HDR Engineering, Inc.

CITY OF YANKTON

Contract Drawings For

City of Yankton, South Dakota

2014 Water Treatment Plant Improvements
HORIZONTAL COLLECTOR WELL

City Project No: ES14-5
HDR Project No: 135-223788-003

City of Yankton
715 E. 4th Street
Yankton, SD 57078

ISSUED FOR BIDS
October 8, 2014

REGISTERED PROFESSIONAL ENGINEER
REG. NO.
11048
STEVEN J.
QUAIL
SOUTH DAKOTA
10/8/2014

I, STEVEN J. QUAIL, hereby certify that these plans were prepared by me, or under my direct supervision and that I am a duly registered engineer under the laws of the State of South Dakota.

STEVEN J. QUAIL S.D. No. 11048 10/8/14
Date

INDEX OF SHEETS:

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

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PROJECT NUMBER	135–223788–003

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WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

INDEX OF SHEETS

0 1" 2"

FILENAME	00G001.dwg
SCALE	AS NOTED

SHEET 00G001

A/C	AIR CONDITIONING
A/E	ARCHITECT/ENGINEER
A	ARCHITECTURAL (DWG DISCIPLINE), AMP
AB	ANCHOR BOLT
ABC	AGGREGATE BASE COURSE
ABAN	ABANDON
AC	ALTERNATING CURRENT
ACK	ACKNOWLEDGE
ACP	ACOUSTIC CEILING PANEL, ASPHALTIC CONCRETE PAVEMENT
ACCU	AIR COOLED CONDENSING UNIT
ACST	ACOUSTIC
AD	ADDENDUM, AREA DRAIN
ADDL	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
AF	AMP FRAME, AMP FUSE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AGGR	AGGREGATE
AI	AREA INLET
AIC	AMPS INTERRUPTING CAPACITY
ALIG	ALIGNMENT
ALUM	ALUMINUM
ALT	ALTERNATE, ALTITUDE
AM	ACOUSTICAL MATERIAL
AMB	AMBIENT
ANC	ANCHOR
AP	ACCESS PANEL
APRX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
ASSY	ASSEMBLY
AT	AMP TRIP
ATC	ACOUSTICAL TILE CEILING
ATM	ATMOSPHERE
AUTO	AUTOMATIC
AUX	AUXILIARY
AVG	AVERAGE
AWG	AMERICAN WIRE GAGE
AWT	ACOUSTICAL WALL TILE
B/B	BACK TO BACK
BAL	BALANCE
BBD	BULLETIN BOARD
BC	BASE CABINET, BOTTOM CHORD, BOLT CENTER, BOLT CIRCLE
BD	BOARD
BE	BOTH ENDS, BELL END
BF	BOTH FACES, BOTTOM FACE, BLIND FLANGE, BOARD FEET
BFP	BACKFLOW PREVENTER
BFV	BUTTERFLY VALVE
BITUM	BACKING
BKG	BASE LINE
BL	BUILDING
BLDG	BLOCK
BLK	BLOCKING
BLKG	BENCHMARK, BEAM
BM	BACK OF CURB
BOC	BOTTOM OF DUCT
BOD	BOTTOM OF FOOTING
BOF	BOTTOM OF GRILLE
BOG	BOTTOM OF LOUVER
BOL	BOTTOM OF PIPE
BOP	BOTTOM OF REGISTER
BOR	BOTTOM
BOT	BOTTOM OF UNIT
BOU	BASE PLATE
BP	BEARING
BRG	BEARING PLATE
BRGP	BRACKET
BRKT	BOTH SIDES
BS	BRITISH THERMAL UNIT
BTU	BETWEEN
BTW	BUTT WELD
BTWLD	BELL UP, BUILT UP
BU	BUILT-UP ROOFING
BUR	BOTH WAYS
BW	BYPASS
BYP	
C TO C	CENTER TO CENTER
C&G	CURB & GUTTER
C	CHANNEL SHAPE, CENTIGRADE, CONDUIT, CIVIL (DRAWING DISCIPLINE)
CAB	CABINET
CAP	CAPACITY
CAT	CATALOG
CAV	CAVITY
CB	CATCH BASIN
CCB	CONCRETE BLOCK
CCW	COUNTER CLOCKWISE
CDF	CONTROLLED DENSITY FILL
CE	CONCRETE EDGE
CER	CERAMIC
CF	CUBIC FEET (FOOT)
CFL	COUNTER FLASHING
CHFR	CHAMFER
CHBD	CHALKBOARD
CHD	CHORD
CHH	COMMUNICATION HANDHOLE
CI	CURB INLET
CIP	CAST-IN-PLACE
CIPB	CONCRETE INTERLOCKING PAVER BALLAST
CIRC	CIRCULATION, CIRCULAR
CJ	CONSTRUCTION JOINT
CKT	CIRCUIT
CL	CENTERLINE, CLASS, CLOSE
CLG	CEILING
CLJ	CONTROL JOINT
CLKG	CAULKING
CLR	CLEAR
CMH	COMMUNICATION MANHOLE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT, CONCRETE OPENING
COL	COLUMN
COM	COMMON
COMB	COMBINATION
COMM	COMMUNICATION
COMP	COMPOSITION, COMPRESSIBLE, COMPOSITE
CONC	CONCENTRIC, CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COOR	COORDINATE
CORR	CORROSIVE, CORRUGATED
CP	CHECKER PLATE, CONTROL POINT
CPLG	COUPLING
CRL	CORROSION RESISTANT LINING
CSC	COMPRESSION SLEEVE COUPLING
CSK	COUNTERSINK
CSS	CLINIC SERVICE SINK
CT	CERAMIC TILE
CTR	CENTER
CTRL	CONTROL
CVT	CULVERT
CU	COPPER, CUBIC
CW	CLOCKWISE
CY	CUBIC YARD
d	PENNY (NAIL MEASURE)
D	DEEP, DIFFUSER
DB	DUCT BANK, DECIBEL, DRY BULB
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEG C	DEGREE CENTIGRADE
DEG F	DEGREE FAHRENHEIT
DEMO	DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DH	DEHUMIDIFIER
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL, DIAGRAM
DIFF	DIFFERENTIAL, DIFFERENCE
DIM	DIMENSION
DISCH	DISCHARGE
DIST	DISTANCE, DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DMPF	DAMP PROOFING
DN	DOWN
DO	DISSOLVED OXYGEN, DITTO
DP	DEPTH
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DS	DOWN SPOUT
DT	DOUBLE TEE, DRIP TRAP ASSEMBLY
DUP	DUPLICATE
DWG	DRAWING
DWL	DOWEL
DWR	DRAWER
E	EAST, ELECTRICAL (DWG DISCIPLINE)
EA	EACH, EXHAUST AIR
EBH	ELECTRIC BASEBOARD HEATER
EC	ELECTRICAL CONTRACTOR
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EDB	ELECTRICAL DUCT BANK
EE	EACH END
EF	EACH FACE, EXHAUST FAN
EFF	EFFLUENT, EFFICIENCY
EHH	ELECTRICAL HANDHOLE
EIFS	EXTERIOR INSULATION & FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELBOW, ELEVATION
ELEC	ELECTRICAL
EMBD	EMBEDDED
EMER	EMERGENCY
EMH	ELECTRICAL MANHOLE
ENCL	ENCLOSURE
ENGR	ENGINEER
ENTR	ENTRANCE
EOP	EDGE OF PAVEMENT
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE, EQUAL SPACE, EMERGENCY SHOWER
ESEW	EMERGENCY SHOWER AND EYE WASH
EST	ESTIMATE
EUH	ELECTRIC UNIT HEATER
EW	EACH WAY, EMERGENCY EYE/FACE WASH
EWC	ELECTRIC WATER COOLER
EWEF	EACH WAY, EACH FACE
EWH	ELECTRIC WATER HEATER
EWTB	EACH WAY, TOP AND BOTTOM
EXC	EXCAVATION
EXH	EXHAUST
EXP	EXPANSION, EXPOSED
EXST	EXISTING
EXT	EXTERIOR, EXTERNAL, EXTENSION
F&B	FACE & BYPASS
F TO F	FACE TO FACE
FAB	FABRICATE
FB	FLOOR BEAM
FBD	FIBERBOARD
FBG	FIBERGLASS
FBM	BOARD FOOT MEASURE
FBO	FURNISHED BY OWNER
FC	FLUSHING CONNECTION, FAN COIL
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDC	FLEXIBLE DUCT CONNECTION
FDTN	FOUNDATION
FDR	FEEDER
FE	FLANGED END, FLOW ELEMENT
FEC	FIRE EXTINGUISHER CABINET
FES	FLARED END SECTION
FEXT	FIRE EXTINGUISHER
FF	FAR FACE, FACTORY FINISH, FLAT FACE
FG	FINISHED GRADE
FIG	FIGURE
FH	FIRE HYDRANT
FIN	FINISH
FJT	FLUSH JOINT
FL	FLOW, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE
FLOR	FLUORESCENT
FLR	FLOOR
FLS	FLASHING, FLUSH
FN	FLOW METER
FO	FENCE
FOC	FINISHED OPENING
FOF	FACE OF CONCRETE, FACE OF CURB
FOM	FACE OF FINISH
FOS	FACE OF MASONRY
FOT	FACE OF STUDS
FPT	FLAT ON TOP
FR	FEMALE PIPE THREAD
FRP	FRAME
FRTM	FIBERGLASS REINFORCED PLASTIC
FS	FIRE RETARDANT TREATED MATERIAL
FT	FLOOR SINK, FAR SIDE
FTG	FEET, FOOT
FUR	FOOTING, FITTING
FURN	FURRED, FURRING
FUT	FURNITURE, FURNISH
FV	FUTURE
FW	FACE VELOCITY
FWD	FIELD WELD, FIRE WALL
FWE	FORWARD
FXTR	FURNISHED WITH EQUIPMENT FIXTURE
G	GRILLE, GROUND, GENERAL (DWG DISCIPLINE)
GA	GAGE (METAL THICKNESS)
GAL	GALLON
GALV	GALVANIZED
GB	GRAB BAR, GRADE BREAK
GC	GROOVED COUPLING
GD	GUARD
GEN	GENERAL
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFMU	GROUND FACE MASONRY UNIT
GG	GUTTER GRADE
GJ	GROOVED JOINT
GL	GLASS
GLB	GLASS BLOCK
GND	GROUND
GP	GUY POLE
GR	GRADE
GRTG	GRATING
GSB	GYPSUM SHEATHING BOARD
GT	GREASE TRAP
GV	GATE VALVE
GVL	GRAVEL
GWB	GYPSUM WALLBOARD
GYP	GYPSUM HARDBOARD
H	HIGH
HB	HOSE BIB
HBD	HARDBOARD
HC	HANDICAPPED, HOLLOW CORE, HORIZONTAL CURVE
HC	HORIZONTAL CENTERLINE
HDR	HEADER
HDW	HARDWARE
HEX	HEXAGONAL
HGR	HANGER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HPC	HORIZONTAL POINT OF CURVATURE
HPS	HIGH PRESSURE SODIUM
HPT	HORIZONTAL POINT OF TANGENCY
HR	HOSE REEL, HOUR
HS	HEADED STUD, HIGH STRENGTH
HSS	HOLLOW STRUCTURAL SHAPE
HT	HEIGHT
HTG	HEATING
HV	HIGH VOLTAGE
HVAC	HEATING, VENTILATION & AIR CONDITIONING
HWD	HARDWOOD
HWL	HIGH WATER LEVEL
HYD	HYDRAULIC
HZ	HERTZ, CYCLES PER SECOND
I	INSTRUMENTATION (DWG DISCIPLINE)
ID	INSIDE DIAMETER, INTERIOR DIMENSION
IE	INVERT ELEVATION
IF	INSIDE FACE
IH	INTAKE HOOD
IMP	IMPACT
IN	INCH
INC	INCLUDE, INCANDESCENT
INF	INFLUENT
INSTR	INSTRUMENTATION
INSUL	INSULATION
INT	INTERIOR, INTERSECTION
INTR	INTERMEDIATE, INTERIOR
INV	INVERT
IPS	IRON PIPE SIZE
IPT	INTERNAL PIPE THREAD
IR	INSIDE RADIUS
IRR	IRRIGATION
ISO	ISOMETRIC
JB	JUNCTION BOX
JCT	JUNCTION
JF	JOINT FILLER
JST	JOIST
JT	JOINT
K	KIP
KB	KNEE BRACE
KCMIL	THOUSAND CIRCULAR MILS
KD	KNOCK DOWN
KO	KNOCK OUT
KSI	KIPS PER SQUARE INCH
L	ANGLE, LENGTH, LAVATORY
LAD	LADDER
LAM	LAMINATE
LATL	LATERAL
LB	LAG BOLT, POUND
LCTB	LIQUID CHALK AND TACK BOARD
LDG	LANDING
LDR	LEADER
LE	LIFTING EYE
LF	LINEAR FOOT
LG	LONG
LH	LEFT HAND
LIN	LINEAR
LIQ	LIQUID
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMLU	LIQUID MARKER LECTURE UNIT
LNG	LONGITUDINAL
LOC	LOCATION
LP	LOW POINT
LPS	LOW PRESSURE SODIUM
LR	LONG RADIUS
LS	LIFT STATION
LT	LEFT
LTD	LIMITED
LTG	LIGHTING
LTL	LINTEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
LVR	LOUVER
LW	LIGHTWEIGHT
LWC	LIGHTWEIGHT CONCRETE
LWL	LOW WATER LEVEL
M	MECHANICAL (DWG DISCIPLINE)
MA	MIXED AIR
MACH	MACHINED
MACP	METAL ACOUSTICAL CEILING PANEL
MAINT	MAINTENANCE
MAN	MANUAL
MATL	MATERIAL
MAWP	METAL ACOUSTICAL WALL PANEL
MAX	MAXIMUM
MB	MACHINE BOLT
MBR	MEMBER
MC	MECHANICAL CONTRACTOR, MECHANICAL COUPLING
MCB	METAL CORNER BEAD
MCJ	MASONRY CONTROL JOINT
MDMJ	MODIFIED DOUBLE MECHANICAL JOINT
MECH	MECHANICAL
MED	MEDIUM
MFR	MANUFACTURER
MH	MANHOLE, METAL HALIDE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLO	MAIN LUGS ONLY
MMB	MEMBRANE
MO	MASONRY OPENING
MOD	MODULAR, MODIFY
MON	MONUMENT
MPT	MALE PIPE THREAD
MRGWB	MOISTURE RESISTANT GYPSUM WALLBOARD
MS	MOP SINK
MSL	MEAN SEA LEVEL
MT	MOUNT
MU	MASONRY UNIT
MULL	MULLION
MV	MEDIUM VOLTAGE
MW	MONITORING WELL
N	NORTH, NEUTRAL
NA	NOT APPLICABLE
NAT	NATURAL
NC	NORMALLY CLOSED
NEG	NEGATIVE
NF	NEAR FACE, NON-FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN, NUMBER
NOM	NOMINAL
NPS	NOMINAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
O TO O	OUT-TO-OUT
OA	OUTSIDE AIR, OVERALL
OC	ON CENTER
OCPD	OVER CURRENT PROTECTION DEVICE
OD	OUTSIDE DIAMETER
OED	OPEN END DUCT
OF	OUTSIDE FACE, OFFICE FURNISHING
OG	ORIGINAL GROUND
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OPT	OPTIONAL
OR	OUTSIDE RADIUS
ORD	OVERFLOW ROOF DRAIN
ORIG	ORIGINAL
OVFL	OVERFLOW
OVHG	OVERHANG
OZ	OUNCE
P	PAINT, PROCESS (DWG DISCIPLINE)
PA	PUBLIC ADDRESS
PAR	PARALLEL, PARAPET
PB	PANIC BAR, PULL BOX
PBD	PARTICLE BOARD
PC	POINT OF CURVE, PIECE, PRECAST
PCC	POINT OF COMPOUND CURVATURE
PCF	POUNDS PER CUBIC FOOT
PCT	PERCENT
PCV	PUMP CONTROL VALVE
PE	PLAIN END
PED	PEDESTAL
PEN	PENETRATION
PERF	PERFORATED
PERM	PERMANENT
PERP	PERPENDICULAR
PF	POWER FACTOR
PFMU	PREFACED MASONRY UNIT
PH	PHASE
PI	POINT OF INTERSECTION
PKG	PACKAGE
PL	PLATE, PROPERTY LINE
PLAS	PLASTER
PLAT	PLATFORM
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PNEU	PNEUMATIC
POL	POLISH
POS	POSITIVE, POSITION
PP	POLYPROPYLENE, POWER POLE
PRC	POINT OF REVERSE CURVATURE
PREF	PREFINISHED
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE
PRES	PRESSURE
PRI	PRIMARY
PROP	PROPERTY
PROT	PROTECTION
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PST	PRESTRESSED
PT	POINT, POINT OF TANGENCY
PTN	PARTITION
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PWD	PLYWOOD
PWJ	PLYWOOD WEB JOIST
PZ	PIEZOMETER
Q	RATE OF FLOW
QT	QUARRY TILE
QTR	QUARTER
QTY	QUANTITY
QUAL	QUALITY
R&R	REMOVE AND REPLACE
R&S	REMOVE AND SALVAGE
R	RADIUS, REGISTER, RISER
RA	RETURN AIR
RB	RESILIENT BASE, ROCK BERM
RCPT	RECEPTACLE
RD	ROOF DRAIN
REC	RECESS
RECD	RECEIVED
RECT	RECTANGULAR
RED	REDUCER
REF	REFERENCE
REINF	REINFORCING
REM	REMOVE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETAINING, RETURN
REV	REVISION, REVERSE
RF	RESILIENT FLOORING
RFG	ROOFING
RFL	REFLECTED, REFLECTOR
RGH	ROUGH
RGS	RIGID GALVANIZED STEEL
RGS-PVC	PVC COATED RGS
RH	RELIEF HOOD, RIGHT HAND, RELATIVE HUMIDITY
RJ	RESTRAINED JOINT
RL	REQUIRED LAP
RLFA	RELIEF AIR
RND	ROUND
RNG	RUNNING
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RSP	ROCK SLOPE PROTECTION
RT	RIGHT
RVT	RESILIENT VINYL TILE
RY	READY
S	SOUTH, SINK, STRUCTURAL (DWG DISCIPLINE)
SA	SUPPLY AIR
SAMU	SOUND ABSORBING MASONRY UNIT
SAN	SANITARY
SB	SPLASH BLOCK
SC	SOLID CORE
SCH	SCHEDULE
SCHEM	SCHEMATIC
SCN	SCREEN
SE	STEEL/ALUMINUM EDGE
SEC	SECONDARY, SECONDS
SECT	SECTION
SEP	SEPARATE
SF	SQUARE FOOT
SG	SHEET GLASS, SEALANT GROOVE
SH	SHOWER
SHT	SHEET
SHTG	SHEATHING
SIL	SILENCE
SIM	SIMILAR
SL	SLOPE
SLTD	SLOTTED
SLV	SLEEVE
SMLS	SEAMLESS
SOG	SLAB ON GRADE
SP	SOUNDPROOF, STANDPIPE
SPA	SPACING
SPEC	SPECIFICATION
SPLY	SUPPLY
SPST	SINGLE POLE SINGLE THROW
SPT	SET POINT
SQ	SQUARE
SR	SHORT RADIUS
SS	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STA	STATION
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL, STRAIGHT, STAIR
SUB	SUBSTITUTE
SUC	SUCTION
SUSP	SUSPENDED
SY	SQUARE YARD
SYM	SYMBOL
SYMM	SYMMETRICAL
SYN	SYNTHETIC
SYS	SYSTEM
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
T	TILE, TREAD
TA	TOILET ACCESSORY, TEMPERED AIR
TAN	TANGENT
TBM	TEMPORARY BENCHMARK
TCE	TEMPORARY CONSTRUCTION EASEMENT
TEF	TROWELED EPOXY FLOORING
TEMP	TEMPORARY, TEMPERATURE
THD	THREAD
THK	THICK
THRESH	THRESHOLD
THRU	THROUGH
TKBD	TACK BOARD
TOB	TOP OF BOLT, TOP OF BANK, TOP OF BEAM
TOC	TOP OF CURB, TOP OF CONCRETE
TOD	TOP OF DUCT
TOF	TOP OF FOOTING
TOG	TOP OF GRATING
TOL	TOLERANCE, TOP OF LEDGER
TOM	TOP OF MASONRY
TOP	TOP OF PLATE
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB, TOP OF STEEL
TOW	TOP OF WALL
TP	TOILET PARTITION, TELEPHONE POLE, TOE PLATE, TRAP PRIMER
TPD	TOILET PAPER DISPENSER
TPG	TOPPING
TR	TRANSOM, TRASH RACK
TRANS	TRANSITION
TRD	TRENCH DRAIN
TYP	TYPICAL
U	URINAL
UG	UNDERGROUND
UH	UNIT HEATER
ULT	ULTIMATE
UNFN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
UTIL	UTILITY
V	VENT, VELOCITY, VOLT
VA	VOLT AMPERE
VAC	VACUUM, VOLTS ALTERNATING CURRENT
VAR	VARNISH, VARIABLE, VOLT AMPERES REACTIVE
VB	VAPOR BARRIER, VINYL BASE, VALVE BOX
VC	VERTICAL CURVE
VCT	VINYL COMPOSITION TILE, VERTICAL CENTERLINE
VDC	VOLTS DIRECT CURRENT
VEL	VELOCITY
VENT	VENTILATION
VERT	VERTICAL
VG	VERTICAL GRAIN
VIF	VERIFY IN FIELD
VIN	VINYL
VLT	VAULT
VS	VERSES, VAPOR SEAL
VOL	VOLUME
VPC	VERTICAL POINT OF CURVATURE
VPI	VERTICAL POINT OF INTERSECTION
VPT	VERTICAL POINT OF TANGENCY
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
W	WATT, WEST, WIDE, WINDOW, WIRE, WIDE FLANGE BEAM
WB	WOOD BASE
WC	WATER CLOSET, WATER COLUMN
WD	WOOD, WIDTH
WF	WIDE FLANGE, WASH FOUNTAIN
WG	WIRE GLASS, WATER GAGE
WH	WALL HYDRANT, WEEP HOLE
WI	WROUGHT IRON
WL	WATER LEVEL
WLD	WELDED
WM	WIRE MESH
WP	WATERPROOF, WORKING POINT
WTHP	WEATHERPROOF
WS	WATERSTOP, WATER SURFACE
WSCT	WAINSCOT
WT	WEIGHT, WATER TIGHT
WWF	WELDED WIRE FABRIC
XP	EXPLOSION PROOF
XS	EXTRA STRONG
XXS	DOUBLE EXTRA STRONG
XSECT	CROSS SECTION
YH	YARD HYDRANT
YS	YIELD STRENGTH

GENERAL NOTES:

1. THESE ABBREVIATIONS APPLY TO THE ENTIRE SET OF CONTRACT DRAWINGS.
2. LISTING OF ABBREVIATIONS DOES NOT IMPLY ALL ABBREVIATIONS ARE USED IN THE CONTRACT DRAWINGS.
3. ABBREVIATIONS SHOWN ON THIS SHEET INCLUDE VARIATIONS OF THE WORD. FOR EXAMPLE, "MOD" MAY MEAN MODIFY OR MODIFICATION; "INC" MAY MEAN INCLUDED OR INCLUDING; "REINF" MAY MEAN EITHER REINFORCE OR REINFORCING.
4. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE-EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
5. SEE P&ID LEGEND SHEET FOR PROJECT SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS AND PIPING SYSTEM ABBREVIATIONS.

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ABBREVIATIONS

0 1" 2"

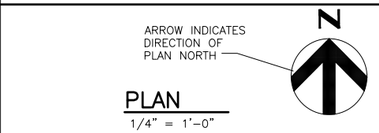
FILENAME	00G002.dwg
SCALE	AS NOTED

SHEET 00G002

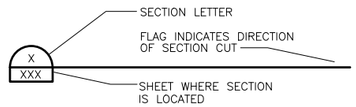
MATERIALS IN PLAN/SECTION

- ACOUSTICAL CEILING TILE (SECTION)
- ASPHALT (PLAN OR SMALL–SCALE SECTION)
- ASPHALT (LARGE–SCALE SECTION)
- BATT INSULATION (SECTION)
- BRICK MASONRY (PLAN AND/OR SECTION)
- CHECKERED PLATE (PLAN)
- CONCRETE (PLAN AND/OR SECTION)
- CONCRETE MASONRY (PLAN AND/OR SECTION)
- DEMOLITION (PLAN AND/OR SECTION)
- EARTH (SECTION)
- FILTER POINT MAT (PLAN)
- FINISHED WOOD (SECTION)
- GLULAM LUMBER (SECTION)
- GRANULAR FILL (SECTION)
- GRATING (SECTION)
- GRATING (PLAN)
- GROUT (SECTION)
- GYPSUM BOARD (SECTION)
- METAL (SECTION)
- ORIENTED STRAND BOARD (SECTION)
- PARTICLE BOARD (SECTION)
- PLYWOOD (LARGE–SCALE SECTION)
- PLYWOOD (SMALL–SCALE SECTION)
- PRECAST CONCRETE (PLAN AND/OR SECTION)
- RIGID INSULATION (SECTION)
- RIPRAP (PLAN AND/OR SECTION)
- SAND (SECTION)
- SOD (SECTION)
- WEEP JOINT MORTAR PROTECTION SYSTEM (SECTION)
- WOOD – CONTINUOUS (SECTION)
- WOOD BLOCKING (SECTION)

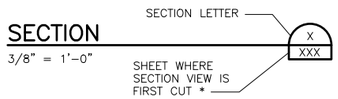
GENERAL SYMBOLOGY



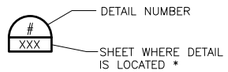
PLAN
1/4" = 1'–0"
PLAN TITLE



SECTION CUT MARKER



SECTION TITLE

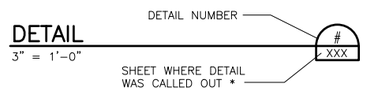


DETAIL MARKER

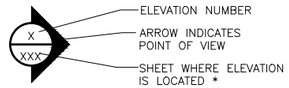
FOR REFERENCING DETAILS INCLUDED IN DRAWING SET.

DETAIL MARKER

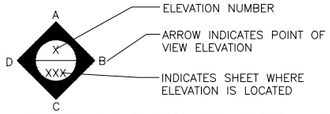
FOR REFERENCING DETAILS BOUND IN SPECIFICATIONS OR SEPARATE VOLUME.



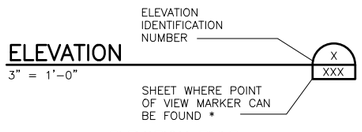
DETAIL TITLE



SINGLE ELEVATION OR PHOTO MARKER



MULTIPLE ELEVATION OR PHOTO MARKER



ELEVATION TITLE

* EXCEPTIONS WHERE THE SHEET NUMBER IS REPLACED BY A DASH (–).

1) FOR COMMON DETAILS, SECTIONS, ELEVATIONS OR DETAILS THAT ARE CUT OR CALLED OUT ON MULTIPLE SHEETS.
2) SECTIONS, ELEVATIONS OR DETAILS THAT ARE LOCATED ON THE SAME SHEET THEY ARE CUT OR CALLED OUT ON.

ARCHITECTURAL

ROOM NUMBER

DOOR NUMBER

A — COLUMN GRID LINE

WALL TYPE

WINDOW TYPE

LOUVER

ACCESSORY, FURNITURE, AND MISCELLANEOUS EQUIPMENT IDENTIFIER

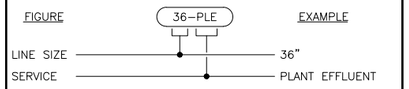
KEY NOTE DESIGNATION

GENERAL LINE SYMBOLOGY

- 4–HOUR FIRE RATED WALL
- 3–HOUR FIRE RATED WALL
- 2–HOUR FIRE RATED WALL
- 1–HOUR FIRE RATED WALL
- COLUMN GRID LINE/CENTERLINE

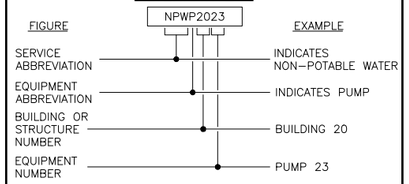
IDENTIFICATION SYMBOLOGY

PIPING

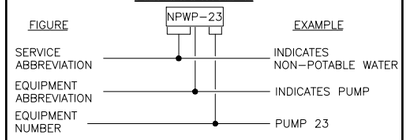


EQUIPMENT IDENTIFICATION

ALTERNATIVE 1



ALTERNATIVE 2



EQUIPMENT DESIGNATIONS

AVV	AIR/VACUUM VALVE
BFV	BUTTERFLY VALVE
CP	CONTROL PANEL
CWGP	COLLECTOR WELL GATE VALVE
CWP	COLLECTOR WELL PUMP
EF	EXHAUST FAN
FE	FLOW ELEMENT
FEXT	FIRE EXTINGUISHER
HP	HIGH VOLTAGE (250V TO 600V) PANEL BOARD
LCP	LIGHTING CONTROL PANEL
MCC	MOTOR CONTROL CENTER
P	PUMP
PCV	PUMP CONTROL VALVE
PLC	PROGRAMMABLE LOGIC CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE

SHEET NAMING CONVENTION

AREA DESIGNATION

00	GENERAL (SYMBOL LEGEND, NOTES, ETC)
01	CIVIL
02	HORIZONTAL COLLECTOR WELL

DISCIPLINE DESIGNATOR & DISCIPLINE ORDER

G	GENERAL
V	SURVEYING/MAPPING
X	DEMOLITION
C	CIVIL
L	LANDSCAPING
U	MULTI–DISCIPLINE
S	STRUCTURAL
A	ARCHITECTURAL
D	PROCESS
M	MECHANICAL (HVAC)
P	PLUMBING
F	FIRE PROTECTION
E	ELECTRICAL
Y	INSTRUMENTATION

DRAWING TYPE DESIGNATOR

0	GENERAL (SYMBOLS, LEGENDS)
1	PLANS
2	ELEVATIONS
3	SECTIONS
4	LARGE SCALE VIEWS
5	DETAILS
6	SCHEDULES AND DIAGRAMS
8	PROFILES
9	3D REPRESENTATIONS

EXAMPLE

GRAVITY THICKENER ARCHITECTURAL SECTION, SHEET 01

0	5				

AREA DESIGNATION

		A			

DISCIPLINE DESIGNATOR

			3		

SHEET TYPE DESIGNATOR

				0	1

SHEET NUMBER

GENERAL NOTES:

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CITY OF YANKTON
SOUTH DAKOTA

HDR
HDR Engineering, Inc.

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ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135–223788–003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN E. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

GENERAL LEGEND

0 1" 2"

FILENAME	00G003.dwg
SCALE	AS NOTED

SHEET 00G003

EXISTING FIRE HYDRANT
EXISTING VALVE & BOX
EXISTING TEE
EXISTING REDUCER
EXISTING SLEEVE
EXISTING CROSS
EXISTING WATER MANHOLE
EXISTING DRINKING FOUNTAIN
EXISTING WATER SHUTOFF
EXISTING SPRINKLER HEAD
EXISTING SANITARY MANHOLE
EXISTING STORM MANHOLE/ JUNCTION BOX
EXISTING TELEPHONE MANHOLE/ JUNCTION BOX
EXISTING TELEPHONE PEDESTAL
EXISTING TRAFFIC MANHOLE/ JUNCTION BOX
EXISTING ELECTRIC MANHOLE/ JUNCTION BOX
EXISTING ELECTRIC PEDESTAL/ TRANSFORMER
EXISTING TRAFFIC SIGNAL LIGHT
EXISTING STREET LIGHT
EXISTING TRAIL LIGHT
EXISTING GUY WIRE ANCHOR
EXISTING POWER POLE
EXISTING HEDGE, BRUSH, SHRUBS, WOODS
EXISTING DECIDUOUS TREE & SIZE
EXISTING CONIFEROUS TREE & SIZE
EXISTING TREE STUMP
EXISTING MAILBOX
EXISTING SIGN
EXISTING GAS METER
EXISTING APPROACH
EXISTING SIDEWALK
EXISTING DROP INLET

EXISTING CONTOURS
EXISTING WATER MAIN & SIZE
EXISTING STORM SEWER & SIZE
EXISTING SANITARY SEWER & SIZE
EXISTING FORCE MAIN & SIZE
EXISTING GAS LINE
EXISTING UNDERGROUND TELEPHONE
EXISTING FIBER OPTIC
EXISTING CABLE TELEVISION
EXISTING UNDERGROUND ELECTRIC
EXISTING OVERHEAD ELECTRIC
EXISTING CITY OF SIOUX FALLS ELECTRIC
EXISTING TRAFFIC
EXISTING DRAIN TILE LINE AND SIZE
EXISTING SPLIT RAIL FENCE
EXISTING CHAIN LINK FENCE
EXISTING BARBED WIRE FENCE
EXISTING CENTERLINE
EXISTING PROPERTY LINE
EXISTING EASEMENT
EXISTING PROPERTY CORNER MONUMENT
EXISTING HORIZONTAL CONTROL
EXISTING VERTICAL CONTROL
BOTTOM SOIL BORING ELEVATION
REFUSAL SOIL BORING ELEVATION
WATER LINE SOIL BORING ELEVATION
SOIL BORING, EXISTING GROUND ELEVATION, AND NUMBER
SUB–UTILITY EXPLORATION AND UTILITY ELEVATION
DIRECTION OF FLOW

REMOVAL LEGEND

REMOVE PCC PAVEMENT
REMOVE ACC PAVEMENT
REMOVE GRAVEL SURFACING
REMOVE CONCRETE CURB AND GUTTER
SAWCUT ACC/PCC
ITEMS TO BE REMOVED (UG UTILITIES, FENCE, ETC.)
TO BE REMOVED
TO BE REMOVED (BY OWNER)
TO BE PROTECTED
TO BE REMOVED AND RESET

PROPOSED LIFT STATION
PROPOSED SANITARY MANHOLE
PROPOSED CLEAN OUT
PROPOSED VALVE & BOX
PROPOSED TEE
PROPOSED CROSS
PROPOSED REDUCER OR INCREASER
PROPOSED SLEEVE
PROPOSED 90° BEND
PROPOSED 45° BEND
PROPOSED 22 1/2° BEND
PROPOSED 11 1/4° BEND
PROPOSED FIRE HYDRANT
PROPOSED YARD HYDRANT
PROPOSED CATCH BASIN
PROPOSED STORM SEWER JUNCTION BOX
PROPOSED STORM SEWER DROP INLET
PROPOSED STORM SEWER INTAKE
PROPOSED STORM SEWER FLARED END
PROPOSED TRENCHED SANITARY SEWER LINE
PROPOSED TRENCHLESS SANITARY SEWER LINE
PROPOSED STEEL CASING PIPE
PROPOSED WATER MAIN
PROPOSED STORM SEWER
PROPOSED GRAVEL SURFACING
PROPOSED PCC
PROPOSED PCC CURB AND GUTTER
PROPOSED ACC
PROPOSED CONTOURS

MATERIAL FOR LINES:

VCP	VITRIFIED CLAY PIPE
HDPE	HIGH DENSITY POLYETHYLENE PIPE
PVC	SOLID WALL POLYVINYL CHLORIDE PIPE
DIP	DUCTILE IRON PIPE
RCP	REINFORCED CONCRETE PIPE
CIP	CAST IRON PIPE
CIPP	CURED IN PLACE PIPE
PE	POLYETHYLENE PIPE
FRPM	FIBERGLASS REINFORCED POLYMER MORTAR PIPE

NOTE:
THE FOLLOWING DRAWINGS, INCLUDED IN THIS SET OF PLANS, INDICATES THE GENERAL UTILITY LOCATIONS ONLY. NEITHER THE CORRECTNESS OR COMPLETENESS OF UTILITY LOCATIONS ARE GUARANTEED. THE CONTRACTOR SHALL CONTACT SOUTH DAKOTA ONE CALL AT 1–800–781–7474 PRIOR TO EXCAVATION.

CITY OF YANKTON
SOUTH DAKOTA

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HDR Engineering, Inc.

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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135–223788–003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN F. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

CIVIL LEGEND

0 1" 2"

FILENAME	00G004.dwg
SCALE	AS NOTED

SHEET 00G004

PIPING SYMBOLOGY

VALVES

SINGLE LINE	DOUBLE LINE	ISOLATION
		BALL VALVE
		BUTTERFLY VALVE
		DIAPHRAGM VALVE
		GATE VALVE
		GLOBE VALVE
		KNIFE GATE VALVE
		NEEDLE VALVE
		PINCH VALVE
		PLUG VALVE
		THREE–WAY BALL VALVE
		THREE–WAY PLUG VALVE
		CONTROL
		BALL CHECK VALVE
		CHECK VALVE
		DOUBLE–DISK CHECK VALVE
		CONE VALVE
OR	OR	PRESSURE RELIEF VALVE
		PRESSURE–REDUCING VALVE
X	X	AIR RELEASE VACUUM VALVE A = AIR RELEASE VAC = VACUUM
		PRESSURE–REGULATING VALVE
		3–WAY CONTROL VALVE

MISCELLANEOUS

- PIPE JOINT (SEE SPECS FOR REQUIREMENTS)
- COMPRESSION SLEEVE TYPE COUPLING
- FLANGED COUPLING ADAPTER (FCA)
- FLEXIBLE CONNECTION
- HARNESSED MECHANICAL COUPLING
- PRESSURE GAGE (W/COCK)
- TRAP
- QUICK DISCONNECT CAM & GROOVE COUPLING
- CAP OR PLUG
- CO — INTERIOR CLEANOUT
- HB–X — HOSE VALVE, HOSE BIBB, OR FLUSHING CONNECTION
- HR–X — HOSE RACK
- FD–X — FLOOR DRAIN
- X = TYPE DESIGNATED IN SPECIFICATIONS
- PIPE IN SECTION
- BU — BELL UP (PLAN)
- BU — BELL UP (SECTION OR SCHEMATIC)
- D — DRAIN (SECTION OR SCHEMATIC)
- ATA — AIR TOOL ASSEMBLY
- AVS — AUTOMATIC VALVE STATION
- PRS — PRESSURE–REDUCING STATION
- RTS — ROUND–TO–SQUARE

MISCELLANEOUS

- BACKFLOW PREVENTER
- M — WATER METER
- VARIABLE AREA METER
- UNION
- WYE–STRAINER
- PENETRATION THROUGH STRUCTURE
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE PIPING CONNECTION
- LINE SIZE CHANGE (CONCENTRIC REDUCER)
- LINE SIZE CHANGE (ECCENTRIC REDUCER)
- LINE TURNING DOWN
- LINE TURNING UP
- BLIND FLANGE
- PIPE BREAK

NOTE:
MISCELLANEOUS SYMBOLOGY SHOWN IS FOR SINGLE–LINE PIPING. DOUBLE–LINE PIPING SYMBOLS ARE SIMILAR.

PLUMBING SYMBOLOGY

- CONDENSER WATER SUPPLY (CWS)
- CONDENSER WATER RETURN (CWR)
- RAW WATER SUPPLY (RWS)
- RAW WATER RETURN (RWR)

HVAC SYMBOLOGY

- 24x18 — SUPPLY AIR OR OUTSIDE AIR DUCT UP (SECTION CUT, FIRST DIMENSION DUCT WIDTH)
- SUPPLY AIR OR OUTSIDE AIR DUCT DOWN (NO SECTION CUT)
- RETURN AIR DUCT UP (SECTION CUT)
- RETURN AIR DUCT DOWN (NO SECTION CUT)
- EXHAUST AIR DUCT UP (NO SECTION CUT)
- EXHAUST AIR DUCT DOWN (NO SECTION CUT)
- ROUND ELBOW UP
- ROUND ELBOW DOWN
- TRANSITION – DOUBLE SIDED
- TRANSITION – ONE SIDED
- TRANSITION – RECTANGULAR TO ROUND DUCT
- STANDARD BRANCH – FOR SUPPLY AIR W/EXTRACTOR AND RETURN AIR W/O EXTRACTOR
- ELBOW – W/TURNING VANE (RECTANGULAR)
- ELBOW – W/TURNING VANES (RECTANGULAR), SMOOTH RADIUS
- GOOSENECK HOOD (COWL)
- 18x24 — RECTANGULAR DUCT OR OPENING SIZE – FIRST NUMBER INDICATES SIZE OF SIDE SHOWN
- 18" DIA — ROUND DUCT SIZE
- R OR D — RECTANGULAR DUCT INCLINE – RISE OR DROP IN RESPECT TO THE AIR FLOW
- (R OR D) — ROUND DUCT INCLINE – RISE OR DROP IN RESPECT TO THE AIR FLOW
- 18x24 — HIDDEN DUCT
- T 9'–10" / B 9'–0" / 18x10 — DUCT ELEVATION TAG ABOVE FINISH FLOOR
- PRESSURE/TEMPERATURE TEST PLUG (PETE PLUG OR EQUAL)
- SA — SOUND ATTENUATOR
- SD SD — SPLITTER DAMPER
- VD, BDD — VD = VOLUME DAMPER, BDD = BACKDRAFT DAMPER
- M — MOTOR OPERATED DAMPER
- FIRE DAMPER
- SMOKE DAMPER
- SMOKE AND FIRE DAMPER

- FLEXIBLE CONNECTION
- FLEXIBLE DUCT
- ACOUSTICAL LINING – DUCT DIMENSIONS FOR NET FREE AREA
- SIZE / CFM — SUPPLY AIR REGISTER OR GRILLE – W/DUCT–MOUNTED EXTRACTOR
- SIZE / CFM — EXHAUST AIR OR RETURN AIR REGISTER OR GRILLE
- SIZE / CFM — EXHAUST AIR OR RETURN AIR REGISTER OR GRILLE
- SIZE / CFM — SUPPLY AIR ASSEMBLY SQUARE DIFFUSER
- SIZE / CFM — SUPPLY AIR ASSEMBLY ROUND DIFFUSER
- WALL LOUVER
- AD PLAN / AD SECTION — ACCESS DOOR
- UC 3/4" — UNDERCUT DOOR 3/4"
- AD — ACCESS DOOR OR ACCESS PANEL IN DUCTWORK
- INTAKE OR RELIEF HOOD
- DOOR GRILLE
- AIR FLOW — BACKDRAFT DAMPER
- EXHAUST ROOF VENTILATOR PROPELLER OR CENTRIFUGAL TYPE
- PROPELLER WALL FAN
- ROOM AIR CONDITIONING UNIT
- INTAKE/EXHAUST LOUVER
- SUPPLY, RETURN OR EXHAUST FAN
- AIR FILTER

HVAC CONTROL SYMBOLOGY

TC	TEMPERATURE CONTROLLER
TT	TEMPERATURE TRANSMITTER
TS	TEMPERATURE SWITCH
T	THERMOSTAT
TI	TEMPERATURE INDICATOR
TM	PERCENTAGE TIMER
RC	RECEIVER CONTROLLER
HOA	HAND–OFF–AUTO
MS	MOTOR STARTER
M	DAMPER ACTUATOR
PI	PRESSURE INDICATOR
FRZ	FREEZE STAT
FS	FIRE STAT
DPS	DIFFERENTIAL PRESSURE SWITCH
SD	SMOKE DETECTOR
FS	FLOW SWITCH
PS	PRESSURE SWITCH
— D —	TIME DELAY
M	MINIMUM POSITION RELAY
S	SIGNAL
AO	ANALOG OUTPUT
AI	ANALOG INPUT
DO	DIGITAL OUTPUT
DI	DIGITAL INPUT
C	COMMON PORT
S	SIGNAL PORT
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
	BALANCING VALVE
RHC	RESISTANCE HEATING CONTACTOR
TA	TEST–AUTO
TOA	TEST–OFF–AUTO
	ELECTRIC SIGNAL
	PIPING
	BULB–TYPE THERMOSTAT

AIR FLOW SCHEMATIC AND TEMPERATURE CONTROL DIAGRAM SYMBOLOGY

- C / C — CHILLED WATER COOLING COIL
- H / C — HOT WATER HEATING COIL
- EP / R — DIRECT EVAPORATIVE COOLER
- D / X — DIRECT EXPANSION COOLING COIL
- EH / C — ELECTRIC HEATING COIL
- VFD — VFD (VARIABLE FREQUENCY DRIVE)
- H / C CAV — CONSTANT AIR VOLUME BOX WITH REHEAT COIL
- H / C VAV — VARIABLE AIR VOLUME BOX WITH REHEAT COIL

MISCELLANEOUS SYMBOLOGY

- MIST ELIMINATOR
- ACTIVATED CARBON OR CHEMICAL FILTER
- CENTRIFUGAL PUMP
- SPRAY NOZZLE/HUMIDIFIER

GENERAL NOTES:

1. THIS IS A STANDARD PROCESS, MECHANICAL AND PLUMBING SYMBOLOGY SHEET. ALL SYMBOLS ARE NOT NECESSARILY USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. SEE INSTRUMENTATION LEGEND SHEET FOR PROJECT–SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135–223788–003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8092
JEFFREY A. LEWIS
SOUTH DAKOTA
10/8/14

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

PROCESS AND MECHANICAL LEGEND

0 1" 2"

FILENAME	00G005.dwg
SCALE	AS NOTED

SHEET 00G005

LOW – VOLTAGE CIRCUIT BREAKER (CB). RATING AND NO. OF POLES AS SHOWN. WHEN SPECIFIED TYPE, OTHER THAN MCCB, IS REQUIRED, X INDICATES TYPE.

X 20A 3P OR X 100AF 80AT 3P

TYPES:
MCCB – MOLDED CASE
ICCB – INSULATED CASE
LVP – LOW VOLTAGE POWER
MCP – MOTOR CIRCUIT PROTECTOR (RATING PER CONNECTED LOAD)

GFP — GROUND FAULT PROTECTION

52 — MEDIUM – VOLTAGE CIRCUIT BREAKER

FUSE, SIZE, AND NUMBER OF FUSES AS NOTED

FUSED CUTOUT, CURRENT RATING, FUSE SIZE, AND NUMBER OF POLES AS NOTED

FUSIBLE SWITCH, CURRENT RATING, FUSE SIZE, AND QUANTITY AS NOTED

NON–FUSED SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

DISCONNECT OR DRAWOUT CONNECTION

A & B A B — MAGNETIC MOTOR STARTER AND SEPARATELY MOUNTED COMBINATION MAGNETIC MOTOR STARTER

D & D — MOTOR CONTROLLER AND SEPARATELY MOUNTED MOTOR CONTROLLER WITH SHORT CIRCUIT PROTECTION AND DISCONNECT

MOTOR STARTER AND CONTROLLER SUBSCRIPTS:

A – MAGNETIC STARTER NEMA SIZE

B – STARTER TYPE
NONE – FULL VOLTAGE NON–REVERSING (FVNR)
FVR – FULL VOLTAGE REVERSING
2S – TWO SPEED
RVAT – REDUCED VOLTAGE AUTO TRANSFORMER

C – CONTROL DIAGRAM OR CONTROLS SCHEDULE NUMBER (IF REQUIRED)

D – CONTROLLER TYPE
VFD – VARIABLE FREQUENCY DRIVE
SS – SOLID STATE

SEPARATELY MOUNTED COMBINATION MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE – LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

SEPERATELY MOUNTED MOTOR STARTER OR CONTROLLER; SEE ELECTRICAL ONE–LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION.

DISCONNECT OR SAFETY SWITCH, 30A, 3P, NON–FUSED UNLESS OTHERWISE NOTED

X Y — FUSED DISCONNECT OR SAFETY SWITCH, 3P, X INDICATES AMP RATING GREATER THAN 30A, Y INDICATES FUSE SIZE

CB — SEPARATELY MOUNTED CIRCUIT BREAKER; SEE ELECTRICAL ONE – LINE DIAGRAM OR SCHEDULE FOR DESCRIPTION

7 1/2 OR HP — MOTOR WITH DESIGN HORSEPOWER (WHEN INDICATED)

G — GENERATOR

ATS — TRANSFER SWITCH, CURRENT RATING, AND NUMBER OF POLES AS NOTED

ATS – AUTOMATIC
MTS – MANUAL

TRANSFORMER

Δ 3–PHASE, 3–WIRE DELTA CONNECTION

Y 3–PHASE, 4–WIRE GROUNDED WYE CONNECTION

LP100 208/120V 3ø, 4W — SWITCHBOARD OR PANELBOARD; NAME, VOLTAGE, PHASE, NUMBER OF WIRES WHEN INDICATED

100 KVA — NON–MOTOR LOAD WITH DESIGN KVA, KW, OR AMP

VOLTAGE TRANSFORMER (VT OR PT)

CURRENT TRANSFORMER (CT)

WH — UTILITY WATT–HOUR METER PER UTILITY REQUIREMENTS

DMP — DIGITAL METERING PACKAGE

GROUND

LIGHTNING ARRESTER

SPD — LOW VOLTAGE SURGE PROTECTIVE DEVICE

SS — SELECTOR SWITCH

PB — PUSHBUTTON

IC — INSTRUMENTATION/CONTROL DEVICE

CONTROL PANEL INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

CONTROL PANEL WITH DISCONNECT SWITCH INTEGRAL OR PROVIDED WITH ASSOCIATED EQUIPMENT

J — JUNCTION OR PULL BOX

PANELBOARD (250V TO 600V)

PANELBOARD (LESS THAN 250V)

X — ELECTRICAL EQUIPMENT ENCLOSURE: SWITCHBOARD, MOTOR CONTROL CENTER, CONTROL PANEL, TRANSFORMER OR OTHER EQUIPMENT AS INDICATED. ESTIMATED SIZE AS INDICATED. WHEN USED X INDICATES EQUIPMENT TYPE.

EQUIPMENT TYPES:

ATS – AUTOMATIC TRANSFER SWITCH
CP – CONTROL PANEL
MTS – MANUAL TRANSFER SWITCH
MCC – MOTOR CONTROL CENTER
UPS – UNINTERUPTABLE POWER SUPPLY
VFD – VARIABLE FREQUENCY DRIVE
SB – SWITCHBOARD
SG – SWITCHGEAR
T – TRANSFORMER

Z X Y — CEILING/PENDANT–MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT, OR INCANDESCENT

Z X Y — CEILING/PENDENT MOUNTED LUMINAIRE – HID, COMPACT FLOURESCENT, OR INCANDESANT – EMERGENCY

X Z Y — WALL–MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT, OR INCANDESCENT

X Z Y — WALL–MOUNTED LUMINAIRE – HID, COMPACT FLUORESCENT, OR INCANDESCENT – EMERGENCY

Z X Y — WALL–MOUNTED FLOOD – HID, COMPACT FLOURESCENT OR INCANDESENT

Z X Y — POLE/STANCHION MOUNTED LUMINAIRE – HID, COMPACT FLOURESCENT OR INCANDESCENT

Z X Y — POLE/STANCHION MOUNTED LUMINAIRE – HID, COMPACT FLOURESCENT OR INCANDESCENT – EMERGENCY

Z X Y — POLE/STANCHION MOUNTED FLOOD – HID, COMPACT FLOURESCENT OR INCANDESCENT

Z Z X Y — CEILING/PENDANT–MOUNTED FLUORESCENT LUMINAIRE

Z X Y — WALL–MOUNTED FLUORESCENT LUMINAIRE

Z X Y — CEILING/PENDANT–MOUNTED FLUORESCENT NORMAL/EMERGENCY LUMINAIRE

Z X Y — WALL–MOUNTED FLUORESCENT NORMAL/EMERGENCY LUMINAIRE

X Y — EMERGENCY LIGHT, 2 ATTACHED HEADS AS SHOWN

X Y — EMERGENCY LIGHT, REMOTE MOUNTED HEAD

X Y X Y — DOUBLE–FACED CEILING OR WALL–MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

X Y X Y — SINGLE–FACED CEILING OR WALL–MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS

LIGHTING FIXTURE SUBSCRIPTS:

X – INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD
Z – INDICATES CONTROLLING SWITCH (IF REQUIRED)
NL – NIGHT LIGHT UNSWITCHED

$ Y X — TOGGLE SWITCH

SUBSCRIPTS:

X – INDICATES TYPE
NONE – SINGLE POLE
2 – DOUBLE POLE
3 – THREE–WAY
4 – FOUR–WAY
HP – TOGGLE SWITCH, HORSEPOWER RATED
K – KEY SWITCH
TE – MANUAL MOTOR STARTER WITH THERMAL
P – ELEMENT
L – PILOT LIGHT
DM – LIGHTED HANDLE
FT – DIMMING
MC – FUSETRON
T – MOMENTARY CONTACT
Y – INDICATES CONTROLLING SWITCH (IF REQUIRED)

PC — PHOTOCELL

TC — TIME CLOCK

OSX — LIGHTING CONTROL OCCUPANCY SENSOR, WALL MOUNTED, X INDICATES TYPE PER SCHEDULE.

OSX — LIGHTING CONTROL OCCUPANCY SENSOR, CEILING MOUNTED, X INDICATES TYPE PER SCHEDULE.

SPECIAL–PURPOSE RECEPTACLE AS DEFINED ON PLANS

PLUG–IN RECEPTACLE STRIP, QUANTITY AND SPACING OF RECEPTACLES AS NOTED OR SPECIFIED

X Y — QUAD–DUPLEX RECEPTACLE, TWO NEMA 5–20R UNDER COMMON COVER PLATE

X Y — DUPLEX RECEPTACLE, NEMA 5–20R

X Y — SIMPLEX RECEPTACLE, NEMA 5–20R

X Y — RECESSED FLOOR MOUNTED BOX, QUANTITY OF NEMA 5–20R RECEPTACLES AS INDICATED

SUBSCRIPTS:

X – INDICATES TYPE
GFCI – GROUND FAULT CIRCUIT INTERRUPTER
Y – INDICATES CIRCUIT NUMBER FROM PANELBOARD

CONDUIT TURNING UP

CONDUIT TURNING DOWN

HOME RUN TO PANEL, 2 #12, 1 #12G IN 3/4"C UNLESS OTHERWISE NOTED

CIRCUIT RUN BETWEEN DEVICES EXPOSED IN NON–ARCHITECTURALLY FINISHED AREAS; CONCEALED IN ARCHITECTURALLY FINISHED AREAS. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CONDUIT RUN BETWEEN DEVICES CONCEALED IN NON–ARCHITECTURALLY FINISHED AREAS OR UNDER FLOOR SLAB. CONDUIT AND CONDUCTOR SIZES SHALL BE THE SAME AS THE HOMERUN FOR THE CIRCUIT.

CIRCUIT HASH MARKS (WHEN INDICATED); LONG, SHORT, SINGLE DOT, AND DOUBLE DOT REPRESENT PHASE, NEUTRAL, EQUIPMENT GROUND, AND ISOLATED EQUIPMENT GROUND, RESPECTIVELY. #12 IN 3/4" CONDUIT UNLESS OTHERWISE INDICATED.

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

CORD AND PLUG CONNECTION

XXX OR XXX — CONDUIT TAG OR CIRCUIT NUMBER – WIRE AND CONDUIT SIZE AS SPECIFIED IN CIRCUIT SCHEDULE ON THE SHEETS

GROUND CABLE

GROUND ROD

GENERAL NOTES:

1. THIS IS A STANDARD ELECTRICAL SYMBOLOGY SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.
2. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
3. SEE P&ID LEGEND SHEET FOR PROJECT–SPECIFIC EQUIPMENT SYMBOLS, EQUIPMENT ABBREVIATIONS, AND PIPING SYSTEM ABBREVIATIONS.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
CIVIL	K. NEWMAN
STRUCTURAL	K. KIRCHNER
ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135–223788–003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7218
KEVIN K. THERNES
SOUTH DAKOTA
10/8/14

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

ELECTRICAL LEGEND

0 1" 2"

FILENAME	00G006.dwg
SCALE	AS NOTED

SHEET 00G006

COMMUNICATION SYMBOLOGY

- WALL MOUNTED TELEPHONE OUTLET
- WALL MOUNTED DATA OUTLET
- WALL MOUNTED COMBINATION TELEPHONE AND DATA OUTLET
- RECESSED FLOOR MOUNTED TELEPHONE OUTLET
- RECESSED FLOOR MOUNTED DATA OUTLET
- RECESSED FLOOR MOUNTED COMBINATION TELEPHONE AND DATA OUTLET
- OR — ANTENNA

AUDIO/VISUAL SYMBOLOGY

- TV — TELEVISION OUTLET
- S — CEILING MOUNT SPEAKER
- S(X) — WALL MOUNT SPEAKER

  SPEAKER SUBSCRIPTS:
  X – INDICATES HEIGHT
- H — HORN TYPE TRANSDUCER
- VC — VOLUME CONTROL
- PAHE — HEAD END EQUIPMENT
- M — FLOOR MOUNTED MICROPHONE JACK
- M — WALL MOUNTED MICROPHONE JACK

SECURITY SYMBOLOGY

- DOOR POSITION SWITCH
- COMBINATION ELECTRIC DOOR STRIKE AND POSITION SWITCH
- R(P) — PROXIMITY CARD READER
- R(K) — PROXIMITY CARD READER WITH KEYPAD
- M — DUAL TECHNOLOGY MOTION DETECTOR
- REQUEST TO EXIT MOTION DETECTOR
- REQUEST TO EXIT PUSH BUTTON
- G — GLASS BREAK DETECTOR
- PTZ — CCTV CAMERA
  PAN/TILT/ZOOM WHEN INDICATED
- SEC — SECURITY EQUIPMENT CABINET
- R — REMOTE KEYPAD/CONTROL STATION

MASS NOTIFICATION SYMBOLOGY

- EXTERIOR LOCATION HIGH POWER SPEAKER ARRAY (HSPA)
- LOC — LOCAL OPERATING CONSOLE
- TXT — TEXT MESSAGE DISPLAY UNIT
- MNCP — MASS NOTIFICATION SYSTEM CONTROL PANEL
- M — COMBINATION SPEAKER/STROBE NOTIFICATION APPLIANCE
- M — SPEAKER NOTIFICATION APPLIANCE
- M — STROBE NOTIFICATION APPLIANCE
- MS — CEILING MOUNTED SPEAKER
- MS — WALL MOUNTED SPEAKER
- MFCP — COMBINATION MASS NOTIFICATION/FIRE ALARM CONTROL PANEL
- MF — COMBINATION MASS NOTIFICATION/FIRE ALARM SPEAKER NOTIFICATION APPLIANCE
- MF — COMBINATION MASS NOTIFICATION/FIRE ALARM STROBE NOTIFICATION APPLIANCE
- MF — COMBINATION MASS NOTIFICATION/FIRE ALARM STROBE NOTIFICATION APPLIANCE

  LENS:
  FIRE ALARM – CLEAR
  MASS NOTIFICATION – AMBER

EMERGENCY ALARM SYMBOLOGY

- E — ALARM BELL
- E — ALARM HORN
- E — ALARM FLASHING LIGHT
- E — ALARM BELL AND FLASHING LIGHT COMBINATION UNIT
- E — ALARM HORN AND FLASHING LIGHT COMBINATION UNIT

CONTROL SYMBOLOGY

- ELECTRICAL CONNECTION
- OR OR — NO ELECTRICAL CONNECTION
- SV OR — SOLENOID VALVE
- X / Y — CONTROL/RELAY COIL; X INDICATES TYPE, Y INDICATES LOOP NO. WHEN USED

  TYPES:
  CR – CONTROL RELAY
  DP – DEFINITE PURPOSE RELAY
  LC – LIGHTING CONTACTOR
  M – MOTOR STARTER
  PC – PHOTOCELL
  TC – TIME CLOCK
  TR – TIMING RELAY
- NORMALLY OPEN CONTACT (N.O.)
- NORMALLY CLOSED CONTACT (N.C.)
- NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS ENERGIZED
- NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS ENERGIZED
- NORMALLY OPEN TIME DELAY RELAY CONTACT WITH TIME DELAY ON OPENING AFTER COIL IS DE–ENERGIZED
- NORMALLY CLOSED TIME DELAY RELAY CONTACT WITH TIME DELAY ON CLOSING AFTER COIL IS DE–ENERGIZED
- NORMALLY OPEN TEMPERATURE SWITCH; CLOSE ON RISING TEMPERATURE
- NORMALLY CLOSED TEMPERATURE SWITCH; OPEN ON RISING TEMPERATURE
- NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW
- NORMALLY CLOSED FLOW SWITCH; OPEN ON INCREASING FLOW
- NORMALLY OPEN LEVEL SWITCH, CLOSE ON RISING LEVEL
- NORMALLY CLOSED LEVEL SWITCH, OPEN ON RISING LEVEL
- NORMALLY OPEN PRESSURE SWITCH, CLOSE ON INCREASING PRESSURE
- NORMALLY CLOSED PRESSURE SWITCH, OPEN ON INCREASING PRESSURE
- NORMALLY OPEN LIMIT SWITCH, CLOSE ON REACHING LIMIT
- NORMALLY CLOSED LIMIT SWITCH, OPEN ON REACHING LIMIT
- MICROPROCESSOR (PLC, RTU, ETC.) OUTPUT
- MICROPROCESSOR (PLC, RTU, ETC.) INPUT
- FIELD WIRING EXTERNAL TO CONTROL PANEL
- X — INTERLOCK; X INDICATES TYPE

  TYPES:
  E – ELECTRICAL
  M – MECHANICAL
  K – KEY
- OFF / HAND / AUTO / XOO / OOX — 3 POSITION SELECTOR SWITCH, MAINTAINED CONTACTS; UNLESS OTHERWISE NOTED, 2–POSITION SIMILAR
- NORMALLY OPEN PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED
- NORMALLY CLOSED PUSHBUTTON, MOMENTARY CONTACT UNLESS OTHERWISE NOTED

CONTROL SYMBOLOGY

- X — INDICATING LIGHT, X INDICATES LENS COLOR
- X — PUSH TO TEST INDICATING LIGHT, X INDICATES LENS COLOR

  LENS COLORS:
  R – RED
  G – GREEN
  B – BLUE
  Y – YELLOW
  W – WHITE
  A – AMBER
- THERMAL OVERLOAD ELEMENT
- OL / (X) — THERMAL OVERLOAD RELAY CONTACT. WHEN SHOWN X INDICATES QUANTITY.
- CPT — CONTROL POWER TRANSFORMER (CPT)
- RTM — RUN TIME METER

FIRE ALARM SYMBOLOGY

- FACP — FIRE ALARM CONTROL PANEL
- FAA — FIRE ALARM ANNUNCIATOR
- F — FIRE ALARM MANUAL PULL STATION
- FS OR — FLOW SWITCH
- TS OR — TAMPER SWITCH
- PS OR — PRESSURE SWITCH
- X AND X — SPOT AND DUCT SMOKE DETECTOR, X INDICATES TYPE

  SUBSCRIPT:
  I – IONIZATION
  P – PHOTOELECTRIC
  D – FIRE OR SMOKE DAMPER
- X — HEAT DETECTOR

  SUBSCRIPT:
  R/C – RATE COMPENSATION
  R/F – COMBINATION RATE OF RISE AND FIXED TEMP
  R – RATE OF RISE FIXED
  F –
- X — FLAME DETECTOR

  SUBSCRIPT:
  IR – INFRARED
  UV – ULTRAVIOLET
- DOOR HOLDER
- F — BELL
- F — HORN/SPEAKER
- F — FLASHING LIGHT
- F — HORN/SPEAKER AND FLASHING LIGHT COMBINATION UNIT
- F — BELL/SPEAKER AND FLASHING LIGHT COMBINATION UNIT

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SOUTH DAKOTA

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WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

ELECTRICAL LEGEND

0 1" 2"

FILENAME	00G007.dwg
SCALE	AS NOTED

SHEET 00G007

PRIMARY ELEMENT SYMBOLOGY

M — MAGNETIC FLOWMETER

LINE TYPES

- MAIN PROCESS LINE
- SECONDARY PROCESS LINE
- AUXILIARY PROCESS LINE
- DIRECTION OF FLOW
- PNEUMATIC SIGNAL
- ELECTRICAL SIGNAL
- HYDRAULIC SIGNAL
- SOFTWARE OR DATA LINK
- SIGNAL CONNECTION
- CROSSOVER – NO CONNECTION
- CAPILLARY

INSTRUMENT SYMBOLOGY

- LOCALLY MOUNTED FIELD INSTRUMENTATION
- MOUNTED ON PANEL FRONT
- MOUNTED INSIDE PANEL
- XXX — FRONT PANEL MOUNTED ON AUXILIARY PANEL (SUBSCRIPT INDICATES PANEL)
- MOUNTED INSIDE AUXILIARY PANEL
- PILOT LIGHT
- INSTRUMENT FUNCTIONS SHARING COMMON HOUSING
- I — COMPLEX INTERLOCK AS DEFINED IN CONTROL DIAGRAM OR IN SPECIFICATIONS
- SHARED DISPLAY, SHARED CONTROL, FIELD MOUNTED
- SHARED DISPLAY, SHARED CONTROL, PRIMARY LOCATION – NORMALLY ACCESSIBLE TO OPERATOR

ACTUATOR SYMBOLOGY

- S — PUMP CONTROL VALVE
- S — SOLENOID OPERATOR

INSTRUMENT IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USERS CHOICE			CONTROL	CLOSED
D	USERS CHOICE	DIFFERENTIAL			
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME; RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECH. ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

MISCELLANEOUS INSTRUMENTATION ABBREVIATIONS

ES	ETHERNET SWITCH
FIC	FIBER INTERCONNECT CENTER
OIT	OPERATOR TERMINAL
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
VFD	VARIABLE FREQUENCY DRIVE
(V)	INCLUDED WITH VENDOR FURNISHED EQUIPMENT PACKAGE

CONTROL SWITCH NOTATION ABBREVIATIONS

XXX / XXXX

HOA	HAND–OFF–AUTO
HOR	HAND–OFF–REMOTE
LL	LEAD–LAG
LLS	LEAD–LAG–STANDBY
LOR	LOCAL–OFF–REMOTE
LR	LOCAL–REMOTE
LS	LEAD–STANDBY
MA	MANUAL–AUTO
SS	START–STOP

VALVES

- BALL VALVE
- BUTTERFLY VALVE
- CONE VALVE
- CHECK VALVE
- DOUBLE–DISK CHECK VALVE
- BALL CHECK VALVE
- DIAPHRAGM VALVE
- GATE VALVE
- GLOBE VALVE
- KNIFE GATE VALVE
- NEEDLE VALVE
- PINCH VALVE
- PLUG VALVE
- THREE–WAY BALL VALVE
- THREE–WAY PLUG VALVE
- PRESSURE–REDUCING VALVE
- PRESSURE–REGULATING VALVE
- THREE–WAY CONTROL VALVE
- OR — PRESSURE–RELIEF VALVE
- X — AIR–RELEASE VACUUM VALVE; A = AIR RELEASE; VAC = VACUUM

MISCELLANEOUS SYMBOLOGY

- PC BASED HMI
- RADIO ANTENNA
- M — MOTOR OPERATED VERTICLE TURBINE LINE SHAFT PUMP

GENERAL NOTES:

1. THIS IS A STANDARD INSTRUMENTATION SYMBOLOGY AND ABBREVIATIONS SHEET. LISTING OF SYMBOLS AND ABBREVIATIONS DOES NOT IMPLY ALL SYMBOLS AND ABBREVIATIONS HAVE BEEN USED ON THIS PROJECT.
2. SEE PROCESS, MECHANICAL AND PLUMBING LEGEND SHEET FOR MISCELLANEOUS PIPING SYMBOLS.
3. SCREENING OR SHADING OF WORK IS USED TO INDICATE EXISTING COMPONENTS OR TO DE–EMPHASIZE PROPOSED IMPROVEMENTS TO HIGHLIGHT SELECTED TRADE WORK. REFER TO CONTEXT OF EACH SHEET FOR USAGE.
4. VALVE SYMBOLS SHOWN HERE ARE APPLICABLE ONLY TO INSTRUMENTATION DIAGRAMS. SEE PROCESS, MECHANICAL AND PLUMBING LEGEND SHEET FOR VALVE SYMBOLS USED ELSEWHERE ON THE SHEETS.

CITY OF YANKTON SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
CIVIL	K. NEWMAN
STRUCTURAL	K. KIRCHNER
ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135–223788–003

REGISTERED PROFESSIONAL ENGINEER — DAVID F. PENNER — 8876 — SOUTH DAKOTA — 10/08/14

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON

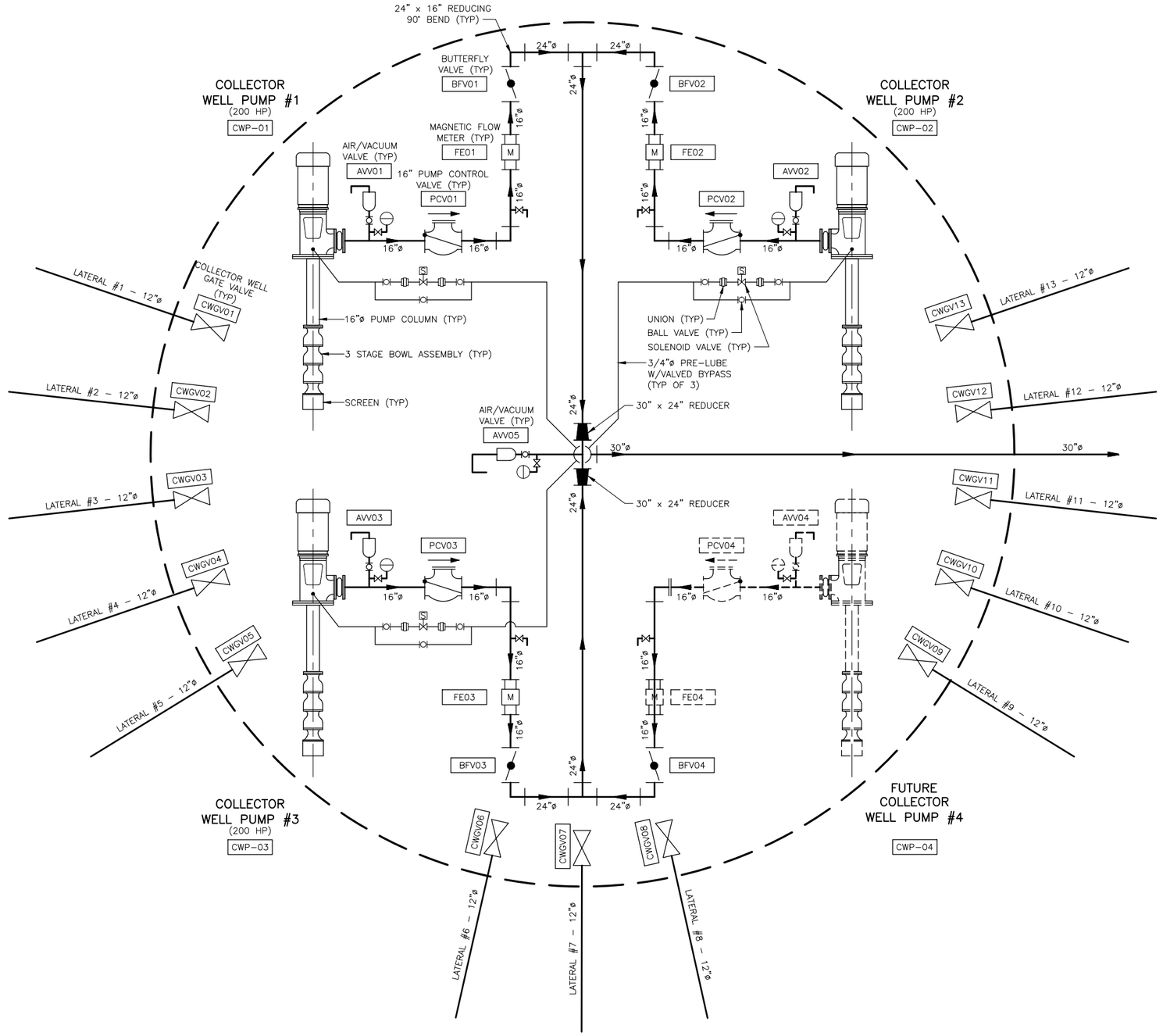
YANKTON, SOUTH DAKOTA 2014

INSTRUMENTATION AND CONTROL LEGEND

0 1" 2"

FILENAME	00G008.dwg
SCALE	AS NOTED

SHEET 00G008



CITY OF YANKTON
SOUTH DAKOTA

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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8247
KEVIN NEWMAN
SOUTH DAKOTA
10/09/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

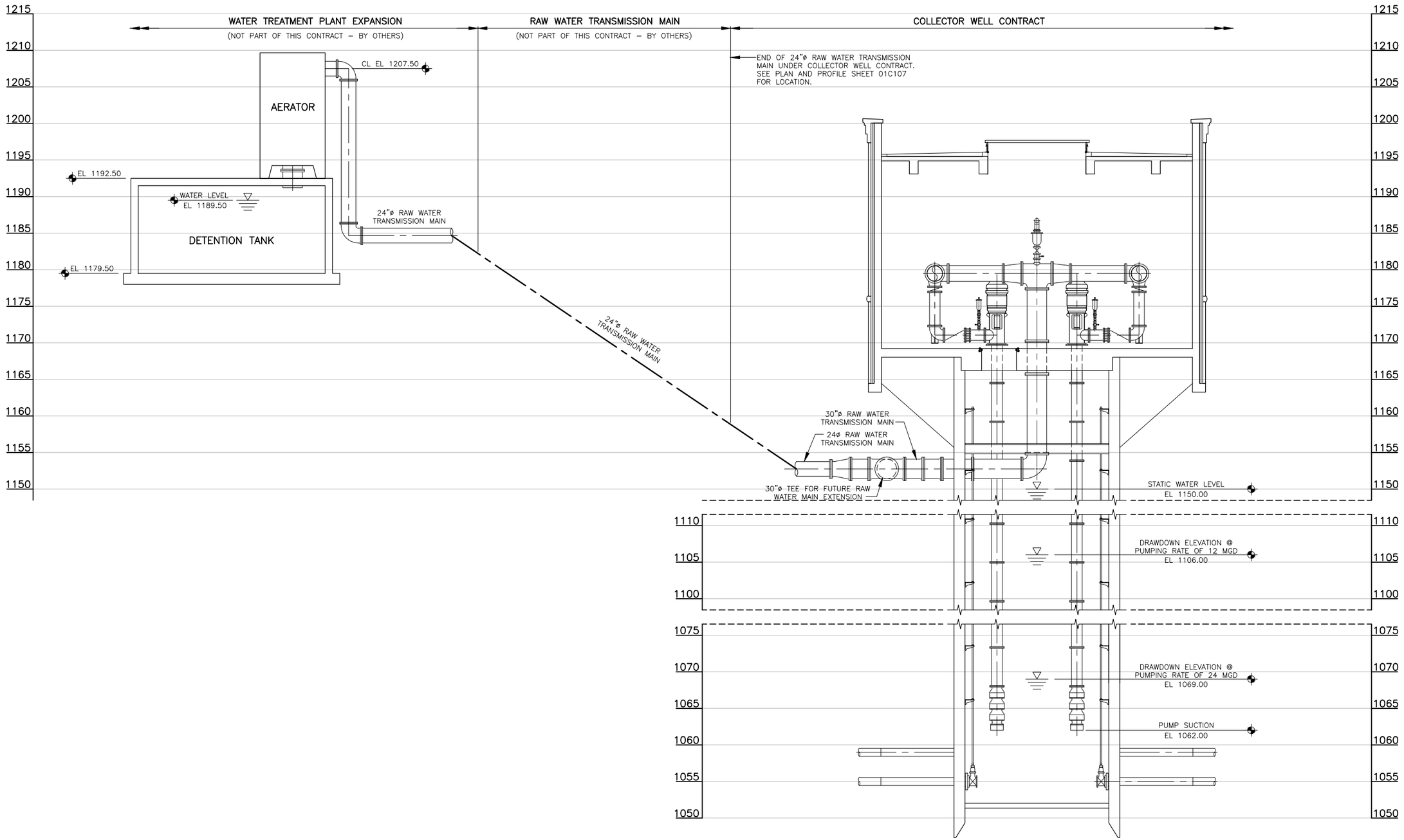
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

PROCESS SCHEMATIC

0 1" 2"

FILENAME	00G009.dwg
SCALE	AS NOTED

SHEET 00G009



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PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

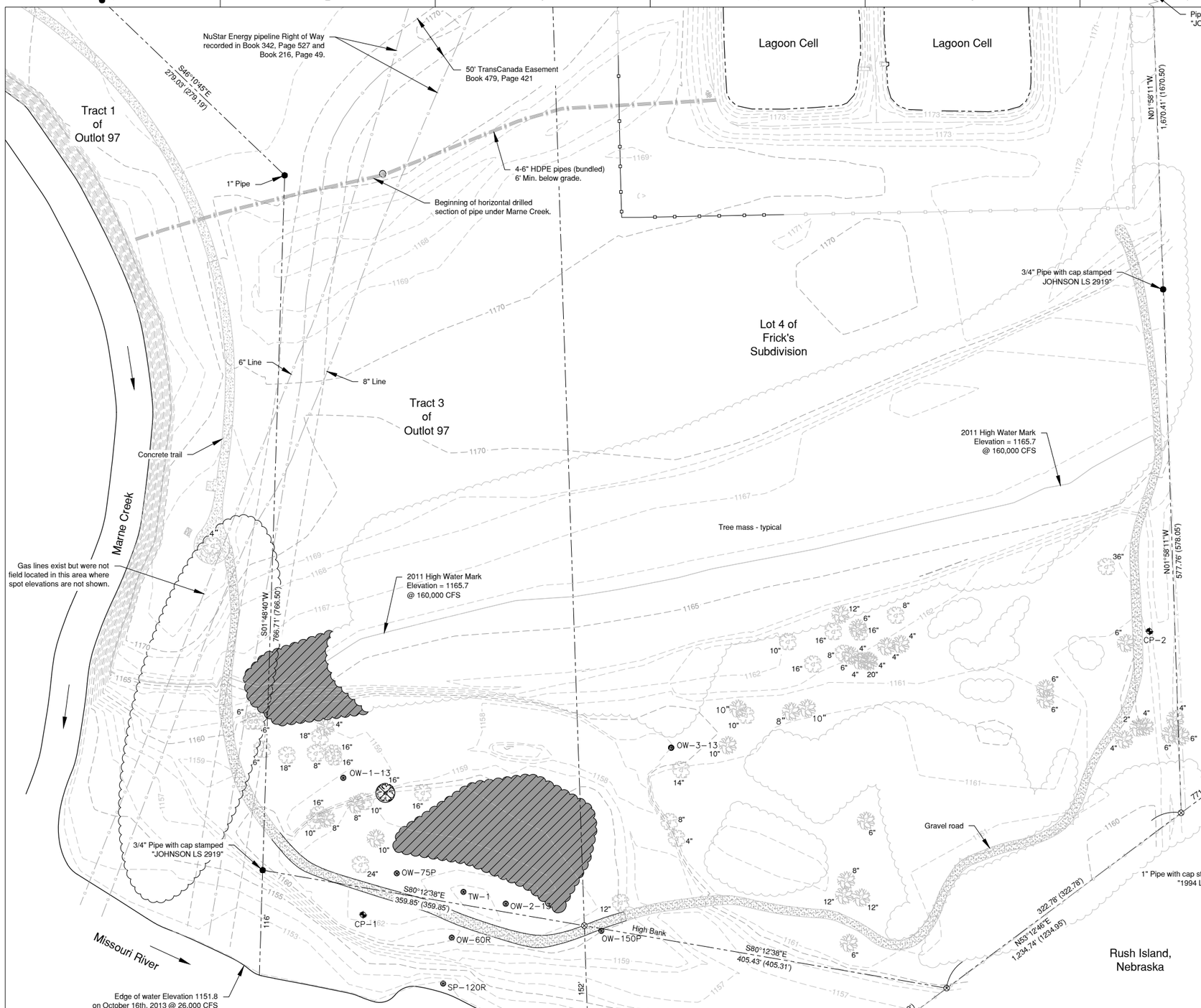
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

HYDRAULIC PROFILE

0 1" 2"

FILENAME	00G010.dwg
SCALE	NONE

SHEET 00G010



N

W E

S

GRAPHIC SCALE

60 30 0 30 60 120

1 INCH = 60 FEET
CONTOUR INTERVAL = 1 FOOT

Existing Topographic Survey Prepared By:

Eisenbraun & Associates
Professional Engineers & Surveyors
Innovative Solutions - Long Term Value
215 Walnut
Yankton, South Dakota 57078
605-665-8092
FAX 605-665-0523
"www.eaweb.com"

LEGEND

G G G	Underground Gas Line	E E E	Underground Power Line
S S S	Sanitary Sewer Line	1495	Existing Contour Line
	Chainlink Fence	x x	Barbed Wire Fence
	Steel Fence		Treeline
	Light Pole	T	Transformer
S	Sanitary Manhole		Valve
W	Monitoring Well		Found Property Corner
12"	Deciduous Tree with diameter		Computed Property Corner
12"	Coniferous Tree with diameter	(100.00')	Record Distance
	Control Point (5/8" rebar with cap stamped "CONTROL POINT")		
	Individual Tree Removal		
	Area to be Cleared and Grubbed		

UTILITY COMPANIES

South Dakota One Call	800-781-7474	Ticket #132810469
Wide Open West	888-745-2888	5100 S. Broadband Lane, Sioux Falls, SD 57108
TransCanada	403-920-7383	1450-1 Street SW, Calgary, Alberta, Canada
MidAmerican Energy Company	605-665-7850	816 Walnut St., Yankton, SD 57078
Midcontinent Communications	800-888-1300	5001 W. 41St., Sioux Falls, SD 57106
NuStar Energy L.P.	800-866-9060	2330 North Loop 1604 W, San Antonio, TX 78248
NorthWestern Energy	605-665-7459	313 Cedar St., Yankton, SD 57078
SDN Communications	800-247-1442	2900 W 10th Street, Sioux Falls, SD 57104
CenturyLink	800-788-3500	100 Centurylink Dr., Monroe, LA 71203
City of Yankton	605-668-5200	416 Walnut St., Yankton, SD 57078

NOTES

The underground utilities shown have been located from South Dakota One Call locates, above ground features and/or record drawings provided by utility companies. The surveyor does not warrant that the underground utilities shown are in the exact location indicated although he does certify they are located as accurately as possible from the information available. The surveyor has not physically located the underground utilities or the depth of bury except as noted above. The surveyor is aware that there are recorded easements that pertain to the natural gas lines that cross the property. However within these easement documents there is no information that can lead to the lines being located on this map, nor is the width of the easement identified in the documents for NuStar Energy.

Well Elevations			
Monitoring Well	Inner Casing Elev. (PVC)	Outer Casing Elev.	Ground Elev.
OW-1-13	1162.41	1162.41	1159.3
OW-2-13	1163.65	1163.63	1160.9
OW-3-13	1162.53	1162.49	1159.4
OW-75P	1165.87	1166.42	1163.3
OW-150P	1162.27	1163.54	1160.6
OW-60R	1163.77	1164.29	1160.9
SP-120R	-	1152.51	1152.2
TW-1	-	1164.24	1161.3
Water Surface Elev.	1149.7	2:35pm on 12/16/2012	

Control Points			
Point	Northing	Easting	Elevation
CP-1	8302.309	60809.730	1162.83
CP-2	8615.016	61676.753	1161.51

DATUM

Horizontal Control is based on "NAD 83" (US Survey Feet) using the City of Yankton Control Network Coordinate System and Vertical Control is based on "NAVD 88" using the City of Yankton's Control Network.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
CIVIL	K. NEWMAN
STRUCTURAL	K. KIRCHNER
ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN F. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

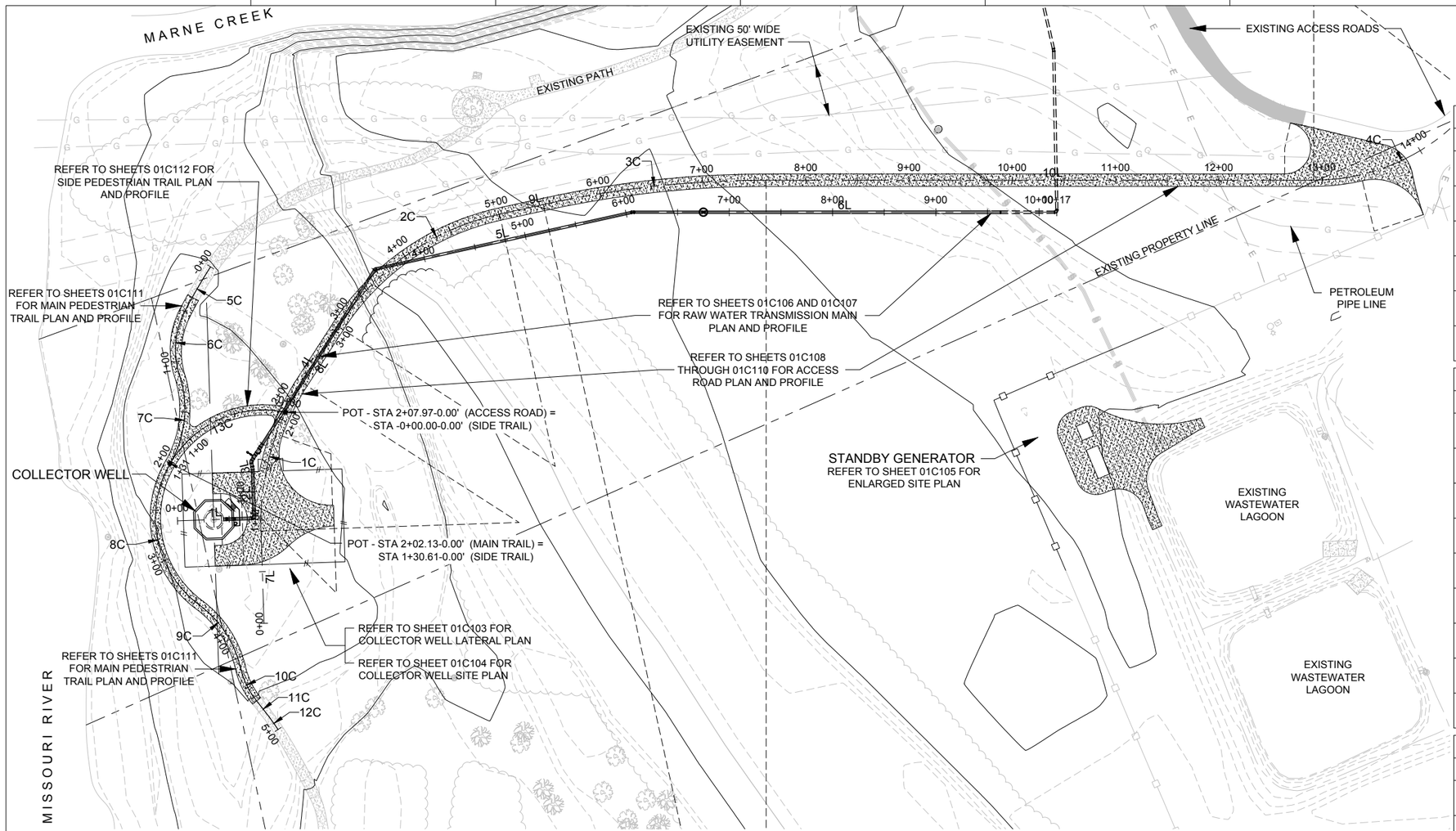
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EXISTING OVERALL SITE PLAN

0 1" 2"

FILENAME	01C101.dwg
SCALE	AS NOTED

SHEET 01C101



HORIZONTAL ALIGNMENT: WATER MAIN					
DESCRIPTION	STATION	LENGTH	COURSE	NORTHING	EASTING
1L	BEG:0+00.00 END:0+74.34	74.34'	N20°00'00.00"E'	BEG:8294.66 END:8364.52	BEG:60908.46 END:60933.88
2L	BEG:0+74.34 END:1+22.82	48.48'	N70°00'00.00"W'	BEG:8364.52 END:8381.10	BEG:60933.88 END:60888.33
3L	BEG:1+22.82 END:1+29.32	6.50'	N81°15'00.00"W'	BEG:8381.10 END:8382.09	BEG:60888.33 END:60881.90
4L	BEG:1+29.32 END:3+51.06	221.74'	N35°19'18.20"W'	BEG:8382.09 END:8563.01	BEG:60881.90 END:60753.70
5L	BEG:3+51.06 END:6+06.53	255.47'	N09°26'16.36"E'	BEG:8563.01 END:8815.02	BEG:60753.70 END:60795.59
6L	BEG:6+06.53 END:10+17.11	410.58'	N21°53'40.61"E'	BEG:8815.02 END:9195.99	BEG:60795.59 END:60948.70

HORIZONTAL ALIGNMENT: Access Road					
DESCRIPTION	STATION	LENGTH	COURSE	NORTHING	EASTING
1C	BEG:0+89.40 END:2+40.71	CL=149.01'	CL=N52°39'39.10"W'	BEG:8365.97 END:8456.35	BEG:60947.75 END:60829.27
2C	BEG:3+05.36 END:5+00.66	CL=190.37'	CL=N12°56'30.92"W'	BEG:8509.10 END:8694.64	BEG:60791.90 END:60749.26
3C	BEG:5+44.06 END:7+61.47	CL=216.98'	CL=N15°39'58.48"E'	BEG:8737.45 END:8946.37	BEG:60756.38 END:60814.97
4C	BEG:12+91.69 END:14+73.79	CL=175.87'	CL=N04°11'19.04"W'	BEG:9438.35 END:9613.75	BEG:61012.69 END:60999.84
7L	BEG:0+00.00 END:0+89.40	89.40'	N70°00'00.00"W'	BEG:8335.40 END:8365.97	BEG:61031.76 END:60947.75
8L	BEG:2+40.71 END:3+05.36	64.65'	N35°19'18.20"W'	BEG:8456.35 END:8509.10	BEG:60829.27 END:60791.90
9L	BEG:5+00.66 END:5+44.06	43.40'	N09°26'16.36"E'	BEG:8694.64 END:8737.45	BEG:60749.26 END:60756.38
10L	BEG:7+61.47 END:12+91.69	530.22'	N21°53'40.61"E'	BEG:8946.37 END:9438.35	BEG:60814.97 END:61012.69
11L	BEG:14+73.79 END:16+01.93	128.14'	N30°16'18.69"W'	BEG:9613.75 END:9724.42	BEG:60999.84 END:60935.25

HORIZONTAL ALIGNMENT: MAIN TRAIL					
DESCRIPTION	STATION	LENGTH	COURSE	NORTHING	EASTING
5C	BEG:-0+00.00 END:0+50.02	CL=50.00'	CL=S37°55'54.67"E'	BEG:8416.05 END:8376.62	BEG:60692.25 END:60722.99
6C	BEG:0+50.02 END:1+13.42	CL=61.75'	CL=S63°32'49.52"E'	BEG:8376.62 END:8349.11	BEG:60722.99 END:60778.27
7C	BEG:1+13.42 END:2+02.13	CL=86.10'	CL=S62°02'40.82"E'	BEG:8349.11 END:8308.75	BEG:60778.27 END:60854.33
8C	BEG:2+02.13 END:3+55.13	CL=139.72'	CL=S79°44'06.85"E'	BEG:8308.75 END:8283.85	BEG:60854.33 END:60991.81
9C	BEG:3+55.13 END:4+29.28	CL=72.62'	CL=N78°35'57.55"E'	BEG:8283.85 END:8298.20	BEG:60991.81 END:61062.99
10C	BEG:4+29.28 END:4+65.47	CL=35.88'	CL=N85°52'11.97"E'	BEG:8298.20 END:8300.79	BEG:61062.99 END:61098.78
11C	BEG:4+65.47 END:4+85.82	CL=20.35'	CL=N73°48'41.82"E'	BEG:8300.79 END:8306.46	BEG:61098.78 END:61118.33
12C	BEG:4+85.82 END:5+00.00	CL=14.18'	CL=N76°45'15.50"E'	BEG:8306.46 END:8309.71	BEG:61118.33 END:61132.13

HORIZONTAL ALIGNMENT: SIDE TRAIL					
DESCRIPTION	STATION	LENGTH	COURSE	NORTHING	EASTING
13C	BEG:-0+00.00 END:1+30.61	CL=122.29'	CL=S02°04'29.64"E'	BEG:8430.95 END:8308.75	BEG:60849.90 END:60854.33

GENERAL NOTES:

1. UTILITIES:
   a. CONTRACTOR SHALL NOTIFY THE APPROPRIATE UTILITY COMPANIES WHEN CONSTRUCTION MIGHT INTERFERE WITH NORMAL OPERATION OF ANY UTILITIES. CONTRACTOR SHALL CONTACT THE SOUTH DAKOTA ONE CALL SYSTEM, UTILITY COMPANIES, AND CITY OF YANKTON TO VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE SOUTH DAKOTA ONE CALL SYSTEM.
   b. ABANDONED UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. COSTS ASSOCIATED WITH THIS WORK SHALL BE INCIDENTAL TO THE VARIOUS BID ITEMS ASSOCIATED WITH WORK ADJACENT TO THE ABANDONED UTILITY.
   c. WHEN PIPE INSTALLATION CROSSES EXISTING UTILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPORTING THE UTILITIES IN A MANNER THAT IS ACCEPTABLE TO THE OWNER OF THE UTILITY. ANY DAMAGE CAUSED TO THE UTILITIES DUE TO CONTRACTOR CARELESSNESS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE UTILITY OWNER.
   d. CITY OF YANKTON STAFF SHALL BE NOTIFIED IMMEDIATELY IN THE EVENT OF A WATER SERVICE OR SEWER SERVICE EMERGENCY INTERRUPTION. THE CONTRACTOR SHALL NOT OPERATE ANY VALVES WITHIN THE SYSTEM UNLESS PREVIOUSLY APPROVED BY THE CITY OF YANKTON.
   e. UTILITY LOCATE AND VERIFY: THE CONTRACTOR SHALL EXCAVATE MATERIAL TO LOCATE THE HORIZONTAL AND VERTICAL POSITION OF AN EXISTING UTILITY LINE (PRIVATE OR PUBLIC) WHEN DIRECTED BY ENGINEER OR AS NOTED ON THE PLANS TO AVOID POSSIBLE CONFLICTS. AFTER VERIFICATION, THE CONTRACTOR SHALL COORDINATE INFORMATION WITH THE ENGINEER. ALL COSTS ASSOCIATED WITH UTILITY LOCATES AND VERIFICATIONS SHALL BE INCIDENTAL TO THE VARIOUS CONTRACT ITEMS.

2. SITE CONSIDERATIONS:
   a. THE CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING PORTABLE TOILET FACILITIES FOR THE PROJECT AT NO COST TO THE OWNER.
   b. THE CONSTRUCTION LIMITS SHALL BE WITHIN THE RIGHT-OF-WAY AND EASEMENT AREAS. MATERIAL STORAGE AND VEHICLE AND EQUIPMENT TRAFFIC SHALL BE LIMITED TO CONSTRUCTION LIMITS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE PROPERTY OWNERS RELATING TO ACCESS TO THEIR PROPERTY AND ANY SUBSEQUENT DAMAGES. ALL WORK RELATED TO ADDITIONAL WORK AREAS AND REPLACEMENT OF DAMAGES SHALL BE AT THE CONTRACTOR'S EXPENSE.
   c. DRAINAGE IS THE CONTRACTOR'S RESPONSIBILITY. CONTRACTOR SHALL BE AWARE OF EXISTING DRAINAGE AND FACILITIES AND SHALL PROVIDE FOR DRAINAGE DURING ALL PHASES OF CONSTRUCTION. CONTRACTOR SHALL BACKFILL AND GRADE AREAS WITHIN THE WORK LIMITS TO ELIMINATE PONDING ON THE SITE. DAMAGE CAUSED BY IMPROPER TEMPORARY DRAINAGE FACILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.
   d. CONTRACTOR TO BE RESPONSIBLE FOR CONSTRUCTION AND MAINTENANCE OF A TEMPORARY ACCESS ROAD TO THE COLLECTION WELL SITE FOR CONSTRUCTION TRAFFIC. THE PROPOSED NEW ACCESS ROAD MAY BE CONSTRUCTED AND USED FOR TEMPORARY CONSTRUCTION ACCESS BUT WILL NEED TO BE RE-GRADED AND RESTORED TO NEW CONDITION FOLLOWING CONSTRUCTION.
   e. EXISTING CONCRETE WALKING PATH IS NOT TO BE USED BY CONTRACTOR FOR VEHICLE AND EQUIPMENT ACCESS TO THE COLLECTOR WELL SITE.
   f. CONTRACTOR TO RESTORE ALL ACCESS ROADS TO ORIGINAL OR BETTER CONDITION FOLLOWING CONSTRUCTION. COST FOR RESTORATION OF GRAVEL ACCESS ROADS TO BE INCIDENTAL TO THE PROJECT. A BID ITEM HAS BEEN INCLUDED FOR CONCRETE PAVEMENT REMOVAL AND REPLACEMENT AND IS TO BE USED FOR REPLACEMENT OF DAMAGED PAVEMENT OF THE CONCRETE DRIVEWAY AT HWY 50.

3. SITE CONSIDERATIONS:
   a. ALL TRAFFIC CONTROL AND SIGNING SHALL COMPLY WITH SOUTH DAKOTA DOT STANDARDS.

4. CONSTRUCTION STAKING AND SURVEY:
   a. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING. SEE SPECIFICATION SECTION 01060 - SPECIAL CONDITIONS.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

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ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN F. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

PROPOSED OVERALL SITE PLAN

0 1" 2"

FILENAME	01C102.dwg
SCALE	AS NOTED

SHEET 01C102

CENTER OF COLLECTOR WELL CAISSON
STA 1+00.00-45.60' LT / N8327.66 ; E60920.47

COLLECTOR WELL LATERAL #1
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8364.90 ; E60874.07
100' FROM OF/CAISSON = N8396.20 ; E60835.07
150' FROM OF/CAISSON = N8427.49 : E60796.08
185' FROM OF/CAISSON = N8449.40 ; E60768.78 (END)

COLLECTOR WELL LATERAL #2
CENTERLINE EL = 1059.00
50' FROM OF/CAISSON = N8351.62 ; E60866.01
100' FROM OF/CAISSON = N8371.76 ; E60820.24
150' FROM OF/CAISSON = N8391.90 ; E60774.48
185' FROM OF/CAISSON = N8405.99 ; E60742.44 (END)

COLLECTOR WELL LATERAL #3
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8336.71 ; E60861.66
100' FROM OF/CAISSON = N8344.32 ; E60812.24
150' FROM OF/CAISSON = N8351.92 ; E60762.83
185' FROM OF/CAISSON = N8357.25 ; E60728.23 (END)

COLLECTOR WELL LATERAL #4
CENTERLINE EL = 1059.00
50' FROM OF/CAISSON = N8321.18 ; E60861.32
100' FROM OF/CAISSON = N8315.74 ; E60811.62
150' FROM OF/CAISSON = N8310.30 ; E60761.92
185' FROM OF/CAISSON = N8306.49 ; E60727.13 (END)

COLLECTOR WELL LATERAL #5
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8306.09 E60865.01
100' FROM OF/CAISSON = N8287.97 E60818.41
150' FROM OF/CAISSON = N8269.85 E60771.81
185' FROM OF/CAISSON = N8257.17 E60739.19 (END)

COLLECTOR WELL LATERAL #6
CENTERLINE EL = 1059.00
50' FROM OF/CAISSON = N8278.92 E60886.34
100' FROM OF/CAISSON = N8237.96 E60857.66

COLLECTOR WELL LATERAL #7
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8271.75 E60900.12
100' FROM OF/CAISSON = N8224.76 E60883.02

COLLECTOR WELL LATERAL #8
CENTERLINE EL = 1059.00
50' FROM OF/CAISSON = N8268.39 E60915.28
100' FROM OF/CAISSON = N8218.58 E60910.93

COLLECTOR WELL LATERAL #9
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8275.49 E60949.09
100' FROM OF/CAISSON = N8231.66 E60973.14
150' FROM OF/CAISSON = N8187.82 E60997.19
185' FROM OF/CAISSON = N8157.14 E61014.02 (END)

COLLECTOR WELL LATERAL #10
CENTERLINE EL = 1059.00
50' FROM OF/CAISSON = N8284.68 E60961.61
100' FROM OF/CAISSON = N8248.56 E60996.19
150' FROM OF/CAISSON = N8212.44 E61030.77
185' FROM OF/CAISSON = N8187.16 E61054.97 (END)

COLLECTOR WELL LATERAL #11
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8296.79 E60971.34
100' FROM OF/CAISSON = N8270.85 E61014.08
150' FROM OF/CAISSON = N8244.92 E61056.83
185' FROM OF/CAISSON = N8226.76 E61086.75 (END)

COLLECTOR WELL LATERAL #12
CENTERLINE EL = 1059.00
50' FROM OF/CAISSON = N8311.01 E60977.59
100' FROM OF/CAISSON = N8297.02 E61025.59
150' FORM OF/CAISSON = N8283.03 E61073.60
185' FROM OF/CAISSON = N8273.23 E61107.20 (END)

COLLECTOR WELL LATERAL #13
CENTERLINE EL = 1055.00
50' FROM OF/CAISSON = N8326.36 E60979.95
100' FROM OF/CAISSON = N8325.27 E61029.94
150' FROM OF/CAISSON = N8324.18 E61079.93
185' FROM OF/CAISSON = N8323.42 E61114.92 (END)

GENERAL NOTES:

1. REFER TO SHEET 01C104 FOR FENCE AND GRAVEL SURFACE LOCATES AND ELEVATIONS.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

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WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

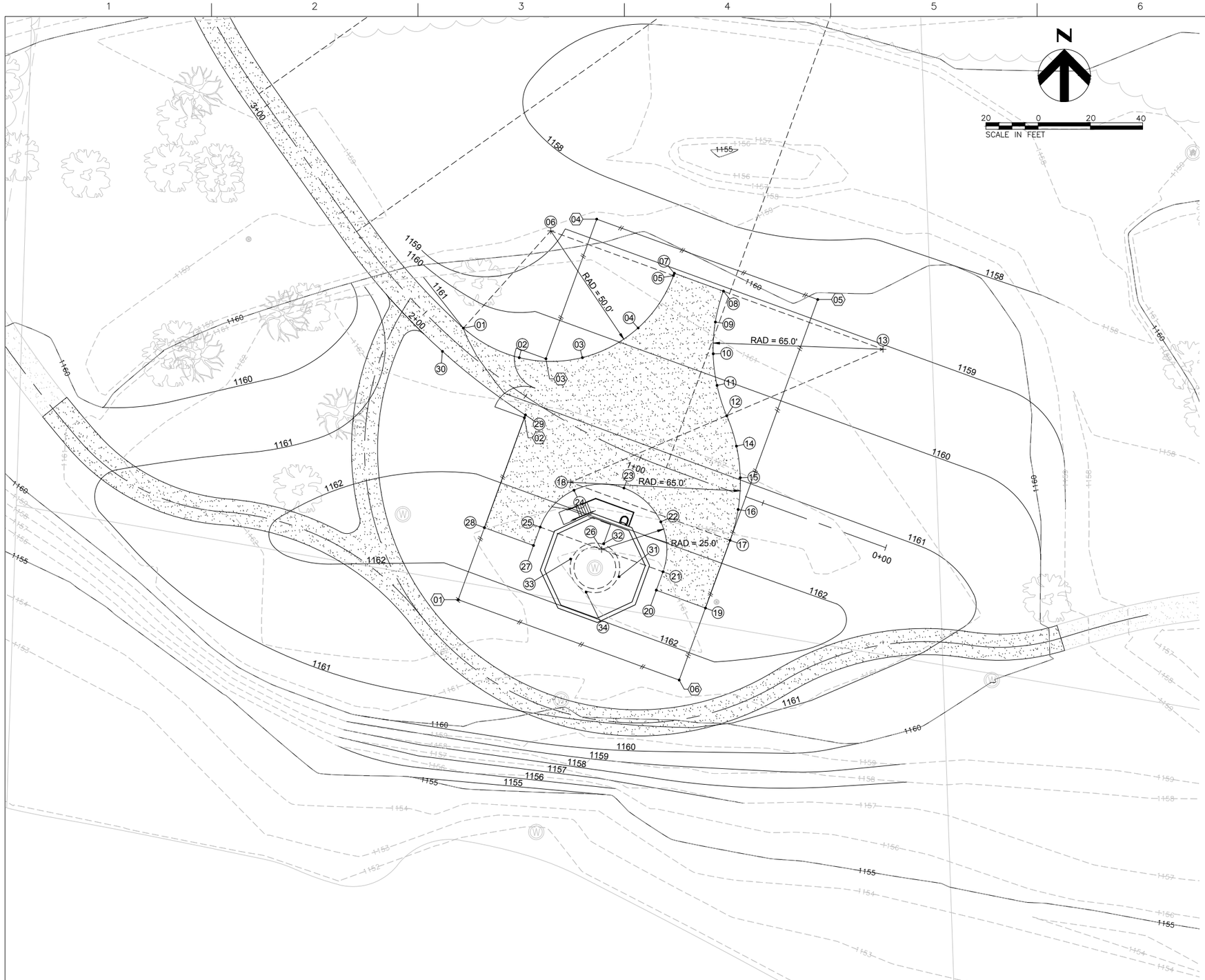
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

LATERAL PLAN

0 1" 2"

FILENAME	01C103.dwg
SCALE	AS NOTED

SHEET 01C103



EDGE OF GRAVEL SURFACING LOCATES AND ELEVATIONS:

(01) BEGIN 50.0' RADIUS
STA 1+85.19-6.00' RT
N8419.44 E60870.13
TOG EL =1161.00

(02) 1/4 PT 50.0' RADIUS
STA 1+60.64-10.69' RT
N8408.10 E60891.49
TOG EL = 1160.57

(03) MID PT 50.0' RADIUS
STA 1+39.05-24.19' RT
N8408.11 E60915.67
TOG EL = 1160.32

(04) 3/4 PT 50.0' RADIUS
STA 1+24.06-44.63' RT
N8419.47 E60937.02
TOG EL = 1159.72

(05) END 50.0' RADIUS
STA 1+20.54-68.66' RT
N8439.52 E60950.54
TOG EL = 1159.08

(06) 50.0' RADIUS POINT
STA 1+85.19-56.00' RT
N8456.62 E60903.56

(07) CORNER OF GRAVEL
STA 1+20.70-69.59' RT
N8440.40 E60950.86
TOG EL = 1159.05

(08) CORNER OF GRAVEL/
BEGIN 65.0' RADIUS
STA 0+92.93-70.98' RT
N8433.56 E60969.65
TOG EL = 1159.05

(09) 1/4 PT 65.0' RADIUS
STA 0+91.21-58.86' RT
N8421.76 E60966.58
TOG EL = 1159.41

(10) MID PT 65.0' RADIUS
STA 0+87.40-47.15' RT
N8409.60 E60965.76
TOG EL = 1159.76

(11) 3/4 PT 65.0' RADIUS
STA 0+81.88-36.28' RT
N8397.49 E60967.22
TOG EL = 1160.08

(12) END 65.0' RADIUS/
BEGIN 65.0' RADIUS/
STA 0+74.43-26.63' RT
N8385.88 E60970.92
TOG EL = 1160.37

(13) 65.0' RADIUS POINT
STA 0+26.93-71.00' RT
N8411.33 E61030.73

(14) 1/4 PT 65.0' RADIUS
STA 0+66.98-16.98' RT
N8374.26 E60974.62
TOG EL = 1160.65

(15) MID PT 65.0' RADIUS
STA 0+61.46-6.11' RT
N8362.16 E60976.09
TOG EL = 1160.98

(16) 3/4 PT 65.0' RADIUS
STA 0+58.07-5.60' LT
N8349.99 E60975.27
TOG EL = 1161.34

(17) END 65.0' RADIUS
STA 0+56.93-17.74' LT
N8338.20 E60972.19
TOG EL = 1161.71

(18) 65.0' RADIUS POINT
STA 1+19.63-19.71' LT
N8360.43 E60911.11

(19) CORNER OF GRAVEL
STA 0+56.93-45.33' LT
N8312.27 E60962.76
TOG EL = 1162.54

(20) CORNER OF GRAVEL
STA 0+76.93-45.33' LT
N8319.11 E60943.96
TOG EL = 1162.54

(21) BEGIN 25.0' RADIUS
STA 0+76.93-37.83' LT
N8326.16 E60946.53
TOG EL = 1162.32

(22) 1/4 PT 25.0' RADIUS
STA 0+84.25-20.16' LT
N8345.27 E60945.69
TOG EL = 1161.79

(23) MID PT 25.0' RADIUS
STA 1+01.31-13.13' LT
N8358.20 E60931.58
TOG EL = 1161.56

(24) 3/4 PT 25.0' RADIUS
STA 1+17.24-21.84' LT
N8357.37 E60912.47
TOG EL = 1161.79

(25) END 25.0' RADIUS
STA 1+21.81-40.27' LT
N8343.26 E60899.54
TOG EL = 1162.33

(26) 65.0' RADIUS POINT
STA 1+00.28-38.11' LT
N8334.71 E60923.03

(27) CORNER OF GRAVEL
STA 1+21.00-47.71' LT
N8336.21 E60896.98
TOG EL = 1162.54

(28) CORNER OF GRAVEL
STA 1+37.50-50.88' LT
N8343.05 E60878.18
TOG EL = 1162.54

(29) CORNER OF GRAVEL /
BEGIN 256.0' RADIUS
STA 1+46.07-6.00' LT
N8386.17 E60893.88
TOG EL = 1161.16

(30) EDGE OF GRAVEL DRIVE
STA 1+85.19-6.00' LT
N8410.52 E60862.11
TOG EL = 1161.37
SEE ACCESS ROAD PLAN
AND PROFILE ON SHEETS
01C107 THROUGH 01C109
FOR CONTINUATION.

(31) FINISHED GROUND @ CAISSON
STA 0+91.96-45.35' LT
N8324.41 E60929.40
GRND EL = 1162.54

(32) FINISHED GROUND @ CAISSON
STA 1+00.35-36.11' LT
N8336.59 E60923.72
GRND EL = 1162.24

(33) FINISHED GROUND @ CAISSON
STA 1+08.01-46.15' LT
N8330.91 E60911.54
GRND EL = 1162.54

(34) FINISHED GROUND @ CAISSON
STA 0+99.67-55.09' LT
N8318.73 E60917.22
GRND EL = 1162.24

CHAIN LINK FENCE LOCATES:

(01) CORNER OF CHAIN LINK FENCE
STA 1+33.24-79.72' LT
N8315.49 E60868.15

(02) CHAIN LINK FENCE GATE POST
STA 1+45.83-7.06' LT
N8385.14 E60893.50

(03) CHAIN LINK FENCE GATE POST
STA 1+51.57-16.27' RT
N8407.70 E60901.71

(04) CORNER OF CHAIN LINK FENCE
STA 1+71.13-70.84' RT
N8461.14 E60921.16

(05) CORNER OF CHAIN LINK FENCE
STA 0+56.93-80.33' RT
N8430.36 E61005.74

(06) CORNER OF CHAIN LINK FENCE
STA 0+56.93-74.67' LT
N8284.70 E60952.72

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WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

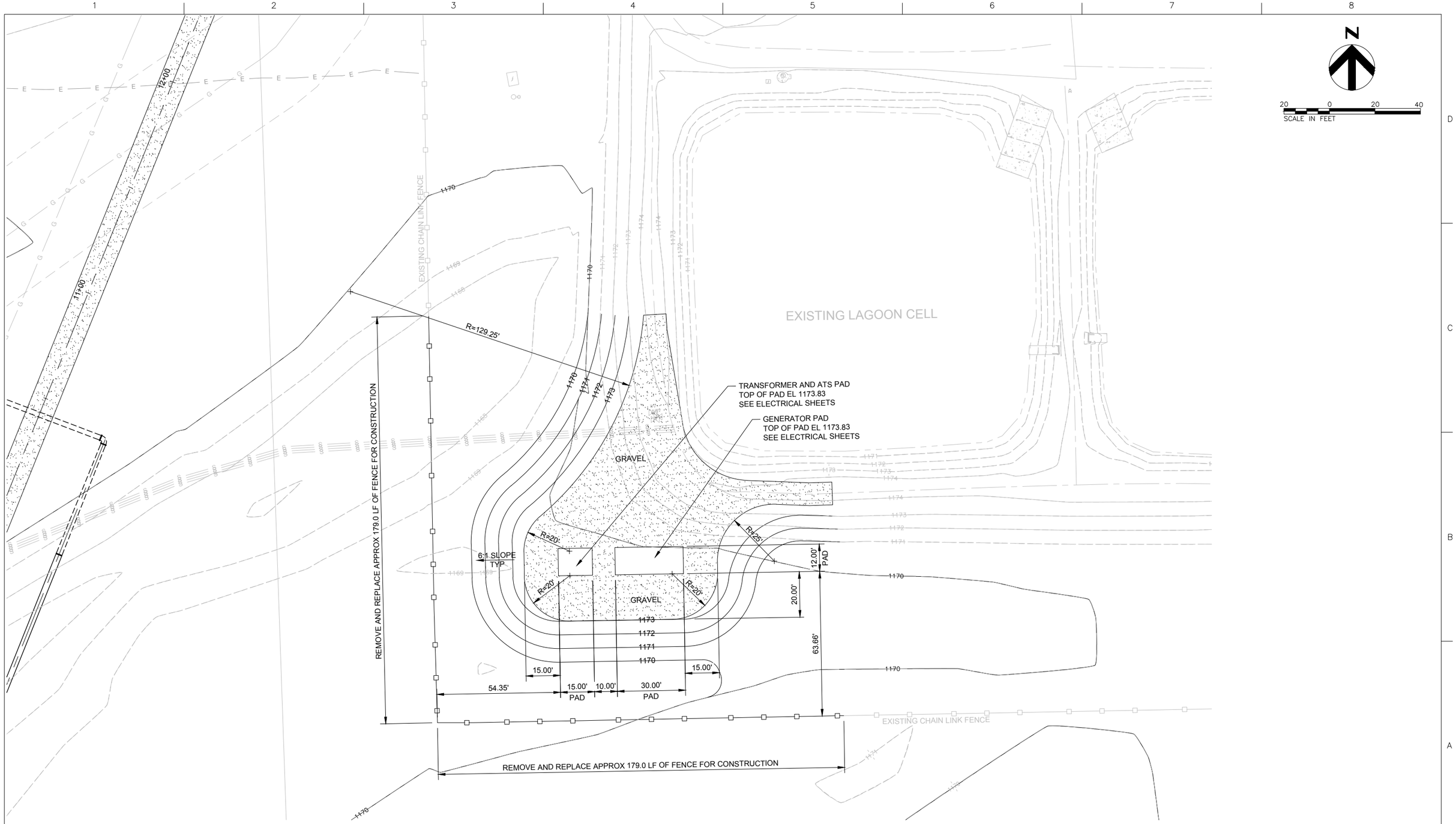
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

SITE GRADING PLAN AND LOCATES

0 1" 2"

FILENAME	01C104.dwg
SCALE	AS NOTED

SHEET 01C104



CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
CIVIL	K. NEWMAN
STRUCTURAL	K. KIRCHNER
ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 9247
KEVIN R. NEWMAN
SOUTH DAKOTA
10/09/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

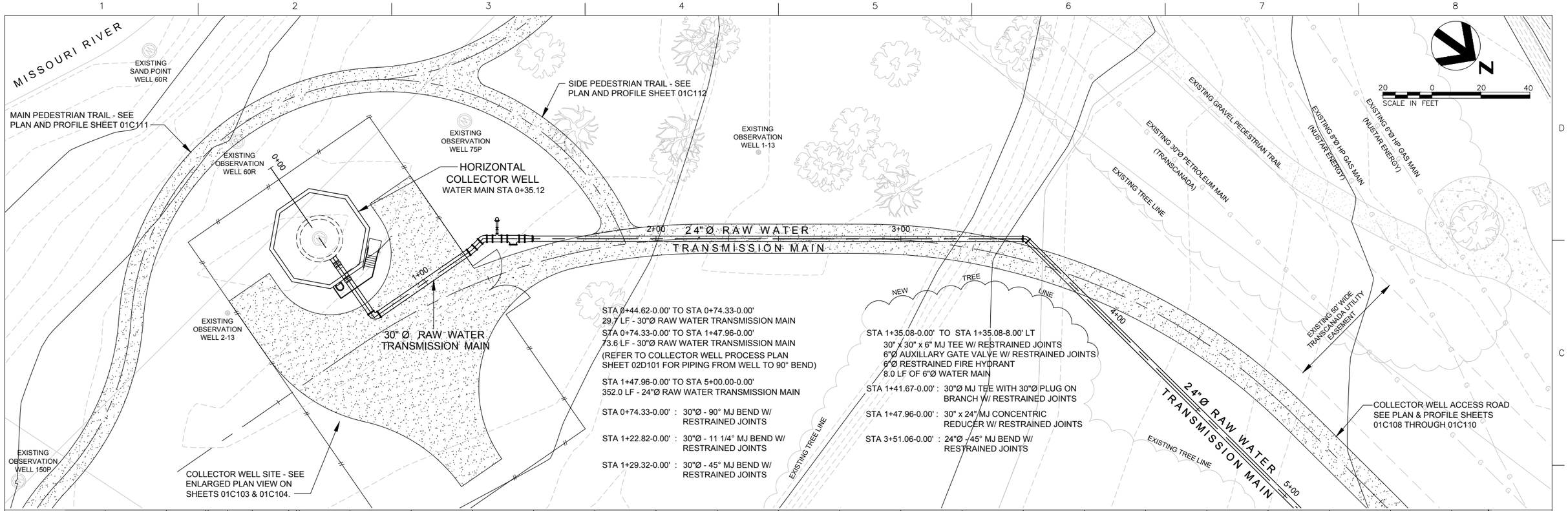
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

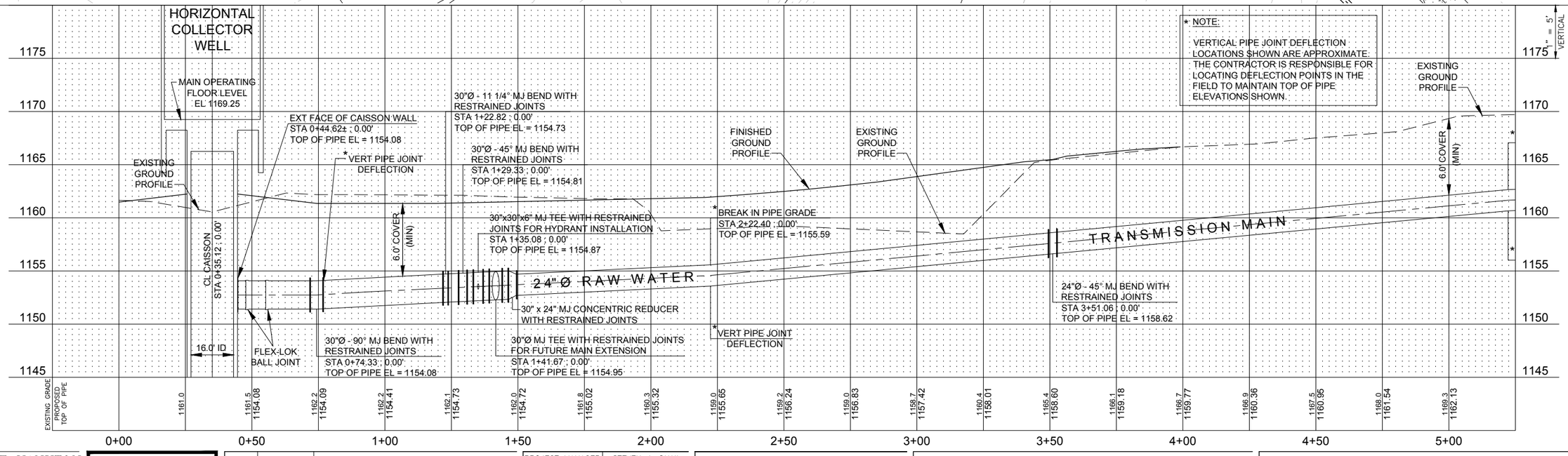
GENERATOR SITE PLAN

0 1" 2"

FILENAME	01C105.dwg
SCALE	AS NOTED

SHEET 01C105





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WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

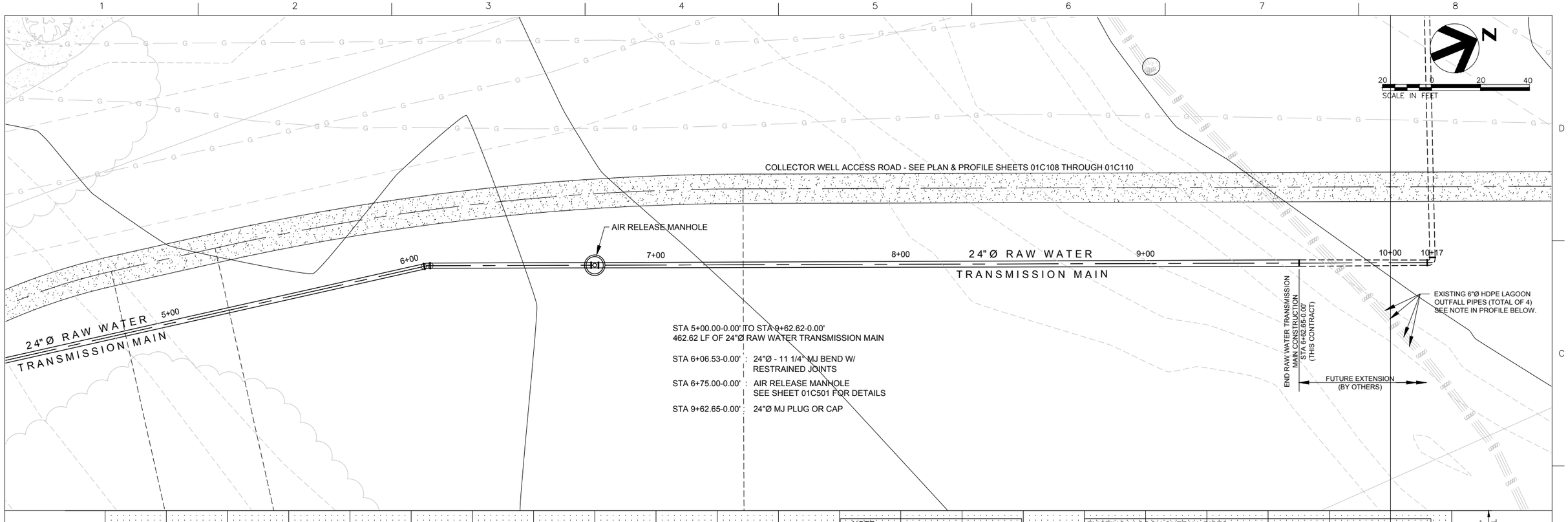
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

WATER MAIN PLAN AND PROFILE

0 1" 2"

FILENAME	01C106.dwg
SCALE	AS NOTED

SHEET 01C106



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REGISTERED PROFESSIONAL ENGINEER
REG. NO. 8947
KEVIN E. NEWMAN
SOUTH DAKOTA
10/03/2014

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

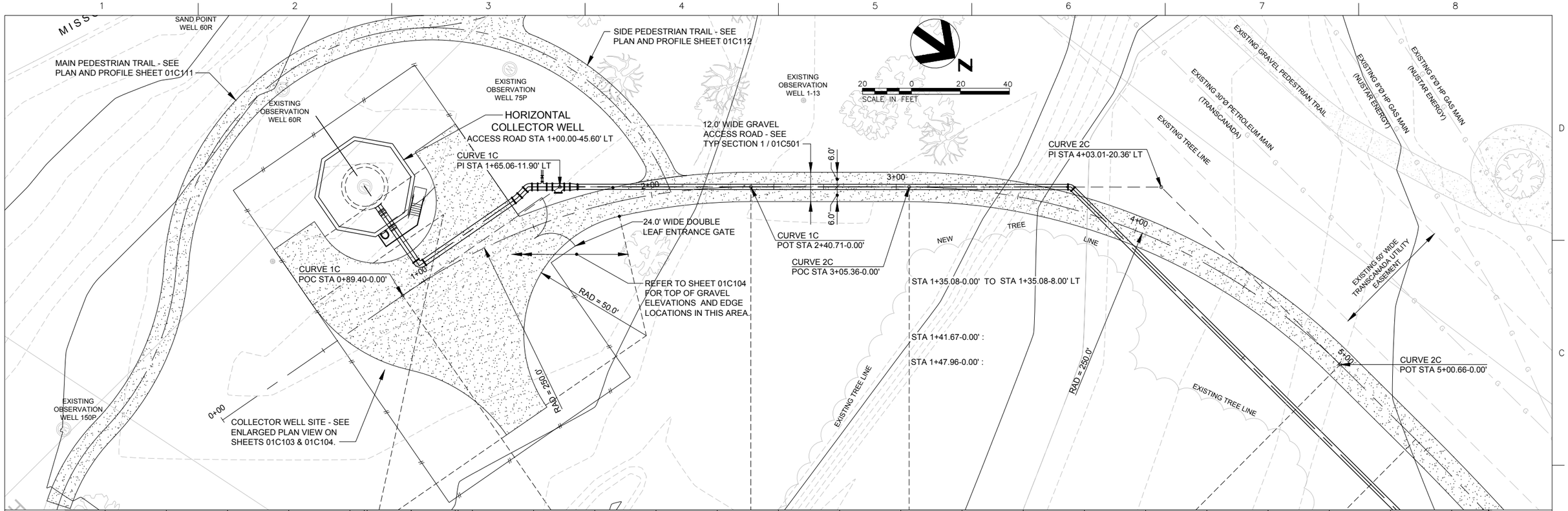
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

WATER MAIN
PLAN AND PROFILE

0 1" 2"

FILENAME	01C107.dwg
SCALE	AS NOTED

SHEET 01C107



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WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

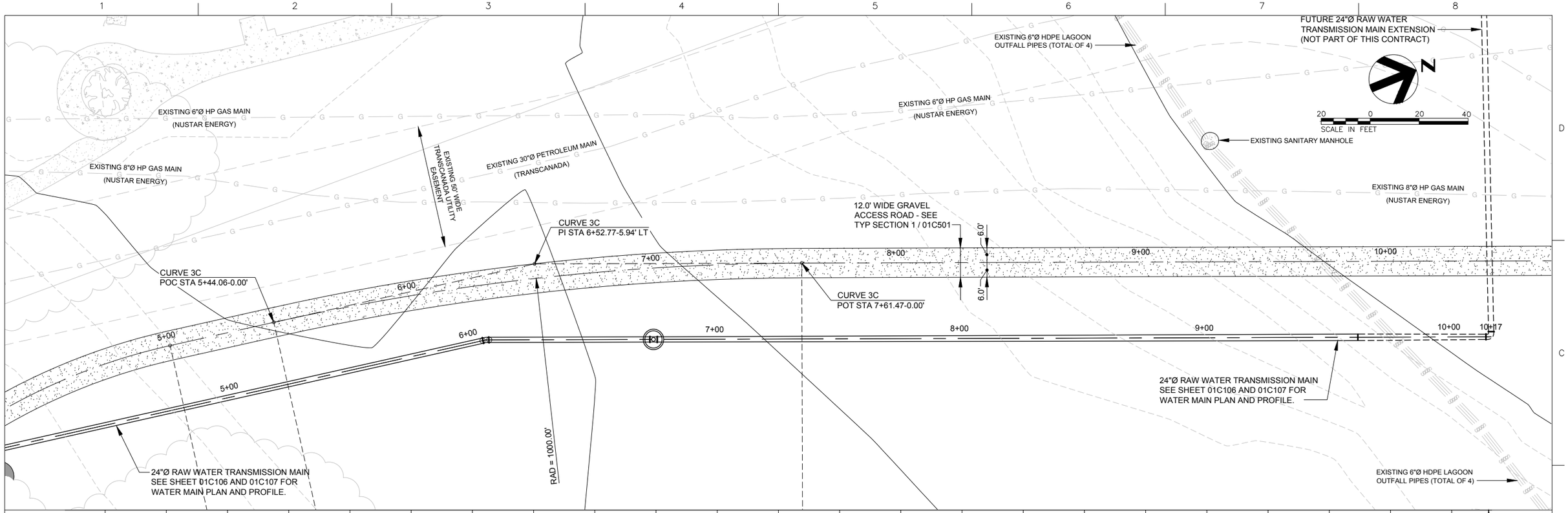
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

ACCESS ROAD
PLAN AND PROFILE

0 1" 2"

FILENAME	01C108.dwg
SCALE	AS NOTED

SHEET 01C108



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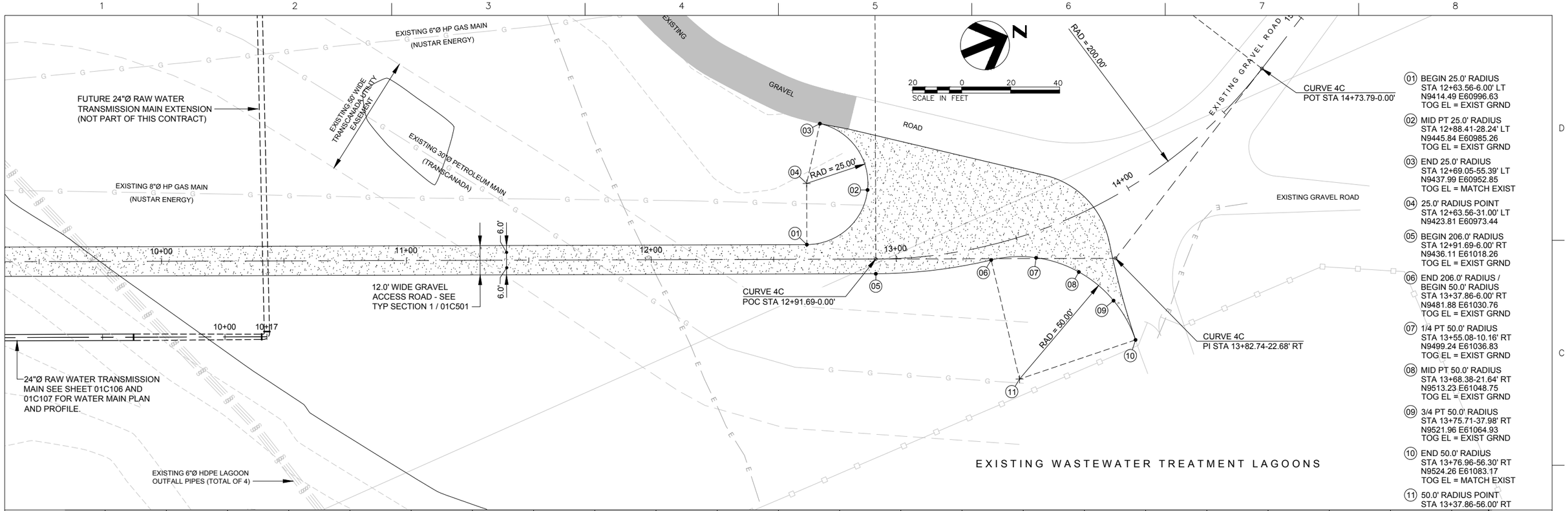
YANKTON, SOUTH DAKOTA 2014

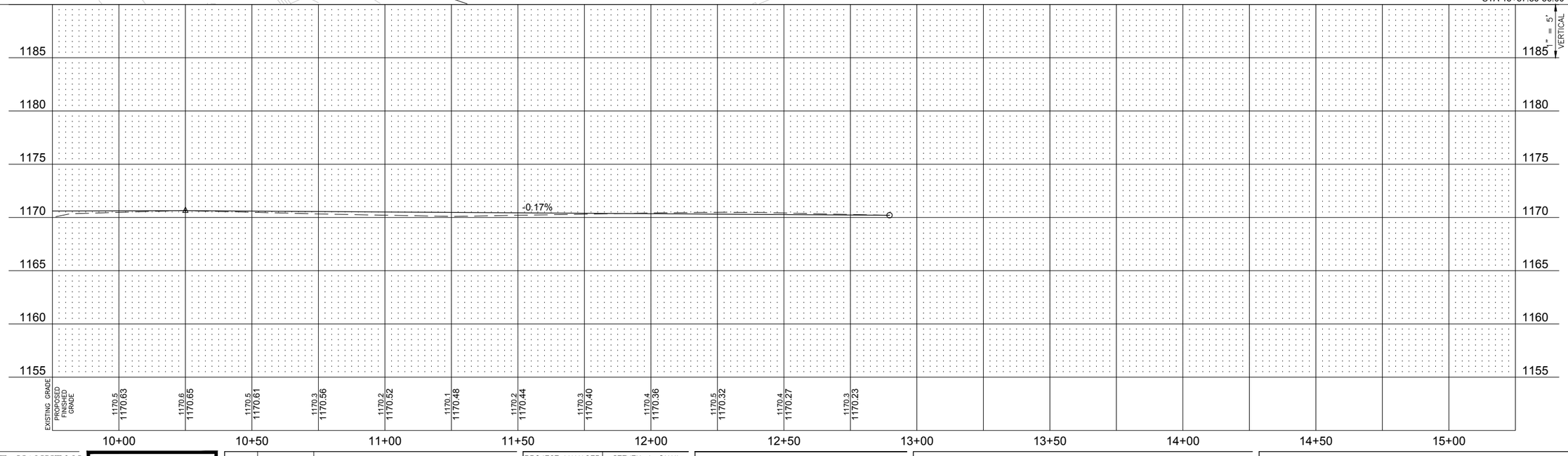
ACCESS ROAD
PLAN AND PROFILE

0 1" 2"

FILENAME	01C109.dwg
SCALE	AS NOTED

SHEET 01C109





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HORIZONTAL COLLECTOR WELL

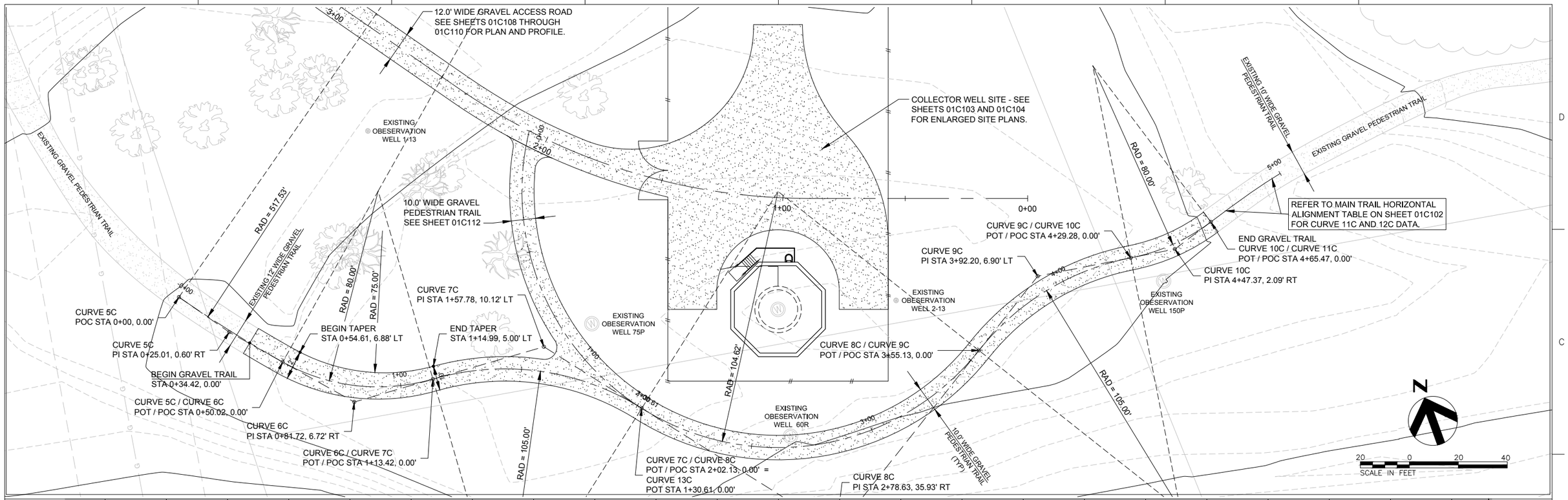
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

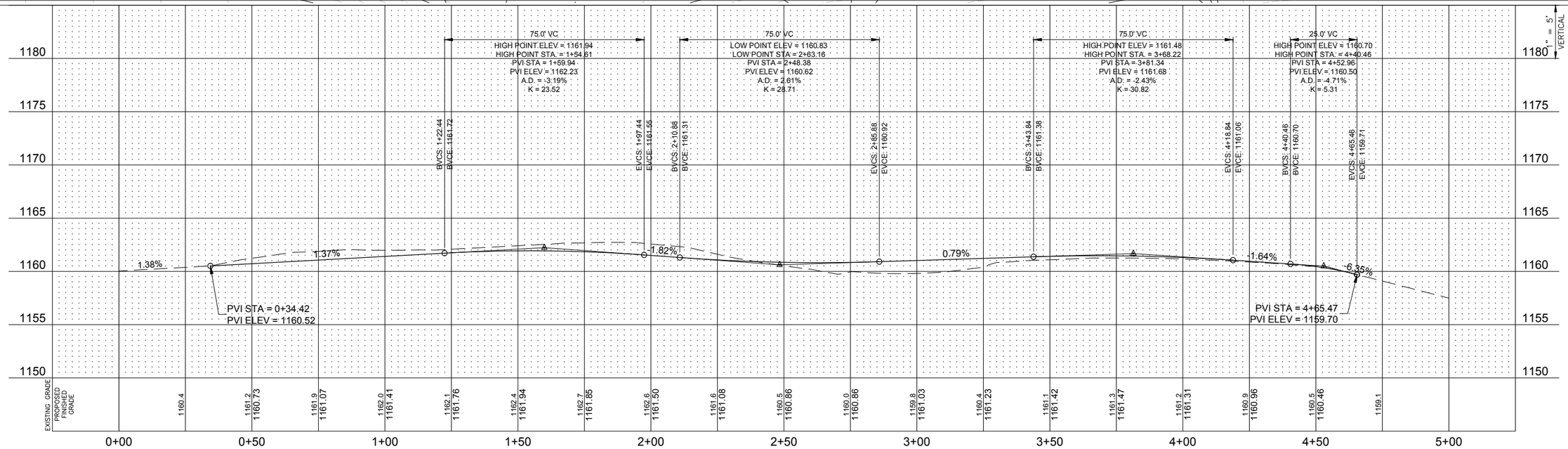
ACCESS ROAD
PLAN AND PROFILE

0 1" 2"

FILENAME	01C110.dwg
SCALE	AS NOTED

SHEET 01C110





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HORIZONTAL COLLECTOR WELL

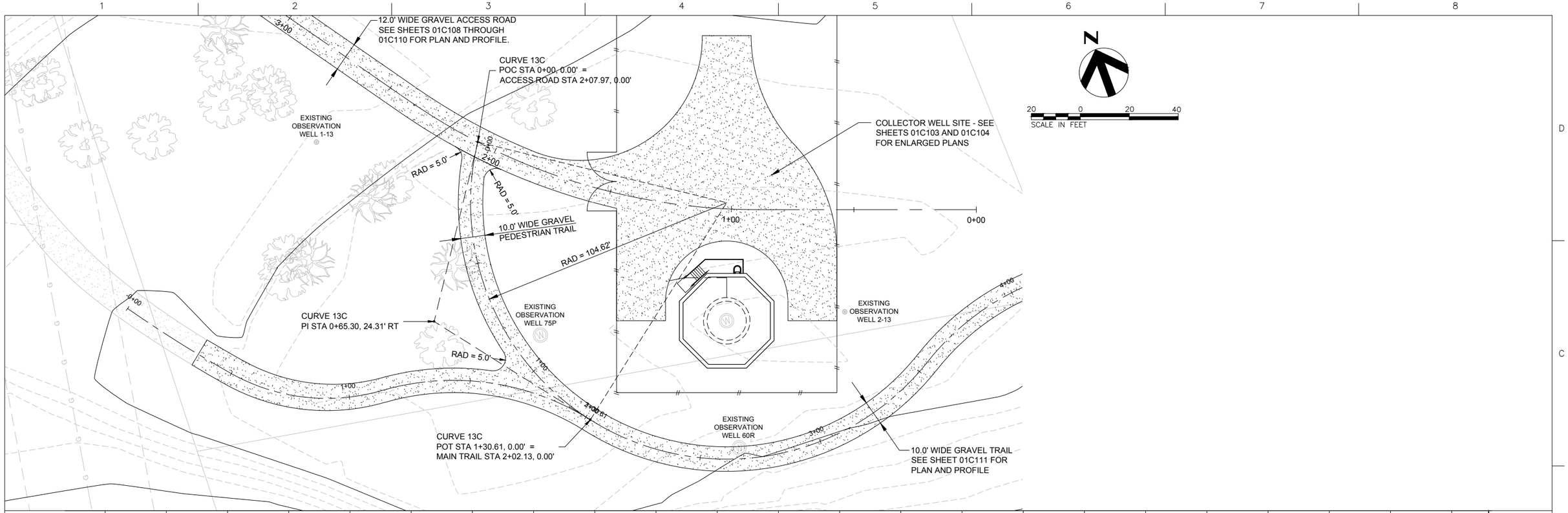
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

MAIN PEDESTRIAN TRAIL
PLAN AND PROFILE

0 1" 2"

FILENAME	01C111.dwg
SCALE	AS NOTED

SHEET 01C111



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HORIZONTAL COLLECTOR WELL

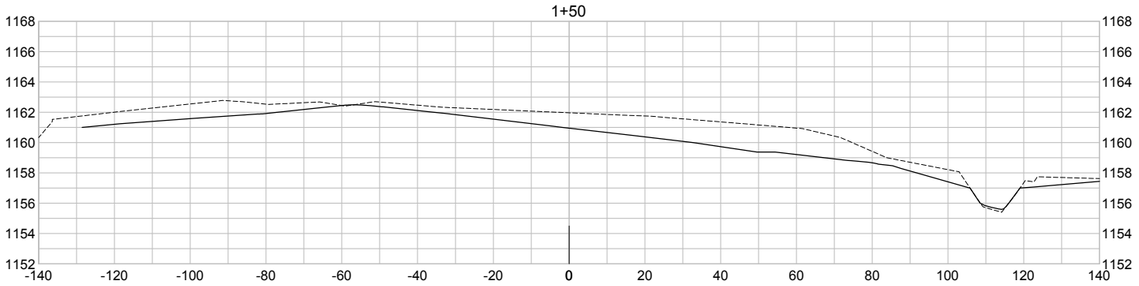
CITY OF YANKTON

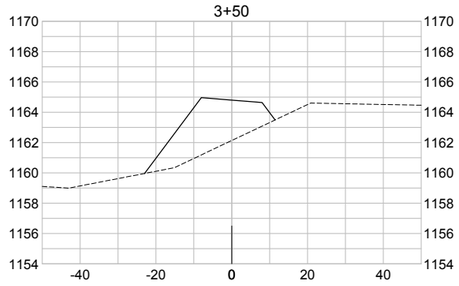
YANKTON, SOUTH DAKOTA 2014

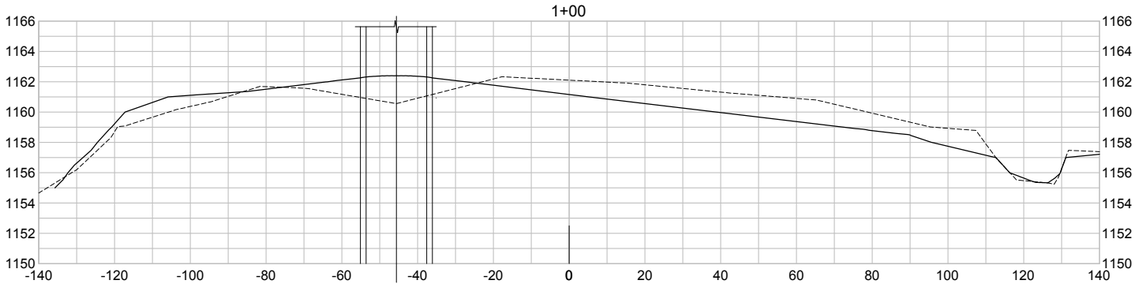
MAIN PEDESTRIAN TRAIL
PLAN AND PROFILE

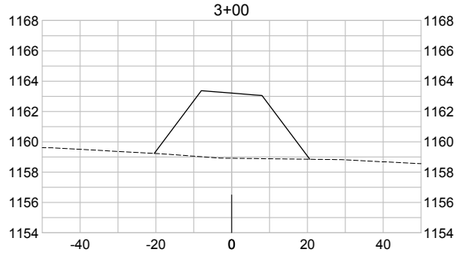
FILENAME	01C112.dwg
SCALE	AS NOTED

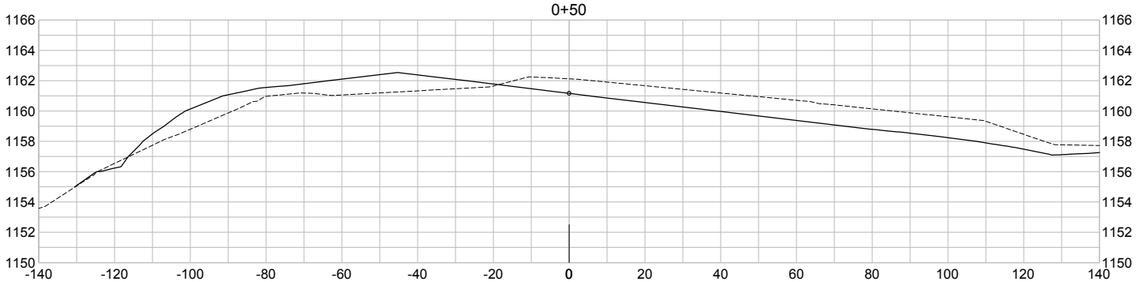
SHEET 01C112

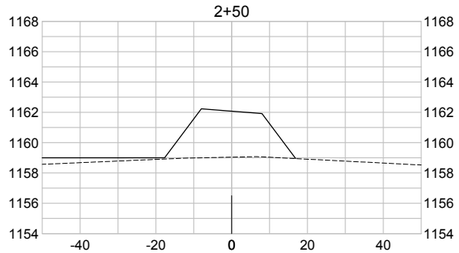


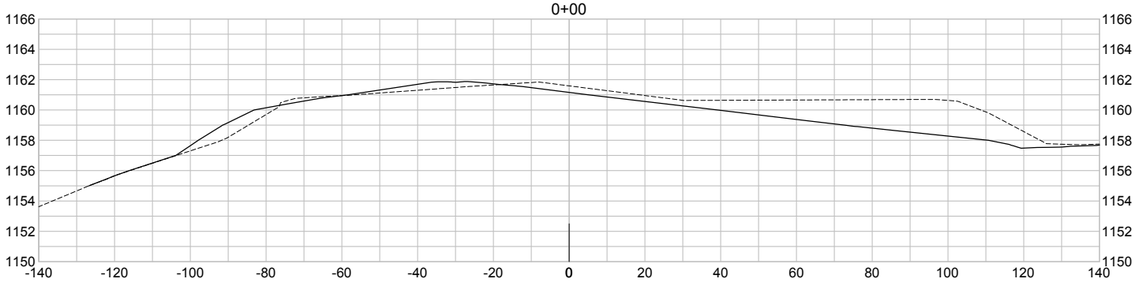


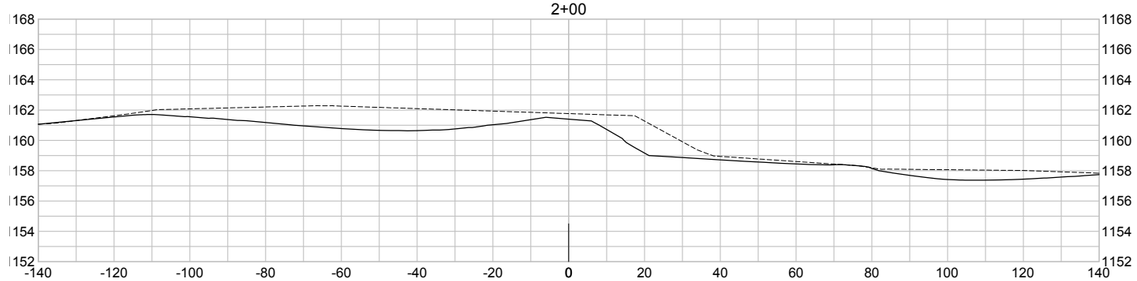












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REG. NO. 6247
KEVIN E. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON

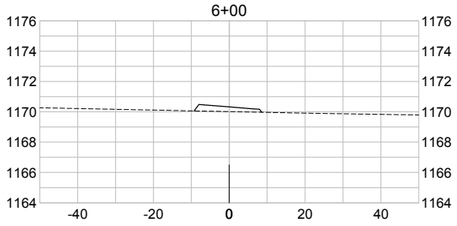
YANKTON, SOUTH DAKOTA 2014

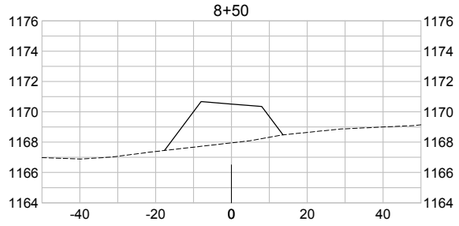
ACCESS ROAD CROSS SECTIONS

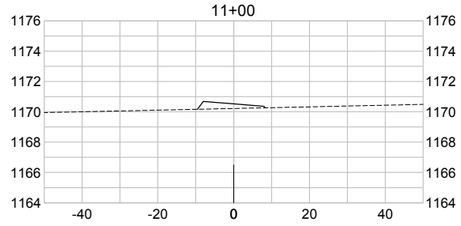
0 1" 2"

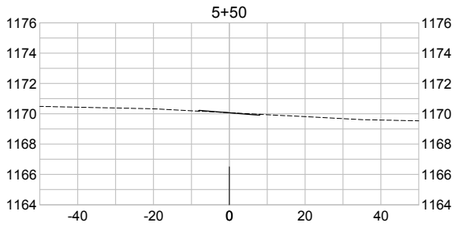
FILENAME	01C113.dwg
SCALE	AS NOTED

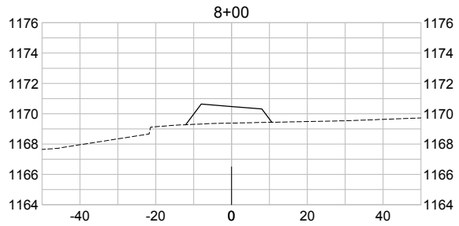
SHEET 01C113

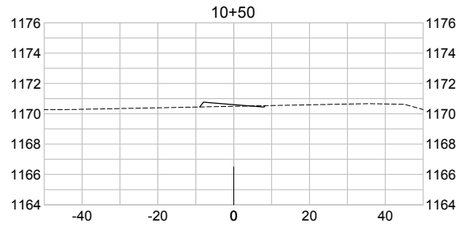


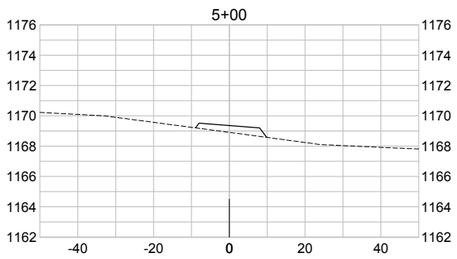


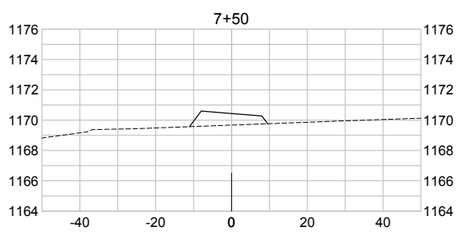


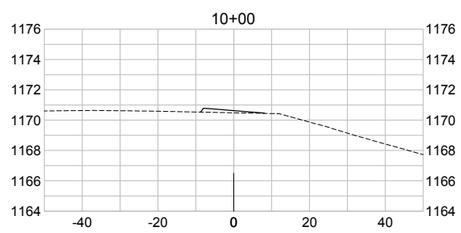


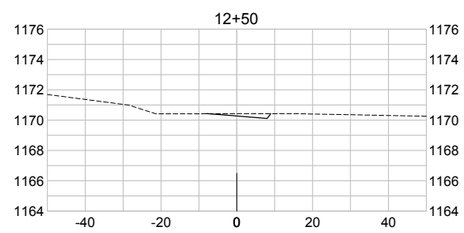


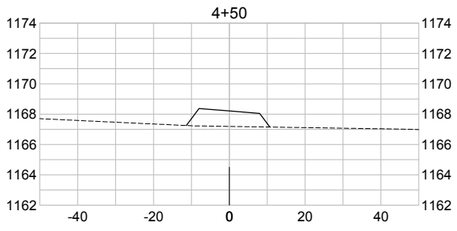


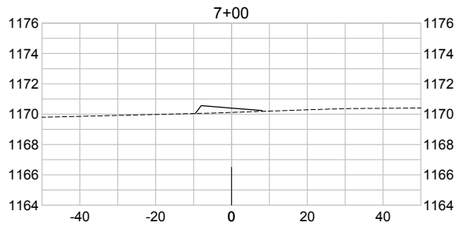


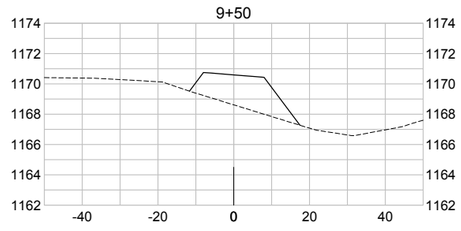


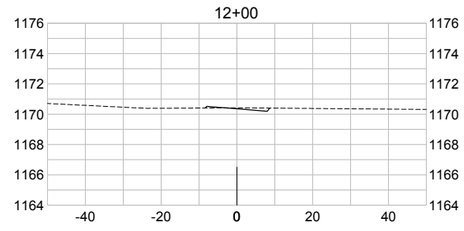


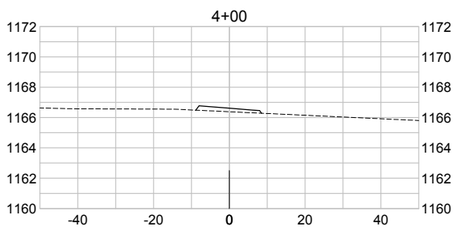


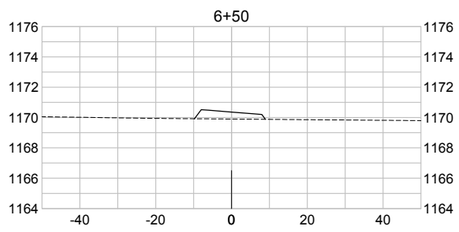


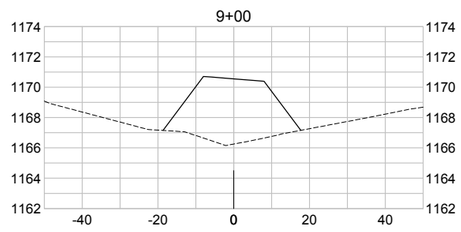


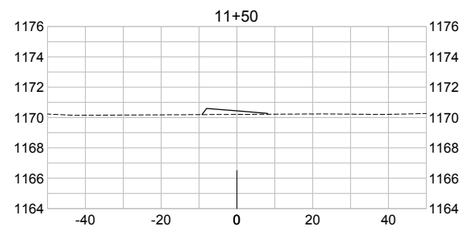












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WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

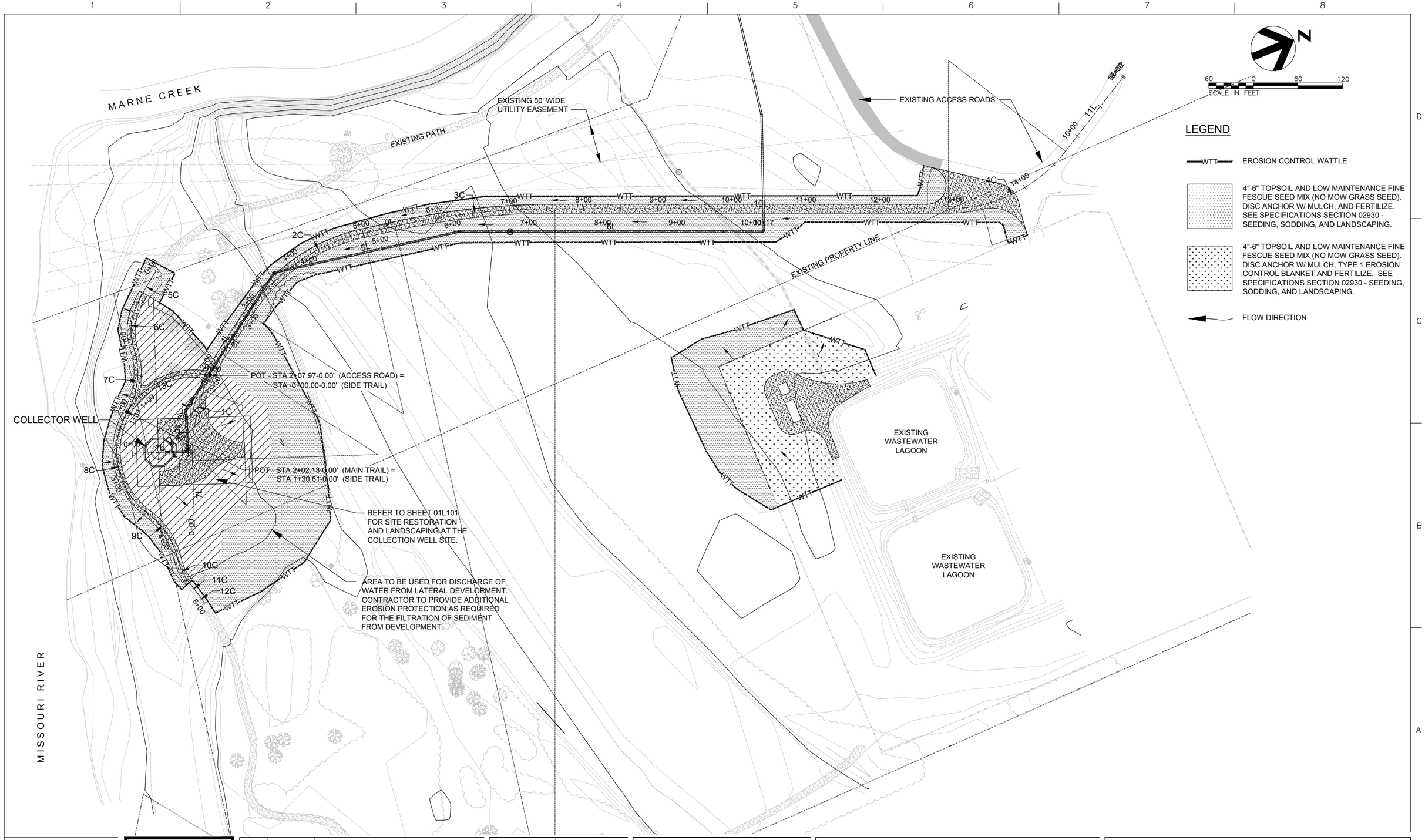
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

ACCESS ROAD CROSS SECTONS

0 1" 2"

FILENAME	01C114.dwg
SCALE	AS NOTED

SHEET
01C114



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WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EROSION CONTROL PLAN

0 1" 2"

FILENAME	01C115.dwg
SCALE	AS NOTED

SHEET 01C115

PROJECT DESCRIPTION/LOCATION

The Yankton Horizontal Collector Well project consists of the construction of a new 16 foot diameter by 120 feet deep horizontal collector well, which will be located along the north side of the Missouri River at Paddle Wheel Point in Yankton, SD. The project will also include the construction approximately 900 linear feet of raw water transmission main. The remaining portion of the raw water transmission main will be constructed as a separate project. Construction will also include a gravel access road to the horizontal collector well. The area is located in the SW1/4 of Section 17, Township 93 North, Range 55 West.

NOTICE OF INTENT

A Notice of Intent (NOI) for coverage under the General Permit for Storm Water Discharges Associated with Construction Activities has been submitted to the South Dakota DENR and the permit number is SDR10G804. This permit and general requirements of this permit are included in Appendix C of the Specifications.

ESTIMATE OF QUANTITIES

ITEM	QUANTITY	UNIT
Remove Sediment	6.5	CuYd
Remove Erosion Control Wattle	4,260	Ft
Type 1 Erosion Control Blanket	2,030	SqYd
20" Diameter Erosion Control Wattle	4,260	Ft
Remove and Reset Erosion Control Wattle	1,065	Ft
Low Maintenance Fine Fescue Seed (No-Mow Grass)	3.20	AC

Note: See sheet 01L101 for additional seeding, sodding and landscaping items and quantities.

FERTILIZING

The Contractor shall apply an all-natural slow release fertilizer prior to seeding or placing sod. Fertilizer to be as specified in Specification Section 02930 – Seeding, Sodding, and Landscaping.

PERMANENT SEEDING

The areas to be seeded consist of all newly graded areas within the project limits except for the top of roadways and areas designated to be sodded and seeded with a cover crop. See Sheet 01L101 and Specification Section 02930 – Seeding, Sodding, and Landscaping.

SODDING

Sod shall be placed at locations specified in the plans and at locations determined by the Engineer during construction. See Sheet 01L101 and Specification Section 02930 – Seeding, Sodding, and Landscaping.

WATER FOR VEGETATION

Water for vegetation consists of applying water to seeded areas to enhance germination and/or root growth. When watering, use the following guidelines:

Immediately after seeding:

- Keep the topsoil moist but not excessively wet until the seed has germinated.
- Water a minimum of 3 days a week for 2 weeks preferably watering 2 or 3 times a day in small quantities.
- Use fine spray and low pressure to avoid topsoil wash and to prevent uncovering buried seeds.

After emergence:

- Topsoil shall be kept thoroughly moistened by sprinkling, as necessary, for 6 weeks. After the 6 week period, an inspection shall be made to determine if grass is established enough to suspend watering. Continue watering until grass has been thoroughly established.
- Never apply water at a rate faster than the topsoil can absorb.
- Water during early morning hours or early evening hours.
- Do not water when rain is forecasted for the area.
- If rainfall occurs, suspend watering according to rainfall amount.

All costs for furnishing and applying the water including hauling, materials, equipment, labor, and incidentals necessary shall be incidental to seeding and sodding bid items.

MULCHING (GRASS HAY OR STRAW)

Bales with noxious weed contamination will be rejected and the Contractor will be required to remove the contaminated bales from the project. See Specification Section 02930 – Seeding Sodding, and Landscaping.

EROSION CONTROL WATTLE

Erosion control wattles for restraining the flow of runoff and sediment shall be installed at locations shown on the Erosion Control Plan table and at locations determined by the Engineer during construction. Refer to Standard Plate 734.06 for details.

The Contractor shall provide certification that the erosion control wattles do not contain noxious weed seeds.

The erosion control wattle provided shall be from the approved product list. The approved product list for erosion control wattle may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

REMOVE AND RESET EROSION CONTROL WATTLE

Erosion control wattles may be removed and reset as necessary as work progresses. The erosion control wattles removed and reset shall be in useable condition. All costs for removing and resetting the erosion control wattles shall be incidental to the contract unit price per foot for "Remove and Reset Erosion Control Wattle".

American Boom and Barrier Corp.
Cape Canaveral, FL
Phone: 1-800-843-2110
www.abbcoboom.com

ENVIRO-USA, LLC
Cocoa, FL
Phone: 1-321-222-9551
www.enviro-usa.com

Elastec/American Marine, Inc.
Carmi, IL
Phone: 1-618-382-2525
www.turbiditycurtains.com

Geo-Synthetics, LLC (GSI)
Waukesha, WI
Phone: 1-800-444-5523
www.geosynthetics.com

Parker Systems, Inc.
Chesapeake, VA
Phone: 1-866-472-7537
www.parkersystemsinc.com

EROSION CONTROL BLANKET

Erosion control blanket shall be installed 16 feet wide at the locations shown in the erosion control plan and at locations determined by the Engineer during construction.

The erosion control blanket provided shall be from the approved product list. The approved product list for erosion control blanket may be viewed at the following internet site:

http://sddot.com/business/certification/products/Default.aspx

The Contractor shall install erosion control blanket according to the manufacturer's installation instructions.

STREET SWEEPING

Vehicle tracking of sediment from the construction site shall be minimized. Street sweeping shall be used if erosion and sediment control best management practices are not adequate to prevent sediment from being tracked onto the street.

The Contractor shall use a pickup broom having integral self-contained storage to clean the roadway. The pickup broom used shall be a minimum of 6 feet wide and have working gutter brooms.

All costs for cleaning the roadway with a pickup broom shall be incidental to the project.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
CIVIL	K. NEWMAN
STRUCTURAL	K. KIRCHNER
ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135–223788–003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN F. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EROSION CONTROL NOTES

0 1" 2"

FILENAME	01C116.dwg
SCALE	AS NOTED

SHEET 01C116

STORM WATER POLLUTION PREVENTION PLAN CHECKLIST
*(The numbers right of the title headings are **reference numbers** to the GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES*

❖ **SITE DESCRIPTION (4.2 1)**
- **Project Limits: See Title Sheet (4.2 1.b)**
- **Project Description: See Title Sheet (4.2 1.a.)**
- **Site Map(s): See Title Sheet and Plans (4.2 1.f. (1)-(6))**
- **Major Soil Disturbing Activities** (check all that apply)
  - ☒ Clearing and grubbing
  - ☒ Excavation/borrow
  - ☒ Grading and shaping
  - ☐ Filling
  - ☐ Cutting and filling
  - ☐ Other (describe):
- **Total Project Area** 4.50 **(4.2 1.b.)**
- **Total Area To Be Disturbed** 4.50 **(4.2 1.b.)**
- **Existing Vegetative Cover (%)** 100
- **Soil Properties: Poorly graded Sand (SP) with trace silt and fine to medium silty sand (SM) and woody organics (4.2 1. d.)**
- **Name of Receiving Water Body/Bodies** Missouri River **(4.2 1.e.)**

❖ **ORDER OF CONSTRUCTION ACTIVITIES (4.2 1.c.)**
(Stabilization measures shall be initiated as soon as possible, but in no case later than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased. Initiation of final or temporary stabilization may exceed the 14-day limit if earth disturbing activities will be resumed within 21 days.)
- **Install stabilized construction entrance(s).**
- **Install perimeter protection where runoff sheets from the site.**
- **Clearing and grubbing.**
- **Remove and store topsoil.**
- **Stabilize disturbed areas.**
- **Install utilities.**
- **Complete final grading.**
- **Reseed areas disturbed by removal activities.**

❖ **EROSION AND SEDIMENT CONTROLS (4.2 2.a.(1)(a)-(f))**
(Check all that apply)
- **Stabilization Practices (See Detail Plan Sheets)**
  - ☒ Temporary Seeding (Cover Crop Seeding)
  - ☒ Permanent Seeding
  - ☒ Sodding
  - ☐ Planting (Woody Vegetation for Soil Stabilization)
  - ☒ Mulching (Grass Hay or Straw)
  - ☐ Hydraulic Mulch (Wood Fiber Mulch)
  - ☐ Soil Stabilizer
  - ☐ Bonded Fiber Matrix
  - ☒ Erosion Control Blankets or Mats
  - ☐ Vegetation Buffer Strips
  - ☐ Roughened Surface (e.g. tracking)
  - ☐ Dust Control
  - ☐ Other:

- **Structural Temporary Erosion and Sediment Controls**
  - ☐ Silt Fence
  - ☐ Floating Silt Curtain
  - ☐ Straw Bale Check
  - ☐ Temporary Berm
  - ☐ Temporary Slope Drain
  - ☒ Straw Wattles or Rolls
  - ☐ Turf Reinforcement Mat
  - ☐ Rip Rap
  - ☐ Gabions
  - ☐ Rock Check Dams
  - ☐ Sediment Traps/Basins
  - ☐ Inlet Protection
  - ☐ Outlet Protection
  - ☐ Surface Inlet Protection (Area Drain)
  - ☐ Curb Inlet Protection
  - ☐ Stabilized Construction Entrances
  - ☐ Entrance/Exit Equipment Tire Wash
  - ☐ Interceptor Ditch
  - ☒ Concrete Washout Area
  - ☐ Temporary Diversion Channel
  - ☐ Work Platform
  - ☐ Temporary Water Barrier
  - ☐ Temporary Water Crossing
  - ☐ Other:
- **Wetland Avoidance**
  Will construction and/or erosion and sediment controls impinge on regulated wetlands? Yes ☐ No ☒ If yes, the structural and erosion and sediment controls have been included in the total project wetland impacts and have been included in the 404 permit process with the USACE.
- **Storm Water Management (4.2 2.b., (1) and (2))**
  Storm water management will be handled by temporary controls outlined in "EROSION AND SEDIMENT CONTROLS" above, and any permanent controls needed to meet permanent storm water management needs in the post construction period. Permanent controls will be shown on the plans and noted as permanent.
- **Other Storm Water Controls (4.2 2.c., (1) and (2))**
  - **Waste Disposal**
    All liquid waste materials will be collected and stored in sealed metal containers approved by the project engineer. All trash and construction debris from the site will be deposited in the approved containers. Containers will be serviced as necessary, and the trash will be hauled to an approved disposal site or licensed landfill. All onsite personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The general contractor's representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.
  - **Hazardous Waste**
    All hazardous waste materials will be disposed of in a manner specified by local or state regulations or by the manufacturer. Site personnel will be instructed in these practices, and the individual designated as the contractor's on-site representative will be responsible for seeing that these practices are followed.
  - **Sanitary Waste**
    Portable sanitary facilities will be provided on all construction sites. Sanitary waste will be collected from the portable units in a timely manner by a licensed waste management contractor or as required by any local regulations.

❖ **Maintenance and Inspection (4.2 3. and 4.2 4.)**
- **Maintenance and Inspection Practices**
  - Inspections will be conducted at least one time per week and after a storm event of 0.50 inches or greater.
  - All controls will be maintained in good working order. Necessary repairs will be initiated within 24 hours of the site inspection report.
  - Silt fence will be inspected for depth of sediment and for tears in order to ensure the fabric is securely attached to the posts and that the posts are well anchored. Sediment buildup will be removed from the silt fence when it reaches $^{1}/_{3}$ of the height of the silt fence.
  - Sediment basins and traps will be checked. Sediment will be removed when depth reaches approximately 50 percent of the structure's capacity, and at the conclusion of the construction.
  - Check dams will be inspected for stability. Sediment will be removed when depth reaches ½ the height of the dam.
  - All seeded areas will be checked for bare spots, washouts, and vigorous growth free of significant weed infestations.
  - Inspection and maintenance reports will be prepared on form DOT 298 for each site inspection, this form will also be used to document changes to the SWPPP. A copy of the completed inspection form will be filed with the SWPPP documents.
  - The SDDOT Project Engineer and contractor's site superintendent are responsible for inspections. Maintenance, repair activities are the responsibility of the contractor. The SDDOT Project Engineer will complete the inspection and maintenance reports and distribute copies per the distribution instructions on DOT 298.

❖ **Non-Storm Water Discharges (3.0)**
The following non-storm water discharges are anticipated during the course of this project (check all that apply).
- ☐ Discharges from water line flushing.
- ☐ Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- ☒ Uncontaminated ground water associated with dewatering activities.

❖ **Materials Inventory (4.2. 2.c.(2))**
The following materials or substances are expected to be present on the site during the construction period. These materials will be handled as noted under the headings "EROSION AND SEDIMENT CONTROLS" and "SPILL PREVENTION" (check all that apply).
- ☒ Concrete and Portland Cement
- ☒ Detergents
- ☒ Paints
- ☐ Metals
- ☐ Bituminous Materials
- ☐ Petroleum Based Products
- ☒ Cleaning Solvents
- ☐ Wood
- ☐ Cure
- ☐ Texture
- ☒ Chemical Fertilizers
- ☐ Other:

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

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ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN R. NEWMAN
SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EROSION CONTROL NOTES

0 1" 2"

FILENAME	01C117.dwg
SCALE	AS NOTED

SHEET 01C117

❖ **Spill Prevention (4.2 2.c.(2))**

➢ **Material Management**

- Housekeeping
  - Only needed products will be stored on-site by the contractor.
  - Except for bulk materials the contractor will store all materials under cover and in appropriate containers.
  - Products must be stored in original containers and labeled.
  - Material mixing will be conducted in accordance with the manufacturer's recommendations.
  - When possible, all products will be completely used before properly disposing of the container off site.
  - The manufacturer's directions for disposal of materials and containers will be followed.
  - The contractor's site superintendent will inspect materials storage areas regularly to ensure proper use and disposal.
  - Dust generated will be controlled in an environmentally safe manner.
  - Vegetation areas not essential to the construction project will be preserved and maintained as noted on the plans.

- Hazardous Materials
  - Products will be kept in original containers unless the container is not resealable.
  - Original labels and material safety data sheets will be retained in a safe place to relay important product information.
  - If surplus product must be disposed of, manufacturer's label directions for disposal will be followed.
  - Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants will be conducted on an impervious surface and under cover during wet weather to prevent the release of contaminants onto the ground.
  - Wheel wash water will be collected and allowed to settle out suspended solids prior to discharge. Wheel wash water will not be discharged directly into any storm water system or storm water treatment system.
  - Potential pH-modifying materials such as: bulk cement, cement kiln dust, fly ash, new concrete washings, concrete pumping, residuals from concrete saw cutting (either wet or dry), and mixer washout waters will be collected on site and managed to prevent contamination of storm water runoff.

➢ **Product Specific Practices (6.8)**

- Petroleum Products
  All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled.
- Fertilizers
  Fertilizers will be applied only in the amounts specified by the SDDOT. Once applied, fertilizers will be worked into the soil to limit the exposure to storm water. Fertilizers will be stored in an enclosed area. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.
- Paints
  All containers will be tightly sealed and stored when not required for use. The excess will be disposed of according to the manufacturer's instructions and any applicable state and local regulations.
- Concrete Trucks
  Contractors will provide designated truck washout areas on the site. These areas must be self contained and not connected to any storm water outlet of the site. Upon completion of construction washout areas will be properly stabilized.

➢ **Spill Control Practices (4.2 2 c.(2))**

In addition to the previous housekeeping and management practices, the following practices will be followed for spill prevention and cleanup if needed.

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

➢ **Spill Response (4.2 2 c.(2))**

The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on-site and prevent their release into receiving waters. If a spill of pollutants threatens storm water or surface water at the site, the spill response procedures outlined below must be implemented in a timely manner to prevent the release of pollutants.

- The contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the contractor at the site.
- If oil sheen is observed on surface water (e.g. settling ponds, detention ponds, swales), action will be taken immediately to remove the material causing the sheen. The contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to SD DENR.
- Personnel with primary responsibility for spill response and clean up will receive training by the contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

❖ **Spill Notification**

In the event of a spill, the contractor's site superintendent will make the appropriate notification(s), consistent with the following procedures:

➢ A release or spill of a regulated substance (includes petroleum and petroleum products) must be reported to DENR immediately **if any one of the following** conditions exists:
- The discharge threatens or is in a position to threaten the waters of the state (surface water or ground water).
- The discharge causes an immediate danger to human health or safety.
- The discharge exceeds 25 gallons.
- The discharge causes a sheen on surface water.
- The discharge of any substance that exceeds the ground water quality standards of ARSD (Administrative Rules of South Dakota) chapter 74:51:01.
- The discharge of any substance that exceeds the surface water quality standards of ARSD chapter 74:51:01.
- The discharge of any substance that harms or threatens to harm wildlife or aquatic life.
- The discharge of crude oil in field activities under SDCL (South Dakota Codified Laws) chapter 45-9 is greater than 1 barrel (42 gallons).

To report a release or spill, call DENR at 605-773-3296 during regular office hours (8 a.m. to 5 p.m. Central time). To report the release after hours, on weekends or holidays, call State Radio Communications at 605-773-3231. Reporting the release to DENR does not meet any obligation for reporting to other state, local, or federal agencies. Therefore, the responsible person must also contact local authorities to determine the local reporting requirements for releases. DENR recommends that spills also be reported to the National Response Center at (800) 424-8802.

❖ **Construction Changes (4.4)**

When changes are made to the construction project that will require alterations in the temporary erosion controls of the site, the Storm Water Pollution Prevention Plan (SWPPP) will be amended to provide appropriate protection to disturbed areas, all storm water structures, and adjacent waters. The SDDOT Project Engineer will modify the SWPPP plan (DOT 298) and drawings to reflect the needed changes. Copies of changes will be routed per DOT 298. Copies of forms and the SWPPP will be retained in a designated place for review over the course of the project.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN F. NEWMAN
SOUTH DAKOTA
10/8/2014

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EROSION CONTROL NOTES

0 1" 2"

FILENAME	01C118.dwg
SCALE	AS NOTED

SHEET 01C118

❖ CERTIFICATIONS

➢ **Certification of Compliance with Federal, State, and Local Regulations**

The Storm Water Pollution Prevention Plan (SWPPP) for this project reflects the requirements of all local municipal jurisdictions for storm water management and sediment and erosion control as established by ordinance, as well as other state and federal requirements for sediment and erosion control plans, permits, notices or documentation as appropriate.

➢ **City of Yankton, SD**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Authorized Signature (See the General Permit, Section 6.7.1.C.)

➢ **Design Engineer**

This SWPPP appears to fulfill the technical criteria for erosion control. I understand that additional erosion and sediment control measures may be needed if unforeseen erosion problems occur or if the submitted plan does not function as intended. The requirements of this plan shall run with the land and be the obligation of the Primary Responsible Party until such time as the plan is properly completed, modified or voided.

_____

Authorized Signature (See the General Permit, Section 6.7.1.C.)

➢ **Prime Contractor**

This section is to be executed by the General Contractor after the award of the contract. This section may be executed any time there is a change in the Prime Contractor of the project.

I certify under penalty of law that this document and all attachments will be revised or maintained under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____

Authorized Signature

❖ CONTACT INFORMATION

➢ **Contractor Information**:

- Prime Contractor Name:
- Contractor Contact Name:
- Address:
- Address:
- City: State: Zip:
- Office Phone: Field:
- Cell Phone: Fax:

➢ **Erosion Control Supervisor**

- Name:
- Address:
- Address:
- City: State: Zip:
- Office Phone: Field:
- Cell Phone: Fax:

➢ **City of Yankton Project Engineer**

- Name: Kevin F. Newman
- Business Address: 6300 S Old Village Place, Suite 100
- Job Office Location: NA
- City: Sioux Falls State: SD Zip: 57108
- Office Phone: 605-977-7760 Field: 605-214-4955
- Cell Phone: 605-214-4955 Fax:605-977-7747

➢ **SD DENR Contact Spill Reporting**

- Business Hours Monday-Friday (605) 773-3296
- Nights and Weekends (605) 773-3231

➢ **SD DENR Contact for Hazardous Materials.**

- (605) 773-3153

➢ **National Response Center Hotline**

- (800) 424-8802.

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER — REG. NO. 6247 — KEVIN F. NEWMAN — SOUTH DAKOTA — 10/31/2014

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

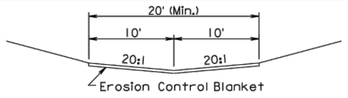
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EROSION CONTROL NOTES

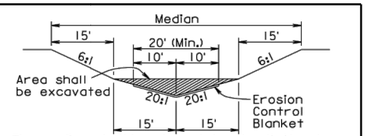
0 1" 2"

FILENAME	01C119.dwg
SCALE	AS NOTED

SHEET 01C119

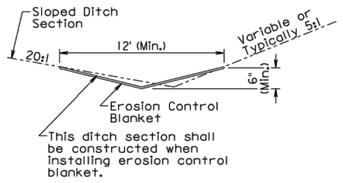


STANDARD DITCH SECTION

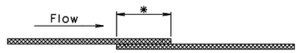


The median shall be shaped to the limits shown in this detail where the erosion control blanket will be placed.

MEDIAN SECTION



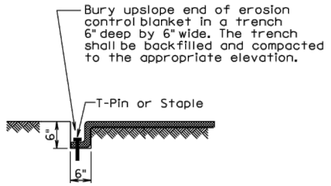
SLOPED DITCH SECTION



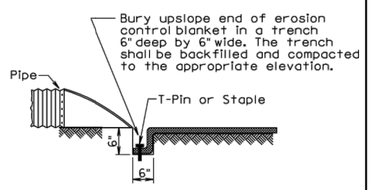
* Use a 4" (Min.) overlap wherever two widths of erosion control blanket are applied side by side.

* Use a 6" (Min.) overlap wherever one roll of erosion control blanket ends and another begins.

OVERLAP DETAIL



TRENCH DETAIL



PIPE END DETAIL

GENERAL NOTES:

Prior to placement of the erosion control blanket, the areas shall be properly prepared, shaped, seeded, and fertilized.

Erosion control blanket shall be unrolled in the direction of the flow of water when placed in ditches and on slopes. The upslope end of the erosion control blanket shall be buried in a trench 6" wide by 6" deep. There shall be at least a 6" overlap wherever one roll of erosion control blanket ends and another begins, with the upslope erosion control blanket placed on top of the downslope erosion control blanket.

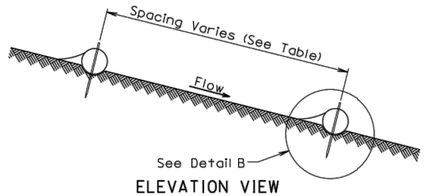
The erosion control blanket shall be pinned to the ground according to the manufacturer's installation recommendations.

After the placement of the erosion control blanket, the Contractor shall fine grade along all edges of the blanket to maintain a uniform slope adjacent to the blanket and level any low spots which might prevent uniform and unrestricted flow of side drainage directly onto the erosion control blanket.

All ditch sections shall be shaped when installing the erosion control blanket. All costs for shaping the ditches shall be incidental to the contract unit price per foot for "Shaping for Erosion Control Blanket".

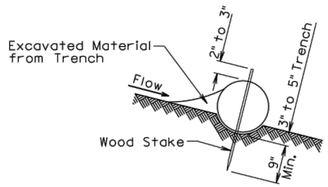
December 23, 2004

Published Date: 3rd Qtr. 2014	SDDOT	*EROSION CONTROL BLANKET*	*PLATE NUMBER* 734.01
			Sheet 1 of 1

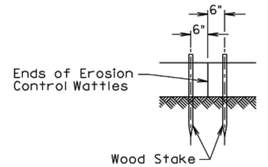


ELEVATION VIEW
CUT OR FILL SLOPE INSTALLATION

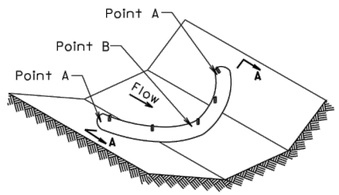
CUT OR FILL SLOPE INSTALLATION	
Slope	Spacing (Ft)
1:1	10
2:1	20
3:1	30
4:1	40



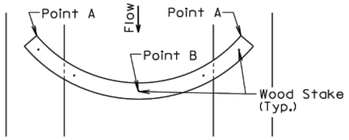
DETAIL B
(TYPICAL OF ALL INSTALLATIONS)



DETAIL C

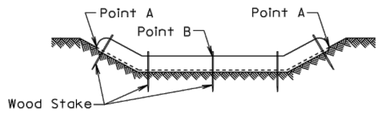


ISOMETRIC VIEW
DITCH INSTALLATION



PLAN VIEW
DITCH INSTALLATION

DITCH INSTALLATION	
Grade	Spacing (Ft)
2%	150
3%	100
4%	75
5%	50



SECTION A-A

December 23, 2004

Published Date: 3rd Qtr. 2014	SDDOT	*EROSION CONTROL WATTLE*	*PLATE NUMBER* 734.06
			Sheet 1 of 2

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
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ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6247
KEVIN E. NEWMAN
SOUTH DAKOTA
10/09/2014

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

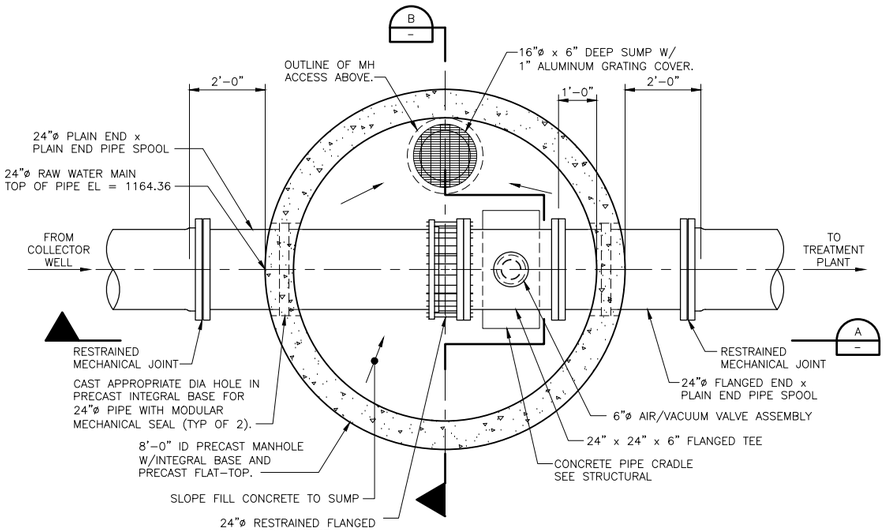
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

EROSION CONTROL DETAILS

0 1" 2"

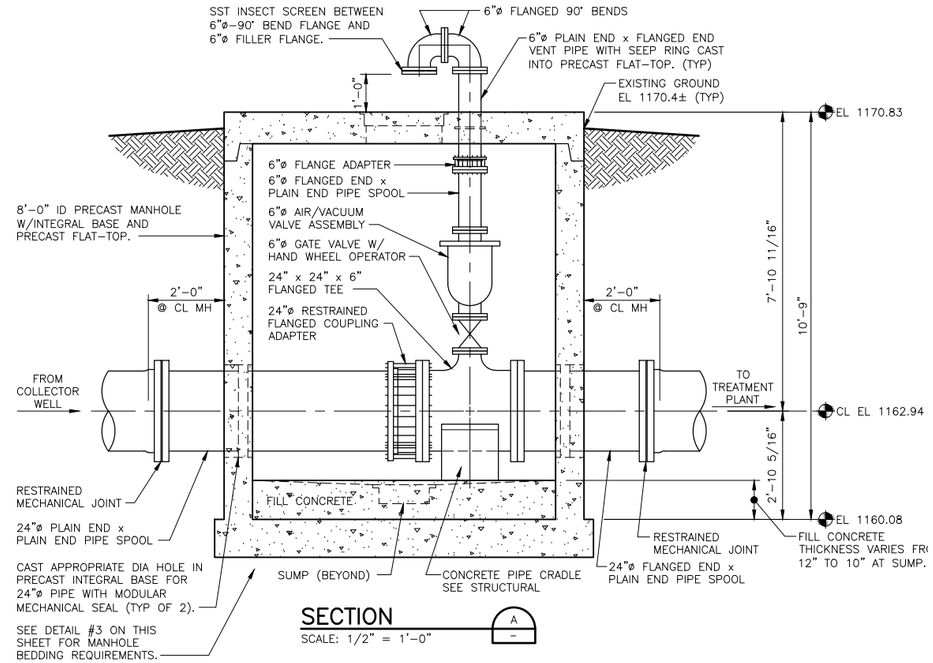
FILENAME	01C120.dwg
SCALE	AS NOTED

SHEET 01C120



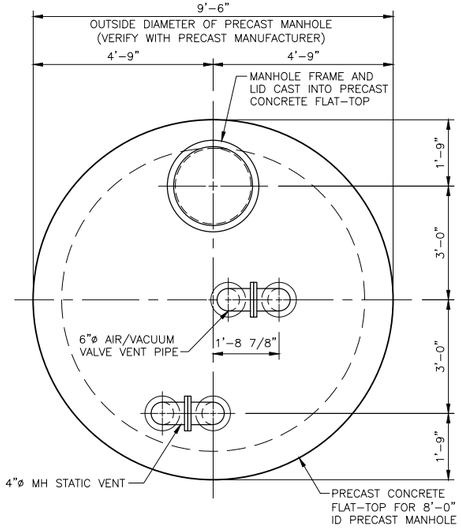
RAW WATER TRANSMISSION MAIN AIR RELEASE MANHOLE PLAN

SCALE: 1/2" = 1'-0"



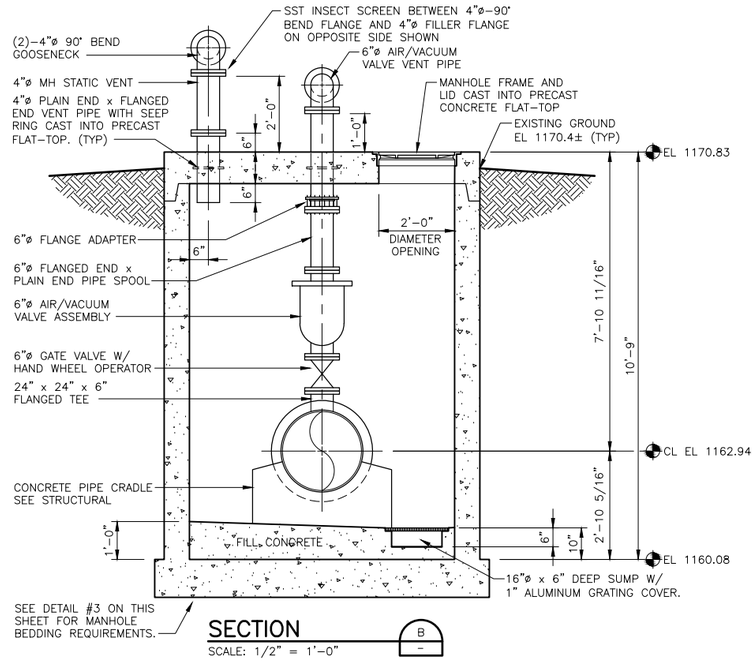
SECTION

SCALE: 1/2" = 1'-0"



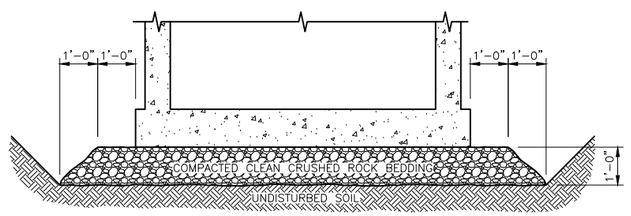
RAW WATER TRANSMISSION MAIN FLAT-TOP MANHOLE COVER PLAN

SCALE: 1/2" = 1'-0"



SECTION

SCALE: 1/2" = 1'-0"



TYPICAL MANHOLE BEDDING DETAIL

SCALE: 1/2" = 1'-0"

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SOUTH DAKOTA

HDR Engineering, Inc.

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ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER — REG. NO. 6247 — KEVIN R NEWMAN — SOUTH DAKOTA — 10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

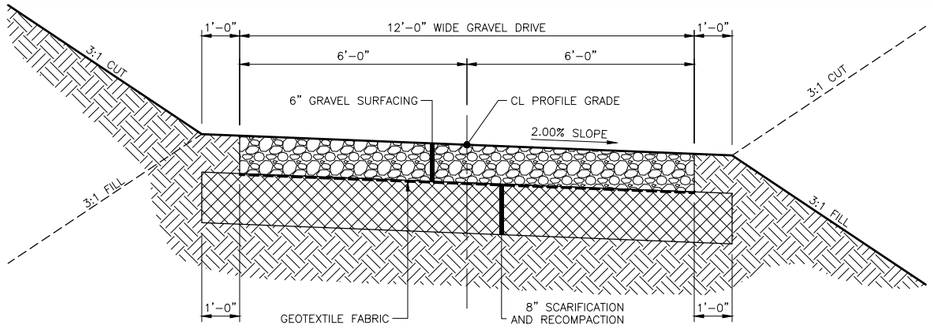
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

AIR RELEASE MANHOLE PLANS AND SECTIONS

0 1" 2"

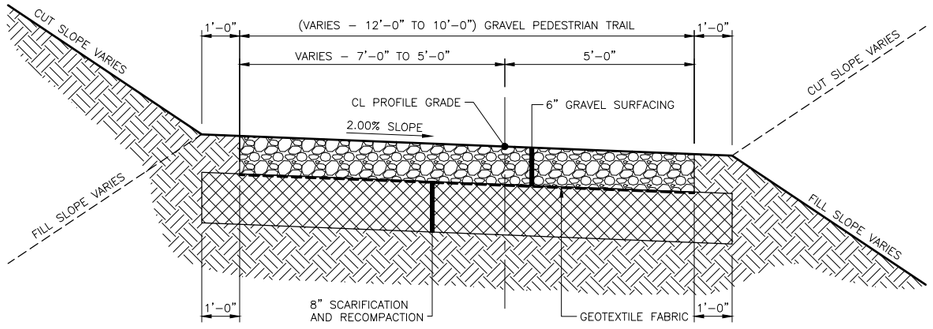
FILENAME	01C501.dwg
SCALE	AS NOTED

SHEET 01C501



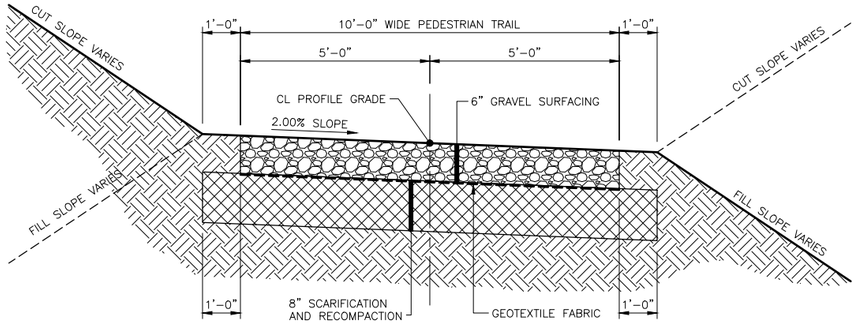
GRAVEL ACCESS ROAD TYPICAL SECTION

NOT TO SCALE



GRAVEL PEDESTRIAN TRAIL TYPICAL SECTION FROM STA 0+54.61 TO STA 1+14.99

NOT TO SCALE

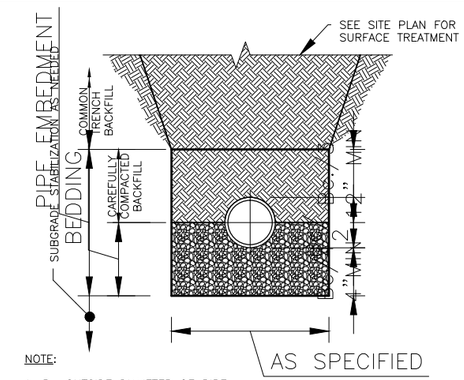


GRAVEL PEDESTRIAN TRAIL TYPICAL SECTION FROM STA 1+14.99 TO STA 4+65.47

NOT TO SCALE

NOTE:

THIS DETAIL ALSO APPLIES TO THE PEDESTRIAN TRAIL BETWEEN THE ACCESS ROAD AND THE MAIN PEDESTRIAN TRAIL AT COLLECTOR WELL SITE. SEE CIVIL SITE PLAN.

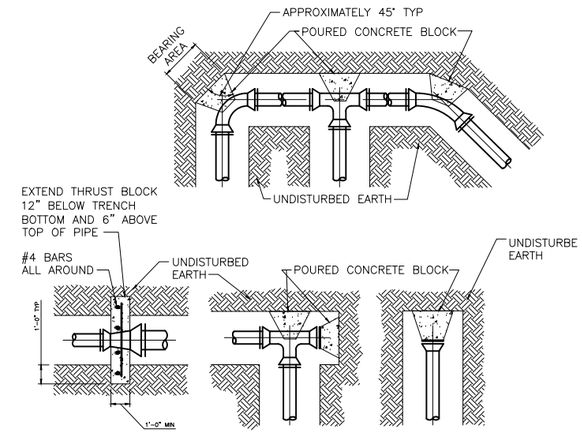


NOTE:

1. Bc=OUTSIDE DIAMETER OF PIPE.

CLASS B PIPE TRENCH DETAIL

NOT TO SCALE



FITTING SIZES	BEARING AREA OF BLOCK IN SQ. FT.				
	TEE & END	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
4"	1.0	1.4	1.0	–	–
6"	2.1	3.0	1.6	1.0	–
8"	3.8	5.3	2.9	1.5	1.0
10"	5.9	8.4	4.6	2.4	1.2
12"	8.5	12.0	6.6	3.4	1.7
14"	11.5	16.3	8.8	4.5	2.3
16"	15.0	21.3	11.6	6.0	3.0
18"	19.0	27.0	14.6	7.6	3.8
20"	23.5	33.3	18.1	9.4	4.7
24"	34.0	48.0	26.2	13.6	6.8
30"	53.0	75.0	40.6	20.7	10.4
36"	76.3	107.9	58.3	29.8	15.0

NOTES:

1. PLACE 4 MIL POLYETHYLENE BETWEEN CONCRETE AND FITTING. CONSTRUCT BLOCK SUCH THAT CONCRETE DOES NOT INTERFERE WITH THE ADJACENT PIPE JOINT.
2. THE HEIGHT (h) OF THE BLOCK SHALL BE EQUAL TO OR LESS THAN 1/2 THE TOTAL DEPTH FROM FINISHED GRADE TO THE BOTTOM THE BLOCK BUT NOT LESS THAN THE PIPE DIAMETER.
3. THE HORIZONTAL DIMENSION OF THE BEARING AREA SHALL BE BETWEEN 1 AND 2 TIMES THE VERTICAL DIMENSION.
4. THRUST BLOCK ORIENTATION SHALL BE SUCH THAT THE CENTER OF THE FITTING CORRESPONDS WITH THE CENTER OF THE THRUST BLOCK.
5. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI @ 28 DAYS.
6. LISTED AREAS ARE BASED ON TEST PRESSURE OF 100 P.S.I. AND AN ALLOWABLE SOIL BEARING STRESS OF 2,000 LBS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURE AND SOIL BEARING PRESSURE, USE THE FOLLOWING EQUATION: BEARING AREA = (TEST PRESSURE/100) X (TABLE VALUE) x 2000/BEARING PRESSURE.

THRUST BLOCK DETAIL

D-BS001

1/4"=1'-0"

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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
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10/09/2014

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

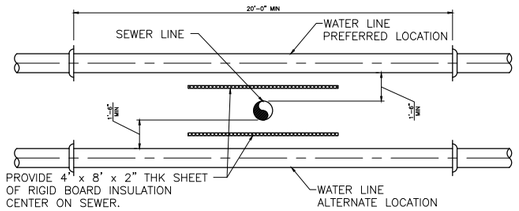
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

CIVIL DETAILS

0 1" 2"

FILENAME	01C502.dwg
SCALE	AS NOTED

SHEET 01C502

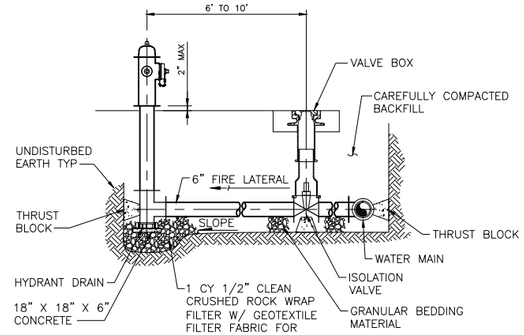


NOTES:

1. MEET ALL STATE REGULATORY CROSSING REQUIREMENTS.
2. INSTALL AIR RELIEF VALVE IF THE CROSSING CREATES A HIGH POINT IN THE PIPE PROFILE.
3. CONSTRUCT THRUST BLOCKS OR INSTALL RESTRAINED JOINT FITTINGS FOR VERTICAL OR HORIZONTAL CHANGES IN ALIGNMENT REQUIRED TO AVOID UTILITY CONFLICTS.
4. CENTER WATER PIPE OVER SEWER PIPE CROSSING TO MAXIMIZE SPACING OF JOINTS FROM THE PIPE CROSSING.

WATER/SEWER CROSSING DETAIL 1

NOT TO SCALE

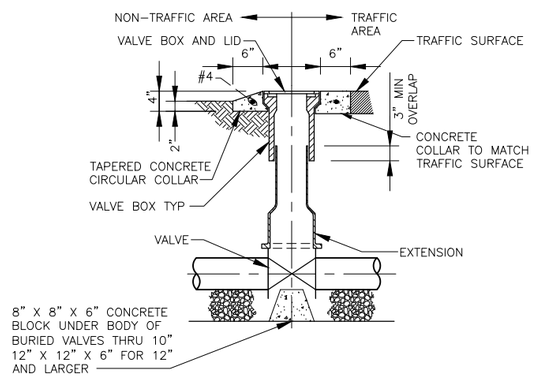


NOTE:

1. TWO RETAINING RODS FROM MAIN TO VALVE AND VALVE TO HYDRANT OR RESTRAINED JOINT HYDRANT FITTINGS AND ADAPTERS MAY BE SUBSTITUTED FOR THRUST BLOCKS.

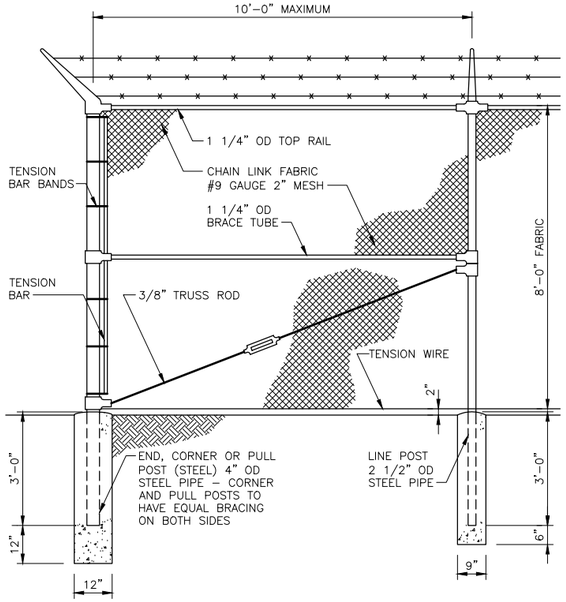
FIRE HYDRANT INSTALLATION DETAIL 2

NOT TO SCALE



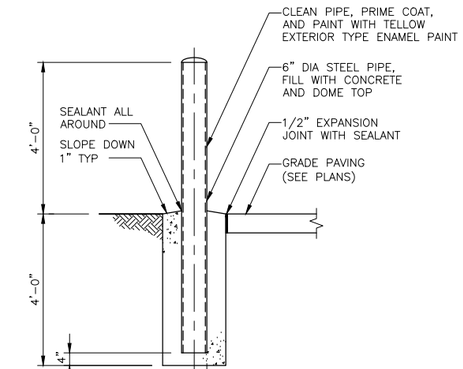
BURIED VALVE BOX 3

NOT TO SCALE



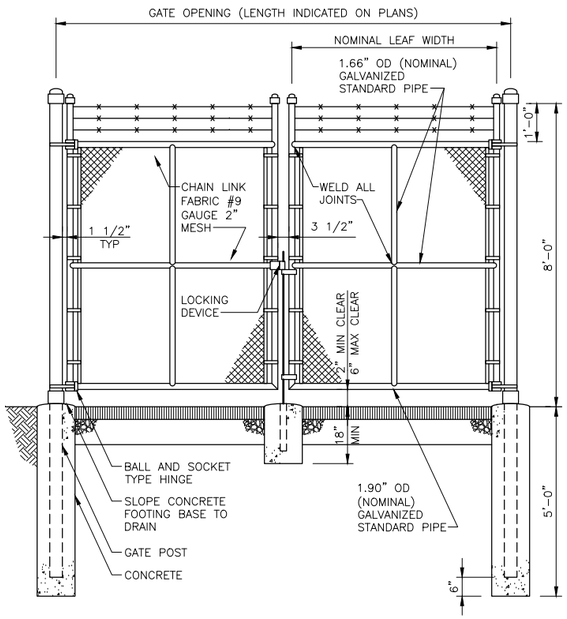
SECURITY FENCE DETAIL 4

1/2"=1'-0"



BOLLARD DETAIL 6

1/2"=1'-0"



SWING GATE DETAIL 5

1/2"=1'-0"

CITY OF YANKTON

SOUTH DAKOTA

HDR Engineering, Inc.

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ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 6947
KEVIN F. NEWMAN
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10/03/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON

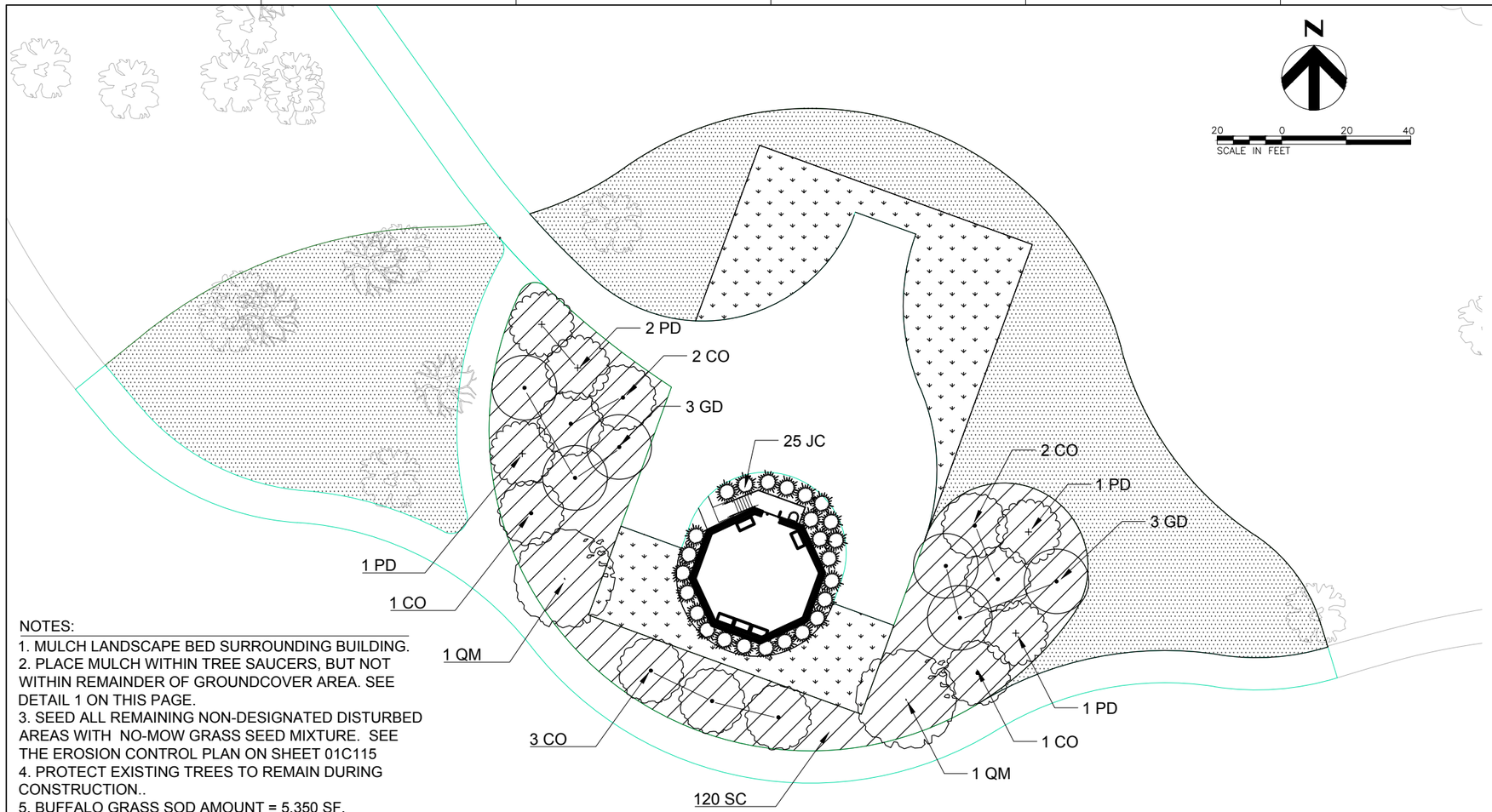
YANKTON, SOUTH DAKOTA 2014

CIVIL DETAILS

0 1" 2"

FILENAME	01C503.dwg
SCALE	AS NOTED

SHEET 01C503



NOTES:

1. MULCH LANDSCAPE BED SURROUNDING BUILDING.
2. PLACE MULCH WITHIN TREE SAUCERS, BUT NOT WITHIN REMAINDER OF GROUNDCOVER AREA. SEE DETAIL 1 ON THIS PAGE.
3. SEED ALL REMAINING NON-DESIGNATED DISTURBED AREAS WITH NO-MOW GRASS SEED MIXTURE. SEE THE EROSION CONTROL PLAN ON SHEET 01C115
4. PROTECT EXISTING TREES TO REMAIN DURING CONSTRUCTION..
5. BUFFALO GRASS SOD AMOUNT = 5,350 SF.
6. NO MOW GRASS SEED MIXTURE COVERS 18,350 SF PLUS THE ADDITIONAL AMOUNT COVERED ABOVE IN NOTE 3.

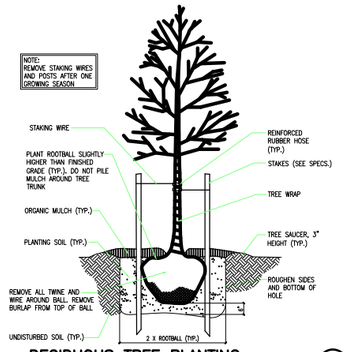
PLANT SCHEDULE

PLANT TYPE	KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	REMARKS
CANOPY TREES	CO	9	CELTIS OCCIDENTALIS	HACKBERRY	2" CAL.	B&B	
	GD	6	GYMNOCLADUS DIOICUS	KENTUCKY COFFEETREE	2" CAL.	B&B	
	PD	5	POPULUS DELTOIDES 'SIOUXLAND'	SIOUXLAND POPLAR	2" CAL.	B&B	
	QM	2	QUERCUS MACROCARPA	BUR OAK	2" CAL.	B&B	
SHRUBS	JC	25	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	#3 GAL.	CG	PLANT 6' O.C.
GROUNDCOVER	SC	120	SYMPHORICARPOS X CHENAULTI 'HANCOCK'	HANCOCK CORALBERRY	#1 GAL.	CG	PLANT 8' O.C.

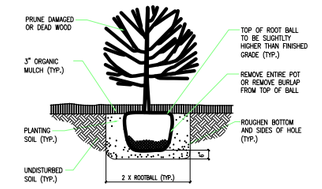
LEGEND:

- GROUNDCOVER
- BUFFALO GRASS SOD
- NO-MOW GRASS SEED MIXTURE

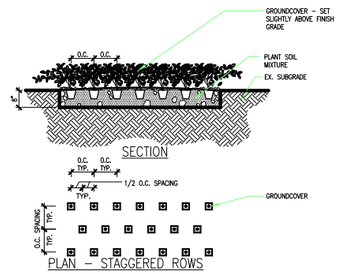
LANDSCAPE PLANTING DETAILS:



DECIDUOUS TREE PLANTING (1)
NO SCALE



EVERGREEN SHRUB PLANTING (2)
NO SCALE



GROUNDCOVER PLANTING (3)
NO SCALE

CITY OF YANKTON
SOUTH DAKOTA

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SOUTH DAKOTA
10/08/2014

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

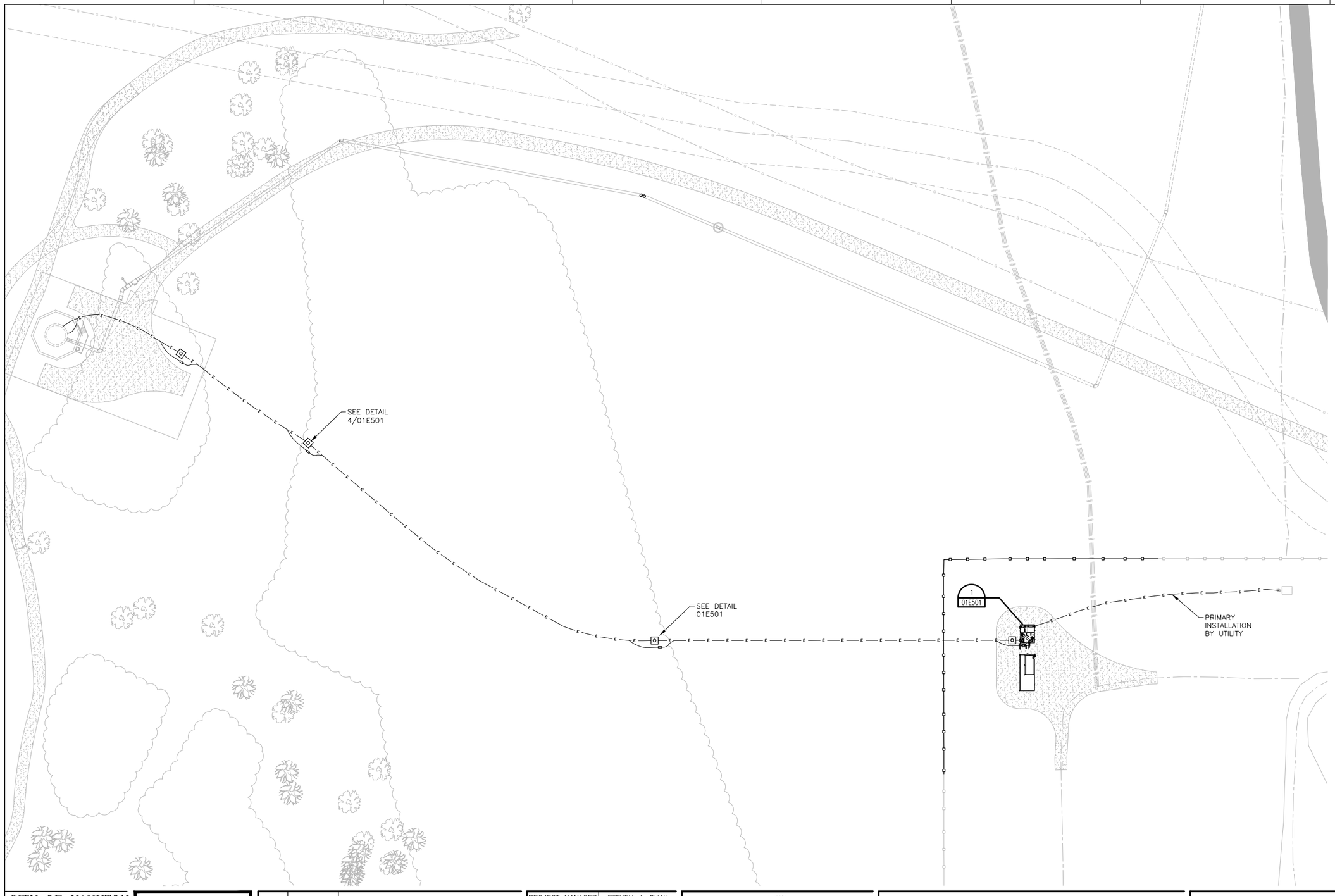
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

SITE LANDSCAPE PLAN

0 1" 2"

FILENAME	01L101.dwg
SCALE	AS NOTED

SHEET 01L101



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INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

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10/8/14

WATER SYSTEM IMPROVEMENTS
HORIZONTAL COLLECTOR WELL

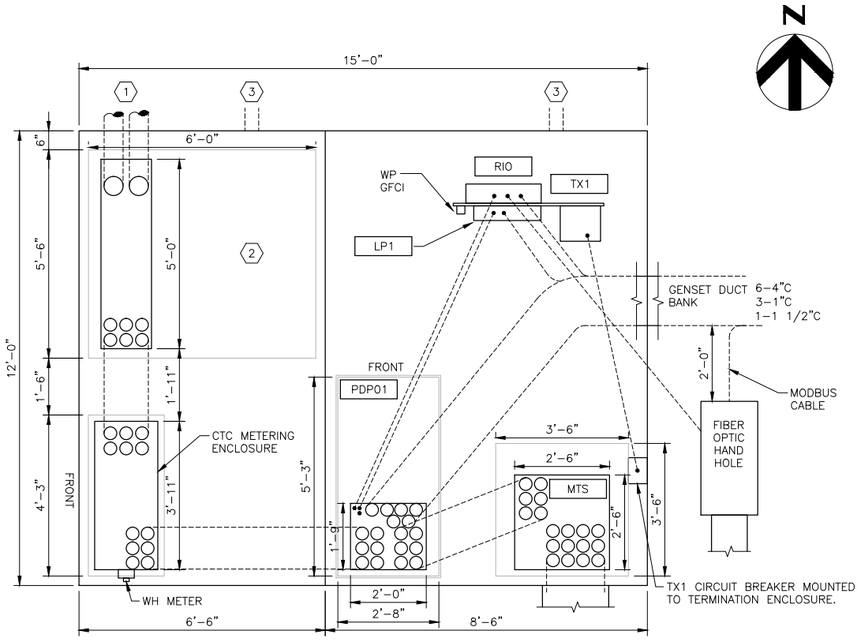
CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

COLLECTOR WELL
SITE ELECTRICAL PLAN

0 1" 2"

FILENAME	01E101.dwg
SCALE	AS NOTED

SHEET
01E101

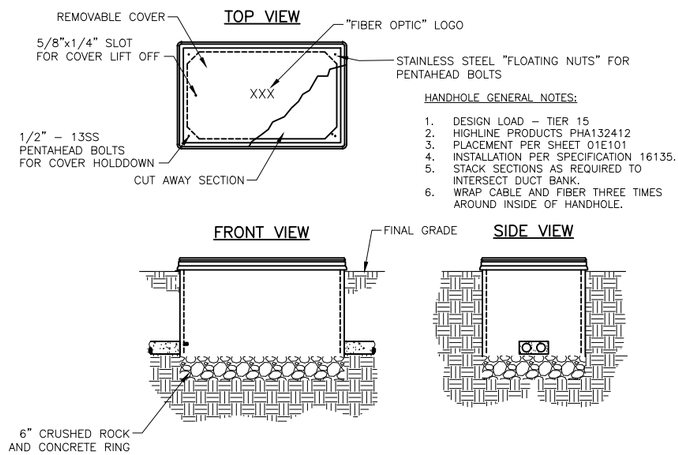


TRANSFORMER PAD DETAIL (1 / 01E101)

1/2" = 1'-0"

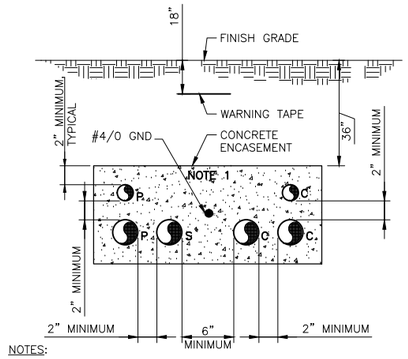
KEYNOTES:

1. ROUTE 2 – 6" PVC CONDUITS THROUGH WALL. EXTEND 36" AND CAP.
2. UTILITY TRANSFORMER SUPPLIED AND SET BY NORTHWEST ENERGY. COORDINATE WITH JAMES HARENS, (605) 668-4608.
3. 2 – 2" PVC PENETRATIONS FOR GROUND CABLES.



HANDHOLE DETAIL (2 / –)

NOT TO SCALE

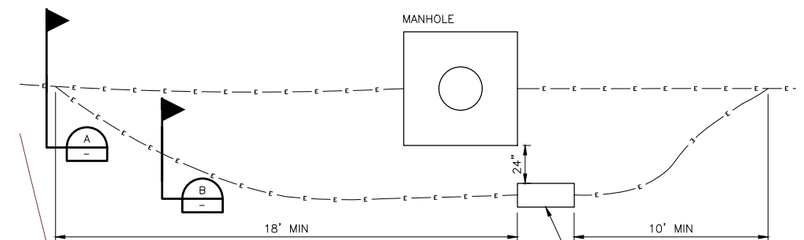


NOTES:

1. NUMBER OF CONDUITS AS REQUIRED FOR THE APPLICATION.
2. P SUBSCRIPT ELECTRICAL POWER OR CONTROL CONDUIT.
3. C SUBSCRIPT COMMUNICATION (TELEPHONE, DATA, INSTRUMENTATION) CONDUIT.
4. S SUBSCRIPT SPARE POWER CONDUITS

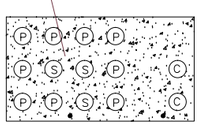
CONCRETE ENCASED DUCTBANK SECTION (3 / –)

NOT TO SCALE



DUCT BANK DETAILS (4 / 01E101)

NOT TO SCALE



SECTION A (A / –)

NOT TO SCALE

SECTION B (B / –)

NOT TO SCALE

CITY OF YANKTON
SOUTH DAKOTA

HDR Engineering, Inc.

ISSUE	DATE	DESCRIPTION
A	10/08/2014	ISSUED FOR BIDS

PROJECT MANAGER	STEVEN J. QUAIL
CIVIL	K. NEWMAN
STRUCTURAL	K. KIRCHNER
ARCHITECTURAL	J. RICKERT
PROCESS	K. NEWMAN
MECHANICAL	J. LEWIS
ELECTRICAL	K. THERNES
INSTRUMENTATION	D. PENNER
PROJECT NUMBER	135-223788-003

REGISTERED PROFESSIONAL ENGINEER
REG. NO. 7218
KEVIN K. THERNES
SOUTH DAKOTA
10/8/14

WATER SYSTEM IMPROVEMENTS HORIZONTAL COLLECTOR WELL

CITY OF YANKTON
YANKTON, SOUTH DAKOTA 2014

COLLECTOR WELL ELECTRICAL SITE DETAILS

0 1" 2"

FILENAME	01E501.dwg
SCALE	AS NOTED

SHEET 01E501