SECTION 22 3400 FUEL FIRED, DOMESTIC WATER HEATERS

PART ! " ENERAL

!.! RELATED DOCUMENTS

A. D#$%&'() $'* (+'+#$, -#./&).') .0 12+ C.'1#$31, &'3,4*&'("+'+#$, $'* S4--,+5+'1$#6 C.'*&1&.') $'* D&/&).' 0! S-+3&0&3$1&.' S+31&.'), $--,61.12&) S+31&.'.

!.2 SUMMARY

A. S+31&.' I'3,4*+):

!. C.5 5+#3&$,, -.%+# 74#'+#, ($) 0&#+*,)1.#$(+, *.5(D)34(,)0.35663( )0.35663(-)-11.3582-E8TFUEL S

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

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

!. W2+#+ ASME 3.*+ 3.')1#431&.' &)&'*&3$1+*, 0$7#&3$1+ $'* ,$7+, 3.5 5+#3&$,, *.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#431&.' &)&'*&3$1+*, 0$7#&3$1+ $'* ,$7+, 3.5 5+#3&$,, 0&''+* 147+, *.5+)1&3 %$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-+3&$, W$##$'16: M$'40$314#+#C))1$'*$#* 0.#5 &' %2&32 5$'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+#&.*): F#.5 *$1+ .0 S47)1$'1&$, C.5-,+1&.'.

$. C.5 5+#3&$,, "$) F&#+*, S1.#$(+, 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.5 5+#3&$,, P.%+# B4#'+#, "$) F&#+*, S1.#$(+, D.5+)1&3 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.!.

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$31.#6 I')1$,,+* S1.#$(+ T$'@ A--4#1+'$'3+):

$. A'.*+ R.*: R+-,$3+$7,+ 5$('+)&45.
7. D&- T47+: R+94&#+* 4',+)) 3.,* %$1+#&',+1&) '+$# 7.11.5 .01$'@.
2.SF
7925775(.3583(,)43566O3(S)311.8845(+)-E00129($)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+$1+#) %&,, 7+ 3.')&*+#+* *+0+31&/+ &0 12+6 *. '.1 -$)) 1+)1) $'*&')-+31&.'). C.5-,6 %&12 #+94&#+5+'1) &' D&/&).' 0! S+31&.' =?4$,&16 R+94&#+5+'1)= 0.# #+1+)1&'($'*

NORTHWESTERN UNIVERSITY
PROJECT NAME _____
JOB # _____

FOR: _____

3.2 CONNECTIONS

A. C.5-,6 %&12 #+94&#+5+'1) 0.# *.5+)1&3 %$1+# -&-&'( )-+3&0&+* &' D&/&)&.' 22 S+31&.' =D.5+)1&3 W$1+# P&-&'(.=

B. C.5-,6 %&12 #+94&#+5+'1) 0.# ($) -&-&'( )-+3&0&+* &' D&/&)&.' 23 S+31&.' =F$3&,&16 N$14#$, "$) P&-&'(.=

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