



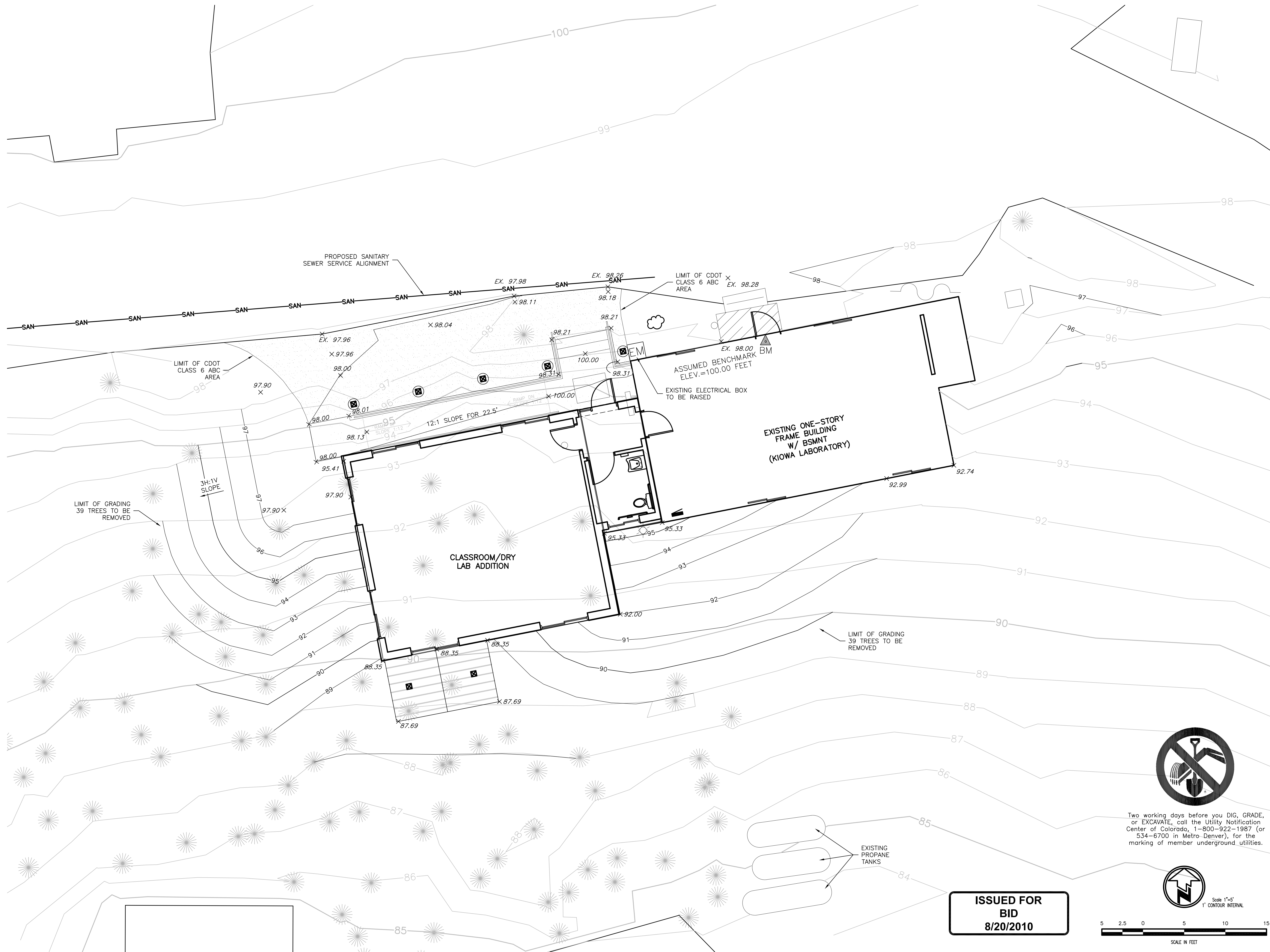
**Facilities Management**  
University of Colorado at Boulder

**Kiowa Lab Addition**  
PR 004591  
University of Colorado  
Mountain Research Station  
750 County Road 116

**Architect / Civil Engineer**  
Diversified Consulting Solutions, Inc.  
4100 West 107th Drive  
Westminster, CO 80031  
Telephone: (303) 618-7802  
FAX: (303) 600-8020

**Structural Engineer**  
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Denver, CO 80212  
Telephone: (720) 560-9646  
FAX: (303) 477-3931

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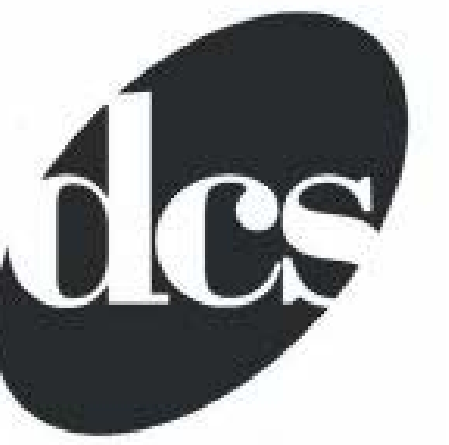


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**8/20/2010**

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50 % Construction Documents	June 15, 2010
Coordination Set CD	July 9, 2010
UCB Staff Comment Revisions	August 19, 2010
Issued for Bid	August 20, 2010

Project Number:	004591
Drawn By:	LD
Reviewed By:	DPG
Approved By:	DPG



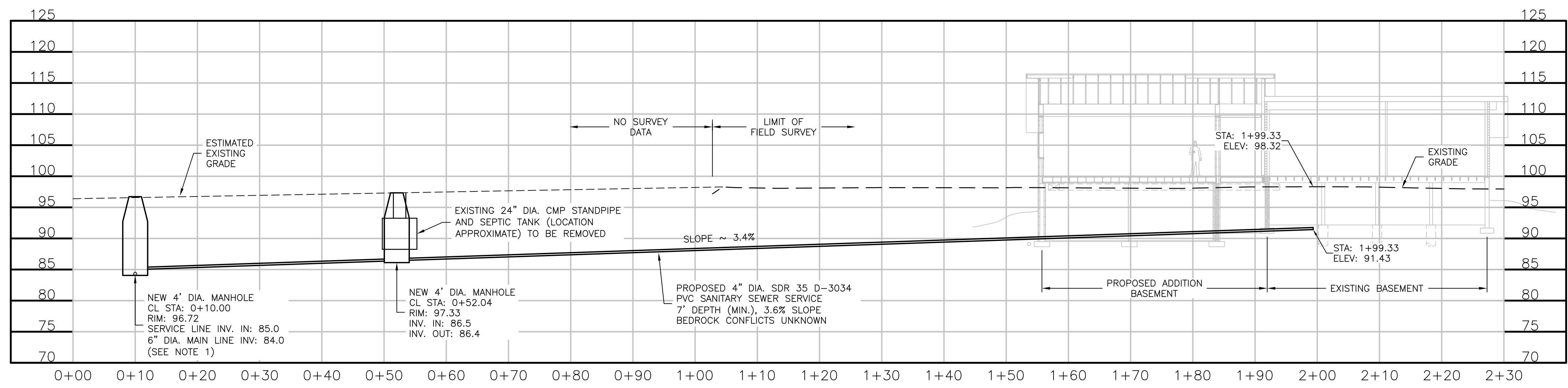
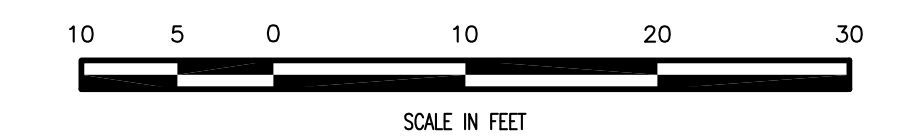
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NOTES:  
1. AS-BUILT ELEVATIONS FOR EXISTING SANITARY SEWER MAINLINE ARE APPROXIMATE. MATCH NEW SANITARY SEWER SERVICE LINE INVERT TO EXISTING TOP OF PIPE.

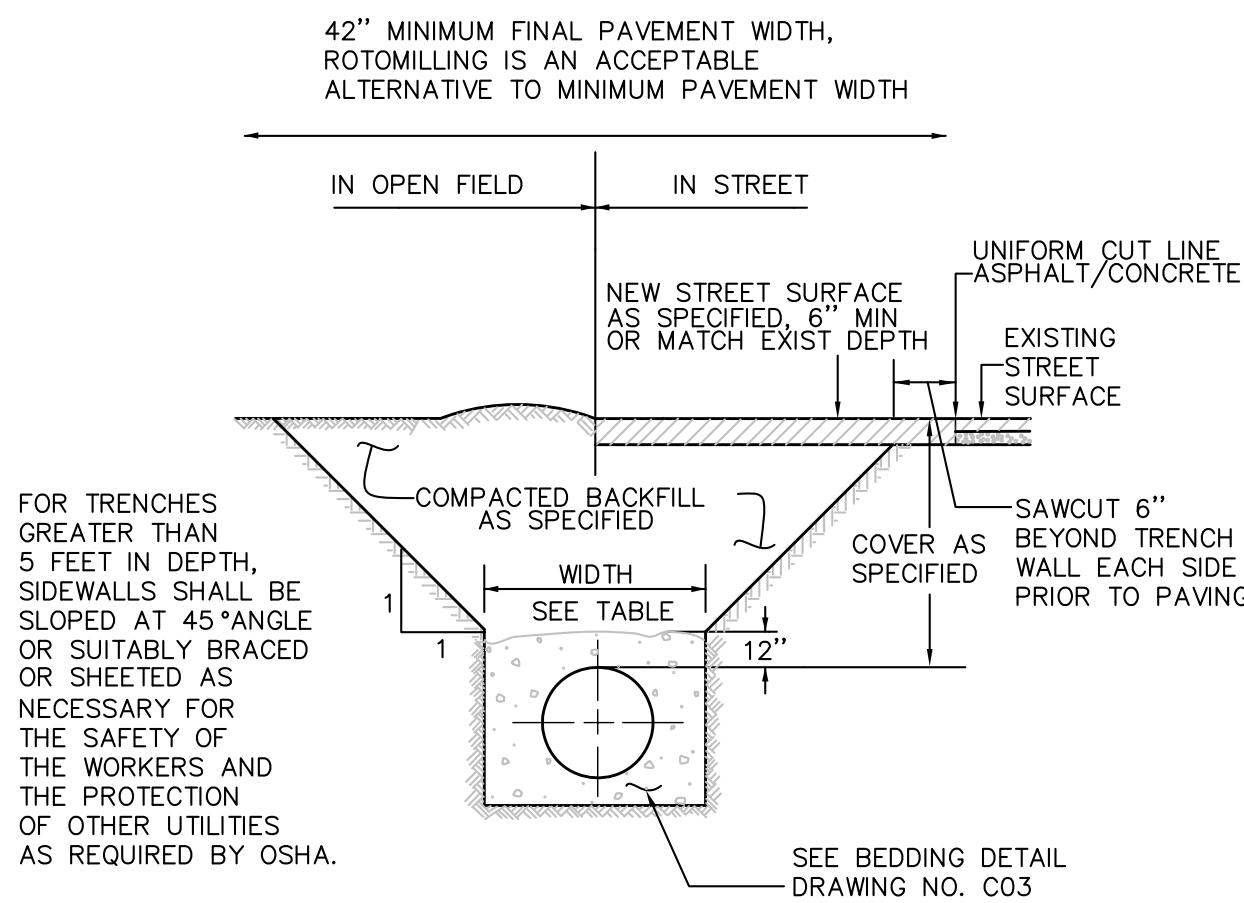
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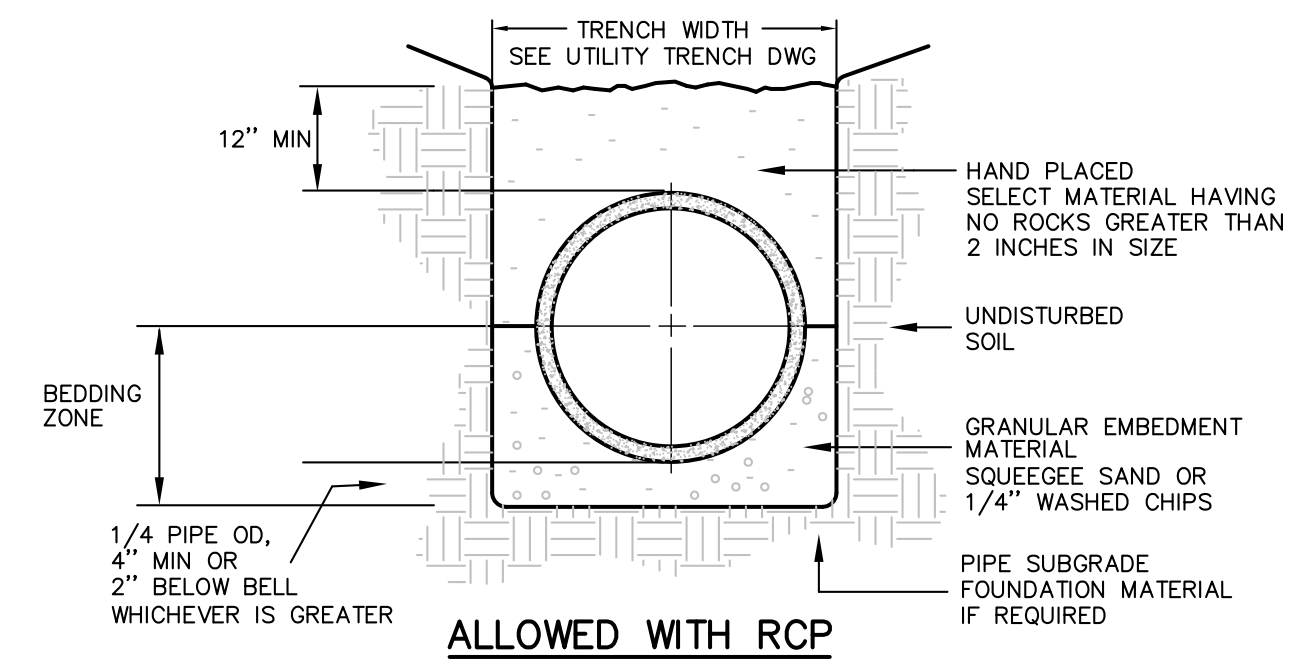
**TYPICAL TRENCH SECTION**  
N.T.S.

NOTES:

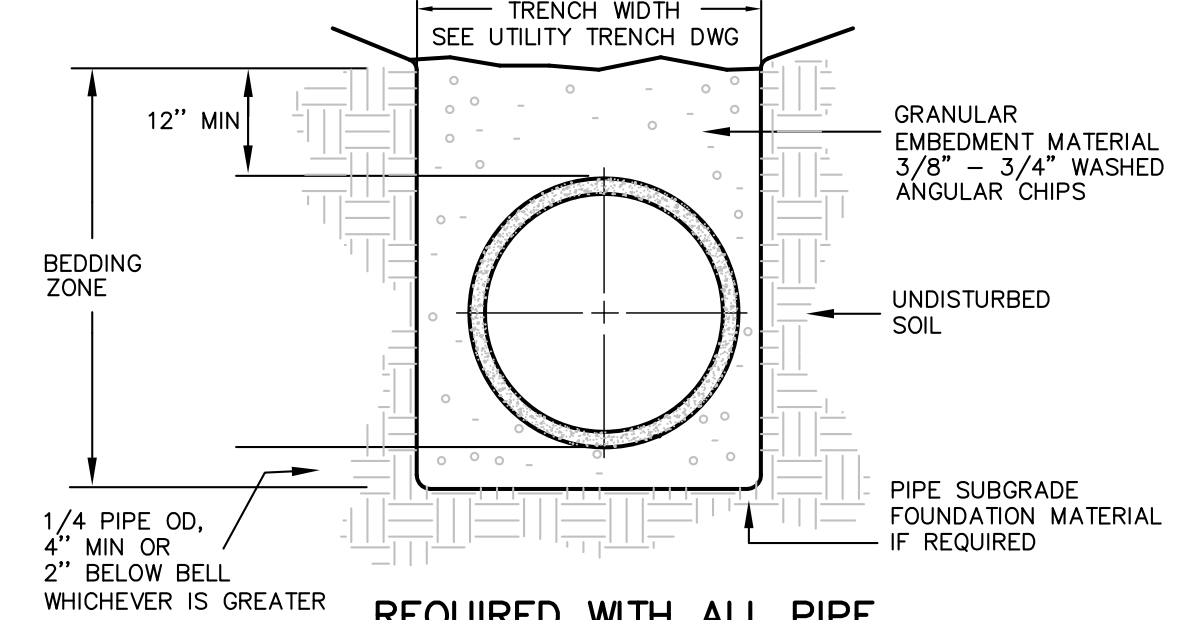
1. MINIMUM COVER TO BE BELOW OFFICIAL STREET GRADE.
2. MINIMUM DISTANCE BETWEEN EDGE OF TRENCH AND EDGE OF ASPHALT, OR LIP OF CURBLINE, SHALL BE 3 FEET.
3. REFER TO DRAWING NO. C.04 FOR PAVEMENT RESTORATION FOR PAVEMENT LESS THAN 3 YEARS OLD.
4. ON STATE HIGHWAYS, REFER TO CDOT UTILITY REQUIREMENTS.

PIPE DIAMETER	TRENCH WIDTH	
	MINIMUM WIDTH	MAXIMUM WIDTH
6"	1'-6"	2'-6"
8"	1'-8"	2'-8"
12"	2'-0"	3'-0"
16"	2'-4"	3'-4"
20"	2'-8"	3'-8"
24"	3'-0"	4'-0"

**UTILITY TRENCH WIDER THAN 16"**  
N.T.S.



**ALLOWED WITH RCP**

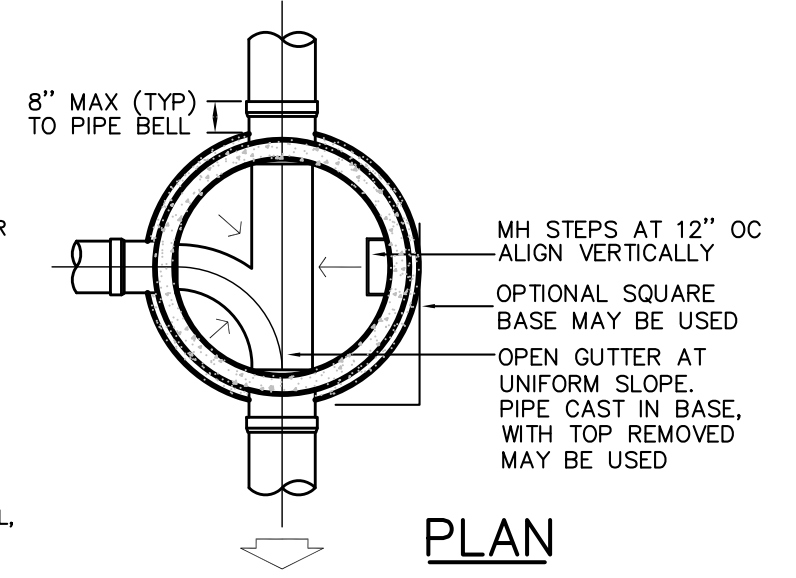


**REQUIRED WITH ALL PIPE EXCEPT RCP**  
(MAY BE USED WITH RCP AT CONTRACTOR'S OPTION)

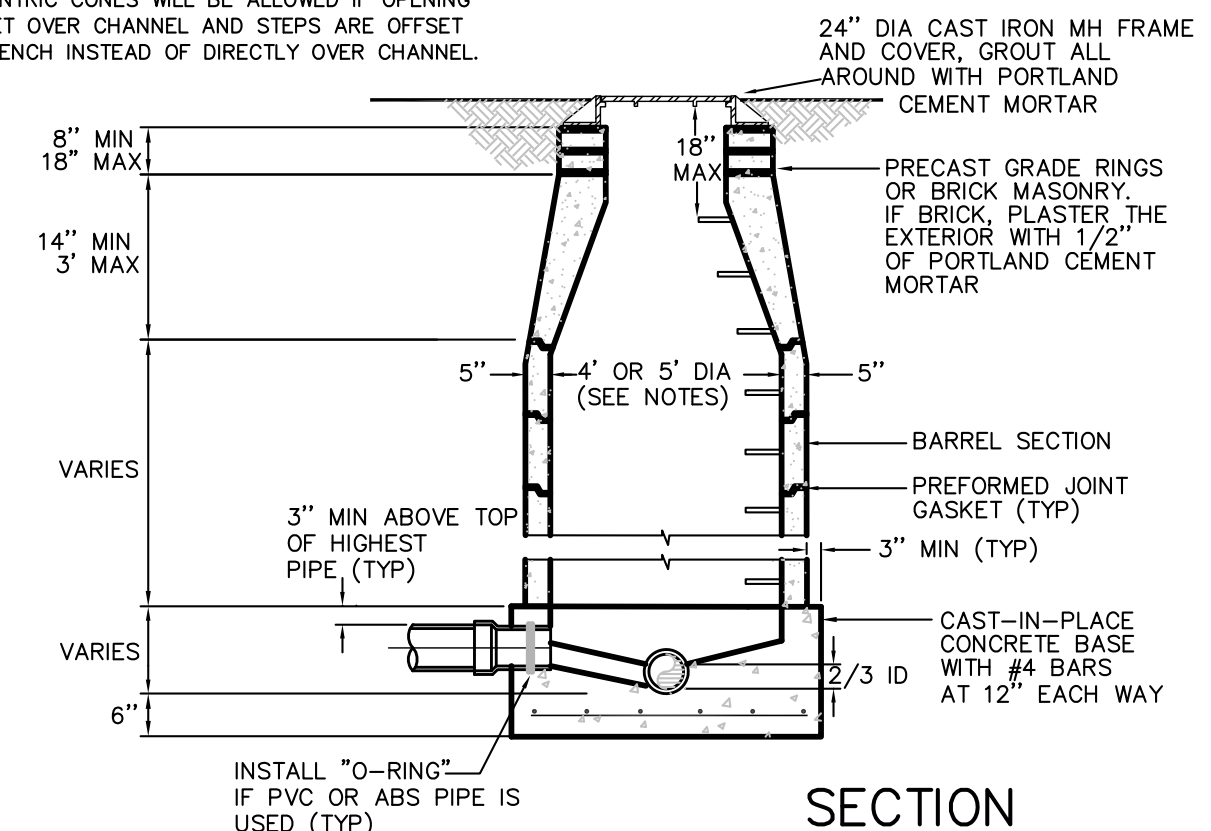
**PIPE BEDDING**  
N.T.S.

NOTES:

1. 4" MANHOLES SHALL BE USED FOR PIPES UP TO 24" DIAMETER.
- 5" MANHOLES SHALL BE USED FOR PIPES FROM 27"-36" DIAMETER.
- SPECIAL MANHOLES SHALL BE USED FOR PIPES LARGER THAN 36" DIAMETER.
- MANHOLES LESS THAN OR EQUAL TO 6' FROM TOP OF CASTING TO INVERT SHALL HAVE FLAT TOPS WITH CONCENTRIC OPENING. ALL ADJUSTING RINGS, CASTINGS, INVERTS, BOTTOMS, ETC., SHALL BE SIMILAR TO SHOWN MANHOLE.
- REFER TO SPECIFICATIONS FOR MATERIAL, INSTALLATION, TESTING, BACKFILL AND SURFACE RESTORATION REQUIREMENTS.
- ECCENTRIC CONES WILL BE ALLOWED IF OPENING IS SET OVER CHANNEL AND STEPS ARE OFFSET TO BENCH INSTEAD OF DIRECTLY OVER CHANNEL.

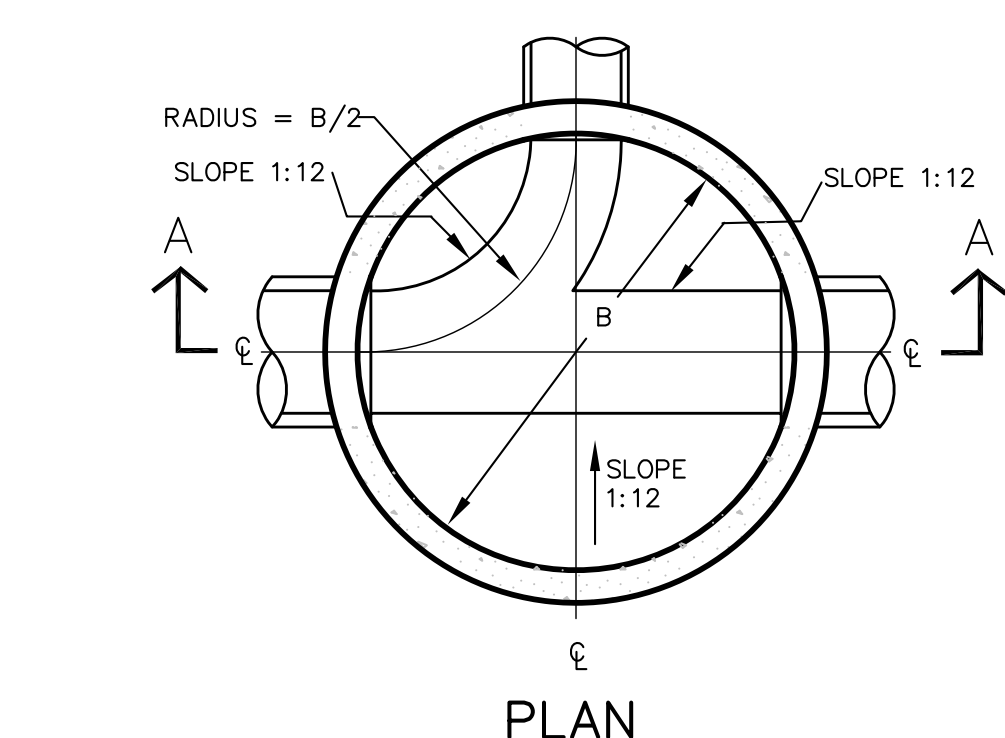


**PLAN**

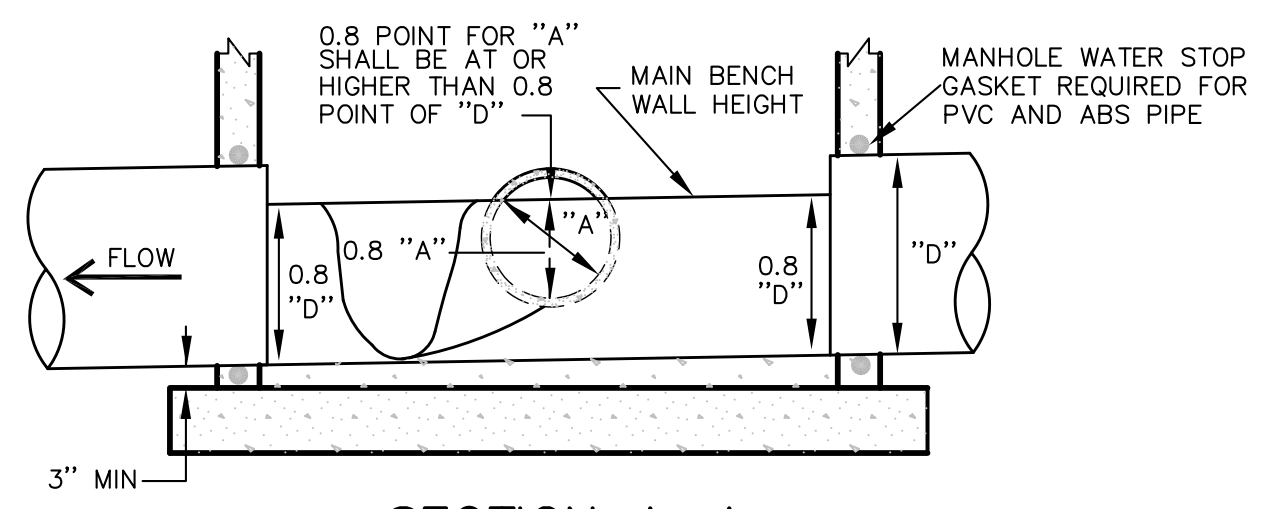


**SECTION**

**STANDARD SEWER MANHOLE**  
N.T.S.

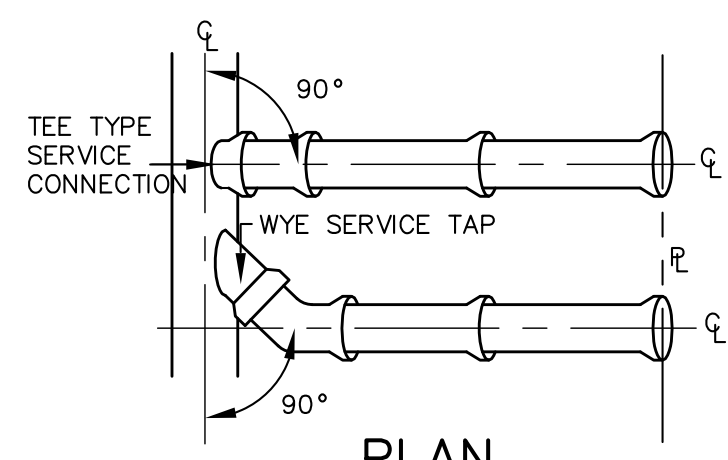


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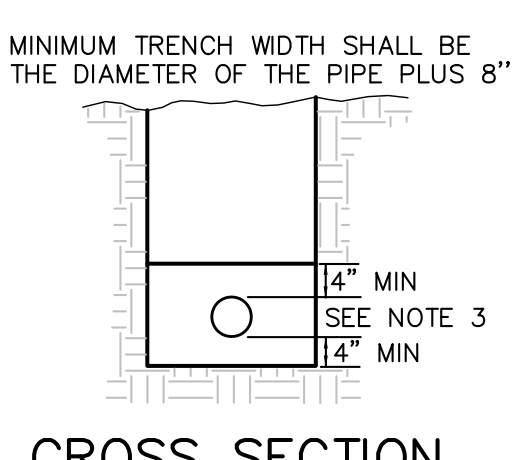


**SECTION A-A**

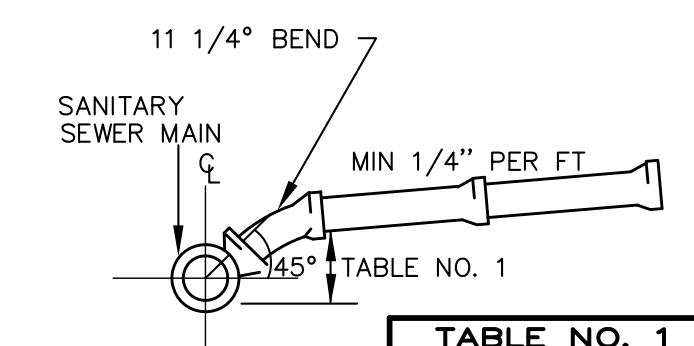
**MANHOLE INVERT**  
N.T.S.



**PLAN**



**CROSS SECTION**



**PROFILE**

MAIN SIZE	4" SERVICE	6" SERVICE	8" SERVICE
8"	6"	10"	
10"	11"	12"	
12"	12"	13"	
15"	15"	16.5"	

**MARKER POST**  
(AT SERVICE STUB OUT)

NOTES:

1. ALL SERVICE LINES SHALL BE 4" MINIMUM IN DIAMETER.
2. THE MINIMUM SLOPE FOR 4" OR 6" SERVICE LINES SHALL BE 1/4" PER FOOT.
3. BEDDING FOR HOUSE CONNECTION WITHIN CITY ROW SHALL BE THE SAME AS FOR SEWER MAIN, LAID TO A MINIMUM DEPTH OF 4" BELOW THE PIPE INVERT AND 4" ABOVE THE TOP OF THE PIPE.
4. ALL TAPS ARE TO BE MADE BY THE CITY OF BOULDER, UNLESS OTHERWISE AUTHORIZED BY THE UTILITY DIVISION.
5. SERVICE LINES LARGER THAN 6" MUST BE CONNECTED TO THE MAIN AT A MANHOLE.
6. SERVICE LINE WILL BE PLUGGED AT THE PROPERTY LINE WITH APPROPRIATE PLUG FOR TYPE OF LINE INSTALLED UNTIL CONNECTED TO BUILDING. AFTER ABANDONMENT OF A SERVICE LINE IT MUST BE PLUGGED 5' INSIDE THE PROPERTY LINE.
7. COMPACTION OF BACKFILL SHALL BE AS STATED IN THE CITY OF BOULDER, STANDARD SPECIFICATIONS.

**SEWER SERVICE LINE**  
N.T.S.

**UNDERGROUND TYPE PLASTIC LINE MARKER:**

1. DURING BACKFILLING AND TOPSOILING OF UNDERGROUND SANITARY SEWER PIPING, INSTALL CONTINUOUS UNDERGROUND PLASTIC LINE MARKERS, LOCATED DIRECTLY OVER BURIED LINES AT 6" TO 8" BELOW FINISHED GRADE.
2. MANUFACTURER'S STANDARD PERMANENT, CONTINUOUS-PRINTED PLASTIC TAPE WITH METALLIC CORE, INTENDED FOR DIRECT-BURIAL SERVICE; NOT LESS THAN 6" WIDE x 4 MILS THICK. PROVIDE GREEN TAPE WITH BLACK PRINTING READING "CAUTION SANITARY SEWAGE LINE BURIED BELOW".
3. PROVIDE IDENTIFICATION MARKERS OF ONE OF THE FOLLOWING:
  - 3.1. ALLEN SYSTEMS, INC.
  - 3.2. EMED CO., INC.
  - 3.3. SETON NAME PLATE CORP.

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**GENERAL NOTES FOR CONSTRUCTION:**

1. ALL WORK TO CONFORM TO THE UNIVERSITY OF COLORADO AT BOULDER DESIGN AND CONSTRUCTION STANDARDS.
2. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THESE REQUIREMENTS SHALL COMPLY CONTINUOUSLY, AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ARCHITECT HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ARCHITECT.
3. CONTRACTOR SHALL WORK FROM AN APPROVED CONSTRUCTION PLAN SET, SIGNED AND SEALED BY THE ARCHITECT AND/OR ENGINEER OF RECORD. CONTRACTOR SHALL KEEP AT LEAST ONE COPY OF THE SIGNED, APPROVED PLANS ON-SITE AT ALL TIMES THROUGHOUT PROJECT EXECUTION.
4. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER A MINIMUM OF 48 HOURS NOTICE FOR ANY ROAD, DRIVEWAY, PARKING AND ACCESS CLOSURES. THE EXTENT OF THE CLOSURE SHALL BE APPROPRIATELY ESTIMATED, AND THE CONTRACTOR SHALL KEEP THE OWNER REGULARLY INFORMED OF ACTUAL PROGRESS AND REOPENING OF ACCESS.
5. ANY ACCESS CLOSURES SHALL BE SAFELY MARKED AND POSTED, AND EQUIPPED WITH APPROPRIATE TRAFFIC CONTROL MEASURES.
6. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE OWNER. ALL TRAFFIC CONTROL SHALL FOLLOW MUTCD STANDARDS.
7. GENERAL CLEANUP OF THE PROJECT AREA SHALL BE MAINTAINED UNTIL COMPLETION OF ALL WORK ON THE PROJECT. ALL DISPOSALS SHALL BE TO LICENSED DISPOSAL FACILITIES ONLY. CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL DISPOSALS FROM THE PROJECT.
8. CONSTRUCTION SHALL BE SAFELY STABILIZED AT THE END OF EACH WORK DAY, INCLUDING EXCAVATIONS AND TRENCHING.

**GRADING NOTES:**

1. THE PROJECT DISTURBANCE AREA SHALL BE CLEARED OF ALL TREES, SHRUBS, BUSHES, ROOTS AND OTHER ORGANICS. THESE ORGANIC MATERIALS SHALL BE REMOVED FROM THE PROJECT SITE AND PROPERLY RECYCLED OR DISPOSED OF BY THE CONTRACTOR.
2. THE PROJECT AREA SHALL THEN BE STRIPPED OF ANY TOPSOIL MATERIALS, WHICH SHALL BE STOCKPILED AND REDISTRIBUTED ON THE DISTURBANCE AREAS PRIOR TO RESEEDING.
3. THE EXISTING STONE STAIRWAY WEST OF THE ADDITION SHALL BE REMOVED PRIOR TO PLACEMENT OF FILL IN THAT SPECIFIC AREA. THE STONES SHALL BE SALVAGED AND STACKED JUST OUTSIDE THE FILL AREA FOR FUTURE RECONSTRUCTION BY THE OWNER.
4. ALL FILL SHALL BE COMPACTED TO MINIMUM 95% OF MAXIMUM DENSITY PER STANDARD PROCTOR WITHIN OPTIMUM MOISTURE LIMITS.
5. EXCESS EXCAVATION MATERIALS SHALL REMAIN THE PROPERTY OF THE OWNER, AND SHALL BE STOCKPILED AT A DESIGNATED EXISTING GRAVEL PARKING LOT LOCATION APPROXIMATELY 400' WEST OF THE KIOWA LAB ADDITION SITE. THE PROPOSED STOCKPILE LOCATION IS ACCESSIBLE BY GRAVEL ROAD FROM THE KIOWA LAB ADDITION SITE.
6. SOIL CUT AND FILL SLOPES WITHOUT ROCK STABILIZATION SHALL BE 2:1 HORIZONTAL: VERTICAL OR FLATTER.
7. NEW DRIVEWAY AREAS AS SHOWN ON THE PLANS SHALL BE TOPPED WITH 6" OF CDOT CLASS 6 AGGREGATE BASE COURSE (ABC) MATERIALS, PLACED TO MINIMUM 95% OF MAXIMUM DENSITY PER STANDARD PROCTOR, WITHIN OPTIMUM MOISTURE LIMITS.

**UTILITY NOTES:**

1. ALL EXISTING UTILITY LOCATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
2. THE DRAWINGS MAY NOT SHOW ALL UTILITIES, NOR THE FULL EXTENT OF THE UTILITIES. CONTRACTOR IS ADVISED TO USE CAUTION WITH ALL EXCAVATION AREAS.
3. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE ANY AND ALL UTILITY LOCATES AND REQUIRED RELOCATIONS.
4. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING UTILITY SERVICES AND IMPROVEMENTS THROUGHOUT CONSTRUCTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE OWNER A MINIMUM OF 48 HOURS NOTICE FOR ANY INTERRUPTIONS OF UTILITY SERVICES REQUIRED DURING THE COURSE OF CONSTRUCTION.
6. SHEETING AND BRACING: THE SIDES OF ANY EXCAVATION OVER FOUR FEET (4'), OR AT DEPTHS AND CONDITIONS THAT MAY INDUCE CAVING, SHALL BE SUPPORTED BY ADEQUATE SHORING. ALL EXCAVATION, TRENCHING AND SHORING SHALL BE IN STRICT COMPLIANCE WITH APPLICABLE OSHA RULES AND REGULATIONS.
7. INSPECTION WILL BE REQUIRED FOR SANITARY SEWER SERVICE WORK, INCLUDING SEPTIC TANK REMOVAL, AND INSTALLATION OF MANHOLES AND SANITARY SERVICE LINE. THE CONTRACTOR SHALL PROVIDE THE OWNER A MINIMUM 48 HOURS NOTICE FOR REQUIRED INSPECTIONS.
8. SANITARY SEWER SERVICE LINES SHALL BE 4" DIAMETER PVC SDR35 PER ASTM D-3034 WITH PUSH-ON SINGLE GASKET TYPE JOINTS.
9. THE SANITARY SEWER SERVICE LINES SHALL BE PROVIDED WITH CONTINUOUS WARNING TAPE PLACED 12" OVER THE TOP OF PIPE.
10. ALL PIPE LENGTHS SHOWN ARE APPROXIMATE, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR AT THE TIME OF INSTALLATION.
11. TRENCH BACKFILL SHALL BE COMPACTED TO MINIMUM 95% OF MAXIMUM DENSITY PER STANDARD PROCTOR WITHIN OPTIMUM MOISTURE LIMITS.
12. SANITARY SEWER MANHOLE RIM ELEVATIONS AS SHOWN ON THE PLANS ARE APPROXIMATE. MANHOLE RIM FINAL ELEVATIONS SHALL MATCH ACTUAL ADJACENT ROAD GRADE. MANHOLE RIMS SHALL BE SHIMMED TO MATCH ACTUAL ROAD GRADE IN ADDITION TO ROAD ELEVATION.
13. SANITARY SEWER MANHOLE COVERS SHALL BE STAMPED "SANITARY SEWER".

**EROSION CONTROL NOTES:**

1. CONTRACTOR TO COMPLY WITH ALL STATE ENVIRONMENTAL PERMITTING REQUIREMENTS, AS APPLICABLE, INCLUDING STORMWATER EROSION CONTROL AND CONSTRUCTION DEWATERING.
2. ALL DISTURBED AREAS SHALL BE SEEDED WITH ARKANSAS VALLEY SEED "MULTI-COLOR HIGH ALTITUDE MIX" OR APPROVED EQUAL. THE SEED MIX IS TO BE BROADCAST AT A RATE OF NOT LESS THAN 40 POUNDS LIVE SEED PER ACRE, IN THE FOLLOWING PROPORTIONS:  

30% EPHRAIM WHEATGRASS	25% SHEEP FESCUE
15% PERENNIAL RYE	15% CHEWINGS FESCUE
10% KENTUCKY BLUEGRASS	5% ROCKY MOUNTAIN WILDFLOWER MIX
3. WATERING OF THE SEEDED AREAS WILL BE PROVIDED BY THE OWNER ONCE THE CONTRACTOR HAS DEMOBILIZED FROM THE SITE.
4. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR EROSION CONTROL ON THIS SITE FOR THE ENTIRE TERM AND DURATION OF THE CONTRACT AND THE WORK. THE CONTRACTOR MAY ACHIEVE ACCEPTABLE EROSION CONTROL BY WHATEVER IMPROVEMENTS, SYSTEMS, METHODS OR MEANS HE DEEMS SUITABLE BASED ON HIS JUDGMENT AND EXPERIENCE.
5. CONTRACTOR SHALL PREPARE AN EROSION CONTROL PLAN FOR MINIMIZING AND CONTROLLING EROSION FROM THE CONSTRUCTION DISTURBANCE AREA. THE EROSION CONTROL PLAN AT A MINIMUM SHALL DESCRIBE AND SHOW A LAYOUT OF EROSION CONTROL PRACTICES AND MEASURES TO BE USED.
6. ALL EROSION CONTROL IMPROVEMENTS SHALL BE INSTALLED PER MANUFACTURER'S GUIDELINES AND SPECIFICATIONS.
7. ONCE APPROVED BY THE OWNER, THE EROSION CONTROL PRACTICES AND MEASURES SHALL BE OBSERVED AND REMAIN IN PLACE AS NEEDED UNTIL SUCCESSFUL SITE REVEGETATION IS ACHIEVED.
8. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED REGULARLY.
9. FOLLOWING SUCCESSFUL REVEGETATION OF THE DISTURBANCE AREA, THE CONTRACTOR IS RESPONSIBLE TO REMOVE ANY EROSION CONTROL BMP'S AND MEASURES STILL IN PLACE.
10. NO WASH WATER FOR CONCRETE TRUCKS OR EQUIPMENT CLEANING WILL BE ALLOWED ON-SITE FOR THIS PROJECT.
11. RUBBISH, TRASH, GARBAGE, LITTER OR SIMILAR MATERIALS SHALL BE DEPOSITED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE SITE FROM WIND OR STORMWATER DISCHARGE.



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