

NORTHWESTERN UNIVERSITY
PROJECT NAME _____
JOB # _____

FOR: _____
ISSUED: 11/08/2018

SECTION 33 1000 - WATER DISTRIBUTION

PART 1 - ENER!

1"1 RELATED DOCUMENTS

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1"0 C!OSEOUT SUBMITTA!S

A" O-+#\$1&. ' \$ ' * M\$&'1+'\$'3+ D\$1\$: F.# %\$1+# /\$,/+) \$ ' *)-+3&\$,1&+) 1. &'3,5*+ &' +6+#(+ '374
. -+#\$1&. '4 \$ ' * 6\$&'1+'\$'3+ 6\$'5\$,)"

1"C DUA!ITY ASSURANCE

A" R+(5,\$1.#7 R+A5&#+6+'1):

1. C. 6 -,7 %&12 #+A5&#+6+'1) .0 51&,817 3. 6 -\$'7)5-- ,7&' (%\$1+#" I'3,5*+ 1\$--&' (.0 %\$1+#
6\$&') \$ ' * 8\$3=0, .% -#+/+'1&. '"

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2"@ CATHODIC PROTECTION

A" C\$12. * 3 P#. 1+31%. ')2\$,, 8+ -+# 12+ C17 .0
S1\$ ' * \$#*)"

W\$1+# K S+%+# D1/1). ' .

2"C ATE VALVES

A" AWWA4 C\$)1-1#. ' \$1+ V\$, /+):

1. N. '#1)1' (-S1+64 M+1\$, -S+\$1+* \$1+ V\$, /+):

\$" D+)3#1-11. ': #7- .# *5311,+11#. ' 8. *7 \$' * 8. ' '+10 %12 3\$)1-11#. ' .# 8#. 'B+ * .58,+
*1)3 (\$1+4 8#. 'B+ (\$1+ #1' ()4 8#. 'B+)1+64 \$' *)1+6 '51"

- 1L S1\$ ' * \$#*: AWWA C@00"
- 2L M1' 1656 P#+)5#+ R\$11' (: 200 -)1("
- 3L E' * C. ' '+311. '): M+32\$ ' 13\$, E. 1'1"
- >L I'1+#1.# C. \$11' (: C. 6 -,71' (%12 AWWA C@@0"

2. N. '#1)1' (-S1+64 R+)1,1+ '1-S+\$1+* \$1+ V\$, /+):

\$" D+)3#1-11. ': #7- .# *5311,+11#. ' 8. *7 \$' * 8. ' '+10 %12 8#. 'B+ .# (#7- .# *5311,+
11#. ' (\$1+4 #+)1,1+ '1)+\$1)4 8#. 'B+)1+64 \$' *)1+6 '51"

- 1L S1\$ ' * \$#*: AWWA C@01"
- 2L M1' 1656 P#+)5#+ R\$11' (: 200 -)1("
- 3L E' * C. ' '+311. '): M+32\$ ' 13\$, E. 1'1"
- >L I'1+#1.# C. \$11' (: C. 6 -,71' (%12 AWWA C@@0"

3. N. '#1)1' (-S1+64 H1(2-P#+)5#+4 R+)1,1+ '1-S+\$1+* \$1+ V\$, /+):

\$" D+)3#1-11. ': D5311,+11#. ' 8. *7 \$' * 8. ' '+10 %12 8#. 'B+ .# *5311,+11#. ' (\$1+4 #+)1,1+ '1
)+\$1)4 8#. 'B+)1+64 \$' *)1+6 '51"

- 1L S1\$ ' * \$#*: AWWA C@01"
- 2L M1' 1656 P#+)5#+ R\$11' (: 200 -)1("
- 3L E' * C. ' '+311. '): P5)2 . ' .# 6+32\$ ' 13\$, E. 1'1"
- >L I'1+#1.# C. \$11' (: C. 6 -,71' (%12 AWWA C@@0"

4. OSKY4 R1)1' (-S1+64 M+1\$, -S+\$1+* \$1+ V\$, /+):

\$" D+)3#1-11. ': C\$)1- .# *5311,+11#. ' 8. *7 \$' * 8. ' ' 314 %12 23\$) C#.' " #358,+ :\$345#6\$)32\$)427(32)77(.1)14

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1L S!\$'*\$#*: AWWA C@01"
2L M&'&656 P#+)5#+ R\$1&' (: 200 -)&(" E' * C. ' '+31&. '): F,\$' (+*"
3L

B" U!/FM 4 C\$)1-l#. ' \$1+ V\$,/+):

1. U!/FM 4 N. '#&)' (-S1+6 \$1+ V\$,/+):

\$" D+)3#-1&. ': l#. ' 8. *7 \$' * 8. ' '+1 %&12 0,\$' (+ 0.# &' *&3\$1.# -.)14 8#. 'B+)+\$1&' (6\$1+&\$,4 \$' * &')&*+)3#+%"

1L S!\$'*\$#*): U! 2C2 \$' * FM \$- -#. /+*" E' * C. ' '+31&. '): F,\$' (+*"
2L M&'&656 P#+)5#+ R\$1&' (: 1F@ -)&("

\$" S1\$'*\$#*: AWWA C@02"
8" P#+)5#+ R\$1&' (: 1@0 -)&(6&'&656"
3" P+# C&17 .0 W\$1+# K S+%+# D&/&)&. ' S1\$'*\$#*)"

B" W+i-B\$##+, F#H7*#\$'1):

1. D+)3#&-1&. ': F#++)1\$' * &' (4 %&12 . '+ NPS >-1/2 \$' * 1%. NPS 2-1/2 .51,+1)4 NPS C 12#+\$*+* .# 0,\$' (+* &',+14 \$' * 8\$)+)+31&. ' %&12 NPS C 6 +32\$' &3\$, -&' 1&',+1" I' 3,5*+ &' 1+#&. # 3. \$1&' (\$33.#* &' (1. AWWA C@00"

\$" S1\$'*\$#*: AWWA C@03"
8" P#+)5#+ R\$1&' (: 1@0 -)&(6&'&656"
3" P+# C&17 .0 W\$1+# K S+%+# D&/&)&. ' S1\$'*\$#*)"

2"11 FIRE DEPARTMENT CONNECTIONS

A" F#D+-\$#16+'1 C. ' '+31&. '):

1. D+)3#&-1&. ': F#++)1\$' * &' (4 %&12 3\$)1-8#. ' B+ 8. *74 12#+\$* &' ,+1) \$33.#* &' (1. NFPA 11C3 \$' * 6 \$132&' (. .3\$, 0&#+ *+-\$#16+'1 2.)+ 12#+\$*)4 \$' * 12#+\$*+* 8.11.6 .51,+1" I' 3,5*+ ,5((+* 3\$-)4 (\$)=+1)4 \$' * 32\$&')G ,5((+*)%&/+, 3. ' '+31&. ' \$' * *#.- 3,\$- -+ # 0.# +\$32 2.)+3. ' '+31&. ' &',+1G 18-&' 32- 2&(2 8#\$)) ,++/+G \$' * #.5' * +)35132+ . ' -,\$1+ "

\$" S1\$'*\$#*: U! >0@"
8" C. ' '+31&. '): T%. NPS 2-1/2 &',+1) \$' * . '+ NPS > .51,+1"
3" I',+1 A,&(' 6+'1: I',&' +4 2. #&B. '1\$, .# SA5\$#+"
" F&'&2 I' 3,5 &' (S,++/+ : P. ,&)2+* 8#. ' B+"
+" E)35132+ . ' P,\$1+ M\$#=#&' (: ?AUTO SPJR K STANDPIPE"?)
0" P+# 12+ C&17 .0 #+A5&#+ 6+'1)"

PART 3 - EMECUTION

3"1 EARTHWORJ

A" R+0+# 1. S+31&. ' 312000 ?E\$#12 M. /&' (? 0.# +;3\$/\$1&' (4 1#+' 32&' (4 \$' * 8\$3=0&, &' ("

3"2 UTILITY !OCATION

A" P#&. # 1. \$' 7 51&, &17 &')1\$, \$1&. ' %.# = 3. 6 6+' 3&' (4 C. ' 1# \$31. #)2\$, 3\$, , JU!IE / . '+3\$, , I, &' . &) ,.3\$1+ "

3"3 PIPIN APPLICATIONS

A" +'+#\$: U)+ -&-+4 0&11&' ()4 \$' * E. &' &' (6+12. *) 0.# -&-&' ()7)1+6) \$33.#* &' (1. 12+ 0. . . %&' (\$- , &3\$1&. ')"

B" T#\$')&1&. ' 3.5- &' () \$' *) -+3&\$, 0&11&' () %&12 -#+)5#+ # \$1&' () \$1 ,+\$)1 +A5\$, 1. -&-&' (-#+)5#+ # \$1&' (6\$7 8+ 5)+* 4 5', +)) .12+ # %&) + &' * &3\$1+ "

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B" W\$1+#-M\$&' C. ' '+31&. ': T\$- %\$1+# 6 \$&' \$33.#*&' (1. #+A5&#+6+'1) .0 %\$1+# 51&,17 3. 6 -\$'7 \$' *
.0)iB+ \$' * &' ,.3\$1&. ' &' *i3\$1+*"

C" M\$=+ 3. ' '+31&. ') ,\$(+# 12\$' NPS 2 %i12 1\$--&' (6 \$32&' + \$33.#*&' (1. 12+ 0.,. %&' (:

1. l')1\$,, 1\$--&' (),++/+ \$' * 1\$--&' (/\$,/+ \$33.#*&' (1. MSS SP-C0"

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- 8" Di+,+31#3 F&11&' () 0.# NPS 2-1/2 1. NPS >: U)+ *&+,+31#3 0,\$' (+)4 0,\$' (+ =&1) .# '&- -,+)"
- 3" Di+,+31#3 F&11&' () 0.# NPS @ \$' * !\$#(+#: U)+ *&+,+31#3 0,\$' (+ =&1)"

3"F ANCHORA E INSTA!!ATION

A" A'32.#\$(+4 '+#&,: l')l\$,, %\$1+#-*&)1#&851&.' -&-&' (%&12 #+)1#&1'+* E.&'1)" A'32.#\$(+) \$' * #+)1#&1'+*-E.&'1 17-+) 12\$1 6\$7 8+ 5)+* &'3,5*+ 12+ 0.,,.%&' (:

- 1. C.'3#+1+ 12#5)1 8,.3=)"
- 2. !.3=&' (6+32\$'&3\$, E.&'1)"
- 3. S+1-)3#+% 6+32\$'&3\$, #+1\$&' +# (,\$'*)"
- 4. B.,1+* 0,\$' (+* E.&'1)"
- 5. H+\$1-05)+* E.&'1)"
- 6. P&-+ 3,\$6-) \$' * 1&+ #.*)"

B" l')l\$,, \$'32.#\$(+) 0.# 1++)4 -5() \$' * 3\$-)4 8+*')4 3#.)+4 /\$,/+)4 \$' * 27*#\$'1 8#\$'32+)" l'3,5*+ \$'32.#\$(+) 0.# 12+ 0.,,.%&' (-&-&' ()7)1+6):

- 1. \$)=+1+*--+'

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3"1> FIRE HYDRANT INSTA!!ATION

A" +'+#\$: l')1\$, +\$32 0# + 27*#\$ '1 %12)+-\$#1+ (\$1+ /\$, /+ &')5-- ,7 -&-+4 \$' 32.# %12 #+)1#\$' +*
E.&'1) .# 12#5)1 8,.3=)4 \$' *)5-- .#1 &' 5-#(21 -.)&13. '"

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1. P5#(+ '+% %\$1+#-*&)1#851&. ' -&-&' ()7)1+6) \$' * -\$#1) .0 +;&1&' ()7)1+6) 12\$1 2\$/+ 8++' \$,1+#+*4 +;1+'*+*4 .# #+-\$i#+* 8+0.#+ 5)+"
2. U)+ -5#(&' (\$' * *&)'&'0+31&' (-#.3+*5#+ -#+)3#8+* 87 \$512.#&1&+) 2\$/&' (E5#&) *&31&. ' .#4 80 6+12.* &)' .1 -#+)3#8+* 87 \$512.#&1&+) 2\$/&' (E5#&) *&31&. '4 5)+ -#.3+*5#+ *+)3#8+* &' NFPA 2> 0.# 0,5)2&' (.0 -&-&' (" F,5)2 -&-&' ()7)1+6 %&12 3,+&'4 -.1\$8,+ %\$1+# 5'1&, * %\$1+# * .+) ' .1 \$--+\$# \$1 - .&'1) .0 .51,+1"
3. U)+ -5#(&' (\$' * *&)'&'0+31&' (-#.3+*5#+ -#+)3#8+* 87 \$512.#&1&+) 2\$/&' (E5#&) *&31&. ' .#4 80 6+12.* &)' .1 -#+)3#8+* 87 \$512.#&1&+) 2\$/&' (E5#&) *&31&. '4 5)+ -#.3+*5#+ *+)3#8+* &' AWWA CC@1 .# * . \$) 0.,, .%) /857 (*) -11.3583 () -156 .57.71542 (') 0.715207 () 0.356 603 (.) 0.713207 (#) -5