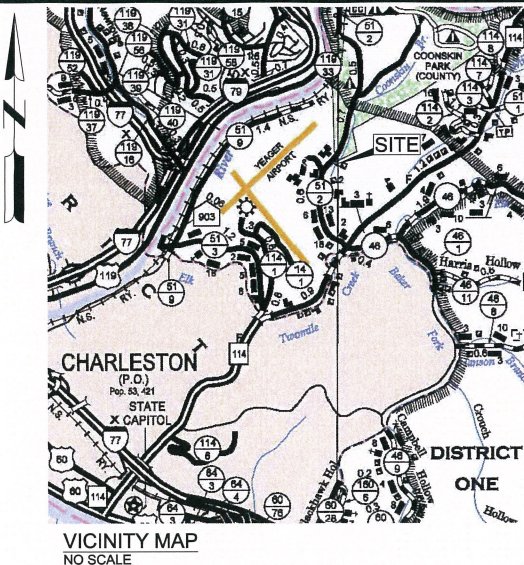




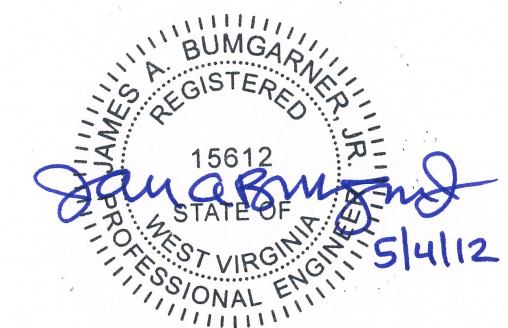
WEST VIRGINIA ARMY NATIONAL GUARD

CHILD DEVELOPMENT CENTER
UTILITY UPGRADES



Mead & Hunt
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WV ARMY NATIONAL GUARD
CHILD DEVELOPMENT CENTER
UTILITY UPGRADES
CONSTRUCTION & FACILITIES MANAGEMENT OFFICE
DESIGN AND CONSTRUCTION BRANCH
1707 COONSKIN DRIVE
CHARLESTON, WV 25311

REVISION

CLIENT NO: R3259700
M&H NO: 113755.0
DATE: 03-06-2012
DESIGNED BY: WKM
DRAWN BY: WKM
CHECKED BY: JAB
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SHEET CONTENTS
TITLE SHEET

SHEET NO. 1 of 6

C-100

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SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNITS	QUANTITY
WATERLINE			
670004-161	3 INCH DUCTILE IRON PIPE, TYPE I, CLASS 50	LF	404
*	*CONNECT 3" DIP TO EX.	LS	1
*	3" DIP 45 DEG BEND	EA	2
*	3" DIP TEE	EA	1
670004-202	6 INCH DUCTILE IRON PIPE, TYPE II, CLASS 50	LF	1,696
*	CONNECT 6" DIP TO EX	LS	1
*	6" ACV	EA	1
670009-200	6 INCH GATE VALVE AND VALVE BOX	EA	1
*	6" DIP 45 DEG BEND	EA	3
*	6" DIP 90 DEG BEND	EA	1
*	6" X 8" DIP REDUCER	EA	2
*	6" DIP TEE	EA	1
670004-222	8 INCH DUCTILE IRON PIPE, TYPE II, CLASS 50	LF	70
*	8" DIP 90 DEG BEND	EA	1
670010-300	16" WATER LINE CASING	LF	35
*	CONCRETE CHANNEL DEMO	LS	1
*	CONCRETE CHANNEL REPAIR	EA	1
670013-200	6 INCH FIRE HYDRANT	EA	1
*	BACKFLOW PREVENTER	EA	1
*	VAULT	EA	1
SANITARY			
675008-202	6 INCH DUCTILE IRON SEWER PIPE, TYPE II, CLASS 50	LF	376
675014-001	MANHOLE COMPLETE, INCLUDING CASTING	EA	3
ELECTRIC CONDUIT			
670007-018	4 INCH PLASTIC PIPE, SCHEDULE 80	LF	1,142
COMMUNICATIONS CONDUIT			
670007-018	4 INCH PLASTIC PIPE, SCHEDULE 80	LF	1,152

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SHEET CONTENTS
SUMMARY OF
QUANTITIES

SHEET NO. 2 of 6

C-101

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE CURRENT "WEST VIRGINIA DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS ROAD AND BRIDGES" PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND STATE AND LOCAL HEALTH DEPARTMENT REGULATIONS.
2. CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE BEGINNING SITE UTILITY CONSTRUCTION.
3. MAINTAIN POSITIVE DRAINAGE AND EROSION CONTROL IN ALL LOCATIONS DURING ALL PHASES OF CONSTRUCTION.
4. LOCATE AND COORDINATE WITH ALL BELOW AND ABOVE GROUND UTILITIES.
5. UNLESS OTHERWISE NOTED, RESTORE AND SEED ALL AREAS DISTURBED BY CONSTRUCTION.
6. FIELD VERIFY SIZE, ELEVATION, AND LOCATION OF EACH POINT OF CONNECTION TO EXISTING UTILITIES.
7. UNLESS OTHERWISE NOTED, CONTRACTOR IS RESPONSIBLE FOR TRENCHING AND BACKFILLING, AND CUTTING AND PATCHING OF DISTURBED PAVEMENT AND SIDEWALKS.
8. PROVIDE LONG SWEEPING BENDS FOR UNDERGROUND CABLE, DATA, COMMUNICATIONS, AND ELECTRIC CONDUIT.
9. CONTRACTOR IS RESPONSIBLE FOR ALL TAP FEES.
10. CONTRACTOR SHALL COORDINATE ALL WORK WITH ASSOCIATED UTILITY COMPANY PRIOR TO BEGINNING WORK AND SHALL FURNISH AND INSTALL ANY ADDITIONAL ITEMS FOR TIE IN TO UTILITY LINE BY REQUEST OF ASSOCIATED UTILITY COMPANY AT NO ADDITIONAL COST TO OWNER.
11. PROPOSED STRUCTURE TOPS SHALL BE RAISED OR LOWERED TO ACCOMMODATE NEW FINISH GRADES.
12. NEW BUILDING, SITE GRADING, AND SITE FEATURES OTHER THAN UTILITIES ARE SHOWN FOR PLAN READABILITY ONLY. REFER TO OTHER SITE DRAWINGS FOR SITE LAYOUT DETAILS.
13. ALL CONDUIT SHALL BE INSTALLED WITH A MINIMUM OF 36" OF COVER. MAINTAIN A MINIMUM OF 36" OF COVER AT UTILITY CROSSINGS. CONTRACTOR SHALL COMPLY WITH OTHER ELECTRIC COMPANY REQUIREMENTS.
14. MAINTAIN A MINIMUM OF 10 FEET HORIZONTAL SEPARATION BETWEEN SANITARY SEWER LINES AND WATER LINE FOR PARALLEL INSTALLATIONS. WHERE CROSSINGS OCCUR, WATER LINE SHALL MAINTAIN A MINIMUM OF 18 INCHES VERTICAL SEPARATION WITH THE WATER LINE INSTALLED ABOVE THE SANITARY SEWER LINE.
15. INSTALL BACKFILL STABILIZERS FOR TRENCH BACKFILL WHERE REQUIRED.
16. ALL BENDS IN WATER LINES SHALL BE RESTRAINED USING MEGALUG RESTRAINTS.
17. TWO 4" CONDUIT FOR DATA AND COMMUNICATIONS WIRE ROUTING; COORDINATE LOCATION WITH WV ARMY NATIONAL GUARD.
18. ALL CONDUIT MUST BE 4" SCHEDULE 80 PVC INSTALLED WITH A NYLON PULL ROPE.

WATERLINE NOTES

1. METALLIC LOCATOR TAPE SHALL BE INSTALLED ABOVE ALL WATER LINES, APPROXIMATELY TWO (2) FEET BELOW THE GROUND SURFACE. IN ADDITION, COPPER TRACER WIRE SHALL BE INSTALLED WITH THE PIPE.
2. ITEMS OF WORK NOTED ON THE PLANS AND NOT SPECIFICALLY COVERED BY A PAY ITEM ARE TO BE DECLARED A NON-PAY ITEM. THE COST OF SAID WORK SHALL BE INCLUDED IN THE VARIOUS ITEMS OF PAYMENT. EXAMPLE - WORK ASSOCIATED WITH INSTALLATION OF FITTINGS, CONNECTIONS, ETC.
3. CONCRETE THRUST BLOCKS SHALL BE PROVIDED AT ALL DIRECTION AND SIZE CHANGES. SEE THRUST BLOCK BEARING AREA TABLE. KEEP ALL FLANGE CONNECTIONS FREE AND CLEAR OF CONCRETE.
4. THE INFORMATION SHOWN ON THE DRAWINGS CONCERNING TYPE, SIZE, AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE, SIZE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO.
5. CONTRACTOR SHALL NOTIFY MISS UTILITY OF WV (1-800-245-4848) 72 HOURS IN ADVANCE OF START OF CONSTRUCTION ACTIVITIES. CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING UNDERGROUND OR ABOVE GROUND UTILITIES.
6. ALL WORK SHALL COMPLY WITH THE CURRENT "WEST VIRGINIA DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS ROAD AND BRIDGES" PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS.
7. THE CONTRACTOR SHALL PROVIDE THE COMPACTION AND CONCRETE TESTING NECESSARY FOR HIS QUALITY CONTROL AND AS REQUIRED BY THE WEST VIRGINIA DIVISION OF HIGHWAYS IN ACCORDANCE WITH SECTION 601 OF THE STANDARD SPECIFICATIONS. COPIES OF THESE TESTS SHALL BE MADE AVAILABLE TO THE OWNER UPON REQUEST.
8. ALL HAULING AND TRANSPORTING OF EQUIPMENT SHALL BE DONE ON RIGHTS-OF-WAY UNLESS CONTRACTOR OBTAINS OTHER ACCESS ROUTES FROM LANDOWNERS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES OUTSIDE OF RIGHT-OF-WAY.
10. THE SEQUENCE OF CONSTRUCTION IS TO BE CONDUCTED IN SUCH A MANNER TO MINIMIZE THE TIME THAT CUSTOMERS ARE OUT OF SERVICE. IN NO CASE SHALL THIS TIME EXCEED FOUR (4) HOURS. THE CONTRACTOR SHALL GIVE ALL AFFECTED CUSTOMERS A MINIMUM OF FORTY-EIGHT (48) HOURS WRITTEN NOTIFICATION OF ANY DISRUPTION IN SERVICE. ANY DISRUPTION OF SERVICE SHALL OCCUR ONLY BETWEEN THE HOURS OF 10:00 PM AND 4:00 AM.
11. THE LOCATION OF EXISTING WATERLINES IS APPROXIMATE. THE CONTRACTOR SHALL DIG TEST PITS PRIOR TO COMMENCING CONSTRUCTION TO VERIFY THE LOCATION OF THE EXISTING WATERLINES AND VALVES.
13. PRIOR TO COMMENCING WORK ON THE WATER LINES, THE CONTRACTOR SHALL NOTIFY MR. BRETT MORGAN, WEST VIRGINIA AMERICAN WATER COMPANY AT 304-340-2011, MR. STEPHEN DUFFY, WEST VIRGINIA ARMY NATIONAL GUARD AT 304-561-6501, AND LT. COL. JOHN DULIN WITH THE WEST VIRGINIA AIR NATIONAL GUARD AT 304-341-6270. ALL WORK IS TO BE COORDINATED WITH THE OWNER.
14. ALL WATER MAINS SHALL BE COVERED WITH SUFFICIENT EARTH OR OTHER ISOLATION TO PREVENT FREEZING. ALL DISTRIBUTION MAINS SHALL BE PROVIDED WITH A MINIMUM OF THIRTY-SIX (36) INCHES OF EARTH COVERING. ALL MAINS OF LESS THAN EIGHT (8) INCHES IN DIAMETER WITHIN FIVE (5) FEET OF A HEAVILY TRAVELED HIGHWAY SHALL BE PROVIDED WITH AT LEAST FORTY-TWO (42) INCHES OF COVER.
15. WATER LINE SHALL BE PRESSURE TESTED IN ACCORDANCE WITH SECTION 670 OF THE STANDARD SPECIFICATIONS.
16. PRESSURE FOR WATERLINE PRESSURE AND LEAK TESTS SHALL BE 200 PSI.
17. WATER LINE SHALL BE DISINFECTED, FLUSHED, AND BACTERIOLOGICALLY TESTED PRIOR TO USE IN ACCORDANCE WITH SECTION 670 OF THE STANDARD SPECIFICATIONS AND THE REQUIREMENTS OF THE BUREAU FOR PUBLIC HEALTH. THE CONTRACTOR SHALL PROVIDE SAMPLING TAP TO OBTAIN WATER SAMPLING FOR BACTERIOLOGICAL TESTING.
18. ALL UNPAVED AREAS DISTURBED BY THE WATER LINE RELOCATION WORK SHALL BE GRADED TO DRAIN, SEEDED AND MULCHED AS SOON AS POSSIBLE AND RESTORED TO ORIGINAL CONDITION.
19. WATERLINE PIPE ON THIS PROJECT SHALL BE DUCTILE IRON. ALL FITTINGS FOR THE PVC PIPE SHALL BE DUCTILE IRON WITH A PRESSURE RATING OF 350 PSI OR GREATER.

SANITARY SEWER NOTES

1. ALL WORK SHALL COMPLY WITH THE CURRENT "WEST VIRGINIA DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS ROAD AND BRIDGES" PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND STATE AND LOCAL HEALTH DEPARTMENT REGULATIONS.
2. THE CONTRACTOR SHALL NOT PERFORM ANY GRADING OPERATIONS OVER EXISTING SEWER FACILITIES WITHIN THE PROJECT WHICH WOULD IN ANY WAY JEOPARDIZE SERVICES UNTIL THE PROPOSED SEWER FACILITIES ARE INSTALLED AND PLACED INTO OPERATION AND EXISTING SEWER FACILITIES ARE ABANDONED. ANY DEVIATION MUST BE APPROVED BY THE ENGINEER.
3. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF THE EXISTING SANITARY FACILITIES.
4. THE CONTRACTOR SHALL PLUG OR CAP EACH END OF SANITARY SEWERS WHICH ARE TO BE ABANDONED AS NOTED IN THE PLANS AND AS DETAILED. COST OF PLUGGING OR CAPPING EXISTING LINES SHALL BE INCIDENTAL TO THE PAY ITEMS FOR THE VARIOUS PIPES INSTALLED.
5. ALL SANITARY SEWER RELOCATION WORK SHALL BE STAGED TO MINIMIZE THE TIME THAT ANY CUSTOMERS ARE OUT OF SERVICE. IN NO CASE SHALL THE TIME EXCEED FOUR (4) HOURS. A HIGH EARLY STRENGTH ADMIXTURE TO CONCRETE FOR THRUST BLOCKS SHALL BE USED. SANITARY SEWER RELOCATION WORK SHALL BE STAGED SUCH THAT THERE SHALL BE NO OUT-OF-SERVICE TIME AND DISCHARGING RAW SEWAGE TO STREAMS SHALL BE PROHIBITED. THE CONTRACTOR SHALL USE PUMP-AROUND, PLUG-AND-BACK-UP, OR OTHER APPROVED METHODS WHEN CONSTRUCTING CONNECTION TO EXISTING SANITARY SEWERS. CONNECTION SHALL BE MADE BETWEEN THE HOURS OF 6:00 P.M. AND 6:00 A.M.
6. PRIOR TO COMMENCING WORK ON THE SANITARY LINES, THE CONTRACTOR SHALL NOTIFY MR. MARK JUSTICE, CHARLESTON SANITARY BOARD, AT 304-340-2011 AND MR. STEPHEN DUFFY, WEST VIRGINIA ARMY NATIONAL GUARD AT 304-561-6501. ALL WORK IS TO BE COORDINATED WITH THE OWNER.
7. LOCATION, DEPTHS AND SIZES OF EXISTING UTILITIES SHOWN ON THE UTILITY RELOCATION PLANS ARE NOT GUARANTEED. THE CONTRACTOR SHALL FIELD VERIFY WITH TEST HOLES THE LOCATION, ELEVATION, TYPE, ROUNDNESS, GRADE AND SIZE OF ALL EXISTING UNDERGROUND UTILITIES AND POINTS OF CONNECTION. PRIOR TO EXCAVATION, ORDERING OF MATERIALS AND INSTALLATION FOR THIS PROJECT.
8. COST OF CONNECTING SANITARY SEWER LINES TO EXISTING MANHOLES AND SERVICE CONNECTIONS SHALL BE INCLUDED IN THE UNIT BID PRICE OF THE PIPE.
9. 6 INCH PLASTIC SEWER PIPE SHALL BE CLASS 200, SDR-35, P.V.C. PIPE MEETING THE REQUIREMENTS OF AWWA C-900 AND CONFORMING TO SECTION 675 OF THE STANDARD SPECIFICATIONS.
10. SANITARY SEWER CLEANOUTS SHALL BE MEASURED BY THE LINEAR FOOT OF PIPE, INCLUDING FITTINGS, AND PAID FOR UNDER THE PAY ITEM FOR THE PIPE INSTALLED.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEWAGE OVERFLOWS OR SPILLAGE DURING SANITARY SEWER SYSTEM SHUTDOWN OR CONNECTIONS. ONCE GRAVITY SANITARY SEWER FACILITIES HAVE BEEN SHUTDOWN OR PUMP STATIONS PUMPED DOWN, THE CONTRACTOR SHALL PROVIDE STANDBY SEWAGE PUMPING AND HAULING OR BY-PASS PUMPING TECHNIQUES FOR THE DISPOSAL OF ALL OVERFLOWS WHICH MAY OCCUR IN THE SHUTDOWN OF THE SANITARY SEWER SYSTEM FACILITIES. THE METHOD FOR MAINTAINING SEWAGE CONVEYANCE SHALL BE APPROVED BY THE ENGINEER PRIOR TO SYSTEM SHUTDOWN.
12. THE CONTRACTOR SHALL NOTE THAT THE FORCE MAIN RELOCATION PLANS ARE ONLY FOR TASKS RELATED TO SEWER WORK. THE CONTRACTOR SHALL REFER TO THE ROADWAY PLANS FOR ROADWAY AND DRAINAGE DESIGN. ALL MATERIALS OF CONSTRUCTION COMMON TO THE ROADWAY WORK, INCLUDING BUT NOT LIMITED TO; AGGREGATES, CONCRETE, BITUMINOUS PAVEMENT, SEEDING AND MULCHING, EROSION CONTROLS, ETC. SHALL BE PROVIDED IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS.
13. THE CONTRACTOR, WITH HIS ASSOCIATED MATERIAL SUPPLIERS, SHALL PROVIDE CERTIFICATION ACCEPTABLE TO THE ENGINEER, THAT ALL PIPE MATERIALS SUPPLIED ON THE PROJECT MEET OR EXCEED THE SPECIFICATIONS.
14. ALL THRUST PROTECTION INSTALLED UNDER THIS CONTRACT SHALL BE PLACED BEFORE BACKFILLING OF THE TRENCH AND INSPECTED BY THE ENGINEER. TEMPORARY BUTTRESSING FOR TESTING SHALL BE PROVIDED. INSTALLATION OF APPROVED RETAINER GLANDS, TIE RODS, AND OTHER THRUST RESTRAINTS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
15. CONTRACTOR SHALL NOTIFY MISS UTILITY OF WV (1-800-245-4848) 72 HOURS IN ADVANCE OF START OF CONSTRUCTION ACTIVITIES. CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY DAMAGE TO EXISTING UNDERGROUND OR ABOVE GROUND UTILITIES.
16. SYSTEM SHUT DOWN OPERATION:
 - A. THE CONTRACTOR SHALL SUBMIT A SEQUENCE OF UTILITY CONSTRUCTION A MINIMUM OF 30 DAYS PRIOR TO UTILITY ADJUSTMENT FIELD EFFORTS. THE SEQUENCE OF UTILITY CONSTRUCTION SHALL CONSIST OF A PRELIMINARY LIST OF DATES FOR UTILITY TIE-INS, CONNECTIONS AND SHUTDOWNS. THE CONTRACTOR SHALL ALSO PROVIDE AT THIS TIME THE ANTICIPATED SHUTDOWN TIME REQUIRED, AS WELL AS ANTICIPATED TIME OF DAY SCHEDULE FOR THE TIE-INS, CONNECTIONS, AND SHUTDOWNS.
 - B. CONTRACTOR SHALL GIVE A TWO (2) WEEK NOTICE IN WRITING TO THE OWNER PRIOR TO BEGINNING MODIFICATIONS TO THE EXISTING FACILITIES.
 - C. THE EXISTING FACILITIES SHALL BE DEACTIVATED FOR A MAXIMUM PERIOD OF FOUR (4) HOURS FOR EACH SCHEDULED SHUTDOWN. THE CONTRACTOR SHALL MAKE AS MANY CONNECTIONS AS PRACTICAL DURING EACH SHUTDOWN PERIOD.
17. ANY DAMAGE OCCURRING TO ANY EXISTING UTILITIES DURING THE CONSTRUCTION OF THIS PROJECT SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE BY MEANS APPROVED BY THE UTILITY OWNER.

UTILITY CONTACT PERSONNEL

ELECTRICITY:
APPALACHIAN POWER COMPANY
CHARLESTON, WEST VIRGINIA
MR. PATRICK BROWN 304-746-2662

NATURAL GAS:
MOUNTAINEER GAS COMPANY
CHARLESTON, WEST VIRGINIA
MR. MIKE PLYMALE 304-347-0577

WATER:
WEST VIRGINIA AMERICAN WATER
COMPANY
CHARLESTON, WEST VIRGINIA
MR. BRETT MORGAN 304-340-2011

SANITARY:
CHARLESTON SANITARY BOARD
CHARLESTON, WEST VIRGINIA
MR. MARK JUSTICE 304-561-8185

NOTE: TELEPHONE, DATA, AND CABLE TV SHALL BE COORDINATED WITH THE WV ARMY NATIONAL GUARD REPRESENTATIVE: MAJOR PATRICK CHARD 304-561-6519.

Mead & Hunt

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SHEET CONTENTS
UTILITY SERVICE
GENERAL NOTES

SHEET NO. 3 of 6

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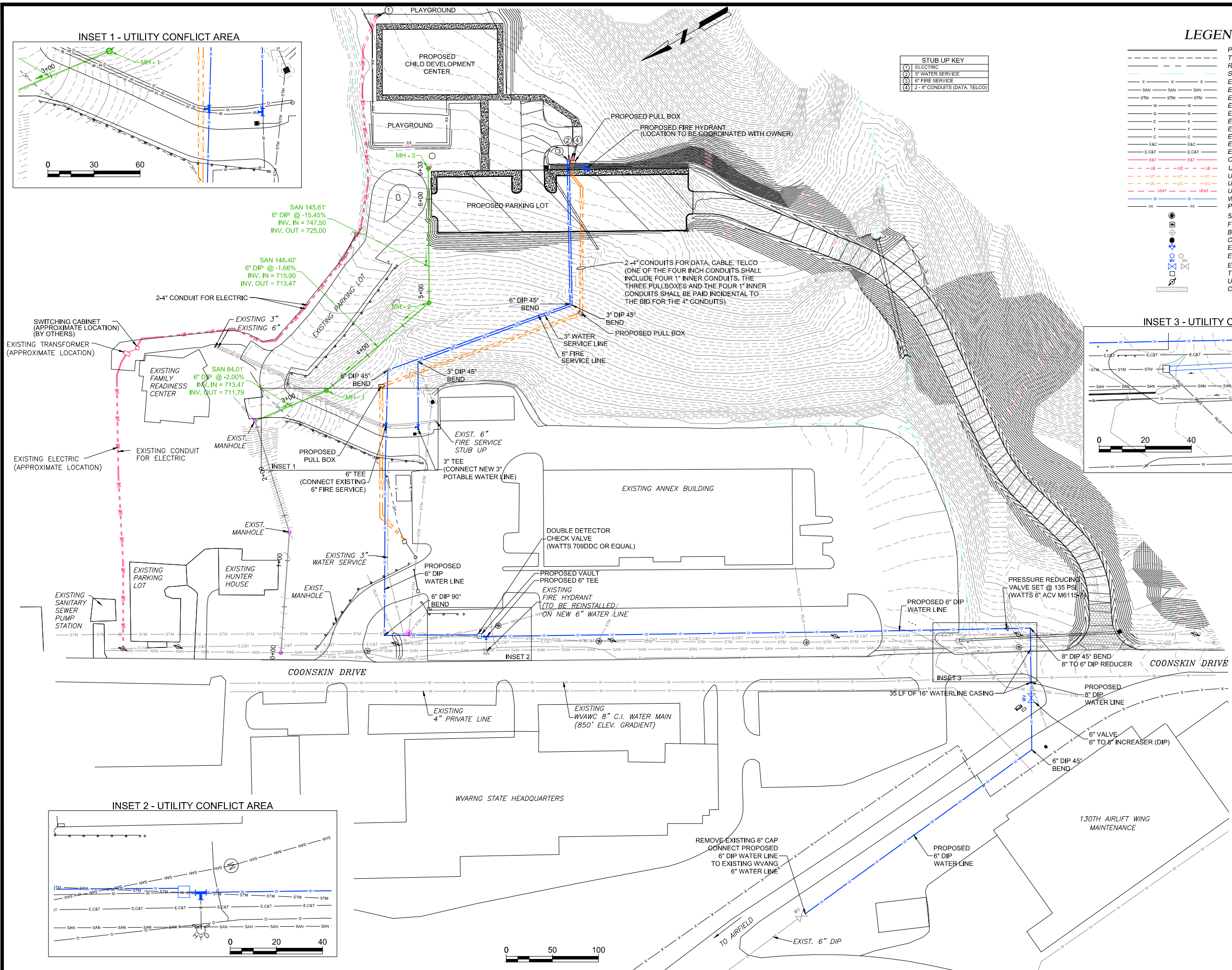
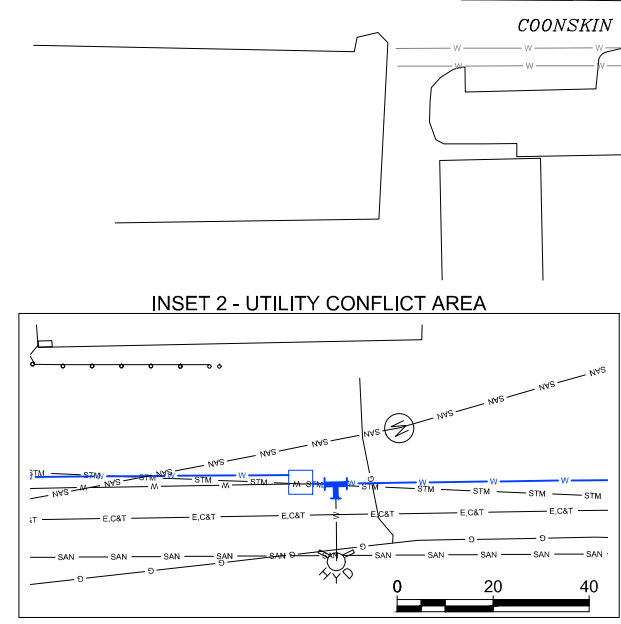
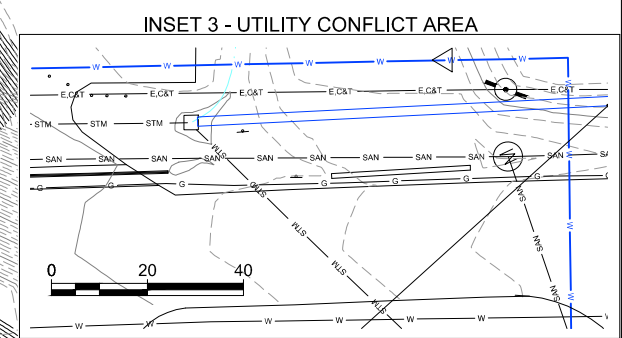
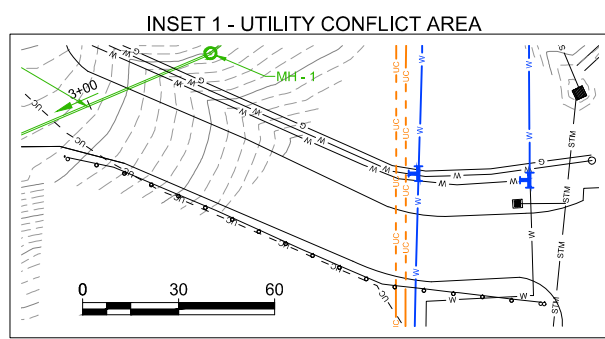
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LEGEND

---	PROPERTY LINE
---	TRACT LINE
---	RIGHT OF WAY
---	STREAM/DITCH
X X X	EXISTING FENCE LINE
SAN SAN SAN	EXISTING SANITARY SEWER
STM STM STM	EXISTING STORM SEWER
W W W	EXISTING WATER LINE
G G G	EXISTING GAS LINE
E E E	EXISTING OVERHEAD ELECTRIC
T T T	EXISTING OVERHEAD TELEPHONE
C C C	EXISTING OVERHEAD CABLE
E&C E&C	EXISTING OVERHEAD ELECTRIC/CABLE
E&C&T E&C&T	EXISTING OVERHEAD ELECTRIC/CABLE/TELEPHONE
---	OVERHEAD ELECTRIC/TELEPHONE
---	UNDERGROUND ELECTRIC
---	UNDERGROUND TELEPHONE
---	UNDERGROUND CABLE/DATA
---	UNDERGROUND ELECTRIC/TELEPHONE
---	WATER LINE
---	PROPOSED FENCE
○	5/8" REBAR WITH CAP SET
○	FOUND MONUMENTATION
○	BENCH MARK
○	CALCULATED POINT
○	EXISTING FIRE HYDRANT
○	EXISTING WATER OR GAS METER
○	EXISTING WATER OR GAS VALVE
○	TELEPHONE OR ELECTRIC RISER
○	UTILITY POLE
○	CONCRETE AREA

STUB UP KEY

①	ELECTRIC
②	3" WATER SERVICE
③	6" FIRE SERVICE
④	2-4" CONDUITS (DATA, TELCO)



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SHEET CONTENTS
UTILITY SERVICE PLAN

SHEET NO. 4 of 6

C-103

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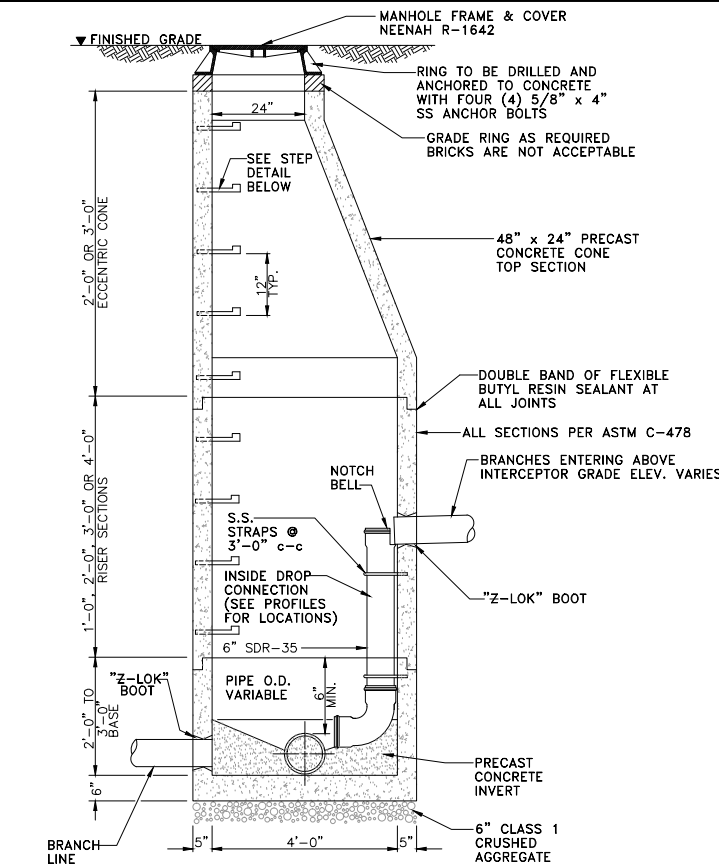
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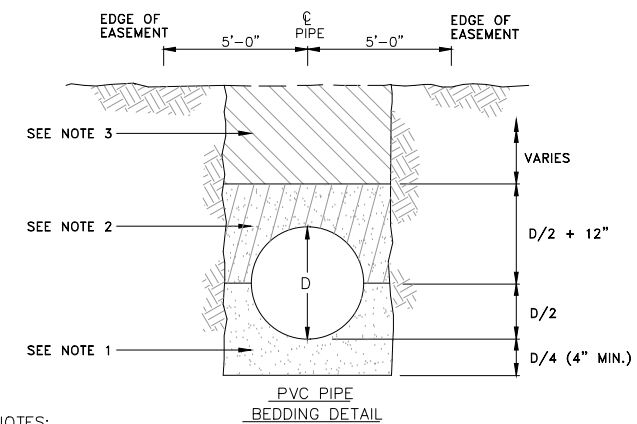
SHEET NO. 5 of 6

D-101



48" DIAMETER PRECAST CONCRETE MANHOLES
NO SCALE

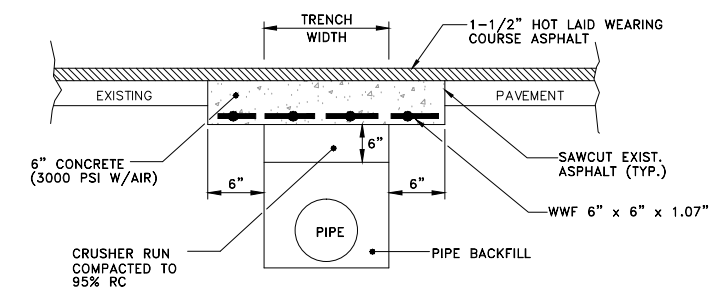
NOTE:
1. SHALLOW MANHOLES (4'-0" IN DEPTH OR LESS) SHALL USE FLAT TOP SECTIONS.



PIPE BEDDING
NO SCALE

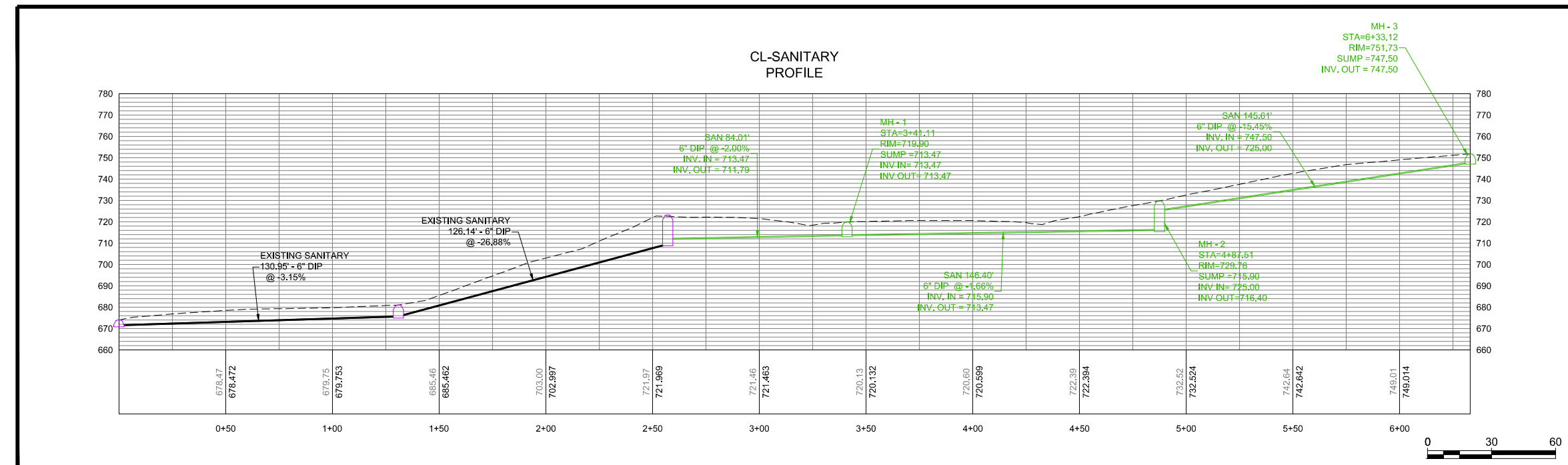
NOTES:

- HAND-PLACED AGGREGATE MEETING THE FOLLOWING REQUIREMENT:
a. #57 ANGULAR LIMESTONE
THE AGGREGATE SHALL BE PLACED UNDER THE PIPE HAUNCHES ON PVC PIPE TO PROVIDE FULL PIPE SUPPORT FROM THE SPRING LINE DOWN.
- HAND-PLACED SELECT BACKFILL: #57 ANGULAR LIMESTONE OR CLEAN MATERIAL FROM EXCAVATION WITH PARTICLE SIZE 3/4" OR LESS
- SUITABLE MATERIAL FROM EXCAVATION: NO DEBRIS, STICKS, TIMBER, WOOD, TRASH OR ORGANIC MATERIAL. NO PARTICLES GREATER THAN 6 INCHES.
- COMPACT BACKFILL TO SAME DENSITY AS ADJACENT UNDISTURBED SOIL EXCEPT IN ROADWAYS OR STREETS.
- COMPACT BACKFILL IN ROADWAYS OR STREETS TO 95% DENSITY.

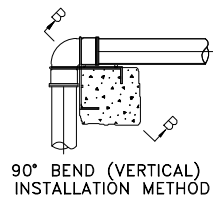


NOTE:
1. MILL DOWN ROAD 1-1/2" AND PROVIDE FULL WIDTH OVERLAY
2. PAY ITEM FOR CONCRETE TRNCH REPAIR INCLUDES SAWCUTTING EXISTING ASPHALT, COMPACTED CRUSHER RUN, AND REINFORCED CONCRETE
3. PAY ITEM FOR 1-1/2" WEARING COURSE OVERLAY INCLUDES MILLING, CLEAN-UP, AND TACK COAT

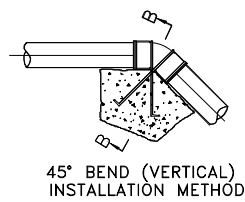
ASPHALT ROAD REPLACEMENT
NO SCALE



CL-SANITARY PROFILE



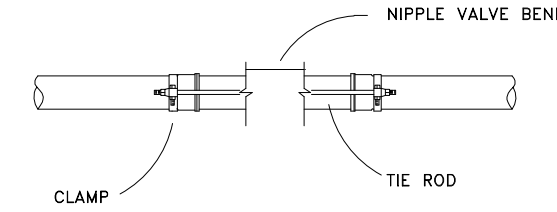
90° BEND (VERTICAL)
INSTALLATION METHOD



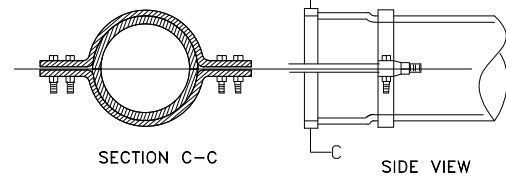
45° BEND (VERTICAL)
INSTALLATION METHOD



SECTION B-B

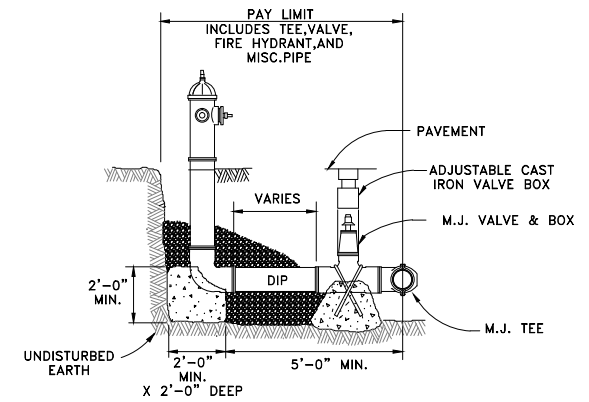


INSTALLATION METHOD
TYPE 1 CLAMP

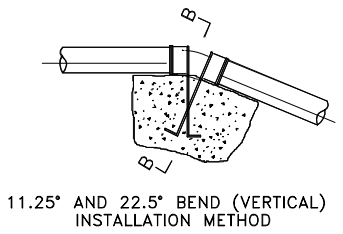


SECTION C-C SIDE VIEW

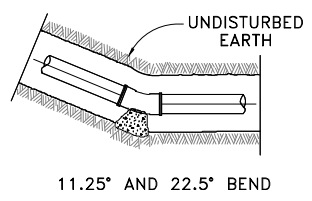
CLAMP & TIE RODS
NO SCALE



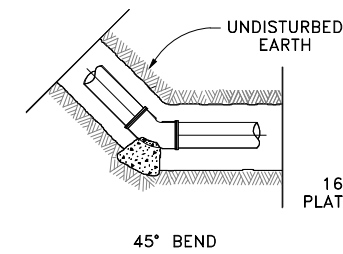
FIRE HYDRANT WITH TEE
NO SCALE



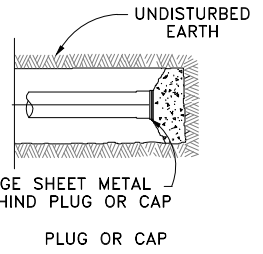
11.25° AND 22.5° BEND (VERTICAL)
INSTALLATION METHOD



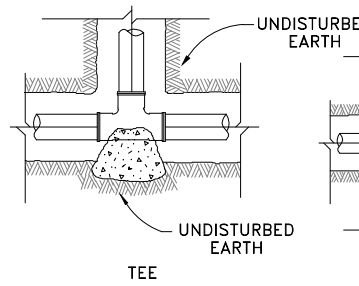
11.25° AND 22.5° BEND



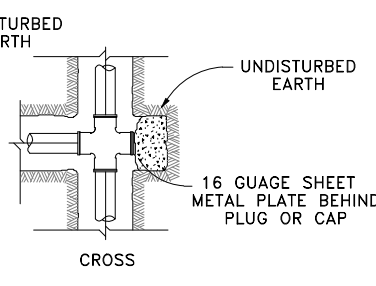
45° BEND



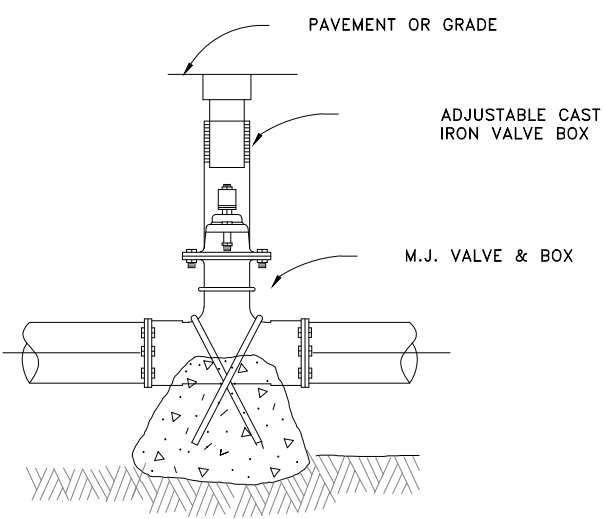
PLUG OR CAP



TEE



CROSS



GATE VALVE
NO SCALE

NOTES

THE PRODUCT OF THE H AND L DIMENSIONS SELECTED FOR ANY THRUST BLOCK SHALL BE EQUAL TO OR GREATER THAN THE REQUIRED SOIL BEARING AREA. THE MINIMUM AREA IN ANY SITUATION SHALL BE ONE SQUARE FOOT.

THE VALUES OF REQUIRED SOIL BEARING AREA ARE BASED ON AN ALLOWABLE SOIL PRESSURE (SA) OF 2000 PSF IN UNDISTURBED EARTH. IF A LOWER GRADE OF SOIL IS ENCOUNTERED, THE SOIL BEARING AREA MUST BE INCREASED AS DIRECTED BY THE ENGINEER.

THE TABLE VALUES ARE NOT APPLICABLE IF SOIL SUPPORT OF THE THRUST BLOCKS IS INTERRUPTED BY EXCAVATION OR A DOWNWARD SLOPING GROUND LINE IN THE VICINITY BEHIND THE BLOCKS.

IF THE DESIGN PRESSURE IS BETWEEN THE TABLE VALUES, THE REQUIRED SOIL BEARING AREA FOR THE NEXT HIGHER DESIGN PRESSURE SHALL BE USED.

FOR DESIGN PRESSURE EXCEEDING 200 PSIG, THE REQUIRED SOIL BEARING AREA SHALL BE 2.01 X SQUARE INCHES AREA OF THE PIPE X THE DESIGN PRESSURE X (SIN /)/2000.

THRUSTING FACES OF BLOCKS SHALL BE CENTERED ON BENDS HORIZONTALLY.

CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF 670.4.3 OR 715.12 OF THE SPECIFICATIONS. REINFORCING STEEL SHALL CONFORM TO 709.1 OF THE SPECIFICATIONS. THE COST OF CONCRETE AND STEEL IN THESE THRUST BLOCKS SHALL BE INCLUDED IN THE COST OF VARIOUS PIPE BID ITEMS.

WITH PIPE LINES WITH DESIGN PRESSURE LESS THAN 100 PSIG THE REINFORCEMENT CAN BE 6"X6"-6X6 GAGE WELDED WIRE FABRIC.

S.F. OF UNDISTURBED SOIL BEARING AREA REQUIRED IF S _a =2000 P.S.I.									
PIPE SIZE INCHES	DESIGN PRESSURE (MAXIMUM OPERATING + TEST)								
	11-1/4°			22-1/2°			45°		
	100_PSIG	150_PSIG	200_PSIG	100_PSIG	150_PSIG	200_PSIG	100_PSIG	150_PSIG	200_PSIG
4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6	1.0	1.0	1.0	1.0	1.0	1.2	1.1	1.7	2.2
8	1.0	1.0	1.0	1.0	1.5	2.0	2.0	3.0	4.0
10	1.0	1.2	1.6	1.6	2.4	3.1	3.1	4.6	6.1
12	1.2	1.7	2.3	2.3	3.4	4.5	4.4	6.6	8.7
16	2.0	3.0	4.0	3.9	5.8	7.7	7.7	11.5	15.4
18	2.6	3.8	5.1	5.0	7.5	10.0	9.8	14.7	19.5
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---	---	---	---	---	---	---	---	---	---
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	90°			TEE			DEAD END		
	100_PSIG	150_PSIG	200_PSIG	100_PSIG	150_PSIG	200_PSIG	100_PSIG	150_PSIG	200_PSIG
4	1.0	1.4	1.8	1	1	1	1	1	2
6	2.1	3.1	4.1	2	2	3	2	3	4
8	3.7	5.5	7.3	3	4	5	3	4	6
10	5.6	8.4	11.2	5	6	8	5	8	10
12	8.0	12.1	16.0	6	8	11	7	11	14
16	14.2	21.3	28.4	10	15	20	13	20	26
18	18.1	27.1	36.1	13	19	26	17	25	34
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WV ARMY NATIONAL GUARD
CHILD DEVELOPMENT CENTER
UTILITY UPGRADES
CONSTRUCTION & FACILITIES MANAGEMENT OFFICE
DESIGN AND CONSTRUCTION BRANCH
1707 COONSKIN DRIVE
CHARLESTON, WV 25311

REVISION
CLIENT NO: R3259700
M&H NO: 113755.0
DATE: 03-06-2012
DESIGNED BY: WKM
DRAWN BY: WKM
CHECKED BY: JAB
DO NOT SCALE DRAWINGS
SHEET CONTENTS
UTILITY SERVICE
DETAILS
SHEET NO. 6 of 6