

NORTHWESTERN UNIVERSITY
PROJECT NAME _____
JOB # _____

FOR: _____
ISSUED: 2022.2

SECTION 22 3400 FUEL FIRED, DOMESTIC WATER HEATERS

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Division 1 () Schedule (+ # \$, - # . /) . 0 12+ C. 1 # \$ 31, & ' 3,4 * & ' (" + ' + # \$, \$ ' * S4 - -, + 5 + ' 1 \$ # 6
C. ' * & & . ') \$ ' * D & / &) & . ' 0! S - + 3 & 0 3 \$ 1 & . ' S + 3 1 & . ') , \$ - -, 6 1 . 1 2 &) S + 3 1 & . ' .

1.2 SUMMARY

- A. S + 3 1 & . ' 1 ' 3,4 * +) :

1. C. 5 5 + # 3 & \$, , - . % + # 7 4 # ' + # , (\$) 0 & # + * ,) 1 . # \$ (+ , * . 5 (D) 3 4 (,) 0 . 3 5 6 6 0 3 () 0 . 3 5 6 6 0 3 (-) - 1 1 . 3 5 8 2 - E 8 T F U E L S

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B. ASHRAE:IESNA ;0.! C.5-,\$'3+: F\$7#3\$1+ \$' * , \$7+, 04+, 0#++*, *.5+)13 %\$1+# 2+\$1+#) 1. 3.5- ,6 %12 ASHRAE:IESNA ;0.!

C. ASME C.5-,\$'3+:

- 1. W2++ ASME 3.*+3.')1#431. ' &) &' *3\$1+*, 0\$7#3\$1+ \$' * , \$7+, 3.55+#31\$, *.5+)13 %\$1+# 2+\$1+#)1.#\$(+ 1\$'@) 1. 3.5- ,6 %12 ASME B.&,+ # \$' * P#+)4# V+))+, C.*+: S+31. ' VIII, D&/&) &' !.
- 2. W2++ ASME 3.*+3.')1#431. ' &) &' *3\$1+*, 0\$7#3\$1+ \$' * , \$7+, 3.55+#31\$, 0&' '+* 147+, *.5+)13 %\$1+# 2+\$1+#) 1. 3.5- ,6 %12 ASME B.&,+ # \$' * P#+)4# V+))+, C.*+: S+31. ' IV.

D. NSF C.5-,\$'3+: F\$7#3\$1+ \$' * , \$7+, +94- 5+'1 3.5- .'+ '1) 12\$1 %&, 7+ &' 3.'1\$31 %12 -.1\$7,+ %\$1+# 1. 3.5- ,6 %12 NSF A!, =D#&'@&' (W\$1+# S6)1+5 C.5- .'+ '1) H+\$,12 E00+31).=

!B WARRANTY

A. S-+31\$, W\$##\$'16: M\$'40\$314#+#))1\$' *\$#* 0.#5 &' %2132 5\$'40\$314#+# \$(#++) 1. #+-\$# #. #+-,\$3+ 3.5- .'+ '1) .0 04+, 0#++*, *.5+)13 %\$1+# 2+\$1+#) 12\$1 0\$, &' 5\$1+#\$,) .# %.#@5\$')2- %12&')-+300+* %\$##\$'16 -+##. *.

!. W\$##\$'16 P+#. *): F#.5 *\$1+ .0 S47)1\$'1\$, C.5- ,+1& . '.

\$. C.55+#31\$, " \$) F#++*, S1.#\$(+, D.5+)13 W\$1+# H+\$1+#):

- 1D S1.#\$(+ T\$'@: T2#++ 6+\$#).
- 2D C.'1#. ,) \$' * O12+# C.5- .'+ '1): O'+ 6+#E)D.
- 3D C.5-#+)&' T\$'@): F&/+ 6+\$#).

PART 2 PRODUCTS

2.! COMMERCIAL, " AS FIRED, STORA " E, DOMESTIC WATER HEATERS

A. C.55+#31\$, P.%+# B4#'+#, " \$) F#++*, S1.#\$(+, D.5+)13 W\$1+# H+\$1+#):

!. B\$&) .0 D+)&' P#. *431: S47>+31 1. 3.5-,\$'3+ %12 #+94#++5+'1), -#./&*+ -#. *431 &' *3\$1+* . ' 12+ *\$%&' () .# 3.5- \$7,+ -#. *431 76 .'+ .0 12+ 0.,, %&' (:

- \$. A.O.S5&12
- 7. L.32&/\$#.
- 3. B#\$*0.#* W2&1+
- *. N\$/&+'

- 2. S1\$' *\$#*: ANSI F2! .!0.3:CSA 4.3.
- 3. S1.#\$(+ T\$'@ C.')1#431. ' : ASME 3.*+)1++ , %12 !B0 -)&' (%.#@&' (-#+)4# # \$1&' (.

\$. T\$- -&' (): F\$31.#6 0\$7#3\$1+* .0 5\$1+#\$,) 3.5- -1&7,+ %12 1\$'@. A11\$32 1\$- -&' () 1. 1\$'@ 7+0.#+ 1+)1&' (.

!D T2#+\$*+ + '*) \$33.#*&' (1. ASME B! .20.!

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- 7. I'1+#. # F&'&2: C. 5 -,6 %&12 NSF A! 7\$###+# 5\$1+#\$,) 0.# - .1\$7,+ %\$1+# 1\$' @ ,&'&' (), &'3,4*&' (+G1+ '*&' (0&'&)2 &'1. \$' * 12#. 4(2 1\$' @ 0&11&' () \$' * .41,+1).
- 3. L&'&' (: " , \$) 3. 5 -,6&' (%&12 NSF A! 7\$###+# 5\$1+#\$,) 0.# - .1\$7,+ %\$1+# 1\$' @ ,&'&' (), &'3,4*&' (+G1+ '*&' (,&'&' (&'1. \$' * 12#. 4(2 1\$' @ 0&11&' () \$' * .41,+1).

4. F\$3l.#6 l')1\$,+* Sl.#\$(+ T\$' @ A--4#1+'\$'3+):

\$. A' . *+ R. *: R+-, \$3+\$7,+ 5\$ (' +) &45.

7.SF D&- T47+: R+94#++* 4',+)) 3., * %\$1+# &' ,+1 &) '+\$# 7.11. 5 .0 1\$' @.

7925775 (.3583(,)4356603(S)311.8845 (+) -E00129(\$)0.713207 (')0. .7149(&)4.71247 (.124735)071207 ()

- \$. T\$- -&' (): F\$31.#6 0\$7#3\$1+*)1+, , %+, *+* 1. 1\$' @ 7+0.#+ 1+)1&' (\$' * , \$7+, &' (. I'3,4*+ ASME B! .20.! -&-+ 12#+\$* .
- 7. I'1+#&. # F&' &)2: C. 5 - ,6 %&12 NSF A! 7\$##&+# 5\$1+#&\$,) 0.# - . 1\$7,+ %\$1+# 1\$' @ , &' &' (), &' 3,4* &' (+G1+ ' * &' (0&' &)2 &' 1. \$' * 12#. 4 (2 1\$' @ 0&11&' () \$' * . 41,+1).
- 3. A&# C2\$#(&' (V\$, /+ : F\$31.#6 &')1\$, +* .

4. C\$- \$3&16 \$' * C2\$#\$31+#&)1&3):

- \$. W.#@&' (P#+)4#+ R\$1&' (: !B0 -)&(.)
- 7. C\$- \$3&16 A33+- 1\$7,+ : !0 (\$, . 5&' &545.

- B. P&- &' (T6-+ H+\$1 T#\$-): F&+, * 0\$7#&3\$1+* -&- &' (\$\$\$' (+5+'1 \$33.#* &' (1. ASHRAE:IESNA ;0.!).
- C. H+\$1 T#\$- F&11&' (): ASHRAE ;0.2.
- D. "\$) S241.00 V\$, /+): ANSI F2! .! B:CSA ; ! M, 5\$' 4\$, 6 . - +\$1+* . F4# ' &)2 0.# &')1\$, , \$1&. ' &' -&- &' (.
- E. "\$) P#+)4#+ R+(4,\$1.#): ANSI F2! .! I:CSA A.3, \$- , , \$' 3+ 16-+. I'3,4*+ %&12 -#+)4#+ #&1&' (\$) ##+94&#+* 1. 5\$132 (\$))4-- , 6.
- F. A41. 5\$1&3 "\$) V\$, /+): ANSI F2! .2! :CSA A.B, \$- , , \$' 3+, +, +31#&3\$, 6 . - +\$1+* , . ' .00 \$41. 5\$1&3 /\$, /+.
- ". C. 57&' \$1&. ' T+5 - +\$14#+ \$' * P#+)4#+ R+, &+0 V\$, /+): I'3,4*+ #+, &+ /&' (3\$- \$3&16 \$1 , +\$)1 \$) (#+\$1 \$) 2+\$1 &' -41, \$' * &' 3,4*+ -#+)4#+)+11&' (, +)) 12\$' * . 5+)1&3 %\$1+# 2+\$1+# %.#&' (-#+)4#+ #&1&' (. S+, +31 #+, &+0 /\$, /+) %&12)+')&' (+, +5+'1 12\$1 +G1+'*) &' 1.)1.#\$ (+ 1\$' @.
- !. "\$) F&#+* , D. 5+)1&3 W\$1+# H+\$1+#): ANSI F2! .22:CSA 4.4 M.

2.3 SOURCE ?UALITY CONTROL

- A. F\$31.#6 T+)1): T+)1 \$' * &') - +31 \$)) +57,+* * . 5+)1&3 %\$1+# 2+\$1+# \$' *)1.#\$ (+ 1\$' @) - +3&0&+* 1. 7+ ASME 3. * + 3. ')1#431&. ' , \$33.#* &' (1. ASME B. &, +\$' * P#+)4#+ V+) , C. *+.
- B. H6*#.) 1\$1&3\$, 6 1+)1 3. 5 5 + #3&\$, * . 5+)1&3 %\$1+# 2+\$1+# \$' *)1.#\$ (+ 1\$' @) 1. 5&' &545 .0 . '+ \$' * . '+ 2\$, 0 1&5+) -#+)4#+ #&1&' (7+0.#+)2&- 5+' 1.
- C. D. 5+)1&3 %\$1+# 2+\$1+#) %&, 7+ 3. ')&*+#+* * +031&/+ &0 12+6 * . ' .1 - \$)) 1+)1) \$' * &') - +31&. '). C. 5 - ,6 %&12 #+94&#+5+'1) &' D&/&) &. ' 0! S+31&. ' =?4\$, &16 R+94&#+5+'1) = 0.# #+1+)1&' (\$' * .

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3.2 CONNECTIONS

- A. C. 5 - ,6 %12 #+94##+5+'1) 0.# * . 5+)13 %\$1+# -&-&' () -+300+* &' D&/&)&. ' 22 S+31&. ' =D. 5+)1&3 W\$1+# P&-&' (.=
- B. C. 5 - ,6 %12 #+94##+5+'1) 0.# (\$) -&-&' () -+300+* &' D&/&)&. ' 23 S+31&. ' =F\$3&,16 N\$14#\$, " \$) P&-&' (.=
- C. D#\$%&' () &' *13\$1+ (+' +#\$, \$##\$' (+5+'1 .0 -&-&' (, 0&11&' () , \$ ' *) -+3&\$,1&+).
- D. W2+##+ &')1\$,&' (-&-&' (\$*>\$3+'1 1. 04+, 0&##+*, * . 5+)1&3 %\$1+# 2+\$1+#), \$,,.%)-\$3+ 0.#)+##/13+ \$ ' * 5&'1+' \$'3+ .0 %\$1+# 2+\$1+#). A##\$' (+ -&-&' (0.# +\$)6 #+5 ./\$, .0 * . 5+)1&3 %\$1+# 2+\$1+#).

3.3 IDENTIFICATION

- A. I*+'1&06)6)1+5 3.5 - . '+'1). C. 5 - ,6 %12 #+94##+5+'1) 0.# &*+'1&0&3\$1&. ') -+300+* &' D&/&)&. ' 22 S+31&. ' =I*+'1&0&3\$1&. ' 0.# P,457&' (P&-&' (\$ ' * E94&- 5+'1.=

3.4 FIELD ?UALITY CONTROL

- A. P+#0.#5 1+)1) \$ ' * &') -+31&. ').
- !. M\$'40\$314#++#) F&+,* S+##/13+: E' (\$ (+ \$ 0\$31.#6 \$412.#18+*)+##/13+ #+-#+)+'1\$1&/+ 1. &') -+31 3.5 - . '+'1), \$)) +57,&+), \$ ' * +94&- 5+'1 &')1\$,,\$1&. '), &' 3,4* &' (3. ' '+31&. '), \$ ' *