NORTHWESTERN	I UNIVERSITY
PROJECT NAME _	
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FOR:	
ISSUED:	2022 2

SECTION 22 3400 FUEL FIRED, DOMESTIC WATER HEATERS

PART! "ENERAL

!.! RELATED DOCUMENTS

!.2 SUMMARY

A. S+314. ' I'3,4*+):

!. C.55+#3%\$,, -.%+# 74#'+#, (\$) 0\#+*,)1.#\$(+, *.5(D)34(,)0.356603()0.356603(-)-11.3582-E8TFUEL

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- B. ASHRAE:IESNA; 0.! C.5-,\&\dagger'3+: F\dagger'7\\\\3\dagger'1+\dagger'\, \dagger'3+; F\dagger'\\\3\dagger'\
- C. ASME C. 5 18 '3+:
 - !. W2+#+ ASME 3.*+ 3.')1#431&.' &) &'*&3\$1+*, 0\$7#3\$1+ \$'*,\$7+, 3.55+#3&\$,, *.5+)1&3
 %\$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#4318.' &) &'*&3\$1+*, 0\$7#3\$1+\$'*,\$7+, 3.55+#3&\$,, 0&''+*147+,
 .5+)1&3 %\$1+# 2+\$1+#) 1. 3.5-,6 %&12 ASME B.&,+# \$' P#+))4#+ V+))+, C.*+: S+31&.' IV.

!.B WARRANTY

- A. S-+3&\$, W\$##\$'16: M\$'40\$314#+#\))1\$'*\$#* 0.#5 &' %2&32 5\$'40\$314#+# \$(#++) 1. #+-\$&# .# #+-,\$3+ 3.5-.'+'1) .0 04+, 0&#+*, *.5+)1&3 %\$1+# 2+\$1+#\) 12\$1 0\$&, &' 5\$1+#&\$,) .# %.#@5\$')2&-%&12&')-+3&0&+* %\$##\$'16 -+#&.*.
 - !. W\$##\$'16 P+#8.*): F#. 5 *\$1+ .0 S47)1\$'18\$, C. 5 -,+18.'.
 - \$. C. 5 5 + #3&\$,, "\$) F&#+*, S1. #\$(+, D. 5+)1&3 W\$1+# H+\$1+#):
 - !D 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+#3\\$,, P.%+# B4#'+#, "\$) F\#+*, S1.#\$(+, D. 5+)\\3 W\\$1+# H+\\$1+#):
 - - \$. A. O. S5 &12
 - 7. L.32\langle/\\$#.
 - 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+#å.# Få'å)2: C.5-,6 %å12 NSF A! 7\$##å+# 5\$1+#\\$,) 0.# -.1\$7,+ %\$1+# 1\$'@, ,å'å'(), å'3,4*å'(+G1+'*å'(0\å'\å)2\å'1.\\$'*12#.4(21\\$'\@0\å1\\å'()\\$'*.41,+1).
- 3. Lå'å'(: ",\$)) 3.5-,6å'(%å12 NSF A! 7\$##å+# 5\$1+#å\$,) 0.# -.1\$7,+ %\$1+# 1\$'@, å'å'(), å'3,4*å'(+G1+'*å'(,å'å'(&'1.\$'*12#.4(21\$'@0&11\&'()\$'*.41,+1).
- 4. F\$31.#6 I')1\$,,+* S1.#\$(+ T\$'@ A--4#1+'\$'3+):
 - \$. A'.*+R.*: R+-,\$3+\$7,+ 5\$('+)&45. **?.** D&- T47+: R+94\(\mathrm{#}\)+ * 4',+) 3.,* *\$1+\(\mathrm{#}\)\(\mathrm{#

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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(21\$'@0&11&'()\$'*.41,+1).
- 3. A&# C2\$#(&'(V\$,/+: F\$31.#6&')1\$,,+*.
- 4. C\$-\$3\langle16 \$' * C2\$#\$31+#\langle)1\langle3):
 - \$. W.#@&'(P#+))4#+ R\$1&'(: !B0 -)&(.
 - 7. C\$-\$3\(\delta\)6 A33+-1\(\septimes\)7,+: !0 (\(\septimes\), 5\(\delta\)645.
- 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. "\$) \$241.00 V\$,/+): ANSI F2!.!B:CSA;.! M, 5\$'4\$,,6 .-+#\$1+*. F4#'\(\delta\)2 0.# \(\delta\')1\$,,\$1\(\delta\.'\delta\'\delta
- E. "\$) P#+))4#+ R+(4,\$1.#): ANSI F2!.!I:CSA A.3, \$--,\(\delta\)'3+ 16-+. I'3,4*+ \(\delta\)'12 -#+))4#+ #\$\(\delta\'(\(\delta\) #+94\(\delta\)+* 1. 5\(\delta\)(\$))4--,6.
- F. A41.5\$1\(\delta\)3 "\$) V\$,/+): ANSI F2!.2!:CSA A.B, \$--,\(\delta\)5'3+, +,+31\(\delta\)3\$,,6 .-+\(\delta\)5'1\(\delta\)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\(\delta\) %\$1+# 2+\$1+#)\$'*)1.#\$(+ 1\$'@))-+3\(\delta\)+*
 1. 7+ ASME 3.*+3.')1#431\(\delta\).',\$33.#*\(\delta\)' (1. ASME B.\(\delta\)+#\$'* P#+))4#+ V+))+, C.*+.
- B. H6*#.)1\$1\(\dagger{c}3\),6 1+)13.55+\(\dagger{c}3\)\(\dagger{c}\), *.5+)1\(\dagger{c}3\)\(\dagger{c}3\)\(\dagger{c}4\)\(\da
- C. D. 5+)183 %\$1+# 2+\$1+#) %8,, 7+ 3.')8*+#+* *+0+318/+ 80 12+6 *. '.1 -\$)) 1+)1) \$'* 8')-+318.'). C. 5-.6 %812 #+948#+5+'1) 8' D8/8)8.' 0! S+318.' =?4\$.816 R+948#+5+'1)= 0.# #+1+)18'(\$'*

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3.2 CONNECTIONS

- A. C.5-,6 %12 #+94#+5+'1) 0.# *.5+)183 %\$1+# -8-8'()-+3608+* 8' D8/8)8.' 22 S+318.' =D.5+)183 W\$1+# P8-8'(.=
- B. C.5-,6 %12 #+944#+5+'1) 0.# (\$) -1-1 ()-+360+* 1 D1/1 ()-+360+* 1 D1/1 ()-+360+* 1 EF\$36,16 N\$14#\$, "\$) P1-1 (.=
- C. D#\$%'() &'*&3\$1+ (+'+#\$, \$##\$'(+5+'1.0-&-&'(, 0&11&'(), \$'*)-+3&\$,1&+).
- D. W2+#+ &')1\$,,&'(-&-&'(\$*\\$3+'1 1. 04+, 0\| ++*, *.5+)1\| 3 %\\$1+# 2+\\$1+#), \$,,.%)-\\$3+ 0.#)+#/\| 3+ \$'* 5\| 8'1+'\\$'3+ .0 %\\$1+# 2+\\$1+#). A\| #\\$'(0.# +\\$)6 #+ 5./\\$, .0 *.5+)1\| 3 %\\$1+# 2+\\$1+#).

3.3 IDENTIFICATION

A. 1*+'1&06)6)1+5 3.5-.'+'1). C.5-,6 %\ldots \(4+94\rangle +5+'1\rangle \) 0.# \(\ldots +'1\rangle \) \(3\rangle \) \(1.5 \rangle +1) \(1.7 \rangle +1 \rang

3.4 FIELD ?UALITY CONTROL

- A. P+#0.#5 1+)1) \$'*&')-+31&.').
 - !. M\$'40\$314#+#() F&+,* S+#/&3+: E'(\$(+ \$ 0\$31.#6 \$412.#\8+*)+#/\&3+ #+-#+)+'1\$\\/+ 1. \\/\&')-+31 3.5-.'+'1(),\$())+57\\/\&+),\$'* +94\(\&-5+'1\(\&')\)1\$,,\$\\\\&'),\(\&'3,4*\(\&'\)(3.''+3\(\&.''),\$'*