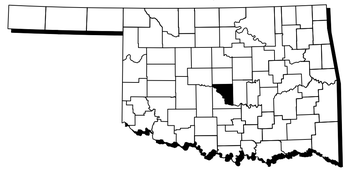
CLEVELAND COUNTY, OKLAHOMA

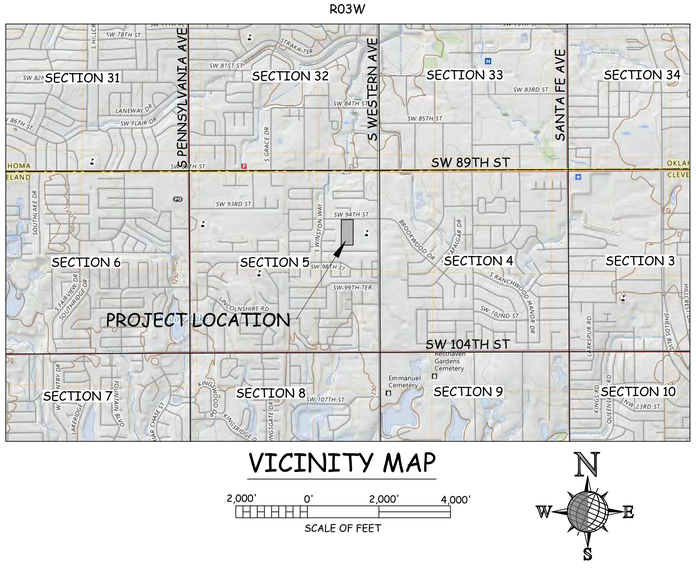


BRIDGES OF MOORE

CIVIL SITE DEVELOPMENT

GRADING, PAVING, STORMWATER, EROSION CONTROL, WATER, AND WASTEWATER UTILITIES

BEFORE YOU DIG.. CALL OKIE 1-800-522-6543



VICINITY MAP

2,000' 0' 2,000' 4,000'

SCALE OF FEET

N W E S

SEARCH, LLC

SYSTEMS ENGINEERING & RESEARCH

ENGINEERING EXCELLENCE SINCE 1970

ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

P.O. BOX 722516, NORMAN OK 73070 TEL.(405) 364-0900

SEARCHengr.com Oklahoma C.A. No. 106 Renewal 6-30-25

INDEX OF SHEETS

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT REGULATIONS OF:
   - 1.1. CONSTRUCTION STANDARDS CHAPTERS 626 AND 656 OF THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY TITLE 252 OKLAHOMA ADMINISTRATIVE CODE AND;
   - 1.2. CONSTRUCTION STANDARDS OF THE CITY OF OKLAHOMA CITY MADE PUBLICLY AVAILABLE AT THE FOLLOWING WEBSITE: https://www.okc.gov/departments/public-works/engineer-architect-resources/standards
   - 1.3. FINAL APPROVAL AND ACCEPTANCE OF ALL CONSTRUCTION WILL BE BY THE CITY OF OKLAHOMA CITY.
2. THE CONTRACTOR SHALL CONSTRUCT THE IMPROVEMENTS IN ACCORDANCE WITH THE SEALED AND SIGNED PLANS AND SPECIFICATIONS, PROVIDED BY THE ENGINEER.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMPLEMENTATION OF TEMPORARY FENCING OR OTHER PROTECTIVE MEASURES NECESSARY TO:
   - 3.1. ENSURE THE SAFETY AND WELL-BEING OF PASSERBYS FROM UNNECESSARY HAZARDS ASSOCIATED WITH HEAVY CONSTRUCTION AND;
   - 3.2. ENSURE ADJACENT LAND OWNER'S PETS AND/OR STOCK REMAIN FENCED AND PROTECTED FROM INJURY.
   - 3.3. THE COST FOR THE SAME TO BE INCLUDED IN THE BID PRICE.
4. ALL LABOR, MATERIALS AND SERVICE CHARGES BY UTILITIES REQUIRED TO PROVIDE ELECTRICAL, GAS, AND TELEPHONE SERVICE FOR THIS CONTRACT WILL BE INCLUDED IN THE BID PRICE FOR THE VARIOUS ITEMS.
5. ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE SLAB SODDED WITH BERMUDA GRASS. THE COST OF THE SAME WILL BE INCLUDED IN THE PRICE BID.
   - 5.1. SODDED AREAS ARE TO BE WATERED WEEKLY AT A RATE OF 1/2" PER APPLICATION FOR EIGHT WEEKS AFTER INSTALLATION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL UNDERGROUND AND/OR OVERHEAD UTILITIES EITHER PUBLIC OR PRIVATE. THE COST OF THE SAME WILL BE INCLUDED IN THE PRICE BID INCLUDING ALL REQUIREMENTS RELATED TO TRENCH SAFETY.
7. ANY CONSTRUCTION PROCEDURE NOT COVERED BY THE PLANS AND SPECIFICATIONS SHALL BE EXECUTED IN ACCORDANCE WITH PROPER CONSTRUCTION TECHNIQUES.
8. ALL AREAS DISTURBED DURING CONSTRUCTION INCLUDING PAVEMENT, SIDEWALKS, DRIVES, APPROACHES, PARKING AND FENCES SHALL BE RESTORED WITH EQUAL OR BETTER THAN ORIGINAL MATERIALS.
9. ALL CONSTRUCTION SHALL BE IN FULL CONFORMANCE WITH ODEQ, LOCAL REQUIREMENTS AND APPLICABLE ELECTRICAL, GAS, FIRE, AND PLUMBING CODES.
10. ALL WORK NOT CLASSIFIED AS A "CONTRACT ITEM" SHALL BE CONSIDERED INCIDENTAL AND THE COST THEREOF INCLUDED IN ITEMS CLASSIFIED FOR PAYMENT.
11. UPON COMPLETION OF SECTIONS OF WORK, AND PRIOR TO RECEIVING PAYMENT THEREFORE, THE CONTRACTOR SHALL REMOVE ALL MACHINERY, EQUIPMENT, TEMPORARY STRUCTURES, SURPLUS AND DISCHARGED MATERIALS, RUBBISH, STUMPS OR PORTIONS OF TREES RESULTING FROM HIS OPERATION. MATERIAL CLEANED FROM THE SITE AND DEPOSITED ON ADJACENT PROPERTY WILL NOT BE CONSIDERED AS HAVING BEEN DISPOSED OF SATISFACTORILY. CONTRACTOR MAY STACK AND BURN ON SITE ALL RUBBISH, STUMPS OR PORTIONS OF TREE AFTER ACQUIRING A BURN PERMIT FROM THE LOCAL MUNICIPALITY IF APPLICABLE AND ENGINEER'S APPROVAL. DISPOSAL SHALL BE IN LOCATIONS APPROVED BY THE ENGINEER BEFORE THE WORK BEGINS.
12. THE CONTRACTOR SHALL USE A REGISTERED LAND SURVEYOR AND PROVIDE ALL CONSTRUCTION STAKING FROM CONTROL SET BY THE ENGINEER.
13. THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS ARE APPROXIMATE BASED UPON AVAILABLE INFORMATION. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL VERIFY THE ELEVATION OF ALL EXISTING UTILITIES BEFORE BEGINNING CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCY.
14. THE CONTRACTOR SHALL MAINTAIN AND SUBMIT TO THE ENGINEER AT COMPLETION OF CONSTRUCTION A SET OF PLANS UPON WHICH ARE NOTED WITH ALL AS-BUILT CHANGES.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING TRAFFIC FLOW AROUND CONSTRUCTION SITE AT ALL TIMES.
16. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE FINISHED TO A SMOOTH UNIFORM SURFACE PERMITTING DRAINAGE AND SLOPED IN SUCH CONDITION THAT ALL AREAS MAY BE MOWED WITH ROTARY TYPE MOWING EQUIPMENT.
17. IT IS THE INTENT OF THESE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE FUNCTIONING SYSTEM. ANY ITEM NEEDED TO COMPLETE AN OPERATING SYSTEM SHALL BE FURNISHED BY THE CONTRACTOR WHETHER SPECIFICALLY CALLED FOR OR NOT. THE COST OF THE SAME WILL BE INCLUDED IN THE VARIOUS BID ITEMS.
18. ALL CONCRETE SLABS, SIDEWALKS, ETC. SHALL HAVE AT MINIMUM:
   - 18.1. #4 BARS @ 12" C.C., E.W. (CENTER TO CENTER, EACH WAY) FOR THICKNESSES BETWEEN 4" & 7" AND;
   - 18.2. #4 BARS @ 12" C.C., E.W., E.F. (CENTER TO CENTER, EACH WAY, EACH FACE) FOR THICKNESSES BETWEEN 7" & 12" UNLESS OTHERWISE NOTED.
19. IF THE GRADES SUBSIDE AND/OR ERODE WITHIN 12 MONTHS OF COMPLETION, THE CONTRACTOR SHALL REWORK GRADES TO SPECIFIED TOLERANCES AS SOON AS WEATHER PERMITS.
20. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,500 PSI, ALL REINFORCING STEEL SHALL HAVE A YIELD STRENGTH OF 60,000 PSI.
21. ALL METAL PIPING, VALVES, FITTINGS, AND SUPPORTS SHALL BE CLEANED, PRIMED AND PAINTED. THE PAINTING SYSTEM SHALL BE A LUSTERLESS EPOXY PAINT. TNEMEC SERIES 69 OR APPROVED EQUAL. ALL SYSTEMS SHALL BE APPLIED PER THE MANUFACTURER'S GUIDELINES.
22. ALL REBAR SHALL HAVE 2" OF CLEARANCE FROM EACH FACE.
23. ALL COLD POURED JOINTS SHALL HAVE A 6" NEOPRENE BARBELL SHAPED WATERSTOP.
24. ALL HORIZONTAL AND VERTICAL REINFORCING STEEL SHALL WRAP AROUND CORNERS A MINIMUM OF 24" OR THE MINIMUM DEVELOPMENT LENGTH (48 X BAR Ø), WHICHEVER IS GREATER. (EXAMPLE: FOR #5 BAR = 48 X 0.625" = 30"). BAR SIZE AND SPACING SHALL BE EQUAL TO THE LARGEST BAR AT THE CORNER TO BE WRAPPED.
25. COMPACTION REQUIREMENTS:
   - 25.1. PAVED AREAS: 95% STANDARD PROCTOR DENSITY
   - 25.2. NON-PAVED AREAS: 90% STANDARD PROCTOR DENSITY IF COVER DEPTH < 10'. 95% STANDARD PROCTOR DENSITY IF COVER DEPTH > 10'.
26. ALL FITTINGS AND VALVES SHALL BE EPOXY COATED D.I.P. WITH 316 STAINLESS STEEL BOLTS AND RESTRAINED JOINTS.
27. ALL DUCTILE IRON (D.I.) PIPE AND FITTINGS SHALL BE CL51, COATED WITH FUSION-BONDED EPOXY, AND CONFORM WITH ALL APPLICABLE AWWA, NFPA, NSF AND ANSI REGULATIONS FOR MUNICIPAL POTABLE WATER SYSTEMS.
28. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ADA STANDARDS.
29. IT IS RECOMMENDED THAT ALL SITE EXCAVATION, BACKFILL, AND COMPACTION BE CONSTRUCTED IN ACCORDANCE WITH THE GUIDANCE PROVIDED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER, REGISTERED IN THE STATE OF OKLAHOMA.
30. ALL WATER AND WASTEWATER LINES SHALL HAVE A MINIMUM OF 36" OF COVER RELATIVE TO THE FINAL GRADE OF THE SITE UNLESS SPECIFICALLY NOTED OTHERWISE.
31. VERTICAL AND HORIZONTAL SEPARATION BETWEEN PROPOSED UTILITIES AND OTHER PROPOSED AND/OR EXISTING UTILITIES SHALL MAINTAIN PROPER CLEARANCE AS PER ODEQ OAC 252:626-19-2(h)(1-3).

ALL SITE DESIGN NORTHINGS AND EASTINGS SHOWN ON THE PLANS REFERENCE THE NAD83 OKLAHOMA STATE PLANES, NORTH ZONE, US SURVEY FOOT COORDINATE SYSTEM.

Drawing for Review only unless Signature and Date are Originals

SUMMARY OF PRIVATE QUANTITIES

ITEM #	ITEM	UNIT	QUANTITY	AS-BUILT
1	12" CORRUGATED HDPE DRAIN PIPE	L.F.	80	
2	APPROVED FILL MATERIAL	C.Y.	1200	
3	CONCRETE FOR HEADWALLS AND EMERGENCY SPILLWAY	YD.	4	
4	CONCRETE FOR DETENTION POND DISCHARGE FLUME	YD.	5	
5	ENERGY DISSIPATER RIP RAP	C.Y.	21	
6	BERMUDA SLAB SOD	S.F.	25,675	

EROSION CONTROL QUANTITIES (BY DEVELOPER)

1	SILT FENCE	L.F.	1977	
2	ROCK BAG SILT FENCE	EA	45	
3	CONSTRUCTION ENTRANCE	EA	1	
4	WASHOUT AREA	EA	1	

SWQ PERMIT: SWL-2024-00270

BLDC-2024-07591

BELOW FOR CITY USE ONLY

- ☐ **FPAT REQUIRED**
- ☐ **EASEMENT(S) REQUIRED**
- ☐ **DRIVEWAY WIDTH APPROVAL**
- ☐ **STORM SEWER TAP PERMITS**
- ☐ **REVOCABLE PERMITS**

BILLING ADDRESS

Omni Construction
Joe Sherga
1909 S Eastern Ave.
Moore, OK 73160

BUILDING ADDRESS

1010 SW 94th St.
Moore, OK 73139

SWQ/ML- 1/17/25
No comments

DETENTION POND PLAN

TO SERVE

PROJECT DP-5691

BRIDGES OF MOORE

BEING A PART OF THE NE/4, SEC. 05, T10N, R3W, I.M.,
AN ADDITION TO OKLAHOMA CITY, OKLAHOMA COUNTY, OKLAHOMA

DETENTION POND GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE DONE IN STRICT ACCORDANCE WITH OKLAHOMA CITY'S "STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS" AND SHALL BE UNDER THE STRICT SUPERVISION OF THE CITY ENGINEER OF THE CITY OF OKLAHOMA CITY.
2. ALL CONCRETE SHALL BE CLASS "A" CONCRETE, 3500 PSI. ALL EXPOSED CONCRETE SURFACES SHALL HAVE A CARBORUNDUM FINISH. ALL EXPOSED CONCRETE EDGES SHALL HAVE A ¾" CHAMFER.
3. ALL REINFORCING STEEL BARS SHALL BE DEFORMED BARS COLD BENT, NO WELDS PERMITTED.
4. CLEAR, GRUB AND STRIP BERM LOCATION. REMOVE SURFACE SOIL CONTAINING HIGH AMOUNTS OF ORGANIC MATTER AND STOCKPILE FOR LATER USE.
5. SCARIFY BERM LOCATION BEFORE PLACING FILL. FILL SHOULD BE CLEAN, STABLE MATERIAL AND SHOULD BE FREE OF ORGANIC MATTER AND OTHER OBJECTIONABLE MATERIALS. ALL FILL SHALL BE PLACED IN 8" LOOSE LIFT AND SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY.
6. ALL CUT/FILL SLOPES SHALL BE 3H:1V MAXIMUM.
7. VEGETATE SPILLWAY AND SIDE SLOPES IMMEDIATELY FOLLOWING GRADING. ANCHOR ANY MULCH IN SPILLWAY WITH NETTING OR GEOTEXTILE FABRIC. INSTALL PAVING MATERIAL TO FINISHED GRADE IF SPILLWAY IS NOT TO BE VEGETATED.
8. CHECK EMBANKMENT FOR SETTLEMENT, SEEPAGE OR SLUMPING ALONG TOE. REPAIR IMMEDIATELY IF NECESSARY.
9. ALL EXPOSED DIRT SHALL BE SOLID SLAB SODDED UPON COMPLETION OF CONSTRUCTION.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION.
11. A WORK ZONE PERMIT MUST BE OBTAINED FROM THE TRAFFIC MANAGEMENT DIVISION AT LEAST (2) WORKING DAYS PRIOR TO THE START OF WORK AND/OR PLACING OR REMOVING ANY BARRICADES OR MODIFYING TRAFFIC CONTROL DEVICES. E-MAIL workzone@okc.gov TO OBTAIN AN APPLICATION.

EROSION CONTROL NOTES

1. ALL LAND DISTURBING ACTIVITIES INSIDE OF THE OKLAHOMA CITY LIMITS MUST OBTAIN A LAND DISTURBING ACTIVITY PERMIT WITH THE CITY OF OKLAHOMA CITY STORM WATER QUALITY MANAGEMENT DIVISION. ADDITIONALLY, CONSTRUCTION ACTIVITIES THAT RESULT IN LAND DISTURBANCE OF EQUAL TO OR GREATER THAN ONE (1) ACRE, OR LESS THAN ONE (1) ACRE IF THEY ARE PART OF A LARGER COMMON PLAN OF DEVELOPMENT OR SALE THAT TOTALS AT LEAST ONE (1) ACRE MUST OBTAIN AUTHORIZATION TO DISCHARGE STORMWATER UNDER THE OPDES CONSTRUCTION GENERAL PERMIT OKR10.
2. THE USGS 7.5 MINUTE QUADRANGLE SHEETS ARE USED TO INDICATE THE "WATERS OF THE UNITED STATES" AND "WETLANDS" EXIST WITHIN THIS PROJECT AREAS. THE ISSUE OF "WATERS OF THE UNITED STATES" AND "WETLANDS" FALLS UNDER THE CORP OF ENGINEERS (COE) TULSA DISTRICT REGULATORY DIVISION, BUT THE CITY IS OBLIGATED TO ENSURE THAT ALL NECESSARY STATE AND FEDERAL PERMITS HAVE BEEN OBTAINED, PURSUANT TO 40CFR 122.21 THEREFORE, THE APPLICANT IS REQUIRED TO SUBMIT DOCUMENTATION FROM THE COE SHOWING COE APPROVAL FOR PROPOSED WORK, IF APPLICABLE.
3. LIST EROSION CONTROL QUANTITIES AND WHO WILL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THE EROSION CONTROL.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGE DUE TO CONSTRUCTION.
5. A COPY OF THE EROSION CONTROL SITE PLAN MUST ALWAYS BE ON SITE AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST.
6. BLOCK OFF ACCESS OR ADD CONSTRUCTION ENTRANCE.
7. A MINIMUM OF 18" OF SOD IS REQUIRED ALONG ALL CURBS AND FLUMES.
8. A NOTICE OF INTENT (NOI) AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHOULD BE SUBMITTED 30 DAYS PRIOR TO THE INITIAL DISTURBANCE OF SOILS.
9. IF A FLOODPLAIN ACTIVITY (FPAT) PERMIT IS REQUIRED FOR THIS PROJECT, THIS PERMIT MUST BE OBTAINED BEFORE A STORM WATER QUALITY (SWQ) PERMIT WILL BE ISSUED.

ADA NOTES

1. ALL AMERICANS WITH DISABILITIES ACT (ADA)/SIDEWALK IMPROVEMENTS MUST MEET CURRENT ADA REQUIREMENTS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT AND/OR REPAIR OF ALL EXISTING ADA IMPROVEMENTS DAMAGED OR DISTURBED DURING CONSTRUCTION.

BENCHMARK & VERTICAL DATUM

SURVEYOR

COWAN GROUP ENGINEERING

7100 CLASSEN, SUITE 500 -
OKLAHOMA CITY, OK 73116

O: (405) 463-3369 F: (405) 463-3381

CERTIFICATE OF AUTHORIZATION NO: 6414

BENCHMARKS

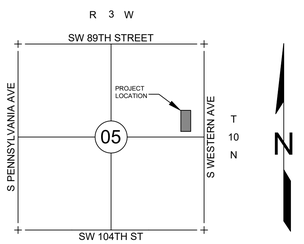
BM 1:
"X" ON SIDEWALK
EL. 2169.32
N. 136251.608
E. 2107641.801

BM 2:
"X" ON SIDEWALK
EL. 1271.41
N. 136252.989
E. 2107925.313

BM 3:
"X" ON CONCRETE
EL. 1274.78
N. 135806.688
E. 2107913.097

DATUM
Horizontal - NAD83 (OK83-NF)
Vertical - NAVD88

The City of
OKLAHOMA CITY
Public Works Department



LOCATION MAP
SCALE: 1" = 2000'

SHEET INDEX

ONE CALL UTILITY LOCATION NUMBER

(405) 840-5032
1-800-522-6543

This number is to be used for information on the location of all underground utilities. Contact this number and other numbers specified in the plans prior to any excavation.

PREPARED BY:

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. BOX 722516, NORMAN OK 73070 TEL.(405) 364-0900
SEARCHengr.com Oklahoma C.A. No. 106 Renewal 6-30-25

PERRY L. STREEBIN 14623 CERTIFIED PROFESSIONAL ENGINEER STATE OF OKLAHOMA CONSULTING ENGINEER 12-11-2024

(OK P.E. 14623) Date: 12-11-2024

REGISTERED PROFESSIONAL ENGINEER

EXP. DATE: 2/28/2025

RECEIVED
-12/13/2024
PUBLIC WORKS
ENGINEERING

CONSTRUCTION MUST BEGIN WITHIN ONE (1) YEAR FROM THE DATE OF APPROVAL OR THAT APPROVAL WILL BE WITHDRAWN.

DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION

Checked by: 01.21.2025 Date:

Checked by: Date:

Checked by: Date:

APPROVED:

City Engineer: for 01/23/2025 Date:

FINAL PLANS

BRIDGES OF MOORE **(DP-5691)**

SUMMARY OF PUBLIC QUANTITIES

ITEM #	ITEM	UNIT	QUANTITY	AS-BUILT
1	8" DR18 C900 WATERLINE	LF	10	
2	6" X 6" TAPPING SADDLE	EA	1	
3	6" MJ ADAPTER	EA	2	
4	6" MJ GATE VALVE AND BOX	EA	1	
5	6" X 8" MJ REDUCER	EA	1	
6	2" SSS	EA	1	
7	TESTING & DISINFECTION	LSUM	1	

PRIVATE QUANTITIES (BY DEVELOPER)

EROSION CONTROL QUANTITIES (BY DEVELOPER)

1	SILT FENCE	L.F.	1977	
2	ROCK BAG SILT FENCE	L.F.	45	
3	CONSTRUCTION ENTRANCE	EA	1	
4	WASHOUT AREA	EA	1	

SWQ PERMIT: SWL-2024-00270

BLDC-202X-XXXXX

BELOW FOR CITY USE ONLY

- ☐ DEQ REQUIRED ☐ RECV'D
- ☐ EASEMENT REQUIRED ☐ RECV'D
- ☐ FH FLOW TEST REQUIRED ☐ RECV'D

~~DEQ NOT REQ'D~~

PRIVATE HYDRANTS SEND COPY TO OKC FD AND ASSIGN ADDRESS

REFERENCED WATER STANDARD DETAILS

W-STD-01 - 8/17/14
W-STD-02 - 8/17/14
W-STD-03 - 8/17/14
W-STD-04 - 8/17/14
W-512.C (METER VAULT)- 11/30/22
W-515 (FIRE ASSY VAULT)- 11/30/22

BILLING ADDRESS

Omni Construction
1909 S. Eastern Ave.
Moore, OK 73160

BUILDING ADDRESS

1010 SW 94th St.
Moore, OK 73139

PROJECT NO. WA-2024-00026
PUBLIC WATER MAIN PLANS
TO SERVE
BRIDGES OF MOORE
A PART OF THE NE/4, SEC. 05, T10N, R3W, I.M., AN ADDITION TO OKLAHOMA CITY, OKLAHOMA COUNTY, OKLAHOMA

WATER GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO CURRENT OKLAHOMA CITY STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS AND SHALL BE UNDER STRICT SUPERVISION OF THE CITY ENGINEER OF THE CITY OF OKLAHOMA CITY.
2. ALL CONSTRUCTION SHALL CONFORM TO TITLE 252 OKLAHOMA ADMINISTRATIVE CODES.
3. SEPARATION OF WATER MAINS AND SEWER SHALL BE IN ACCORDANCE TO ODEQ 252:626-19-2-(h).
4. PRESSURE AND LEAKAGE TESTING SHALL BE IN ACCORDANCE TO ODEQ 252:626-19-2-(e).
5. DISINFECTION AND TESTING SHALL BE IN ACCORDANCE TO ODEQ 252:626-19-2(f).
6. ALL WORK NOT CLASSIFIED AS A PAY ITEM SHALL BE CONSIDERED INCIDENTAL CONSTRUCTION. COST OF WHICH SHOULD BE INCLUDED IN THE COST OF OTHER PAY ITEMS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ALL LANDSCAPING IN AS GOOD OR BETTER CONDITION AS EXISTING LANDSCAPING.
8. IN ACCORDANCE WITH ODEQ REGULATIONS, THE CITY PROVIDES WATER AT A MINIMUM PRESSURE OF 25 psi. THE DEVELOPER IS RESPONSIBLE FOR DESIGNING AND CONSTRUCTION OF ALL FIXTURES TO PROVIDE ADEQUATE DOMESTIC AND FIRE PROTECTION UNDER MINIMUM PRESSURE CONDITIONS. THE DEVELOPER WILL BE RESPONSIBLE FOR ANY FAILURE OF DOMESTIC AND FIRE PROTECTION SYSTEMS WHICH REQUIRE WATER PRESSURE IN EXCESS OF 25 psi.
9. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITIES AND DEPTHS PRIOR TO CONSTRUCTION BY MEANS OF UTILITY SURVEY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OR REPAIR OF ALL PRIVATE & PUBLIC UTILITIES DAMAGED DURING CONSTRUCTION.
10. ALL SERVICES ARE TO BE CONNECTED TO EXISTING METER WITH MATERIAL PER CURRENT CITY OF OKLAHOMA CITY SPECIFICATIONS FROM PROPOSED WATER MAIN.
11. STANDARD DEPTH OF COVER SHALL BE A MINIMUM OF 4.0 FEET. MINIMUM DEPTH OF 5.0 FEET REQUIRE ALONG SECTION ROADS.
12. ALL CROSSINGS AND PROPOSED TIE-IN LOCATIONS SHALL BE EXCAVATED AHEAD OF CONSTRUCTION TO VERIFY THE FLOWLINE OF EXISTING WATER MAINS.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION STAKING. THE STAKING MUST BE DONE BY AN OKLAHOMA REGISTERED PROFESSIONAL LAND SURVEYOR WHICH WILL BE VERIFIED BY CITY INSPECTORS.
14. THE AIR RELEASE AND VACUUM VALVE SHALL MEET CURRENT CITY OF OKLAHOMA CITY SPECIFICATIONS.
15. HYDRANTS SHALL CONFORM TO AWWA STANDARD C502, LATEST REVISION & MEET CURRENT CITY OF OKLAHOMA CITY SPECIFICATIONS.
16. ALL VERTICAL AND HORIZONTAL FITTINGS REQUIRE MECHANICAL JOINT RESTRAINTS PER CITY OF OKLAHOMA CITY SPECIFICATIONS.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GRADING ALL DISTURBED AREAS TO DRAIN AS GOOD OR BETTER THAN EXISTING CONDITIONS.
18. THE CONTRACTOR SHALL PROVIDE SEVEN (7) DAYS NOTICE TO OKLAHOMA CITY LINE MAINTENANCE DIVISION AND THE PROPERTY OWNERS PRIOR TO TAKING ANY WATER MAIN OUT OF SERVICE. THE CONTRACTOR IS NOT ALLOWED TO OPERATE ANY VALVE CONNECTED TO OKLAHOMA CITY WATER MAINS.
19. WHEN PVC PIPE IS SPECIFIED AND USED ON THIS PROJECT, CONTRACTOR SHALL INSTALL ONE STRAND OF NO. 12 GAUGE COPPER TRACER WIRE ALONG TOP OF ALL PVC PIPES. BRING THE TRACER WIRE TO TOP OF GROUND AND ANCHOR AT ALL VALVES, FIRE HYDRANTS, AND OTHER APPURTENANCES.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE GPS "AS-BUILT" SURVEY, FOLLOWING THE INSTALLATION OF WATER MAINS, FOR EVERY 100' ALONG THE ALIGNMENT OF THE PROJECT, COORDINATES OF THE VALVES, FIRE HYDRANTS, EXISTING WATER METERS, AND SIMILAR APPURTENANCES. AN AUTOCAD DRAWING AND COORDINATES DATA SHEET SHALL BE SUBMITTED TO THE PRIVATE DEVELOPMENT DIVISION FOR APPROVAL. THIS TASK MUST BE PERFORMED BY A REGISTERED PROFESSIONAL LAND SURVEYOR. DATA SUBMITTED SHALL BE TIED TO OKLAHOMA STATE PLANE COORDINATE SYSTEM.
21. WATER METERS AND FIRE HYDRANTS MUST SIT WITHIN THE ROW OR UTILITY EASEMENT LOCATED IN A GRASSY AREA OUTSIDE OF PAVING FOR SIDEWALKS, STREETS, & DRIVEWAYS.
22. ON APRIL 30, 2013, THE CITY OF OKLAHOMA CITY ADOPTED A RESOLUTION ESTABLISHING A PERMANENT MANDATORY WATER CONSERVATION PROGRAM RESTRICTING WATERING TO EVERY OTHER DAY WITH PROPERTIES WITH ODD NUMBERED ADDRESSES BEING PERMIT TO WATER ONLY ON ODD NUMBERED DAYS AND PROPERTIES WITH EVEN NUMBERED ADDRESSES BEING PERMITTED TO WATER ONLY ON EVEN NUMBER DAYS. SHOULD CONDITIONS INCLUDING BUT NOT LIMITED TO DECREASED WATER SUPPLY STORAGE LEVELS OR DROUGHT CAUSE CONDITIONS TO DETERIORATE INCREASED WATER RESTRICTIONS MAY COME INTO EFFECT. THESE CURRENT AND FUTURE CONSERVATION REQUIREMENTS AND WATER AND WATERING RESTRICTIONS ARE APPLICABLE TO ALL PROJECTS AND CONTRACTORS JUST AS THEY ARE APPLICABLE TO OKLAHOMA CITY CITIZENS. SEE DETAILS AT: http://www.squeezeeverydrop.com/ THE CITY OF OKLAHOMA CITY HAS ALSO ESTABLISHED A VARIANCE PROGRAM FOR IRRIGATION OF NEW LANDSCAPING. CONTRACTOR WILL BE RESPONSIBLE FOR TIMELY OBTAINING AND, IF AND AS GRANTED, FOR COMPLIANCE WITH THE VARIANCE PROGRAM REQUIREMENTS. SEE DETAILS AT: http://www.squeezeeverydrop.com/WaterConservationProgram/VarianceProgram.aspx FAILURE TO COMPLY WITH THE CURRENT AND FUTURE RESTRICTIONS AND REQUIREMENTS OF THE MANDATORY WATER CONSERVATION PROGRAM OR THE VARIANCE, IF AND AS GRANTED, MAY RESULT IN THE RECEIPT OF A CITATION AND/OR THE REVOCATION FOR THE VARIANCE.
23. FINAL GRADING MUST BE COMPLETE PRIOR TO INSTALLATION OF WATER AND SANITARY SEWER MAINS.
24. TYPE 'A' AGGREGATE BACKFILL SHALL BE PLACED IN ALL TRENCHES UP TO GROUND LEVEL WHERE LINES CROSS UNDER PROPOSED OR EXISTING PAVING. TYPE 'A' AGGREGATE BACKFILL SHALL BE COMPACTED IN ACCORDANCE WITH THE CITY OF OKLAHOMA CITY STANDARD SPECIFICATIONS. THE MAXIMUM PAY QUANTITY FOR TYPE 'A' AGGREGATE BACKFILL IS THAT QUANTITY REQUIRED TO FILL A NEAT MINIMUM WIDTH DITCH, LISTED IN THE TRENCH WIDTH DETAIL, FROM THE FLOWLINE OF THE PIPE TO THE PAVEMENT SUBGRADE ELEVATION TO 5' BACK OF CURB ON EACH SIDE OF THE STREET. ANY ADDITIONAL TYPE 'A' AGGREGATE REQUIREMENTS ARE CONSIDERED INCIDENTAL.
25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF ALL UTILITIES, BOTH UNDERGROUND & OVERHEAD, EITHER PUBLIC OR PRIVATE, AS TO THEIR ACTUAL LOCATION PRIOR TO COMMENCING CONSTRUCTION.
26. ANY SUBDIVISION ENTRY SIGN, MARQUEE, SIGN, FENCE, STRUCTURE, ETC. THAT WILL BE OVER ANY PROPOSED WATER AND/OR WASTEWATER MAIN. THE MAIN MUST BE STEEL ENCASED A MINIMUM OF 20 FEET AND EXTEND 5 FEET BEYOND THE EDGE OR FOOTING OF SIGN. FOR ANY EXISTING MAINS, CONCRETE ENCASE EXISTING MAINS AS REQUIRED. A REVOCABLE PERMIT IS REQUIRED TO ALLOW THESE TO BE IN THE ROW AND/OR UTILITY EASEMENT.
27. ENGINEER TO PROVIDE DESIGN FOR RESTRAIN JOINT PIPE LENGTHS FOR ALL FITTINGS IN ACCORDANCE WITH THE JOINT RESTRAINT MANUFACTURER WITH A MINIMUM TEST PRESSURE OF 150 PSI.

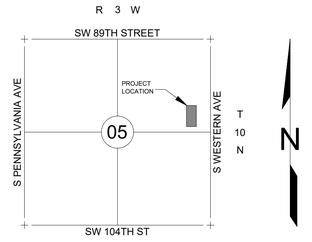
TRAFFIC NOTES

28. A WORK ZONE PERMIT MUST BE OBTAINED FROM THE TRAFFIC MANAGEMENT DIVISION AT LEAST TWO (2) WORKING DAYS PRIOR TO THE START OF WORK AND/OR PLACING OR REMOVING ANY BARRICADES OR MODIFYING EXISTING TRAFFIC CONTROL DEVICES. APPLICATION FOR WORK ZONE PERMIT CAN BE LOCATED AT https://access.okc.gov/aca/Default.aspx
29. THE CONTRACTOR IS RESPONSIBLE FOR THE PROMPT REPLACEMENT AND/OR REPAIR OF ALL TRAFFIC CONTROL DEVICES AND APPURTENANCES DAMAGED OR DISTURBED DUE TO CONSTRUCTION.
30. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL PAVEMENT MARKINGS THAT WILL BE IN CONFLICT WITH THE PROPOSED WORK.
31. THE CONTRACTOR SHALL CONTACT OKLAHOMA CITY TRAFFIC OPERATIONS FOR THE MARKING OF TRAFFIC SIGNAL CONDUIT AND APPURTENANCES AT LEAST TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION AND/OR PLACING OR REMOVING ANY BARRICADES OR MODIFYING EXISTING TRAFFIC CONTROL DEVICES.

EROSION CONTROL NOTES

1. ALL LAND DISTURBING ACTIVITIES INSIDE OKC LIMITS MUST OBTAIN A LAND DISTURBING ACTIVITY PERMIT WITH THE CITY OF OKLAHOMA CITY STORM WATER QUALITY MANAGEMENT DIVISION. ADDITIONALLY, CONSTRUCTION ACTIVITIES THAT RESULT IN LAND DISTURBANCE OF EQUAL TO OR GREATER THAN ONE (1) ACRE IF THEY ARE PART OF A LARGER COMMON PLAN OF DEVELOPMENT OR SALE THAT TOTALS AT LEAST ONE (1) ACRE MUST OBTAIN AUTHORIZATION TO DISCHARGE STORM WATER UNDER THE OPDES CONSTRUCTION GENERAL PERMIT OKR10.
2. THE USGS 7.5 MINUTES QUADRANGLE SHEETS ARE USED TO INDICATE THE "WATERS OF THE UNITED STATES" AND "WETLANDS" EXIST WITHIN THIS PROJECT AREAS. THE ISSUE OF "WATERS OF THE UNITED STATES" AND "WETLANDS" FALLS UNDER THE CORP OF ENGINEERS (COE) TULSA DISTRICT REGULATORY DIVISION, BUT THE CITY IS OBLIGATED TO ENSURE THAT ALL NECESSARY STATE AND FEDERAL PERMITS HAVE BEEN OBTAINED, PURSUANT TO 40CFR 60.3 THEREFORE, THE APPLICANT IS REQUIRED TO SUBMIT DOCUMENTATION FROM THE COE SHOWING COE APPROVAL FOR PROPOSED WORK, IF APPLICABLE.
3. LIST EROSION CONTROL QUANTITIES AND WHO WILL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF THE EROSION CONTROLS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF ALL EROSION CONTROL DEVICES DAMAGED DUE TO CONSTRUCTION.
5. A COPY OF THE EROSION CONTROL SITE PLAN MUST ALWAYS BE ON SITE AND MADE AVAILABLE TO THE INSPECTOR UPON REQUEST.
6. BLOCK OFF ACCESS OR ADD CONSTRUCTION ENTRANCE.
7. A MINIMUM OF 18" OF SOD IS REQUIRED ALONG ALL CURBS & FLUMES.
8. THE CONTRACTOR MAY BE REQUIRED TO INSTALL ADDITIONAL EROSION CONTROL DEVICES BEFORE FLUSHING WATERLINE TO MINIMIZE EROSION AND TO REMAIN IN COMPLIANCE WITH STORM WATER QUALITY REQUIREMENTS.
9. IF A FLOODPLAIN ACTIVITY (FPA) PERMIT IS REQUIRED FOR THIS PROJECT. THIS PERMIT MUST BE OBTAINED BEFORE A STORM WATER QUALITY (SWQ) PERMIT WILL BE ISSUED.
10. A NOTICE OF INTENT (NOI) AND STORM WATER POLLUTION PREVENTION PLAN (SWPPP) SHOULD BE SUBMITTED 30 DAYS PRIOR TO THE INITIAL DISTURBANCE OF SOILS.

The City of OKLAHOMA CITY
Utilities Engineering
Private Development Division



LOCATION MAP
SCALE: 1" = 2000'

SHEET INDEX

Review and approval of construction plans for the installation of public water and wastewater facilities, mains, and appurtenances by Oklahoma City is only for conformance with Oklahoma City design requirements or standards. Oklahoma City takes no responsibility for any errors or omissions within the plans or for construction in conformance with the plans and easements. The Professional Engineer that sealed the approved plans and specifications must prepare and submit any revisions or modifications to Oklahoma City for review and approval. The Developer and/or their representative is responsible for ensuring that construction is completed in conformance with the approved plans and specifications.

ONE CALL UTILITY LOCATION NUMBER

840-5032
1-800-522-6543

This number is to be used for information on the location of all underground utilities. Contact this number and other numbers specified in the plans prior to any excavation.

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. BOX 722516, NORMAN OK 73070 TEL.(405) 364-0900
SEARCHengr.com Oklahoma C.A. No. 106 Renewal 6-30-23

PREPARED BY:

(OK P.E. 14623) Date: 6-26-2024

REGISTERED PROFESSIONAL ENGINEER
DATE: 6-26-2024

CONSULTING ENGINEER REGISTERED PROFESSIONAL ENGINEER PERRY L. STREEBIN 14623 OKLAHOMA 6-26-2024

CONSTRUCTION MUST BEGIN WITHIN ONE (1) YEAR FROM THE DATE OF APPROVAL, OR THAT APPROVAL IS WITHDRAWN.

DEPARTMENT OF UTILITIES ENGINEERING PRIVATE DEVELOPMENT DIVISION

R. Noelle Lewis 6/27/24
Checked by: Date:

07/11/24
Checked by: Date:

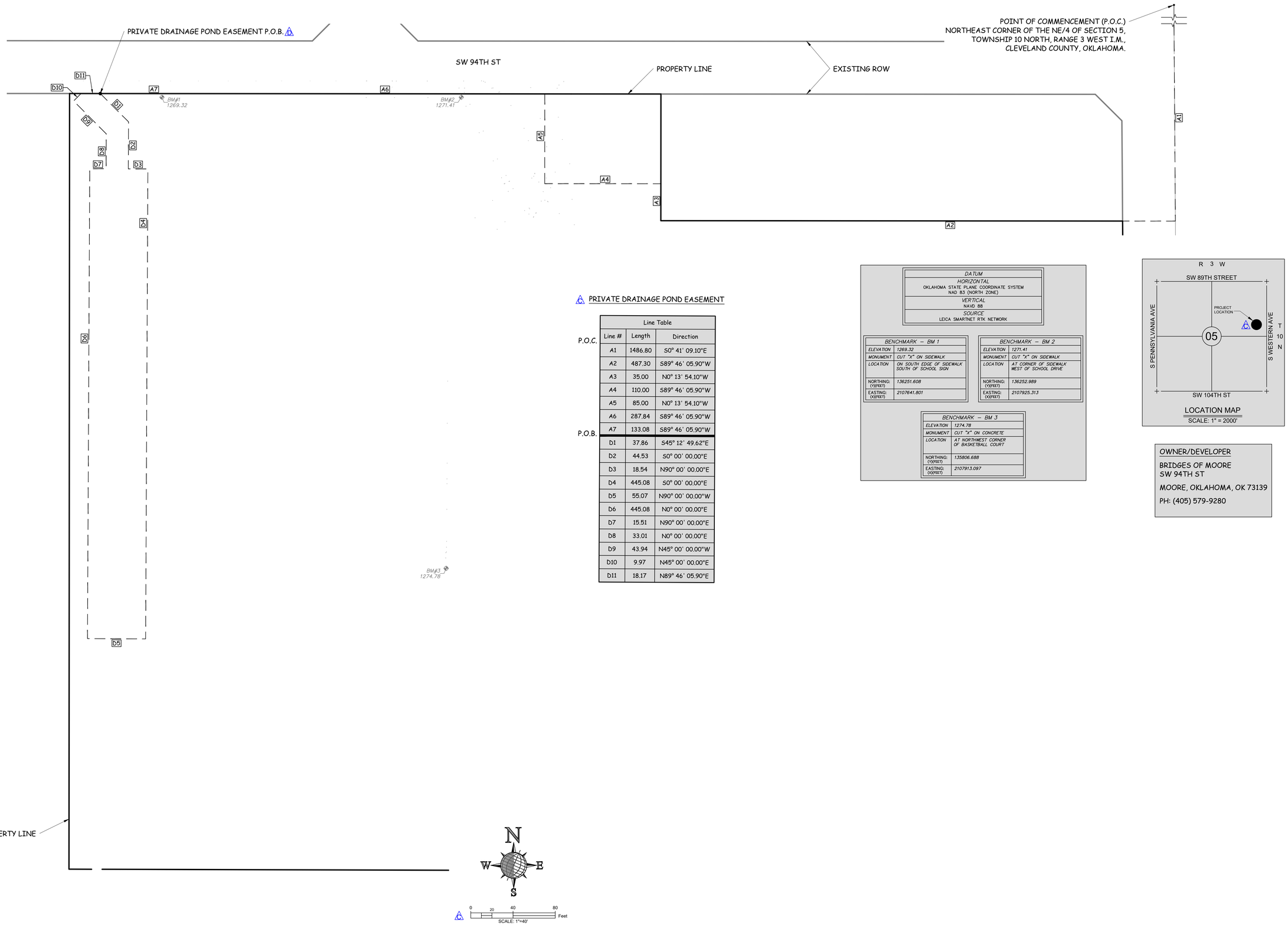
07/11/24
Checked by: Date:

DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION

APPROVED:
Date 07/15/2024
DEREK MILLER, P.E., DIRECTOR for PUBLIC WORKS / CITY ENGINEER

BRIDGES OF MOORE **(WA-2024-00026)**

REVISED 03/05/2024



A PRIVATE DRAINAGE POND EASEMENT

	Line Table		
	Line #	Length	Direction
P.O.C.	A1	1486.80	S0° 41' 09.10"E
	A2	487.30	S89° 46' 05.90"W
	A3	35.00	N0° 13' 54.10"W
	A4	110.00	S89° 46' 05.90"W
	A5	85.00	N0° 13' 54.10"W
	A6	287.84	S89° 46' 05.90"W
P.O.B.	A7	133.08	S89° 46' 05.90"W
	D1	37.86	S45° 12' 49.62"E
	D2	44.53	S0° 00' 00.00"E
	D3	18.54	N90° 00' 00.00"E
	D4	445.08	S0° 00' 00.00"E
	D5	55.07	N90° 00' 00.00"W
	D6	445.08	N0° 00' 00.00"E
	D7	15.51	N90° 00' 00.00"E
	D8	33.01	N0° 00' 00.00"E
	D9	43.94	N45° 00' 00.00"W
	D10	9.97	N45° 00' 00.00"E
	D11	18.17	N89° 46' 05.90"E

DATUM	
HORIZONTAL	OKLAHOMA STATE PLANE COORDINATE SYSTEM NAD 83 (NORTH ZONE)
VERTICAL	NAVD 88
SOURCE	LEICA SMARTNET RTK NETWORK

BENCHMARK – BM 1	
ELEVATION	1269.32
MONUMENT	CUT "X" ON SIDEWALK
LOCATION	ON SOUTH EDGE OF SIDEWALK SOUTH OF SCHOOL SIGN
NORTHING: (Y)(FEET)	136251.608
EASTING: (X)(FEET)	2107641.801

BENCHMARK – BM 2	
ELEVATION	1271.41
MONUMENT	CUT "X" ON SIDEWALK
LOCATION	AT CORNER OF SIDEWALK WEST OF SCHOOL DRIVE
NORTHING: (Y)(FEET)	136252.989
EASTING: (X)(FEET)	2107925.313

BENCHMARK – BM 3	
ELEVATION	1274.78
MONUMENT	CUT "X" ON CONCRETE
LOCATION	AT NORTHWEST CORNER OF BASKETBALL COURT
NORTHING: (Y)(FEET)	135806.688
EASTING: (X)(FEET)	2107913.097

LOCATION MAP
SCALE: 1" = 2000'

OWNER/DEVELOPER

BRIDGES OF MOORE
SW 94TH ST

MOORE, OKLAHOMA, OK 73139

PH: (405) 579-9280

EASEMENT PLAN

SHEET NAME: EASEMENT PLAN
PROJECT: BRIDGES OF MOORE
CLIENT: BRIDGES
LOCATION: Moore, Cleveland Co., Oklahoma

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

REV.	DATE	NAME	DESCRIPTION
A	06/24/2024	LB	Clarifications per OKC CP#2 review & meeting 6/14/24
B	07/16/2024	LB	Clarifications per OKC CP#2 review

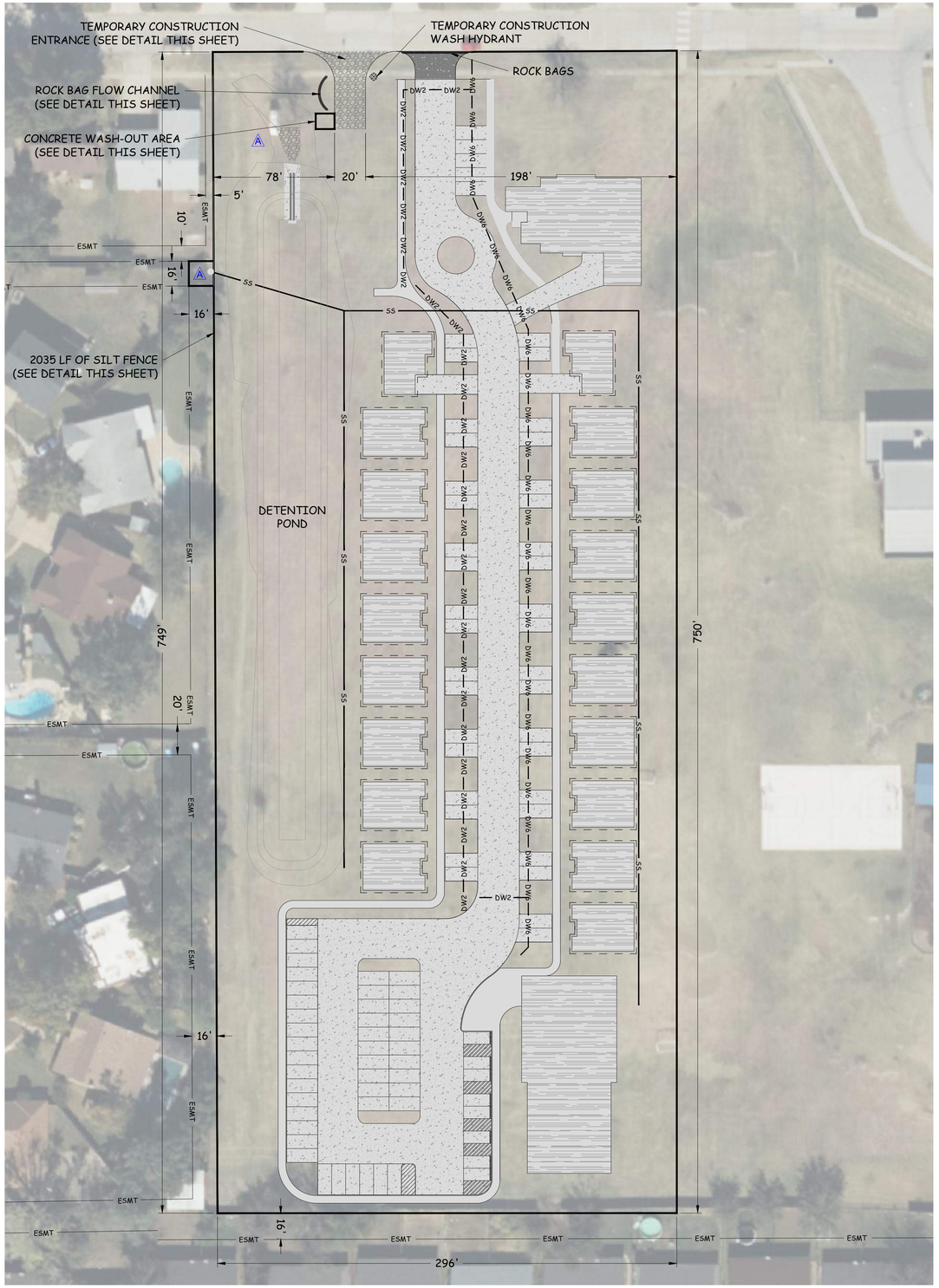
DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 03/20/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA

SHEET
1.01

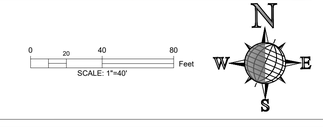
Drawing for Review only unless Signature and Date are Originals

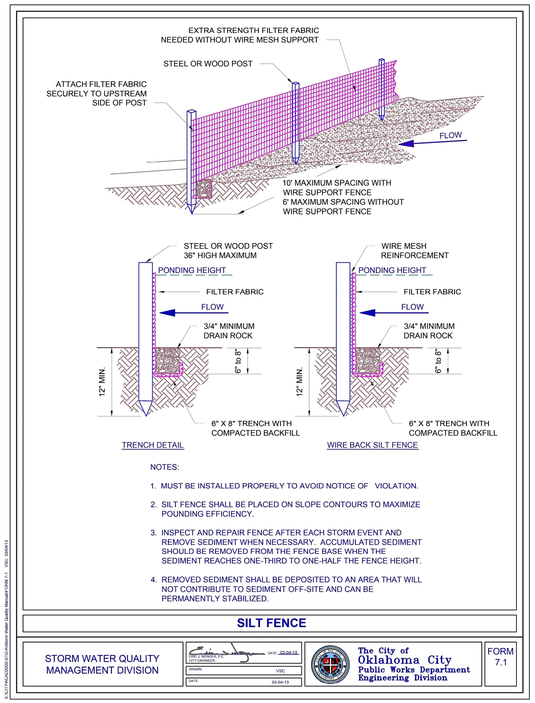
Plot Date: 8/1/2024 3:10 PM Location: G:\Shared drives\Directory\2023\125 - Bridges Sky Ranch\Hwy Project\Design\23125-UTILITY NETWORKS.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Jacob



EROSION CONTROL PLAN

SCALE: 1"=40'





NOTES:

1. MUST BE INSTALLED PROPERLY TO AVOID NOTICE OF VIOLATION.
2. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE POUNDING EFFICIENCY.
3. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. ACCUMULATED SEDIMENT SHOULD BE REMOVED FROM THE FENCE BASE WHEN THE SEDIMENT REACHES ONE-THIRD TO ONE-HALF THE FENCE HEIGHT.
4. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

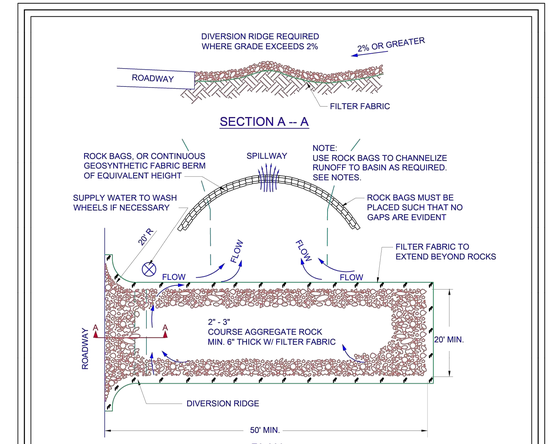
SILT FENCE

STORM WATER QUALITY MANAGEMENT DIVISION

CITY ENGINEER — DATE: 03-04-13
DRAWN: VSC
DATE: 03-04-13

The City of Oklahoma City Public Works Department Engineering Division

FORM 7.1



NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. BAGS OF WOVEN GEOTEXTILE FABRIC, FILLED WITH GRAVEL MUST BE LAYERED SUCH THAT NO GAPS ARE EVIDENT.

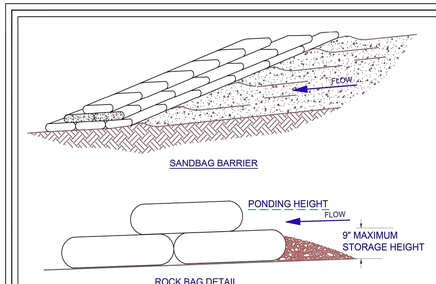
TEMPORARY ROCK CONSTRUCTION ENTRANCE / EXIT

STORM WATER QUALITY MANAGEMENT DIVISION

CITY ENGINEER — DATE: 03-04-13
DRAWN: VSC
DATE: 03-04-13

The City of Oklahoma City Public Works Department Engineering Division

FORM 7.4



NOTES:

1. A 'REASONABLE' DESIGN SIZE PARTICLE MUST BE SELECTED.
2. SIZE DISTRIBUTION OR UPSTREAM SOIL PARTICLES MUST BE EVALUATED.
3. INFLOW AND OUTFLOW FROM THE SYSTEM FOR A SPECIFIC FREQUENCY STORM MUST BE KNOWN.
4. POND VOLUME IS DIRECTLY PROPORTIONAL TO THE DISCHARGE RATE OF THE SYSTEM.
5. POND VOLUME IS INVERSELY PROPORTIONAL TO THE MASS OF THE DESIGN SIZE SUSPENDED PARTICLE.
6. A SYSTEM MUST PROVIDE SUFFICIENT FLOW TO ALLOW FOR DEPOSITION OF DESIGN PARTICLES.
7. THE PONDING HEIGHT MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNNOFF FROM BYPASSING THE INLET. A TEMPORARY DIKE MAY BE NECESSARY ON THE DOWNSLOPE SIDE OF THE STRUCTURE.
8. ROCK BAG SILT BARRIER SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE POUNDING EFFICIENCY.
9. PLACE ROCK BAG SUCH THAT NO GAPS ARE EVIDENT.
10. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM RECOMMENDED STORAGE HEIGHT.
11. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

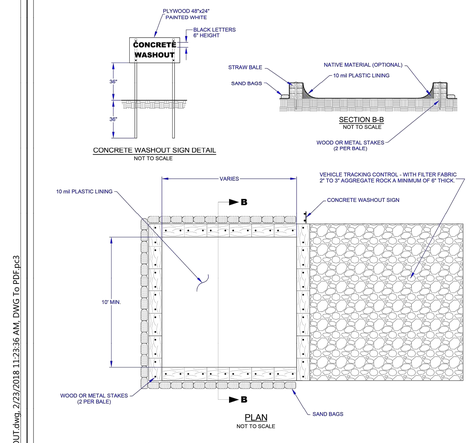
ROCK BAG SILT FENCE

STORM WATER QUALITY MANAGEMENT DIVISION

CITY ENGINEER — DATE: 03-05-13
DRAWN: VSC
DATE: 03-04-13

The City of Oklahoma City Public Works Department Engineering Division

FORM 7.6



Notes:

1. CWA shall be installed prior to concrete placement.
2. See plan view for CWA installation location. The location of all concrete washout structures must be constructed with a minimum setback dimensions of 5 feet above groundwater, and 50 feet from the top of bank of perennial stream, other surface water body, or wetland.
3. CWA shall include a flat surface pit that is at least 10' x 10' with the walls built of haybales end to end double staked into the ground.
4. CWA must be installed with a low permeable polypropylene or polyethylene geomembrane with a minimum 10-mil thickness.
5. Vehicle tracking pad shall be sloped towards the CWA and shall be constructed with a filter fabric under 2" to 3" aggregate rock a minimum of 6" thick.
6. Signs shall be placed at the construction entrance, at the CWA and elsewhere as necessary to clearly indicate the location of the CWA to operators of concrete trucks and pump rigs

ABOVE GROUND CONCRETE WASHOUT AREA

STORM WATER QUALITY MANAGEMENT DIVISION

CITY ENGINEER — DATE:
DRAWN: TVN
DATE: 02-22-18

The City of Oklahoma City Public Works Department Engineering Division

FORM 7.22

EROSION CONTROL PLAN & DETAILS

BRIDGES OF MOORE

BRIDGES

Moore, Cleveland Co., Oklahoma

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900

Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

REV.	DATE	NAME	DESCRIPTION
A	05/14/2024	LB	Revise sheets per OKC check print #1 review

DESIGNED: P. Streebin
DRAWN: J. Billingsley
APPROVED: P. Streebin
DATE: 03/14/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
05-14-2024
OKLAHOMA

SHEET 1.02

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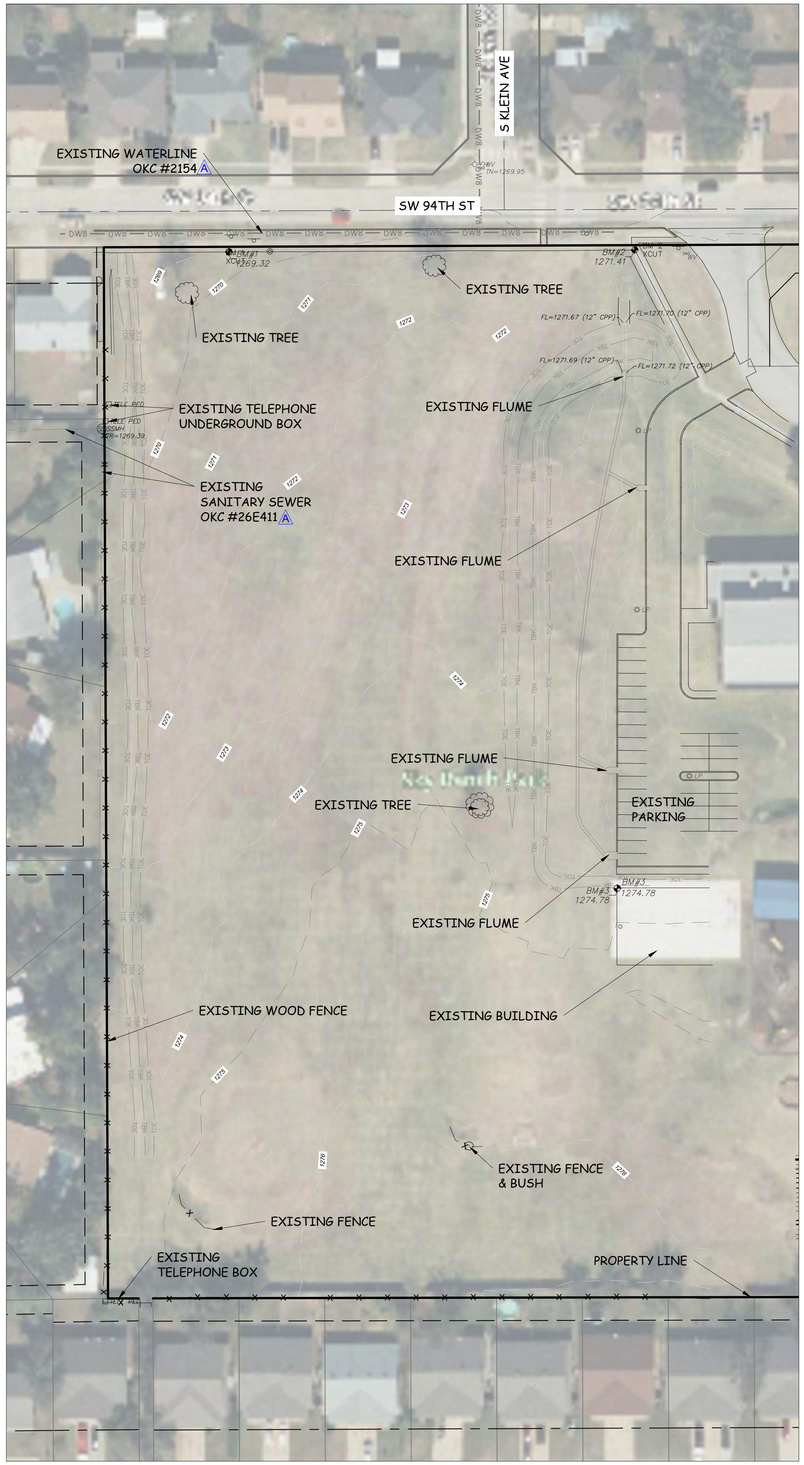
LEGEND
(WITH LINE SIZES WHERE APPLICABLE)

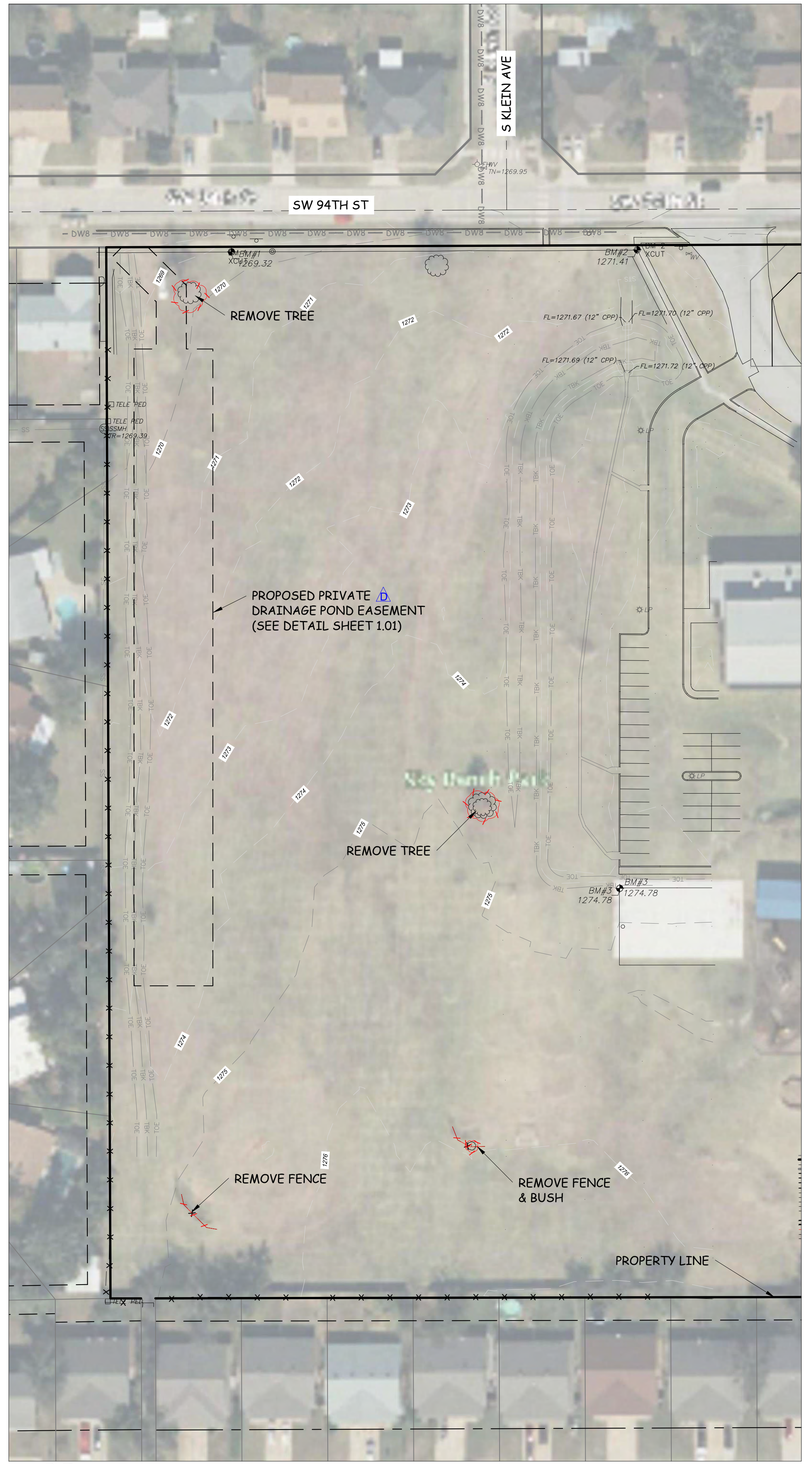
- LOT LINE
- PROPERTY LINE
- RoW/PL — RIGHT-OF-WAY/ PROPERTY LINE
- RIGHT OF WAY
- EASEMENT (GENERAL)
- PERMANENT UTILITY EASEMENT
- TEMPORARY CONSTRUCTION ESMT
- BUILDING SETBACK LINE
- X — X — WOOD FENCE
- DW — DW — DOMESTIC WATERLINE
- UGE — UNDERGROUND ELECTRICAL
- G — G — GAS LINE
- OHE — OVERHEAD ELECTRICAL
- STORM WATER FLOW DIRECTION
- CORRUGATED METAL CULVERT
- CONCRETE FLUME
- UTILITY REMOVE
- TBK — TOP OF BANK
- TOE — TOE OF BANK

- FIRE HYDRANT
- SERVICE LINE WATER METER

BEFORE YOU DIG CALL OKIE
811 OKIE USA 1.800.522.6543 CALLOKIE.COM



EXISTING CONDITIONS



DEMO PLAN

0 25 50 100 Feet
SCALE: 1"=50'

N W E S

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EXISTING CONDITIONS & DEMO PLAN
SHEET NAME

BRIDGES OF MOORE
PROJECT

BRIDGES
CLIENT

Moore, Cleveland Co., Oklahoma
LOCATION

SEARGEL, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

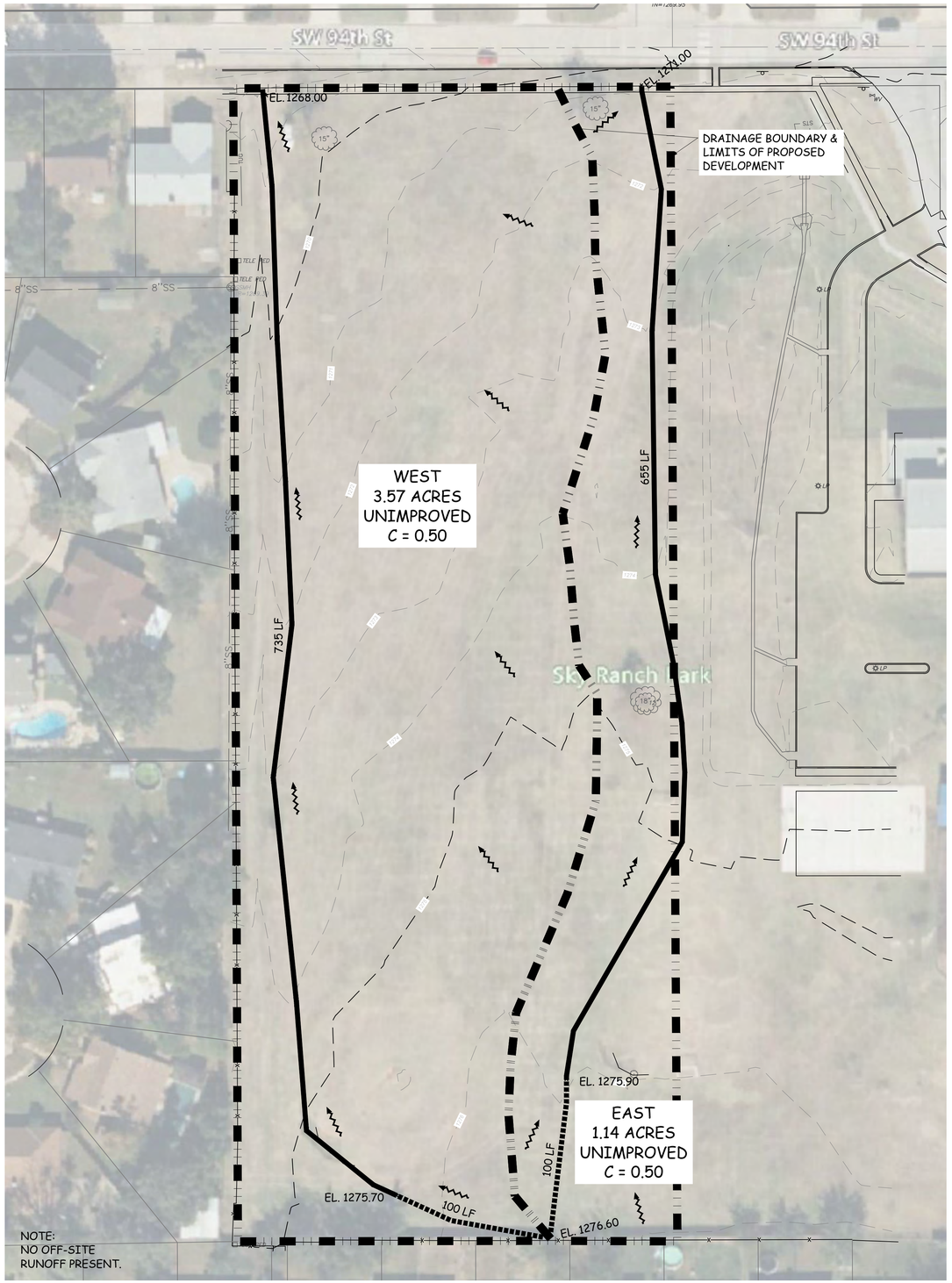
REV.	DATE	NAME	DESCRIPTION
A.	05142024	LB	Clarifications per OKC CP#1 review
D.	07162024	LB	Clarifications per OKC CP#2 review

DESIGNED: P. Streebin
DRAWN: J. Billingsley
APPROVED: P. Streebin
DATE: 03/15/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
8-8-24
OKLAHOMA

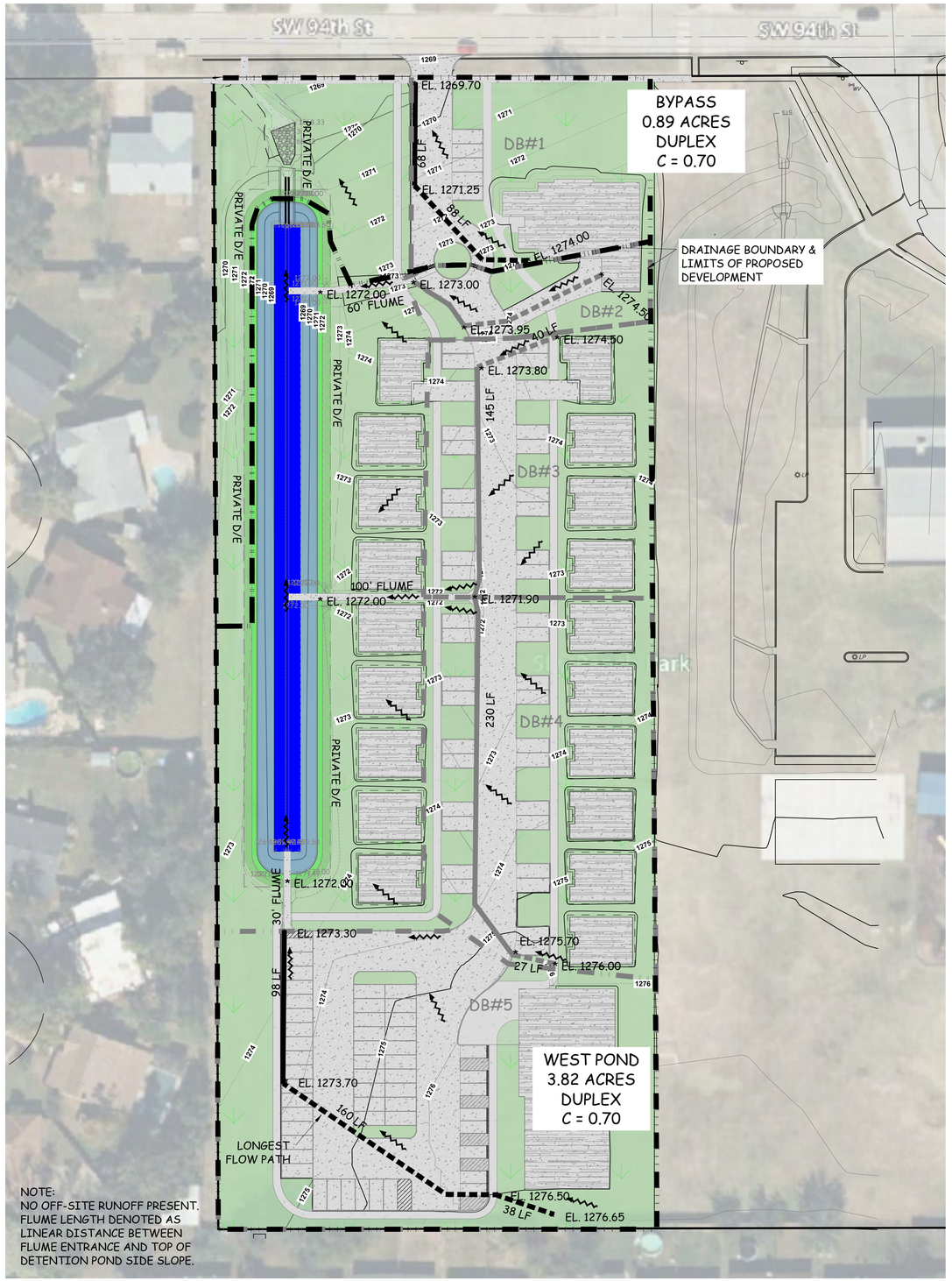
SHEET 1.03

Plot Date: 8/6/2024 9:06 AM Location: O:\Shared drives\Directory\23\23135 - Bridges Sky Ranch\Bay Project\Sheets\23135- Existing Conditions & Demo Plan.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Admin



EXISTING DRAINAGE AREA

0 20 40 80 Feet
SCALE: 1"=40'



PROPOSED DRAINAGE AREA A

0 20 40 80 Feet
SCALE: 1"=40'

N
W E
S

LINETYPE LEGEND

- OVERLAND FLOW
- CHANNELIZED FLOW
- CATCHMENT DIVIDE
- MINOR DIVIDE

Drawing for Review only unless Signature and Date are Originals

EXISTING AND PROPOSED DRAINAGE AREA

SHEET NAME

BRIDGES OF MOORE

PROJECT

BRIDGES

CLIENT

Moore, Cleveland Co., Oklahoma

LOCATION

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

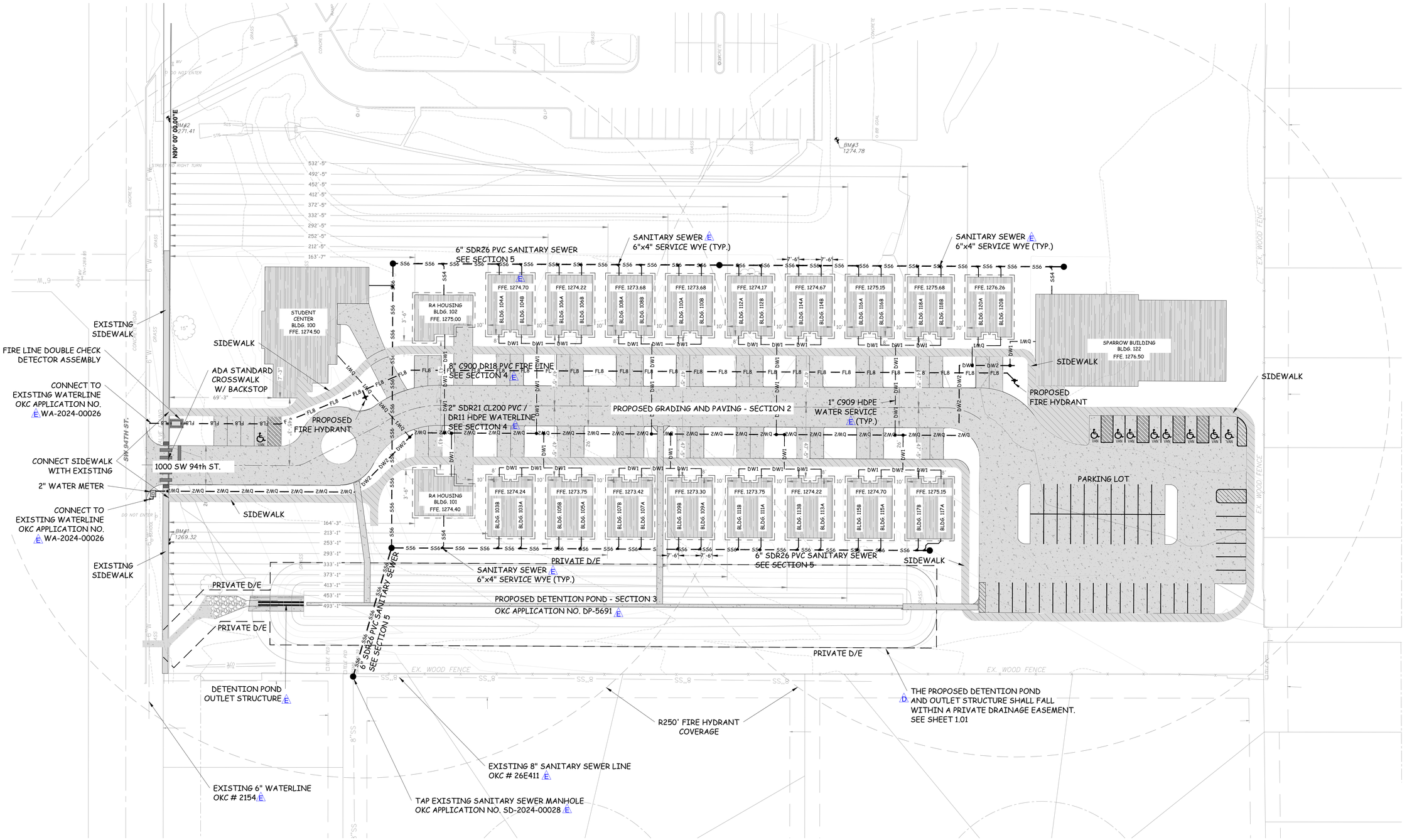
REV.	DATE	NAME	DESCRIPTION
A	08/29/2024	LB	Clarifications per OKC CPH3 review

DESIGNED: P. Streebin
DRAWN: J. Billingsley
APPROVED: P. Streebin
DATE: 05/24/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA
8-11-2025

SHEET
1.04

Plot Date: 8/29/2024 3:58 PM Location: G:\Shared drives\Directory\2023\2125 - Bridges Sky Ranch\dwg Misc\Stormwater\Proposed Flow Plan 2024-05-23.dwg Page Size: ARCH E1 full bleed D (36.00 x 24.00 Inches) By: Jacob



PARKING SUMMARY

STUDENT CENTER	
STANDARD PARKING SPACES:	7
VAN ACCESSIBLE SPACES:	1
RA HOUSING	
1.0/DWELLING UNIT:	2
STUDENT HOUSING	
1.0/DWELLING UNIT:	34
SPARROW BUILDING	
STANDARD PARKING SPACES:	43
VAN ACCESSIBLE SPACES:	8

OKC APPLICATION NUMBERS

STORMWATER DETENTION	DP-5691
SANITARY SEWER	SD-2024-00028
WATER	WA-2024-00026

NOTE: BLDG 103 - 120 ARE DUPLEX STUDENT HOUSING

SITE PLAN

SCALE: 1"=30'

Drawing for Review only unless Signature and Date are Originals

SHEET NAME: SITE PLAN
PROJECT: BRIDGES OF MOORE
CLIENT: BRIDGES
LOCATION: Moore, Cleveland Co., Oklahoma

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

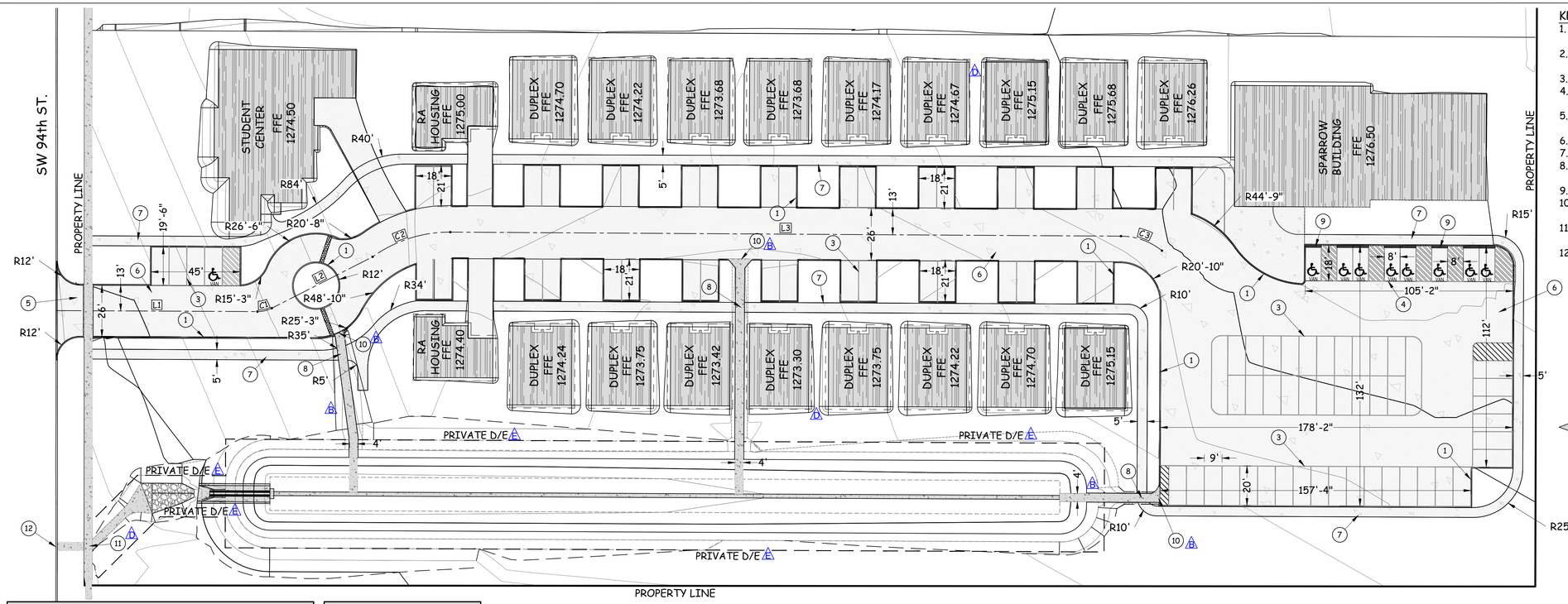
REV.	DATE	NAME	DESCRIPTION
D.	07/16/2024	LB	Clarifications per OKC CPM2 review
E.	12/6/2024	LRP	Clarifications per OKC BLDC review 1

DESIGNED: P. Streebin
DRAWN: J. Billingsley
APPROVED: P. Streebin
DATE: 03/26/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
12-11-2024
OKLAHOMA

SHEET 2.00

Plot Date: 12/11/2024 2:07 PM Location: C:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\dwg Project Design\23125 - SITE PLAN.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Admin



OVERALL PAVING PLAN

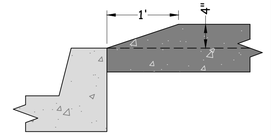
Road CL Curve Table						
Curve #	Length	Radius	Chord Bearing	Chord Length	Tangent	Delta Angle
C1	7.558	16.00	S13° 31' 50.18"E	7.49	3.851	27.06
C2	41.997	66.87	S17° 57' 22.07"E	41.31	21.717	35.98
C3	22.460	33.48	S19° 13' 13.19"W	22.04	11.671	38.44

Road CL Line Table		
Line #	Length	Direction
L1	101.868	S0° 00' 22.72"W
L2	57.272	S27° 17' 17.75"E
L3	339.633	S0° 04' 13.07"W

Cut/Fill Summary

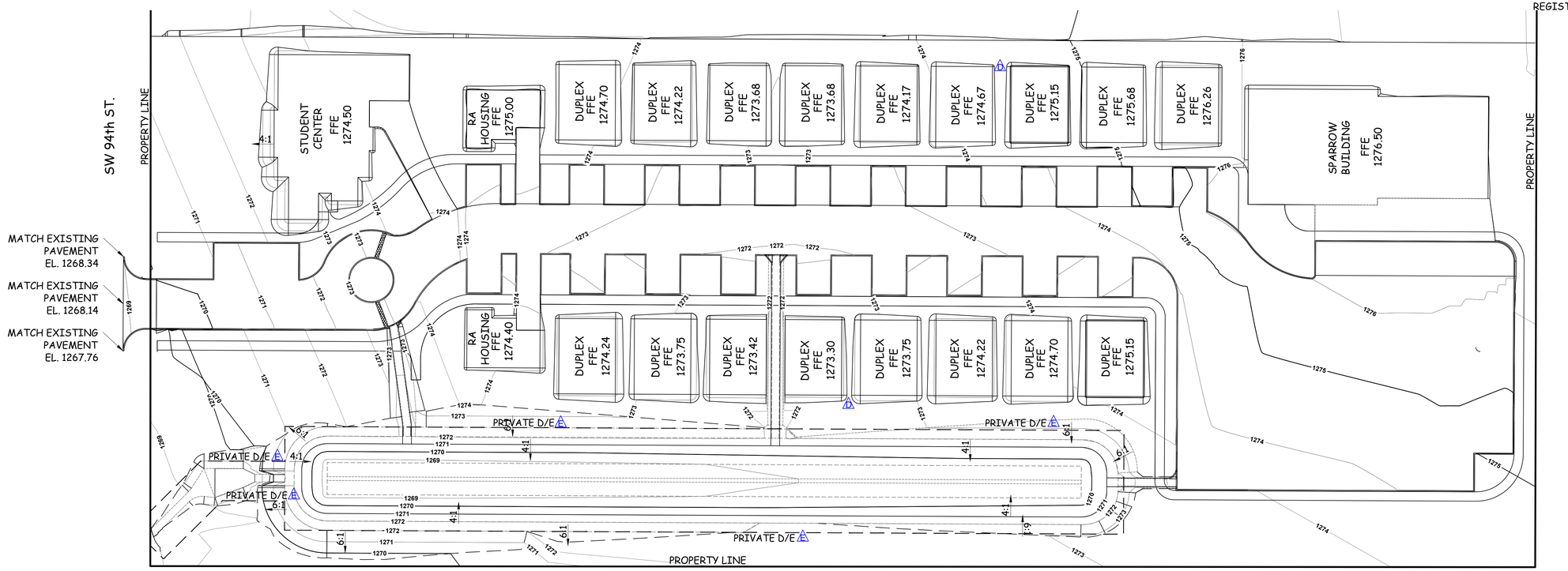
Name	Cut Factor	Fill Factor	2d Area	Cut	Fill	Net
FG VOLUME SURFACE	1.000	1.000	331489.65 Sq. Ft.	4078.68 Cu. Yd.	2921.09 Cu. Yd.	1157.58 Cu. Yd.<Cut>
Totals			331489.65 Sq. Ft.	4078.68 Cu. Yd.	2921.09 Cu. Yd.	1157.58 Cu. Yd.<Cut>

KEYED NOTES:
1. 6" STANDARD CURB (SEE DETAIL SHT. D-200C)
2. FLUME ENTRANCE (SEE DETAIL SHT. D-1008 PLAN 1)
3. 4" WIDE PARKING LOT STRIPING
4. ADA ACCESSIBLE PARKING LANE (SEE DETAIL SHT. 2.07)
5. ADA CROSSWALK (SEE DETAIL SHT. D700-800)
6. PAVEMENT (SEE DETAIL SHT. 2.07)
7. SIDEWALK (SEE DETAIL SHT. D-700C)
8. SIDEWALK RAMP AT FLUME CROSSING (SEE DETAIL SHT. D-700E)
9. PARKING BLOCK (SEE DETAIL SHT. 2.07)
10. FLUME ENTRANCE (SEE DETAIL SHT. D-1008 PLAN 2)
11. SIDEWALK CROSSING (SEE DETAIL SHT. D-700E)
12. FLUME CURB END TRANITION (SEE DETAIL THIS SHEET)



FLUME CURB END TRANSITION DETAIL
NTS

NOTE:
IT IS RECOMMENDED THAT ALL SITE EXCAVATION, BACKFILL, AND COMPACTION BE CONSTRUCTED IN ACCORDANCE WITH THE GUIDANCE PROVIDED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER REGISTERED IN THE STATE OF OKLAHOMA



OVERALL GRADING PLAN

0 15 30 60 Feet
SCALE: 1"=30'

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

SHEET NAME	OVERALL GRADING PLAN
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

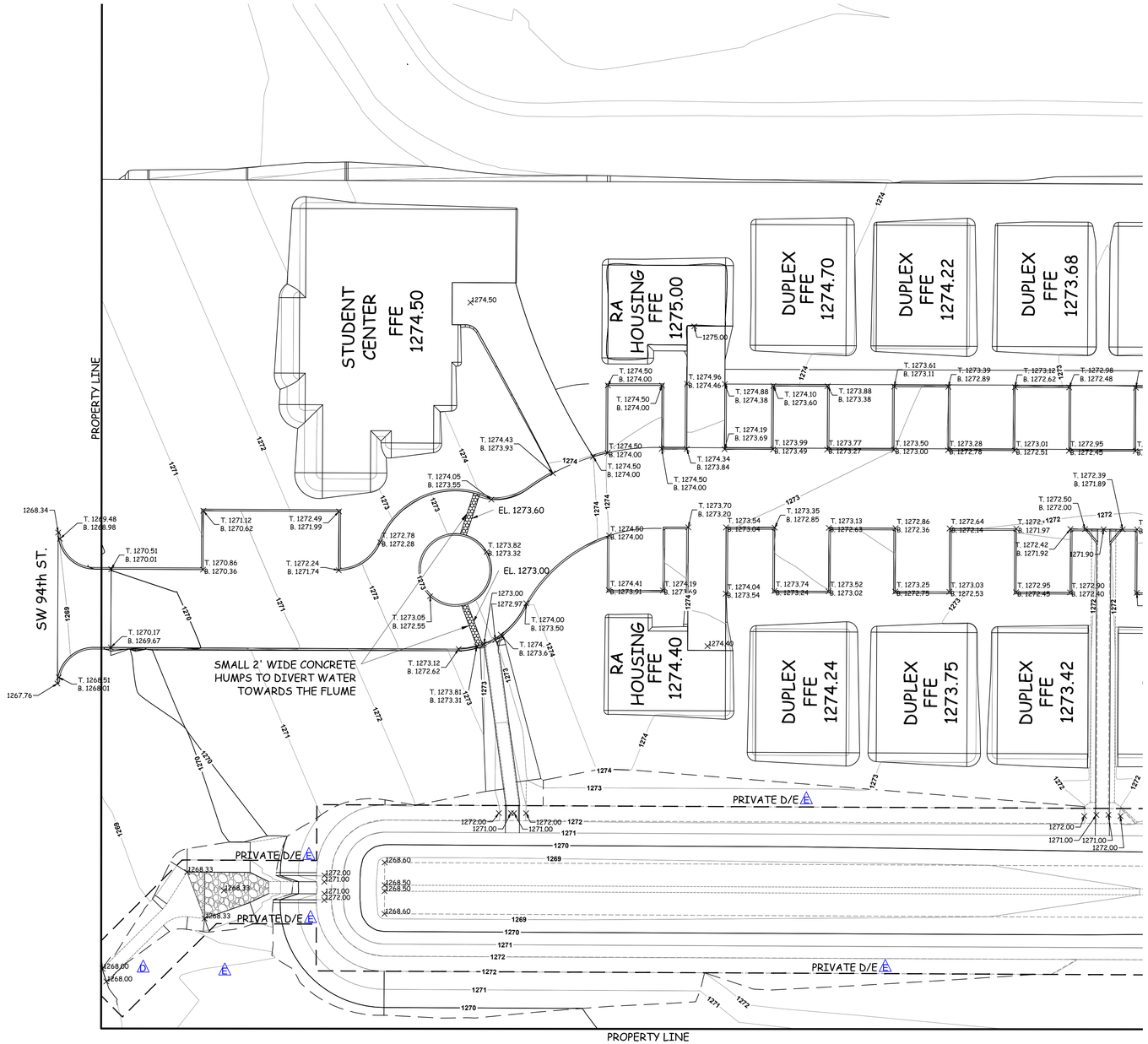
REV.	DATE	NAME	DESCRIPTION
A	05/29/2024	LB	Clarifications per OKC CP#1 review
B	07/16/2024	LB	Clarifications per OKC CP#2 review
C	08/29/2024	LB	Clarifications per OKC CP#3 review

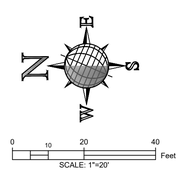
DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
8-11-2024
OKLAHOMA

SHEET 2.01

Plot Date: 12/10/2024 8:37 AM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\dwg Project\Design\23125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Layne Peterson





LEGEND:

×1272.00 SPOT ELEVATON

×T. 1272.49 B. 1271.99 CURB TOP ELEVATION / CURB BOTTOM ELEVATION

ENLARGED GRADING PLAN - NORTH

SHEET NAME

BRIDGES OF MOORE

PROJECT

BRIDGES

CLIENT

City of Moore, Cleveland Co., OK

LOCATION

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

REV.	DATE	NAME	DESCRIPTION
A	05/29/2024	LB	Clarifications per OKC CP#1 review
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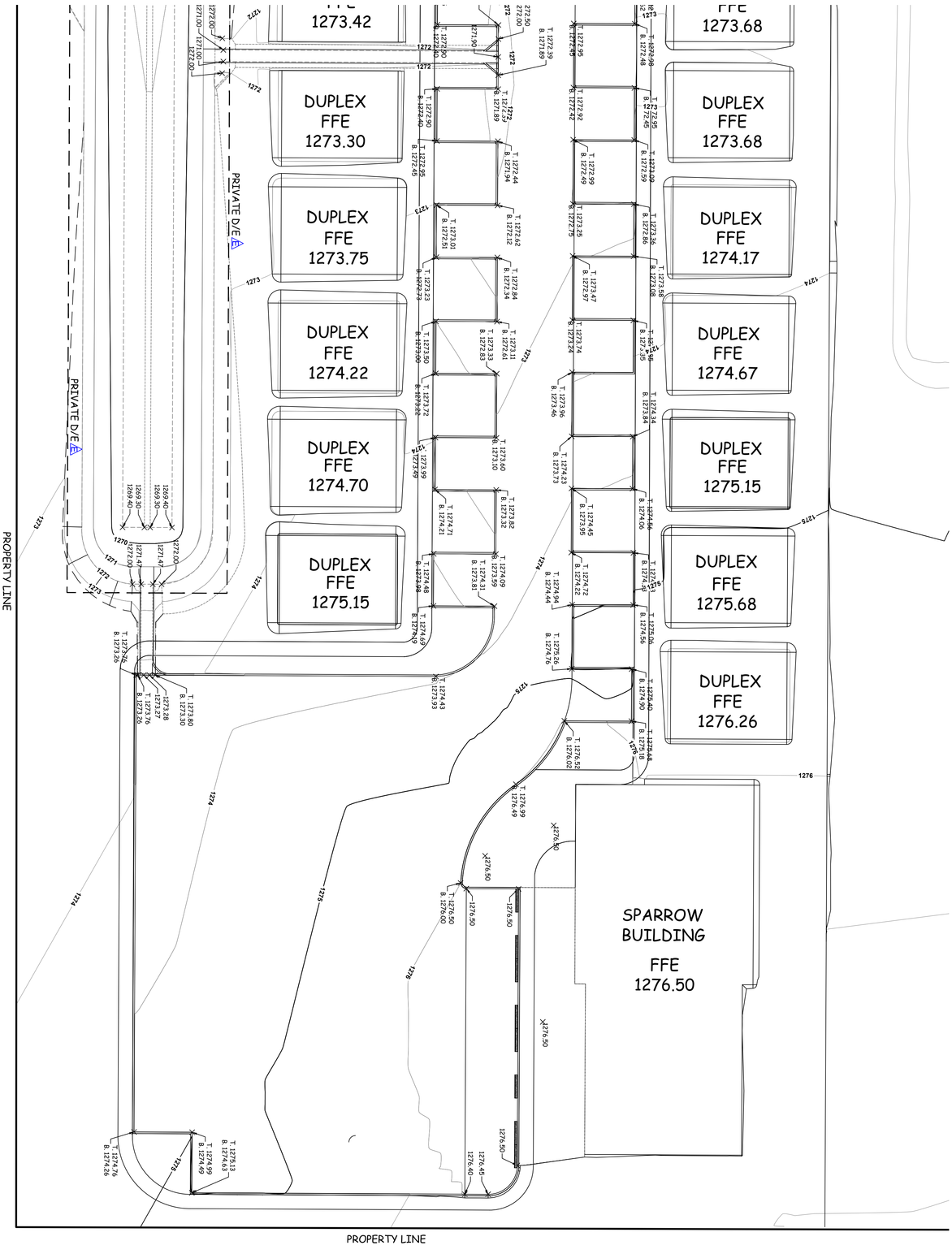
C	08/29/2024	LB	Clarifications per OKC CP#3 review

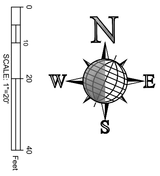
DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
8-11-2024
OKLAHOMA

SHEET 2.02

Plot Date: 8/29/2024 4:10 PM Location: C:\Shared drives\Directory (2)\2025 - Bridges Sky Ranch\Hwy Project\Design\25125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Jacob





LEGEND:

×1272.00 SPOT ELEVATION

×T. 1272.49 CURB TOP ELEVATION

×B. 1271.99 CURB BOTTOM ELEVATION

SHEET 2.03

REGISTERED PROFESSIONAL ENGINEER PERRY L. STREEBIN 14823 OKLAHOMA

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

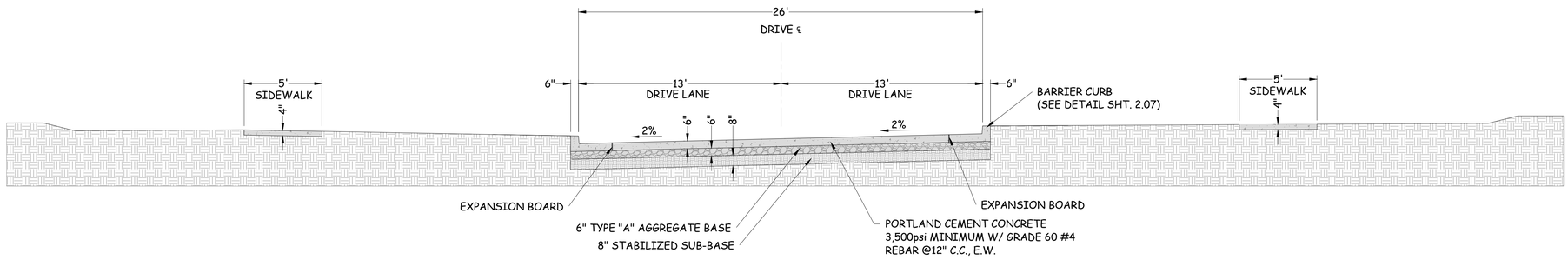
REV.	DATE	NAME	DESCRIPTION
A	05/29/2024	LB	Clarifications per OKC CP#1 review
A	08/29/2024	LB	Clarifications per OKC CP#3 review

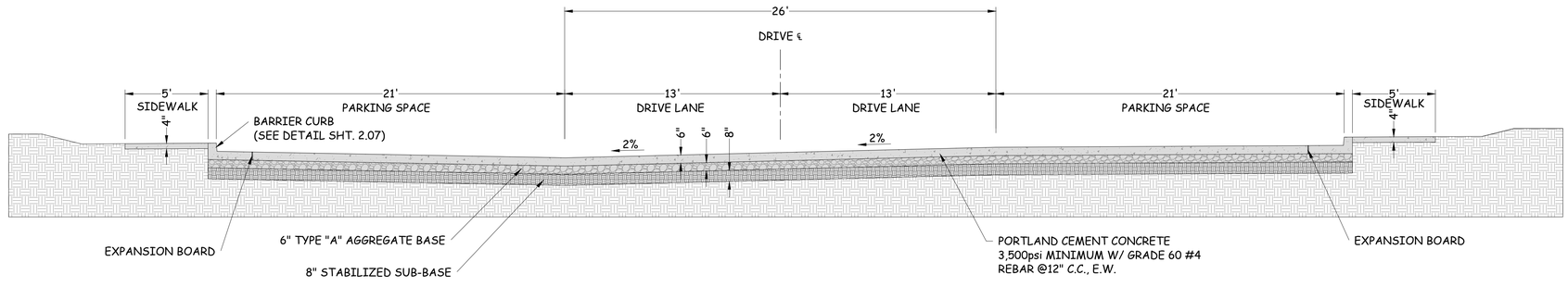
SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900

Oklahoma C.A. No. 106
Renewal 6-30-25

SHEET NAME	ENLARGED GRADING PLAN - SOUTH
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK





TYPICAL PAVING SECTION VIEWS

0 2 4 8 Feet
SCALE: 1"=4'

Plot Date: 4/5/2024 11:50 AM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\dwg Project Design\23125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches)

SHEET NAME: TYPICAL PAVING SECTIONS
PROJECT: BRIDGES OF MOORE
CLIENT: BRIDGES
LOCATION: City of Moore, Cleveland Co., OK

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

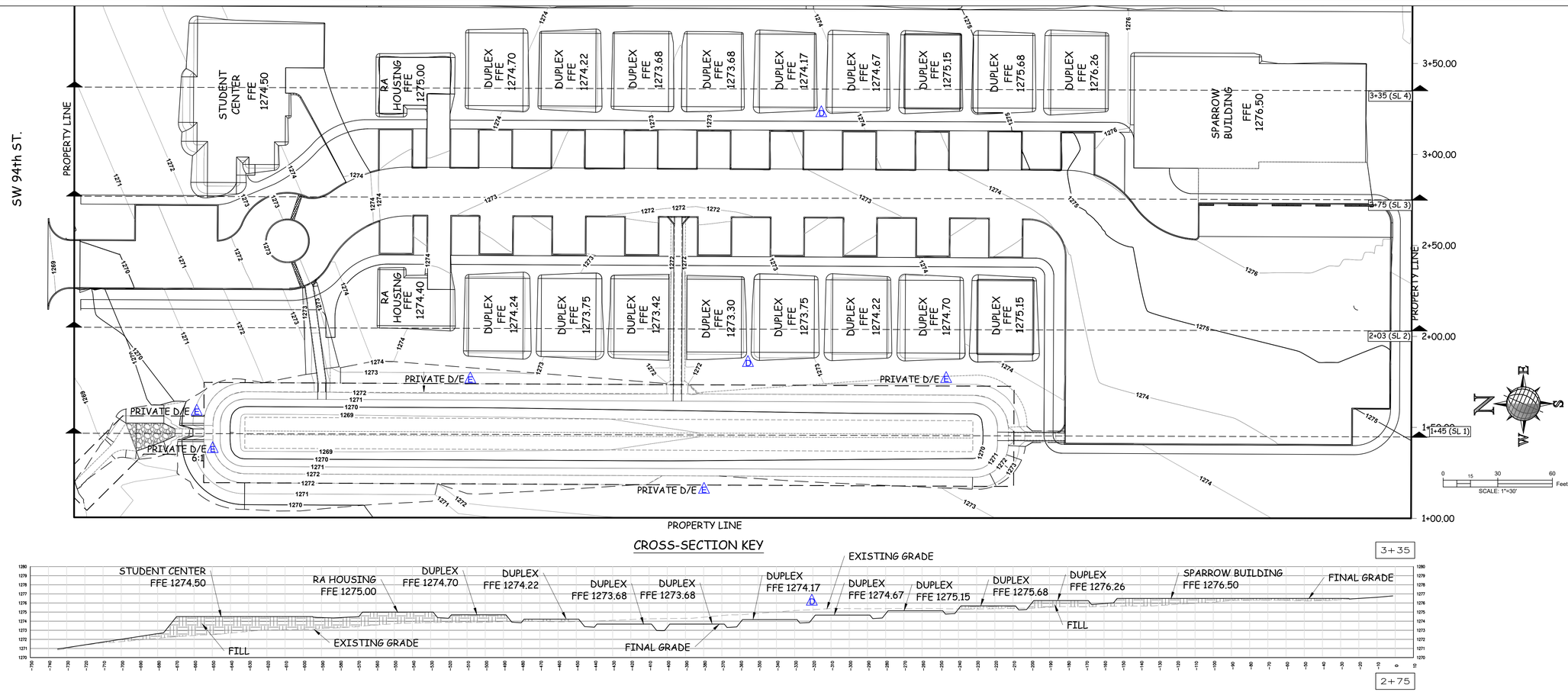
SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

DESCRIPTION | NAME | DATE | REV.

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14823
4-5-2024
OKLAHOMA

SHEET
2.04



CROSS-SECTION KEY

CROSS-SECTION PROFILES

HORTIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 8'
VERTICAL EXAGGERATION = 5X

SHEET NAME	GRADING CROSS SECTIONS N-S
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

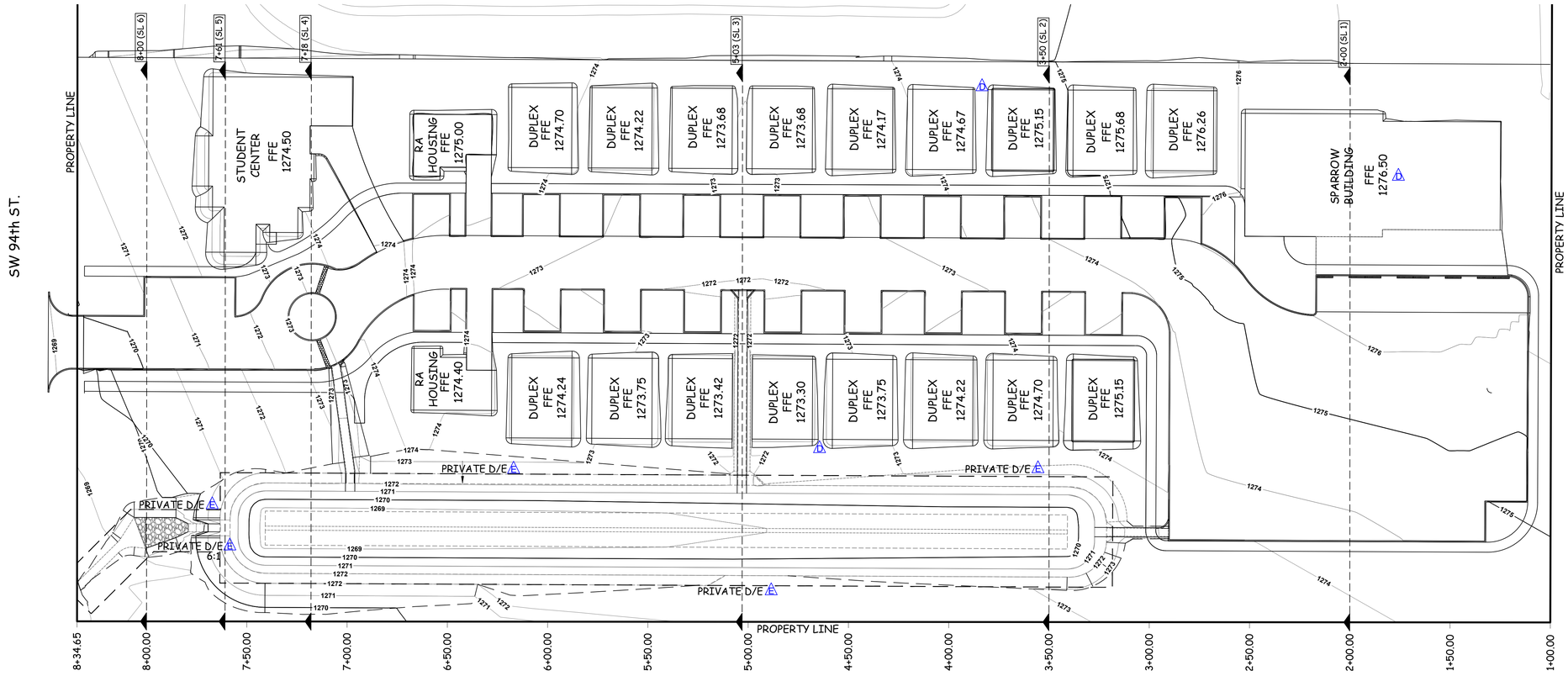
REV.	DATE	NAME	DESCRIPTION
A	05/29/2024	LB	Clarifications per OKC CP#1 review
B	07/16/2024	LB	Clarifications per OKC CP#2 review
A	08/29/2024	LB	Clarifications per OKC CP#3 review

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA
8-1-25

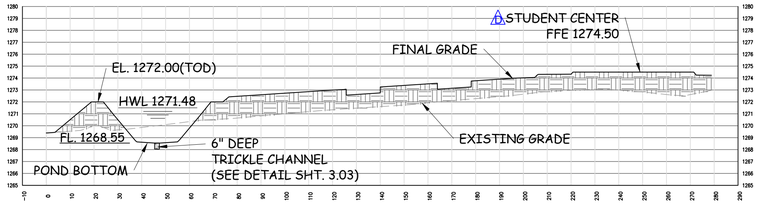
SHEET 2.05

Plot Date: 8/29/2024 4:13 PM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\dwg Project\Design\23125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Jacob



CROSS-SECTION KEY

7+18



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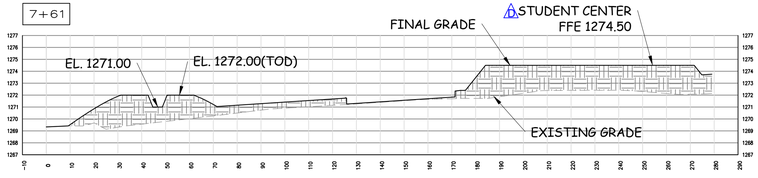

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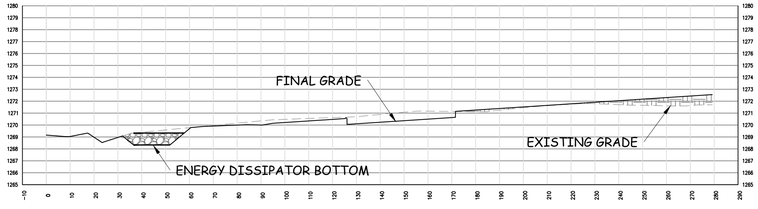
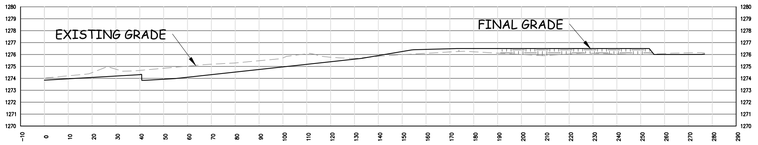
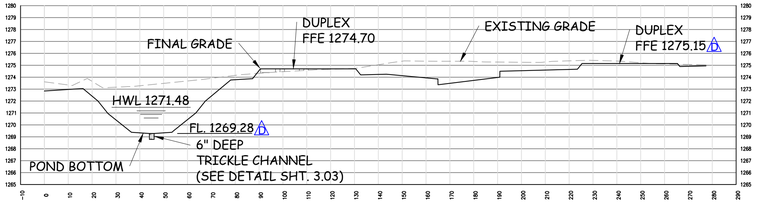


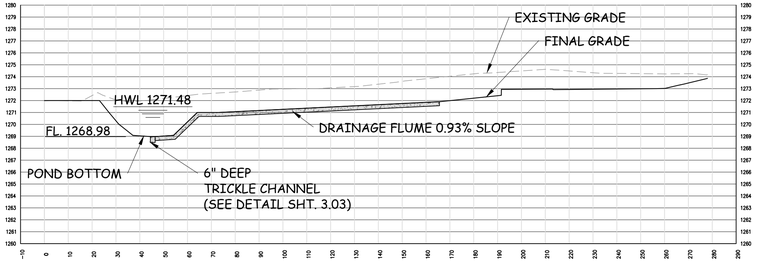
2+00



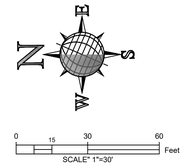
3+50



5+03



CROSS-SECTION PROFILES



HORTIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 8'
VERTICAL EXAGGERATION = 5X

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SHEET NAME	GRADING CROSS SECTIONS E-W
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

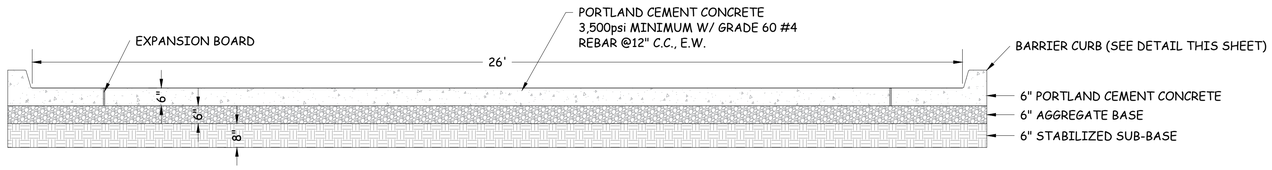
REV.	DATE	NAME	DESCRIPTION
A	05/29/2024	LB	Clarifications per OKC CP#1 review
A	07/16/2024	LB	Clarifications per OKC CP#2 review
A	08/29/2024	LB	Clarifications per OKC CP#3 review

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
8-29-2024
OKLAHOMA

SHEET 2.06

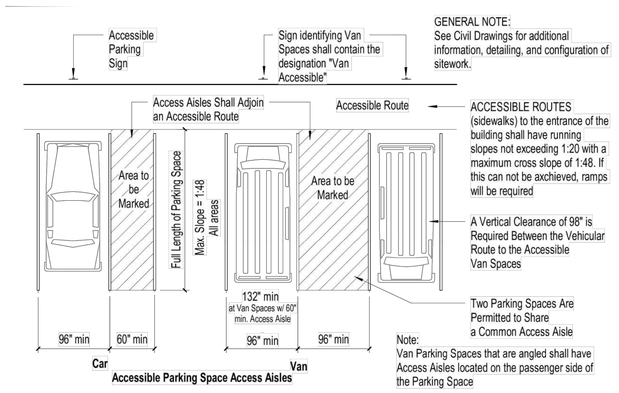
Plot Date: 8/29/2024 4:15 PM Location: G:\Shared Drives\Directory\23\23125 - Bridges Sky Ranch\Eng Project\Design\23125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Jacob

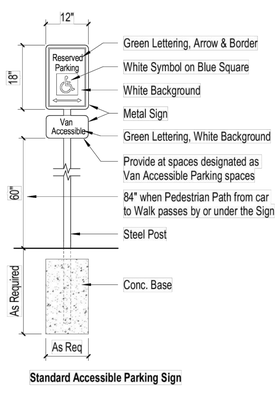


PARKING/ DRIVE SURFACE SECTION VIEW
(TYP.)

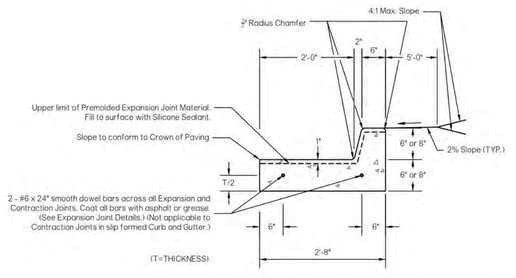
NOTES:

1. ALL VEGETATION, TOPSOIL TO MINIMUM OF 6", AND UNSTABLE FILL MATERIAL SHALL BE REMOVED.
2. ALL AREAS TO BE PAVED SHALL BE TEST ROLLED PER ODOT STANDARD SPECIFICATIONS SECTION 203.
3. THE TOP 8" OF SUITABLE FILL SHALL BE SCARIFIED AND COMPACTED TO 95% STANDARD PROCTOR DENSITY.
4. CONTRACTION JOINTS SHALL BE: INSTALLED AT 2 TIMES THE THICKNESS (IN INCHES) INTERVALS (IN FEET), ORIENTED IN TWO DIRECTIONS, WITH 90 DEGREES BETWEEN JOINTS, ¼ THE THICKNESS OF THE PAVEMENT, CLEANED AND SEALED WITH AN INDUSTRY ACCEPTED STANDARD JOINT SEALANT.





ADA COMPLIANT PARKING DETAILS

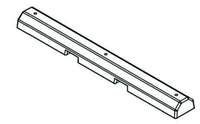


NOTE: Maximum spacing of 1/2" Expansion Joints to be 100' c/c with Contraction Joints 15' - 20' apart to match Driveway Returns. (Expansion Joint spacing not applicable to slip formed Curb and Gutter.)

BARRIER CURB & GUTTER DETAIL
(TYPE 1)

PRODUCT SPEC SHEET

PC-8



MODEL: PC-8

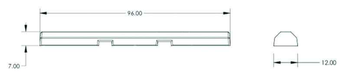
DESCRIPTION: Concrete Parking Curb w/Forklift Knockouts

DIMENSIONS: 96"L x 12"W x 7"H

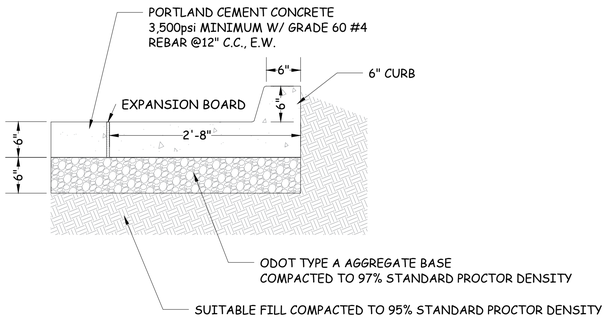
REINFORCEMENT: Four Stringer welded, 1/2" rebar cage.

WEIGHT: 420 lbs.

FINISH: Smooth gray concrete



PARKING BLOCK DETAIL
NTS



PAVEMENT DESIGN SECTION VIEW

SHEET NAME	SEARCH STANDARD DEATAILS
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

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SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

REV.	DATE	NAME	DESCRIPTION

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA
12-5-2024

SHEET
2.07

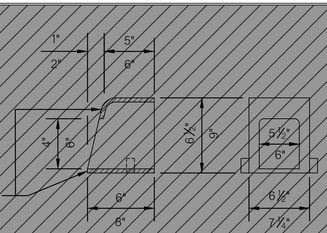
Drawing for Review only unless Signature and Date are Originals

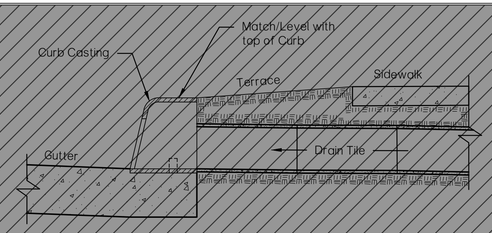
Plot Date: 4/4/2024 4:45 PM Location: O:\Shared drives\Directory\2324\25 - Bridges Sky Ranch\Hwg Project\Details\2325-SEARCH DETAILS 2.07.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches)

EXPLANATION OF DIMENSIONS

TOP DIMENSION R-3262-3

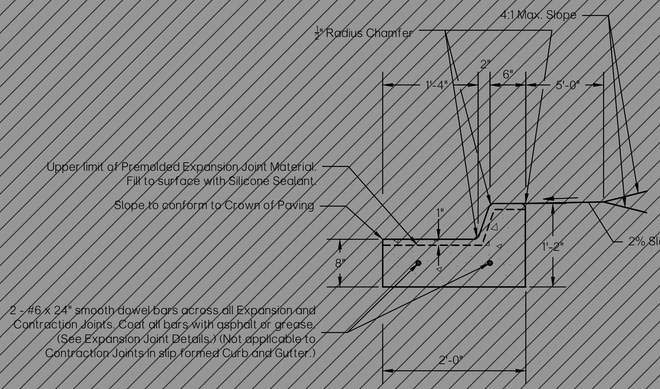
BOTTOM DIMENSION R-3262-6





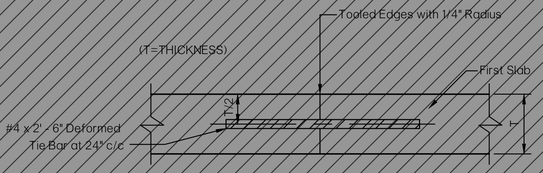
STORM WATER CURB OPENINGS

NEENAH R-3262-3 & R-3262-6



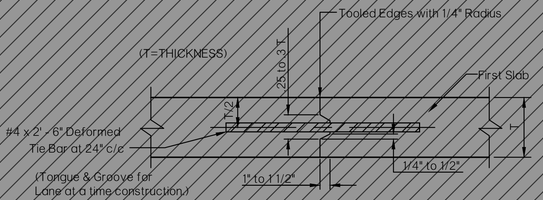
NOTE: Maximum spacing of 1/2" Expansion Joints to be 100' c/c with Contraction Joints 15' - 20' apart to match Driveway Returns. (Expansion Joint spacing not applicable to slip formed Curb and Gutter.)

CONCRETE CURB & GUTTER DETAIL FOR DOWNTOWN



STANDARD TIED CONSTRUCTION JOINT

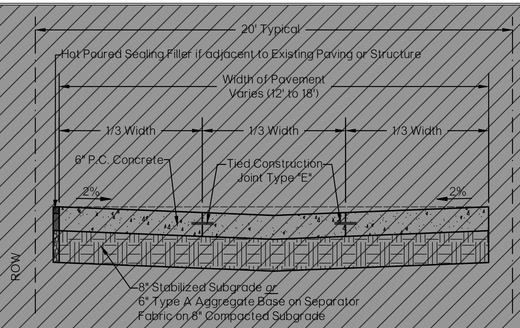
TYPE "E"



NOTE: Tongue & Groove shall be allowed, as approved by the City Engineer, when traffic is to be maintained during construction.

ALTERNATE TIED CONSTRUCTION JOINT

TYPE "E"



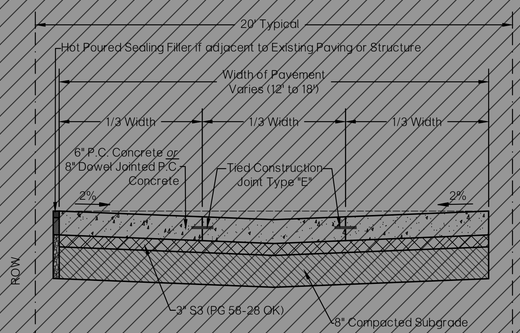
TYPICAL SECTION

P.C. CONCRETE ALLEY PAVING

LOCAL RESIDENTIAL

• 230 •

NOTE: Transverse Joints at 10' MAX.



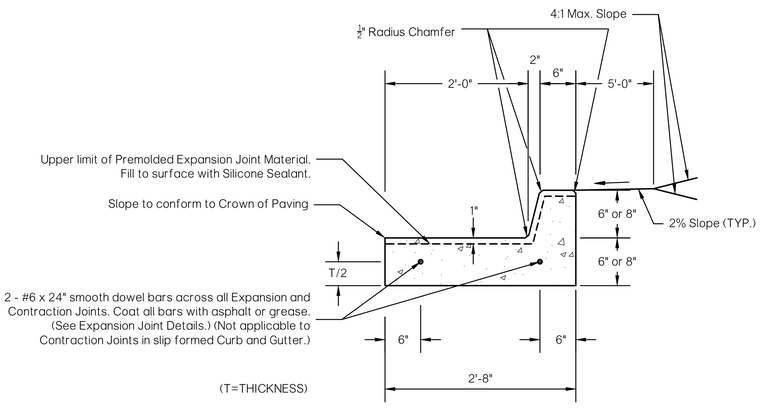
TYPICAL SECTION

P.C. CONCRETE ALLEY PAVING

COMMERCIAL/INDUSTRIAL

• 231 •

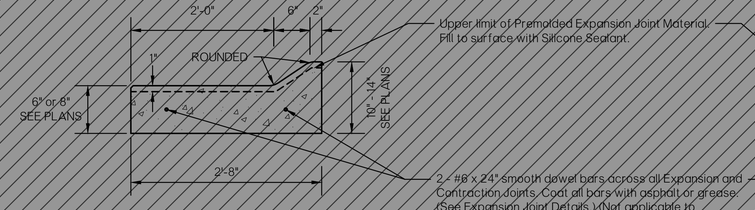
NOTE: Transverse Joints at 10' MAX.



NOTE: Maximum spacing of 1/2" Expansion Joints to be 100' c/c with Contraction Joints 15' - 20' apart to match Driveway Returns. (Expansion Joint spacing not applicable to slip formed Curb and Gutter.)

BARRIER CURB & GUTTER DETAIL

(TYPE 1)

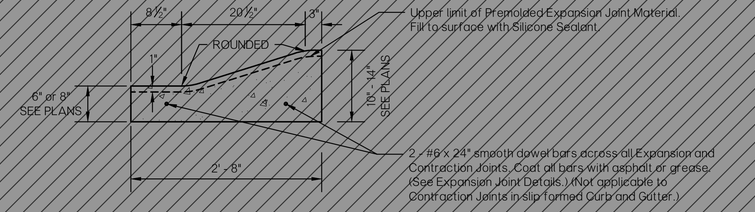


All Exposed Edges to Have 3/8" Rounded Finish

MOUNTABLE CURB & GUTTER DETAIL

(TYPE 2)

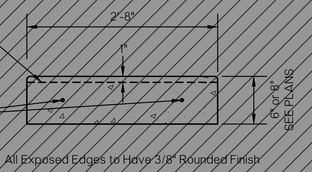
★ For use in residential street only, unless otherwise approved by City Engineer.



SPECIAL MOUNTABLE CURB & GUTTER DETAIL

(TYPE 3)

★ For use in residential street only, unless otherwise approved by City Engineer.



All Exposed Edges to Have 3/8" Rounded Finish

RIBBON CURB DETAIL

(TYPE 4)

★ For use in residential street only.

CURBS FOR P.C. CONCRETE PAVEMENT NOTE:

1. #4 Tiebars 2'-0" long are required at 24" centers if Curb & Gutter not cast integrally with the P.C. Concrete street pavement. Longitudinal Construction Joints on Local and Collector streets may, with the approval of the City Engineer, be Butt Type Joints with Tiebars.

The City of Oklahoma City

Public Works Department

Engineering Division

APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER DATE: 09/12/2023

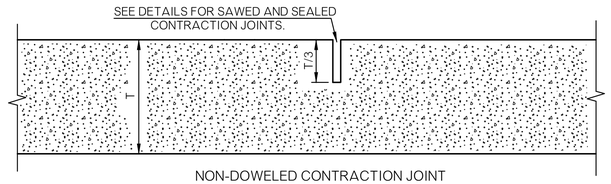
DRAWN: OKC-PW-SRB

DATE: 3/9/2023

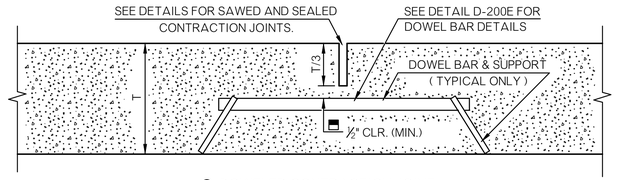
P.C. CONCRETE PAVING SPECIAL DETAILS

Detail Number

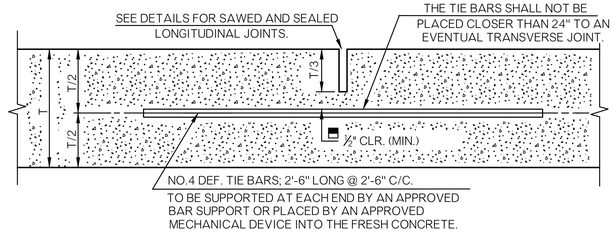
D-200C



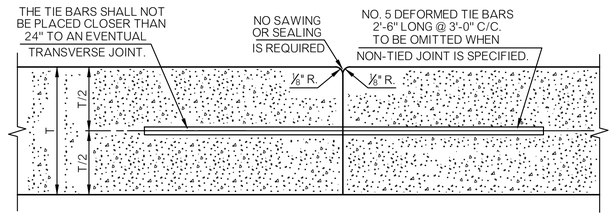
NON-DOWELED CONTRACTION JOINT



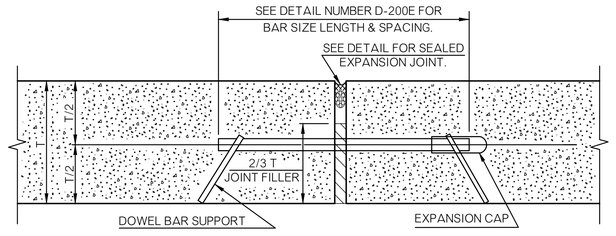
◒ DOWELED CONTRACTION JOINT



LONGITUDINAL JOINT

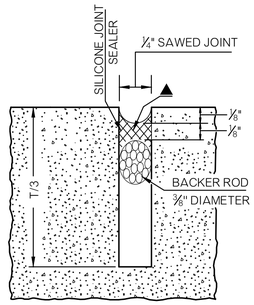


TIED BUTT JOINT
LONGITUDINAL CONSTRUCTION JOINT

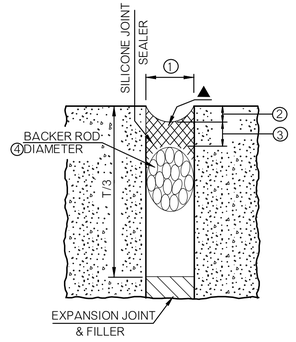


EXPANSION JOINT / ISOLATION JOINT ■

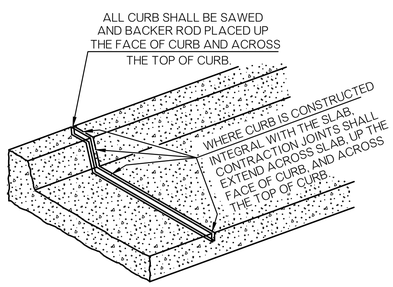
■ OMIT DOWEL BARS, CAPS & SUPPORTS FOR ISOLATION JOINTS
SEE STANDARD DRAWING NUMBER D-200E, LOAD TRANSFER UNITS,
FOR DETAILS OF ALTERNATE TYPES OF DOWEL BAR SUPPORTS.



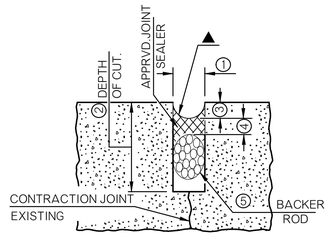
ALTERNATE DETAILS
SAWED AND SEALED CONTRACTION,
AND LONGITUDINAL JOINTS



SEALED EXPANSION JOINT



CONTRACTION JOINT WITH
INTEGRAL CURB



JOINT REHABILITATION DETAILS

JOINT REHABILITATION TREATMENT TABLE				
JOINT WIDTH ①	DEPTH OF CUT ②	SEALANT RECESS DEPTH ③	SEALANT THICKNESS ④	BACKER ROD DIAMETER ⑤
INCHES	INCHES	INCHES	INCHES	INCHES
¼"	1⅛"	⅛" (MIN.)	¼"	⅜"
⅜"	1¼"	⅛" (MIN.)	⅜"	½"
½"	1¾"	⅛" (MIN.)	½"	⅝"
¾"	1¾"	⅛" (MIN.)	¾"	⅞"
⅞"	1¾"	⅛" (MIN.)	⅞"	1"
1"	2"	—	—	1⅛"
OVER 1"	OVER 2"	—	—	1¼" +

JOINT REHABILITATION - POLYMER SEALANT

JOINT REHABILITATION TREATMENT TABLE				
JOINT WIDTH ①	DEPTH OF CUT ②	SEALANT RECESS DEPTH ③	SILICONE SEALANT THICKNESS ④	BACKER ROD DIAMETER ⑤
INCHES	INCHES	INCHES	INCHES	INCHES
¾"	1¼"	¼"	3⁄16"	½"
½"	1¾"	¼"	¼"	⅝"
¾"	1¾"	¼"	⅜"	⅞"
⅞"	1¾"	½"	7⁄16"	1"
1"	2"	½"	½"	1⅛"
OVER 1"	OVER 2"	½"	½"	1¼"

JOINT REHABILTIATION - SILICONE SEALANT

EXPANSION JOINT / ISOLATION JOINT TREATMENT TABLE			
JOINT WIDTH ①	SEALANT RECESS DEPTH ②	SILICONE SEALANT THICKNESS ③	BACKER ROD DIAMETER ④
INCHES	INCHES	INCHES	INCHES
½"	¼"	¼"	⅝"
¾"	¼"	⅜"	⅞"
1"	⅜"	½"	1¼"
1½"	½"	½"	2"
2"	½"	¾"	2½"

DETAILS FOR SEALED
EXPANSION / ISOLATION JOINT

EXPANSION OR ISOLATION JOINT WIDTH SHALL BE 1/2", UNLESS OTHERWISE SPECIFIED ON THE PLANS. TABLE VALUES, AS SHOWN THIS TABLE , SHALL BE USED IN THOSE SPECIFIED CASES.

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE OKC STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.
2. ONLY SILICONE SEALANT MEETING REQUIREMENTS OF THE OKC STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS SHALL BE ACCEPTABLE FOR USE.
3. ALL JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE OKC STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS. WATER FLUSHING AND AIR CLEANING OF JOINT SHALL BE IN ONLY ONE DIRECTION-FORWARD. SANDBLASTING SHALL BE PERFORMED IN TWO PASSES, ONE FOR EACH FACE OF THE JOINT.
4. THE SHAPE FACTOR COMBINED WITH JOINT CLEANNESS IS THE CRITICAL COMBINATION NECESSARY TO GUARANTEE DESIRED BONDING AND FUNCTION OF SEALED JOINTS. NO TOLERANCE EXCEPT THOSE SHOWN HERE WILL BE ALLOWED.

▲ 5. THE JOINT SHAPE FACTOR IS DEFINED AS THE FINAL PRESSED SHAPE OF THE SILICONE MATERIAL. THE TOOLING OPERATION WILL FIRMLY PRESS THE FRESHLY APPLIED MATERIAL INTIMATELY AGAINST THE CUT SIDES OF THE RECESS AND THE BACKER ROD SURFACES. THE ROUNDED SHAPE ON TOP AND BOTTOM OF THE SILICONE ALLOWS THE SEALANT TO PROPERLY FLEX BUT MAINTAIN ADHERANCE TO THE PAVING.

◒ 6. ON JOINTED PORTLAND CEMENT CONCRETE PAVEMENTS, DOWELLED CONTRACTION JOINTS SHALL BE USED ON DRIVING LANES ONLY. CONCRETE SHOULDERS SHALL NOT BE DOWELLED UNLESS SPECIFIED ON THE PLANS.

7. LONGITUDINAL JOINTS BETWEEN PAVEMENT AND TIED CONCRETE SHOULDERS SHALL NOT BE SAWED OR SEALED UNLESS OTHERWISE SHOWN ON THE PLANS.

⬒ 8. ON ALL SAWED JOINTS, THE KERF DEPTH SHALL CLEAR DOWEL BARS, TIE BARS AND/OR REINFORCING STEEL BY A MINIMUM OF 1/2".

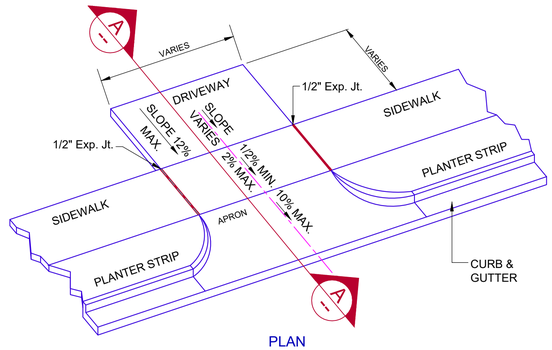
9. CONTRACTION JOINTS IN JOINTED P. C. PAVEMENT SHALL BE AT APPROXIMATELY 15'-0" CENTERS, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

The City of Oklahoma City
Public Works Department
Engineering Division

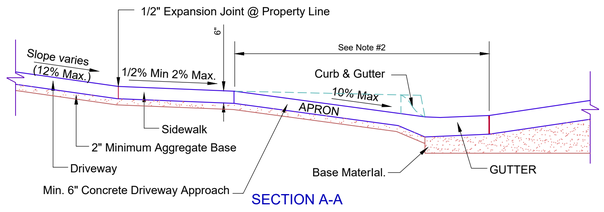
APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER
DATE: 09/12/2023
DRAWN: OKC-PW-SRB
DATE: 3/9/2023

LONGITUDINAL, EXPANSION AND CONTRACTION JOINTS DETAILS

Detail Number
D-200D



PLAN



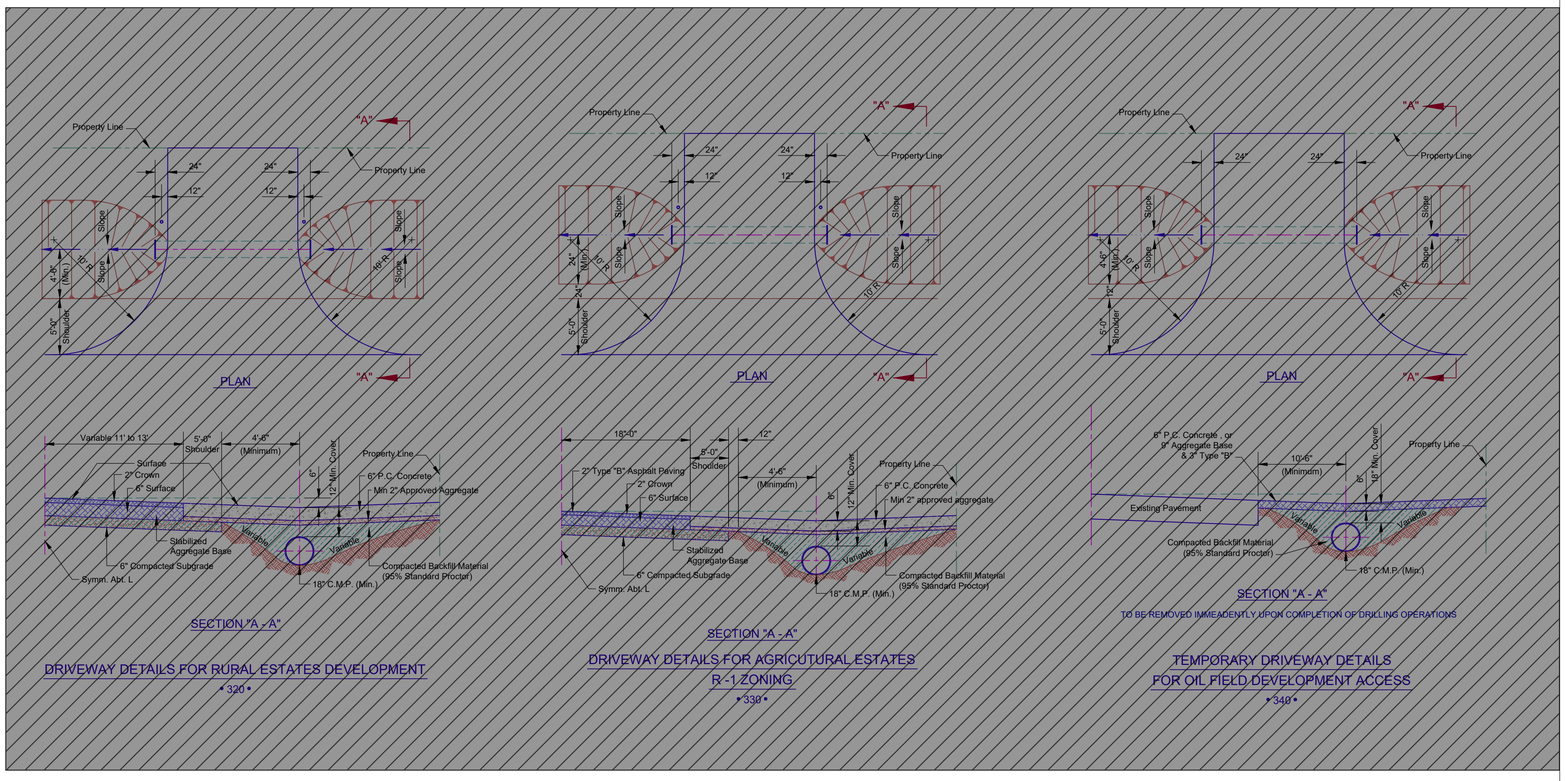
SECTION A-A

NOTES:

1. A 5' - 0" minimum radius is approved for one & two family residences not abutting a limited access or major street. All other Driveways will have a 10' 0 " minimum radius.
2. The Driveway Contractor shall saw cut & remove the complete Curb and Gutter section. Saw cuts shall be 2" or 1/3 the depth of the gutter, whichever is greater. Saw cuts shall include the top & face of curb as well as the gutter. Saw cuts shall be made prior to the removal of concrete.
3. If a gutter holds water prior to any construction by driveway Contractor, he should notify the City Engineer of the situation before doing any work. The completed driveway work will not be accepted if the gutter holds water due to poor construction by the Contractor.
4. It is recognized that this driveway detail will not cover every possible situation encountered in construction. Additional expansion joints will be required as needed.
5. Clean and seal all joints and saw cuts in accordance with standard specifications.
6. Longitudinal Joint required for drives 16' wide & greater. Saw cut 2" deep and fill with silicone sealant. Transverse Joints Required at 15' Maximum Spacing.
7. Do not turn radius in front of adjacent property without written permission from adjacent property owner.
8. Commercial an industrial driveway approaches may be thicker or approved by the City Engineer.

DRIVEWAY DETAILS

•310•



SECTION "A - A"

DRIVEWAY DETAILS FOR RURAL ESTATES DEVELOPMENT

•320•

SECTION "A - A"

DRIVEWAY DETAILS FOR AGRICUTURAL ESTATES R -1 ZONING

•330•

SECTION "A - A"

TO BE REMOVED IMMEADENTLY UPON COMPLETION OF DRILLING OPERATIONS

TEMPORARY DRIVEWAY DETAILS FOR OIL FIELD DEVELOPMENT ACCESS

•340•

The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY:
ERIC J. WENGER, P.E.
CITY ENGINEER

DATE: 09-12-23

DRAWN: VSC

DATE: 02-05-13

STANDARD TYPICAL SECTIONS DRIVEWAY DETAILS

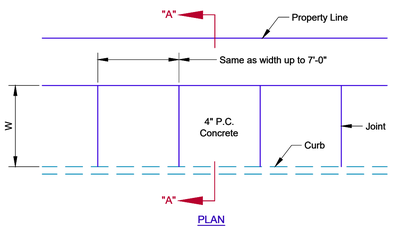
Drawing Number

D-300

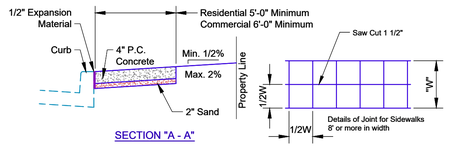
REVISION 3-2017

\\ci.okc\okc\PW-CAD\Nguyen\Drawing\Hanger BIS\STANDARD\D-300-REV032017.dwg, 8/17/2023 1:13:59 PM, DWG To PDF.pc3

DETAILS FOR SIDEWALK
LOCATED AT CURB



PLAN

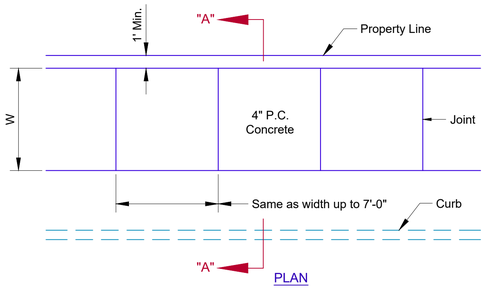


SECTION "A - A"

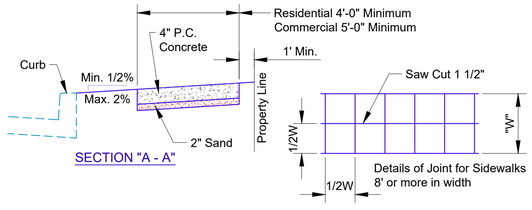
NOTES:

1. 1/2" x 4" premolded expansion material around Power Poles or other structures in walk with at least 36" of clear travel space.
2. Expansion Joints maximum distance = 100', use 1/2" x 4" premolded expansion material.
3. Contraction Joints maximum distance = 7', saw cut 1 1/2" deep and fill with sealant.
4. Saw cut joints within 24 hours.
5. Use 1/2" x 4" premolded expansion joint at curb and at adjacent Property Lines.
6. All joints to be sealed. Premolded expansion material to be removed to a depth of 1/2" prior to applying sealant.

DETAIL FOR SIDEWALK
LOCATED AWAY FOM CURB



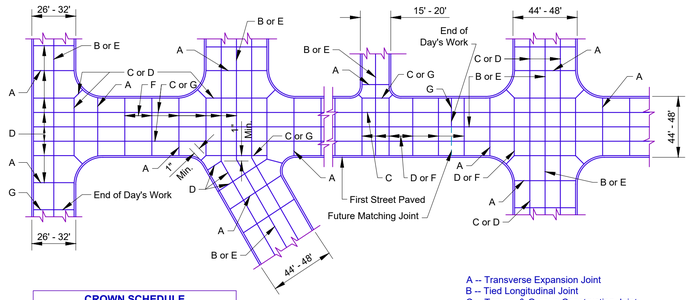
PLAN



SECTION "A - A"

NOTES:

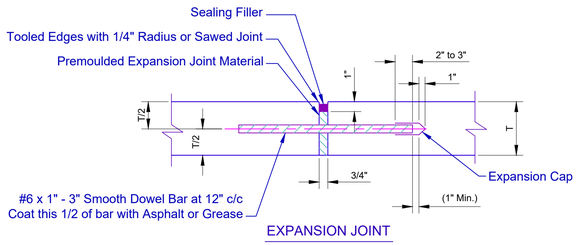
1. 1/2" x 4" premolded expansion material around Power Poles or other structures in walk with at least 36" of clear travel space.
2. Expansion Joints maximum distance = 100', use 1/2" x 4" premolded expansion material.
3. Contraction Joints maximum distance = 7', saw cut 1 1/2" deep and fill with sealant.
4. Saw cut joints within 24 hours.
5. All joints to be sealed. Premolded expansion material to be removed to a depth of 1/2" prior to applying sealant.



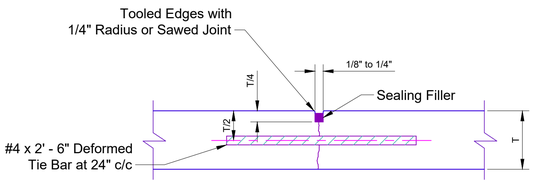
CROWN SCHEDULE		
FULL WIDTH	To 33' with 6" Curb	32' & over with 8" Curbs
	2 1/2"	4"

A -- Transverse Expansion Joint
B -- Tied Longitudinal Joint
C -- Tongue & Groove Construction Joint
D -- Contraction Joint
E -- Longitudinal Construction Joint
F -- Doweled Contraction Joint
G -- Doweled Construction Joint

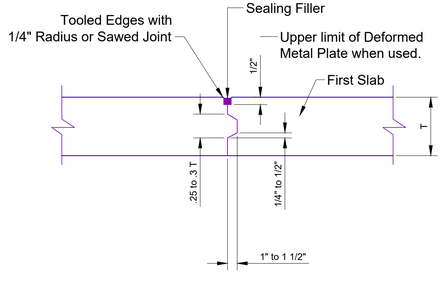
JOINT LAYOUT DETAILS



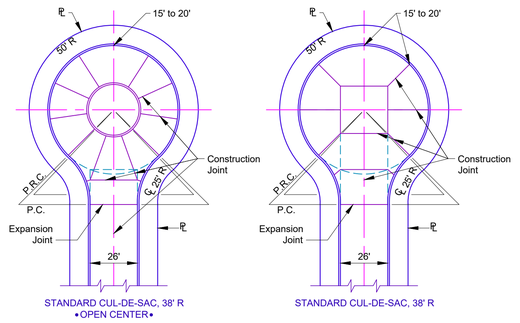
EXPANSION JOINT
TYPE "A"



TIED JOINT
TYPE "B"



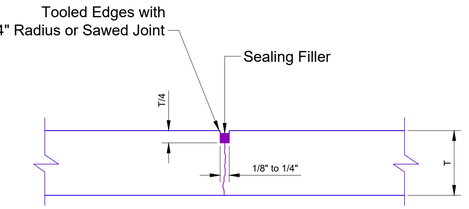
TONGUE & GROOVE CONSTRUCTION
TYPE "C"



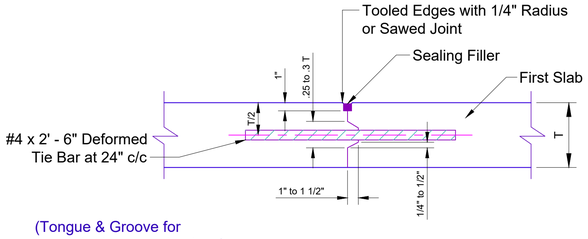
STANDARD CUL-DE-SAC, 38' R
•OPEN CENTER•

STANDARD CUL-DE-SAC, 38' R

JOINT LAYOUT DETAILS

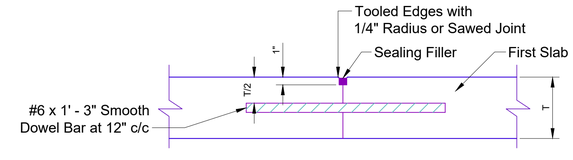


CONTRACTION JOINT
TYPE "D" (ALT. TYPE "F")



(Tongue & Groove for
Lane at a time construction.)

TIED CONSTRUCTION JOINT
TYPE "E"

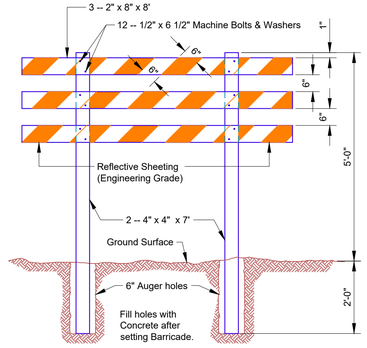


DOWLED CONSTRUCTION JOINT
TYPE "G"

NOTES:

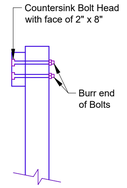
Smooth Dowel Bars across Expansion Joints shall be provided with Expansion Caps, and coated with Asphalt or Grease, (Type A & G).

Grooves in Joints may be formed by: (1) temporary embedment of a suitable Mandrel, (2) installation of a thin strip of premoulded Joint Filler Material, (3) sawing the Pavement after the Concrete has hardened.



NOTE:

Markings for Barricade Rails are to be Orange and White. Markings are to be 6" wide and attached at 45° angles as set forth in the latest edition of the Uniform Traffic Control Devices Manual

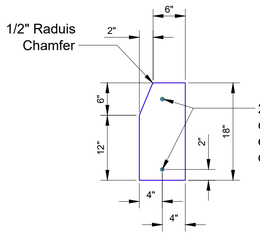


NOTES:

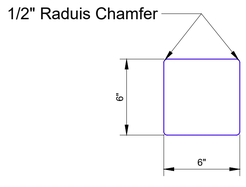
4" X 4" X 7' Timber are to be #2 or better S4S Yellow Pine, Wolmanized or Penta Treated.

2" x 8" x 8' Timber are are to be #2 or better S4S Yellow Pine KD.

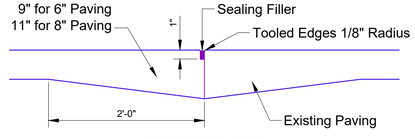
STANDARD REFLECTOR TYPE BARRICADE



•CONCRETE CURB•



•CONCRETE HEADER•



•THICKENED EDGE•

The City of Oklahoma City
Public Works Department
Engineering Division

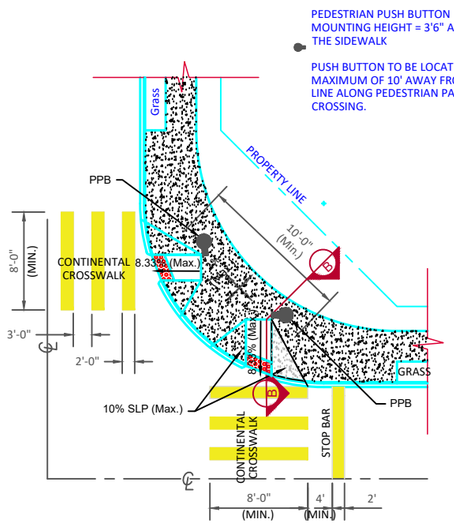
APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER
DATE: 09-12-23

DRAWN: VSC

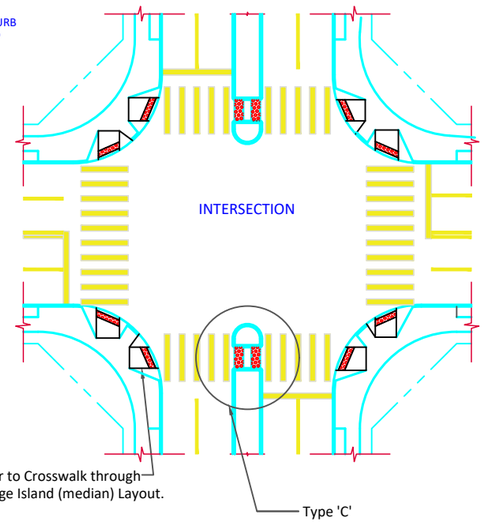
DATE: 02-07-13

STANDARD TYPICAL SECTIONS MISCELLANEOUS DETAILS

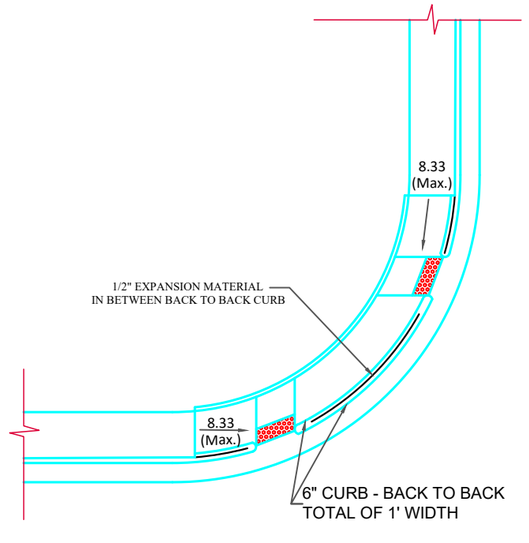
Drawing Number
D-500



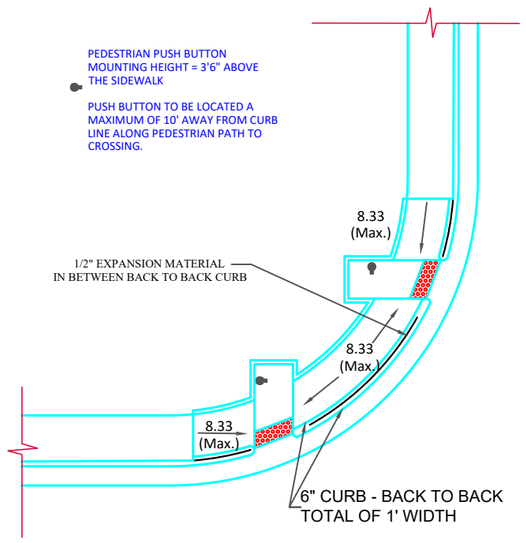
CURB RAMP TYPE "A"



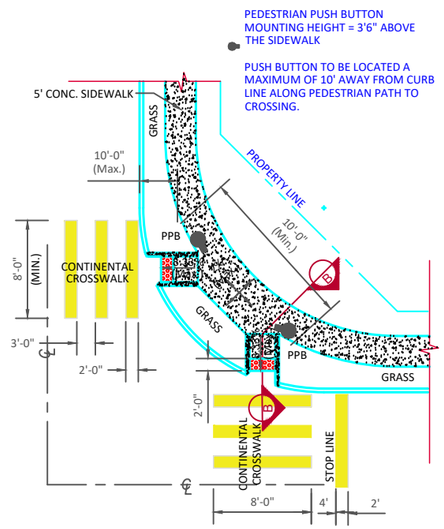
INTERSECTION WITH REFUGE ISLANDS LAYOUT



BACK OF CURB RAMP WITHOUT PEDESTRIAN PUSH BUTTON TYPE "G"

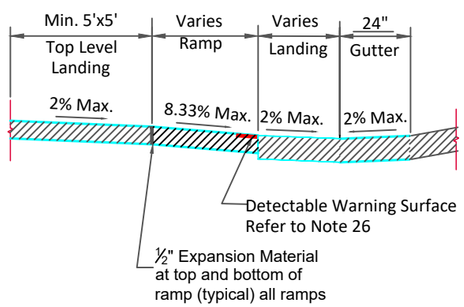


BACK OF CURB RAMP WITH PEDESTRIAN PUSH BUTTON TYPE "G"

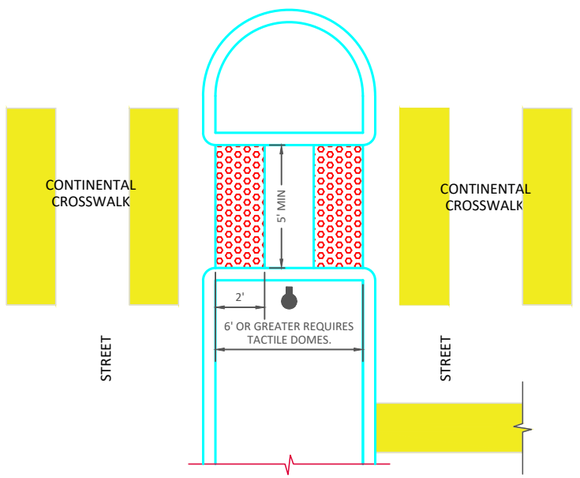


CURB RAMP TYPE "B"

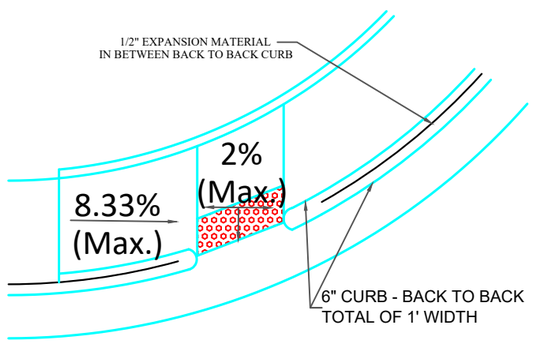
See Detail 1 & Detail 2 (Sheet B)



SECTION B-B



STANDARD CROSSWALK THROUGH MEDIAN LAYOUT TYPE "C"



DETAIL OF TYPE "G" RAMP

The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER
DATE: 09/12/2023
DRAWN: VSC
DATE:

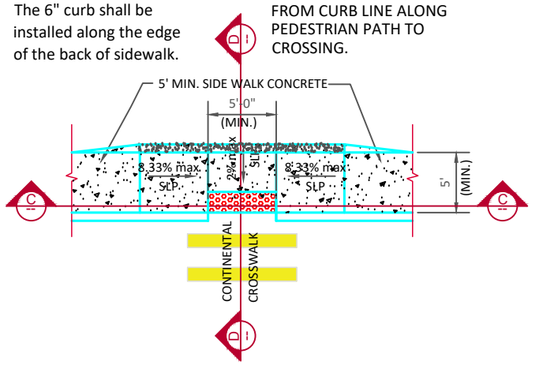
ADA CURB RAMP DETAILS ARTERIAL STREETS

Drawing Number
D-700
A

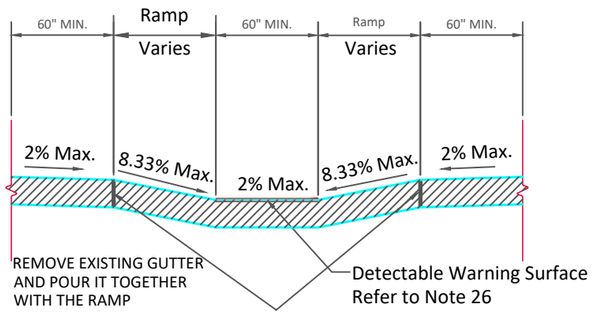
Curb-Ramp shall be used on narrow sidewalk or at mid block locations when standard curb ramp lay-out is not feasible. The 6" curb shall be installed along the edge of the back of sidewalk.

- PEDESTRIAN PUSH BUTTON MOUNTING HEIGHT = 3'6" ABOVE THE SIDEWALK

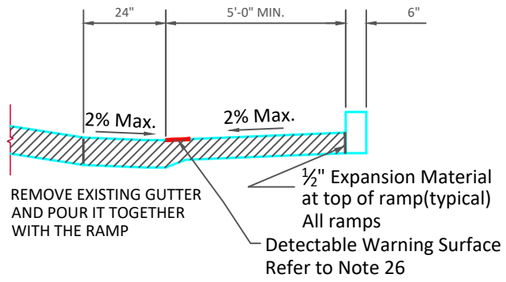
PUSH BUTTON TO BE LOCATED A MAXIMUM OF 10' AWAY FROM CURB LINE ALONG PEDESTRIAN PATH TO CROSSING.



PARALLEL CURB RAMP TYPE "D"

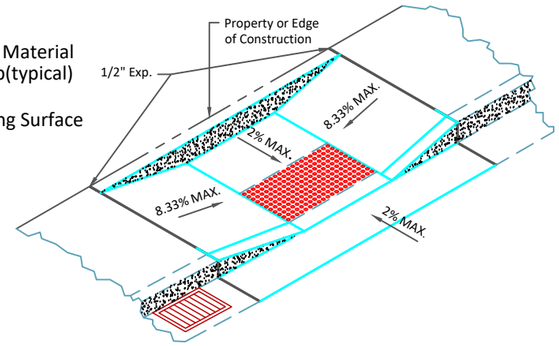


SECTION C-C



SECTION D-D

See Detail 2 for Isometric View

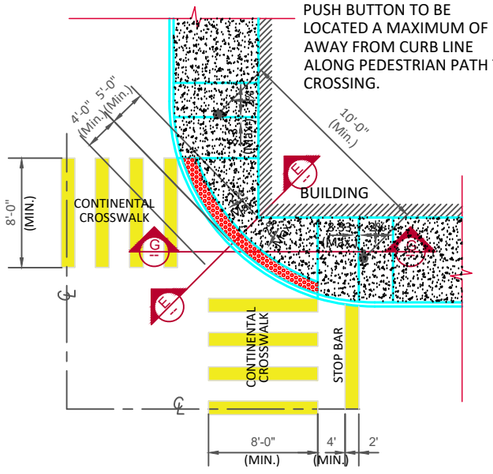


DETAIL 2 TYPE D

Isometric

- PEDESTRIAN PUSH BUTTON MOUNTING HEIGHT = 3'6" ABOVE THE SIDEWALK

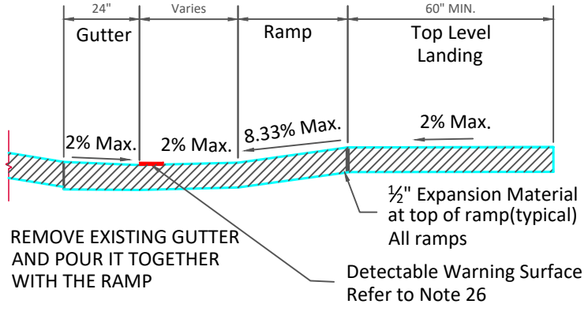
PUSH BUTTON TO BE LOCATED A MAXIMUM OF 10' AWAY FROM CURB LINE ALONG PEDESTRIAN PATH TO CROSSING.



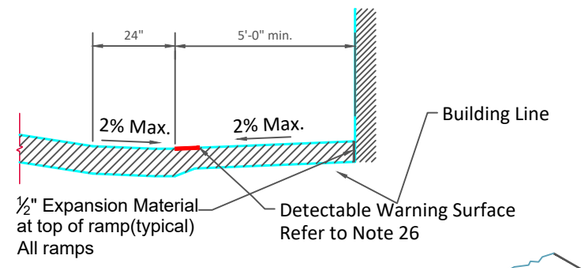
RADIUS CURB RAMP TYPE "E"

See Detail 3 for Isometric View

Written approval by the City Engineer is required.

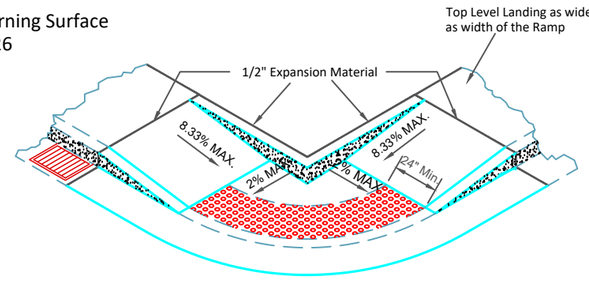


SECTION G-G TYPE "E"



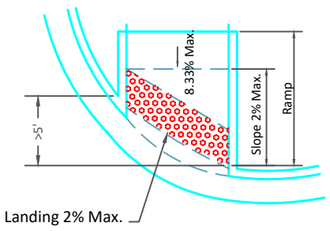
SECTION E-E TYPE "E"

See Detail 3 for Isometric View



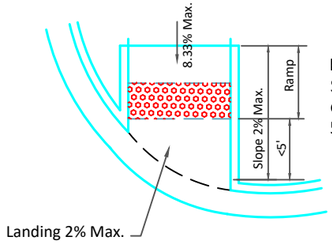
DETAIL 3 TYPE E

Isometric



Place Detectable Warning Surface on bottom landing if landing is more than 5' deep at any point.

DETAIL 1



Place Detectable Warning Surface on the bottom if both levels of grade break are less than 5' from back of curb

DETAIL 2

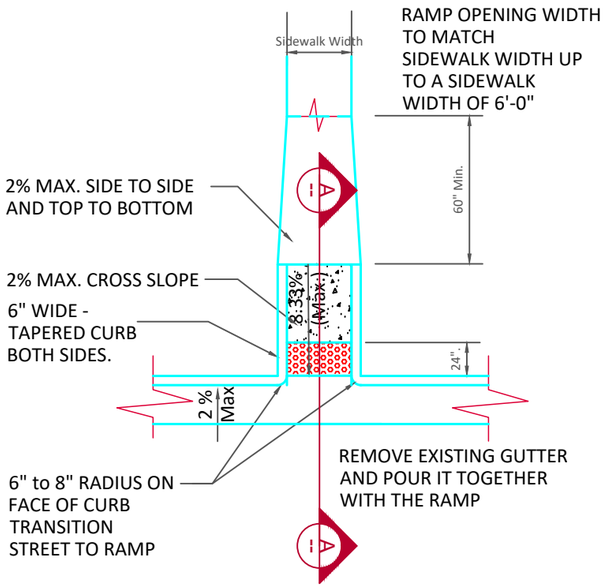
The City of Oklahoma City
Public Works Department
Engineering Division

DATE: 09/12/2023
APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER
DRAWN: VSC
DATE:

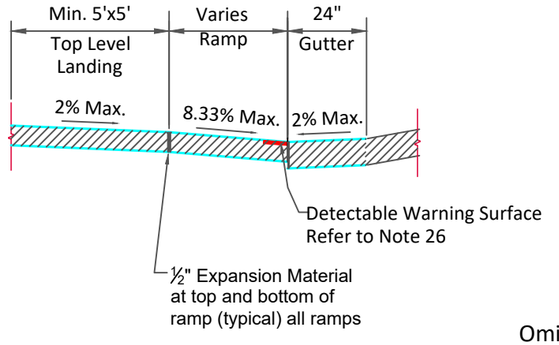
ADA CURB RAMP DETAILS ARTERIAL STREETS

Drawing Number D-700

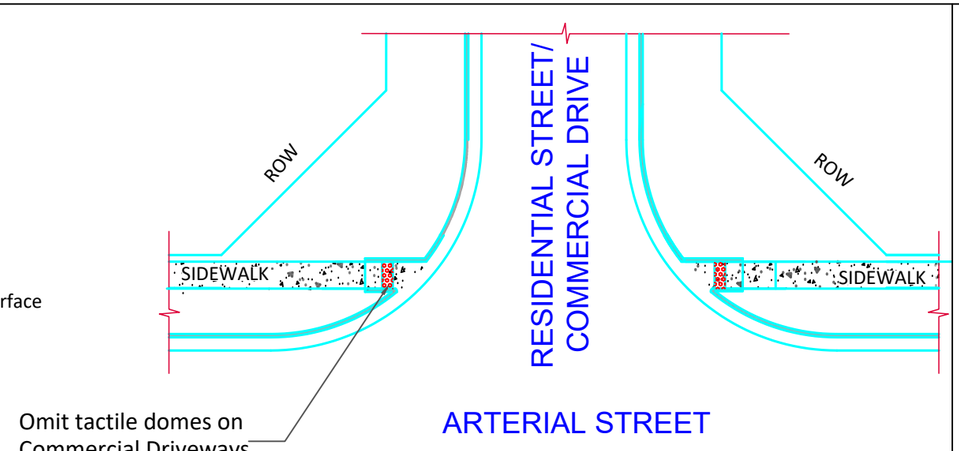
B



METHOD OF TRANSITIONING A RAMP WITH DIE OUT CURBS

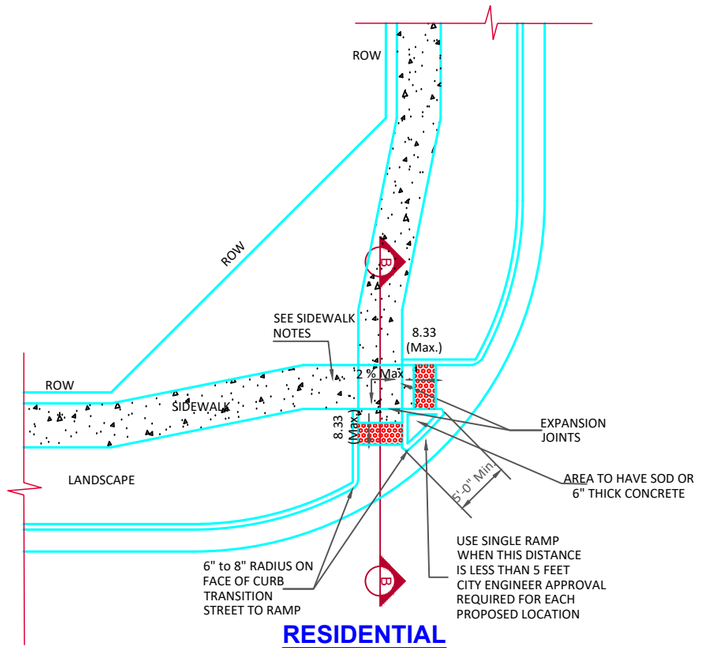


SECTION A-A

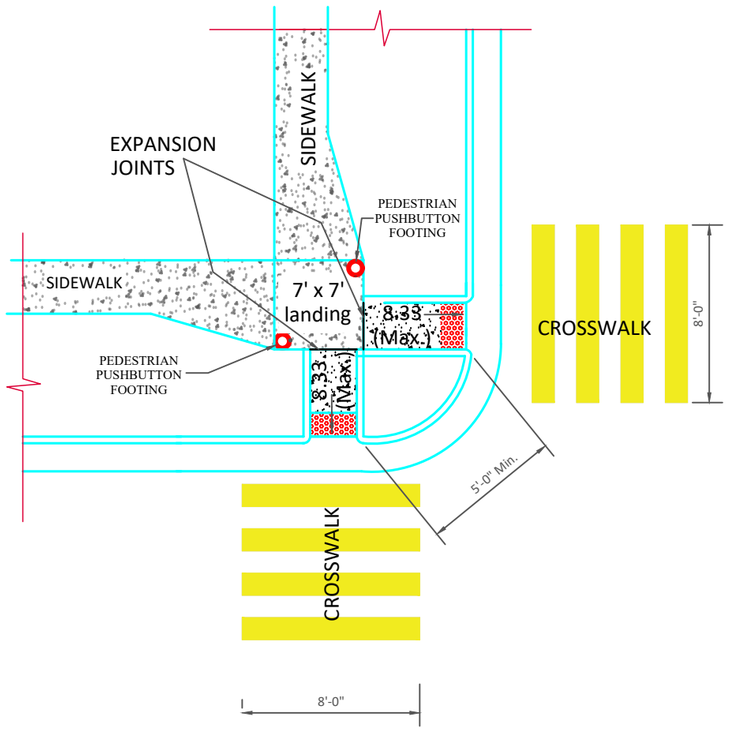


ARTERIAL STREET

ARTERIAL / MINOR STREET RAMPS (OR COMMERCIAL DRIVES)



RESIDENTIAL CURB RAMP TYPE "F"

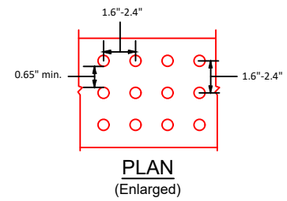


SHARED LANDING AT SIGNALIZED INTERSECTIONS

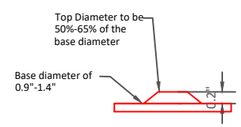
DETAIL 1

Detectable Warning Surface Specifications:

- Must provide a Visual Contrast.
- Raised Tactile surfaces used for way finding.
- Detectable Warning Surface shall be installed in a manner such that the domes are parallel to the direction of pedestrian travel.
- Install the Detectable Warning Surface beginning at back of curb.



PLAN
(Enlarged)



ELEVATION
(Enlarged)

DETECTABLE WARNING SURFACE PATTERN LAYOUT

The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER
DATE: 09/12/2023
DRAWN: VSC
DATE:

ADA CURB RAMP DETAILS RESIDENTIAL STREETS COMMERCIAL DRIVES

Drawing Number
D-700
C

Sidewalk Notes:

1. All work must meet current Americans with Disabilities Act (ADA) requirements.

2. Minimum sidewalk width shall be as follows: residential, 5'-0" at curb, 4'-0" at property line; commercial, 6'-0" at curb, 5'-0" at property line.

3. Sidewalk cross slope shall be a maximum of 2% and a minimum of 1/2% cross slope.

4. Whenever the width of the sidewalk is less than 5'-0", a 5' x 5' passing area with a maximum 2% slope and minimum 1/2% slope in any direction at intervals of 200' shall be installed.

5. Whenever changing direction in a sidewalk, install a 5' x 5' passing area with maximum 2% slope and minimum 1/2% slope in any direction.

6. Objects such as tree branches, signs, water fountains, etc. shall not protrude into the sidewalk more than 4" at the heights between 27" and 80".

7. Sidewalk shall be constructed of 4" thick concrete with medium broom finish on top of 2" of 1.5" crusher run, ⅜" rock screenings, 1.5" clean recycled concrete or approved equal. Developers of Residential Neighborhoods are allowed the usage of 2" of sand instead of the required crusher run.

8. All obstructions into the walk, such as power poles, hydrants, sign posts, etc. must have at least 48" of clear travel space around the obstruction.

9. Sidewalk running grade shall not exceed 5% unless the sidewalk is contained in the R-O-W and then cannot exceed the general grade established for the adjacent street.

General Notes:

10. Any deviation from the standard curb-ramp plans shall be approved by the City Engineer or his designee on a case by case basis.

11. The standard curb-ramp drawings supersede all previous drawings and shall be a part of the new curb ramp standard drawings.

12. All alternate ramps shall be approved by the City Engineer or his designee prior to construction.

13. Seal all sawed joints on sidewalks, landings and ramps. Width of expansion joint shall be ½"

Pedestrian Signals Notes:

14. Push button must be located adjacent to and accessible from a landing.

15. A clear space of 30" x 48" minimum dimension must be next to the push button.

16. Maximum reach to a push button can not exceed 10".

Curb Ramp Notes:

17. A curb ramp is defined as the entire concrete surface which includes the ramp and flared sides. The minimum 4' wide center portion, including the Detectable Warning Surface, shall have a sloped plane of 8.33% (1:12) maximum, and cross slope, not to exceed 2%. The "flared side" of the ramp shall lie on a slope of 10% (1:10) maximum measured along the curb. The curb ramp shall have a surface tolerance of ¼" per 10 foot straight edge maximum.

18. The ramp center line and path of travel should be parallel to the sidewalk whenever possible. The full width of the ramp shall lie within the crosswalk area. It is desirable that the location of the ramp be as close as possible to the center of the crosswalk.

19. Curb Ramps shall not exceed 15' in length unless otherwise directed by the City Engineer.

20. Existing utility boxes and covers shall be adjusted flush with the curb ramp surface and shall not straddle any change in plane or material. Existing utility box frames and covers shall have matching surface finish on the entire frame and cover. New utility boxes shall not be placed within the accessible pathway.

21. The surface of the curb ramp and Detectable Warning Surface material shall be stable, firm and slip resistant. The concrete curb ramp surface shall be medium broom finished transverse to the axis of the ramp and shall be slightly rougher than the finish of the adjacent sidewalk surface.

22. A level landing 5'-0" deep, with a 2% maximum slope in each direction shall be provided at the upper end of each curb ramp to allow safe egress from the ramp surfaces. The width of the level landing shall be at least as wide as the width of the ramp. A clear space of a minimum of 30" wide x 48" deep shall be provided at pedestrian push buttons at signalized crossings. This space may be contained in the landing.

23. Existing vertical utility poles or street light poles may be incorporated into the flared sides, if necessary. The vertical obstruction shall be a minimum of 6"away from edge of the ramp. Pedestrian crosswalks push button poles, fire department call boxes and other poles with activated devices, may not be placed in the curb-ramp at any time. No new vertical obstructions may be located in the curb ramp or the accessible pathway.

24. Ramp opening shall be the same width as the sidewalk up to 6'-0" wide.

25. Curb Ramp shall be constructed with 8" thick concrete at collector and arterial streets; and with 6" thick concrete at residential streets. All on top of 2" of 1.5"crusher run, ⅜" rock screenings, 1.5" recycled concrete or approved equal. The 6" thick concrete will extend the maximum length of 6' from the face of curb and the 8" thick concrete will extend the maximum length of 8' from the face of curb. The remainder of the ramp will be constructed of 4" thick concrete and paid as sidewalk. All landings and incidental connections will be paid as sidewalk and will be constructed of 4" thick concrete. A 6" concrete curb will be constructed on each side of the ramp where 1:10 concrete slopes are not used.

26. For new construction all Detectable Warning Surfaces are to be set in concrete. Surface applied domes require special written approval by the City Engineer.

27. Curb ramp pay items shall only be used at street intersections, signalized driveways or alleys with tactile domes.

28. Where feasible, ramps shall align in such a way that the pedestrian travel path shall provide a direct path to corresponding ramp. Ramps that require pedestrians to change direction of travel in the street or driveway shall require City Engineer approval.

29. Where a ramp ties into an existing curb and gutter, the entire curb and gutter shall be removed and replaced extending 2 feet past the width of the ramp on each side.

The City of Oklahoma City
Public Works Department
Engineering Division

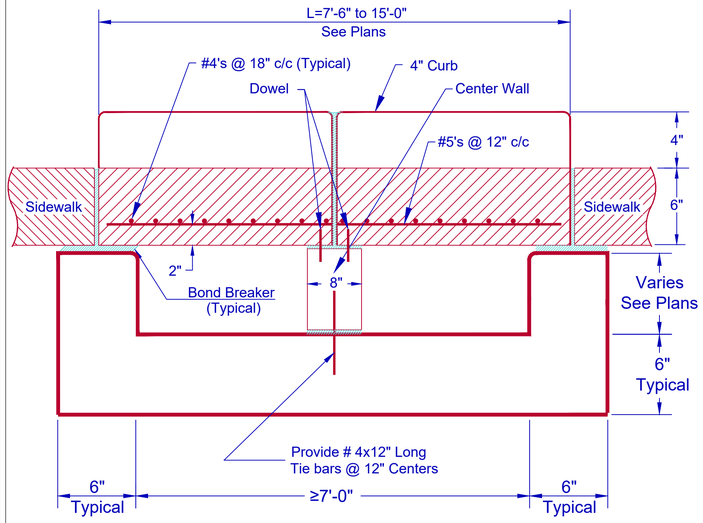
APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER — DATE: 09/12/2023

DRAWN: VSC

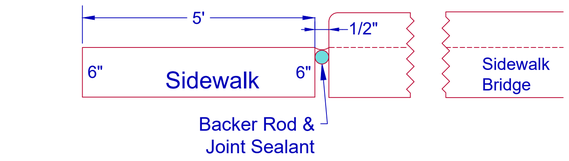
DATE:

ADA CURB RAMP DETAILS

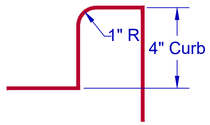
Drawing Number
D-700
D



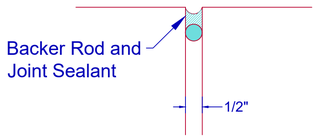
Section A-A for 7'-0" or greater span length



Detail 1



Detail 2

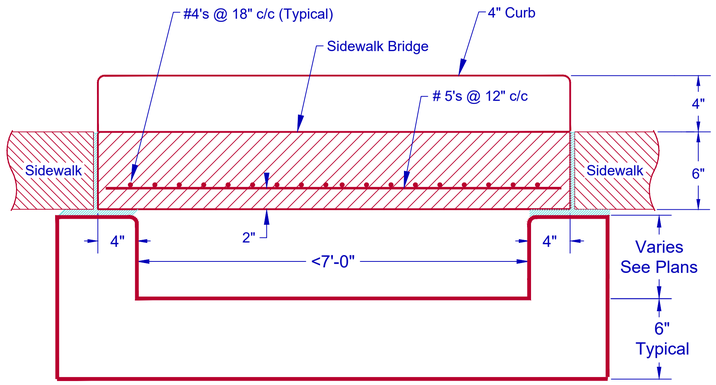


Seal from top of curbs down face of curbs and across full width of walkway

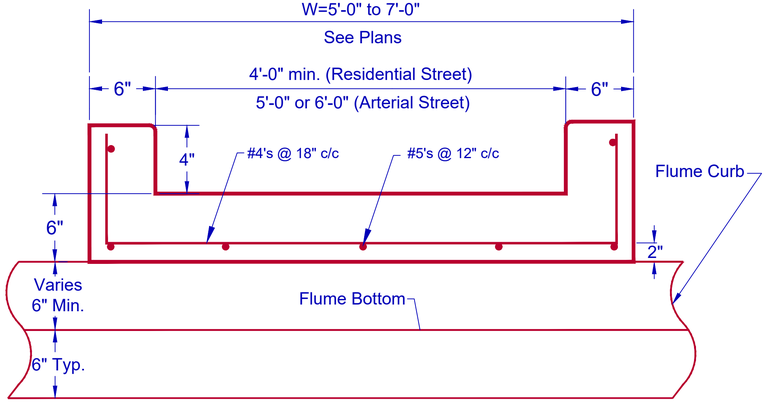
Detail 3

Sidewalk Bridge Notes:

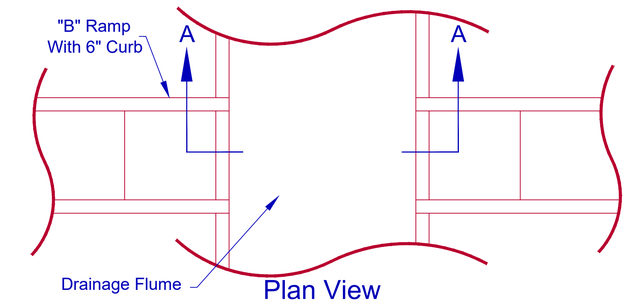
1. The width of the sidewalk bridge must be at least as wide as the adjacent sidewalk.
2. # 5 bars must extend to within 1 1/2" of the end forms.
3. Flume crossing with sidewalk bridges having a walking path greater than 5' wide require a separate design
4. Flume crossing with a dimension of 18" or greater from flume surface to the walkway surface will require pedestrian guardrail.
5. 3/4" chamfer (typical) required on all exposed edges.



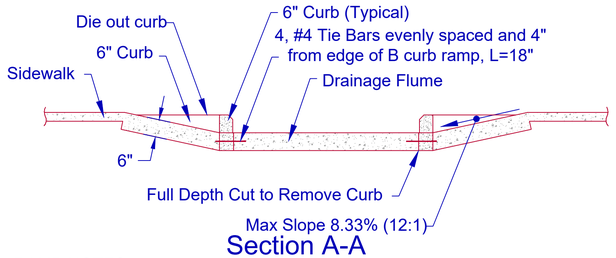
Section A-A for less 7'-0" span length



Section B-B



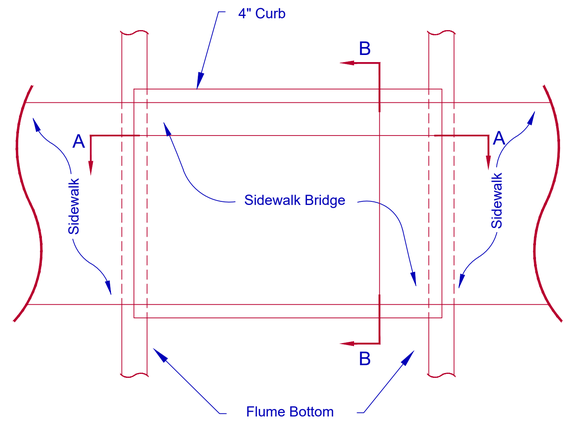
Plan View



Section A-A

RAMP NOTES:

1. In most cases, to be constructed as shown above unless grade or other factors require the construction of a sidewalk bridge.
2. If flume grade is more than 2%, then bottom of flume must be reconstructed so the longitudinal grade is 2% or less to meet ADA requirements for sidewalk cross slope. The transition on each side of sidewalk in bottom of flume must be at least 2' wide and a maximum grade equal to 2x the longitudinal flume grade.



Plan View

Sidewalk at Flume Crossing

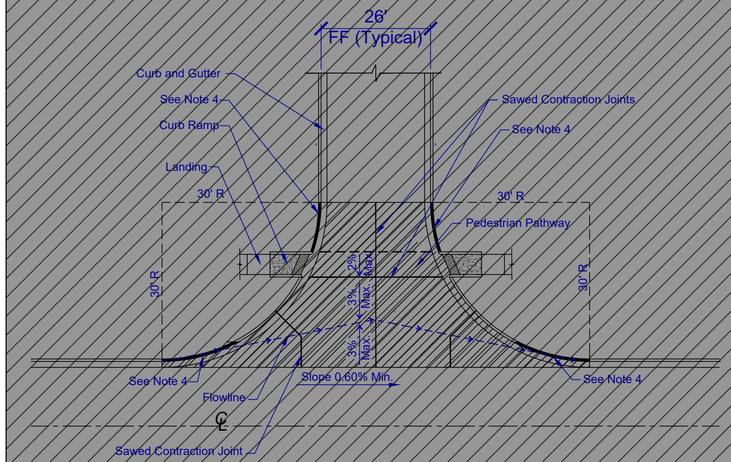
The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER — DATE: 09/12/2023
DRAWN: TVN
DATE: 02-26-20

ADA SIDEWALK AND CURB RAMP AT FLUME DETAILS

Drawing Number
D-700E

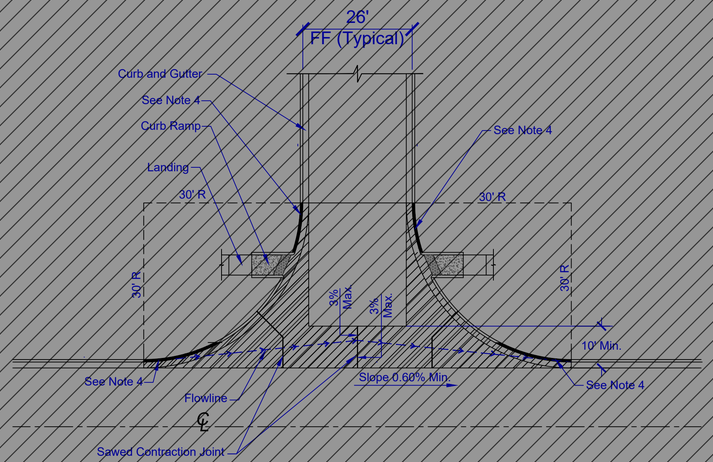
D-700C-2020



OPTION 1
CONCRETE VALLEY GUTTER
FOR ASPHALT PAVED STREETS

NOTES:

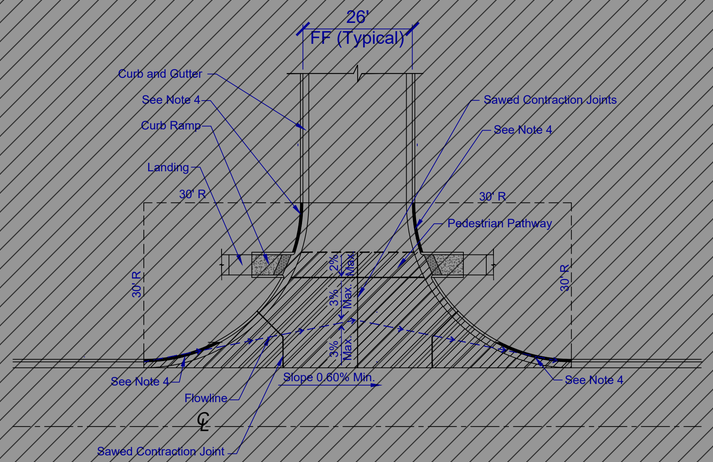
1. Use Class AA 4000 psi (HES) Concrete, 8" Thick for Retrofit. Use Class A 3000 psi, 8" Thick for New Construction.
2. Rebar #4 @ 12" CC.
3. A=122.16 SY (Typical) Not Including Curb and Gutter.
4. Remove and Replace 6' to 8' of Existing Curb and Gutter. Replace entire Curb and Gutter Radius if in Poor Condition.



OPTION 2
CONCRETE VALLEY GUTTER
FOR ASPHALT PAVED STREETS

NOTES:

1. Use Class AA 4000 psi (HES) Concrete, 8" Thick for Retrofit. Use Class A 3000 psi, 8" Thick for New Construction.
2. Rebar #4 @ 12" CC.
3. A=73.27 SY (Typical) Not Including Curb and Gutter.
4. Remove and Replace 6' to 8' of Existing Curb and Gutter. Replace entire Curb and Gutter Radius if in Poor Condition.

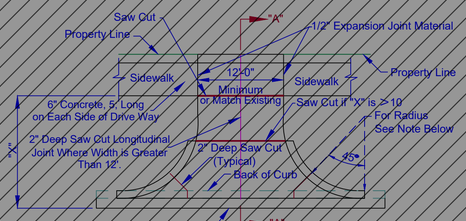


OPTION 3
CONCRETE VALLEY GUTTER
FOR ASPHALT PAVED STREETS

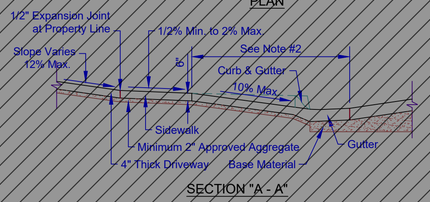
NOTES:

1. Use Class AA 4000 psi (HES) Concrete, 8" Thick for Retrofit. Use Class A 3000 psi, 8" Thick for New Construction.
2. Rebar #4 @ 12" CC.
3. A=91.80 SY (Typical) Not Including Curb and Gutter.
4. Remove and Replace 6' to 8' of Existing Curb and Gutter. Replace entire Curb and Gutter Radius if in Poor Condition.

DRIVEWAY DETAIL



PLAN

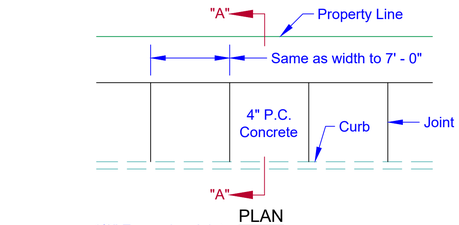


SECTION "A - A"

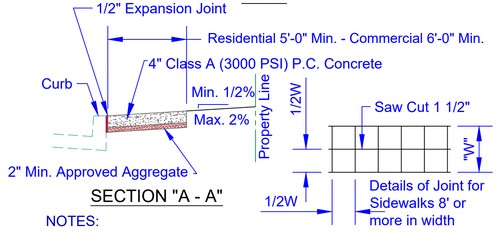
NOTES:

1. A 5' - 0" minimum radius is approved for one & two family residences not abutting a limited access or major street. All other Driveways will have a 10' 0 " minimum radius.
2. The Driveway Contractor shall saw cut & remove the complete Curb and Gutter section. Saw cuts shall be 2" or 1/3 the depth of the gutter, whichever is greater, include the top & face of curb as well as the gutter, be made prior to the removal of concrete, and be full depth for removal and 2" or ¼ the depth for crack control, whichever is greater.
3. If a gutter holds water prior to any construction by driveway Contractor, he should notify the City Engineer of the situation before doing any work. The completed driveway work will not be accepted if the gutter holds water due to poor construction by the Contractor.
4. It is recognized that this driveway detail will not cover every possible situation encountered in construction. Additional expansion joints will be required as needed.
5. Clean and seal all joints and saw cuts in accordance with standard specifications.
6. Longitudinal and Transverse Joints, required for drives 12' wide & over, Saw cut 2" or 1/3 depth and fill with silicone sealant.
7. Do not turn radius in front of adjacent property without written permission from adjacent property owner.
8. When connecting a new sidewalk to an existing steep driveway, which cannot be made ADA compliant, the transition panel on each side of the driveway shall not be more than 5' in length, unless approved by the engineer.
9. For a residential or commercial structure located below street level, the high point of the sidewalk where it crosses the driveway shall be at least 6" above the street gutter elevation.

DETAILS FOR SIDEWALK
LOCATED AT CURB



PLAN

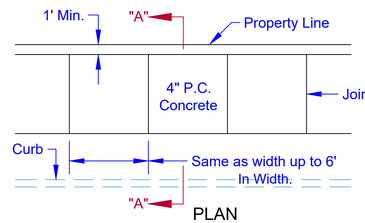


SECTION "A - A"

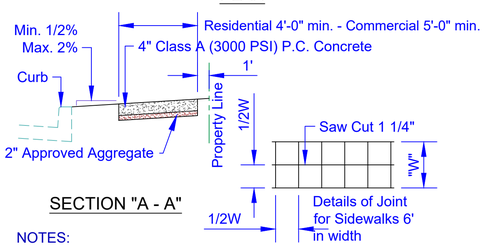
NOTES:

1. 1/2" x 4" premolded expansion material around Power Poles or other structures in walk, with at least 36" of clear travel space.
2. Expansion joints maximum distance = 100', use 1/2" x 4" premolded expansion material.
3. Transverse contraction joints maximum distance = 5', saw cut or Tool 1 ¼" deep.
4. Saw cut joints within 24 hours or 12 hours if temperature is above 85°F.
5. Use 1/2" x 4" premolded expansion joint behind curb or attached to curb.
6. Medium broom finish (transverse).
7. Use edger tool on all edges.

DETAILS FOR SIDEWALK
LOCATED AWAY FROM CURB



PLAN



SECTION "A - A"

NOTES:

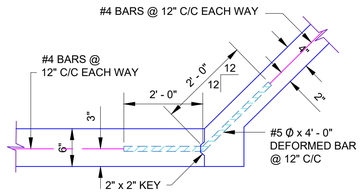
1. Place 1/2" premolded expansion material around Power Poles or other structures in walk, with at least 36" of clear travel space.
2. Expansion joints maximum distance = 100', use 1/2" x 4" premolded expansion material.
3. Transverse Contraction joints maximum distance = 5', saw cut or tool 1 ¼" deep.
4. Saw cut joints within 24 hours or 12 hours if temperature is above 85°F.
5. Medium broom finish (transverse).
6. Use edger tool on all edges.

The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER
DATE: 09-12-23
DRAWN: TVN
DATE: XX-XX-XX

STANDARD DETAILS

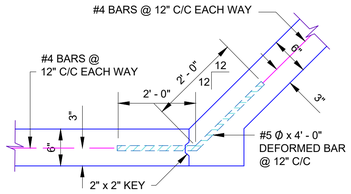
Drawing Number
D-800
B



LONGITUDINAL CONSTRUCTION JOINT

FOR 6" BOTTOM & 4" SIDE WALLS
4" WALLS FOR DEPTH OF 0' TO 5'
WALL DETAIL "A"

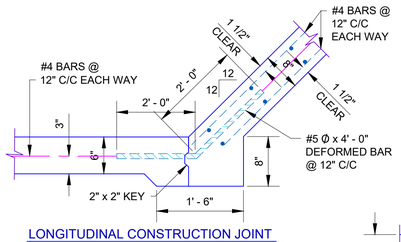
CONCRETE CHANNEL LINER JOINT DETAIL



LONGITUDINAL CONSTRUCTION JOINT

FOR 6" BOTTOM & 4" SIDE WALLS
6" WALLS FOR DEPTH OF 0' TO 5'
WALL DETAIL "B"

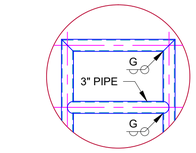
CONCRETE CHANNEL LINER JOINT DETAIL



LONGITUDINAL CONSTRUCTION JOINT

FOR 6" BOTTOM & 6" SIDE WALLS
8" WALLS FOR 2/3 THE WALL HEIGHT ABOVE 5'
WALL DETAIL "C"

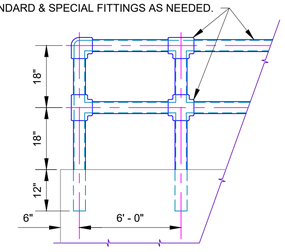
CONCRETE CHANNEL LINER JOINT DETAIL



ALTERNATE DETAIL

(USUING WELD CONNECTIONS ON PIPE HANDRAILS)

3" I.D. GALV. STEEL PIPE WITH PLAIN GALV. FITTINGS.
USE STANDARD & SPECIAL FITTINGS AS NEEDED.

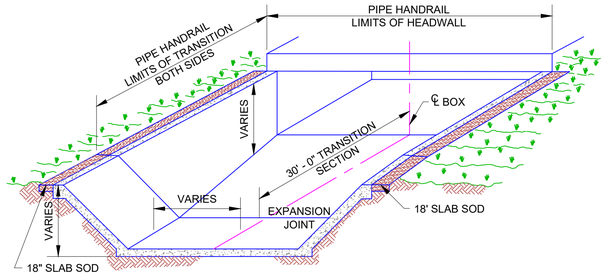


PIPE HANDRAIL DETAIL

HANDRAIL NOTES: WELD CONNECTIONS MAY BE USED FOR PIPE HANDRAIL. WELD CONNECTIONS SHALL BE THOROUGHLY CLEANED OF ALL LOOSE SCALE, GROUND SMOOTH & SPOT POINTED WITH TWO COATS OF ALUMINUM PAINT.

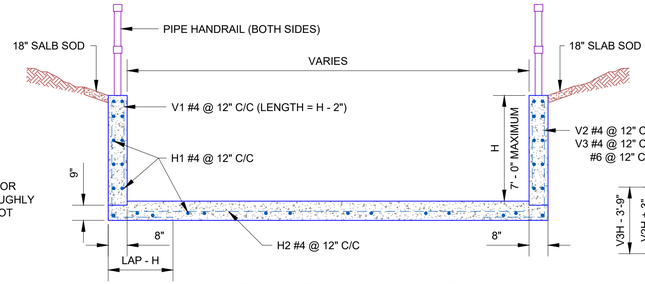
LONGITUDINAL CONSTRUCTION JOINT

THROUGH TRANSITION SECTION



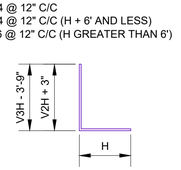
30' TRANSITION TO R.C. BOXES
VERTICAL 1:1 SIDE SLOPE

CONCRETE CHANNEL LINER JOINT DETAIL

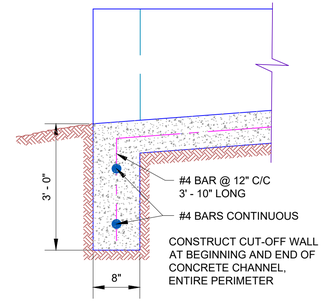


ODOT TYPE II-C RETAINING WALL SECTION (MODIFIED)

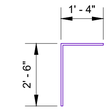
CONCRETE CHANNEL LINER JOINT DETAIL



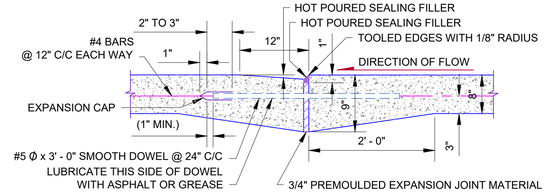
BAR BENDING DIAGRAM



CUT-OFF WALL DETAIL

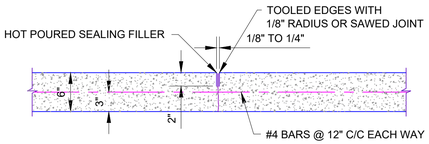


TYPICAL #4 BAR
(FOR CUT-OFF WALL)



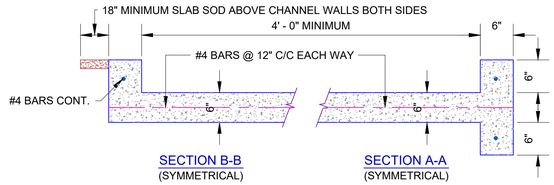
TYPICAL TRANSVERSE EXPANSION JOINT

SPACED AT 100 FOOT C/C MAXIMUM



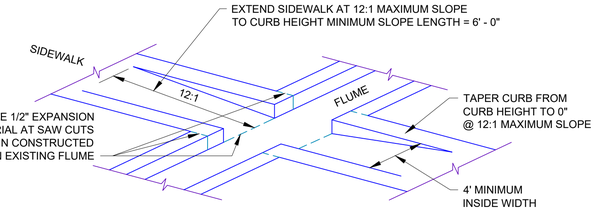
CONTRACTION JOINT

SPACED AT 20 FOOT C/C
(ALSO USE JOINT LONGITUDINALLY AT CENTERLINE OF CHANNEL
FOR BOTTOM WIDTHS OF 12 FOOT AND OVER)

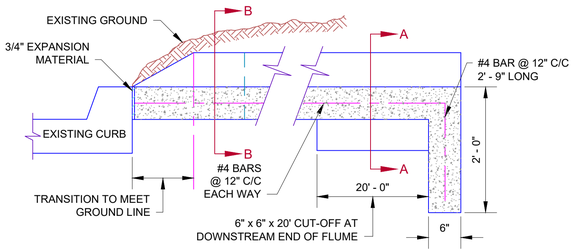


CONSTRUCTION JOINT

SPACED AT 20 FOOT C/C
(ALSO USE JOINT LONGITUDINALLY AT CENTERLINE OF CHANNEL
FOR BOTTOMS OF 12 FOOT AND OVER)



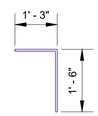
SIDEWALK RAMP AT FLUME CROSSING



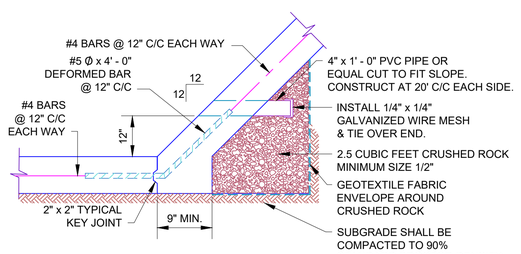
PROFILE

CONCRETE FLUME DETAIL

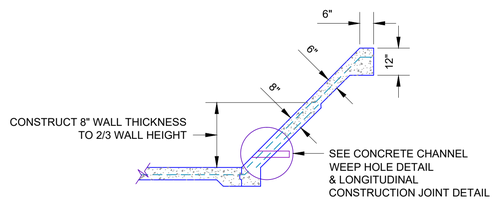
NOTE: 3/4" EXPANSION JOINT @ 100' MAXIMUM
SAWED CONSTRUCTION JOINT @ 20' MAXIMUM



TYPICAL #4 BAR
(FOR CONCRETE FLUME)



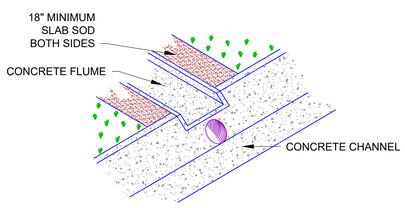
TYPICAL CONCRETE CHANNEL LINER DETAIL



CONCRETE CHANNEL LINER JOINT DETAIL

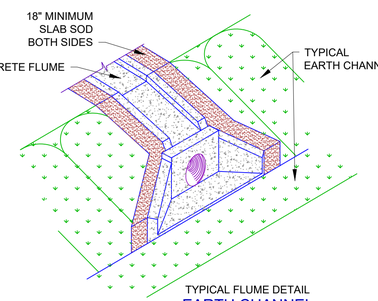
FOR WALL HEIGHT ABOVE 5'

CONCRETE CHANNEL WEEP HOLE DETAIL



TYPICAL FLUME DETAIL

CONCRETE CHANNEL



TYPICAL FLUME DETAIL

EARTH CHANNEL

OKLAHOMA CITY
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION

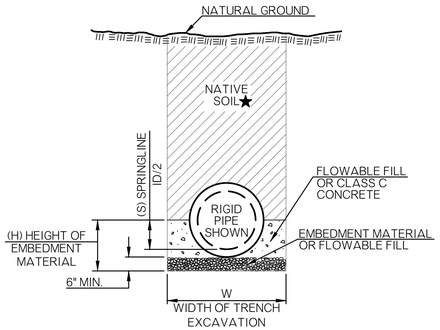
STANDARD CHANNEL LINER & FLUME DETAILS

APPROVED BY:
PAUL F. BRUM, P.E.
CITY ENGINEER

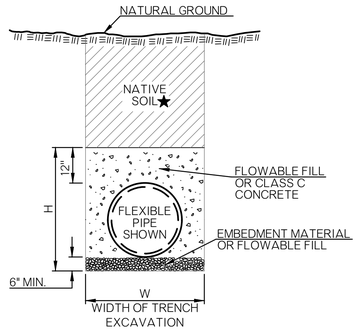
DATE: 7-11-01

DRAWN:	DATE:	DWG. N0.
V.S.C.	06/27/01	D-501

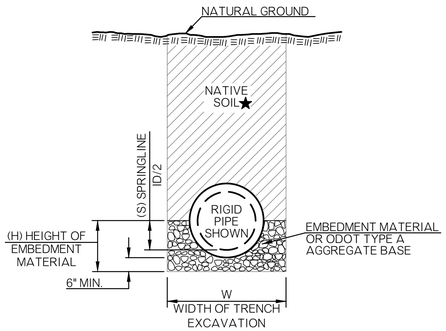
E:/CITY/ACAD2000-STD/D-501.DWG VSC 06/27/01



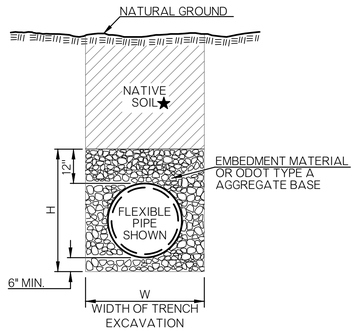
CLASS A BEDDING
RIGID PIPES



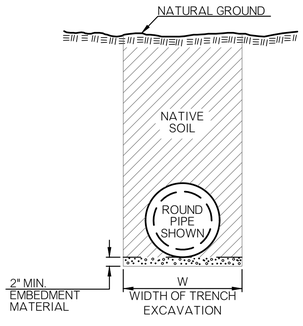
CLASS A BEDDING
FLEXIBLE PIPES



CLASS B BEDDING
RIGID PIPES

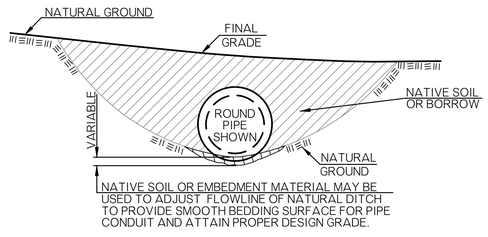


CLASS B BEDDING
FLEXIBLE PIPES



CLASS C BEDDING
ALTERNATE 1

NOTE: DETAIL THE SAME FOR RIGID & FLEXIBLE PIPES.



CLASS C BEDDING
ALTERNATE 2

NOTE: DETAIL THE SAME FOR RIGID & FLEXIBLE PIPES.

PIPE BEDDING CLASS/DESIGN TABLE

TYPE OF PIPE	■ UNDER PAVING				OUTSIDE PAVING		
	CROSS DRAIN (NHS OR ADT > 6000 VPD)	CROSS DRAIN (OTHER)	STORM SEWER (NHS OR ADT > 6000 VPD)	STORM SEWER (OTHER)	CROSS DRAIN	SIDE DRAIN	STORM SEWER
REINFORCED CONCRETE PIPE	B	B	B	B	B	C	B
CORRUGATED GALV. STEEL PIPE (CGSP)	NA	B	NA	B	B	C	B
MILL (POLYMER) PRECOATED CGSP	NA	B	NA	B	B	C	B
CORRUGATED GALV. STRUCT. PLATE	NA	B	NA	B	B	C	B
ALUMINIZED (ALUMINUM COATED) TYPE II CSP	NA	B	NA	B	B	C	B
CORRUGATED POLYETHYLENE / PVC	NA	A/B	NA	A/B	B	B	B
POLYVINYL CHLORIDE (SC 40/80 PVC)	NA	NA	NA	NA	NA	NA	NA
POLYPROPYLENE PIPE (PP) ▲	B	B	B	B	B	C	B
NOTE: CLASS A BEDDING NEEDS APPROVAL BY THE CITY ENGINEER.							

■ WHEN THERE IS ANY POSSIBILITY OF THE PAVEMENT BEING WIDENED DURING THE LIFE OF THE DRAINAGE STRUCTURE, THE BEDDING SHALL MEET THE 'UNDER PAVING SECTION' CRITERIA FOR THE FULL EXTENT OF ANY ANTICIPATED EXPANSION TO THE FACILITY.

▲ BACKFILL WITH A MINIMUM OF TWO (2) FEET OF APPROVED BACKFILL MATERIAL.

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE OKLAHOMA STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.
2. NATIVE SOIL FOR BACKFILL TO BE COMPACTED IN ACCORDANCE WITH SECTION 212 OF THE OKC STANDARD SPECIFICATIONS.
3. A BETTER CLASS OF BEDDING MAY BY SUBSTITUTED FOR THE NEXT LOWER CLASS. EXAMPLE: CLASS A STANDARD BEDDING CAN BE USED IN LIEU OF CLASS B STANDARD BEDDING.
4. FOR TRENCH WIDTH (W), BEDDING HEIGHT (H), PIPE DATA, MULTIPLE PIPE SPACING & BEDDING DATA, SEE ROADWAY STANDARDS D-1001 & D-1002.
5. DATA TABLE WILL DISPLAY 'NA' WHEN PIPE MATERIALS ARE NOT ALLOWED.
6. STANDARD BEDDING CLASS C MATERIAL(S) (ALTERNATE 1) WILL BE CONSIDERED AS INCIDENTAL AND NOT BE PAID FOR SEPARATELY. COST FOR BORROW OR FILL MATERIAL, NEEDED FOR ALTERNATE 2, WILL BE INCLUDED IN THE PRICE OF THE PIPE.
7. PIPE MATERIAL(S)/PRODUCT(S) NOT SHOWN IN THE PIPE BEDDING TABLE WILL BE EVALUATED AND APPROVED ON A CASE BY CASE BASIS.
8. ALL TEMPORARY PIPES SHALL HAVE CLASS C BEDDING UNLESS OTHERWISE SHOWN IN THE PLANS.
9. BEDDING MATERIAL TYPE B AND C SHALL BE PLACED IN 6" LAYERS AND COMPACTED TO THE SPECIFIED DENSITY USING HAND OPERATED EQUIPMENT ONLY.
★ 10. WHEN PIPE INSTALLATION IS UNDER PAVING, IN LIEU OF BACKFILLING WITH NATIVE SOIL, PLACE BEDDING MATERIAL ALL THE WAY TO TOP OF TRENCH.
11. THE USE OF AN ALTERNATE PIPE AND ITS CORRESPONDING BEDDING MATERIAL WILL BE ACCEPTABLE PROVIDED THE CRITERIA IN THE DESIGN TABLE IS MET.
12. POLYPROPYLENE PIPE SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321.

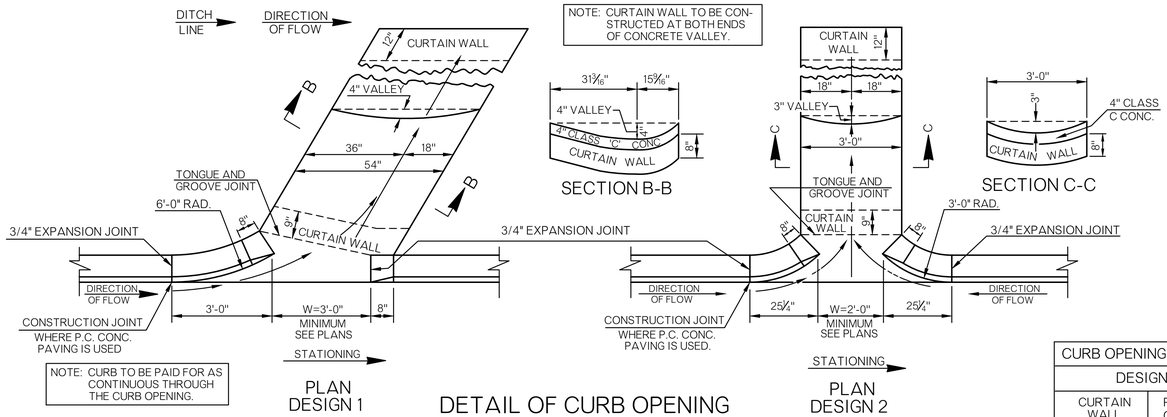
The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER — DATE: 09/12/2023
DRAWN: OKC-PW-SRB
DATE: 3/9/2023

PIPE BEDDING AND BACKFILL

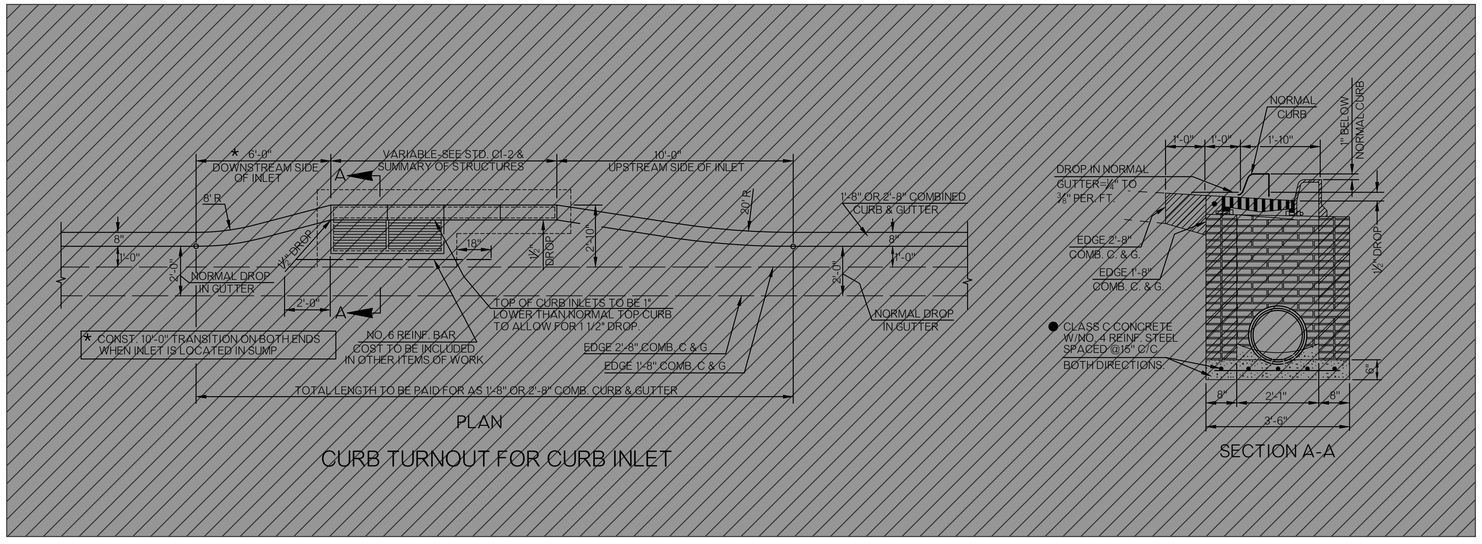
Detail Number

D-1000



DETAIL OF CURB OPENING IN CONCRETE CURB

CURB OPENING - CLASS C CONCRETE QUANTITIES			
DESIGN 1		DESIGN 2	
CURTAIN WALL	PER FOOT OF FLUME	CURTAIN WALL	PER FOOT OF FLUME
0.096 C.Y.	0.048 C.Y.	0.074 C.Y.	0.037 C.Y.



CURB TURNOUT FOR CURB INLET

GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIAL REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE OKC STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.
2. INLET STRUCTURES MAY BE SUPPLIED AS PRECAST UNITS IF PROPOSED PRECAST DESIGN IS SUBMITTED TO THE CITY ENGINEER AND APPROVED FOR USE.

The City of Oklahoma City
Public Works Department
Engineering Division

APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER — DATE: 09/12/2023

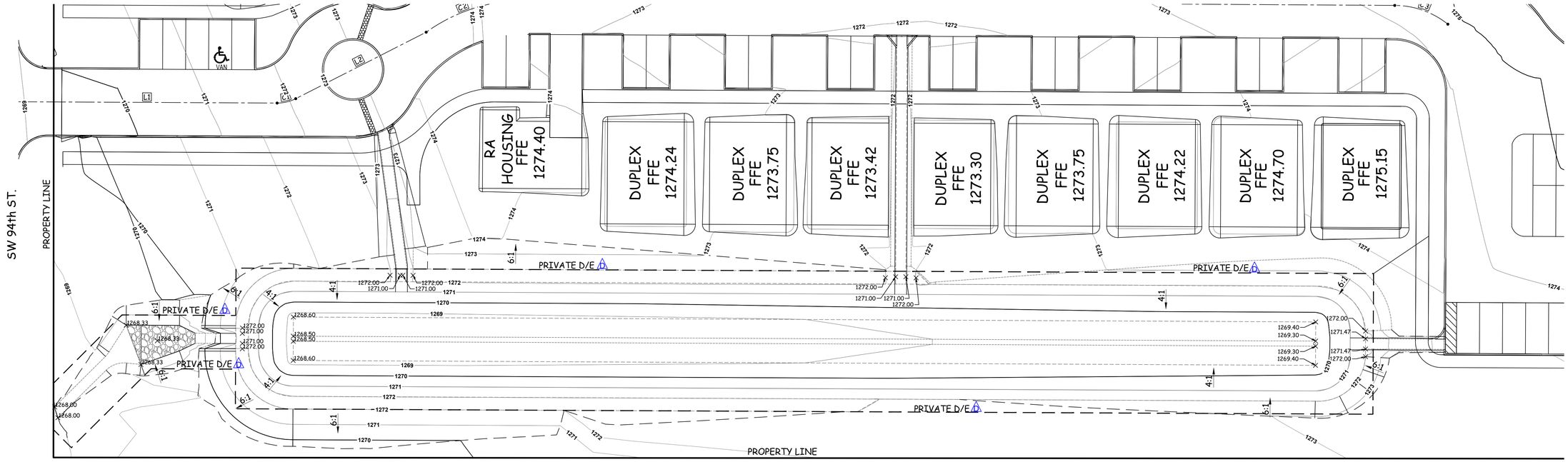
DRAWN: OKC-PW-SRB

DATE: 3/9/2023

STORM SEWER CONSTRUCTION DETAILS

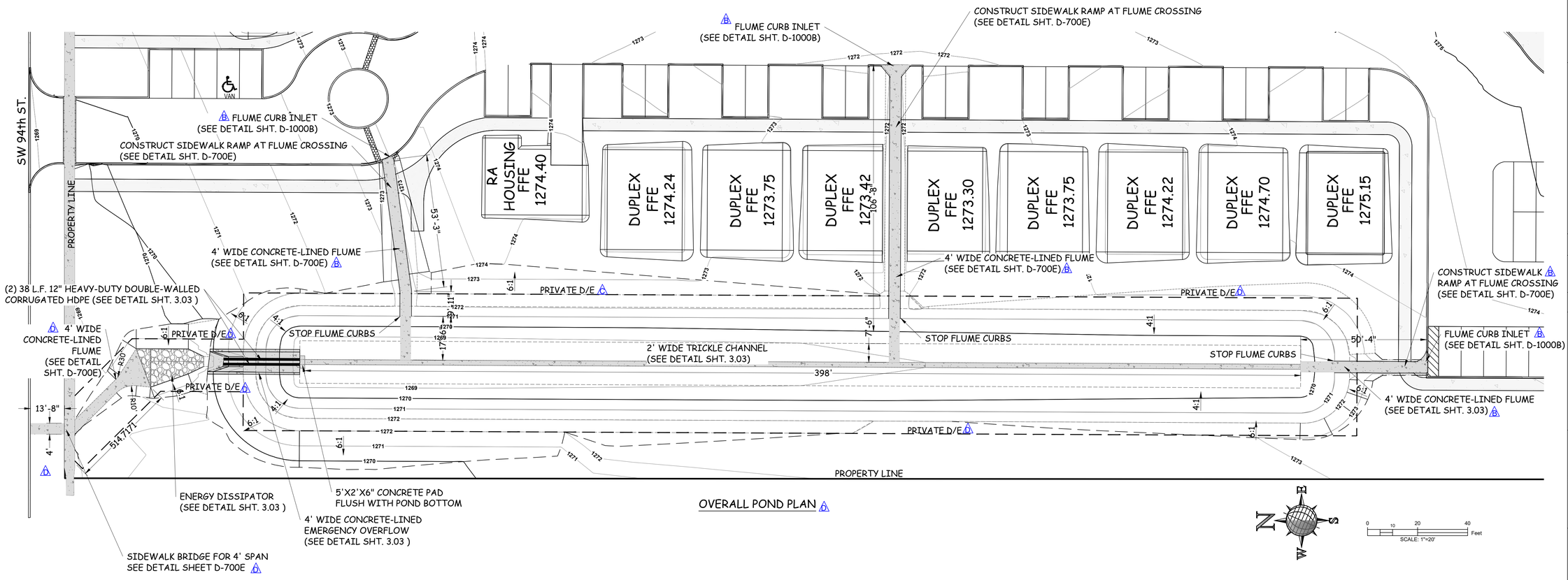
Detail Number

D-1008



OVERALL POND GRADING PLAN

NOTE:
PROPOSED DETENTION POND AND OUTLET STRUCTURE WILL BE WITHIN A DEDICATED PRIVATE DRAINAGE EASEMENT



OVERALL POND PLAN

SCALE: 1"=20'

SHEET NAME	OVERALL POND PLAN AND POND GRADING PLAN
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

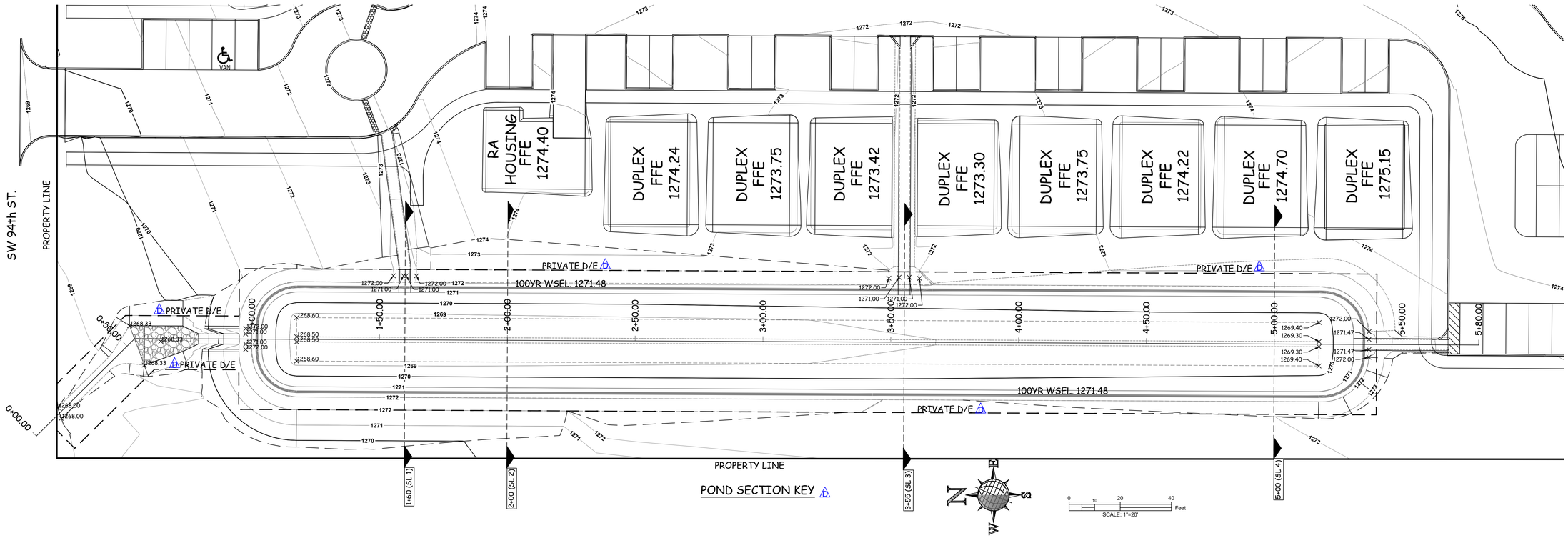
REV.	DATE	NAME	DESCRIPTION
05/29/2024	LB		Clarifications per OKC CP#1 review
07/16/2024	LB		Clarifications per OKC CP#2 review

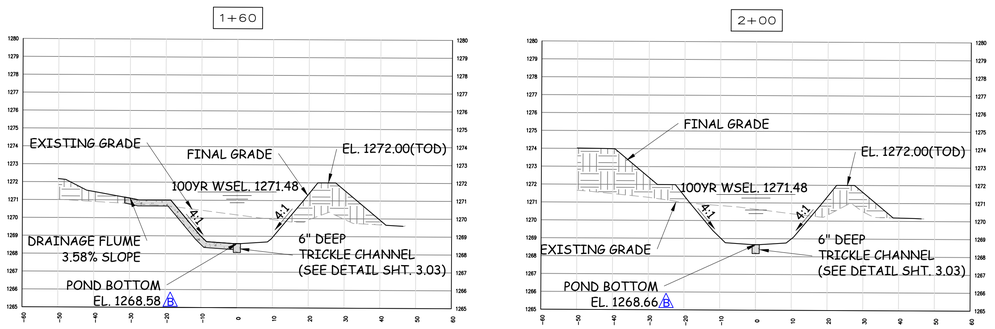
DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

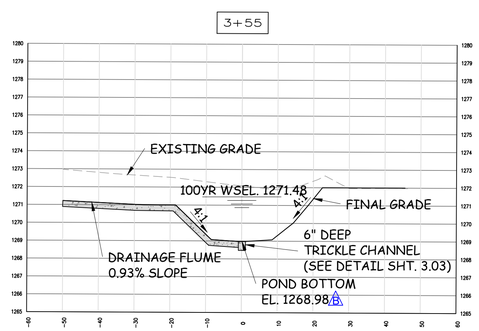
REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
12-11-2024
OKLAHOMA

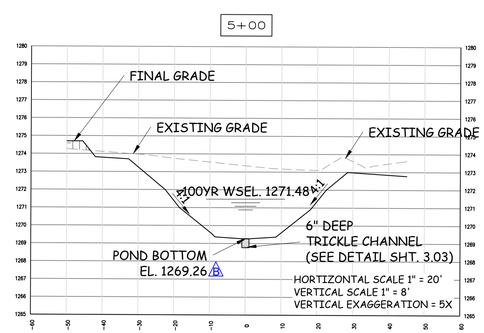
SHEET 3.01

Plot Date: 12/11/2024 2:42 PM Location: G:\Shared drives\Directory\2023\125 - Bridges Sky Ranch\Hwy Project\Design\23125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Layne Peterson

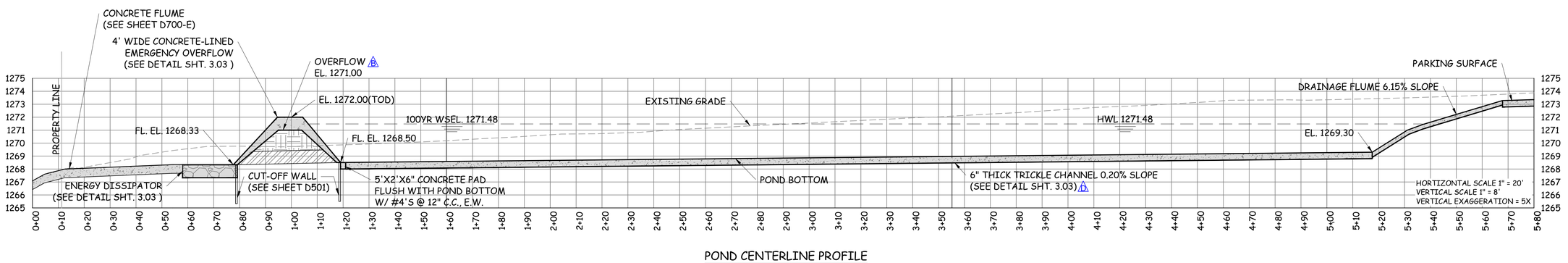








POND CROSS-SECTION PROFILES



POND CENTERLINE PROFILE

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SHEET NAME	POND GRADING SECTIONS
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

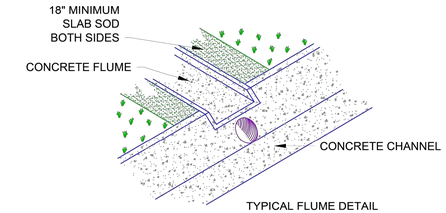
REV.	DATE	NAME	DESCRIPTION
A	05/29/2024	LB	Clarifications per OKC CP#1 review
B	07/16/2024	LB	Clarifications per OKC CP#2 review

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

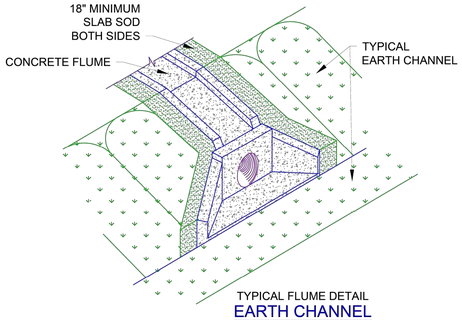
REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA
12-11-2024

SHEET
3.02

Plot Date: 12/11/2024 4:11 PM Location: C:\Shared drives\Directory (2)\2025\25 - Bridges Sky Ranch\Hwy Project\Design\25125-Rough Grading 3-25-24.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Layne Petersen



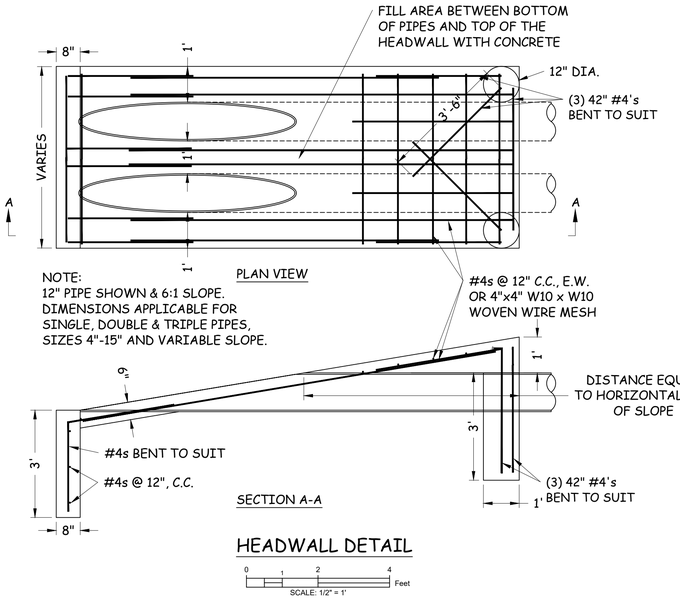
TYPICAL FLUME DETAIL
CONCRETE CHANNEL



TYPICAL FLUME DETAIL
EARTH CHANNEL

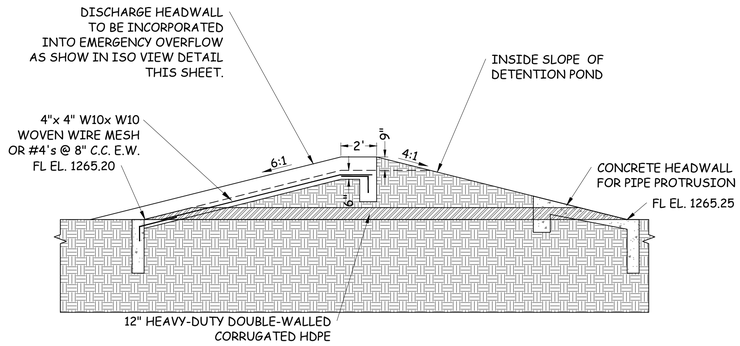
CONCRETE FLUME

STORM WATER QUALITY MANAGEMENT DIVISION	DATE: 03-07-13	The City of Oklahoma City Public Works Department Engineering Division	FORM 7.15



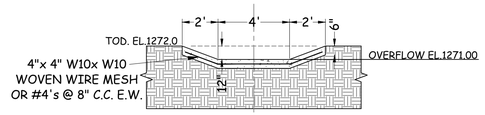
HEADWALL DETAIL

0 1 2 4 Feet
SCALE: 1/2" = 1'



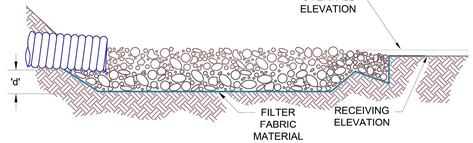
EMERGENCY OVERFLOW DETAIL

0 2 4 8 Feet
SCALE:1/4"=1'



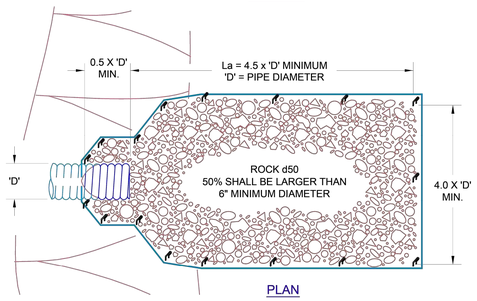
EMERGENCY OVERFLOW DETAIL

0 2 4 8 Feet
SCALE:1/4"=1'



THICKNESS ('d') = 1.5 x MAXIMUM DIAMETER - 6" MINIMUM

SECTION



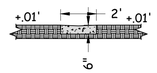
PLAN

NOTES:

1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC.

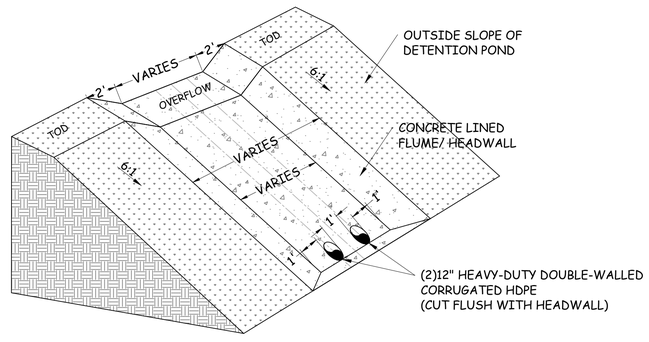
ENERGY DISSIPATER

STORM WATER QUALITY MANAGEMENT DIVISION	DATE: 03-08-13	The City of Oklahoma City Public Works Department Engineering Division	FORM 7.18



TRICKLE CHANNEL DETAIL

0 2 4 8 Feet
SCALE:1/4"=1'



EMERGENCY OVERFLOW ISOMETRIC DETAIL

0 2 4 8 Feet
SCALE:1/4"=1'

Drawing for Review only unless Signature and Date are Originals

DETENTION POND
STANDARD DETAILS

SHEET NAME

BRIDGES OF MOORE

PROJECT

BRIDGES

CLIENT

Moore, Cleveland Co., Oklahoma

LOCATION

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

REV.	DATE	NAME	DESCRIPTION

DESIGNED: P. Streebin
DRAWN: J. Billingsley
APPROVED: P. Streebin
DATE: 03/28/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA
03-28-24

SHEET
3.03

Plot Date: 6/6/2024 2:10 PM Location: G:\Shared drives\Directory\2023\2125 - Bridges Sky Ranch\dwg Project\Details\2125- DETENTION POND STANDARD DETAILS.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches)

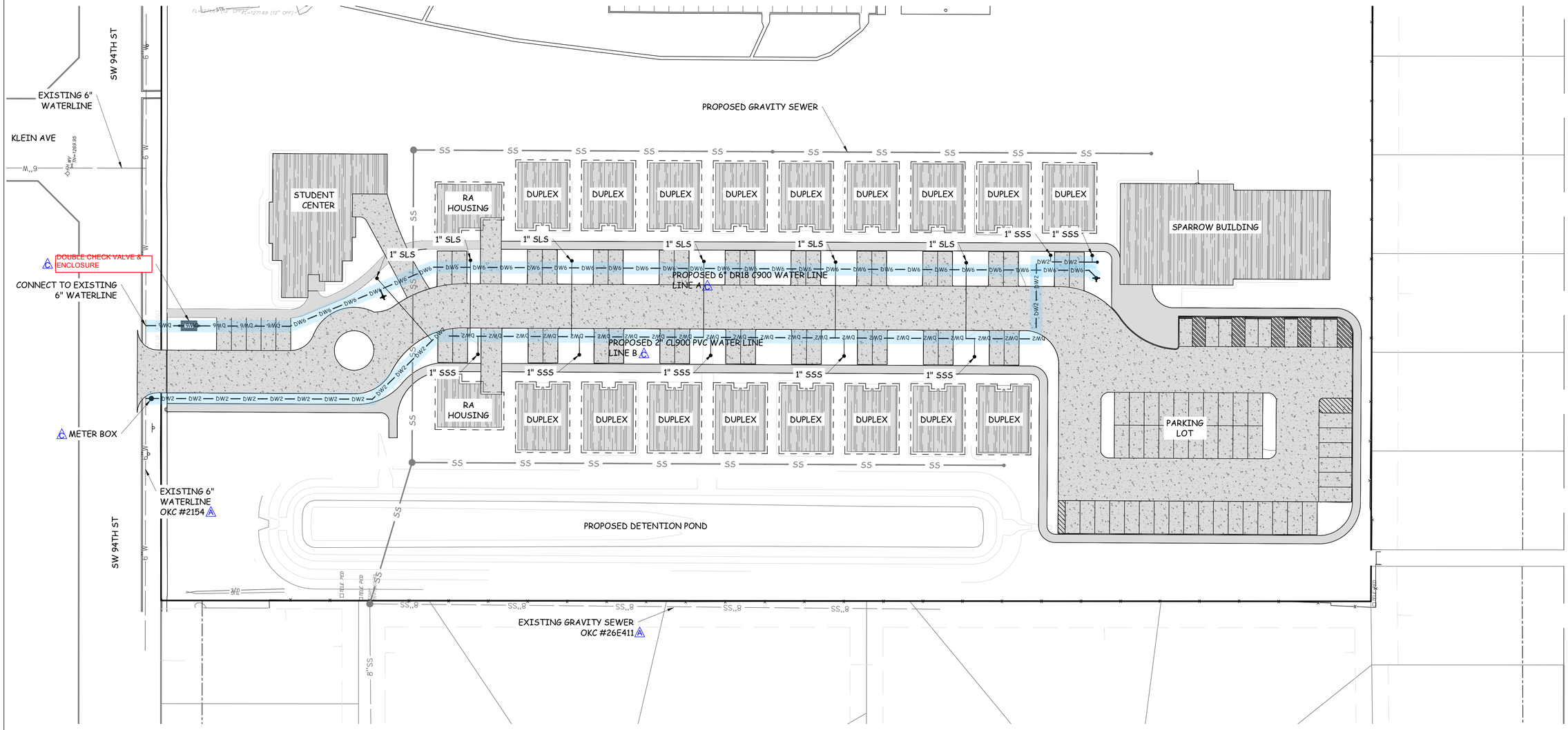
NOTES:

1. All public utilities shall be designed in accordance with City of Oklahoma City Standards.
2. All streets shall be designed in accordance with City of Oklahoma City Standards.
3. All public utilities shall be dedicated easements.
4. All waterlines shall be 6" unless otherwise noted.
5. Fire hydrants shall be spaced a maximum of 500 ft. apart. Fire hydrants shall not be placed within 20 ft. of any structure.
6. All existing and proposed meters must meet current Meter Specifications and standard details and be located in the right-of-way or utility easement within grassy areas outside of sidewalks, driveways, streets and/or paving.
7. No FEMA Zone floodplain within extents of subject property.
8. Water meters, gate valves, and fire hydrants must sit outside of paving for sidewalks and driveways

LEGEND
(WITH LINE SIZES WHERE APPLICABLE)

- LOT LINE
- PROPERTY LINE
- RoW/PL — RIGHT-OF-WAY/ PROPERTY LINE
- RIGHT OF WAY
- EASEMENT (GENERAL)
- PERMANENT UTILITY EASEMENT
- TEMPORARY CONSTRUCTION ESMT
- BUILDING SETBACK LINE
- X — X — WOOD FENCE
- DW — DW — DOMESTIC WATERLINE
- UGE — UNDERGROUND ELECTRICAL
- G — G — GAS LINE
- OHE — OVERHEAD ELECTRICAL
- STORM WATER FLOW DIRECTION
- CORRUGATED METAL CULVERT
- CONCRETE FLUME
- UTILITY REMOVE
- TBK — TOP OF BANK
- TOE — TOE OF BANK

- FIRE HYDRANT
- SERVICE LINE WATER METER



WATERLINE LOCATION MAP

SCALE:1"=30'

Drawing for Review only unless Signature and Date are Originals

SHEET NAME	WATERLINE LOCATION MAP
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	Moore, Cleveland Co., Oklahoma

SEARCH, LLC
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P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

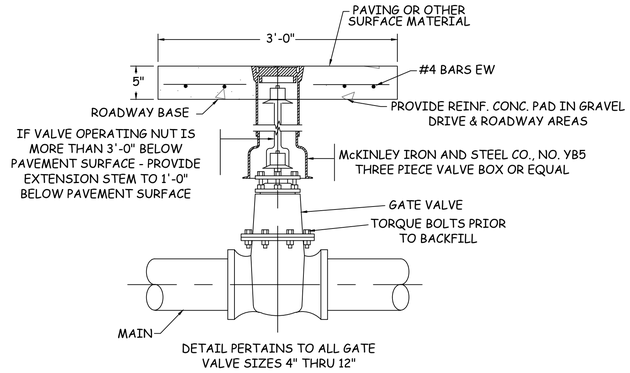
REV.	DATE	NAME	DESCRIPTION
1	05/14/2024	LB	Clarifications per OKC CP#1 review
2	06/24/2024	LB	Clarifications per OKC CP#2 review & meeting 6/14/24

DESIGNED: P. Streebin
DRAWN: L. Gonzalez
APPROVED: P. Streebin
DATE: 04/01/2024

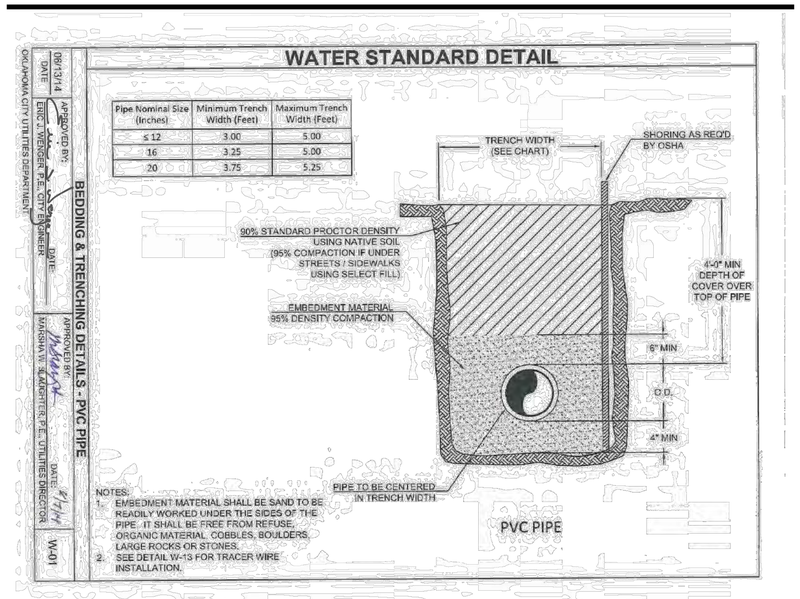
REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA

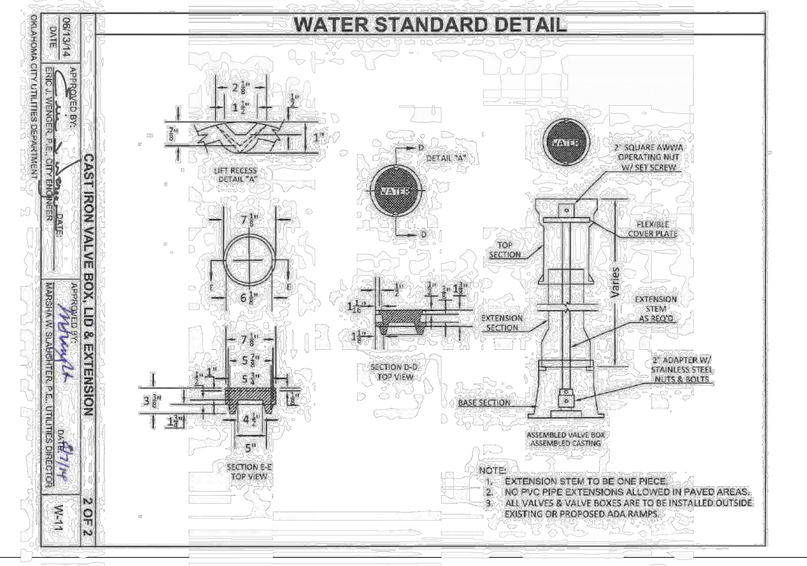
SHEET 4.01

Plot Date: 6/25/2024 11:56 AM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\dwg Project\Sheets\23125-LOCATION MAPS.dwg Page Size: ARCH (sheet D (36.00 x 24.00 Inches)

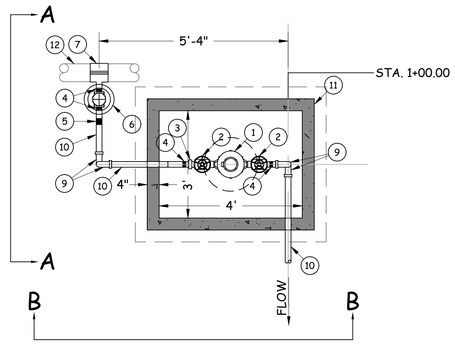


TYPICAL GATE VALVE AND BOX

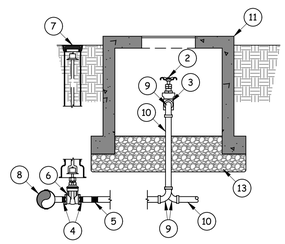




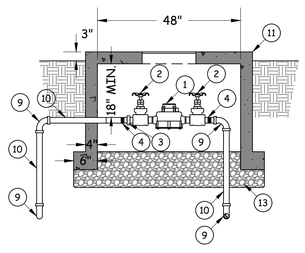
KEYED NOTES:
1. 2" BADGER RECORDALL M70 WATER METER
2. 2" NPT THREADED BALL VALVE
3. 2" NPT BRASS UNION
4. 2" NPT BRASS NIPPLE
5. 2" NPT TO HDPE/ PVC ADAPTER
6. 2" NPT THREADED GATE VALVE ASSEMBLY
7. McKINLEY IRON AND STEEL CO. NO. YB5 THREE PIECE VALVE BOX (OR EQUAL)
8. 6" X 2" S.S. SADDLE TAP
9. 2" COMPRESSION STYLE 90° BEND
10. 2" DR11 HDPE/ SDR9 CL200 PVC PIPE
11. 3' X 4' ID CAST-IN-PLACE METER BOX WITH STANDARD CAST IRON METER LID AND FRAME
12. EXISTING 6" WATER MAIN
13. 6" CRUSHER RUN (ASTM C33 #57) COMPACTED TO 95% STANDARD PROCTOR DENSITY



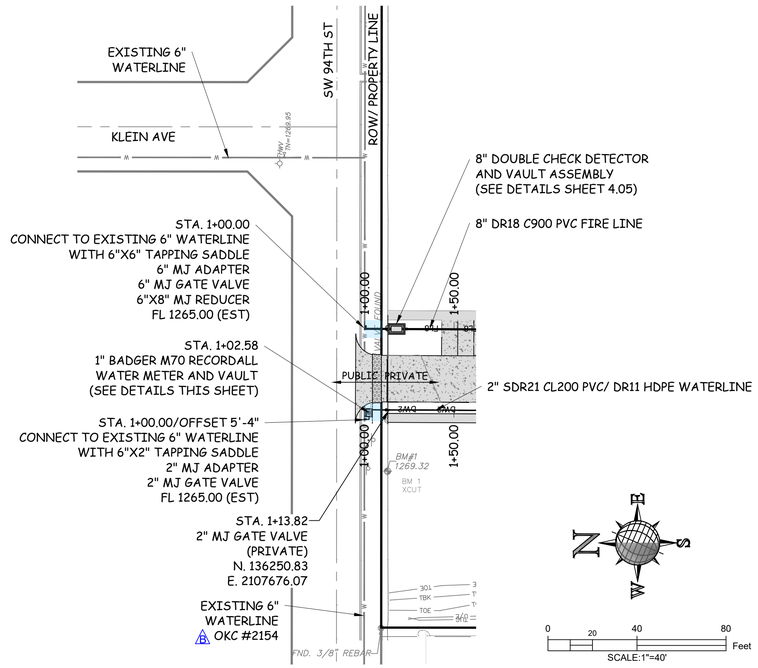
△ 2" WATER METER DETAIL PLAN VIEW



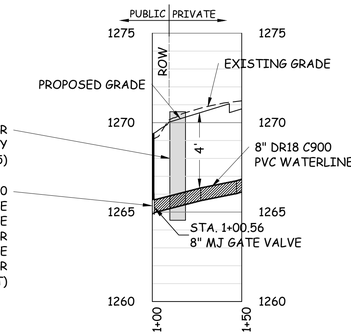
2" WATER METER DETAIL PROFILE VIEW
SECTION "A-A"



△ 2" WATER METER DETAIL PROFILE VIEW
SECTION "B-B"

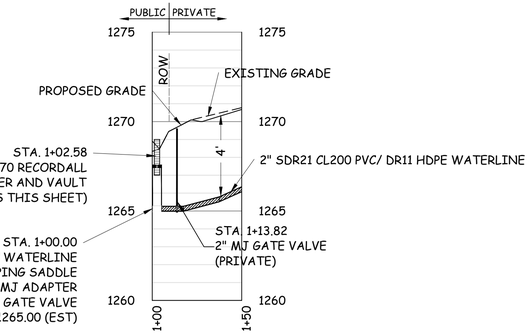


△ PUBLIC 2" WATERLINE TAP AND 8" FIRE LINE TAP PLAN VIEW



△ PUBLIC 8" FIRE TAP PROFILE

0 20 40 80 Feet
HORIZONTAL SCALE: 1"= 40'
VERTICAL SCALE: 1"= 4'
VERTICAL EXAGGERATION: 10X



△ PUBLIC 2" WATERLINE TAP PROFILE

Drawing for Review only unless Signature and Date are Originals

PUBLIC WATERLINE P&P
SHEET NAME
BRIDGES OF MOORE
PROJECT
BRIDGES
CLIENT
Moore, Cleveland Co., Oklahoma
LOCATION

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

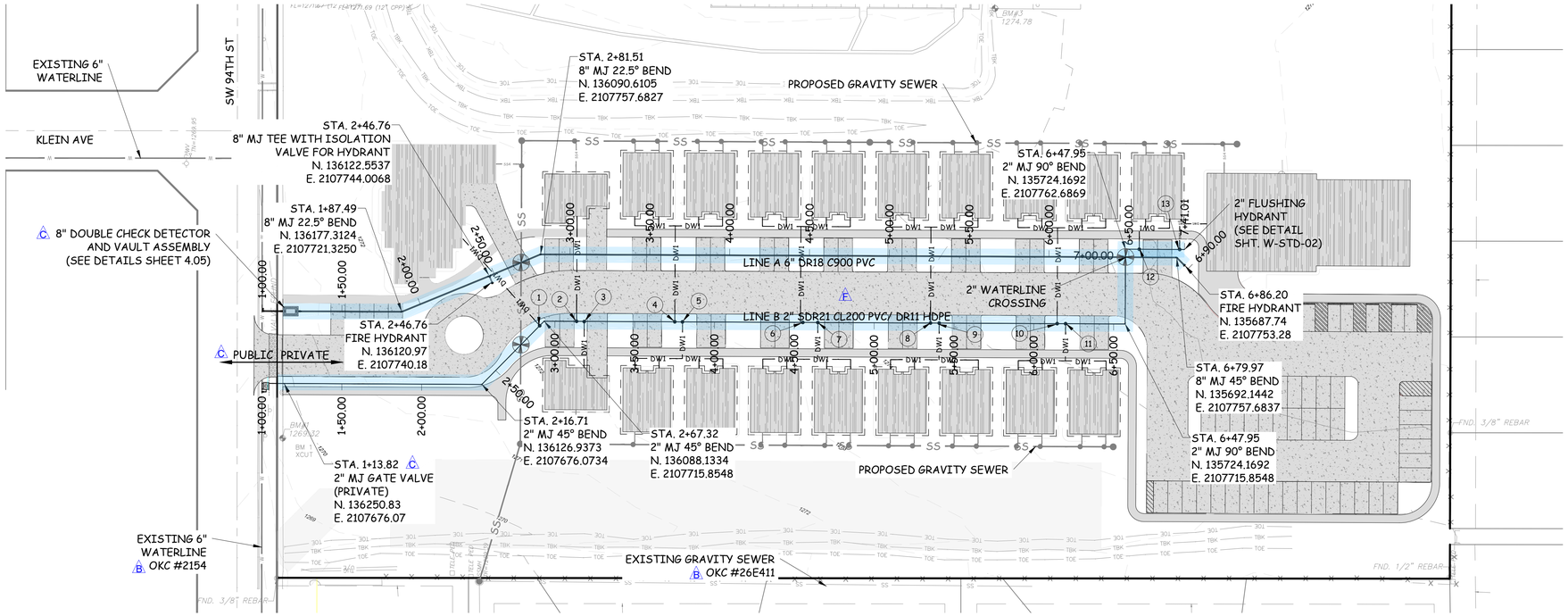
REV.	DATE	NAME	DESCRIPTION
△	05/29/2024	LB	Clarifications per OKC CP#1 review
△	06/24/2024	LB	Clarifications per OKC CP#2 review & meeting 6/14/24

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 06/21/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA

SHEET
4.02

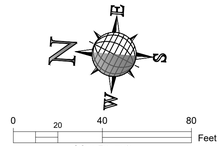
Plot Date: 6/26/2024 3:43 PM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\Hwy Project\Design\23125-UTILITY NETWORKS.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Kyla

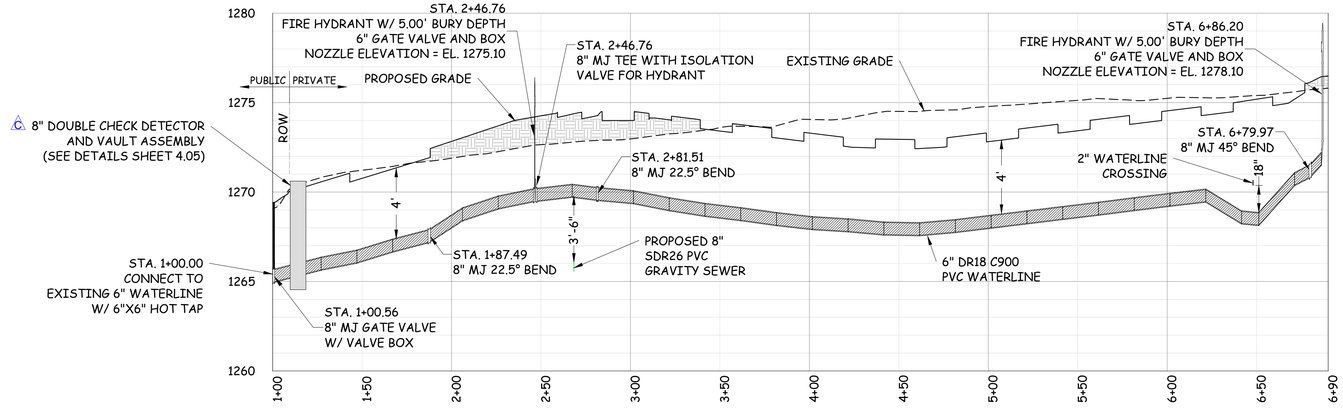


C. 1" WATER SERVICE TAP LOCATIONS
F. ON 2" WATERLINE

1" FAR SIDE SERVICE STA.	1" NEAR SIDE SERVICE STA.
1) 2+88.43	3) 3+17.53
2) 3+12.73	5) 3+79.11
4) 3+74.26	7) 4+64.71
6) 4+55.34	9) 5+39.83
8) 5+34.43	11) 6+19.03
10) 6+13.75	12) 7+12.66
	13) 7+37.94

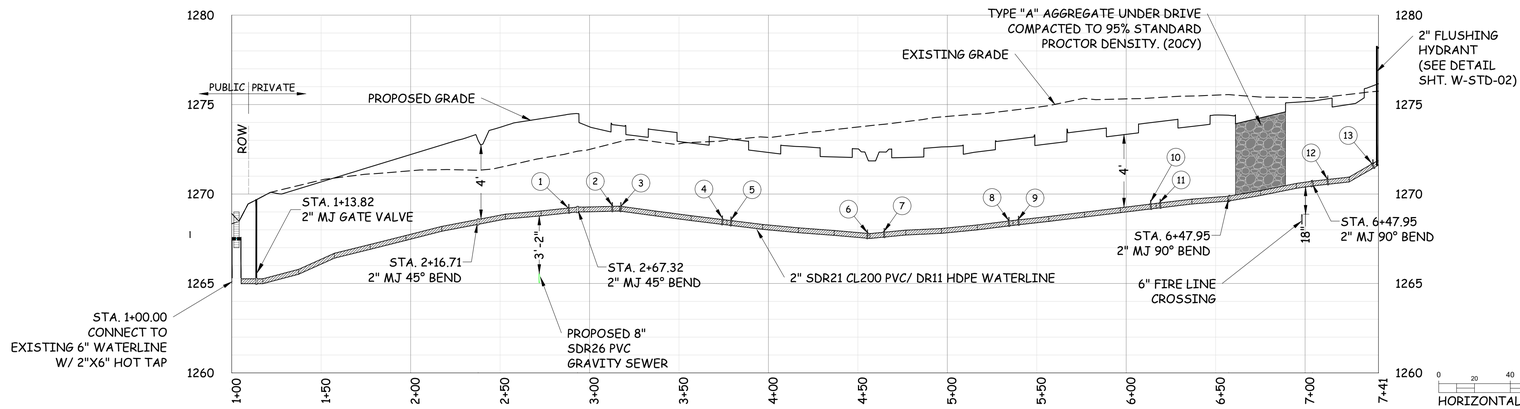
NOTE:
ALL WATER SERVICES TO BE 1" C909 HDPE WITH 2"X1" TAPPING SADDLE AND CORPORATION STOP. SEE OKC STANDARD DETAIL W-22 FOR TAP AND CORPORATION STOP INSTALLATION.





HORIZONTAL SCALE: 1"= 40'
VERTICAL SCALE: 1"= 4'
VERTICAL EXAGGERATION: 10X

LINE A 6" WATERLINE PROFILE C.



HORIZONTAL SCALE: 1"= 40'
VERTICAL SCALE: 1"= 4'
VERTICAL EXAGGERATION: 10X

LINE B 2" WATERLINE PROFILE C.

NOTE:
1) FIRE HYDRANT BURY DEPTH NOTED BETWEEN FINAL GRADE OF FIRE HYDRANT AND FLOW LINE OF WATER MAIN.
2) WATER METERS, GATE VALVES, AND FIRE HYDRANTS MUST SIT OUTSIDE OF PAVING FOR SIDEWALKS AND DRIVEWAYS

LEGEND
(WITH LINE SIZES WHERE APPLICABLE)

- LOT LINE
- PROPERTY LINE
- RoW/PL — RIGHT-OF-WAY/ PROPERTY LINE
- RIGHT OF WAY
- EASEMENT (GENERAL)
- PERMANENT UTILITY EASEMENT
- TEMPORARY CONSTRUCTION ESMT
- BUILDING SETBACK LINE
- X — X — WOOD FENCE
- DW — DW — DOMESTIC WATERLINE
- UGE — UNDERGROUND ELECTRICAL
- G — G — GAS LINE
- OHE — OVERHEAD ELECTRICAL
- STORM WATER FLOW DIRECTION
- CORRUGATED METAL CULVERT
- CONCRETE FLUME
- UTILITY REMOVE
- TBK — TOP OF BANK
- TOE — TOE OF BANK
- FIRE HYDRANT
- SERVICE LINE WATER METER

Drawing for Review only unless Signature and Date are Originals

REV.	DATE	NAME	DESCRIPTION
B.	05/29/2024	LB	Clarifications per OKC CPH2 review
C.	06/24/2024	LB	Clarifications per OKC CPH2 review & meeting 6/14/24
F.	12/11/2024	LB	Water and Sewer service clarifications

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

PERRY L. STREEBIN 14623 REGISTERED PROFESSIONAL ENGINEER STATE OF OKLAHOMA
12-13-2024

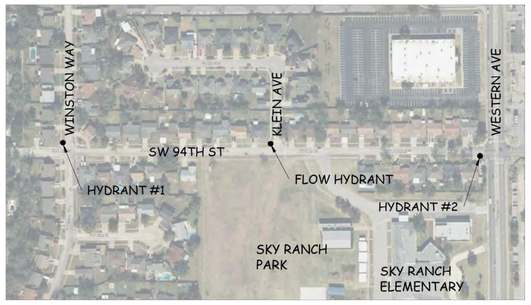
SHEET 4.03

SHEET NAME: WATERLINE P&P
PROJECT: BRIDGES OF MOORE
CLIENT: BRIDGES
LOCATION: Moore, Cleveland Co., Oklahoma

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

Plot Date: 12/13/2024 2:32 PM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\Eng Project\Design\23125-UTILITY NETWORKS.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Admin



N
W E
S

0 125 250 500 Feet
SCALE: 1"=250'

FIRE HYDRANT FLOW TEST			
	STATIC	RESIDUAL	FLOW
LOCATION	(psi)	(psi)	(gpm)
HYDRANT #1	48	45	919
HYDRANT #2	44	42	919

RNL 6/27/24

DESIGNED	P. Streebin		
DRAWN	J. Billingsley		
APPROVED	P. Streebin		
DATE	03/18/2024		
REV.	DATE	NAME	

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

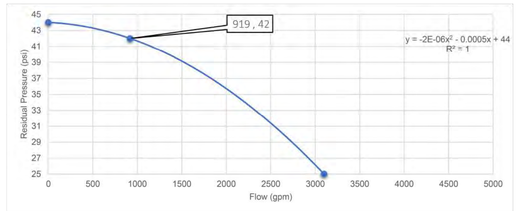
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106 Renewal 6-30-25

FIRE HYDRANT FLOW TEST EXHIBIT
Bridges of Moore
Oklahoma City, Oklahoma Co., Oklahoma

HYDRANT FLOW TEST RESULTS

Project Location: SW 94th & Western AVE
Client: Bridges of Moore
Conducted On: 3/18/2024
Conducted By: L. Brewer & J. Billingsley

		Residual Hydrant	Flow Hydrant	
Hydrant Location		SW 94th & Western AVE	SW 94th & S Klein AVE	
Hydrant Elevation	ft	1,268	1,272	Estimate
Outlet Coefficient			0.9	.9 typical
Outlet Diameter	in.		2.5	2.5 typical
Static Pressure	psi	44		
Residual Pressure	psi	42		
Pitot Tube Pressure	psi		30	
Static HGL	ft	1,370		
Residual HGL	ft	1,365		
Calculated Flow	gpm	919		
Projected Flow at 25 psi Residual	gpm	3,100		



Calculated flow was calculated using the formula:
$Q=(29.83)(C)(D)^2(P)^{1/2}$ where
Q = Flow in gpm
C = Outlet Coefficient
D = Outlet Diameter
P = Pitot Pressure

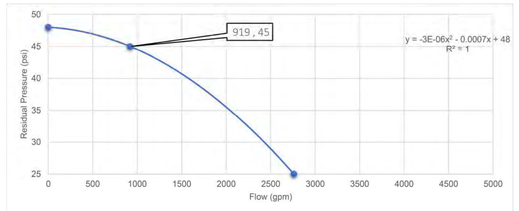
Projected Flow was calculated using the formula
$Qp=Q((Ps-Px)/(Ps-Pr))^{0.54}$ where
Qp = Projected Flow
Q = Flow
Ps = Static Pressure
Px = Desired Pressure
Pr = Residual Pressure

3/22/2024 8:27 AM

HYDRANT FLOW TEST RESULTS

Project Location: SW 94th & Western AVE
Client: Bridges of Moore
Conducted On: 3/18/2024
Conducted By: L. Brewer & J. Billingsley

		Residual Hydrant	Flow Hydrant	
Hydrant Location		SW 94th & Winston Way	SW 94th & S Klein AVE	
Hydrant Elevation	ft	1,261	1,272	Estimate
Outlet Coefficient			0.9	.9 typical
Outlet Diameter	in.		2.5	2.5 typical
Static Pressure	psi	48		
Residual Pressure	psi	45		
Pitot Tube Pressure	psi		30	
Static HGL	ft	1,372		
Residual HGL	ft	1,365		
Calculated Flow	gpm	919		
Projected Flow at 25 psi Residual	gpm	2,761		



Calculated flow was calculated using the formula:
$Q=(29.83)(C)(D)^2(P)^{1/2}$ where
Q = Flow in gpm
C = Outlet Coefficient
D = Outlet Diameter
P = Pitot Pressure

Projected Flow was calculated using the formula
$Qp=Q((Ps-Px)/(Ps-Pr))^{0.54}$ where
Qp = Projected Flow
Q = Flow
Ps = Static Pressure
Px = Desired Pressure
Pr = Residual Pressure

3/22/2024 8:27 AM

SHEET NAME	FIRE HYDRANT FLOW TEST
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	Moore, Cleveland Co., Oklahoma

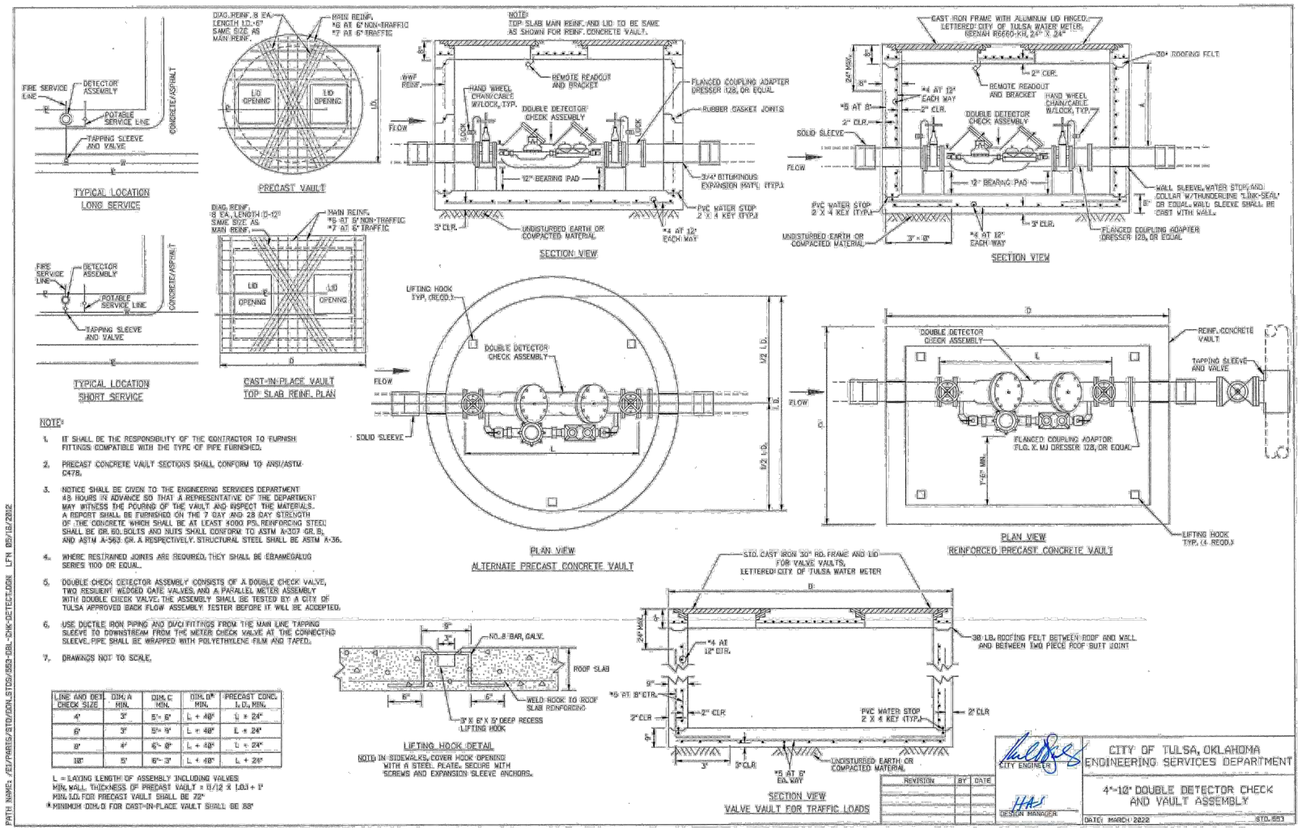
DESCRIPTION | NAME | DATE | REV.

DESIGNED: P. Streebin
DRAWN: J. Billingsley
APPROVED: P. Streebin
DATE: 06/24/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
06-26-2024
OKLAHOMA

SHEET 4.04

Drawing for Review only unless Signature and Date are Originals



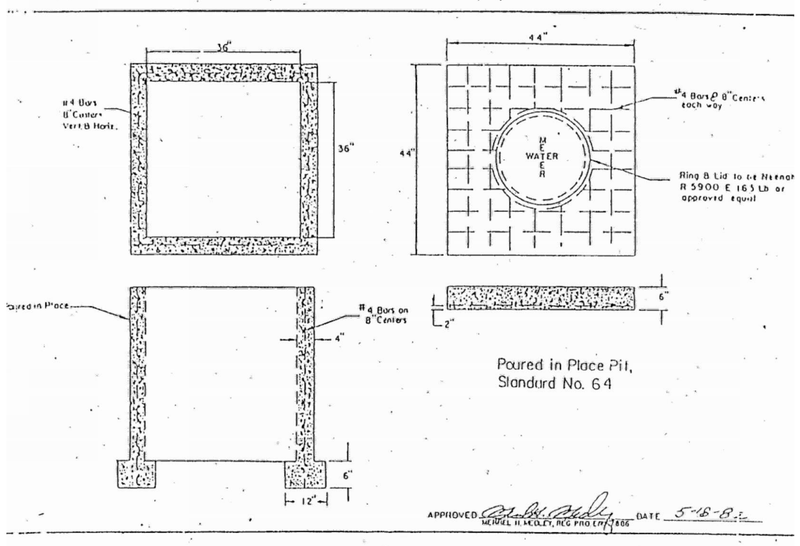
NOTE:

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH FITTINGS COMPATIBLE WITH THE TYPE OF PIPE FURNISHED.
2. PRECAST CONCRETE VAULT SECTIONS SHALL CONFORM TO ANSI/ASTM-C478.
3. NOTICE SHALL BE GIVEN TO THE ENGINEERING SERVICES DEPARTMENT 48 HOURS IN ADVANCE SO THAT A REPRESENTATIVE OF THE DEPARTMENT MAY WITNESS THE POURING OF THE VAULT AND INSPECT THE MATERIALS. A REPORT SHALL BE FURNISHED ON THE 7 DAY AND 28 DAY STRENGTH OF THE CONCRETE WHICH SHALL BE AT LEAST 4000 PSI. REINFORCING STEEL SHALL BE GR. 60, BOLTS AND NUTS SHALL CONFORM TO ASTM A-307 GR. B, AND ASTM A-563 GR. A RESPECTIVELY. STRUCTURAL STEEL SHALL BE ASTM A-36.
4. WHERE RESTRAINED JOINTS ARE REQUIRED, THEY SHALL BE EBAAMEGALUG SERIES 1100 OR EQUAL.
5. DOUBLE CHECK DETECTOR ASSEMBLY CONSISTS OF A DOUBLE CHECK VALVE, TWO RESILIENT WEDGED GATE VALVES, AND A PARALLEL METER ASSEMBLY WITH DOUBLE CHECK VALVE. THE ASSEMBLY SHALL BE TESTED BY A CITY OF TULSA APPROVED BACK FLOW ASSEMBLY TESTER BEFORE IT WILL BE ACCEPTED.
6. USE DUCTILE IRON PIPING AND DUCI FITTINGS FROM THE MAIN LINE TAPPING SLEEVE TO DOWNSTREAM FROM THE METER CHECK VALVE AT THE CONNECTING SLEEVE. PIPE SHALL BE WRAPPED WITH POLYETHYLENE FILM AND TAPED.
7. DRAWINGS NOT TO SCALE.

LINE AND DET. CHECK SIZE	DIM. A MIN.	DIM. C MIN.	DIM. D* MIN.	PRECAST CONC. L, D, MIN.
4"	3'	5'- 6"	L + 48"	L + 24"
6"	3'	5'- 9"	L + 48"	L + 24"
8"	4'	6'- 0"	L + 48"	L + 24"
10"	5'	6'- 3"	L + 48"	L + 24"

L = LAYING LENGTH OF ASSEMBLY INCLUDING VALVES
MIN. WALL THICKNESS OF PRECAST VAULT = 11/12 X L/D3 + 1"
MIN. I.D. FOR PRECAST VAULT SHALL BE 72"
* MINIMUM DIM. D FOR CAST-IN-PLACE VAULT SHALL BE 33"

FIRE LINE DOUBLE CHECK DETECTOR ASSEMBLY DETAILS



WATER METER BOX DETAILS

REV.	DATE	NAME	DESCRIPTION
C.	06/24/2024	L.B.	Clarifications per OKC CPH2 review & meeting 6/14/24

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 06/24/2024

SHEET 4.05

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SEARGIL, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL
P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SHEET NAME	MISCELLANEOUS DETAILS
PROJECT	BRIDGES OF MOORE
CLIENT	BRIDGES
LOCATION	City of Moore, Cleveland Co., OK

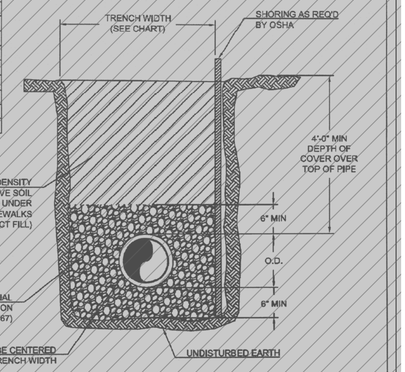
Plot Date: 6/26/2024 3:08 PM Location: G:\Shared drives\Directory\23123125 - Bridges Sky Ranch\dwg Project Details\23125-MISC DETAILS 4.03.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Admin
PATH: NAME: /ELYPHOTO/STD/DGN_STDS/653-CBL-CHK-DETECT.DGN LEVEL: 65-1 DATE: 6/5/2002

PLOTTED: Friday, November 07, 2014 1:44:23 PM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\WATER\FINAL SHEETS\WAT-STD-DET-2014-SIGNED.DWG

WATER STANDARD DETAIL

BEDDING & TRENCHING DETAILS - STEEL PIPE

Pipe Nominal Size (Inches)	Minimum Trench Width (Feet)	Maximum Trench Width (Feet)
48	7.00	10.00
54	8.00	10.50
60	9.00	11.00
64	9.75	13.50
66	9.75	11.50
72	10.50	12.00
78	10.50	12.50
84	11.00	13.00
90	11.50	13.50



STEEL PIPE ≥ 48"

NOTE:
1. EMBEDMENT MATERIAL TO BE FREE FROM REFUSE, ORGANIC MATERIAL, COBBLES, BOULDERS, LARGE ROCKS OR STONES.

W-04

WATER STANDARD DETAIL

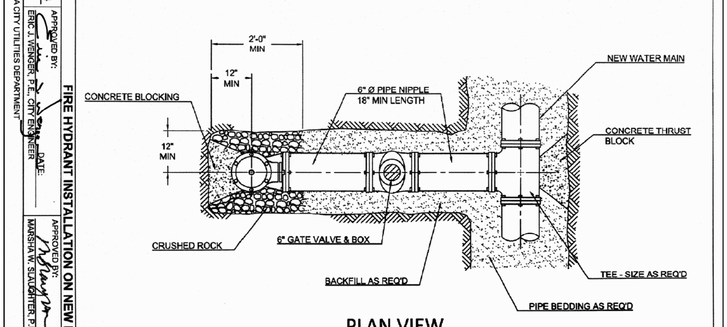
WATER STANDARD DETAIL INDEX

DRAWING NUMBER		ISSUED DATE
W-01	BEDDING & TRENCHING DETAILS - PVC PIPE	6/13/14
W-02	BEDDING & TRENCHING DETAILS - DIP < 12"	6/13/14
W-03	BEDDING & TRENCHING DETAILS - DIP > 12"	6/13/14
W-04	BEDDING & TRENCHING DETAILS - STEEL PIPE	6/13/14
W-05	FIRE HYDRANT INSTALLATION ON NEW MAIN - PAGE 1 OF 2	6/13/14
W-06	FIRE HYDRANT INSTALLATION ON NEW MAIN - PAGE 2 OF 2	6/13/14
W-07	FIRE HYDRANT INSTALLATION ON EXISTING MAIN - PAGE 1 OF 2	6/13/14
W-08	FIRE HYDRANT INSTALLATION ON EXISTING MAIN - PAGE 2 OF 2	6/13/14
W-09	FIRE HYDRANT NOZZLES THREAD DETAILS	10/30/14
W-10	CAST IRON VALVE BOX, LID & EXTENSION - PAGE 1 OF 2	6/13/14
W-11	CAST IRON VALVE BOX, LID & EXTENSION - PAGE 2 OF 2	6/13/14
W-12	WATER MANHOLE COVER	6/13/14
W-13	PVC PIPE TRACER WIRE INSTALLATION	6/13/14
W-14	2" AIR / VACUUM RELEASE VALVE INSTALLATION	6/13/14
W-15	2" BLOW OFF INSTALLATION	6/13/14
W-16	GUARD POST INSTALLATION DETAIL	6/13/14
W-17	REVERSE TAP INSTALLATION	6/13/14
W-18	PIPE BORING AND CASING INSTALLATION - PAGE 1 OF 2	6/13/14
W-19	PIPE BORING AND CASING INSTALLATION - PAGE 2 OF 2	6/13/14
W-20	SINGLE SHORT SERVICE REPLACEMENT	6/13/14
W-21	SINGLE LONG SERVICE REPLACEMENT	6/13/14
W-22	SINGLE SHORT SERVICE NEW INSTALLATION	6/13/14
W-23	SINGLE LONG SERVICE NEW INSTALLATION	6/13/14
W-24	METER BOX FOR GRASSY AREAS - PAGE 1 OF 2	6/13/14
W-25	METER BOX FOR GRASSY AREAS - PAGE 2 OF 2	6/13/14
W-26	METER BOX FOR PAVED AREAS	6/13/14
W-27	METER BOX LID FOR PAVED AREAS - 5/8" TO 1"	6/13/14
W-28	METER BOX LID FOR PAVED AREAS - 1-1/2" TO 2"	6/13/14
W-29	WATER METER VAULT INSTALLATION - PAGE 1 OF 6	6/13/14
W-30	WATER METER VAULT INSTALLATION - PAGE 2 OF 6	6/13/14
W-31	WATER METER VAULT INSTALLATION - PAGE 3 OF 6	6/13/14
W-32	WATER METER VAULT INSTALLATION - PAGE 4 OF 6	6/13/14
W-33	WATER METER VAULT INSTALLATION - PAGE 5 OF 6	6/13/14
W-34	WATER METER VAULT INSTALLATION - PAGE 6 OF 6	6/13/14
W-35	FIRE FLOW METER VAULT INSTALLATION - PAGE 1 OF 5	6/13/14
W-36	FIRE FLOW METER VAULT INSTALLATION - PAGE 2 OF 5	6/13/14
W-37	FIRE FLOW METER VAULT INSTALLATION - PAGE 3 OF 5	6/13/14
W-38	FIRE FLOW METER VAULT INSTALLATION - PAGE 4 OF 5	6/13/14
W-39	FIRE FLOW METER VAULT INSTALLATION - PAGE 5 OF 5	6/13/14
W-40	METER RELOCATION FOR STREET RESURFACING / SIDEWALKS / ADA RAMPS	6/13/14
W-41	HORIZONTAL THRUST BLOCK - BENDS - PAGE 1 OF 3	6/13/14
W-42	HORIZONTAL THRUST BLOCK - BENDS - PAGE 2 OF 3	6/13/14
W-43	HORIZONTAL THRUST BLOCK - BENDS - PAGE 3 OF 3	6/13/14
W-44	HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES - PAGE 1 OF 2	6/13/14
W-45	HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES - PAGE 2 OF 2	6/13/14
W-46	VERTICAL THRUST BLOCK - BENDS - PAGE 1 OF 2	6/13/14
W-47	VERTICAL THRUST BLOCK - BENDS - PAGE 2 OF 2	6/13/14

W-00

WATER STANDARD DETAIL

FIRE HYDRANT INSTALLATION ON NEW MAIN



PLAN VIEW

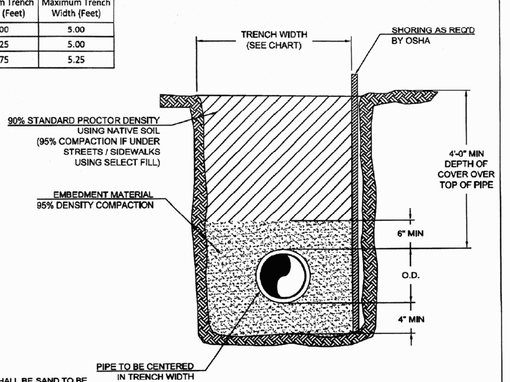
NOTES:
1. HYDRANT COLOR IS AS FOLLOWS:
   (a) "INTERNATIONAL ORANGE" (SW 4081) FOR PUBLIC
   (b) "SAFETY RED" (SW 4082) FOR PRIVATE
2. SEE DETAIL W-43 & W-44 FOR THRUST BLOCK SIZING.
3. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.

W-05 1 OF 2

WATER STANDARD DETAIL

BEDDING & TRENCHING DETAILS - PVC PIPE

Pipe Nominal Size (Inches)	Minimum Trench Width (Feet)	Maximum Trench Width (Feet)
≤ 12	3.00	5.00
16	3.25	5.00
20	3.75	5.25



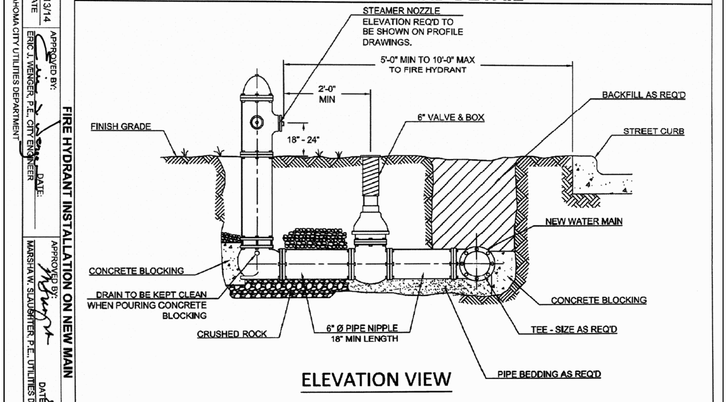
PVC PIPE

NOTES:
1. EMBEDMENT MATERIAL SHALL BE SAND TO BE READILY WORKED UNDER THE SIDES OF THE PIPE. IT SHALL BE FREE FROM REFUSE, ORGANIC MATERIAL, COBBLES, BOULDERS, LARGE ROCKS OR STONES.
2. SEE DETAIL W-13 FOR TRACER WIRE INSTALLATION.

W-01

WATER STANDARD DETAIL

FIRE HYDRANT INSTALLATION ON NEW MAIN



ELEVATION VIEW

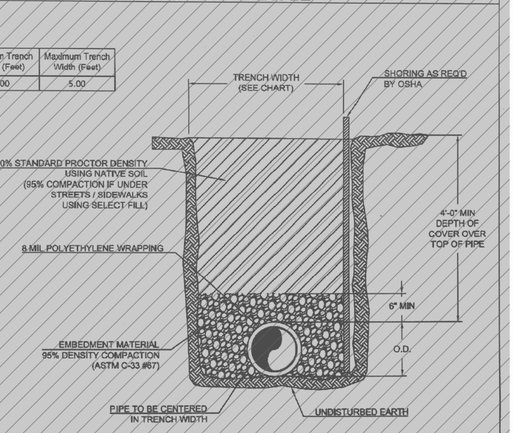
NOTES:
1. HYDRANT COLOR IS AS FOLLOWS:
(a) "INTERNATIONAL ORANGE" (SW 4081) FOR PUBLIC
(b) "SAFETY RED" (SW 4082) FOR PRIVATE
2. SEE DETAIL W-43 & W-44 FOR THRUST BLOCK SIZING.
3. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.

W-06 2 OF 2

WATER STANDARD DETAIL

BEDDING & TRENCHING DETAILS - DIP ≤ 12"

Pipe Nominal Size (Inches)	Minimum Trench Width (Feet)	Maximum Trench Width (Feet)
≤ 12	3.00	5.00



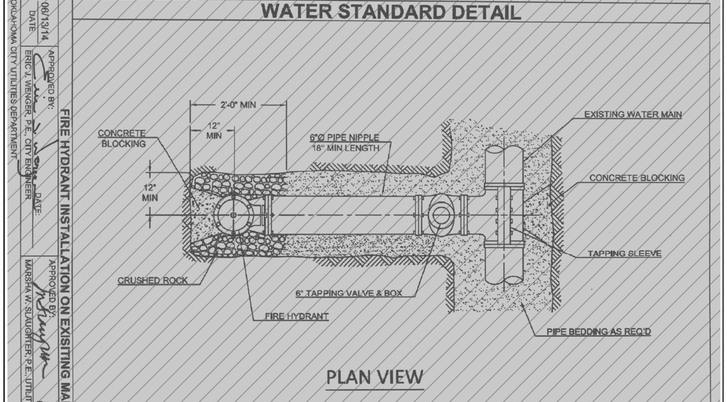
DUCTILE IRON PIPE ≤ 12"

NOTE:
1. EMBEDMENT MATERIAL TO BE FREE FROM REFUSE, ORGANIC MATERIAL, COBBLES, BOULDERS, LARGE ROCKS OR STONES.

W-02

WATER STANDARD DETAIL

FIRE HYDRANT INSTALLATION ON EXISTING MAIN



PLAN VIEW

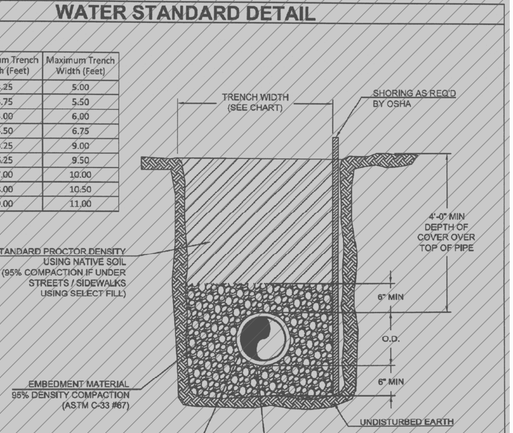
NOTES:
1. HYDRANT COLOR IS AS FOLLOWS:
(a) "INTERNATIONAL ORANGE" (SW 4081) FOR PUBLIC
(b) "SAFETY RED" (SW 4082) FOR PRIVATE
2. SEE DETAIL W-43 & W-44 FOR THRUST BLOCK SIZING.
3. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.

W-07 1 OF 2

WATER STANDARD DETAIL

BEDDING & TRENCHING DETAILS - DIP > 12"

Pipe Nominal Size (Inches)	Minimum Trench Width (Feet)	Maximum Trench Width (Feet)
16	3.25	5.00
20	3.75	5.50
24	4.00	6.00
30	4.50	6.75
36	5.25	9.00
42	6.25	9.50
48	7.00	10.00
54	8.00	10.50
60	9.00	11.00



DUCTILE IRON PIPE > 12"

NOTE:
1. EMBEDMENT MATERIAL TO BE FREE FROM REFUSE, ORGANIC MATERIAL, COBBLES, BOULDERS, LARGE ROCKS OR STONES.

W-03

SHEET NUMBER W-STD-01

SCALE: AS SHOWN

DATE: 11/07/14
DRAWN BY: MWS/EJW
CHECKED BY: JDS

WATER STANDARD DETAILS

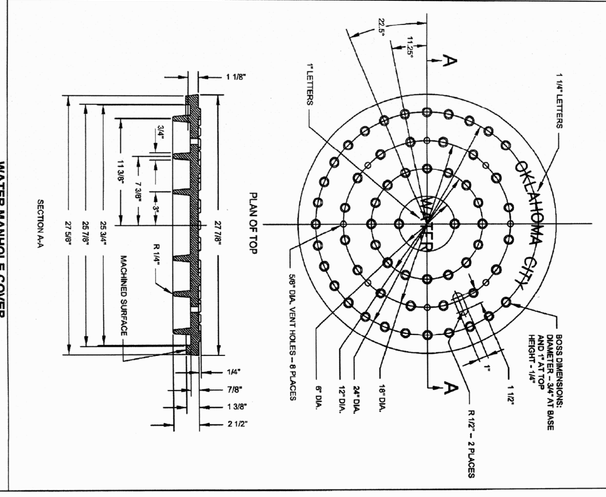
NO.	DATE	DESCRIPTION
1	11/07/14	STD DRAWING W-00 MODIFIED

The City of Oklahoma City
Utilities Department
Engineering Division

PLOTTED: Friday, November 07, 2014 1:41:37 PM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\WATER\FINAL SHEETS\WAT-STD-DET-2014-SIGNED.DWG

WATER STANDARD DETAIL

WATER MANHOLE COVER

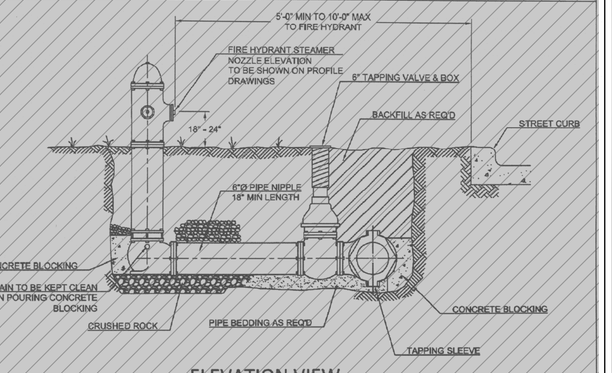


DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-12

WATER STANDARD DETAIL

FIRE HYDRANT INSTALLATION ON EXISTING MAIN



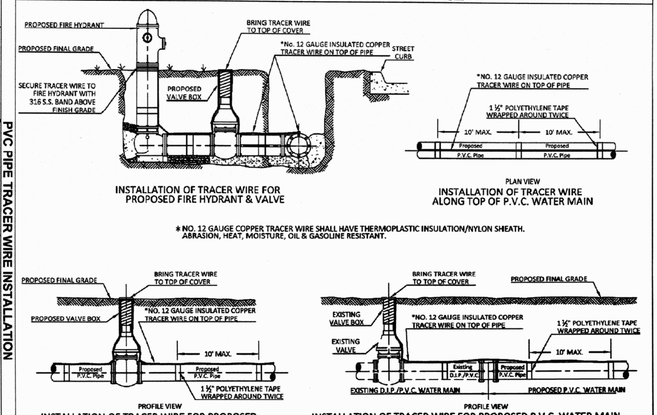
NOTES:
1. HYDRANT COLOR IS AS FOLLOWS:
   (a) "INTERNATIONAL ORANGE" (SW 4081) FOR PUBLIC
   (b) "SAFETY RED" (SW 4082) FOR PRIVATE
2. SEE DETAIL W-43 & W-44 FOR THRUST BLOCK SIZING.
3. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.

DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-08 — 2 OF 2

WATER STANDARD DETAIL

PVC PIPE TRACER WIRE INSTALLATION



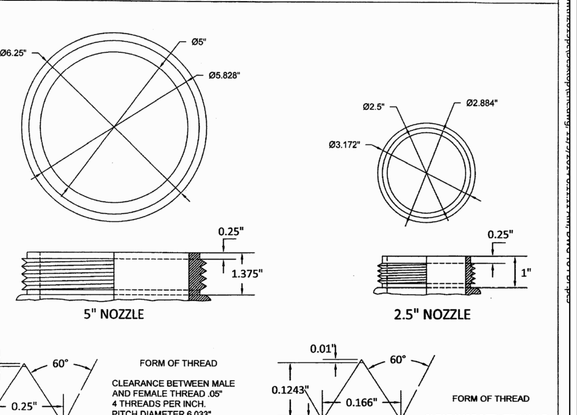
NOTES:
1. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.
2. WHEN EXISTING DIP/PVC MAIN IS TO BE EXTENDED WITH A PVC MAIN, THE CONTRACTOR SHALL EXCAVATE ALONG THE TOP OF EXISTING MAIN TO THE NEAREST EXISTING VALVE AND INSTALL A TRACER WIRE ON TOP OF EXISTING PING, AS SHOWN IN DETAIL.

DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-13

WATER STANDARD DETAIL

FIRE HYDRANT NOZZLES THREAD DETAILS

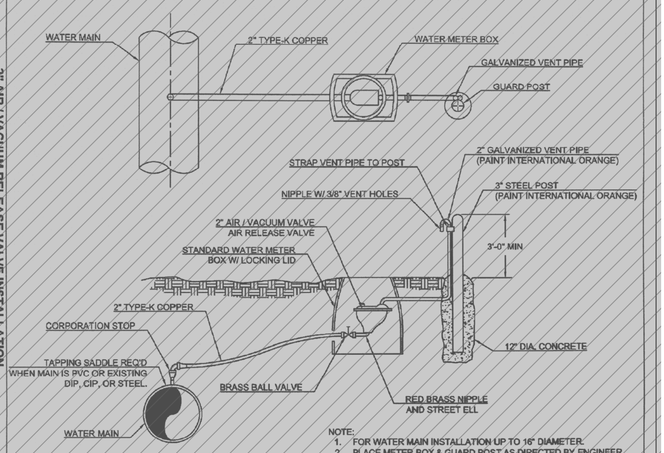


DATE	APPROVED BY:	DATE
10/30/14	ERIC J. WERNER, P.E., CITY ENGINEER	DATE: 11/03/14
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	11/3/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-09

WATER STANDARD DETAIL

2" AIR / VACUUM RELEASE VALVE INSTALLATION



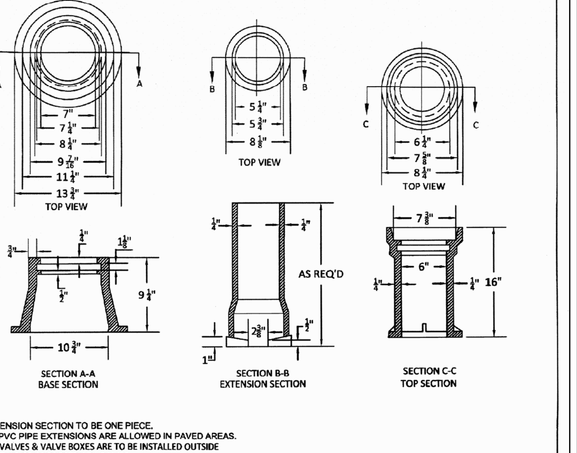
NOTE:
1. FOR WATER MAIN INSTALLATION UP TO 16" DIAMETER:
2. PLACE METER BOX & GUARD POST AS DIRECTED BY ENGINEER.

DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-14

WATER STANDARD DETAIL

CAST IRON VALVE BOX, LID & EXTENSION



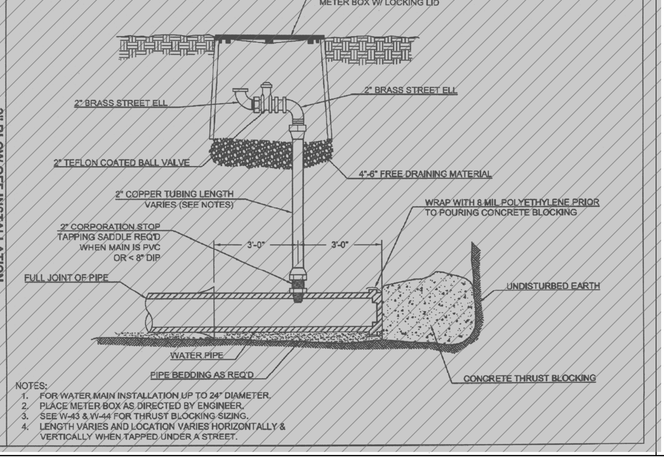
NOTE:
1. EXTENSION SECTION TO BE ONE PIECE.
2. NO PVC PIPE EXTENSIONS ARE ALLOWED IN PAVED AREAS.
3. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.

DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-10 — 1 OF 2

WATER STANDARD DETAIL

2" BLOW OFF INSTALLATION



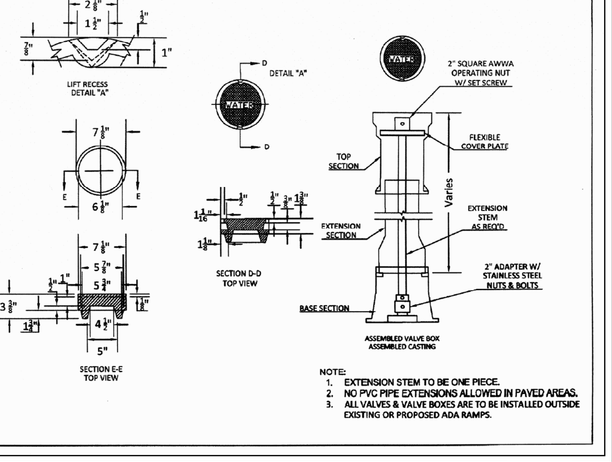
NOTES:
1. FOR WATER MAIN INSTALLATION UP TO 24" DIAMETER.
2. PLACE METER BOX AS DIRECTED BY ENGINEER.
3. SEE W-43 & W-44 FOR THRUST BLOCKING SIZING.
4. LENGTH VARIES AND LOCATION VARIES HORIZONTALLY & VERTICALLY WHEN TAPPED UNDER A STREET.

DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-15

WATER STANDARD DETAIL

CAST IRON VALVE BOX, LID & EXTENSION



NOTE:
1. EXTENSION STEM TO BE ONE PIECE.
2. NO PVC PIPE EXTENSIONS ALLOWED IN PAVED AREAS.
3. ALL VALVES & VALVE BOXES ARE TO BE INSTALLED OUTSIDE EXISTING OR PROPOSED ADA RAMPS.

DATE	APPROVED BY:	DATE
06/13/14	ERIC J. WERNER, P.E., CITY ENGINEER	
	MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	6/17/14

OKLAHOMA CITY UTILITIES DEPARTMENT — W-11 — 2 OF 2

SHEET NUMBER: W-STD-02

SCALE: AS SHOWN

DATE: 11/07/14
DRAWN BY:- MWS/EJW
CHECKED BY:- JDS

WATER STANDARD DETAILS

NO.	DATE	DESCRIPTION
1	11/07/14	STD DRAWING W-09 MODIFIED

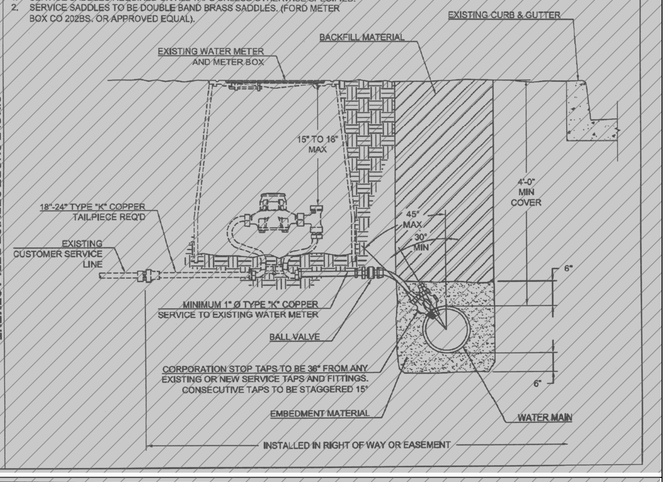
The City of Oklahoma City
Utilities Department
Engineering Division

PLOTTED: Tuesday, August 26, 2014 10:19:03 AM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\WATER\FINAL SHEETS\WAT-STD-DET-2014-SIGNED.DWG

WATER STANDARD DETAIL

SINGLE SHORT SERVICE REPLACEMENT

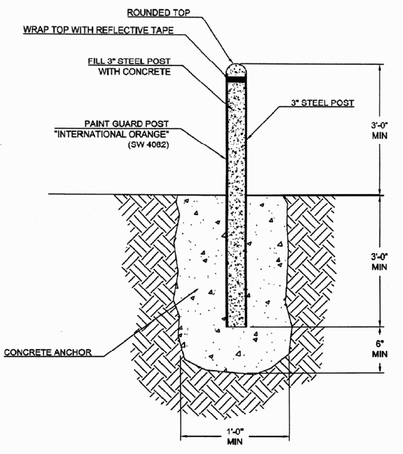
NOTE:
1. SERVICE SADDLES REQUIRED ON ALL TAPS UNLESS OTHERWISE SPECIFIED.
2. SERVICE SADDLES TO BE DOUBLE BAND BRASS SADDLES. (FORD METER BOX CO 202BS, OR APPROVED EQUAL).

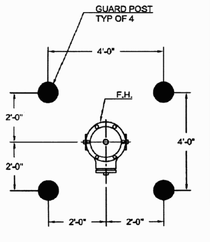


APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-20

WATER STANDARD DETAIL

GUARD POST INSTALLATION DETAIL





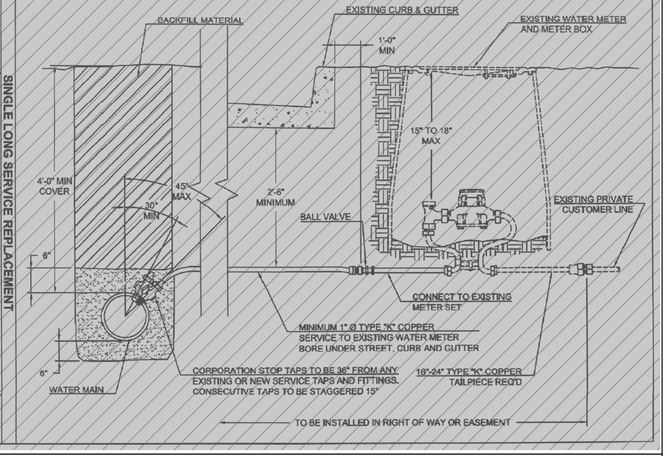
TYPICAL FIRE HYDRANT PROTECTION IN TRAFFIC AREAS

APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-16

WATER STANDARD DETAIL

SINGLE LONG SERVICE REPLACEMENT

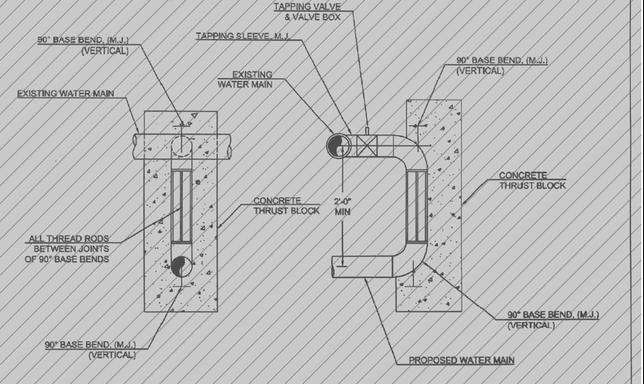
NOTE:
1. SERVICE SADDLES REQUIRED ON ALL TAPS UNLESS OTHERWISE SPECIFIED.
2. SERVICE SADDLES TO BE DOUBLE BAND BRASS SADDLES. (FORD METER BOX CO 202BS, OR APPROVED EQUAL).



APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-21

WATER STANDARD DETAIL

REVERSE TAP INSTALLATION



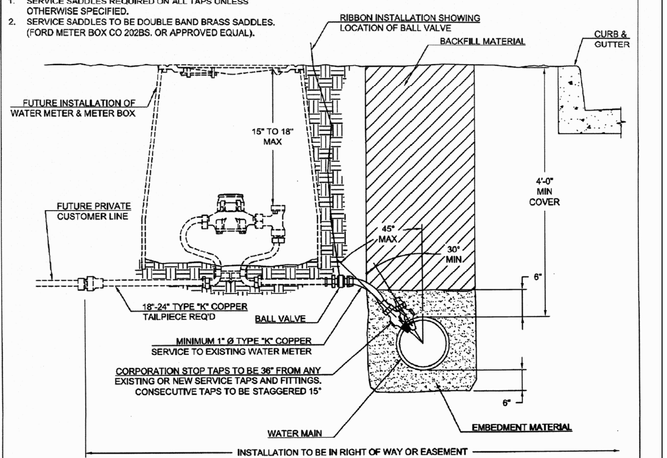
NOTE:
RESTRAIN JOINT SYSTEM OPTIONS:
(A) MEGA-LUG TYPE JOINT RESTRAINT SYSTEM ON ALL JOINTS.
(B) STAINLESS STEEL ALL THREAD RODS B/W 90° VERTICAL BASE BENDS.

APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-17

WATER STANDARD DETAIL

SINGLE SHORT SERVICE NEW INSTALLATION

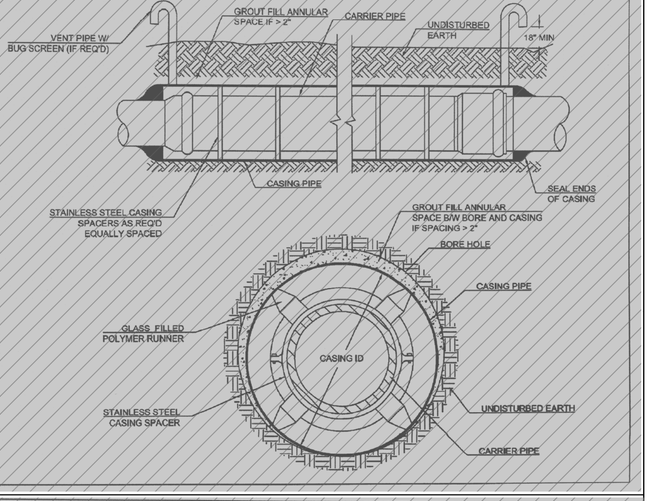
NOTE:
1. SERVICE SADDLES REQUIRED ON ALL TAPS UNLESS OTHERWISE SPECIFIED.
2. SERVICE SADDLES TO BE DOUBLE BAND BRASS SADDLES. (FORD METER BOX CO 202BS, OR APPROVED EQUAL).



APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-22

WATER STANDARD DETAIL

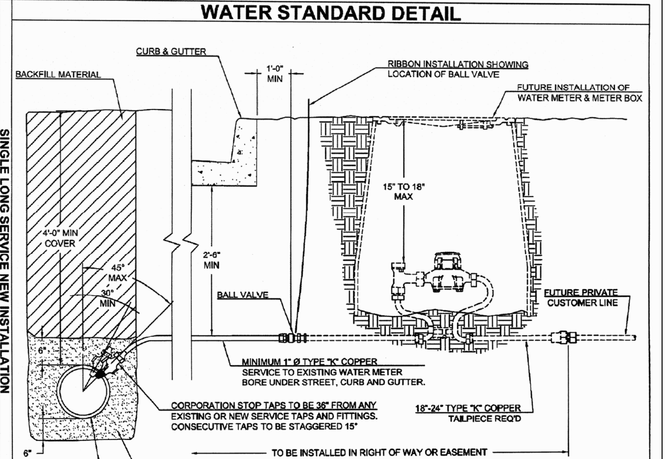
PIPE BORING AND CASING INSTALLATION



APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-18 1 OF 2

WATER STANDARD DETAIL

SINGLE LONG SERVICE NEW INSTALLATION



NOTE:
1. SERVICE SADDLES REQUIRED ON ALL TAPS UNLESS OTHERWISE SPECIFIED.
2. SERVICE SADDLES TO BE DOUBLE BAND BRASS SADDLES. (FORD METER BOX CO 202BS, OR APPROVED EQUAL).

APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-23

WATER STANDARD DETAIL

PIPE BORING AND CASING INSTALLATION

NOTE:

SEALED CASING ENDS - NEOPRENE RUBBER END SEALS SECURED WITH 316 STAINLESS STEEL BANDING REQUIRED.

PLUGGED PIPE ENDS - BOTH ENDS OF THE CASING PIPE SHALL BE PLUGGED WITH A NON-SHRINK GROUT OR CONCRETE HAVING A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI OR GROUTED MASONRY. EACH PLUG SHALL BE A MINIMUM LENGTH OF 18", GROUTING PRESSURE SHALL NOT EXCEED THE PIPE MANUFACTURER'S RECOMMENDATIONS.

VENT PIPES - VENT PIPES SHALL BE INSTALLED ON BOTH ENDS OF CASING FOR BORINGS THAT CROSS ODOT ROADS AND RAILROAD CROSSINGS. VENTS SHALL BE 2" DIA FOR CASING SIZES < 30-IN. VENTS SHALL BE 4" DIA FOR CASING SIZES > 30-IN. VENTS SHALL HAVE A 90 DEG BEND TO POINT TOWARDS THE GROUND AND SHALL BE PAINTED INTERNATIONAL ORANGE. BUG SCREEN SHALL BE INCLUDED ON THE OPEN END OF VENT PIPE.

CASING PIPE SIZE - STEEL CASING PIPE SHALL HAVE THE FOLLOWING MINIMUM DIAMETERS: SEE TABLE 1

CASING PIPE THICKNESS - STEEL CASING PIPE SHALL HAVE THE FOLLOWING MINIMUM THICKNESS(ES), IN INCHES, FOR THE INDICATED MAXIMUM DEPTH OF COVER(S), IN FEET: SEE TABLE 2

CASING MATERIAL - STEEL CASING PIPE SHALL CONFORM WITH ASTM A-139, STANDARD SPECIFICATION FOR ELECTRIC-FUSION (ARC) - WELDED STEEL PIPE (NPS 4 AND OVER). THE STEEL MATERIAL SHALL BE NEW, SMOOTH WALL, CARBON STEEL, GRADE B, WITH A MINIMUM TENSILE STRENGTH AND MINIMUM THIRTY-FIVE-THOUSAND (35,000 PSI) POUNDS PER SQUARE INCH YIELD STRENGTH.

TABLE 1
RECOMMENDED CASING SIZING

PIPE NOMINAL SIZE (INCHES)	SUGGESTED CASING PIPE INSIDE DIAMETER (INCHES)	PIPE NOMINAL SIZE (INCHES)	SUGGESTED CASING PIPE INSIDE DIAMETER (INCHES)
4	8 TO 10	20	28 TO 30
6	10 TO 12	24	31 TO 33
8	14 TO 16	30	36 TO 42
10	16 TO 18	36	42 TO 48
12	18 TO 20	42	54 TO 60
16	20 TO 22	48	60 TO 66
18	24 TO 26		

TABLE 2
CASING PIPE THICKNESS

Outside Diameter (inches)	Under Highway		Under Railroad		
	Wall Thickness (Inches)	Maximu m Cover (Feet)	BNSF (Uncoated) Wall Thickness (inches)	Union Pacific Wall Thickness (inches)	Maximum Cover (Feet)
≤ 12	0.1880	30	0.2500	0.2500	30
16	0.2500	30	0.3125	0.3125	30
18	0.2500	30	0.3125	0.3125	30
20	0.2500	30	0.3750	0.3750	30
24	0.2500	30	0.4375	0.4375	30
30	0.3220	30	0.5000	0.5000	30
36	0.3750	30	0.5625	0.5625	30
42	0.3750	25	0.5625	0.5625	30
48	0.4380	25	0.6250	0.6250	25

APPROVED BY: ERIC J. WERGER, P.E. CITY ENGINEER — DATE: 06/13/14
APPROVED BY: MARSHA W. SLAUGHTER, P.E. UTILITIES DIRECTOR — DATE: 6/1/14
W-19 2 OF 2

SHEET NUMBER: W-STD-03

SCALE: AS SHOWN

DATE: 08/07/14
DRAWN BY: MW/SEJW
CHECKED BY: JDS

WATER STANDARD DETAILS

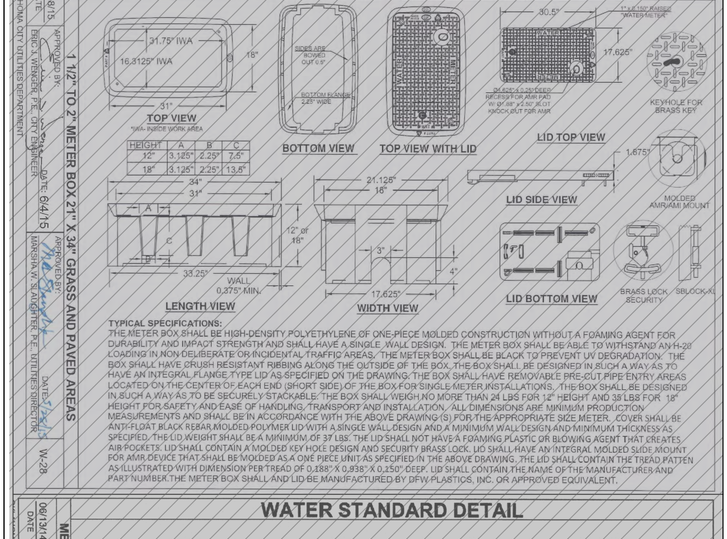
NO.	DATE	DESCRIPTION

The City of Oklahoma City
Utilities Department
Engineering Division

PLOTTED: Friday, June 05, 2015 5:01:23 PM
FILE PATH: \\CI.OKC\OKC\WW-ENGINEERINGSHARE1\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED WATER METER 2015\FINAL\WAT-STD-DET-2015-SIGNED.DWG

WATER STANDARD DETAIL

1 1/2" TO 2" METER BOX 21" X 34" GRASS AND PAVED AREAS

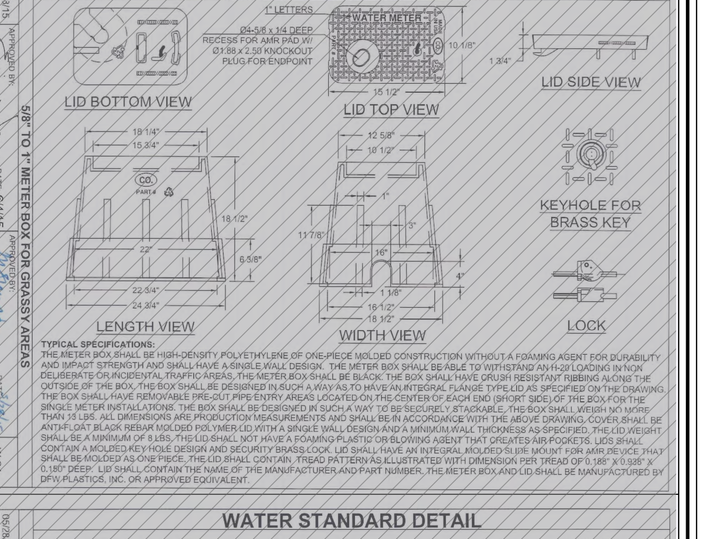


TYPICAL SPECIFICATIONS:
THE METER BOX SHALL BE HIGH-DENSITY POLYETHYLENE OF ONE-PIECE MOLDED CONSTRUCTION WITHOUT A FOAMING AGENT FOR DURABILITY AND IMPACT STRENGTH AND SHALL HAVE A SINGLE WALL DESIGN. THE METER BOX SHALL BE ABLE TO WITHSTAND AN H-20 LOADING IN NON DELIBERATE OR INCIDENTAL TRAFFIC AREAS. THE METER BOX SHALL BE BLACK TO PREVENT UV DEGRADATION. THE BOX SHALL HAVE CRUSH RESISTANT RIBBING ALONG THE OUTSIDE OF THE BOX. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO HAVE AN INTEGRAL FLANGE TYPE LID AS SPECIFIED ON THE DRAWING. THE BOX SHALL HAVE REMOVABLE PRE-CUT PIPE ENTRY AREAS LOCATED ON THE CENTER OF EACH END (SHORT SIDE) OF THE BOX FOR THE SINGLE METER INSTALLATIONS. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO BE SECURELY STACKABLE. THE BOX SHALL WEIGH NO MORE THAN 24 LBS FOR 12" HEIGHT AND 33 LBS FOR 18" HEIGHT FOR SAFETY AND EASE OF HANDLING, TRANSPORT AND INSTALLATION. ALL DIMENSIONS ARE MINIMUM PRODUCTION MEASUREMENTS AND SHALL BE IN ACCORDANCE WITH THE ABOVE DRAWING (S) FOR THE APPROPRIATE SIZE METER. COVER SHALL BE ANTI-FLOAT BLACK REBAR MOLDED POLYMER LID WITH A SINGLE WALL DESIGN AND A MINIMUM WALL THICKNESS AS SPECIFIED, THE LID WEIGHT SHALL BE A MINIMUM OF 37 LBS. THE LID SHALL NOT HAVE A FOAMING PLASTIC OR BLOWING AGENT THAT CREATES AIR POCKETS. LID SHALL CONTAIN A MOLDED KEY HOLE DESIGN AND SECURITY BRASS LOCK. LID SHALL HAVE AN INTEGRAL MOLDED SLIDE MOUNT FOR AMR DEVICE THAT SHALL BE MOLDED AS A ONE PIECE UNIT AS SPECIFIED IN THE ABOVE DRAWING. THE LID SHALL CONTAIN THE TREAD PATTEN AS ILLUSTRATED WITH DIMENSION PER TREAD OF 0.188" X 0.938" X 0.150" DEEP. LID SHALL CONTAIN THE NAME OF THE MANUFACTURER AND PART NUMBER. THE METER BOX SHALL AND LID BE MANUFACTURED BY DFW PLASTICS, INC. OR APPROVED EQUIVALENT.

DATE: 05/28/15 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/4/15 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/15 | W-24

WATER STANDARD DETAIL

5/8" TO 1" METER BOX FOR GRASSY AREAS

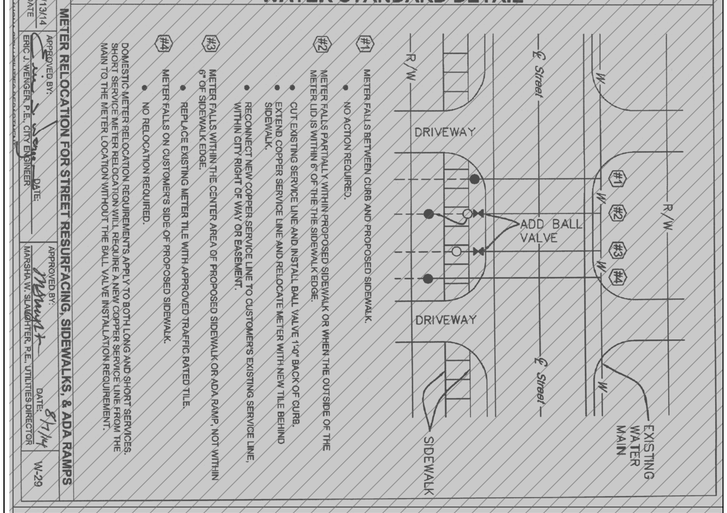


TYPICAL SPECIFICATIONS:
THE METER BOX SHALL BE HIGH-DENSITY POLYETHYLENE OF ONE-PIECE MOLDED CONSTRUCTION WITHOUT A FOAMING AGENT FOR DURABILITY AND IMPACT STRENGTH AND SHALL HAVE A SINGLE WALL DESIGN. THE METER BOX SHALL BE ABLE TO WITHSTAND AN H-20 LOADING IN NON DELIBERATE OR INCIDENTAL TRAFFIC AREAS. THE METER BOX SHALL BE BLACK TO PREVENT UV DEGRADATION. THE BOX SHALL HAVE CRUSH RESISTANT RIBBING ALONG THE OUTSIDE OF THE BOX. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO HAVE AN INTEGRAL FLANGE TYPE LID AS SPECIFIED ON THE DRAWING. THE BOX SHALL HAVE REMOVABLE PRE-CUT PIPE ENTRY AREAS LOCATED ON THE CENTER OF EACH END (SHORT SIDE) OF THE BOX FOR THE SINGLE METER INSTALLATIONS. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO BE SECURELY STACKABLE. THE BOX SHALL WEIGH NO MORE THAN 15 LBS. ALL DIMENSIONS ARE PRODUCTION MEASUREMENTS AND SHALL BE IN ACCORDANCE WITH THE ABOVE DRAWING. COVER SHALL BE ANTI-FLOAT BLACK REBAR MOLDED POLYMER LID WITH A SINGLE WALL DESIGN AND A MINIMUM WALL THICKNESS AS SPECIFIED, THE LID WEIGHT SHALL BE A MINIMUM OF 8 LBS. THE LID SHALL NOT HAVE A FOAMING PLASTIC OR BLOWING AGENT THAT CREATES AIR POCKETS. LID SHALL CONTAIN A MOLDED KEY HOLE DESIGN AND SECURITY BRASS LOCK. LID SHALL HAVE AN INTEGRAL MOLDED SLIDE MOUNT FOR AMR DEVICE THAT SHALL BE MOLDED AS A ONE PIECE UNIT AS SPECIFIED IN THE ABOVE DRAWING. THE LID SHALL CONTAIN THE TREAD PATTERN AS ILLUSTRATED WITH DIMENSION PER TREAD OF 0.185" X 0.935" X 0.180" DEEP. LID SHALL CONTAIN THE NAME OF THE MANUFACTURER AND PART NUMBER. THE METER BOX AND LID SHALL BE MANUFACTURED BY DFW PLASTICS, INC. OR APPROVED EQUIVALENT.

DATE: 05/28/15 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/4/15 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/15 | W-25

WATER STANDARD DETAIL

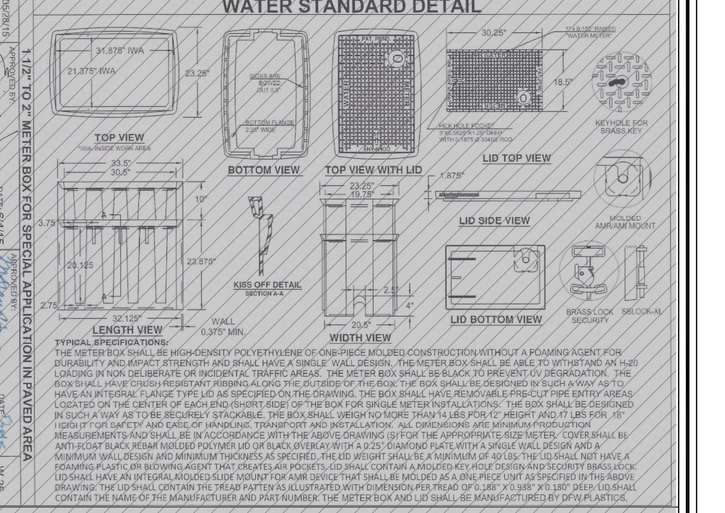
METER RELOCATION FOR STREET RESURFACING, SIDEWALKS, & ADA RAMPS



DATE: 06/13/14 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/11/14 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/14 | W-29

WATER STANDARD DETAIL

5/8" TO 1" METER BOX FOR SPECIAL APPLICATION IN PAVED AREA

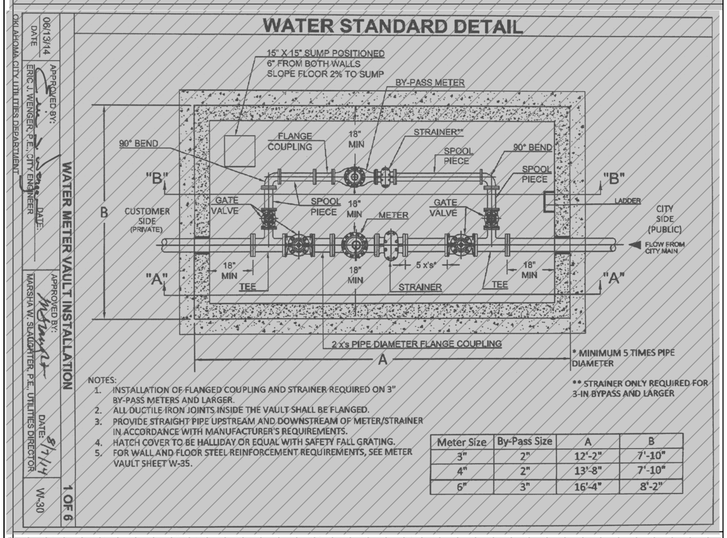


TYPICAL SPECIFICATIONS:
THE METER BOX SHALL BE HIGH-DENSITY POLYETHYLENE OF ONE-PIECE MOLDED CONSTRUCTION WITHOUT A FOAMING AGENT FOR DURABILITY AND IMPACT STRENGTH AND SHALL HAVE A SINGLE WALL DESIGN. THE METER BOX SHALL BE ABLE TO WITHSTAND AN H-20 LOADING IN NON DELIBERATE OR INCIDENTAL TRAFFIC AREAS. THE METER BOX SHALL BE BLACK TO PREVENT UV DEGRADATION. THE BOX SHALL HAVE CRUSH RESISTANT RIBBING ALONG THE OUTSIDE OF THE BOX. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO HAVE AN INTEGRAL FLANGE TYPE LID AS SPECIFIED ON THE DRAWING. THE BOX SHALL HAVE REMOVABLE PRE-CUT PIPE ENTRY AREAS LOCATED ON THE CENTER OF EACH END (SHORT SIDE) OF THE BOX FOR SINGLE METER INSTALLATIONS. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO BE SECURELY STACKABLE. THE BOX SHALL WEIGH NO MORE THAN 14 LBS FOR 12" HEIGHT AND 17 LBS FOR 18" HEIGHT FOR SAFETY AND EASE OF HANDLING, TRANSPORT AND INSTALLATION. ALL DIMENSIONS ARE MINIMUM PRODUCTION MEASUREMENTS AND SHALL BE IN ACCORDANCE WITH THE ABOVE DRAWING (S) FOR THE APPROPRIATE SIZE METER. COVER SHALL BE ANTI-FLOAT BLACK REBAR MOLDED POLYMER LID OR BLACK OVERLAY WITH A 0.25" DIAMOND PLATE WITH A SINGLE WALL DESIGN AND A MINIMUM WALL DESIGN AND MINIMUM THICKNESS AS SPECIFIED, THE LID WEIGHT SHALL BE A MINIMUM OF 40 LBS. THE LID SHALL NOT HAVE A FOAMING PLASTIC OR BLOWING AGENT THAT CREATES AIR POCKETS. LID SHALL CONTAIN A MOLDED KEY HOLE DESIGN AND SECURITY BRASS LOCK. LID SHALL HAVE AN INTEGRAL MOLDED SLIDE MOUNT FOR AMR DEVICE THAT SHALL BE MOLDED AS A ONE PIECE UNIT AS SPECIFIED IN THE ABOVE DRAWING. THE LID SHALL CONTAIN THE TREAD PATTERN AS ILLUSTRATED WITH DIMENSION PER TREAD OF 0.188" X 0.938" X 0.180" DEEP. LID SHALL CONTAIN THE NAME OF THE MANUFACTURER AND PART NUMBER. THE METER BOX AND LID SHALL BE MANUFACTURED BY DFW PLASTICS.

DATE: 05/28/15 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/4/15 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/15 | W-26

WATER STANDARD DETAIL

WATER METER VAULT INSTALLATION — 1 OF 6



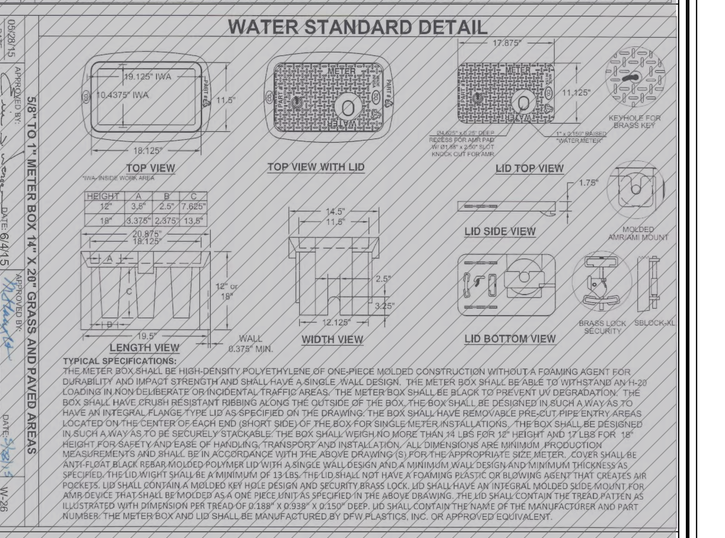
NOTES:
1. INSTALLATION OF FLANGED COUPLING AND STRAINER REQUIRED ON 3" BY-PASS METERS AND LARGER.
2. ALL DUCTILE IRON JOINTS INSIDE THE VAULT SHALL BE FLANGED.
3. PROVIDE STRAIGHT PIPE UPSTREAM AND DOWNSTREAM OF METER/STRAINER IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
4. HATCH COVER TO BE HALLIDAY OR EQUAL WITH SAFETY FALL GRATING.
5. FOR WALL AND FLOOR STEEL REINFORCEMENT REQUIREMENTS, SEE METER VAULT SHEET W-35.

Meter Size	By-Pass Size	A	B
3"	2"	12'-2"	7'-10"
4"	2"	13'-8"	7'-10"
6"	3"	16'-4"	8'-2"

DATE: 06/13/14 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/11/14 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/14 | W-30

WATER STANDARD DETAIL

5/8" TO 1" METER BOX 14" X 20" GRASS AND PAVED AREAS

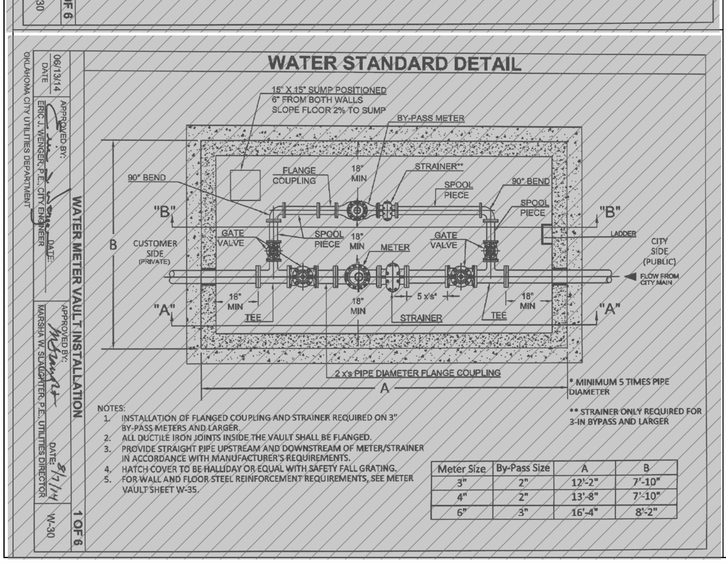


TYPICAL SPECIFICATIONS:
THE METER BOX SHALL BE HIGH-DENSITY POLYETHYLENE OF ONE-PIECE MOLDED CONSTRUCTION WITHOUT A FOAMING AGENT FOR DURABILITY AND IMPACT STRENGTH AND SHALL HAVE A SINGLE WALL DESIGN. THE METER BOX SHALL BE ABLE TO WITHSTAND AN H-20 LOADING IN NON DELIBERATE OR INCIDENTAL TRAFFIC AREAS. THE METER BOX SHALL BE BLACK TO PREVENT UV DEGRADATION. THE BOX SHALL HAVE CRUSH RESISTANT RIBBING ALONG THE OUTSIDE OF THE BOX. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO HAVE AN INTEGRAL FLANGE TYPE LID AS SPECIFIED ON THE DRAWING. THE BOX SHALL HAVE REMOVABLE PRE-CUT PIPE ENTRY AREAS LOCATED ON THE CENTER OF EACH END (SHORT SIDE) OF THE BOX FOR SINGLE METER INSTALLATIONS. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO BE SECURELY STACKABLE. THE BOX SHALL WEIGH NO MORE THAN 24 LBS FOR 12" HEIGHT AND 33 LBS FOR 18" HEIGHT FOR SAFETY AND EASE OF HANDLING, TRANSPORT AND INSTALLATION. ALL DIMENSIONS ARE MINIMUM PRODUCTION MEASUREMENTS AND SHALL BE IN ACCORDANCE WITH THE ABOVE DRAWING (S) FOR THE APPROPRIATE SIZE METER. COVER SHALL BE ANTI-FLOAT BLACK REBAR MOLDED POLYMER LID WITH A SINGLE WALL DESIGN AND A MINIMUM WALL THICKNESS AS SPECIFIED, THE LID WEIGHT SHALL BE A MINIMUM OF 13 LBS. THE LID SHALL NOT HAVE A FOAMING PLASTIC OR BLOWING AGENT THAT CREATES AIR POCKETS. LID SHALL CONTAIN A MOLDED KEY HOLE DESIGN AND SECURITY BRASS LOCK. LID SHALL HAVE AN INTEGRAL MOLDED SLIDE MOUNT FOR AMR DEVICE THAT SHALL BE MOLDED AS A ONE PIECE UNIT AS SPECIFIED IN THE ABOVE DRAWING. THE LID SHALL CONTAIN THE TREAD PATTEN AS ILLUSTRATED WITH DIMENSION PER TREAD OF 0.188" X 0.938" X 0.150" DEEP. LID SHALL CONTAIN THE NAME OF THE MANUFACTURER AND PART NUMBER. THE METER BOX AND LID SHALL BE MANUFACTURED BY DFW PLASTICS, INC. OR APPROVED EQUIVALENT.

DATE: 05/28/15 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/4/15 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/15 | W-27

WATER STANDARD DETAIL

WATER METER VAULT INSTALLATION — 1 OF 6



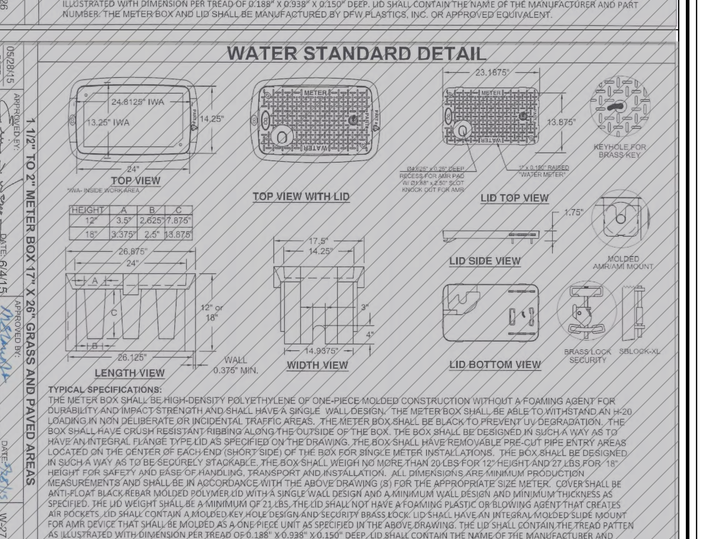
NOTES:
1. INSTALLATION OF FLANGED COUPLING AND STRAINER REQUIRED ON 3" BY-PASS METERS AND LARGER.
2. ALL DUCTILE IRON JOINTS INSIDE THE VAULT SHALL BE FLANGED.
3. PROVIDE STRAIGHT PIPE UPSTREAM AND DOWNSTREAM OF METER/STRAINER IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
4. HATCH COVER TO BE HALLIDAY OR EQUAL WITH SAFETY FALL GRATING.
5. FOR WALL AND FLOOR STEEL REINFORCEMENT REQUIREMENTS, SEE METER VAULT SHEET W-35.

Meter Size	By-Pass Size	A	B
3"	2"	12'-2"	7'-10"
4"	2"	13'-8"	7'-10"
6"	3"	16'-4"	8'-2"

DATE: 06/13/14 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/11/14 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/14 | W-30

WATER STANDARD DETAIL

1 1/2" TO 2" METER BOX 17" X 26" GRASS AND PAVED AREAS



TYPICAL SPECIFICATIONS:
THE METER BOX SHALL BE HIGH-DENSITY POLYETHYLENE OF ONE-PIECE MOLDED CONSTRUCTION WITHOUT A FOAMING AGENT FOR DURABILITY AND IMPACT STRENGTH AND SHALL HAVE A SINGLE WALL DESIGN. THE METER BOX SHALL BE ABLE TO WITHSTAND AN H-20 LOADING IN NON DELIBERATE OR INCIDENTAL TRAFFIC AREAS. THE METER BOX SHALL BE BLACK TO PREVENT UV DEGRADATION. THE BOX SHALL HAVE CRUSH RESISTANT RIBBING ALONG THE OUTSIDE OF THE BOX. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO HAVE AN INTEGRAL FLANGE TYPE LID AS SPECIFIED ON THE DRAWING. THE BOX SHALL HAVE REMOVABLE PRE-CUT PIPE ENTRY AREAS LOCATED ON THE CENTER OF EACH END (SHORT SIDE) OF THE BOX FOR SINGLE METER INSTALLATIONS. THE BOX SHALL BE DESIGNED IN SUCH A WAY AS TO BE SECURELY STACKABLE. THE BOX SHALL WEIGH NO MORE THAN 26 LBS FOR 12" HEIGHT AND 27 LBS FOR 18" HEIGHT FOR SAFETY AND EASE OF HANDLING, TRANSPORT AND INSTALLATION. ALL DIMENSIONS ARE MINIMUM PRODUCTION MEASUREMENTS AND SHALL BE IN ACCORDANCE WITH THE ABOVE DRAWING (S) FOR THE APPROPRIATE SIZE METER. COVER SHALL BE ANTI-FLOAT BLACK REBAR MOLDED POLYMER LID WITH A SINGLE WALL DESIGN AND A MINIMUM WALL THICKNESS AS SPECIFIED, THE LID WEIGHT SHALL BE A MINIMUM OF 21 LBS. THE LID SHALL NOT HAVE A FOAMING PLASTIC OR BLOWING AGENT THAT CREATES AIR POCKETS. LID SHALL CONTAIN A MOLDED KEY HOLE DESIGN AND SECURITY BRASS LOCK. LID SHALL HAVE AN INTEGRAL MOLDED SLIDE MOUNT FOR AMR DEVICE THAT SHALL BE MOLDED AS A ONE PIECE UNIT AS SPECIFIED IN THE ABOVE DRAWING. THE LID SHALL CONTAIN THE TREAD PATTEN AS ILLUSTRATED WITH DIMENSION PER TREAD OF 0.188" X 0.938" X 0.150" DEEP. LID SHALL CONTAIN THE NAME OF THE MANUFACTURER AND PART NUMBER. THE METER BOX AND LID SHALL BE MANUFACTURED BY DFW PLASTICS, INC. OR APPROVED EQUIVALENT.

DATE: 05/28/15 | APPROVED BY: ERIC J. WERNER, P.E., CITY ENGINEER | DATE: 6/4/15 | APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR | DATE: 6/11/15 | W-27

SHEET NUMBER: W-STD-04
SCALE: AS SHOWN
DATE: 06/05/15
DRAWN BY: MWISE/JW
CHECKED BY: MWISE/JW

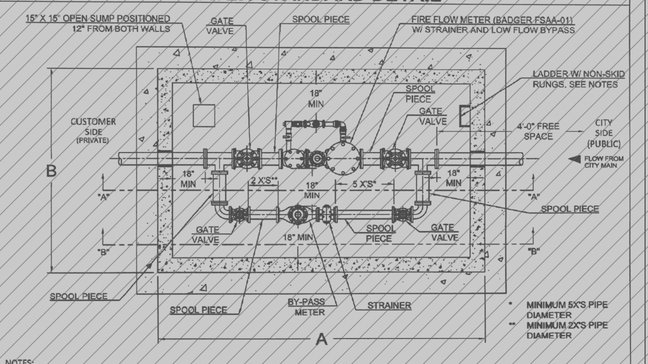
WATER STANDARD DETAILS

NO.	DATE	DESCRIPTION
1	6/4/2015	METER BOX DETAILS REVISED

The City of Oklahoma City
Utilities Department
Engineering Division

PLOTTED: Tuesday, August 26, 2014 10:22:49 AM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\WATER\FINAL SHEETS\WAT-STD-DET-2014-SIGNED.DWG

WATER STANDARD DETAIL

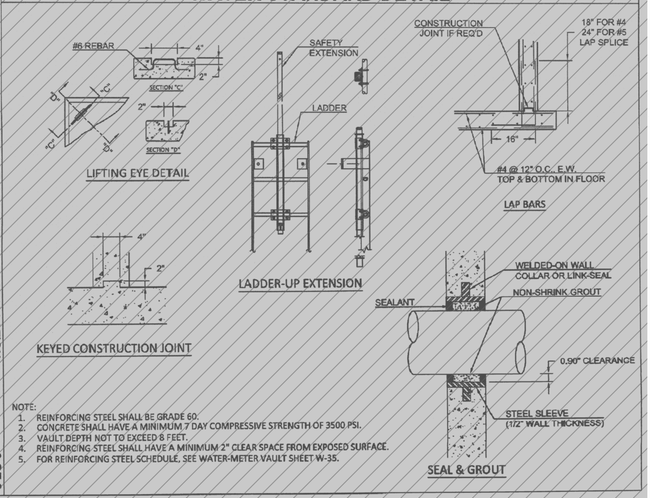


NOTES:
1. ALL DUCTILE IRON JOINTS INSIDE THE VAULT SHALL BE FLANGED.
2. PROVIDE STRAIGHT PIPE UPSTREAM AND DOWNSTREAM OF METER/STRAINER IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
3. HATCH COVER TO BE HALLIDAY OR EQUAL WITH SAFETY FAIL GRATING.
4. LADDER TO BE INSTALLED WITH LADDER-UP SAFETY POST EXTENSION.
5. FOR WALL AND FLOOR STEEL REINFORCEMENT REQUIREMENTS, SEE METER VAULT SHEET W-40.
6. 6" AND ABOVE TURBINE (TURBO) METERS NEEDS APPROVAL FROM METER SHOP SUPERVISOR.

Meter Size	By-Pass Size	A	B
6"	3"	15'-6"	9'-6"
8"	4"	17'-0"	11'-0"
10"	6"	20'-0"	13'-6"
12"	8"	22'-0"	15'-6"

FIRE FLOW METER VAULT INSTALLATION — W-36 — 1 OF 5

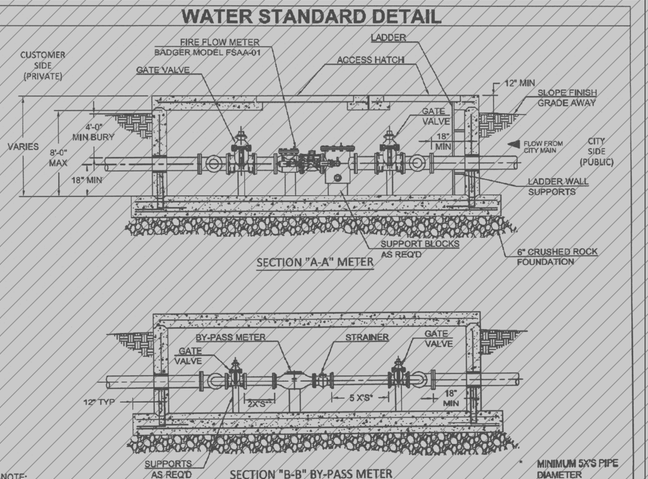
WATER STANDARD DETAIL



NOTE:
1. REINFORCING STEEL SHALL BE GRADE 60.
2. CONCRETE SHALL HAVE A MINIMUM 7 DAY COMPRESSIVE STRENGTH OF 3500 PSI.
3. VAULT DEPTH NOT TO EXCEED 6 FEET.
4. REINFORCING STEEL SHALL HAVE A MINIMUM 2" CLEAR SPACE FROM EXPOSED SURFACE.
5. FOR REINFORCING STEEL SCHEDULE, SEE WATER-METER VAULT SHEET W-35.

WATER METER VAULT INSTALLATION — W-32 — 3 OF 6

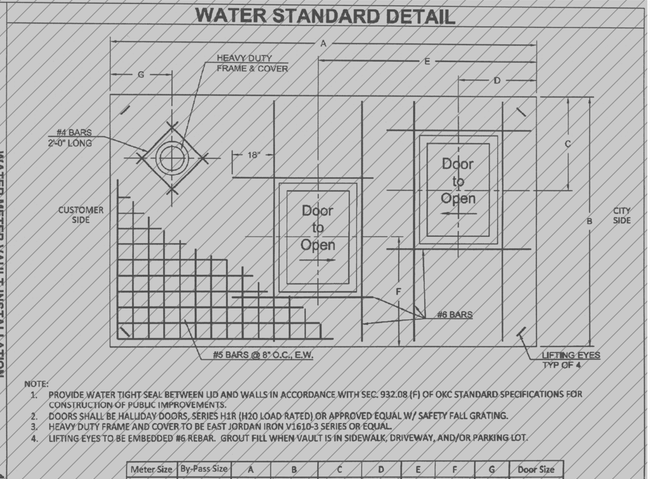
WATER STANDARD DETAIL



NOTE:
1. ALUMINUM ACCESS LADDER WITH SAFETY EXTENSION AND NON-SKID RUNGS @ 12" O.C., TO BE ANCHORED TO VAULT WALL AND HATCH COVER.

FIRE FLOW METER VAULT INSTALLATION — W-37 — 2 OF 5

WATER STANDARD DETAIL

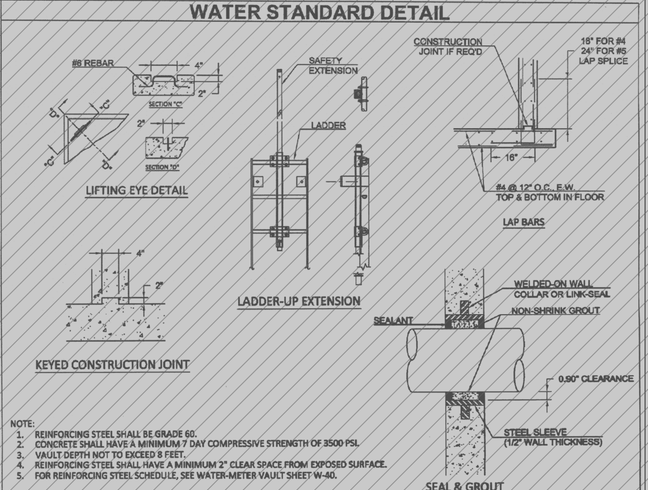


NOTE:
1. PROVIDE WATER TIGHT SEAL BETWEEN LID AND WALLS IN ACCORDANCE WITH SEC. 932.08 (F) OF OKC STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.
2. DOORS SHALL BE HALLIDAY DOORS, SERIES H1R (H20 LOAD RATED) OR APPROVED EQUAL W/ SAFETY FALL GRATING.
3. HEAVY DUTY FRAME AND COVER TO BE EAST JORDAN IRON V1610-3 SERIES OR EQUAL.
4. LIFTING EYES TO BE EMBEDDED #6 REBAR. GROUT FILL WHEN VAULT IS IN SIDEWALK, DRIVEWAY, AND/OR PARKING LOT.

Meter Size	By-Pass Size	A	B	C	D	E	F	G	Door Size
3"	2"	12'-2"	7'-10"	3'-0"	2'-6"	6'-9"	3'-6"	2'-0"	H1R-24-36
4"	2"	13'-8"	7'-10"	3'-0"	2'-6"	7'-0"	3'-6"	2'-0"	H1R-24-36

WATER METER VAULT INSTALLATION — W-33 — 4 OF 6

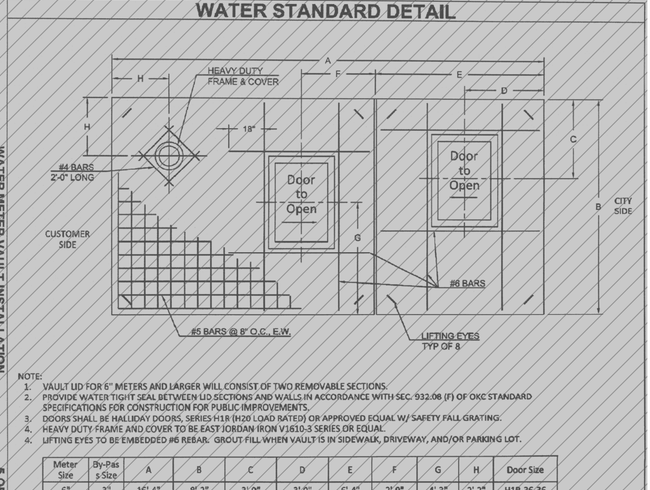
WATER STANDARD DETAIL



NOTE:
1. REINFORCING STEEL SHALL BE GRADE 60.
2. CONCRETE SHALL HAVE A MINIMUM 7 DAY COMPRESSIVE STRENGTH OF 3500 PSI.
3. VAULT DEPTH NOT TO EXCEED 8 FEET.
4. REINFORCING STEEL SHALL HAVE A MINIMUM 2" CLEAR SPACE FROM EXPOSED SURFACE.
5. FOR REINFORCING STEEL SCHEDULE, SEE WATER-METER VAULT SHEET W-40.

FIRE FLOW METER VAULT INSTALLATION — W-38 — 3 OF 5

WATER STANDARD DETAIL

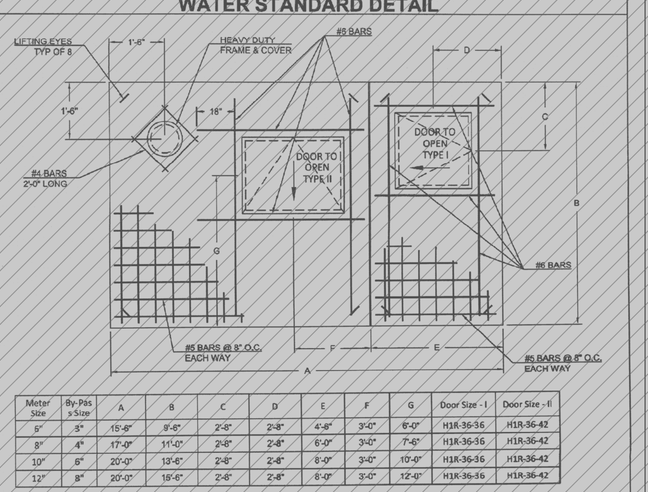


NOTE:
1. VAULT LID FOR 6" METERS AND LARGER WILL CONSIST OF TWO REMOVABLE SECTIONS.
2. PROVIDE WATER TIGHT SEAL BETWEEN LID SECTIONS AND WALLS IN ACCORDANCE WITH SEC. 932.08 (F) OF OKC STANDARD SPECIFICATIONS FOR CONSTRUCTION FOR PUBLIC IMPROVEMENTS.
3. DOORS SHALL BE HALLIDAY DOORS, SERIES H1R (H20 LOAD RATED) OR APPROVED EQUAL W/ SAFETY FALL GRATING.
4. HEAVY DUTY FRAME AND COVER TO BE EAST JORDAN IRON V1610-3 SERIES OR EQUAL.
4. LIFTING EYES TO BE EMBEDDED #6 REBAR. GROUT FILL WHEN VAULT IS IN SIDEWALK, DRIVEWAY, AND/OR PARKING LOT.

Meter Size	By-Pass Size	A	B	C	D	E	F	G	H	Door Size
6"	3"	16'-4"	8'-2"	3'-0"	3'-0"	6'-4"	2'-9"	4'-3"	2'-2"	H1R-36-36

WATER METER VAULT INSTALLATION — W-34 — 5 OF 6

WATER STANDARD DETAIL



Meter Size	By-Pass Size	A	B	C	D	E	F	G	Door Size - I	Door Size - II
5"	3"	15'-6"	8'-6"	2'-6"	2'-8"	4'-8"	3'-0"	6'-0"	H1R-36-36	H1R-36-42
8"	4"	17'-0"	11'-0"	2'-6"	2'-8"	6'-0"	3'-0"	7'-6"	H1R-36-36	H1R-36-42
10"	6"	20'-0"	13'-6"	2'-6"	2'-8"	8'-0"	3'-0"	10'-0"	H1R-36-36	H1R-36-42
12"	8"	20'-0"	15'-6"	2'-6"	2'-8"	8'-0"	3'-0"	12'-0"	H1R-36-36	H1R-36-42

WATER METER VAULT INSTALLATION — W-39 — 4 OF 5

WATER STANDARD DETAIL

Reinforcing Schedule for Concrete Vaults

Meter Size	By-Pass Size	Design No.	Depth (feet)	A	B	Wall Thickness	Floor Thickness	Vertical Bars Size	Vertical Bars Spacing	Horizontal Bars Size	Horizontal Bars Spacing	Top Thickness	Top Bars Size	Top Bars Spacing
3"	2"	1	5'	12'-2"	7'-10"	8"	10"	4	12	4	12	8	5	8
		2	6	12'-2"	7'-10"	8"	10"	4	9	4	12	8	5	8
		3	7	12'-2"	7'-10"	8"	10"	5	12	4	12	8	5	8
		4	8	12'-2"	7'-10"	8"	10"	5	9	4	12	8	5	8
4"	2"	5	5	13'-8"	7'-10"	8"	10"	4	12	4	12	8	5	8
		6	6	13'-8"	7'-10"	8"	10"	4	9	4	12	8	5	8
		7	7	13'-8"	7'-10"	8"	10"	5	12	4	12	8	5	8
		8	8	13'-8"	7'-10"	8"	10"	5	9	4	12	8	5	8
6"	3"	9	5	16'-4"	8'-2"	8"	10"	4	12	4	12	8	5	8
		10	6	16'-4"	8'-2"	8"	10"	4	9	4	12	8	5	8
		11	7	16'-4"	8'-2"	8"	10"	5	12	4	12	8	5	8
		12	8	16'-4"	8'-2"	8"	10"	5	9	4	12	8	5	8

NOTES:
1. ALL REINFORCING REBAR SHALL BE GRADE 60.
2. TOP BARS SHALL BE PLACED IN TWO MATS. BAR SIZE AND SPACING SHALL IN EACH DIRECTION BE INCLUDED IN EACH MAT OF STEEL.
3. FLOOR REINFORCING USE #8 BARS @ 12" C/C EACH WAY FOR THE TOP MAT AND THE BOTTOM MAT OF REINFORCING.
4. WALL, FLOOR AND TOP THICKNESS ARE IN INCHES. STEEL REINFORCEMENT SPACING IS IN INCHES.

WATER METER VAULT INSTALLATION — W-35 — 6 OF 6

SHEET NUMBER: W-STD-05

SCALE: AS SHOWN

DRAWN BY: MWS — DATE: 08/07/14
CHECKED BY: JDS

WATER
STANDARD DETAILS

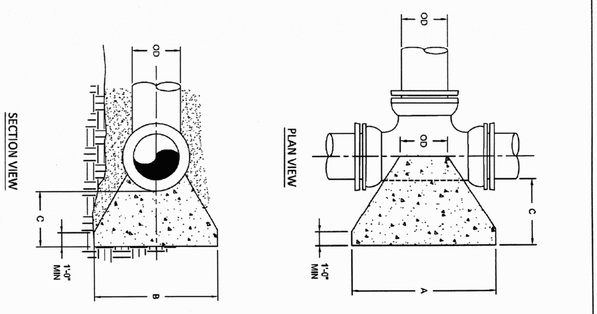
NO.	DATE	DESCRIPTION

The City of Oklahoma City
Utilities Department
Engineering Division

PLOTTED: Tuesday, August 26, 2014 10:24:45 AM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\WATER\FINAL SHEETS\WAT-STD-DET-2014-SIGNED.DWG

WATER STANDARD DETAIL

HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES



1 OF 2

WATER STANDARD DETAIL

FIRE FLOW METER VAULT INSTALLATION

Reinforcing Schedule for Concrete Vaults

Meter Size	By-Pass Size	Design No.	Depth (feet)	A	B	Wall Thickness	Floor Thickness	Vertical Bars		Horizontal Bars		Top Bars	
								Size	Spacing	Size	Spacing	Top Thickness	Size	Spacing
6"	3"	9	5	15'-6"	9'-6"	8	10	4	12	4	12	8	5	8
		10	6	15'-6"	9'-6"	8	10	4	9	4	12	8	5	8
		11	7	15'-6"	9'-6"	8	10	5	12	4	12	8	5	8
		12	8	15'-6"	9'-6"	8	10	5	9	4	12	8	5	8
8"	4"	13	5	17'-0"	11'-0"	8	10	4	12	4	12	8	5	8
		14	6	17'-0"	11'-0"	8	10	4	9	4	12	8	5	8
		15	7	17'-0"	11'-0"	8	10	5	12	4	12	8	5	8
		16	8	17'-0"	11'-0"	8	10	5	9	4	12	8	5	8
10"	8"	17	5	20'-0"	13'-6"	8	10	4	12	4	12	8	5	8
		18	6	20'-0"	13'-6"	8	10	4	9	4	12	8	5	8
		19	7	20'-0"	13'-6"	10	11	5	12	4	12	8	5	8
		20	8	20'-0"	13'-6"	10	11	5	12	4	12	8	5	8
12"	8"	21	5	20'-0"	15'-6"	8	10	4	12	4	12	8	5	8
		22	6	20'-0"	15'-6"	8	10	4	9	4	12	8	5	8
		23	7	20'-0"	15'-6"	10	11	4	6	5	12	8	5	8
		24	8	20'-0"	15'-6"	10	11	5	6	5	12	8	5	8

NOTES:
1. ALL REINFORCING REBAR SHALL BE GRADE 60.
2. TOP BARS SHALL BE PLACED IN TWO MATS. BAR SIZE AND SPACING SHALL IN EACH DIRECTION BE INCLUDED IN EACH MAT OF STEEL.
3. FLOOR REINFORCING USE #4 BARS @ 12" C/C EACH WAY FOR THE TOP MAT AND THE BOTTOM MAT OF REINFORCING.
4. WALL, FLOOR AND TOP THICKNESS ARE IN INCHES. STEEL REINFORCEMENT SPACING IS IN INCHES.

5 OF 5

WATER STANDARD DETAIL

HORIZONTAL THRUST BLOCK - TEES, PLUGS, VALVES

NOTES:

- SIZING OF THRUST BLOCK BASED ON THE FOLLOWING CONDITIONS:

  SOIL BEARING: 1500 PSI
  WORKING PRESSURE: 150 PSI
  SURGE PRESSURE: 100 PSI
  TOTAL DESIGN PRESSURE: 250 PSI
  FACTOR OF SAFETY: 1.5

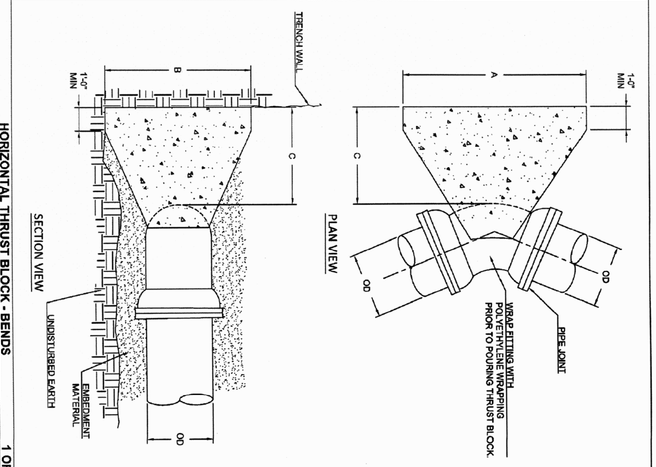
- THRUST BLOCK CONCRETE TO BE 3500 PSI 7 DAY HIGH EARLY STRENGTH CONCRETE.
- WRAP FITTINGS AND/PIPE WITH 8 MIL POLYETHYLENE WRAPPING PRIOR TO POURING THRUST BLOCK.
- THRUST BLOCK TO BE POURED AGAINST UNDISTURBED EARTH. IF FILL IS REQUIRED, 95% COMPACTION IS REQUIRED FOR FILL MATERIAL.
- BEARING AREAS, VOLUMES, AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
- THRUST BLOCK DIMENSIONS CAN BE MODIFIED BUT MUST STILL MAINTAIN THE SURFACE AREA FOOTPRINT AGAINST THE SOIL.
- LEAVE ALL PIPE JOINTS COMPLETELY ACCESSIBLE. DO NOT POUR CONCRETE OVER ANY PIPE JOINTS.
- FITTINGS GREATER THAN 36-INCH REQUIRE CALCULATIONS FROM ENGINEER TO BE SUBMITTED FOR REVIEW.

Pipe Dia (in)	Thrust (Tons)	Dim "A" (ft)	Dim "B" (ft)	Dim "C" (ft)	Area (sf)	Volume (cy)
4	3.4	3.00	1.50	1.00	4.52	0.04
6	7.0	4.25	2.25	1.00	9.35	0.13
8	12.1	5.50	3.00	1.25	16.08	0.31
10	18.1	7.00	3.50	1.50	24.19	0.53
12	25.7	8.00	4.25	1.75	34.21	0.89
14	34.5	9.25	5.00	2.00	45.96	1.43
16	44.6	11.00	5.50	2.25	59.45	2.05
18	56.0	12.00	6.25	2.50	74.66	2.89
20	68.7	14.00	6.50	2.75	91.61	3.65
24	98.0	18.75	7.00	3.25	130.70	5.67
30	150.8	27.00	7.50	3.75	201.06	9.38

2 OF 2

WATER STANDARD DETAIL

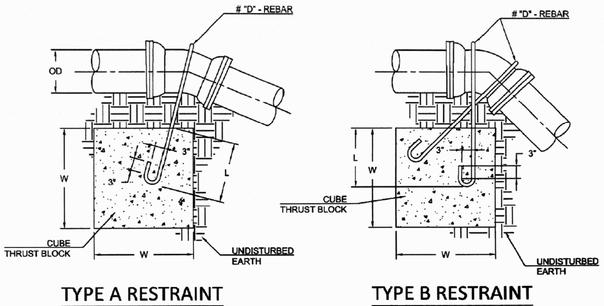
HORIZONTAL THRUST BLOCK - BENDS



1 OF 3

WATER STANDARD DETAIL

VERTICAL THRUST BLOCK - BENDS



1 OF 2

WATER STANDARD DETAIL

HORIZONTAL THRUST BLOCK - BENDS

Thrust Force (Tons)

Pipe Dia (in)	90 Deg Bend	45 Deg Bend	22.5 Deg Bend	11.25 Deg Bend
4	0.02	2.60	1.32	0.67
6	9.92	5.37	2.74	1.37
8	17.06	9.23	4.71	2.36
10	25.66	13.89	7.08	3.56
12	36.29	19.64	10.01	5.03
14	48.75	26.38	13.45	6.76
16	63.05	34.12	17.40	8.74
18	79.19	42.86	21.85	10.98
20	97.17	52.59	26.81	13.47
24	138.63	75.02	38.25	19.22
30	213.25	115.41	58.84	29.56

Area of Thrust Block (sf)

Pipe Dia (in)	90 Deg Bend	45 Deg Bend	22.5 Deg Bend	11.25 Deg Bend
4	6.40	3.46	1.77	0.89
6	13.22	7.15	3.65	1.83
8	22.74	12.31	6.27	3.15
10	34.21	18.52	9.44	4.74
12	48.38	26.18	13.35	6.71
14	65.00	35.18	17.93	9.01
16	84.07	45.50	23.19	11.65
18	105.59	57.14	29.13	14.64
20	129.55	70.11	35.74	17.96
24	184.84	100.03	51.00	25.62
30	284.34	153.89	78.45	39.42

Volume of Thrust Block (cy)

Pipe Dia (in)	90 Deg Bend	45 Deg Bend	22.5 Deg Bend	11.25 Deg Bend
4	0.07	0.03	0.01	0.00
6	0.20	0.09	0.03	0.01
8	0.42	0.19	0.07	0.02
10	0.84	0.35	0.13	0.05
12	1.50	0.57	0.21	0.08
14	2.25	0.95	0.33	0.12
16	3.26	1.32	0.51	0.17
18	4.24	1.96	0.72	0.24
20	5.41	2.61	0.95	0.33
24	8.27	4.22	1.58	0.57
30	14.49	7.12	3.01	1.08

NOTES:

- SIZING OF THRUST BLOCK BASED ON THE FOLLOWING CONDITIONS:

  SOIL BEARING: 1500 PSI
  WORKING PRESSURE: 150 PSI
  SURGE PRESSURE: 100 PSI
  TOTAL DESIGN PRESSURE: 250 PSI
  FACTOR OF SAFETY: 1.5

- THRUST BLOCK CONCRETE TO BE 3500 PSI 7 DAY HIGH EARLY STRENGTH CONCRETE.
- WRAP FITTINGS AND/PIPE WITH 8 MIL POLYETHYLENE WRAPPING PRIOR TO POURING THRUST BLOCK.
- THRUST BLOCK TO BE POURED AGAINST UNDISTURBED EARTH. IF FILL IS REQUIRED, 95% COMPACTION IS REQUIRED FOR FILL MATERIAL.
- BEARING AREAS, VOLUMES, AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
- THRUST BLOCK DIMENSIONS CAN BE MODIFIED BUT MUST STILL MAINTAIN THE SURFACE AREA FOOTPRINT AGAINST THE SOIL.
- LEAVE ALL PIPE JOINTS COMPLETELY ACCESSIBLE. DO NOT POUR CONCRETE OVER ANY PIPE JOINTS.
- FITTINGS GREATER THAN 36-INCH REQUIRE CALCULATIONS FROM ENGINEER TO BE SUBMITTED FOR REVIEW.

2 OF 3

WATER STANDARD DETAIL

VERTICAL THRUST BLOCK - BENDS

Type A Restraint

Pipe Dia (inches)	Bend (deg)	Side of Cube (W) (ft)	Bar Dia (D)	Embedment (L) (ft)	Volume (cy)
4	11.25	2.00	#5	2.00	0.3
	22.50	2.75	#5	2.00	0.7
6	11.25	2.75	#5	2.00	0.7
	22.50	3.50	#5	2.00	1.4
8	11.25	3.25	#5	2.00	1.2
	22.50	4.00	#5	2.00	2.3
12	11.25	4.00	#6	2.00	2.5
	22.50	5.25	#6	3.00	4.9
16	11.25	5.00	#7	3.00	4.3
	22.50	6.25	#7	4.00	8.6
20	11.25	5.75	#8	3.50	6.7
	22.50	7.25	#8	4.00	13.2
24	11.25	6.50	#8	4.00	9.5
	22.50	8.00	#8	4.00	18.9
30	11.25	7.50	#8	4.00	14.6
	22.50	9.25	#8	4.00	29.1

Type B Restraint

Pipe Dia (inches)	Bend (deg)	Side of Cube (W) (ft)	Bar Dia (D)	Embedment (L) (ft)	Volume (cy)
4	45.00	3.25	#5	2.00	1.3
6	45.00	4.25	#5	2.50	2.6
8	45.00	5.00	#5	2.00	4.6
12	45.00	6.50	#5	4.00	9.7
16	45.00	7.75	#6	4.00	16.9
20	45.00	9.00	#6	4.00	26.0
24	45.00	10.00	#6	4.00	37.0
30	45.00	12.00	#6	4.00	57.0

NOTES:

- SIZING OF THRUST BLOCK BASED OFF THE FOLLOWING CONDITIONS:

  SOIL BEARING: 1500 PSI
  WORKING PRESSURE: 150 PSI
  SURGE PRESSURE: 100 PSI
  TOTAL DESIGN PRESSURE: 250 PSI
  FACTOR OF SAFETY: 1.5

- THRUST BLOCK CONCRETE TO BE 3500 PSI 7 DAY HIGH EARLY STRENGTH CONCRETE.
- WRAP FITTINGS AND/PIPE WITH 8 MIL POLYETHYLENE WRAPPING PRIOR TO POURING THRUST BLOCK.
- THRUST BLOCK TO BE POURED AGAINST UNDISTURBED EARTH. IF FILL IS REQUIRED, 95% COMPACTION IS REQUIRED FOR FILL MATERIAL.
- BEARING AREAS, VOLUMES, AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
- THRUST BLOCK DIMENSIONS CAN BE MODIFIED BUT MUST STILL MAINTAIN THE SURFACE AREA FOOTPRINT AGAINST THE SOIL.
- LEAVE ALL PIPE JOINTS COMPLETELY ACCESSIBLE. DO NOT POUR CONCRETE OVER ANY PIPE JOINTS.
- EPOXY COATED REBAR MINIMUM STRESS YIELD STRENGTH OF REBAR IS 60 KSI.
- FITTINGS GREATER THAN 36-INCH REQUIRE CALCULATIONS FROM ENGINEER TO BE SUBMITTED FOR REVIEW.

2 OF 2

WATER STANDARD DETAIL

HORIZONTAL THRUST BLOCK - BENDS

Dimension "A" (ft)

Pipe Dia (in)	90 Deg Bend	45 Deg Bend	22.5 Deg Bend	11.25 Deg Bend
4	3.75	2.75	1.75	1.25
6	5.25	3.50	2.50	2.00
8	7.50	5.00	3.50	2.50
10	8.50	6.25	4.25	3.00
12	9.75	7.50	5.50	4.00
14	12.00	8.50	6.00	4.50
16	13.50	9.50	6.75	4.75
18	16.25	10.50	7.25	5.50
20	19.25	11.75	8.50	6.00
24	25.50	15.00	10.25	10.25
30	34.50	20.50	12.50	8.75

Dimension "B" (ft)

Pipe Dia (in)	90 Deg Bend	45 Deg Bend	22.5 Deg Bend	11.25 Deg Bend
4	1.75	1.25	1.00	0.75
6	2.50	2.00	1.50	1.00
8	3.00	2.50	1.75	1.25
10	4.00	3.00	2.25	1.50
12	5.00	3.50	2.50	1.75
14	5.50	4.25	3.00	2.00
16	6.25	4.75	3.50	2.50
18	6.50	5.50	4.00	2.75
20	6.75	6.00	4.25	3.00
24	7.25	6.75	5.00	2.50
30	8.25	7.50	6.25	4.50

Dimension "C" (ft)

Pipe Dia (in)	90 Deg Bend	45 Deg Bend	22.5 Deg Bend	11.25 Deg Bend
4	0.88	0.63	0.50	0.38
6	1.25	1.00	0.75	0.50
8	1.50	1.25	0.88	0.63
10	2.00	1.50	1.13	0.75
12	2.50	1.75	1.25	0.88
14	2.75	2.13	1.50	1.00
16	3.13	2.38	1.75	1.25
18	3.25	2.75	2.00	1.38
20	3.38	3.00	2.13	1.50
24	3.63	3.38	2.50	1.25
30	4.13	3.75	3.13	2.25

3 OF 3

SHEET NUMBER: W-STD-06

SCALE: AS SHOWN

DATE: 08/07/14
DRAWN BY: JDS
CHECKED BY: MWS/EJW

WATER
STANDARD DETAILS

NO.	DATE	DESCRIPTION

The City of Oklahoma City
Utilities Department
Engineering Division

NOTES:

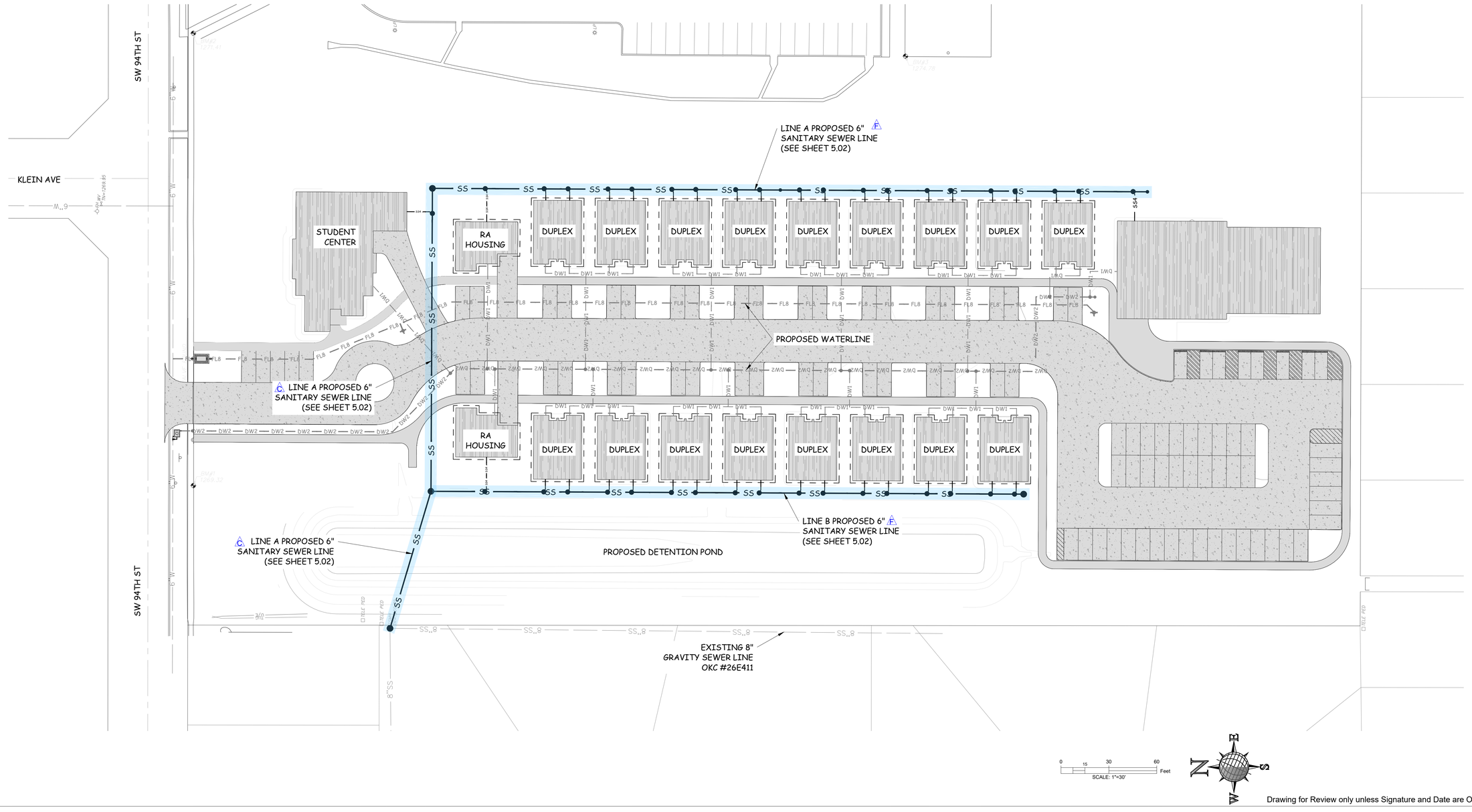
1. All public utilities shall be designed in accordance with City of Oklahoma City Standards..
2. All streets shall be designed in accordance with City of Oklahoma City Standards.
3. All public utilities shall be dedicated easements.
4. All sanitary sewer lines shall be 8" unless otherwise noted.

LEGEND

(WITH LINE SIZES WHERE APPLICABLE)

- LOT LINE
- PROPERTY LINE
- RoW/PL — RIGHT-OF-WAY/ PROPERTY LINE
- RIGHT OF WAY
- EASEMENT (GENERAL)
- PERMANENT UTILITY EASEMENT
- TEMPORARY CONSTRUCTION ESMT
- BUILDING SETBACK LINE
- X — X — WOOD FENCE
- DW — DW — DOMESTIC WATERLINE
- UGE — UNDERGROUND ELECTRICAL
- G — G — GAS LINE
- OHE — OVERHEAD ELECTRICAL
- STORM WATER FLOW DIRECTION
- CORRUGATED METAL CULVERT
- CONCRETE FLUME
- UTILITY REMOVE
- TBK — TOP OF BANK
- TOE — TOE OF BANK
- FIRE HYDRANT
- SERVICE LINE WATER METER

BEFORE YOU DIG CALL OKIE — OKIE 811 — DIAL 811 OR VISIT CALLOKIE.COM



0 15 30 60 Feet

SCALE: 1"=30'

Drawing for Review only unless Signature and Date are Originals

SANITARY SEWER LOCATION MAP

SHEET NAME

BRIDGES OF MOORE

PROJECT

BRIDGES

CLIENT

Moore, Cleveland Co., Oklahoma

LOCATION

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900

Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

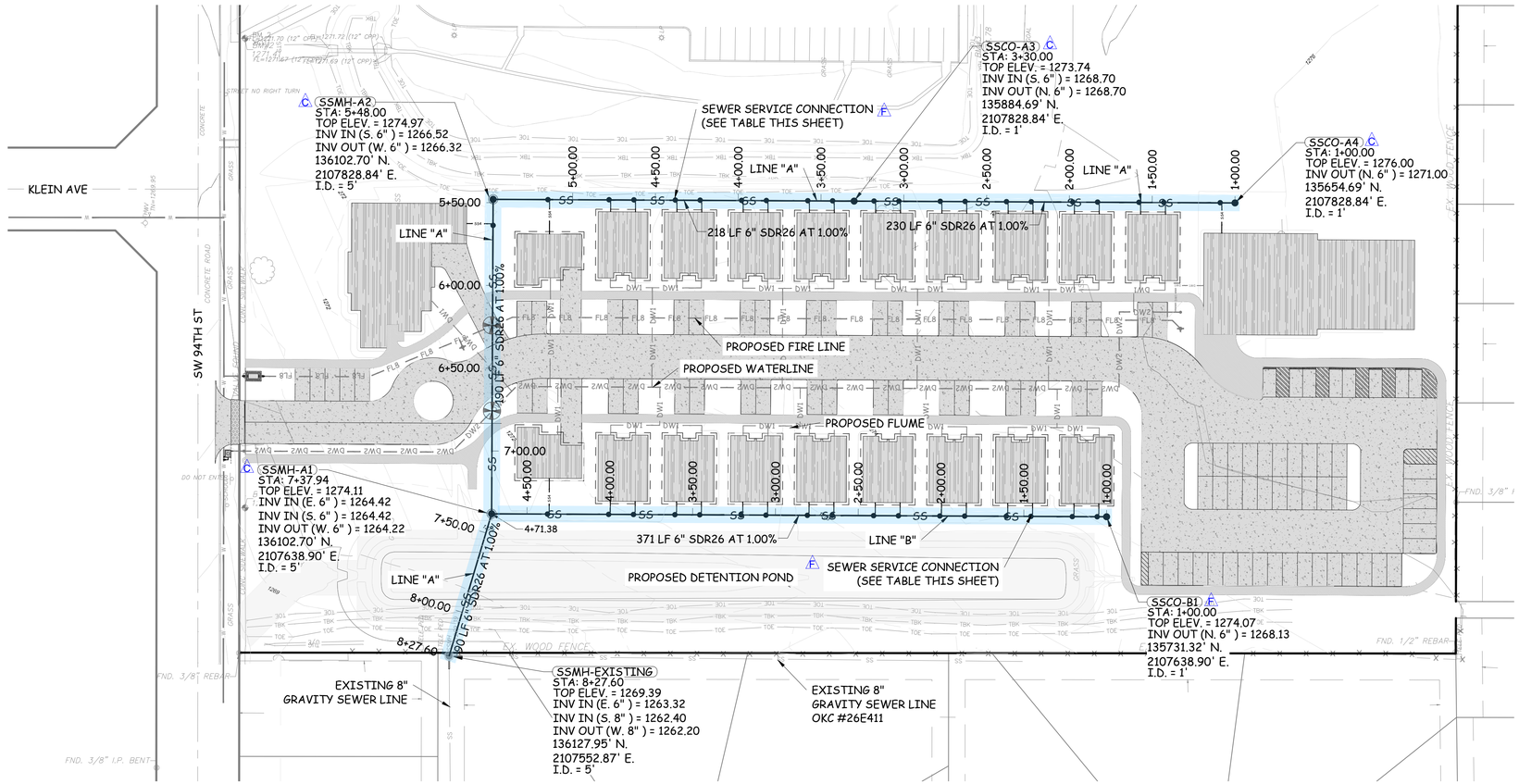
REV.	DATE	NAME	DESCRIPTION
C	06/24/2024	LB	Clarifications per OKC CPR2 review & meeting 6/14/24
E	12/11/2024	LB	Water and Sewer service clarifications

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 04/01/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
OKLAHOMA
12-13-2024

SHEET 5.01

Plot Date: 12/12/2024 4:09 PM Location: G:\Shared drives\Directory\23\23125 - Bridges Sky Ranch\dwg Project\Sheets\23125-LOCATION MAPS.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Admin



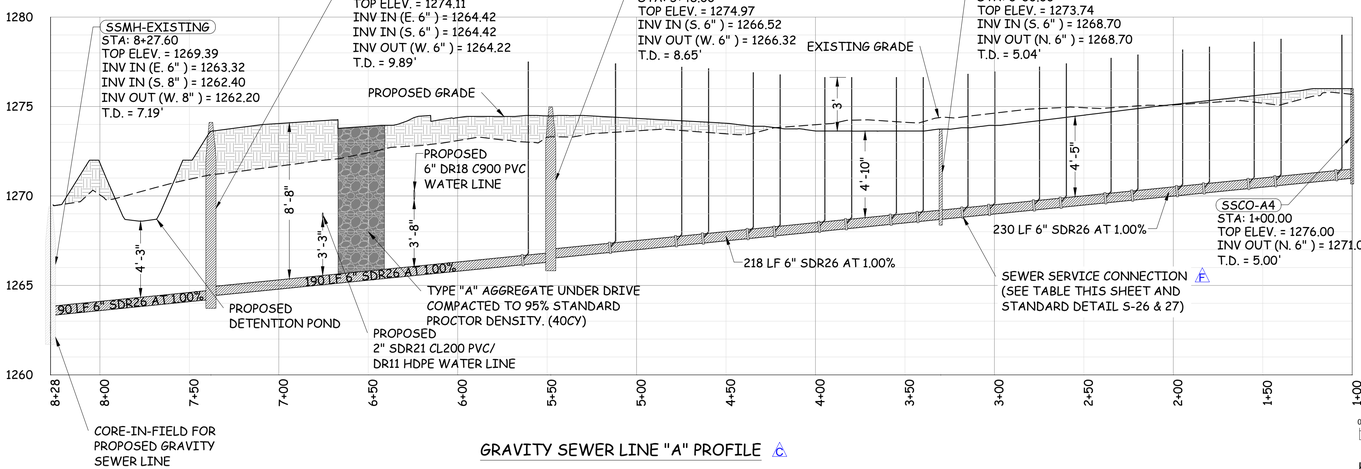
LEGEND

(WITH LINE SIZES WHERE APPLICABLE)

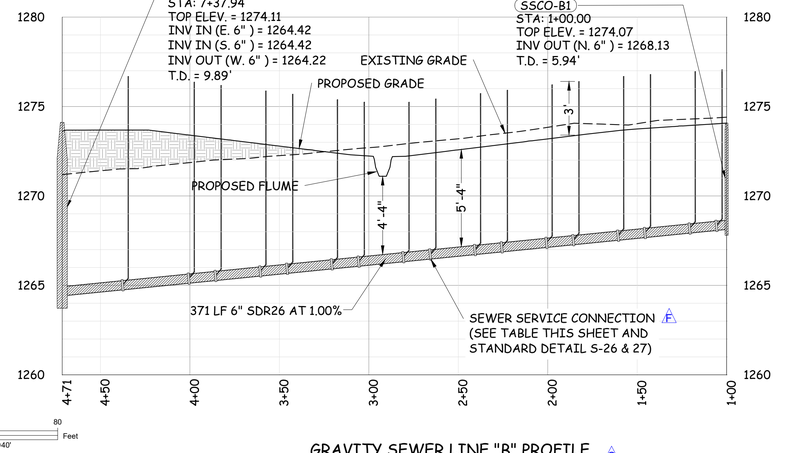
- LOT LINE
- PROPERTY LINE
- RoW/PL — RIGHT-OF-WAY/ PROPERTY LINE
- RIGHT OF WAY
- EASEMENT (GENERAL)
- PERMANENT UTILITY EASEMENT
- TEMPORARY CONSTRUCTION ESMT
- BUILDING SETBACK LINE
- X — X — WOOD FENCE
- DW — DW — DOMESTIC WATERLINE
- UGE — UNDERGROUND ELECTRICAL
- G — G — GAS LINE
- OHE — OVERHEAD ELECTRICAL
- STORM WATER FLOW DIRECTION
- CORRUGATED METAL CULVERT
- CONCRETE FLUME
- UTILITY REMOVE
- TBK — TOP OF BANK
- TOE — TOE OF BANK
- FIRE HYDRANT
- SERVICE LINE WATER METER

F. SEWER SERVICE LINE FITTING TABLE

SEWER LINE	STATION	FITTING	FLOW LINE EL.
A	1+08.89	6"X4" SERVICE WYE	1270.91
A	1+42.93	6"X4" SERVICE WYE	1270.57
A	1+57.93	6"X4" SERVICE WYE	1270.42
A	1+82.93	6"X4" SERVICE WYE	1270.17
A	1+97.93	6"X4" SERVICE WYE	1270.02
A	2+22.93	6"X4" SERVICE WYE	1269.77
A	2+37.93	6"X4" SERVICE WYE	1269.62
A	2+62.93	6"X4" SERVICE WYE	1269.37
A	2+77.93	6"X4" SERVICE WYE	1269.22
A	3+02.93	6"X4" SERVICE WYE	1268.97
A	3+17.93	6"X4" SERVICE WYE	1268.82
A	3+42.93	6"X4" SERVICE WYE	1268.57
A	3+57.93	6"X4" SERVICE WYE	1268.42
A	3+82.93	6"X4" SERVICE WYE	1268.17
A	3+97.93	6"X4" SERVICE WYE	1268.02
A	4+22.93	6"X4" SERVICE WYE	1267.77
A	4+37.93	6"X4" SERVICE WYE	1267.62
A	4+62.93	6"X4" SERVICE WYE	1267.37
A	4+77.93	6"X4" SERVICE WYE	1267.22
A	5+14.90	6"X4" SERVICE WYE	1266.85
A	5+63.68	6"X4" SERVICE WYE	1266.16
B	1+05.70	6"X4" SERVICE WYE	1268.33
B	1+20.70	6"X4" SERVICE WYE	1268.18
B	1+45.70	6"X4" SERVICE WYE	1267.93
B	1+60.70	6"X4" SERVICE WYE	1267.78
B	1+85.70	6"X4" SERVICE WYE	1267.53
B	2+00.70	6"X4" SERVICE WYE	1267.38
B	2+25.70	6"X4" SERVICE WYE	1267.13
B	2+40.70	6"X4" SERVICE WYE	1266.98
B	2+65.70	6"X4" SERVICE WYE	1266.73
B	2+80.70	6"X4" SERVICE WYE	1266.58
B	3+05.70	6"X4" SERVICE WYE	1266.33
B	3+20.70	6"X4" SERVICE WYE	1266.18
B	3+45.70	6"X4" SERVICE WYE	1265.93
B	3+60.70	6"X4" SERVICE WYE	1265.78
B	3+85.70	6"X4" SERVICE WYE	1265.53
B	4+00.70	6"X4" SERVICE WYE	1265.38
B	4+37.64	6"X4" SERVICE WYE	1265.01



GRAVITY SEWER LINE "A" PROFILE C.



GRAVITY SEWER LINE "B" PROFILE C.

HORIZONTAL SCALE: 1"= 40'
VERTICAL SCALE: 1"= 4'
VERTICAL EXAGGERATION: 10X

SCALE: 1"=40'

SCALE: 1"=40'

SANITARY SEWER P&P
BRIDGES OF MOORE
BRIDGES
Moore, Cleveland Co., Oklahoma

SHEET NAME | PROJECT | CLIENT | LOCATION

P.O. Box 722516
Norman, OK 73070
TEL. (405)364-0900
Oklahoma C.A. No. 106
Renewal 6-30-25

SEARCH, LLC
SYSTEMS ENGINEERING & RESEARCH
ENGINEERING EXCELLENCE SINCE 1970
ENVIRONMENTAL • CIVIL • MUNICIPAL • INDUSTRIAL

REV.	DATE	NAME	DESCRIPTION
C.	06/24/2024	LB	Clarifications per OKC CP#2 review & meeting 6/14/24
F.	12/12/2024	LB	Water and Sewer service clarifications

DESIGNED: P. Streebin
DRAWN: L. Brewer
APPROVED: P. Streebin
DATE: 03/20/2024

REGISTERED PROFESSIONAL ENGINEER
PERRY L. STREEBIN
14623
12-13-2024
OKLAHOMA

SHEET
5.02

Drawing for Review only unless Signature and Date are Originals

Plot Date: 12/13/2024 2:50 PM Location: G:\Shared drives\Directory\23\23125 - Bridges Sby Ranch\hwy Project\Design\23125-UTILITY NETWORKS.dwg Page Size: ARCH full bleed D (36.00 x 24.00 Inches) By: Admin

SANITARY SEWER STANDARD DETAIL

DRAWING INDEX — ISSUE DATE:

SANITARY SEWER DETAILS INDEX OF DRAWINGS

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-00

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE CITY OF OKLAHOMA CITY STANDARD SPECIFICATIONS FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS.
2. ALL WORK NOT CLASSIFIED AS A CONTRACT PAY ITEM SHALL BE CONSIDERED AS AN INCIDENTAL AND NOT PAID FOR DIRECTLY.
3. ALL EXCAVATION UNDER EXISTING PAVEMENT SHALL BE BACKFILLED WITH CRUSHER RUN ROCK. ALL EXCAVATION UNDER FUTURE PAVEMENT SHALL BE BACKFILLED WITH SAND.
4. PIPE LEAKAGE TESTS SHALL BE PERFORMED BY THE CONTRACTOR IN ACCORDANCE WITH THE OKLAHOMA CITY SEWER REQUIREMENTS. LEAKAGE SHALL NOT EXCEED 50 GALLONS PER INCH OF NORMAL PIPE PER MILE PER DAY FOR ANY SECTION OF THE SYSTEM.
5. DEFLECTION TESTS SHALL BE PERFORMED ON ALL FLEXIBLE PIPE. THE TEST SHALL BE CONDUCTED AFTER THE FINAL BACKFILL HAS BEEN IN PLACE FOR AT LEAST THIRTY (30) DAYS. NO PIPE SHALL EXCEED A DEFLECTION OF MORE THAN FIVE (5%) PERCENT. IF THE DEFLECTION TEST IS TO BE RUN USING A RIGID BALL AND MANDREL, IT SHALL HAVE A DIAMETER EQUAL TO NINETY-FIVE (95%) PERCENT OF THE INSIDE DIAMETER OF THE PIPE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.
6. POLYVINYL CHLORIDE (PVC) PIPES SHALL CONFORM TO ASTM F-794 FOR OPEN PROFILE PIPE AND ASTM F-1803 FOR CLOSED PROFILE PIPE. REGARDLESS OF SIZE, OPEN PROFILE WALL PIPE WILL BE ALLOWED ONLY ON SECTIONS OF PIPE WHERE THERE ARE NO APPARENT SERVICE CONNECTIONS.
7. SPECIAL SANITARY SEWER PIPE SHALL BE REQUIRED TO SATISFY MINIMUM HORIZONTAL AND VERTICAL CLEARANCE REQUIREMENTS FROM WATERLINES, WELLS AND PETROLEUM STORAGE TANKS, AS ESTABLISHED BY THE OKLAHOMA STATE DEPARTMENT OF ENVIRONMENTAL QUALITY (ODEQ).
8. SPECIAL PVC PIPE SHALL CONFORM TO ASTM D-2241 AND SDR 32.5 FOR SIZES FOUR (4") INCHES TO THIRTY-SIX (36") INCHES, OR AWWA C-900 AND AWWA C-905; WITH A MINIMUM DR RATING OF DR18 FOR PIPE SIZES FOUR (4") INCHES TO TWELVE (12") INCHES AND A MINIMUM DR RATING OF DR32.5 FOR PIPE SIZES GREATER THAN TWELVE (12") INCHES.
9. DUCTILE IRON PIPE (DIP) SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-151.
   - 9.1. EXTERIOR COATING -- THE EXTERIOR SURFACES OF DUCTILE IRON PIPE, SPECIFICATIONS AND FITTINGS SHALL BE COATED WITH AN ASPHALTIC COATING IN ACCORDANCE WITH ASTM A746, SECTION 6.1; OF AWWA E-151. THE COATING SHALL HAVE A MINIMUM THICKNESS OF ONE (1) MIL.
   - 9.2. INTERIOR COATING -- INTERIOR SURFACES OF PIPE AND FITTINGS SHALL BE LINED WITH FORTY (40) MILLS OF VIRGIN POLYETHYLENE COMPLYING WITH ASTM D-1248 OR MADISON POLYETHYLENE LINING, CORPORATE II TX-5 MINUTE NUMBER 17115, MANUFACTURED BY MADISON CHEMICALS, INC., CANADA, OR APPROVED EQUAL. THE LINING MATERIALS SHALL BE COMPOUNDED WITH A MINIMUM OF TWO (2%) PERCENT CARBON BLACK TO RESIST ULTRA VIOLATE RAYS.
   - 9.3. THICKNESS -- UNLESS OTHERWISE SPECIFIED, DUCTILE IRON PIPE SHALL MEET THE REQUIREMENTS IN THE FOLLOWING TABLE AS SHOWN IN DETAIL S-02.

GENERAL CONSTRUCTION NOTES 1 of 2

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-01

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

DIP PIPE THICKNESS REQUIRMENTS

Pipe Nominal Thickness (inches)	DEPTH of COVER (feet) ≤10' — Nominal Thickness (inches)	≤10' — Standard Pressure Class AWWA C-151	>10' or ≤15' — Nominal Thickness (inches)	>10' or ≤15' — Standard Pressure Class AWWA C-151	>15' or ≤20' — Nominal Thickness (inches)	>15' or ≤20' — Standard Pressure Class AWWA C-151	>20' or ≤25' — Nominal Thickness (inches)	>20' or ≤25' — Standard Pressure Class AWWA C-151	>25' or ≤30' — Nominal Thickness (inches)	>25' or ≤30' — Standard Pressure Class AWWA C-151
3	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
4	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
6	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
8	0.25	350	0.25	350	0.25	350	0.25	350	0.25	350
10	0.26	350	0.26	350	0.26	350	0.26	350	0.26	350
12	0.28	350	0.28	350	0.28	350	0.28	350	0.28	350
18	0.31	250	0.31	250	0.31	250	0.31	250	0.34	300
24	0.33	200	0.33	200	0.33	300	0.38	200	0.38	300
30	0.34	150	0.34	150	0.34	250	0.42	150	0.45	300
36	0.39	150	0.39	150	0.39	250	0.47	150	0.56	300
42	0.41	150	0.41	150	0.41	150	0.52	150	0.65	300
48	0.46	150	0.46	150	0.46	150	0.64	150	0.70	350
54	0.51	150	0.51	150	0.51	300	0.72	150	0.79	350
60	0.54	150	0.54	150	0.54	300	0.76	150	0.83	350
64	0.56	150	0.56	150	0.56	300	0.80	150	0.87	350

GENERAL CONSTRUCTION NOTES 2 of 2

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-02

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. HIGHWAYS

MINIMUM PIPE CLASSES FOR DIAMETER TWENTY FOUR INCHES (24") TO ONE HUNDRED TWO INCHES (102") MEETING THE REQUIREMENTS OF ASTM C-76, SHALL BE AS FOLLOWS:

MAXIMUM DEPTH OF COVER (FT)	MINIMUM CLASS
10	III
15	IV
25	V

FOR MAXIMUM DEPTH OF COVER THIRTY FEET (30') PIPES RANGING FROM TWENTY-FOUR INCHES (24") TO FIFTY FOUR INCHES (54") IN DIAMETER SHALL BE DESIGNED AND MANUFACTURED IN ACCORDANCE WITH ASTM C-655 AND SHALL HAVE THE FOLLOWING MINIMUM THREE-EDGE BEARING STRENGTH FOR 0.01 INCH CRACK (D0.01) IN POUNDS PER LINEAL FOOT PER FOOT OF INSIDE DIAMETER.

PIPE NOMINAL SIZE (INCHES)	$D_{0.01}$ (LB/LINEAL FT./FT. OF INSIDE Ø)
24	3200
27	3050
30	3050
33	3475
36	3475
42	3450
48	3300
54	3125

PIPES RANGING IN DIA. FROM SIXTY INCHES (60") TO ONE HUNDRED TWO INCHES (102") SHALL BE CLASS V FOR A MINIMUM DEPTH OF COVER OF THIRTY FEET (30') WHEN MANUFACTURED IN ACCORDANCE WITH ASTM C-76.

2. RAILROADS

MINIMUM PIPE CLASSES FOR E-80 RAILROAD LIVE LOAD FOR PIPE SIZE TWENTY FOUR INCHES (24") TO ONE HUNDRED TWO INCHES (102") IN DIA. MEETING THE REQUIREMENTS OF ASTM C-76, OR ASTM C-655 SHALL BE AS FOLLOWS:

A. MAXIMUM DEPTH OF COVER TEN FEET (10')– DIA. TWENTY FOUR INCHES (24") TO ONE HUNDRED TWO INCHES (102") SHALL BE CLASS VI.

B. MAXIMUM DEPTH OF COVER FIFTEEN FEET (15') DIA. TWENTY FOUR INCHES (24") TO FORTY TWO INCHES (42") SHALL BE CLASS V AND DIA. FORTY EIGHT INCHES (48") TO ONE HUNDRED TWO INCHES (102") SHALL BE CLASS VI.

C. MAXIMUM DEPTH OF COVER TWENTY FEET (20')– DIA. TWENTY FOUR INCHES (24") TO ONE HUNDRED TWO INCHES (102") SHALL BE CLASS V.

D. MAXIMUM DEPTH OF COVER TWENTY FIVE FEET (25') DIA. TWENTY FOUR INCHES (24") SHALL HAVE D0.01 OF THIRTY ONE HUNDRED POUNDS/LINEAL FOOT PER FOOT OF INSIDE DIA. (3100 LB/LF).

DIAMETERS TWENTY SEVEN INCHES (27") TO ONE HUNDRED TWO INCHES (102") SHALL BE CLASS V.

E. MAXIMUM DEPTH OF COVER THIRTY FEET(30')– DIA. TWENTY FOUR INCHES (24") TO SIXTY INCHES (60") SHALL HAVE THE FOLLOWING D0.01

PIPE NOMINAL SIZE (INCHES)	$D_{0.01}$ (LB/LINEAL FT./FT. OF INSIDE Ø)
24	3300
27	3125
30	3150
33	3575
36	3675
42	3550
48	3400
54	3225
60	3100

DIAMETERS TWENTY FOUR INCHES (24") TO ONE HUNDRED TWO INCHES (102") SHALL BE CLASS V.

REINFORCED CONCRETE PIPE MINIMUM DESIGN

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-03

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

VITRIFIED CLAY PIPE (VCP)
MINIMUM PIPE DESIGN
ASTM C-700

PIPE NOMINAL SIZE (INCHES)	MINIMUM THREE-EDGE BEARING STRENGTH (LB/FT)	MAXIMUM DEPTH OF COVER (FT)
4	2000	25
6	2000	25
8	2200	20
10	2400	18
12	2600	16
15	2900	15
18	3300	14
21	3850	14
24	4400	14
27	4700	13
30	5000	13
33	5500	13
36	6000	13
39	6500	13
42	7000	12

VITRIFIED CLAY PIPE DESIGN

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-04

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. GENERAL -- WHEN CALLED FOR ON THE PLANS OR SPECIFIED, MANHOLES SHALL BE TESTED, BEFORE ACCEPTANCE, BY EITHER PERFORMING EXFILTRATION OR VACUUM TEST. THE ENGINEER SHALL DETERMINE WHICH TEST SHALL BE PERFORMED.
2. EXFILTRATION TEST -- ALL INCOMING AND OUTGOING LINES (INCLUDING SERVICES) SHALL BE PLUGGED AND THE MANHOLE FILLED WITH WATER UP TO THE BOTTOM OF THE MANHOLE RING. IF THE WATER LOSS EXCEEDS THE MAXIMUM ALLOWABLE AS SHOWN, THE MANHOLE SHALL BE CONSIDERED TO HAVE FAILED THE TEST. THE CONTRACTOR SHALL DRAIN, PERFORM THE NECESSARY REPAIRS AS DIRECTED BY THE ENGINEER, AND THEN RESET THE MANHOLE UNTIL IT PASSES, ALL AT NO ADDITIONAL COST TO THE CITY.

Manhole Depth (feet)	Maximum Allowable Water Loss
≤ 8	One (1") inch over Five (5) minutes
≥ 8	One - Eighth (1/8") inch per vertical foot of depth over five (5) minutes

3. VACUUM TESTING -- ALL INCOMING AND OUTGOING SEWER AND SERVICE LINES SHALL BE PLUGGED. THE PLUGS RESTRAINED AND THE VACUUM TESTER HEAD PLACED ON THE MANHOLE RING AND SEALED. A VACUUM OF TEN (10") INCHES Hg (MERCURY) SHALL THEN BE DRAWN ON THE MANHOLE AND THE TIME MEASURES FOR THE VACUUM TO DROP TO NINE (9") INCHES Hg. THE TIME MEASURED SHALL BE NOT LESS THAN THAT SHOWN ON THE FOLLOWING TABLE.

Manhole Internal Diameter (feet)	Time Measured (seconds)
4	60
5	60
6	60
7	70

MANHOLE TESTING

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-05

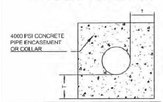
OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

TRENCH WIDTH TABLE

PIPE NOMINAL SIZE (IN.)	MIN. TRENCH WIDTH (FT.)	MAX TRENCH WIDTH (FT.)
4 to 12	3.00	5.00
15	3.25	5.00
18	3.50	5.00
21	3.75	5.25
24	4.00	6.00
27	4.25	6.25
30	4.50	6.75
33	4.75	8.25
36	5.25	9.00
42	6.25	9.50
48	7.00	11.00
54	8.00	11.50
60	9.00	12.00
66	9.75	13.00
72	10.50	13.00
78	10.50	13.50
84	11.00	14.00
90	11.50	14.50
96	12.00	15.00
102	12.50	15.50

PIPE ENCASEMENT AND COLLAR DETAIL



NOMINAL DIAMETER (IN.)	T (IN.)
≤ 18"	6"
> 18" & ≤ 30"	8"
> 30" & ≤ 42"	10"
> 42"	12"

NOTE: For Collars the concrete encasement shall be placed to a minimum of twelve (12") inches on either side of the joint.

EMBEDMENT MATERIAL

EMBEDMENT MATERIAL IS THE MATERIAL TO BE PLACED FROM A MINIMUM OF SIX-INCHES (6") BELOW THE BOTTOM OF THE PIPE TO THE SPRINGLINE (HALF THE PIPE DIAMETER) OR TO A MINIMUM OF SIX-INCHES (6") ABOVE THE TOP OF THE PIPE FOR RIGID AND FLEXIBLE PIPES, RESPECTIVELY. THE REMAINING TO BE PLACED OVER THE EMBEDMENT MATERIAL WILL BE CONSIDERED BACKFILL.

MINIMUM MATERIAL REQUIREMENTS

1. GENERAL

EMBEDMENT MATERIAL FOR ALL RIGID AND FLEXIBLE PIPES SHALL BE CRUSHED ROCK MEETING THE REQUIREMENTS EITHER OF ASTM D-2321, CLASS 1A, OR ASTM C-33, NO. 57 OR 67 IN GRADATIONS SHOWN BELOW.

NOMINAL SIEVE REQUIREMENT	PERCENT PASSING		
	ASTM D-2321 CLASS 1A	ASTM C-33 NO.57	ASTM C-33 NO. 67
1½ IN.	100%	100%	-
1 INCH	-	95 TO 100%	100%
¾ INCH	-	-	90 TO 100%
½ INCH	-	25 TO 60%	-
⅜ INCH	-	-	20 TO 55%
NO. 4	≤ 10%	0 TO 10%	0 TO 10%
NO. 8	-	0 TO 5%	0 TO 5%
NO. 200	≤ 5%	-	-

2. COMPACTION REQUIREMENTS

ALL EMBEDMENT MATERIAL SHALL BE PLACED AND COMPACTED IN SIX INCH (6") LIFTS TO THE FOLLOWING MINIMUM PERCENT OF STANDARD PROCTOR DENSITY AS DETERMINED BY ASTM D-698, "TESTS FOR MOISTURE DENSITY RELATIONS OF SOIL - AGGREGATE MIXTURES" AND ASTM D-2049, "TEST FOR RELATED DENSITY OF COHESIONLESS SOILS", RESPECTIVELY.

COMPACTION TEST	COMPACTION REQUIREMENT
STANDARD PROCTOR DENSITY	95%
RELATIVE DENSITY	75%

3. COMPACTION METHODS

ALL EMBEDMENT MATERIAL SHALL BE COMPACTED IN ACCORDANCE WITH THE METHODS DESCRIBED IN PART "3" OF "BACKFILLING REQUIREMENTS"

EMBEDMENT MATERIAL & TRENCH WIDTH TABLE

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-06

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. DESCRIPTION

BACKFILL IS THAT PORTION OF THE TOTAL TRENCH BACKFILL DOWN TO BUT NOT INCLUDING THE PIPE EMBEDMENT MATERIAL. THE BACKFILL SHALL BE ONLY MATERIAL APPROVED BY THE ENGINEER CONSISTING OF LOOSE EARTH FREE OF CLODS, STONES, ORGANIC MATTER, DEBRIS OR OTHER OBJECTIONABLE MATERIAL. ALL BACKFILLING SHALL BE DONE IN SUCH A MANNER AS NOT TO DISTURB OR DAMAGE THE PIPE OR STRUCTURES OVER OR AGAINST WHICH IT IS BEING PLACED. ANY PIPE OR STRUCTURE DAMAGED OR MOVED FROM ITS PROPER LINE OR GRADE DURING BACKFILLING OPERATIONS SHALL BE OPENED UP AND REPAIRED AND THEN REBACKFILLED AS HEREIN SPECIFIED.THE PLACING OF BACKFILL MATERIAL SHALL NOT BEGIN UNTIL APPROVAL FOR SO DOING HAS BEEN GIVEN BY THE ENGINEER, BUT BACKFILLING ABOUT STRUCTURES OR PORTIONS OF STRUCTURES SHALL BE DONE IMMEDIATELY WHEN SO ORDERED BY THE ENGINEER. THE TOP SURFACE OR OTHER MATERIAL IS REMOVED AND PILED SEPARATELY. SUCH MATERIAL SHALL BE CAREFULLY REPLACED IN A MANNER APPROVED BY THE ENGINEER. THE TOP TWELVE INCHES (12") OF BACKFILL MATERIAL SHALL BE OF AS GOOD OR BETTER QUALITY AS THE ORIGINAL TOP SOIL WHICH WAS REMOVED.

2. COMPACTION REQUIREMENTS

ALL BACKFILL SHALL BE PLACED AND COMPACTED IN SIX INCH (6") LIFTS OR HAND-TAMPED EQUIPMENT AND THIRTY INCH (30") LIFTS FOR SELF-PROPELLED OR POWER DRIVEN EQUIPMENT TO THE FOLLOWING MINIMUM PERCENT OF STANDARD PROCTOR DENSITY OR RELATED DENSITY AS DETERMINED BY ASTM D-698, "TESTS FOR MOISTURE-DENSITY RELATIONS OF SOILS AND SOIL AGGREGATE MIXTURES", AND ASTM D-2049, "TEST FOR RELATIVE DENSITY OF COHESIONLESS SOILS", RESPECTIVELY. ASTM D-2049 SHALL BE PERFORMED ON COHESIONLESS (GRANULAR) SOILS. COHESIVE BACKFILL MATERIAL SHALL REACH THE INDICATED COMPACTION LEVELS AT PLUS OR MINUS THREE PERCENT (3%) OF OPTIMUM MOISTURE CONTENT. THE LIFT THICKNESS SHALL BE REDUCED, IF NECESSARY, TO MEET THE COMPACTION REQUIREMENTS SPECIFIED HEREIN:

GENERAL LOCATION	PERCENT COMPACTION	
	STANDARD PROCTOR DENSITY ASTM D-698	RELATIVE DENSITY TEST ASTM - 2049
UNDER TRAFFIC AREA OR IMPROVED EXISTING SURFACES	95	75
URBAN & RESIDENTIAL AREAS	90	70
UNDEVELOPED & OTHER AREAS	85	70

BACKFILLING REQUIREMENTS 1 of 2

DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER — DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR — DATE: 3/14/14	
03/13/14			S-07

OKLAHOMA CITY UTILITIES DEPARTMENT

The City of Oklahoma City
Utilities Department
Engineering Division

NO.	DATE	DESCRIPTION

SANITARY SEWER STANDARD DETAILS

DATE:	03/14/14
DRAWN BY:	JDS
CHECKED BY:	MWS/EJW

SCALE: AS SHOWN

SHEET NUMBER
S-STD-01

PLOTTED: Friday, March 28, 2014
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\SEWER\WORKING\SAN-SEW-STNDS-2014-SIGNED.DWG

SANITARY SEWER STANDARD DETAIL

3. COMPACTION METHODS

COMPACTION METHODS MAY VARY DEPENDING ON THE MATERIAL OR AS APPROVED BY THE ENGINEER

A. COHESIVE MATERIALS
COMPACTION OF COHESIVE MATERIALS MAY BE OBTAINED BY USE OF IMPACT TYPE EQUIPMENT IN CONFINED AREAS, PNEUMATIC TAMPERS AND ENGINE DRIVEN RAMMERS MAY ALSO BE USED. IN RELATIVELY NARROW TRENCHES, SELF-PROPELLED RAMMERS MAY BE USED. IN WIDE TRENCHES, SHEEPSFOOT ROLLERS MAY BE USED.

B. COHESIONLESS MATERIALS
COHESIONLESS MATERIALS ARE GRANULAR MATERIALS CLASSIFIED AS NON-PLASTIC. IN GENERAL, VIBRATORY EQUIPMENT MAY BE USED FOR PROPER COMPACTION. IN CONFINED AREAS, VIBRATORY PLATES MAY BE USED. FOR WIDER TRENCHES, VIBRATORY ROLLERS MAY BE USED.

C. FLOODING OR JETTING
WHEN APPROVED BY THE ENGINEER, MATERIALS MAY ALSO BE COMPACTED OR SETTLED BY FLOODING WHERE ADEQUATE QUANTITIES OF WATER ARE AVAILABLE FROM THE CITY'S WATER SYSTEM, PRIVATELY OWNED PONDS, CREEKS OR OTHER SOURCES LOCATED WITHIN THREE HUNDRED FEET (300') OF THE TRENCH. WATER SHALL BE USED TO PRODUCE A SEMI-FLUID MASS ALONG AND OUT OF THE TRENCH AT STREAM CROSSINGS OR OTHER PLACES OF ABRUPT CHANGES IN GROUND PROFILE. THE CONTRACTOR SHALL MAKE NECESSARY ARRANGEMENTS WITH THE CITY FOR THE PURCHASE OF WATER FROM THE CITY WATER MAINS, AND WITH OWNERS OF WATER PROCURED FROM PRIVATELY OWNED WATER SOURCES. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED TO THE CONTRACTOR FOR SETTLING THE BACKFILL BY JETTING. THE COST OF SUCH WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR TRENCH EXCAVATION AND BACKFILL OR OTHER PAY ITEMS THE CONTRACTOR MAY ELECT.

4. COMPACTION REQUIREMENTS

ALL BACKFILL SHALL BE TESTED BY AN APPROVED LABORATORY FOR COMPLIANCE OF THE COMPACTION REQUIREMENTS.

5. SURFACE RESTORATION

UPON COMPLETION OF BACKFILLING PROCEDURES, THE CONTRACTOR SHALL REPLACE ALL SURFACE MATERIALS AND SHALL RESTORE PAVING, CURBING, SIDEWALKS, GUTTERS, SHRUBBERY, FENCES, SOD AND OTHER SURFACES DISTURBED TO A CONDITION EQUAL TO OR BETTER THAN THE CONDITION BEFORE WORK BEGAN.

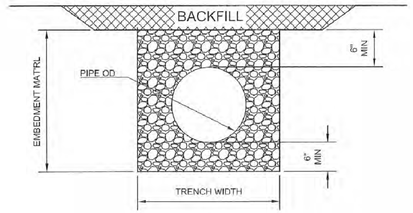
BACKFILLING REQUIREMENTS 2 of 2

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-08

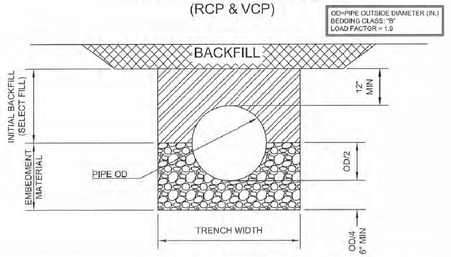
OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

FLEXIBLE PIPE INSTALLATION DETAIL
(DIP, HDPE, PVC & RFP)



RIGID PIPE INSTALLATION DETAIL
(RCP & VCP)

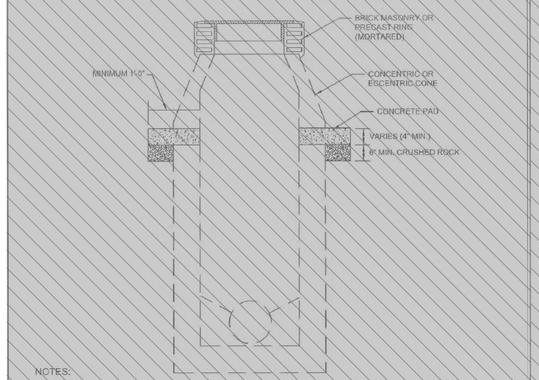


PIPE INSTALLATION DETAILS

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-09

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



NOTES:

1. CAST-IN-PLACE NON-REINFORCED CONCRETE AND BRICK MANHOLES
1.1. THE EXISTING CONE AND WALL, IF NECESSARY, SHALL BE REMOVED TO A LEVEL WHICH WILL ALLOW INSTALLATION OF NEW CONE TO THE PROPER GRADE. THE EXPOSED CUT-OFF SURFACES OF THE EXISTING MANHOLE WALL SHALL BE CLEANED BY REMOVING LOOSE MATERIAL AND WETTED PRIOR TO CONSTRUCTION OF CONCRETE PAD. ALL LOOSE BACKFILL AROUND THE MANHOLE WALL SHALL BE REMOVED AND REPLACED WITH COMPACTED CRUSHED ROCK. THE NEW CONCRETE PAD SHALL BE CONSTRUCTED, AND A NEW CONE SHALL BE FORMED OR PLACED TO THE PROPER GRADE USING FIFTEEN THOUSAND (1500 PSI) POUNDS PER SQUARE INCH MORTAR.

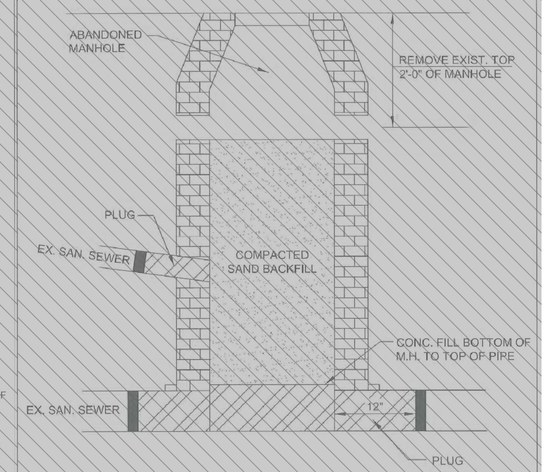
2. PRECAST REINFORCED CONCRETE MANHOLES
2.1. PRECAST SECTIONS SHALL BE REMOVED TO A LEVEL WHERE THE NEW CONE CON BE INSTALLED TO THE DESIRED GRADE. INSTALLATION SHALL BE IN ACCORDANCE WITH THE APPROPRIATE STANDARD DETAIL FOR PRECAST MANHOLE CONES. A NEW RUBBER GASKET SHALL BE USED TO SEAL EACH SECTION.

REBUILDING MANHOLES STANDARD DETAIL

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-10

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



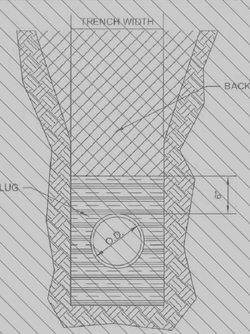
NOTE: SALVAGED MATERIALS, INCLUDING RING AND COVER SHALL BE DELIVERED TO THE LINE MAINTENANCE DIVISION OF THE WATER AND WASTEWATER UTILITIES DEPARTMENT.

ABANDONING MANHOLES STANDARD DETAIL

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-11

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



NOTES:

TWO TYPES OF EMBEDMENT PLUGS MAY BE USED, AT THE CONTRACTORS OPTION, AS FOLLOWS:

1. CLAY PLUGS
1.1. THE EMBEDMENT AND BACKFILL MATERIAL SHALL BE SELECT CLAY SEPARATED FROM EXCAVATED MATERIAL AND SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT. THIS MATERIAL SHALL BE FREE OF CLODS, CLUMPS, DEBRIS, ORGANIC MATERIAL AND STONES. ALL CLAY PLUG MATERIAL SHALL BE COMPACTED TO A MINIMUM OF NINETY (90%) PERCENT OF STANDARD PROCTOR DENSITY (ASTM D-698) AT PLUS OR MINUS THREE (3%) PERCENT OF OPTIMUM MOISTURE CONTENT.

2. FLOWABLE FILL PLUGS
2.1. FLOWABLE FILL PLUGS SHALL CONSIST OF A PORTLAND CEMENT GROUT HAVING A MINIMUM TWENTY-EIGHT (28) DAY COMPRESSIVE STRENGTH OF FIVE HUNDRED (500 PSI) POUNDS PER SQUARE INCH.

EMBEDMENT PLUG

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-12

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. MANHOLES SHALL BE CONSTRUCTED AS SPECIFIED IN ASTM C-478.

2. THE MINIMUM WALL THICKNESS IS SPECIFIED IN THE FOLLOWING TABLE AND SHALL NOT BE LESS THAN ONE-TWELTH (1/12) OF THE INTERNAL DIAMETER OF THE LARGEST CONE OR RISER OR FIVE-INCHES (5") WHICHEVER IS GREATER.

MANHOLE INTERNAL DIAMETER (FEET)	MINIMUM WALL THICKNESS (INCHES)
4	5
5	5
6	6
7	7
8	8

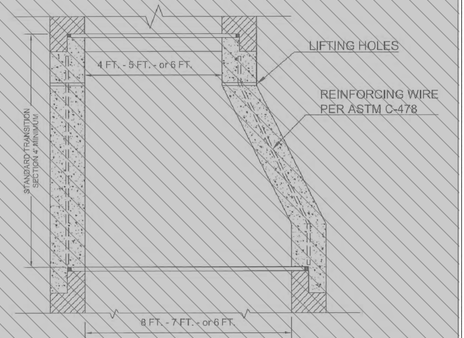
3. MINIMUM DEPTH OF MANHOLE TO BE 6'-0".

4. ALL LIFTING HOLES PROVIDED IN EACH SECTION SHALL BE REPAIRED WITH A MIXTURE OF CEMENT & SAND GROUT FIRMLY PACKED INTO ENTIRE ORIFICE.

5. ALL INSIDES SURFACES OF PRECAST MANHOLES SHALL BE COATED WITH A DRY FILM THICKNESS OF NOT LESS THAN EIGHT (8) MILS OF TNEMEC SERIES 69 HI-BUILD EPOXOLINE II, OR APPROVED EQUAL.

6. WHEN DIRECTED BY THE ENGINEER, A SET OF THREE (3) CYLINDERS, THREE-INCHES (3") IN DIAMETER SHALL BE CUT FROM RANDOMLY SELECTED MANHOLES AND TESTED FOR COMPRESSIVE STRENGTH.

7. ACCEPTANCE OF THE MANHOLE STRUCTURE SHALL BE BASED ON THE CONFORMANCE AND PERFORMANCE OF MATERIALS REQUIRED IN ASTM C-478 AND THE ENGINEER'S INSPECTION OF THE INSTALLED PRODUCT.



PRECAST REINFORCED CONCRETE MANHOLE TRANSITION SECTION

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-13

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

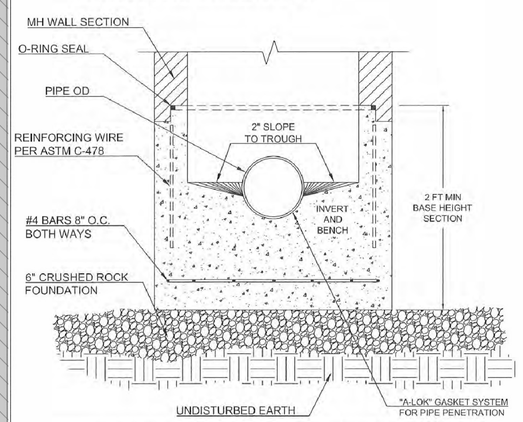
NOTE:

1. ALL CONCRETE FOR MANHOLE STRUCTURE AND BASE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI

2. PRECAST MANHOLES SHALL BE CONSTRUCTED AS PER ASTM C-478

3. ALL INSIDE SURFACES OF PRECAST MANHOLES SHALL BE COATED WITH A DRY FILM THICKNESS OF NOT LESS THAN EIGHT (8) MILS OF TNEMEC SERIES 69 HI-BUILD EPOXOLINE II, OR APPROVED EQUAL.

4. MINIMUM DEPTH OF MANHOLE TO BE 6'-0".



REINFORCED CONCRETE PRECAST MANHOLE BASE SECTION

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-14

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. MANHOLES SHALL BE CONSTRUCTED AS SPECIFIED IN ASTM C-478

2. THE MINIMUM WALL THICKNESS IS SPECIFIED IN THE FOLLOWING TABLE AND SHALL NOT BE LESS THAN ONE-TWELTH ($\frac{1}{12}$) OF THE INTERNAL DIAMETER OF THE LARGEST CONE OR RISER OF FIVE-INCHES (5") WHICHEVER IS GREATER.

MANHOLE INTERNAL DIAMETER (FEET)	MINIMUM WALL THICKNESS (INCHES)
4	5
5	5
6	6
7	7
8	8

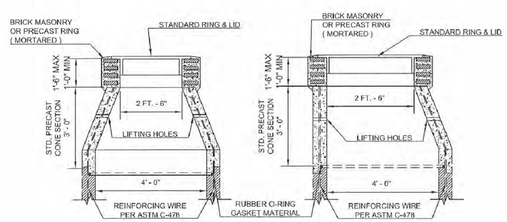
3. MINIMUM DEPTH OF MANHOLE TO BE 6'-0".

4. ALL LIFTING HOLES PROVIDED IN EACH SECTION SHALL BE REPAIRED WITH A MIXTURE OF CEMENT & SAND GROUT FIRMLY PACKED INTO ENTIRE ORIFICE.

5. ALL INSIDE SURFACES OF PRECAST MANHOLES SHALL BE COATED WITH A DRY FILM THICKNESS OF NOT LESS THAN EIGHT (8) MILS OF TNEMEC SERIES 69 HI-BUILD EPOXOLINE II, OR APPROVED EQUAL

6. WHEN DIRECTED BY THE ENGINEER, A SET OF THREE (3) CYLINDERS, THREE-INCHES (3") IN DIAMETER SHALL BE CUT FROM RANDOMLY SELECTED MANHOLES AND TESTED FOR COMPRESSIVE STRENGTH.

7. ACCEPTANCE OF THE MANHOLE STRUCTURE SHALL BE BASED ON THE CONFORMANCE AND PERFORMANCE OF MATERIALS REQUIRED IN ASTM C-478 AND THE ENGINEER'S INSPECTION OF THE INSTALLED PRODUCT.



REINFORCED CONCRETE PRECAST 4 FT DIAMETER MANHOLE CONE

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-15

OKLAHOMA CITY UTILITIES DEPARTMENT

The City of Oklahoma City
Utilities Department
Engineering Division

NO.	DATE	DESCRIPTION

SANITARY SEWER STANDARD DETAILS

DATE: 03/14/14
DRAWN BY: JDS
CHECKED BY: MWS/EJW

SCALE: AS SHOWN

SHEET NUMBER
S-STD-02

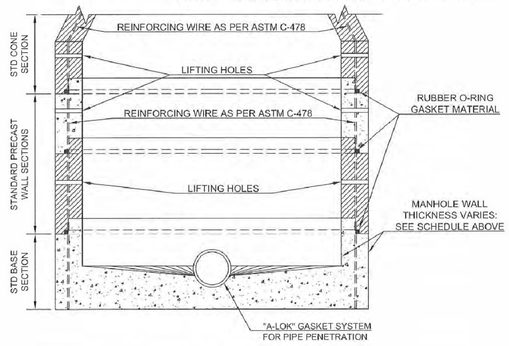
PLOTTED: Friday, March 28, 2014 3:10:47 PM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\SEWER\WORKING\SAN-SEW-STNDS-2014-SIGNED.DWG

SANITARY SEWER STANDARD DETAIL

1. MANHOLES SHALL BE CONSTRUCTED AS SPECIFIED IN ASTM C-478
2. THE MINIMUM WALL THICKNESS IS SPECIFIED IN THE FOLLOWING TABLE AND SHALL NOT BE LESS THAN ONE-TWELFTH ($\frac{1}{12}$) OF THE INTERNAL DIAMETER OF THE LARGEST CONE OR RISER OR FIVE-INCHES (5") WHICHEVER IS GREATER.

MANHOLE INTERNAL DIAMETER (FEET)	MINIMUM WALL THICKNESS (INCHES)
4	5
5	5
6	6
7	7
8	8

3. ALL LIFTING HOLES PROVIDED IN EACH SECTION SHALL BE REPAIRED WITH A MIXTURE OF CEMENT AND SAND GROUT FIRMLY PACKED INTO ENTIRE ORIFICE.
4. ALL INSIDE SURFACES OF PRECAST MANHOLES SHALL BE COATED WITH A DRY FILM THICKNESS OF NOT LESS THAN EIGHT (8) MILS OF TNEMEC SERIES 69 HI-BUILD EPOXOLINE II, OR APPROVED EQUAL.
5. WHEN DIRECTED BY THE ENGINEER, A SET OF THREE (3) CYLINDERS, THREE-INCHES (3") IN DIAMETER SHALL BE CUT FROM RANDOMLY SELECTED MANHOLES AND TESTED FOR COMPRESSIVE STRENGTH.
6. ACCEPTANCE OF THE MANHOLE STRUCTURE SHALL BE BASED ON THE CONFORMANCE AND PERFORMANCE OF MATERIALS REQUIRED IN ASTM C-478 AND THE ENGINEER'S INSPECTION OF THE INSTALLED PRODUCT.



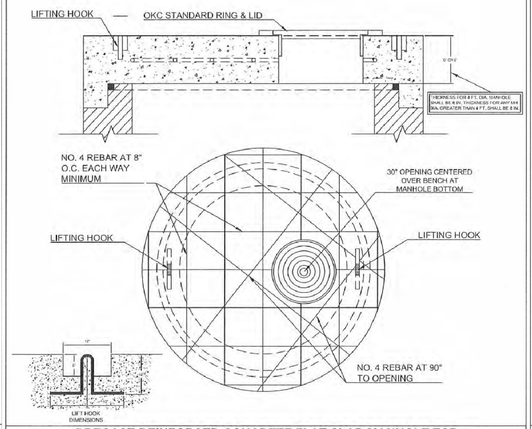
PRECAST MANHOLE WALL DETAIL

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-16

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. MANHOLE TOPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ASTM C-478 LIFTING HOOKS SHALL BE CONSTRUCTED AS PER MANUFACTURERS RECOMMENDATION.
2. ALL INSIDE SURFACES OF PRECAST FLAT TOP SHALL BE COATED WITH A DRY FILM THICKNESS OF NOT LESS THAN EIGHT (8) MILS OF TNEMEC 69 HI-BUILD EPOXOLINE II, OR APPROVED EQUAL.
3. WHEN DIRECTED BY THE ENGINEER, A SET OF THREE (3) CYLINDERS, THREE-INCHES (3") IN DIAMETER SHALL BE CUT FROM RANDOMLY SELECTED MANHOLE TOPS AND TESTED FOR A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI.
4. ACCEPTANCE OF THE MANHOLE TOP STRUCTURE SHALL BE BASED ON THE CONFORMANCE AND PERFORMANCE OF MATERIALS REQUIRED IN ASTM C-478 AND THE ENGINEER'S INSPECTION OF THE INSTALLED PRODUCT.

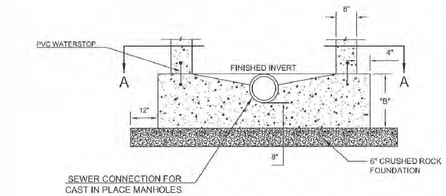


PRECAST REINFORCED CONCRETE FLAT SLAB MANHOLE TOP

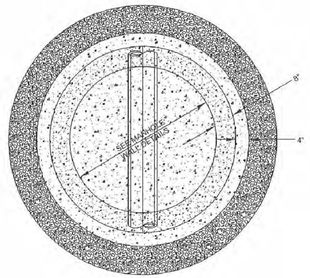
03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-17

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



SCHEDULE OF THICKNESS	
PIPE DIAMETER	"B"
8"	1' - 8"
10"	1' - 10"
12"	2' - 1"
15"	2' - 4"
18"	2' - 8"
21"	3' - 0"
24"	3' - 3"



CAST-IN-PLACE CONCRETE MANHOLE BASE SECTION

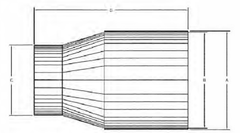
03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-18

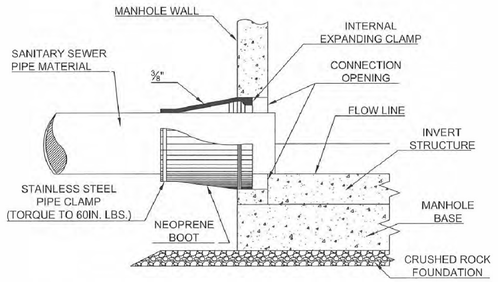
OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

NOTE"
1. ALL PIPE CLAMPS SHALL BE STAINLESS STEEL
2. NEOPRENE EPDM BLENDED COMPOUND BOOT SHALL MEET ASTM C-923

SUGGESTED PIPE O.D. RANGE (IN.)	HOLE & BOOT DIAMETER DIMENSIONS			
	A	B	C	D
3 ½" - 4 ½"	7"	6 ⅜"	4 ½"	6"
5½" - 7"	12"	10¼"	6½"	8"
7" - 8½"	12"	10¼"	8"	8"
8½" - 9½"	12"	10¼"	9¼"	8"
9½" - 11"	16"	14¼"	10½"	8"
10½" - 12"	16"	14¼"	12"	8"
12" - 13½"	16"	14¼"	13½"	8"
14½" - 16½"	20"	18¼"	15¾"	8"
15½" - 17½"	20"	18¼"	17"	8"
18½" - 21½"	24"	22¼"	20¾"	8"





MANHOLE PIPE CONNECTION FOR CAST IN PLACE MANHOLES

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-19

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. GENERAL -- Cast iron rings, tops, covers, grating and all cast iron fitting shall be sound, true to form and thickness, and neatly finished and shall fit together in a satisfactory manner. Castings shall be clean, uniform and whole without blow or sand holes, deposit, hard spots, shrinkage distortion or any other surface defects which would impair serviceability. Casting surfaces shall be smooth and well-cleaned by shot blasting or other approved cleaning method. Plugging or filling holes or other defects shall not be permitted. Parting fins and pouring gates shall be removed. Sharp edges resulting from fabrication shall be dulled by acceptable method to ensure safety in handling. Casting shall conform to the requirements of the Standard Specification for Grey Iron Fittings ASTM A-48, Class "30 B" for rings and "35 B" for covers and the approved Standard Details for Manhole Rings and Covers.

   All rings and covers shall be accurately and carefully placed. All rings shall be beaded in a substantial layer of mortar, shall have a full bearing and shall be set to the exact grade. Unless other wise shown, top of covers shall be flush with or slightly above the surrounding surface. When each cover is placed in any position on the ring, the side play shall not exceed one-eighth (1/8") inch in any direction.

2. RINGS -- Rings may be manufactured in accordance with the Standard Detail for Reversible Manhole Rings.
3. COVERS --
   A GENERAL -- Manhole covers may be manufactured in accordance with the appriolate Standard Details for Vented of Non-Vented Covers.
   B COATING -- When called for on the plans or specified, the underside of all manhole covers shall be given one (1) coat of asphalt varnish after visual inspection and approval on the job site.
   C APPLICATION -- All lids (covers) in street right-of-way shall be non-vented and include rainguard inflow protectors.
4. CASTING WEIGHTS -- The minimum weight of casting will be not less than shown below:

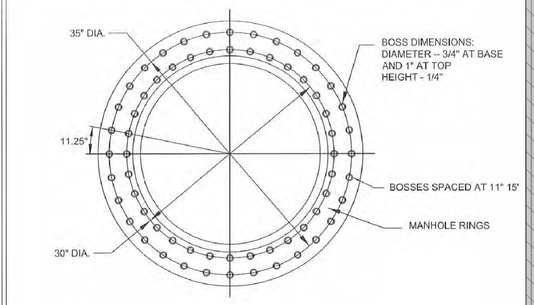
Ring Only	200 LBS
Cover Only	150 LBS
Totals	350 LBS

MANHOLE LID / RING GENERAL NOTES

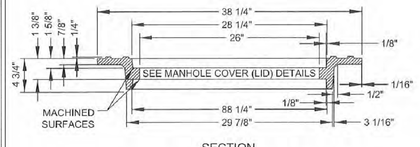
03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-20

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



PLAN



SECTION

AS SHOWN FOR OUT OF PAVING INSTALLATION
REVISED FOR IN PAVING INSTALLATION

GENERAL NOTES:

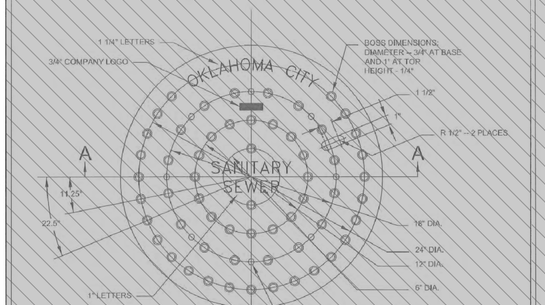
1. FINISH EXCESS IRON AND FINS; MACHINE SEATING SURFACES FLAT TO NOTE DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN, ALL DIMENSIONS ARE IN INCHES.

REVERSIBLE MANHOLE RING

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-21

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



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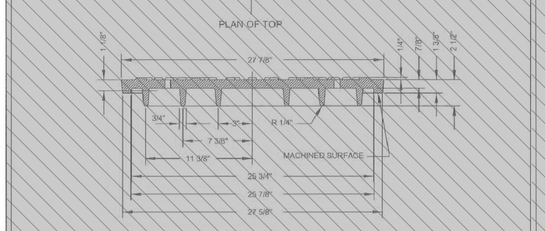


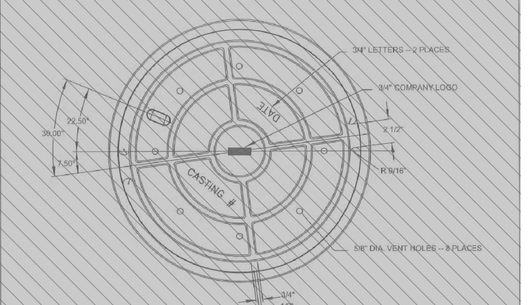
SECTION A-A

VENTED MANHOLE COVER 1 of 2

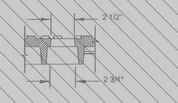
03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-22

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



PLAN OF UNDERSIDE



SECTION THRU PICK SLOT

GENERAL NOTES:

1. FINISH EXCESS IRON AND FINS; MACHINE SEATING SURFACES FLAT TO NOTE DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN, ALL DIMENSIONS ARE IN INCHES.

VENTED MANHOLE COVER 2 of 2

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MSlaughter DATE: 3/14/14 MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	S-23

OKLAHOMA CITY UTILITIES DEPARTMENT

The City of Oklahoma City
Utilities Department
Engineering Division

NO.	DATE	DESCRIPTION

SANITARY SEWER STANDARD DETAILS

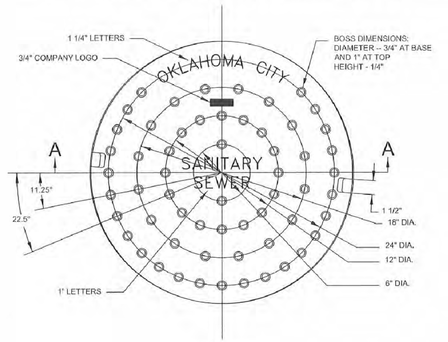
DATE:	03/14/14
DRAWN BY:	JDS
CHECKED BY:	MWS/EJW

SCALE: AS SHOWN

SHEET NUMBER
S-STD-03

PLOTTED: Friday, March 28, 2014 3:10:52 PM
FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\SEWER\WORKING\SAN-SEW-STNDS-2014-SIGNED.DWG

SANITARY SEWER STANDARD DETAIL



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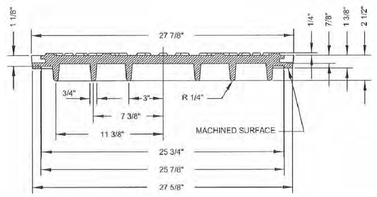


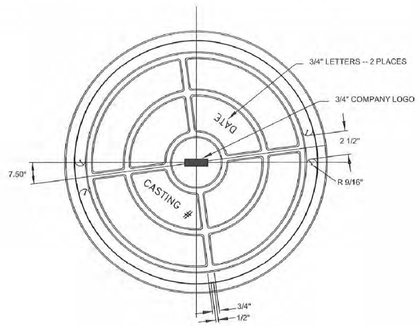
SECTION A-A

NON-VENTED MANHOLE COVER 1 of 2

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR DATE: 3/14/14	S-24

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



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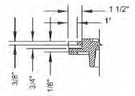


SECTION THRU PICK SLOT

GENERAL NOTES:

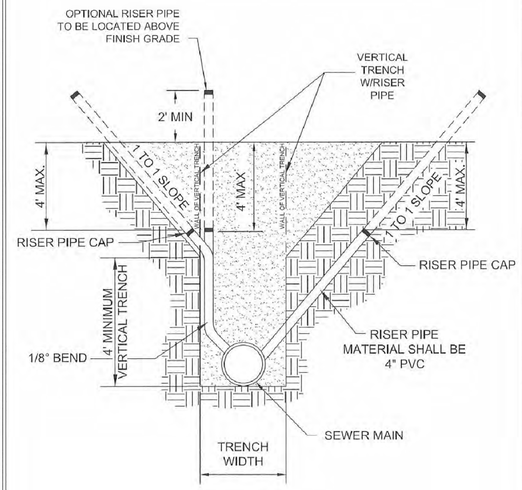
1. FINISH EXCESS IRON AND FINS; MACHINE SEATING SURFACES FLAT TO NOTE DIMENSIONS.
2. FILLETS SHALL BE 1/4" UNLESS OTHERWISE SPECIFIED.
3. UNLESS OTHERWISE SHOWN, ALL DIMENSIONS ARE IN INCHES.

NON-VENTED MANHOLE COVER 2 of 2

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR DATE: 3/14/14	S-25

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



SERVICE CONNECTION INSTALLATION

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR DATE: 3/14/14	S-26

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

1. EXTERNAL CONNECTIONS FOR NEW CONSTRUCTION
   a. WYE BRANCHES --
      For new construction there shall be installed wye branches of size and type shown on the plans with six (6") inch openings at locations shown on the plans or as described by the Engineer.
   b. ELECTRO FUSION BONDED SADDLES --
      For new construction using "Trenchless Construction" technology with HDPE pipe, service connections shall be installed with an electro fusion bonded saddle.

2. EXTERNAL CONNECTION TO EXISTING MAIN -- Connections to existing main may be accomplished as follows:
   a. SADDLES -- Connections may be made by excavating the existing main and cutting a hole using approved equipment and installing a saddle. Sewer service connections constructed with saddles shall include straps, a one-eighth (1/8") degree bend, and a closure piece. when existing main has been rehabilitated by trenchless method of construction, the saddle connection shall be made to the pipe/or liner.
   b. TEES -- Connections maybe made by removing a section of existing pipe and installing a wye branch. Fittings and closure assembly shall be used to make the connection and shall be supplied in a normal diameter or six (6") inches. The external connection shall be considered complete when backfilling and surface restoration is complete. Service connections constructed with wye branches shall include a on-eighth (1/8") degree bend, elbow, and when required, a closure piece.

3. RISER
   a. INSTALLATION -- The pipe may be installed in one of four ways shown on "Service Connection Details." Vertical installation is only approved if approved by the City Engineer.
   b. SIZE AND MATERIAL -- The riser pipe shall be four inch (4") PVC.

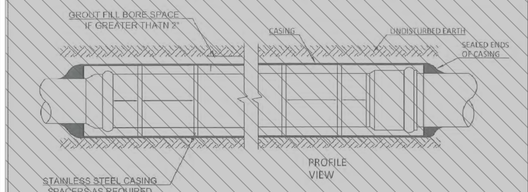
4. LOCATOR TAPE -- A locator tape, green in color stating "CAUTION -- SANITARY SEWER RISER BURIED BELOW" shall be attached to the sanitary sewer riser and extended to a minimum of two (2') feet above the ground, the tape shall be three (3") inch wide DuraTac as manufactured by THOR Enterprises, Inc., of Sun Prairie, Wisconsin or approved equal.

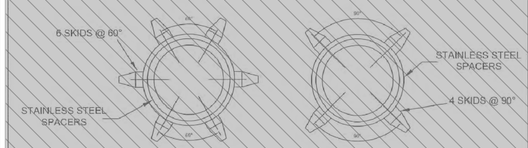
SERVICE CONNECTION INSTALLATION

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR DATE: 3/14/14	S-27

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL





SECTION

NOTES:

PLUGGED PIPE ENDS

OPTION A - GROUT -- both ends of the casing pipe shall be plugged with a grout or concrete having a minimum compressive strength of twenty-five hundred (2500 psi) pounds per square inch or grouted masonry. Each plug shall be a minimum length of eighteen (18) inches. The grouting pressure shall be in accordance with the pipe manufacture's recommendations.

OPTION B - SEALS -- both ends shall be sealed with neoprene rubber seals with stainless steel bandings.

BORE AND ENCASEMENT DETAIL 1 of 2

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR DATE: 3/14/14	S-28

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

2. CASING PIPE SIZE -- Steel casing pipe shall have the following suggested minimum diameters:

PIPE NOMINAL SIZE (inches)	SUGGESTED CASING PIPE INSIDE DIAMETER (inches)
4	8 to 10
6	10 to 12
8	14 to 16
10	16 to 18
12	18 to 20
15	20 to 22
18	24 to 26
24	31 to 33
27	33 to 36
30	36 to 42
36	42 to 48
42	54 to 60
48	60 to 66

3. CASING PIPE THICKNESS -- Steel casing pipe shall have the following minimum thickness(es), in inches, for the indicated maximum depth of cover(s), in feet or as required by the railroad at the time of construction:

OUTSIDE DIAMETER (INCHES)	UNDER HIGHWAY		UNDER RAILROAD		
	WALL THICKNESS (INCHES)	MAXIMUM COVER (FEET)	BNSF (UNCOATED) WALL THICKNESS (INCHES)	UNION PACIFIC WALL THICKNESS (INCHES	MAXIMUM COVER (FEET)
≤ 12	0.1880	30	0.2280	0.2500	30
16	0.2500	30	0.3125	0.3125	30
18	0.2500	30	0.3125	0.3125	30
20	0.2500	30	0.3750	0.3750	30
24	0.2500	30	0.4375	0.4376	30
30	0.3200	30	0.5000	0.5000	30
36	0.3750	30	0.5625	0.5625	30
42	0.3750	25	0.5625	0.5625	30
48	0.4380	25	0.6250	0.6250	25
54	0.4380	25	OVER 48" MUST BE APPROVED BY BNSF RR	OVER 48" MUST BE APPROVED BY U.P.R.R.CO.	20
60	0.4380	25			20
66	0.4380	20			20

4. CASING MATERIAL -- Steel casing pipe shall conform with ASTM A-139, Standard Specification for Electric-Fusion (ARC)-Welded Steel Pipe (NPS 4 and over). The steel material shall be new, smooth wall, carbon steel, Grade B, with a minimum tensile strength, and minimum thirty-five-thousand (35,000 psi) pounds per square inch yield strength.

BORE AND ENCASEMENT DETAIL 2 of 2

03/13/14 DATE	APPROVED BY: ERIC J. WENGER, P.E., CITY ENGINEER DATE:	APPROVED BY: MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR DATE: 3/14/14	S-29

OKLAHOMA CITY UTILITIES DEPARTMENT

The City of Oklahoma City
Utilities Department
Engineering Division

NO.	DATE	DESCRIPTION

SANITARY SEWER STANDARD DETAILS

DATE:	03/14/14
DRAWN BY:	JDS
CHECKED BY:	MWS/EJW

SCALE: AS SHOWN

SHEET NUMBER S-STD-04

PLOTTED: Friday, March 28, 2014 3:10:57 PM
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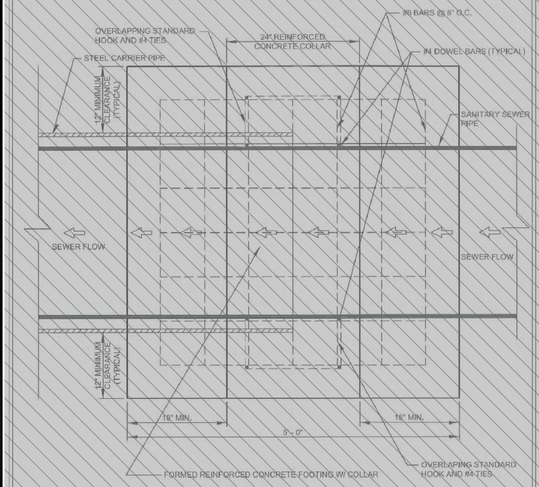
SANITARY SEWER STANDARD DETAIL

NOTE: THE FOLLOWING DETAIL IS TO BE USED ONLY FOR STEEL CARRIER PIPE NOT GREATER THAN 42" IN DIAMETER.



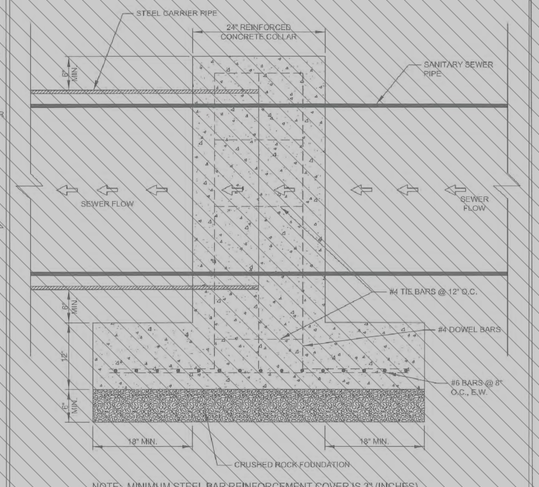
PLAN VIEW

CONCRETE COLLAR WITH SPREAD FOOTING 1 of 2

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-30

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



NOTE: MINIMUM STEEL BAR REINFORCEMENT COVER IS 3" (INCHES).

ELEVATION VIEW

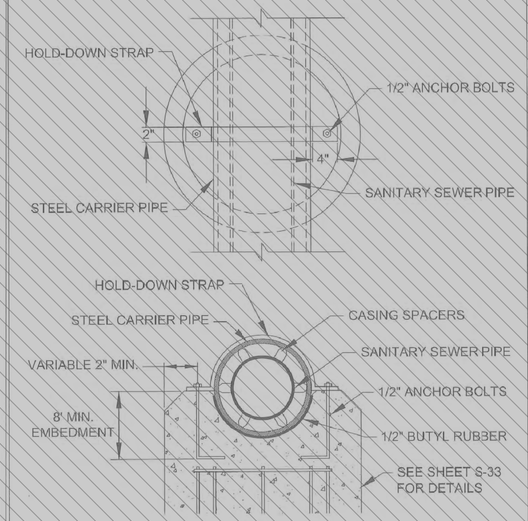
CONCRETE COLLAR WITH SPREAD FOOTING 2 of 2

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-31

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

FOR SANITARY SEWER PIPE LESS THAN OR EQUAL TO 15-IN



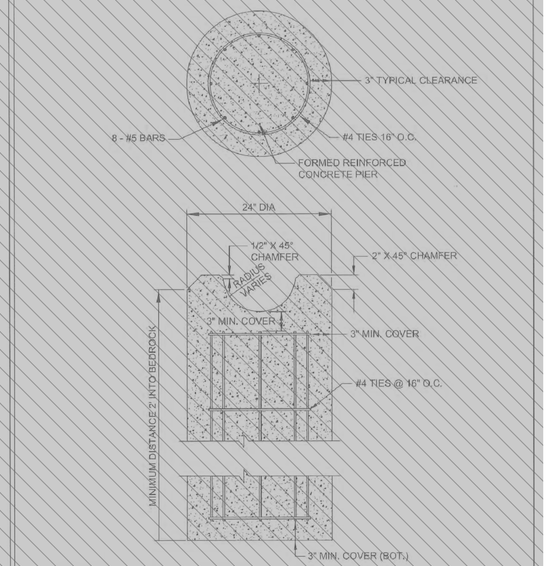
TYPE I PIER 1 of 2

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-32

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

FOR SANITARY SEWER PIPE LESS THAN OR EQUAL TO 15-IN

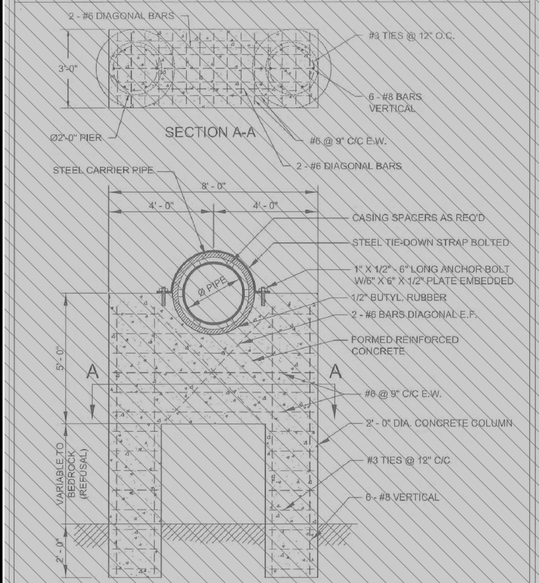


TYPE I PIER 2 of 2

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-33

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL



ELEVATION VIEW

TYPE II PIER

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-34

OKLAHOMA CITY UTILITIES DEPARTMENT

SANITARY SEWER STANDARD DETAIL

TABLE OF STEEL CARRIER PIPE SIZES

Nominal Size	Wall Thickness (in)									
	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
(in)	Span Length - (ft)									
6	36	40	44							
8	38	42	45							
10	39	43	46							
12	40	44	47							
14	40	44	47							
16	41	45	48							
18	41	46	49	52						
20	42	46	50	53						
22	42	46	51	54						
24	42	48	52	55	58	60				
26	43	48	52	56	59	61				
28	43	48	53	56	59	62				
30	43	49	53	57	60	63				
32	44	49	54	57	61	64				
34	44	49	54	58	61	64				
36	44	50	54	58	62	65	70			
38	44	50	55	59	62	65	70			
40	44	50	55	59	63	66	71			
42	44	50	55	59	63	66	72			
45		51	55	60	63	67	72			
48		51	56	60	64	67	73	78		
51		51	56	60	64	68	74	79		
54		51	56	61	65	68	74	79		
57		51	57	61	65	69	75	80		
60		51	57	61	65	69	75	80		
63		52	57	62	66	69	76	81		
66		52	57	62	66	70	76	81	86	90
72		52	58	62	66	70	77	82	87	92

Reference: AWWA M11, 4th Edition, 2004, "Steel Pipe - A Guide for Design and Installation." - Table 7-1.

STEEL CARRIER PIPE SIZES MAXIMUM SPAN LENGTH

DATE	APPROVED BY:	DATE:	APPROVED BY:	DATE:	
03/13/14	ERIC J. WENGER, P.E., CITY ENGINEER		MARSHA W. SLAUGHTER, P.E., UTILITIES DIRECTOR	3/14/14	S-35

OKLAHOMA CITY UTILITIES DEPARTMENT

The City of Oklahoma City
Utilities Department
Engineering Division

NO.	DATE	DESCRIPTION

SANITARY SEWER STANDARD DETAILS

DATE:	03/14/14
DRAWN BY:	JDS
CHECKED BY:	MWS/EJW

SCALE: AS SHOWN

SHEET NUMBER S-STD-05

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FILE PATH: Z:\STANDARD DETAILS & WATER METER SPECIFICATIONS\UPDATED STANDARD DETAILS 2014\SEWER\WORKING\SAN-SEW-STNDS-2014-SIGNED.DWG