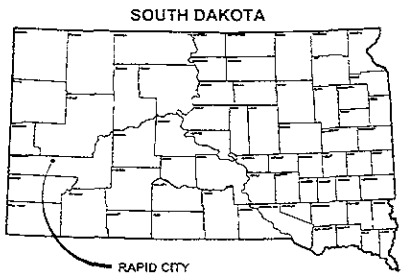
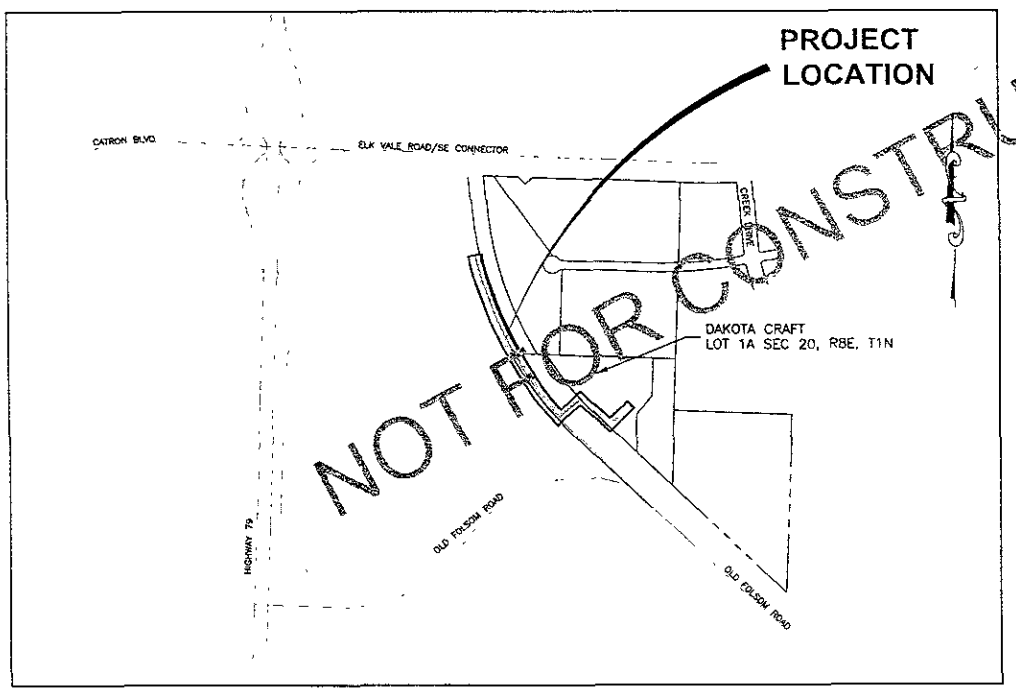
08SR035

DAKOTA CRAFT WATER MAIN EXTENTION



Ferber Engineering Company, Inc.



PROJECT LOCATION MAP NOT TO SCALE

INDEX OF SHEETS

ENGINEER'S CERTIFICATION

I 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 SOUTH DAKOTA.

DAN FERBER, P.E./L.S
REGISTRATION NUMBER 4783

ONE CALL BEFORE DIGGING 1-800-781-7474

08SR035

ESTIMATE OF QUANTITIES

ITEM	DESCRIPTION OF ITEM	QUANTITY	UNIT
1	MOBILIZATION		LS
2	INCIDENTAL WORK		LS
3	1.5" COPPER SERVICE	430	LF
4	8" CERTA LOK PIPE	227	LF
5	12" PVC WATER MAIN	169	LF
6	12" GATE VALVE W/BOX	3	EA
7	1.5" TAPPING SADDLE & CORP STOP		EA
8	1.5" CURB STOP & BOX		EA
9	8" X 6" REDUCER		EA
10	8" HIGH DEFLECTION COUPLING	2	EA
11	12" HIGH DEFLECTION COUPLING	7	EA
12	12" X 12" X 6" TEE	3	EA
13	12" X 12" X 8" TEE		EA
14	12" 45 DEGREE BEND	2	EA
15	12" MJ PLUG		EA
16	FIRE HYDRANT W/AUX VALVE BOX & LEAD	4	EA
17	CONNECT TO EXISTING WATER MAIN	1	EA
18	CONNECT TO EXISTING WATER SERVICE		EA
19	WATER MAIN ENCASEMENT	40	LF
20	TYPE I BEDDING MATERIAL	50	T
21	TYPE II FOUNDATION MATERIAL	50	T
22	REMOVE ASPHALT PAVEMENT	64	SY
23	REMOVE & RESET BARBED WIRE FENCE	10	LF
24	REMOVE AND RESET SIGN		EA
25	AC OVERLAY CLASS G TYPE 1	6	T
26	SEEDING FERTILIZING MULCHING	1.5	ACRE
27	RAILROAD BORE	50	LF
28	TEMPORARY EROSION CONTROL	1	LS

EXISTING LEGEND

CABLE TV OR TELEPHONE RISER
CONIFEROUS TREE
DECIDUOUS TREE
BUSH
HEDGE/TREE LINE
STUMP
LIGHT POLE
GUY WIRE ANCHOR
POWER POLE
TYPE "C" INLET
TYPE "B" INLET
STORM SEWER JUNCTION BOX
POLE SIGN
MAILBOX
POST / BOLLARD
YARD HYDRANT
WATER METER
FIRE HYDRANT
GATE VALVE
SPRINKLER HEAD
CURB STOP
TELEPHONE MANHOLE
STORM SEWER MANHOLE
SANITARY SEWER MANHOLE
CLEAN OUT
SET PROPERTY CORNER
FOUND PROPERTY CORNER
CONTROL POINT
SANITARY SEWER LINE
FOR PIPES 18" AND LARGER
STORM SEWER LINE
FOR PIPES 18" AND LARGER
WATER LINE
FOR PIPES 18" AND LARGER
TELEPHONE LINE
OVERHEAD LINES (POWER, CABLE, ETC)
POWER LINE
GAS LINE
FIBEROPTIC LINE
CABLE TV LINE
BARBWIRE FENCE
WOOD FENCE
PROPERTY LINE
SECTION LINE
EASEMENT LINE

PROPOSED LEGEND

FIRE HYDRANT
GATE VALVE
CURB STOP
45 BEND
CAP
DEFLECTION COUPLER
TEE
REDUCER
WATER ENCASEMENT
JOINT RESTRAINT LENGTH
WATER LINE

GENERAL NOTES

SPECIFICATIONS TO BE USED

ALL WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF RAPID CITY STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 2007 EDITION WITH ALL CURRENT UPDATES

PROJECT NOTE

THE INTENT OF THIS PROJECT IS TO EXTEND THE EXISTING 12" WATER MAIN SOUTH ALONG THE DM&E RAILROAD ROW APPROXIMATELY 1200 FEET TO SERVE DAKOTA CRAFT BUSINESS PROPERTIES

UTILITIES

THE INFORMATION ON THESE DRAWINGS CONCERNING THE TYPE, SIZE, AND LOCATION OF UTILITIES HAS BEEN SHOWN BASED UPON THE BEST INFORMATION AVAILABLE. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITIES IN PLACE. CONTRACTOR SHALL COORDINATE ALL RELOCATIONS WITH THE UTILITY COMPANIES

ELECTRICAL, TELEPHONE, TELEVISION, FIBER AND GAS UTILITIES MAY BE ADJUSTED AND/OR RELOCATED BY THE RESPECTIVE UTILITY COMPANIES

UTILITIES

SOUTH DAKOTA ONE CALL
800-781 7474

(ELECTRIC)
BLACK HILLS POWER AND LIGHT COMPANY
409 DEADWOOD AVENUE
(605) 721 3200

(SIGNAL STREET LIGHTS)
CITY OF RAPID CITY
TRAFFIC OPERATIONS
709 STEELE AVENUE
(605) 394-4118

(TELEPHONE-TELEVISION)
KNOLOGY
809 DEADWOOD AVENUE
(605) 721 2000

(GAS)
MONTANA DAKOTA UTILITIES
718 STEELE AVENUE
(605) 342 0169

(TELEPHONE)
QWEST (USWEST)
(800) 573-1311

(SEWER WATER)
CITY OF RAPID CITY
UTILITIES DEPARTMENT
605 STEELE AVENUE
(605) 394 4163

(TELEPHONE-TELEVISION)
MIDCONTINENT COMMUNICATIONS
301 OMAHA STREET SUITE 106
(605) 988 1300

(TELEPHONE - TELEVISION)
GOLDEN WEST TELECOMMUNICATIONS
415 CROWN STREET
WALL, SD
(605) 279 2161

AIR QUALITY PERMIT

THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF SECTION 7 28 OF THE STANDARD SPECIFICATIONS REGARDING DUST CONTROL. DUST CONTROL PERMITS SHALL BE OBTAINED PRIOR TO BEGINNING WORK. THE CONTRACTOR SHALL PERFORM WATERING AND CLEANING OPERATIONS NECESSARY TO COMPLY WITH THE PERMIT

EROSION CONTROL PLAN

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DEVELOPMENT, PROCUREMENT, AND IMPLEMENTATION OF A STATE OF SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES "STORM WATER" PERMIT. THE CONTRACTOR SHALL FURNISH THE ENGINEER A COPY OF THE POLLUTION PREVENTION PLAN AT THE PRE CONSTRUCTION MEETING

LOCATIONS FOR POLLUTION CONTROL DEVICES ARE NOT SPECIFIED IN THE PLANS AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE DEVICES AND LOCATIONS NECESSARY FOR POLLUTION CONTROL

THE CONTRACTOR IS ADVISED THAT SEVERAL AGENCIES HAVE THE AUTHORITY TO "STOP WORK" IF THE POLLUTION PREVENTION CONTROL IS NOT IMPLEMENTED OR IS NOT EFFECTIVE IN PREVENTION OF ENVIRONMENTAL DAMAGE FROM CONSTRUCTION ACTIVITIES. NO COMPENSATION WILL BE FORTHCOMING FOR "TIME LOST" DUE TO A "STOP WORK" ORDER

THE CONTRACTOR SHALL CONTACT THE SOUTH DAKOTA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (605 773 3351) TO DETERMINE IF A PERMIT IS NEEDED FOR THIS PROJECT, AND WHAT, IF ANY POLLUTION CONTROL MEASURES MUST BE TAKEN

WASTE DISPOSAL SITE

THE CONTRACTOR WILL BE REQUIRED TO FURNISH A SITE FOR THE DISPOSAL OF CONSTRUCTION/DEMOLITION DEBRIS GENERATED BY THIS PROJECT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

CONSTRUCTION DEBRIS MAY NOT BE DISPOSED OF WITHIN THE ROW

EXISTING UTILITY CROSSINGS

REFER TO THE STANDARD SPECIFICATIONS FOR CROSSING OF EXISTING STORM SEWERS AND SANITARY SEWERS. AT ALL LOCATIONS WHERE THE PROPOSED WATER LINE CROSSES OR IS ADJACENT TO EXISTING UTILITIES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR SAFEGUARDING THE EXISTING UTILITY TO ENSURE THAT THEY ARE NOT DISTURBED DURING THE WORK. TEMPORARY STRUCTURAL SUPPORT FOR THE UTILITIES MAY BE REQUIRED. NO SEPARATE PAYMENT SHALL BE MADE FOR CROSSED UTILITY PROTECTION. ANY REPAIR WORK NECESSARY TO A CROSSED UTILITY RESULTING FROM THE CONTRACTOR'S ACTIVITY SHALL BE AT THE CONTRACTOR'S EXPENSE

REMOVAL AND REPLACEMENT OF ASPHALT SERVICE ROAD

AREAS OF ASPHALT TO BE REMOVED AND REPLACED AS SHOWN WITHIN THIS PLAN SET SHALL BE REPLACED WITH A MINIMUM OF 2" ASPHALT OVERLAY OVER THE ENTIRE LENGTH AND WIDTH OF THE REMOVAL LIMITS

SAWING IN EXISTING PAVEMENT

PAVEMENT AREAS TO BE REMOVED ARE SHOWN ON THE DRAWINGS. THESE AREAS REPRESENT THE FINAL PAVEMENT SAWCUT AND REMOVAL LIMITS. THE FIRST PAVEMENT SAWCUT FOR ASPHALT SHALL BE MADE AT LEAST 1 FOOT INSIDE OF THE LINES SHOWN. SAWCUTTING OF THE PAVEMENT AREAS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. NO SEPARATE PAYMENT WILL BE MADE FOR SAWING

WATER MAIN AND ASSOCIATED FITTINGS

THRUST BLOCKS ARE REQUIRED AS CALLED FOR IN THE THRUST BLOCK TABLES ON THE PLAN SHEETS AND AS CALLED FOR IN THE SPECIFICATIONS

VALVE BOX ADAPTERS SHALL BE VALVE BOX ADAPTER AS MANUFACTURED BY ADAPTER INC., OR AN APPROVED EQUAL

RESTRAINING DEVICES ARE REQUIRED AS SHOWN ON THE DRAWINGS. RESTRAINING LENGTH L FOR 12" DEAD END/VALVE IS 75 FEET, 12" 45° BEND IS 16 FEET AND 12"X12"X6" TEE IS 52 FEET

PAYMENT FOR WATER LINE THRUST RESTRAINTS SHALL BE CONSIDERED INCIDENTAL TO THE FITTINGS AND WATER LINE BID ITEMS AND NO SEPARATE PAYMENT WILL BE MADE

12" DEFLECTION COUPLINGS ARE CALLED FOR WITHIN THIS PLAN SET. THE LOCATION OF THE DEFLECTION COUPLING MAY BE ADJUSTED TO FIT FIELD CONDITIONS. THE INTENT IS TO CHANGE THE HORIZONTAL AND/OR VERTICAL GRADE OF THE PROPOSED WATER MAIN WHILE MAINTAINING MINIMUM BURY AND POSITIVE GRADE

PIPE JOINT DEFLECTION

PIPE JOINT DEFLECTION AND DEFLECTION AT FITTINGS SHALL BE WITHIN TOLERANCES RECOMMENDED BY THE PIPE AND/OR FITTING MANUFACTURER. ALLOWABLE DEFLECTION PARAMETERS SHALL BE INCLUDED IN THE PIPE SUBMITTAL AND SHALL BE CLEARLY MARKED AS SUCH

PIPE ENCASEMENT

WHERE INDICATED ON PLANS OR REQUIRED BY STANDARD SPECIFICATIONS PIPE SHALL BE ENCASED WITH CONTROLLED LOW STRENGTH MATERIAL IN ACCORDANCE WITH SECTION 8 3 OF THE STANDARD SPECIFICATIONS

RESTRAINED JOINT PVC PIPE

ALL 8" PVC PIPE USED ON THIS PROJECT SHALL BE RESTRAINED JOINT PVC PIPE. RESTRAINED JOINT PIPE SHALL BE CERTAINTEED CERTA LOK™ C900/C905/RJ PVC PIPE, OR EQUAL. RESTRAINED JOINTS SHALL BE CERTAINTEED CERTA LOK™ RESTRAINED JOINT SYSTEM, OR EQUAL

TRENCH CHECK DAM

CONTRACTOR SHALL PLACE WITHIN THE TRENCH A COMPACTED COHESIVE CLAY CHECK DAM. CHECK DAM LOCATIONS SHALL BE AS INDICATED ON THE PROFILE. DURING CONSTRUCTION, CHECK DAM LOCATIONS MAY BE MOVED DUE TO FIELD CONDITIONS. THE CHECK DAM SHALL EXTEND FROM THE BOTTOM OF THE EXCAVATION THROUGH THE BEDDING MATERIAL TO THE BACKFILL AND SHALL EXTEND COMPLETELY TO EACH TRENCH SIDEWALL. THE CHECK DAM IS USED AS A MEANS TO PREVENT THE CONVEYANCE OF WATER THROUGH THE TRENCH BEDDING. COMPACTED COHESIVE CLAY SHALL CONSIST OF MATERIAL THAT CONTAINS A MINIMUM OF 25% MINUS NO. 200 SIEVE MATERIAL WITH 70% PASSING A 3/4 INCH SIEVE AND A PI OF 10%. THE MATERIAL SHALL CONSIST OF CLAY, SILTY SAND OR SILTY CLAY. IF THE NORMAL EXCAVATED MATERIAL IS NOT SUITABLE FOR CONSTRUCTION OF THE CHECK DAM THEN THE CONTRACTOR SHALL OBTAIN MATERIAL FROM OUTSIDE SOURCES. CHECK DAM INSTALLATION AND MATERIAL SHALL BE CONSIDERED AS INCIDENTAL TO THE WATER INSTALLATION

DM&E RAILROAD CROSSING

DAKOTA, MINNESOTA & EASTERN RAILROAD (DM&E) REQUIRES THE CONTRACTOR TO PURCHASE CORPORATION RAILROAD PROTECTIVE LIABILITY INSURANCE WHILE CONSTRUCTING WITHIN THE DM&E RAILROAD ROW. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO PURCHASE THIS LIABILITY INSURANCE FROM THE DM&E RAILROAD

SEEDING, FERTILIZING AND MULCHING

ALL AREAS DISTURBED AND/OR GRADED DURING THE CONSTRUCTION OF THE PROJECT WILL BE PERMANENTLY SEEDED.

THE PERMANENT SEED MIXTURE SHALL BE AS SPECIFIED BELOW FOR A ROAD DITCH MIXTURE. THE RATE OF APPLICATION SHALL BE 100 POUNDS PER ACRE

40% CRESTED WHEATGRASS
30% PERENNIAL RYEGRASS
20% HARD FESCUE
10% ANNUAL RYEGRASS

SEED SHALL BE PLACED BY DRILLING METHODS ON ALL AREAS

A COMMERCIAL FERTILIZER WITH A MINIMUM GUARANTEED ANALYSIS OF 18-46-0, 11-52-0, OR AN APPROVED ALTERNATE FERTILIZER SHALL BE APPLIED AS SPECIFIED IN SECTION 731 OF THE SDDOT STANDARD SPECIFICATIONS. THE RATE OF APPLICATION SHALL BE 200 POUNDS PER ACRE

GRASS HAY OR STRAW MULCH SHALL BE APPLIED TO ALL SEEDED AREAS AS SPECIFIED IN SECTION 732 OF STANDARD SPECIFICATIONS. THE RATE OF APPLICATION SHALL BE 4000 POUNDS PER ACRE.

TABLE OF FIRE HYDRANTS

STATION	OFFSET	NORTHING	EASTING	BURY LINE ELEV	APPROX INV LEAD
4+74.6	4.1 LT	633301.9	1218438.7	3221.69	3212.12
8+53.5	4 RT	632955.3	1218550.1	3224.64	3215.6
NA	NA	632587.5	1218873.3	3231.65	3223.7
15+34.7	0.0 LT	632744.7	1218988.5	3249.62	3240.73

TOTAL FIRE HYDRANTS 4

SURVEY CONTROL DATA

POINT NO.	MONUMENTATION	NORTHING	EASTING	ELEVATION
CP 10	5/8" REBAR	632548.2880	1218963.159	3244.38
CORC 12	ALLUM CAP	630178.2100	1221431.19	3290.55
CP 20	5/8" REBAR	632375.1860	1219330.77	3248.25
CP 30	5/8" REBAR	632877.7650	1219401.684	3246.61
CORC 2018	ALLUM CAP	634045.1100	1214698.84	3267.28
CORC 2030	ALLUM CAP	631317.3900	1216725.12	3276.45

THE COORDINATES AND DISTANCES SHOWN IN THESE PLANS ARE BASED ON THE SOUTH DAKOTA STATE PLANE CORRDINATE SYSTEM - SOUTH ZONE NAD 83/96

WATER LINE ALIGNMENT DATA

	PI STATION	NORTHING	EASTING
BOP	1+00.0	633656.03	1218318.88
	1+08.0	633648.33	1218320.90
	1+13.4	633643.10	1218322.22
	1+33.4	633623.55	1218326.49
	2+13.4	633546.34	1218347.42
	3+33.4	633432.6	1218384.34
	4+73.4	633301.42	1218434.39
	5+73.4	633209.80	1218474.47
	6+47.5	633143.74	1218508.18
	7+13.5	633080.97	1218487.83
	8+53.5	632957.41	1218553.66
	8+55.7	632955.57	1218554.77
	10+33.4	632807.08	1218652.4
	12+73.4	632615.35	1218796.76
	13+05.7	632591.74	1218819.79
EOP	15+44.8	632751.89	1218996.4

REVISION	NO	DATE	APPROVAL

HORIZ SCALE: AS SHOWN
VERT SCALE: AS SHOWN
DATE: 4/11/2008
DESIGNED: DAL
DRAWN: DAL
CHECKED: DPF

Ferber Engineering Company, Inc.

DAKOTA CRAFT WATER MAIN EXTENTION

QUANTITIES LEGEND GENERAL NOTES AND TABLES

PROJECT NO 07-120

BORING SPECIFICATIONS 08SR035

DESCRIPTION

FURNISH AND INSTALL STEEL CASING PIPE FOR WATER MAIN CROSS ING BASE RAILROAD

MATERIALS

STEEL PIPE

STEEL CASING PIPE SHALL BE CARBON STEEL, ASTM A53 GRADE B, SEAMLESS OR WELDED CONSTRUCTION DIAMETER AND WALL THICKNESS SHALL BE AS CALLED OUT IN THE PLANS CONTRACTOR MAY SUPPLY AND INSTALL LARGER DIAMETER CASING PIPE PROVIDED THE MINIMUM REQUIREMENTS IN THE BID DOCUMENTS ARE OBTAINED

CASING CHOCKS

CASING CHOCKS SHALL BE RACI CASING CHOCKS OR APPROVED EQUAL

CASING SPACERS/CHOCKS SHALL BE DESIGNED TO PROVIDE A MINIMUM OF 1 0-INCH CLEARANCE BETWEEN THE CARRIER PIPE S GREATEST OUTSIDE BELL DIAMETER AND THE CASING PIPE S INSIDE DIAMETER CASING SPACERS/CHOCKS SHALL ALSO BE SIZED TO RESTRICT THE CARRIER PIPE S VERTICAL OR HORIZONTAL MOVEMENT WITHIN THE STEEL CASING TO 2-INCHES THE CASING SPACERS/CHOCKS SHALL SECURELY CLAMP TO THE CARRIER PIPE TO PRECLUDE SLIPPAGE DURING INSTALLATION SPACERS/CHOCKS SHALL BE CAPABLE OF SUPPORTING THE WEIGHT OF THE CARRIER PIPE RUNNING FULL SEE THE CAS ING/CARRIER DETAIL IN THE PLANS FOR MAXIMUM HORIZONTAL SPACING

CASING END SEALS

FOLLOWING PLACEMENT OF THE CARRIER PIPE, THE ENDS OF THE CASING PIPE SHALL BE SEALED WITH A MINIMUM 1.8" THICK RUBBER PULL ON SEAL, WITH STAINLESS STEEL CLAMPS AT THE CASING AND AT THE CARRIER PIPE TO PROVIDE A WATERTIGHT SEAL SEALS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER S SPECIFICATIONS

CONSTRUCTION REQUIREMENTS:

CONTRACTOR QUALIFICATIONS

BORING OR JACKING OF PIPE CASING SHALL BE ACCOMPLISHED BY AN EXPERIENCED FIRM IF SUBCONTRACTORS ARE PROPOSED FOR BORED CROSSINGS THE OWNER RESERVES THE RIGHT TO REVIEW THE PLANT, EQUIPMENT AND QUALIFICATIONS OF THE SUBCONTRACTOR SUBCONTRACTORS MUST BE APPROVED BY THE OWNER

INSTALLATION OF STEEL CASING

THE JACKING OR BORING PIT SHALL BE ONLY OF SUFFICIENT LENGTH TO PROVIDE ROOM FOR THE BORING MACHINE JACKING HEAD, JACKING FRAME, REACTION BLOCKS JACKS AND ONE PIPE LENGTH THE PIT SHALL BE OF SUFFICIENT WIDTH TO PERMIT AMPLE WORKING SPACE THE END OF THE PIT NEAREST TO THE RAILROAD SHALL PRESENT A VERTICAL FACE INTO WHICH THE CASING IS TO BE INSTALLED SHEETING OF THE WORKING FACE WITH STEEL PLATE MAY BE NECESSARY TO PREVENT VOIDS OR CAVING

PITS SHALL BE MAINTAINED IN A DEWATERED CONDITION THROUGHOUT THE CONSTRUCTION PERIOD

THE PITS SHALL BE COMPLETELY FENCED WITH AN APPROVED TEMPORARY SAFETY FENCING SYSTEM OR REFLECTORIZED BARRICADES WHEN BORING OR JACKING OPERATIONS ARE NOT IN PROGRESS AND SHALL BE ILLUMINATED WITH FLASHING WARNING LIGHTS AT NIGHT AT THE EXCAVATION LIMITS CLOSEST TO THE ROADWAY

THE BORE MAY NOT EXCEED THE OUTSIDE DIAMETER OF THE CASING PIPE

PIPE CASING ENDS SHALL BE SQUARED BEFORE PLACING INTO THE JACKING STRING AND CONNECTING TO THE PRECEDING SEGMENT

INSTALLATION OF STEEL CASING CONTINUED)

JOINTS FOR STEEL CASING PIPE SHALL BE OF THE CONTINUOUS SINGLE BUTT WELD TYPE

HORIZONTAL TOLERANCE OF THE INSTALLED CASING IS PLUS OR MINUS 2.5 FEET FROM PLAN ALIGNMENT

THE BORE SHALL BE REJECTED IF THE ABOVE REQUIREMENTS ARE NOT MET

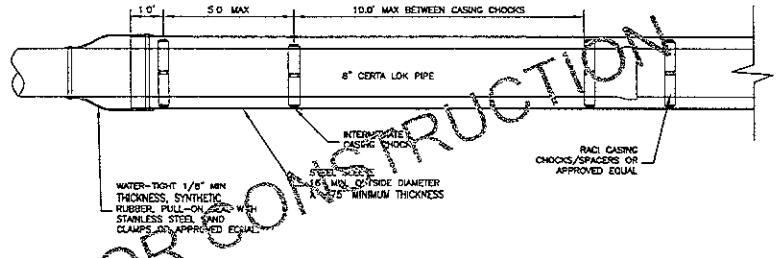
INSTALLATION OF CARRIER PIPE

FOLLOWING INSTALLATION OF THE CASING PIPE THE ENGINEER SHALL INSPECT AND APPROVE THE CASING PRIOR TO INSTALLATION OF THE CARRIER PIPE

THE CARRIER PIPE SHALL BE SUPPORTED CONTINUOUSLY AND UNIFORMLY WITH CASING SPACERS AS SHOWN ON THE PLANS CARRIER PIPE AND BELLS SHALL NOT BE IN CONTACT WITH THE CASING PIPE

CARRIER PIPE SHALL BE INSTALLED IN SUCH A MANNER THAT IT IS NOT DAMAGED BY THE INSTALLATION PROCEDURE. PIPE JOINTS OF THE CARRIER PIPE LOCATED INSIDE THE CASING SHALL BE RESTRAINED TO PREVENT SEPARATION OR OVER INSERTION DURING INSTALLATION CONTRACTOR S METHOD TO PREVENT OVER INSERTION SHALL BE APPROVED BY THE ENGINEER

THE ENDS OF THE CASING SHALL BE PERMANENTLY MARKED BY INSTALLING A METAL T POST 6' BELOW THE FINISHED GRADE DIRECTLY ABOVE THE ENDS OF THE CASING



TYPICAL 16" CASING DETAIL
NTS

NO	DATE	REVISION	APPROVED

HORIZ SCALE AS SHOWN
VERT SCALE AS SHOWN
DATE 4/1/2008
DESIGNED DAL
DRAWN DAL
CHECKED DPF

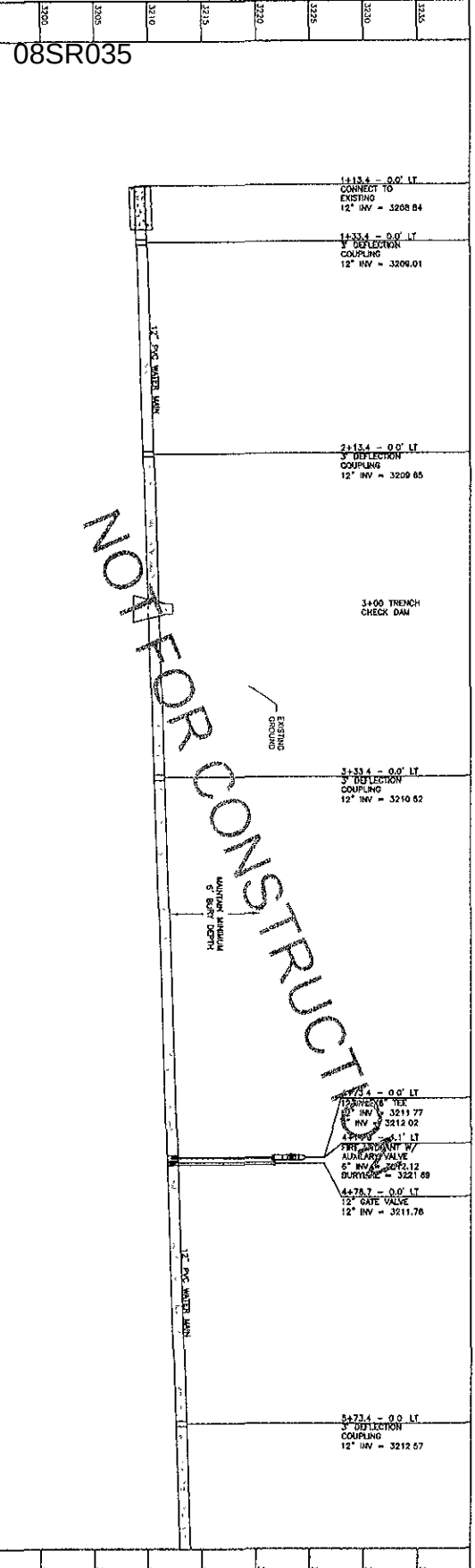
Ferber Engineering Company, Inc.

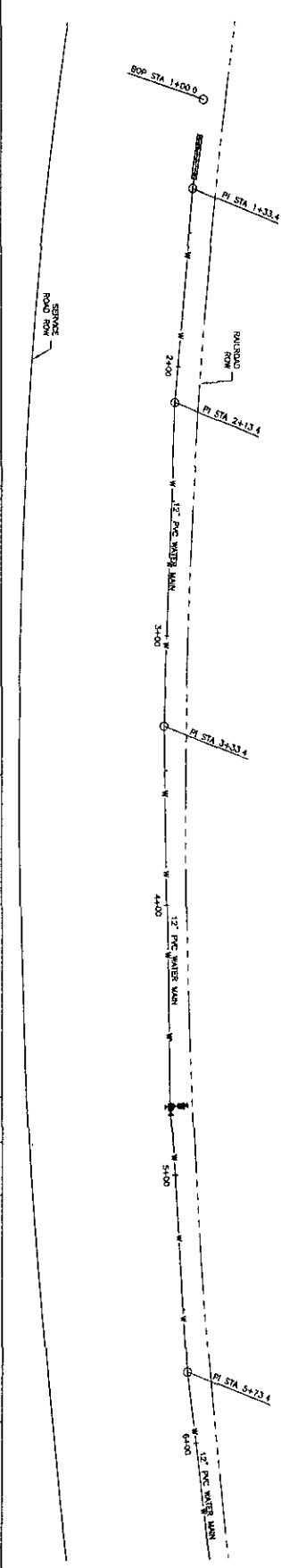
DAKOTA CRAFT WATER
MAIN EXTENTION
RAILROAD BORE SPECIFICATIONS AND DETIALS

PROJECT NO
07-120

SHEET NO
3 of 8

08SR035





WATER MOTES

STA 1+13.4 - 0.0 LT — CONNECT TO EXISTING 12" GATE VALVE
STA 1+13.4 - 0.0 LT TO STA 1+33.4 - 0.0 LT — INSTALL 20 LF - 12" PVC WATER MAIN
STA 1+33.4 - 0.0 LT TO STA 1+39.6 - 0.0 LT — ENGAGE 16 LF - 12" PVC WATER MAIN
STA 1+33.4 - 0.0' LT — INSTALL 3' DEFLECTION COUPLING
STA 1+33.4 - 0.0 LT TO STA 2+13.4 - 0.0 LT — INSTALL 80 LF - 12" PVC WATER MAIN
STA 2+13.4 - 0.0 LT — INSTALL 3' DEFLECTION COUPLING
STA 2+13.4 - 0.0 LT TO STA 3+33.4 - 0.0 LT — INSTALL 120 LF - 12" PVC WATER MAIN

WATER MOTES

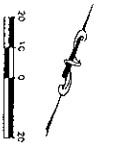
STA 3+33.4 - 0.0 LT — INSTALL 3' DEFLECTION COUPLING
STA 3+33.4 - 0.0 LT TO STA 4+73.4 - 0.0 LT — INSTALL 140 LF - 12" PVC WATER MAIN
STA 4+73.4 - 0.0 LT — INSTALL 12"x12"x6" TEE WITH THURST BLOCK
STA 4+76.6 - 4.1 LT — INSAL FIRE HYDRANT WITH AUXILARY VALVE AND THRUST BLOCK
STA 4+78.7 - 0.0' LT — INSAL 12" GATE VALVE
STA 4+78.7 - 0.0' LT TO STA 5+73.4 - 0.0' LT — INSAL 97 LF - 12 PVC WATER MAIN
STA 5+73.4 - 0.0 LT — INSTALL 3' DEFLECTION COUPLING
STA 5+73.4 - 0.0 LT TO STA 6+07.5 - 0.0' LT — INSAL 74 LF - 12" PVC WATER MAIN

REMOVAL MOTES

STA 3+64.6 - 4.8 LT — REMOVE AND RESET SIGN

TABLE OF TRUST BLOCKS

STATION	SIDE	FITTING TYPE	MINIMUM BEARING AREA (SF)	MINIMUM CONCRETE VOL (CY)
4+73.4	LT	12"X12"X6" TEE	6.2	0.30
4+76.6	LT	6" FIRE HYDRANT	9.6	0.22
		TOTAL	15.9	0.52



HORIZ SCALE	AS SHOWN	NO	DATE	REVISION	APPROVED
VERT SCALE	AS SHOWN				
DATE	4/11/2008				
DESIGNED	DAL				
DRAWN	DAL				
CHECKED	DPF				

DAKOTA CRAFT WATER MAIN EXTENTION

WATER MAIN PLAN AND PROFILE STA 0+40 TO 6+20

Ferber Engineering Company, Inc.

PROJECT NO 07-120

SHEET NO

WATER NOTES

STA 6+47.5 – 0.0 LT	INSTALL 12" 45° BEND WITH THRUST BLOCK.
STA 6+47.5 – 0.0' LT TO STA 7+13.5 – 0.0 LT	INSTALL 66 LF – 12" PVC WATER MAIN
STA 7+13.5 – 0.0 LT	INSTALL 12" 45° BEND WITH THRUST BLOCK.
STA 7+13.5 – 0.0 LT TO STA 8+53.5 – 0.0' LT	INSTALL 140 LF – 12" PVC WATER MAIN
STA 8+53.5 – 0.0 LT	INSTALL 12"X12"X6" TEE WITH THRUST BLOCK.
STA 8+53.5 – 4.1 RT	INSTALL FIRE HYDRANT WITH AUXILIARY VALVE AND THRUST BLOCK
STA 8+55.7 – 0.0 LT	INSTALL 12" GATE VALVE.

WATER NOTES

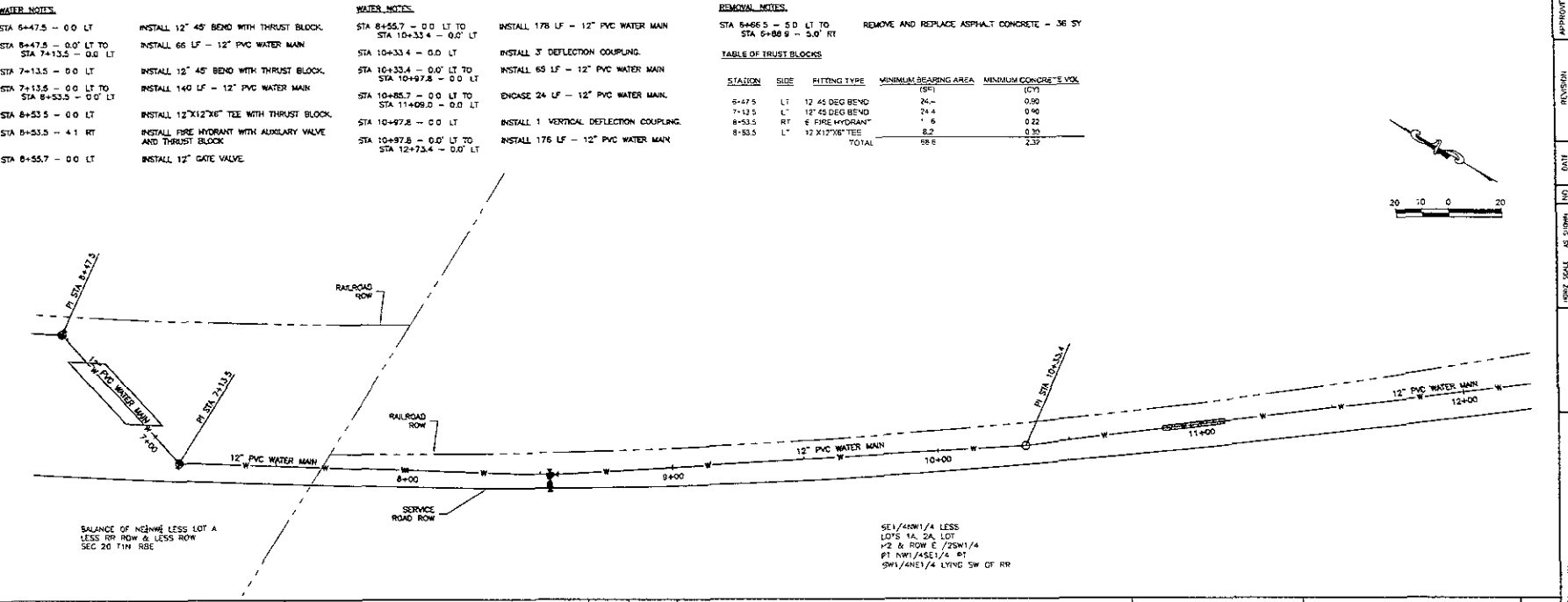
STA 8+55.7 – 0.0 LT TO STA 10+33.4 – 0.0' LT	INSTALL 178 LF – 12" PVC WATER MAIN
STA 10+33.4 – 0.0 LT	INSTALL 3° DEFLECTION COUPLING.
STA 10+33.4 – 0.0' LT TO STA 10+97.8 – 0.0 LT	INSTALL 65 LF – 12" PVC WATER MAIN
STA 10+85.7 – 0.0 LT TO STA 11+09.0 – 0.0 LT	ENCASE 24 LF – 12" PVC WATER MAIN.
STA 10+97.8 – 0.0 LT	INSTALL 1 VERTICAL DEFLECTION COUPLING.
STA 10+97.8 – 0.0' LT TO STA 12+73.4 – 0.0' LT	INSTALL 176 LF – 12" PVC WATER MAIN

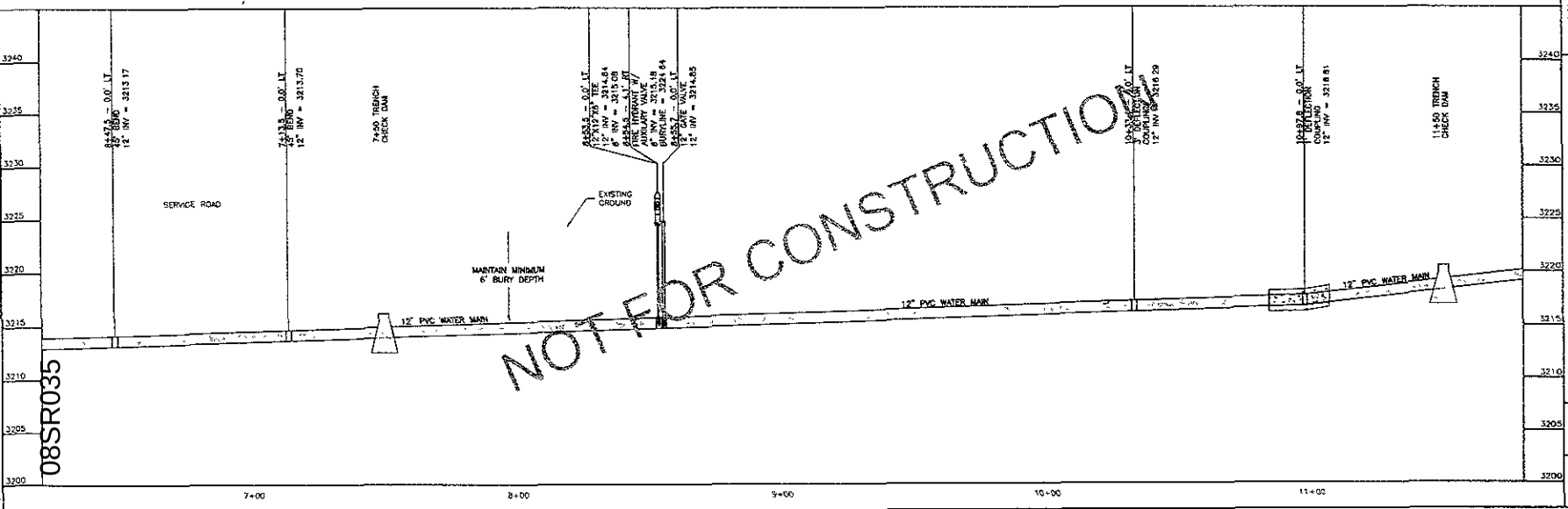
REMOVAL NOTES

STA 6+66.5 – 5.0 LT TO STA 6+88.9 – 5.0' RT	REMOVE AND REPLACE ASPHALT CONCRETE – 36 SY

TABLE OF TRUST BLOCKS

STATION	SIDE	FITTING TYPE	MINIMUM BEARING AREA (SF)	MINIMUM CONCRETE VOL (CY)
6+47.5	LT	12" 45 DEG BEND	24.4	0.90
7+13.5	L"	12" 45 DEG BEND	24.4	0.90
8+53.5	RT	6" FIRE HYDRANT	1.6	0.22
8+53.5	L"	12 X12"X6" TEE	8.2	0.35
		TOTAL	58.8	2.37





NOT FOR CONSTRUCTION

08SR035

NO	DATE	REVISION	APPROVED

HORIZ SCALE AS SHOWN
VERT SCALE AS SHOWN
DATE 1/21/2020
DESIGNED DAL
DRAWN DAL
CHECKED DPF

Ferber Engineering Company, Inc.

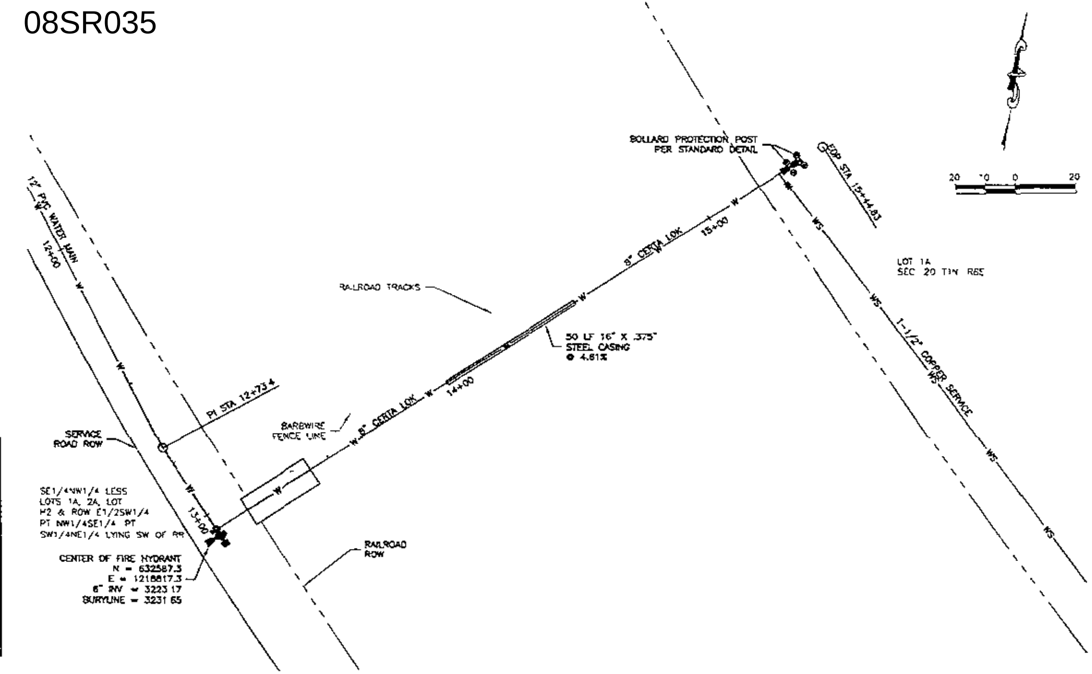
DAKOTA CRAFT WATER
MAIN EXTENTION

WATER MAIN PLAN AND PROFILE STA 6+20 TO 11+80

PROJECT NO
07-120

SHEET NO
5 of 8

08SR035



WATER NOTES.

STA 12+73.4 – 0.0 LT	INSTALL 3° DEFLECTION COUPLING.
STA 12+73.4 – 0.0 LT TO STA 13+05.7 – 0.0' LT	INSTALL 33 LF – 12" PVC WATER MAIN
STA 13+05.7 – 0.0' LT	INSTALL 12" X 12" X 8" TEE WITH THRUST BLOCK
STA 13+05.7 – 2.8' RT	INSTALL 12" X 12" X 6" TEE WITH THRUST BLOCK
STA 13+05.7 – 4.4' RT	INSTALL 12" GATE VALVE.
STA 13+05.7 – 5.8' RT	INSTALL 12" MJ PLUG.
STA 13+05.7 – 0.0 LT TO STA 13+56.6 – 0.0' LT	INSTALL 51 LF – 8" PVC WATER MAIN
STA 13+56.6 – 0.0 LT	INSTALL 1° VERTICAL DEFLECTION COUPLING
STA 13+58.6 – 0.0' LT TO STA 14+54.1 – 0.0' LT	INSTALL 96 LF – 8" PVC WATER MAIN
STA 13+96.8 – 0.0' LT TO STA 14+46.8 – 0.0' LT	BORE/PUSH 50 LF – 16" STEEL CASING
STA 14+54.1 – 0.0 LT	INSTALL 6° DEFLECTION COUPLING
STA 14+54.1 – 0.0 LT TO STA 15+29.9 – 0.0 LT	INSTALL 76 LF – 8" PVC WATER MAIN
STA 15+27.6 – 0.0 LT	INSTALL 1 – 1/2" SERVICE SADDLE AND CORP STOP
STA 15+27.6 – 5.0' RT	INSTALL 1-1/2" CURB STOP
STA 15+29.9 – 0.0' LT	INSTALL 8" X 6" REDUCER.
STA 15+34.1 – 0.0' LT	INSTALL FIRE HYDRANT WITH AUXILARY VALVE AND THRUST BLOCK.
STA 15+34.1 – 0.0' LT	INSTALL 4 BOLLARD PROTECTION POSTS. (INCIDENTAL)

REMOVAL NOTES.

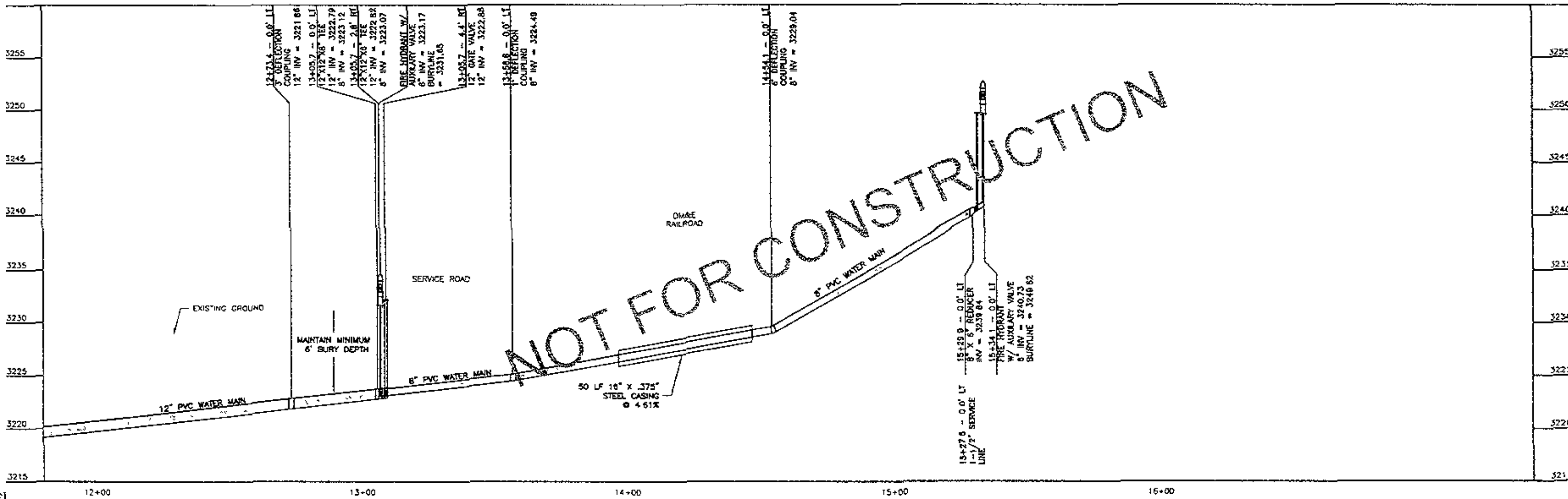
STA 13+11.4 – 5.0 LT TO STA 13+36.3 – 5.0 RT	REMOVE AND REPLACE ASPHALT CONCRETE – 26 SY
STA 13+53.9 – 5.0 RT TO STA 13+56.6 – 5.0' LT	REMOVE BARBWIRE FENCE – 11 LF (INCIDENTAL)
STA 14+64.5 – 5.0 LT TO STA 14+64.5 – 5.0 RT	REMOVE AND RESET BARBWIRE FENCE – 10 LF

TABLE OF TRUST BLOCKS

STATION	SIDE	FITTING TYPE	MINIMUM BEARING AREA (SF)	MINIMUM CONCRETE VOL (CY)
13+05.7	LT	12"X12"X8" TEE	14.0	0.52
13+05.7	RT	12"X12"X6" TEE	8.2	0.30
13+05.7	RT	6" FIRE HYDRANT	11.6	0.22
15+34.1	LT	6" FIRE HYDRANT	11.6	0.22
		TOTAL	45.4	26

WATER NOTES.

INSTALL FIRE HYDRANT WITH AUXILARY VALVE AND THRUST BLOCK AT
N = 632587.3
E = 1218817.3
6" INV = 3223.17
BURYLINE = 3231.65



HORIZ SCALE	AS SHOWN
VERT SCALE	AS SHOWN
DATE	4/11/2008
DESIGNED	DAJ
DRAWN	DAL
CHECKED	DPF

NO	DATE	REVISION	APPROVED

Ferber Engineering Company, Inc.

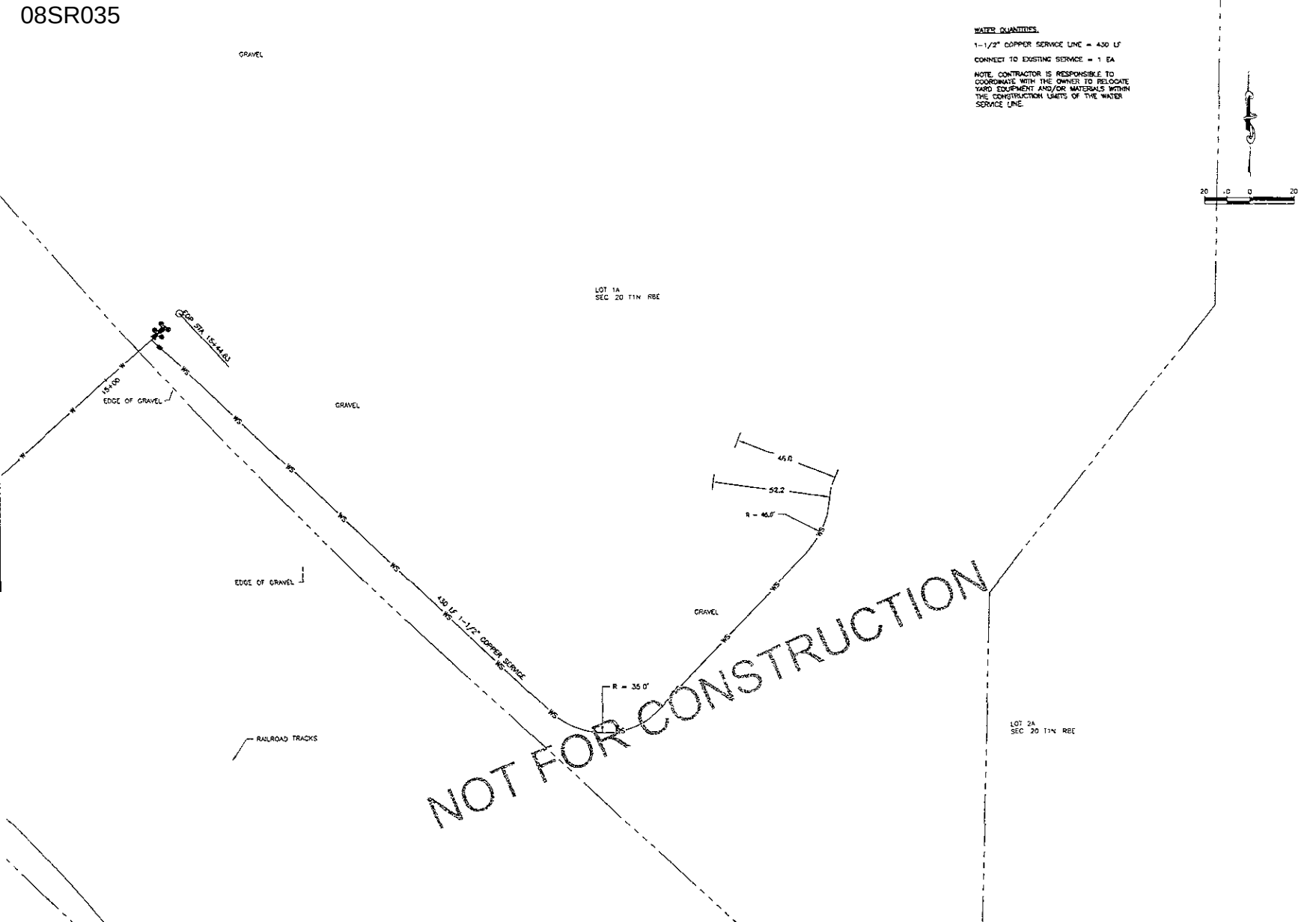
DAKOTA CRAFT WATER MAIN EXTENTION

WATER MAIN PLAN AND PROFILE STA 11+80 TO 15+40

PROJECT NO 07-120

SHEET NO 6 of 8

08SR035



HORZ SCALE	AS SHOWN
VERT SCALE	AS SHOWN
DATE	1/11/2008
DESIGNED	BAL
DRAWN	BAL
CHECKED	

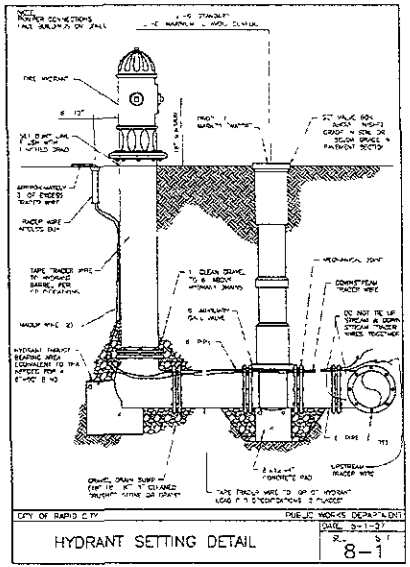
NO	DATE	REVISION	APPROVED

Ferber Engineering Company, Inc.

DAKOTA CRAFT WATER
MAIN EXTENTION
WATER SERVICE LAYOUT

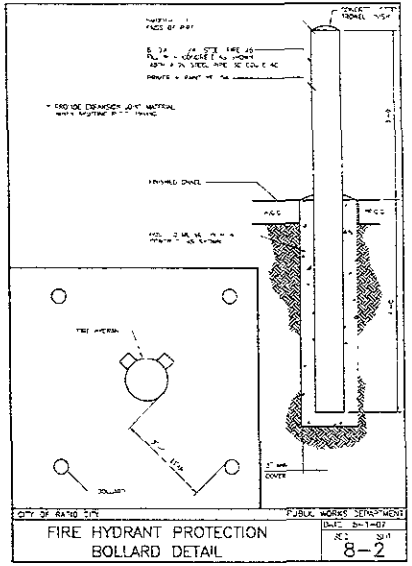
PROJECT NO
07-120

SHEET NO
7 of 8



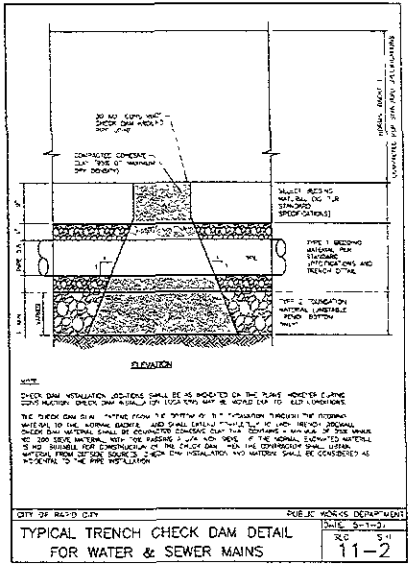
HYDRANT SETTING DETAIL

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT — DATE 9-1-07 — SEC 8-1



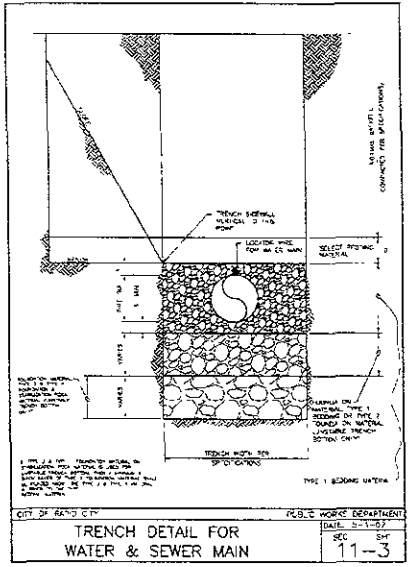
FIRE HYDRANT PROTECTION BOLLARD DETAIL

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT — DATE 9-1-07 — SEC 8-2



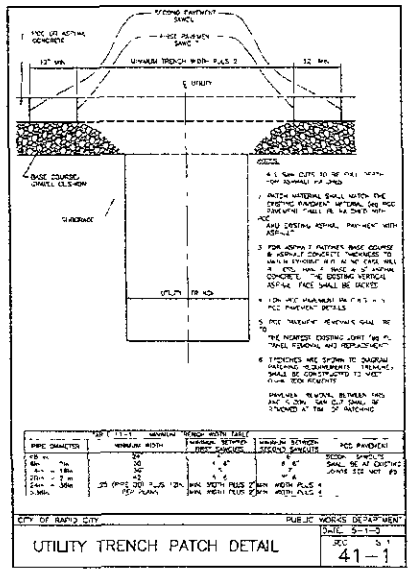
TYPICAL TRENCH CHECK DAM DETAIL FOR WATER & SEWER MAINS

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT — DATE 9-1-07 — SEC 11-2



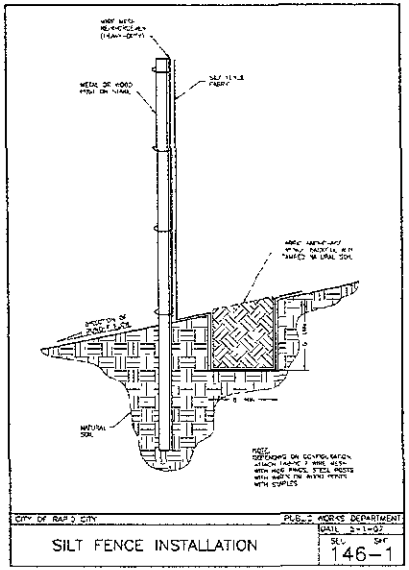
TRENCH DETAIL FOR WATER & SEWER MAIN

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT — DATE 9-1-07 — SEC 11-3



UTILITY TRENCH PATCH DETAIL

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT — DATE 9-1-07 — SEC 41-1



SILT FENCE INSTALLATION

CITY OF RAPID CITY — PUBLIC WORKS DEPARTMENT — DATE 9-1-07 — SEC 146-1

NO	DATE	REVISION	APPR

HORIZ SCALE AS SHOWN
VERT SCALE AS SHOWN
DATE 4/11/2008
DESIGNED DAL
DRAWN DAL
CHECKED DPF

Ferber Engineering Company, Inc.

DAKOTA CRAFT WATER
MAIN EXTENTION
RAPID CITY STANDARD DETAILS

PROJECT NO
07-120

SHEET NO
8 of 8