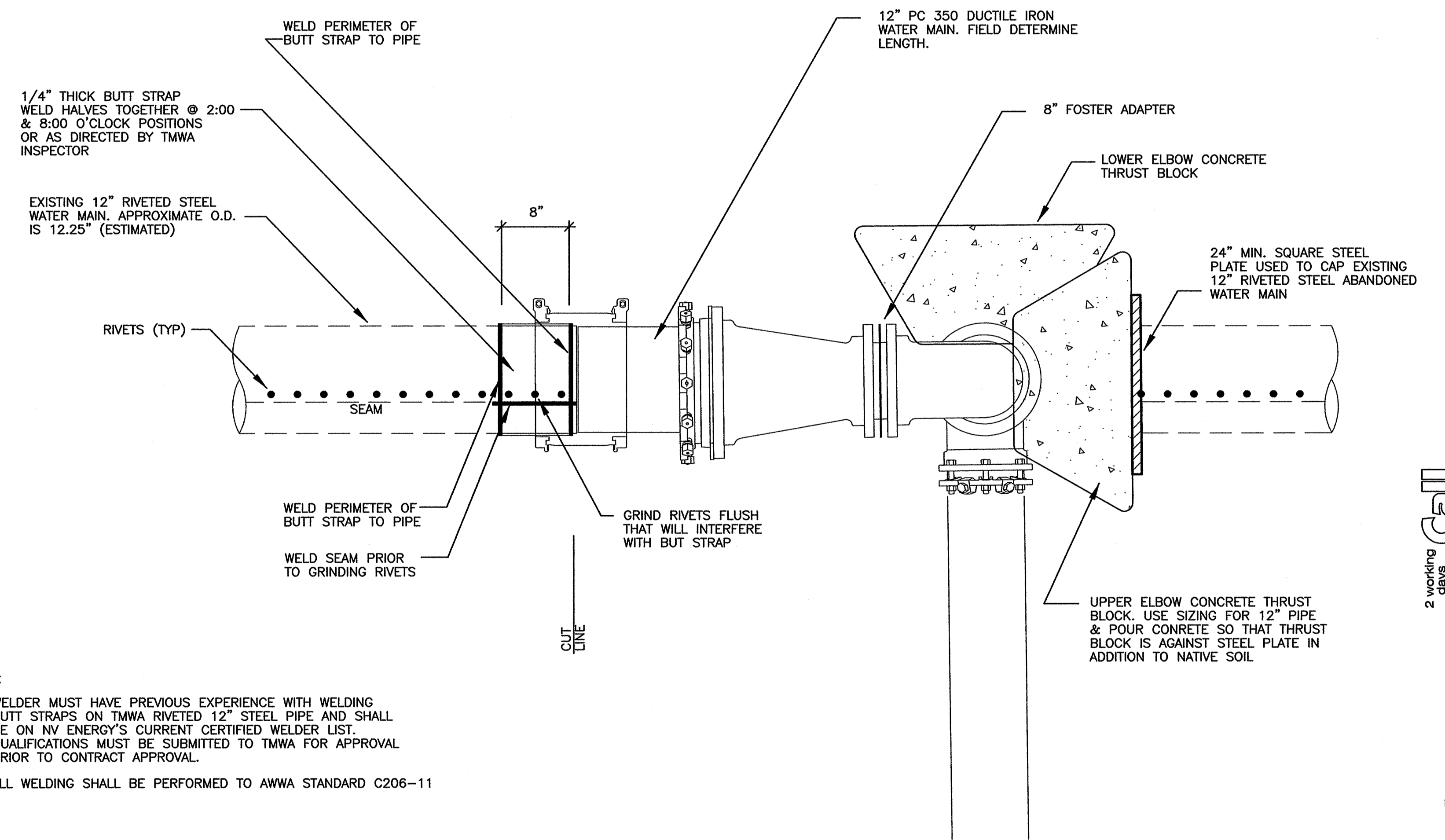
PROFESSIONAL ENGINEER STATE OF NEVADA  
 GARY K. GUZELIS  
 Exp. 6-30-13  
 CIVIL  
 No. 10372  
 5/21/13

SHEET NUMBER  
**C-5**  
 5 OF 6

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 Civil Engineering - Land Development  
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 PH 775-771-5554 / FX 775-858-5851  
 AXION JOB NUMBER: 13004

**SUGGESTED CONSTRUCTION SEQUENCE**

- 1) CONSTRUCT 8" DI MAIN FROM 18TH STREET TO 19TH STREET. (1 AND 2 CAN BE CONCURRENT).
- 2) CONNECT TO 4" CI MAIN IN 18TH STREET AND GO OVER/UNDER 12" RS MAIN TO CONNECT TO NEWLY INSTALLED 8" MAIN. (4" TO SUPPLY NEW 8", 8" VALVES IN 18TH AND 19TH SHUT). TEST AND BACTI
- 3) CONNECT EXISTING SERVICES TO NEW 8" MAIN.
- 4) CLOSE 6" AND 12" VALVE IN 19TH STREET INTERSECTION AND NEAREST 12" VALVE TO WEST.
- 5) REMOVE 12" RS MAIN IN 19TH STREET WHERE INDICATED ON THE DRAWINGS AND CONNECT 8" MAIN TO EXISTING 12" RS MAIN.
- 6) SHUT OFF 6" TR MAIN AND MAKE CONNECTION TO NEWLY INSTALLED 8" MAIN. SHUT DOWN 12" RS MAIN FROM CLOSEST VALVE EAST OF 18TH STREET.
- 7) REMOVE 12" RS PIPE IN 18TH STREET INTERSECTION WHERE INDICATED ON PLANS.
- 8) CONNECT 12" RS MAIN TO 8" MAIN, 4" CI MAIN TO 8" MAIN. IF PREVIOUS CI CONNECTION NOT ACCEPTABLE FOR PERMANENT DESIGN.



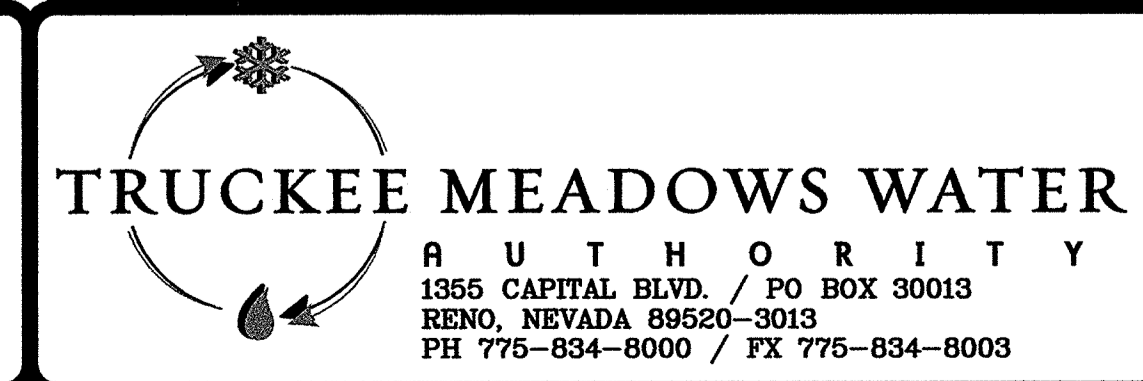
**NOTES:**

- 1) WELDER MUST HAVE PREVIOUS EXPERIENCE WITH WELDING BUTT STRAPS ON TMWA RIVETED 12" STEEL PIPE AND SHALL BE ON NV ENERGY'S CURRENT CERTIFIED WELDER LIST. QUALIFICATIONS MUST BE SUBMITTED TO TMWA FOR APPROVAL PRIOR TO CONTRACT APPROVAL.
- 2) ALL WELDING SHALL BE PERFORMED TO AWWA STANDARD C206-11

**12" RIVETED STEEL CONNECTION**  
N15

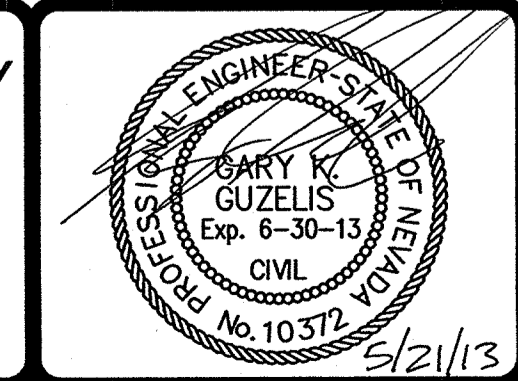
REVISION	DESCRIPTION	DATE	BY

WORK ORDER NO. 10.0001.016  
 DESIGNED: GKG  
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 DATE: 5/21/2013  
 CHECKED BY: \_\_\_\_\_  
 SUBMITTED: \_\_\_\_\_  
 RECOMMENDED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_



**NOT REPRODUCIBLE**  
 PROPERTY OF  
 TRUCKEE MEADOWS WATER  
 AUTHORITY, RETURN UPON  
 COMPLETION OF PROJECT  
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**TRUCKEE MEADOWS WATER AUTHORITY**  
**C-STREET 8" WATER MAIN REPLACEMENT**  
**18TH STREET TO 19TH STREET**  
**DETAIL SHEET**



SHEET NUMBER  
**C-6**  
 6 OF 6

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