$ART 1 - GENERAL

1⁒1 &OR ' INCLUDED

1%: CODES AND STANDARDS

1%:%1 &"r4 !n* 0 !teri!+(()!++ .e in 2u++ !,,"r*!n,e 3it) C!+i2"rni! O,,u#!ti"n!+ S!2et- He!+t) A,t 7CAL-OSHA8/ C!+i2"rni! E+e,tri,!+ C"*e 7CEC8/ St!te Fire M!r()!+/ E+e,tri,!+ S!2et- Or*er(7Tit+e </ Su.,)!#ter B8/ t)e N!ti"n!+ Fire $r"te,ti"n A((",i!ti"n/ C!+i2"rni! Cui+*in C"*e 7CCC8> C!+i2"rni! C"*e "2 Re u+!ti"n(- Tit+e 2: !n* "t)er !##+i,!.+e St!te "r+",!++!3("r re u+!ti"n(% N"t)in in t)e Dr!3in ("r S#e,i2i,!ti"n()!++ .e ,"n(true* t" #er0it 3"r4 n"t ,"n2"r0in t" t)e(e ,"*e(%

1%:%2 E+e,tri,!+ 0 !teri!+(()!++ .e +i(te*/+!.e+e*/ "r ,erti2ie* 2"r it(u(e .- ! N!ti"n!++- Re," niDe* Te(tin L!."r!t"r-(u,) !(Un*er3riter?(L!."r!t"rie(7UL8/ F!,t"r- Mutu!+7FM8/ et,%

1%:%6 M!teri!+(!n* ,"0#"nent()!++ ,"n2"r0 t" In*u(tr- St!n*!r*(/in,+u*in E

NEMA - N!ti"n!+ E+e,tri,!+ M!nu2!,turer?(A((",i!ti"n

ANSI - A0eri,!n N!ti"n!+ St!n*!r*(In(titute

ASTM - A0eri,!n S",iet-2"r Te(tin M!teri!+ A((",i!ti"n

I$CEA - In(u+!te* $"3er C!.+e En ineer?(A((",i!ti"n

CCM - Certi2ie* C!++!(t M!nu2!,turer(

1%:%: &)en C"ntr!,t D",u0ent(*i22er 2r"0 "5ernin ,"*e(/2urni()!n* in(t!++!r er (iDe "r)i)er (t!n*!r*(,!++e* 2"r 3it)"ut e=tr!,)!r e%

1%B RE9IE& OF MATERIALS

1%B%6 &)ere it i(in t)e .e(t intere(t "2 t)e O3ner/ En ineer 0!- i5e 3ritten ,"n(ent t" ! (u.0itt!+ re,ei5e* !2ter e=#ir!ti"n "2 *e(i n!te* ti0e +i0it(/ "r 2"r !n !**iti"n!+ re(u.0itt!+%

1%B%: Su.0it 2"r !##r"5!+ in !0#+e ti0e t" !5"i* *e+!- "2 ,"n(tru,ti"n/ ()"# *r!3in ("r (u.0itt!+("n !++ ite0("2 e1ui#0ent !n* 0!teri!+(,"5ere* in +i(t 0enti"ne* !."5e% Su.0it in !,,"r*!n,e 3it) Gener!+ C"n*iti"n(in ! ,"0#+ete #!,4! e> #!rti!+ (u.0itt!+(3i++ n"t .e ,"n(i*ere*%

1%B%B F!i+ure t" ,"0#+- 3it) !n- "2 t)e #re,e*in re1uire0ent(3i++ ne,e((it!te t)!t t)e (#e,i2ie* 0!teri!+(.e (u.0itte* !n* (u##+ie*%

1%6 RECORD DRA&INGS

1%6%1 U#"n ,"0#+eti"n "2 &"r4/ 2urni() En ineer 3it) Aut"CAD 2i+e/ $DF 2i+e/ !n* "ne 718 #rinte* 2u++ (iDe)!r*,"#- u#"n 3)i,) ()!++ .e ()"3n !++ &"r4 in(t!+e* un*er ,"ntr!,t in,+u*in !n- &"r4 3)i,) !re n"t in !,,"r*!n,e 3it) Ori in!+ C"ntr!,t Dr!3in (% Aut"CAD 2i+e(()!++ .e 200: "r +!ter 5er(i"n/ 3it) e=tern!+ re2eren,e(."un* t" it(#!rent *r!3in % $r"5i*e ! (e#!r!te $D

1%B in,) !."5e (urr"un*in !re!% C!,42i+ !n* ,"0#!,t t" HB #er,ent 0!=i0u0 *r- *en(it- !t "#ti0u0 0"i(ture ,"ntent in+!-er(n"t t" e=,ee* 6 in,)e(3)en ,"0#!,te*%

6%H EQUI$MENT ANCHORAGE

6%H%1 Sei(0i, An,)"r! e "2 E+e,tri,!+ e1ui#0ent ()!+ ,"n2"r0 t" t)e re u+!ti"n("2 CCC-2016 !n* ASCE ;-10/ (e,ti"n(16%6/ 16%:/ !n* 16%6% A+ e1ui#0ent ()!+ .e .r!,e* "r !n,)"re* t" re(i(t !)"riD"nt!+2"r,e !,tin in !n- *ire,ti"n u(in t)e 2"+"3in ,riteri!E

6%H%1%1 T)e t"t!+ *e(i n+!ter!+ (ei(0i, 2"r,e ()!+ .e *eter0ine* 2r"0 (e,ti"n 1616A C!+i2"rni! Cui+*in C"*e 7CCC8 2016 !n* 16%6 ASCE ;-10% F"r,e(()!+ .e !##+ie* in t)e)"riD"nt!+ *ire,ti"n(/3)i,) re(u+t(in t)e 0"(t,riti,!+ +"!*in (2"r *e(i n%

6%H%1%2 T)e 5!+ue "2 A#7,"0#"nent !0#+i2i,!ti"n 2!,t"r8 !n* R#7,"0#"nent re(#"n(e 0"*i2i,!ti"n 2!,t"r8 "2 (e,ti"n 16%6%1 ASCE ;-10 ()!+ .e (e+e,te* 2r"0 (e,ti"n 16%6-1 ASCE ;-10% T)e 5!+ue "2 I#7(ei(0i, i0#"rt!n,e 2!,t"r8 ()!+ .e (e+e,te* 2r"0 16%1%6 ASCE ;-10%

6%H%2 &)ere !n,)"r! e *et!i+(!re n"t ()"3n "n t)e *r!3in (/t)e 2ie+* in(t!+!ti"n ()!+ .e (u.Ae,t t" t)e !##r"5!+ "2 t)e (tru,tur!+ en ineer !n* t)e 2ie+* re#re(ent!ti5e "2 t)e O22i,e "2 t)e St!te Ar,)ite,t%

6%10 ARC FLASH

6%10%1 E+e,tri,!+ e1ui#0ent (u,)!((3it,)."!r*(/#!ne+."!r*(/+"!* ,enter(/0"t"r ,"ntr"+ ,enter(/in*u(tri!+ ,"ntr"+ #!ne+(/0eter ,enter(()!+ .e 2ie+* 0!r4e* t" 3!rn #er("n("2 #"tenti!+ e+e,tri, !r, 2+!())!D!r*(#er CEC 110%16 !n* NF$A ;0E St!n*!r* 2"r E+e,tri,!+ S!2et- in t)e &"r4#+!,e% Mini0u0 +!.e+ 3"r*in ()!+ .e !(2"+"3(E

DANGER
Ar, F+!() !n* S)",4 H!D!r*%
A##r"#ri!te $$E Re1uire*%
D" n"t "#er!te ,"ntr"+("r "#en *""r(3it)"ut !##r"#ri!te #er("n!+#r"te,ti"n e1ui#0ent%
F!i+ure t" ,"0#+- 0!- re(u+t in inAur- "r *e!t)%

6%11 TEST

6%11%1 Te(t !+ 3irin !n* ,"nne,ti"n(2"r ,"ntinuit- !n* r"un*(> 3)ere (u,) te(t in*i,!te 2!u+t- in(u+!ti"n "r "t)er *e2e,t(/+",!te/ re#!ir !n* rete(t% C!+!n,e+"!*(!t #!ne+."!r*(% Furni() !+ te(tin e1ui#0ent%

6%12 CLOSING OF AN UNINS$ECTED &OR '

6%12%1 D" n"t !+"3 "r ,!u(e !n- "2 3"r4 in(t!+e*)ereun*er t" .e ,"5ere* u# "r en,+"(e* .e2"re it)!(.een in(#e,te* !n* !##r"5e*%

6%12%2 S)"u+* !n- 3"r4 .e en,+"(e* "r ,"5ere* u# .e2"re it)!(.een !##r"5e*/ un,"5er (u,) 3"r4 !n* !2ter it)!(.een in(#e,te* !n* !##r"5e*/ 0!4e !+ re#!ir(ne,e((!r- t" re(t"re 3"r4 "2 "t)er(t" ,"n*iti"n(in 3)i,) it 3!(2"un* !t ti0e "2 ,uttin / !+ 3it)"ut !**iti"n!+ ,"(t t" O3ner%

6%16 &ARRANTY

6%16%1 A+ 0!teri!+(!n* in(t!+!ti"n ()!+ .e #r"5i*e* 3it) ! "ne 718 -e!r 3!rr!nt- 3)i,) ()!+ in,+u*e re#+!,e0ent #!rt(/+!."r/ rete(tin / !n* tr!5e+t" !n* 2r"0t)e A". (ite% T)e 3!rr!nt- #eri"* ()!+ .e in !2ter 2in!+!,,e#t!n,e "2 t)e #r"Ae,t% T)e 3!rr!nt- ()!+ ,"5er .ut i(n"t+i0ite* t" t)e 2"+"3in E

6%16%1%1 De2e,ti5e 3"r40!n()i# !n* in(t!+!ti"n%

6%16%1%2 A+ S-(te0 ,"0#"nent(/ *e5i,e(/ ,"n*uit/ 3ire(/ et,%

6%16%1%6 M!nu2!,ture* ite0((u,) !(+i)t 2i=ture(/ re,e#t!,+e(/ (3it,)."!r*/ #!ne+."!r*/ tr!n(2"r0er/ (3it,)e(/ et,%

6%16%1%: C!(i, 0!teri!+((u,) !(,"n*uit/ 3ire(/ ."=e(/ ,!.inet(/ et,%

6%16%2 Cert!in 0!nu2!,ture* ite0(3i+)!5e+"n er 3!rr!nt- #eri"*(% Re2er t" (#e,i2i, ite0 !n* (#e,i2i,!ti"n (e,ti"n 2"r 3!rr!nt- in2"r0!ti"n !n* ter0(%

6%1: S$ARE $ARTS AND S$ECIAL SER9ICE AGREEMENTS

6%1:%1 A 0ini0u0 "2 B #er,ent !tti, (t",4 "n E+e,tr"ni, +i)tin C"ntr"+ *e5i,e((u,) !(#"3er #!,4(/ re+!-(/ ",, (en("r(/ 3!+ (3it,)e(/ *!-+i)t (en("r(/ #+u +"!* ,"ntr"+er(/ #)"t",e+(/ ETC%

6%1:%2 Me,)!ni,!+ !n* E+e,tri,!+ (-(te0(t)!t re1uire re u+!r/ 5er- (#e,i2i, 0!inten!n,e t" .e #er2"r0e* T" in(ure t)eir #r"#er "#er!ti"n/ 2un*(()"u+* .e In,+u*e* in t)e .i* #!,4! e t" ,"5er t)e ,"(t "2 re u+!r 0!inten!n,e inter5!+(.- "ut(i*e (#e,i!+i(t F"r t)e e=#e,te* +i2e "2 t)e e1ui#0ent% A (#e,i2i, E=!0#+e 3"u+* .e .!,4-u# #"3er (-(te0(%

END OF SECTION

2&2 BO9ES

2&2&1 # /1 ni8e0 !ne-$ie,e !r (e/0e0 $re++e0 +tee/ t6$e& B!?e+ *!r *i?ture +' // n!t -e /e++ t' n < in,'e+ +5u re n0 +' // -e e5ui$$e0 (it' *i?ture +tu0& B!?e+ +' // -e t/e +t 1-1A2 in,' 0ee$2 < in,' +5u re *!r 1 !r 2 g ng 0e1i,e+2 (it' $/ +ter ring+ n0 g ng -!? (it' g ng ,!1er& B!?e+ . !unte0 in (// !r ,ei/ing . !uB!?e

/! , ti!n+2 THB N-22 9HHB -22 !r RHB -2 in+u/ ti!n& >0 0egree+ C THHN . 6 -e u+e0 in 0r6 n0 0 . $ /! , ti!n+& Bire in+t //e0 in 'ig' te . $er ture re +2 in,/u0ing -r n, ' ,ir,uit+ in !r -!1e r! !* in+u/ ti!n !r in */u!re+,ent - // +t

2&5 CONCENIENCE OUTLETS

2&5&1 S' // -e FS$e,i*i, ti!nF gr 0e r te0 15 . $ere+ t 125 1!/t+2 0u$/e?2 ,! . $!+iti!n - +e (it' +/!t+ t! ,,! . .!0 te $ r //e/ $/ug , $+ (it' gr!un0ing $eg& C!nt ,t +' // gri$ -!t' +i0e+ !* $/ug $r!ng+& B 'ere !n/6 !ne :1; re,e$t ,/e i+ ,!nne,te0 t! 20 . $ere ,ir,uit2 20 . $ere re,e$t ,/e +' // -e u+e0& Out/et +' // -e UL /i+te0& Re,e$t ,/e+ t! -e Hu--e// !r e5u /&

2&5&1&1 15 A . $7 Hu--e// 5262 +erie+ He 16 Dut6 In0u+tri / #r 0e2 4200 +erie+ *!r H!+$it / #r 0e&

2&5&1&2 20 A . $7 Hu--e// 5=62 +erie+ He 16 Dut6 In0u+tri / #r 0e2 4=00 +erie+ *!r H!+$it / #r 0e&

2&5&1&= Ot'er 0e+ign ti!n+ +n!te0 -e/!(7

2&5&1&=&1 #r!un0 F u/t7	#FR
2&5&1&=&2 T . $er Re+i+t nt	TR
2&5&1&=&= Be t'er Re+i+t nt7	BR
2&5&1&=&< I+!/ te0 #r!un07	I#

2&5&1&< Le1it!n 5252 2 5=52 2 4200 2 n0 4=00 +erie+ , n -e ,!n+i0ere0 e5u /&

2&5&1&5 % ++ K Se6 . !ur 5252 2 5=52 2 4200 2 4=00 +erie+ , n -e ,!n+i0ere0 e5u /&

2&5&2 %r!1i0e 0e1i,e+ (it' . t,'ing $/ te+& I+!/ te0 gr!un0 :I#; re,e$t ,/e+ +' // -e !r nge (it' . t,'ing ,!/!r $/ te& H!+$it / gr 0e re,e$t ,/e+ +' // ' 1e 0i+tin,ti1e FgreenF 0!t& #FI re,e$t ,/e+ +' // ' 1e 1i+i-/e :/ig't; in0i, t!r& C!ntr!//e0 re,e$t ,/e+ +' // -e $er . nent/6 n0 1i+i-/6 . r)e0 (it' t'e uni1er+ / $!(er +6 . -!/ n0 t'e (!r0 MCONTROLLEDN&

2&5&5&1 In e/e1 t!r , !ntr!/ r!! . +&

2&5&5&2 In e/e1 t!r $it+A+' *t+&

2&5&5&= In - t'r!! . + !r re+tr!! . +&

2&6&2&= Cir,uit -re)er+ *r . e+ !* 1200A n0 'ig'er +' // -e +!/i0 +t te e/e,tr!ni,

2&11&2 L rger B!?e+ :<4 in, ' ? =0 in, ' !r / rger;7 %re, +t 'ig'-0en+it6 rein*!r,e0 ,!n,rete (it' en0 n0 +i0e)n!,)!ut+2 $u//ing-in ir!n+& Mini . u . < in, ' (// t'i,)ne++& C!!r0in te +i8e !*t'in (//)n!,)!ut+ (it' . nu* ,turer*!r ,!n0uit entr6& A,,e$t -/e . nu* ,turer+ +' // -e F!rni2 C'ri+t6 !r e5u /&

2&11&= S . //er B!?e+ :+ . //er t' n <4 in, ' ? =0 in, ';7 %re, +t 'ig'-0en+it6 rein*!r,e0 ,!n,rete (it' en0 n0 +i0e)n!,)!ut+2 n0 e?ten+i!n + re5uire0& Mini . u . 1&5

2&11&3&1 A// !* t'e e5ui$. ent gr!un0ing , !n0u,t!r+ in t'e $u//-!? +' // -e gr!un0 -!n0e0 t!get'er u+ing t'e / rge+t gr!un0ing , !n0u,t!r in t'e -!? !r gr!un0ing ter . in /&

2&11&3&2 #r!un0 -!n0 t'e . et / ,!1er t! t'e !t'er gr!un0 , !n0u,t!r+ u+ing t'e / rge+t gr!un0 , !n0u,t!r in t'e $u//-!?&

2&11&3&= Ot'er gr!un0ing . et'!0+ re //!(e0 ('ere +u-.itte0 n0 $$r!1e0&

2&12 BAC I BOARDS

2&12&1 B ,)-! r0+ +' // -e =A< in,' $/6(!!02 t6$e A-C gr 0e *ire tre te0 *!r interi!r u+e2 n0 t6$e E?teri!r #r 0e *!r !ut0!!r u+e& B ,)-! r0

2&16&1&1 Mini . u . +urge , urrent r ting7 160)A $er $ ' +e&

2&16&1&2 C/ . $ing $er*! r . n , e r ting $er UL1<<> =r0 e0iti ! n7

	M ! 0e 120A204C	<40A233C
L-N	<00C	400C
L-#	<00C	400C
N-#	<00C	400C

2&16&2 B ' ere in0i , te0 t $ ne/+ n0 ! t ' er t ' n . in +er1i , e /! , ti ! n+2 $r ! 1i0e intern //6 . ! unte0 S%D2 S5u re-D SurgeL ! gi , 2 E t ! n Cut/er-H . . er2 #&E& ! r e5u /& B ' ere intern / . ! unting i+ n ! t $r , ti , / $r ! 1i0e e?tern //6 . ! unte0 (it ' , /! +e ni$$/e , ! nne , ti ! n2 Le1it ! n 52000 Serie+ ! r e5u /&

2&16&2&1 Mini . u . +urge , urrent r ting7 100)A $er $ ' +e&

2&16&2&2 C/ . $ing $er*! r . n , e r ting $er UL 1<<> =r0 e0iti ! n7

	M ! 0e 120A204C	<40A233C
L-N	<00C	400C
L-#	<00C	400C
N-#	<00C	400C

2&16&= S%D 0e1i , e+ + ' // - e Li+te0 n0 C ! . $! nent Re , ! gni8e0 in , , ! r0 n , e (it ' 7

2&16&=&1 UL 1<<> T ' ir0 E0iti ! n&

2&16&=&2 UL 124=&

2&16&=&= NEMA LS-1 :1>>2; L ! (C ! /t ge Surge %r ! te , ti1e De1i , e+&

2&16&=&< ANSIAIEEE C62&<12 Re , ! . . en0e0 %r , ti , e *! r Surge C ! /t ge+ in L ! (- C ! /t ge AC %! (er Cir , uit+2 C teg ! r6-C&

2&16&=&5 ANSIAIEEE C62&<52 # ui0e ! n Surge Te+ting *! r E5ui$. ent C ! nne , te0 t ! L ! (-C ! /t ge AC %! (er Cir , uit+&

2&16&=&6 C ! . $/6 (it ' CEC Arti , /e 245&

2&13&5 N!n-.et //i,r ,e(6+6+te.++' //n!t-eu+e0 in A++e.-/6 re + n0 !t'er re + ('ere t'e +6+te. i+n!tr te0*!rt'e in+t // ti!n& A++e.-/6 re +in,/u0e -utn!t/i.ite0t!Gg6.n +iu.+2 .u/tiur!+er!!.+2 u0it!riu.+2 ,!n*eren,e r!!.+2 et,&

2&14 COCER %LATES

2&14&1 S(it,' n0 re,e$t ,/e ,!1er $/ te++' //-e+.!!t'n6/!n t6$e& C!1er $/ te+*!r !t'er 0e1i,e+A!ut/et+ +u,' +0 t 2 te/e$'!ne2 te/e1i+i!n2 et,&+' //-e n6/!n& C!1er $/ te ,!/!r+' //-e i1!r62 . t,'ing //+6+te.+&

2&14&2 F!r .u/ti-ur!+er!!.+2 g6.n +iu.+2)it,'en+2 /!,)er r!!.+2 t!i/etAre+tr!!.+2 n0 (//+ +u,' +CMU2 -ri,)2 ,!n,rete -/!,)2 n0 ,!n,rete (//+2 0e1i,e $/ te+ +' //-e+.!!t'+t in/e++ +tee/ (it'-e1e/e0 e0ge+&

2&14&= E ,'re,e$t ,/e+' //' 1e it+ ,ir,uit i0enti*i, ti!n!nt'e ,!1er $/ te :i&e&2 FLA112F;& U+e t6$e(ritten F,/e r t $eF& U+e -/ ,) /etter+Anu.-er+*!r /ig't

=&1&1&=&< C!n,e /e0 -!1e +u+$en0e0 ,ei/ing+ !r ,ei/ing+ 0ire,t/6
tt ,'e0 t! +tru,ture -!1e&

=&1&2 F/e?i-/e ,!n0uit7 S' // -e u+e0 t! $r!1i0e */e?i-/e ,!nne,ti!n+ !*+'!rt /engt' := *t !r /e++; t! e5ui$.ent +u-Ee,t t! 1i-r ti!n !r .!1e.ent n0 t! //.!t!r+& U$ t! 6 *t i+ //!(e0 ('ere 00iti!n /*/e?i-i/it6 i+ nee0e0& %r!1i0e +e$ r te -!n0ing ,!n0u,t!r in //*/e?i-/e ,!nne,ti!n+A,!n0uit& F/e?i-/e ,!n0uit +' // -e !ne ,!ntinu!u+ /engt' (it'!ut ,!u$/ing+&

=&1&2&1 Se,ure */e? ,!n0uit (it'in 12 in,'e+ !*e ,' -!?2 , -inet2 ,!n0uit -!062 !r !t'er ter .in ti!n2 n0 .?i.u.<&5 *t !n ,enter& Re*er t! t'e CEC *!r !t'er +e,ure /engt'+ ('ere */e?i-i/it6 i+ re5uire0 !r in !t'er +$e,i*i, in+t n,e+&

=&1&= Run ,!n0uit ,!n,e /e0 in re +' 1ing *ini+'e0 ,ei/ing+ n0 in (//+& Run // ,r!++ ,!n0uit+ n0 1erti, /ri+er+ !r 0r!$+ ,!n,e /e0 in (// n0A!r $ rtiti!n+& S'!u/0 it -e ne,e++ r6 t! n!t,' n6 *r .ing .e.-er+2 .)e +u,' n!t,'ing !n/6 t/!, ti!n+ n0 in .nner + $$r!1e0 -6 t'e Ar,'ite,t+& B'ere ,!n,e /ing ,!n0uit i+ n!t $!++i-/e !r $r ,ti, /2 ,!n0uit .6 -e run e?$!+e0 in re + !n/6 ('ere +! $er.itte0 -6 t'e Ar,'ite,t& In+t // e?$!+e0 ,!n0uit run ne t/62 $ r //e/ t! !r t rig't ng/e+ t! +tru,tur /.e.-er+& M int in .ini.u.!*6 in,'e+ ,/e r n,e *r!.+te .!r '!t (ter ie+&

=&1&< Su$$!rt ,!n0uit (it' +tr $+ n0 +e,ure t! (!!0 +tru,ture -6 .e n+ !*-!/t+ !r / g+,re(+2 t! ,!n,rete -6 .e n+ !* in+ert !r e?$ n+i!n -!/t+2 t! -ri,)(!r) -6 .e n+ !* e?$ n+i!n -!/t+2 n0 t! '!//!(.+!nr6 -6 .e n+ !* t!gg/e -!/t+& E?$ n0er+ n0 +'ie/0+ +' // -e +tee/ !r .//e -/e ir!n&

=&1&5 D! n!t in+t // in ,!n,rete +/ -+&

=&1&6 C!n0uit+ in+t //e0 in ,!nt ,t (it' gr!un0 +' // -e %CC-<0 ,!n0uit&

=&1&6&1 %r!1i0e .ini.u. 2 in,' !*+ n0 -e00ing t t'e -!tt!. !*t'e tren,' -e*!re / 6ing ,!n0uit+& M int in 2 in,' +e$ r ti!n

=&1&6&<&1 C!n0uit+ 1&5 in,' n0 / rger in+i0e *!un0 ti!n /ine +' // -e -e/!(+u-gr 0e&

=&1&6&<&2 C!n0uit+ 1&25 in,' n0 + . //er in+i0e *!un0 ti!n /ine +' // -e in+t //e0 !n t'e +u-gr 0e2 !n/6 !ne ,!n0uit 'ig'& C!n0uit+ +' // ,r!++ un0er +u-gr 0e& Se,ure ,!n0uit t! +u-gr 0e t! $re1ent F*/! tingF&

=&1&6&<&= B ,)*i// . teri / (it'in *!un0 ti!n /ine +' // -e + n0&

=&1&6&5 Uti/it6 C! . $ n6 :e/e,tri,2 te/e$'!ne2 , -/e TC2 et,&; ,!n0uit+ +' // -e in+t //e0 $er t'eir 0e$t' n0 - ,)*i// re5uire . ent+& Mini . u . 0e$t' +' // -e 2< in,'e+ -e/!(*ini+'e0 gr 0e& Mini . u . ,!n0uit +' // -e %CC-<0& B'ere t'e uti/it6 ,! . $ n6 //!(+ u+e !* F/e++erF gr 0e ,!n0uit2 i&e& DB1202 %CC-<0 +' // -e u+e0&

=&1&6&6C2 (

=&1&21 Fee0er ,!n0uit+ ,!nne,te0 t! $ ne/+A+ (it, '-! r0 +' // ' 1e gr!un0 /ug -u+'ing ,!nne,te0 t! e5ui$.ent gr!un0 -u++ (it' gr!un0 (ire + .e +i8e + / rge+t gr!un0 (ire in t'e $ ne/A+ (it, '-! r0&

=&1&22 C!n0uit+ $enetr ting t'r!ug' t'e r!!*+' // -e +e,ure0 (it'in 12 in,'e+ -e/!(r!!* n0 +u$$!rte0 (it'in 12 in,'e+ !* t'e $enetr ti!n !n t'e r!!*&

=&1&2= B 'ere ,!n0uit+ ,r!++ -ui/0ing e?$ n+i!nA+ei+.i, E!int+ $r!1i0e +'!rt /engt' !* */e?i-/e ,!n0uit :0! n!t e?,ee0 6 *t&; n0 *itting+ /i+te0 + gr!un0ing .e n+2 !r in/!, ti!n+ ('ere */e? ,!n0uit , nn!t -e u+e0 $r!1i0e UL /i+te0 e?$ n+i!nA+ei+.i, *itting+&

=&1&2< C!n0uit+ ,!n,e /e0 in n6 . +!nr6 +' // -e r!ute0 in ,!n0uit +/ee1e& Su,' +/ee1e+ +' // n!t -e $/ ,e0 ,/!+er t' n = 0i . eter+2 ,enter t! ,enter&

=&1&25 C!n0uit+ t! ir ,!n0iti!ning :AC; e5ui$.ent2 * n+2 !r !t'er r!!* .!unte0 e5ui$.ent +' // ri+e u$ *r!. t'e ,ei/ing -e/!(t'r!ug' t'e e5ui$.ent ,ur- !r
-5.15007(+)-0.957164(')0 !n0uit5(in0!)1(.it5(in(t'e-e5ui$.ent2 *12//!72(eT0 FG+8150 50070 t)5951505 (905.15)3 0($)00 5
TLRT*[(=)0.589586(&)-5.15007(1)017-5

t $e& T $e +' // -e e5u / t! S, !t, ' T==2 #ener / E/e, tri, N!& AB-12 !r
$$r!1e0 e5u /& Fee0er +$/i, ing i+ n!t $er . itte0&

=&3&1&1 In +$e, i / in+t n, e+ ('ere *ee0er +$/i, ing i+ //! (e0 -6 t'e Engineer2 it
+' // -e . 0e (it' 'ig' , ! . $re++i!n +/ee1e t6$e , !n

, n -e i0enti*ie0 -6 0i+tin,ti1e ('ite . r)ing : $$/ie0 ' /*-/ $$e0 (it' ('ite e/e,tri, / t $e; *!r t'e / +t 12 in,'e+ t e ,' en0&

=&>&11 B 'ere e5ui$. ent i+ 1000 C!/t+ !r -!1e2 *en,e gr!un0ing +' // -e $r!1i0e0 $er CEC&

=&>&11&1 %r!1i0e gr!un0 r!0 t e ,' ,!rner *en,e $!+t n0 t/ine $!+t+ t /e +t e1er6 <0 *t& #r!un0 r!0+ t! -e 5A4F ? 4 *t -urie0 -e/!(gr 0e&

=&>&11&2 A// gr!un0 ,!n0u,t!r+ t! -e . ini . u . N!& 2 - re ,!$$er& #r!un0 ,!n0u,t!r t! -e -urie0 =0 in,'e+ -e/!(gr 0e *!//!(ing !ut+i0e *en,e0 en,/!+ure& %r!1i0e gr!un0 ,!nne,ti!n+ -et(een gr!un0 r!0+2 t *en,e $!+t+2 t g te $!+t+2 t! e5ui$. ent2 et,& *!r ,! . $/ete /!!$e0 +6+te . &

=&>&11&= E ,' g te $!+t +' // -e gr!un0e0 n0 $r!1i0e */e?i-/e -r i0e0 ,!$$er +tr $ gr!un0 ,!nne,ti!n t! g te& C!rner g te $!+t +' // ' 1e gr!un0 r!0&

=&>&11&< #r!un0 e5ui$. ent r te0 1000C !r 'ig'er t! gr!un0 ,!n0u,t!r&

=&>&11&5 C!nne,ti!n+ t! -e e?!t'er . i, (e/0+ !r gr!un0 ,/ . $+ r te0 *!r +u,' u+e&

=&>&11&6 E ,' g te +' // -e -!n0e0 t! it+ g te$!+t -6 */e?i-/e -r i0e0 ,!$$er +tr $&

=&10 FIELD TESTS

=&10&1 #ener /7 %er*!r . *ie/0 te+t in t'e $re+en,e !* t'e O(ner+ Re$re+ent ti1e e?,e$t + !t'er(i+e +$e,i*ie0& %r!1i0e re5uire0 / -!r2 . teri /+2 e5ui$. ent n0 ,!nne,ti!n+ t! $er*!r . te+t+& D!,u . ent re+u/t+ n0 +u- . it t'e . t! t'e O(ner+ Re$re+ent ti1e& Re$ ir !r re$/ ,e // 0e*e,ti1e (!r)&

=&10&2 [illegible] Re+i+t n,e :IR; F* r* S+tFng $er r

H - . e ! t ' + e e

=&11 CIRCUIT BREA I ER COORDINATION

=&11&1 %r!1i0e $r!te,ti1e 0e1i,e :*u+e+ n0 -re)er+; ,!!r0in ti!n +tu06 !n t'e

=&12 #ROUND FAULT %ROTECTION AND TESTIN#

=&12&1 B 'ere in0i, te0 !n t 'e $/ n+2 $r!1i0e ,ir,uit -re)er (it' gr!un0 * u/t $r!te,ti!n& T 'e gr!un0 * u/t +6+te . +' // in,/u0e . e . !r6 ,ir,uit *!r $!+iti1e tri$$ing ,ti!n 0e+$ite inter . ittent r,ing gr!un0 * u/t+&

=&12&2 %r!1i0e n integr / . e n+ !* te+ting t 'e gr!un0 * u/t +6+te . t! . eet t 'e !n-+ite re5uire . ent+ !* CEC Arti,/e+ 2=0 n0 513&

=&12&= %r!1i0e , ,e$t n,e te+ting $er InterN ti!n / E/e,tri, / Te+ting A++!,i ti!n In,& :NETA; +$e,i*i, ti!n+ n0 +t n0 r0+& Su- . it te+t re+u/t+&

=&1= CLEANIN#

=&1=&1 Bru+' n0 ,/e n (!r) $ri!r t! ,!n,e /ing2 $ inting n0 , ,e$t n,e& %er*!r . e0 in +t ge+ i* 0ire,te0&

=&1=&2 C/e n n0 re$ ir +!i/e0 !r 0 . ge0 $ inte0 e?$!+e0 (!r) n0 . t,' 0E!ining (!r) -e*!re *in / , ,e$t n,e&

=&1=&= Re . !1e 0e-ri+ *r! . in+i0e n0 !ut+i0e !* . teri /2 e5ui$. ent n0 +tru,ture+&

=&1< BARRANTY

=&1<&1 A// . teri /+ n0 in+t // ti!n +' // -e $r!1i0e0 (it' !ne :1; 6e r (rr nt6 ('i,' +' // in,/u0e re$/ ,e . ent $ rt+2 / -!r2 rete+ting2 n0 tr 1e/ t! n0 *r! . t 'e E!-+ite& T 'e (rr nt6 $eri!0 +' // -egin *ter *in / , ,e$t n,e !* t 'e $r!Ee,t&

END OF SECTION

$ART 1 " GENERAL

1%1 RELATED DOCUMENTS&

1%1%1 Dr ' ing(n) gener * #r!+i(i!n(!, C!ntr -t. in-*u)ing Gener * n) Su##*e / ent r0 C!n)iti!n(n) Di+i(i!n-1 S#e-i,i- ti!n (e-ti!n(. ##*0 t! ' !r1 !, t2i((e-ti!n%

1%1%2 Di+i(i!n-13 !r 23. B (i- M teri *(n) Met2!)((e-ti!n(##*0 t! ' !r1 (#e-i,ie) in t2i((e-ti!n%

1%2 REFERENCE STANDARDS

1%2%1 ANSI4TIA-562%AAAC-B - Det i* S#e-i,i- ti!n ,!r 780-n / L (er-O#ti / i9e). 80-u / C!re Di / eter4128-u / C*))ing Di / eter C* ((1 Gr)e)-In)e: Mu*ti / !)e O#ti- * Fi;er(

1%2%2 ANSI4TIA-562%AAAD - Det i* S#e-i,i- ti!n ,!r 780-n / L (er- O#ti / i9e). 80-< / C!re Di / eter4128-< / C*))ing Di / eter C* ((* Gr)e)-In)e: Mu*ti / !)e O#ti- * Fi;er(Suit ;*e ,!r M nu, -turing OM5 C ;*e) O#ti- * Fi;er

1%2%= ANSI4TIA-562%CAAB - Det i* S#e-i,i- ti!n ,!r C* ((I> Di(#er(i!n-Un(2i,te) Sing*e-M!)e O#ti- * Fi;er(' it2 L! ' ? ter $e 1% Current E)iti!n

1%2%5 ANSI4TIA-837%0-D - Generi- C! / / uni- ti!n(C ;*ing ,!r Cu(t! / er $re / i(e(

1%2%8 ANS*4TIA-837%1-D - C! / / er-i * Bui*)ing C! / / un

1%= GO>ERNANCE

1%=%1 T2e E*e-tri- * C!)e re,erre) t! in t2e(e (#e-i,i- ti!n(i(t2e N ti!n * E*e-tri- * C!)e (-urrent*0)!#te) ;0 t2e St te !, C *i,!rni % A** ' !r1 'i** ;e #r!+i)e) in (tri-t -!/#*i n-e 'it2 t2e E*e-tri- * C!)e n) ** regu* ti!n(t2 t / 0 ##*0%

1%=%2 ?2ere (t n) r)(e:i(t.,!r # rti-u* r - teg!r0. #r!)u-t(u(e) !n t2i(#r!Be-t 'i** ;e *i(te) ;0 n OSHA ##r!+e) N ti!n **0 Re-!gni9e) Te(ting L ;!r t!r0 @NRTLA. n) ;e ##r!+e) !r *i(te),!r t2e inten)e) (er+i-e n) ##*i- ti!n%

1%=%= T2e(e (#e-i,i- ti!n( )! n!t un)ert 1e t! re#e t t2e reCuire / ent(!, -!)e(. regu* ti!n(!r NRTL *i(ting !r * ;e*ing in(tru-ti!n(% T2e S#e-i,i- ti!n(!r Dr 'ing(/ 0 reCuire ite / (!r ' !r1 ;e0!n) t2e reCuire / ent(!, ##*i- ;*e -!)e(!r regu* ti!n(% T2e (tri-ter. 2ig2er Cu *it0. gre ter Cu ntit0 !r 2ig2er -!(t 'i** ;e **!'e). n) --!/ / !) ti!n(/ u(t ;e ##r!+e) ;0 O'ner #ri!r t! #r!-ure / ent !r in(t ** ti!n% It i(in-u / ;ent !n t2e In(t **er. / teri * n) eCui# / ent (u##*ier(t! / eet t2e(e (#e-i,i- ti!n(. ##*i- ;*e -!)e(. regu* ti!n(. n) NRTL *i(ting gen-0 re(tri-ti!n(%

1%=%5 T2e '!r) DM nu, -turerD 'i** in-*u)e t2e M nu, -turer. t2e M nu, -turerE(Re#re(ent ti+e. t2e Di(tri;ut!r. t2e F ;ri- t!r. n) t2e Su##*ier !, t2e # rti-u* r -* ((i,i- ti!n !, eCui# / ent. (0(te / . #r!)u-t. n) / teri *%

1%=%8 A** '!r1. eCui# / ent. n) (0(te / ('i** ;e / nu, -ture). #r!+i)e). re# ire). in(t **e). n) te(te) in --!r) n-e 'it2 t2e * te(t e)iti!n n) ** -urrent / en) / ent(!, t2e ##*i- ;*e #u;*i- ti!n(n) (t n) r)(!, t2e !rg ni9 ti!n(*i(te) ;e*!' (!, t2e) te !, t2e C!ntr -t D!-u / ent(% ?2en t2e S#e-i,i- ti!n reCuire / ent(e:-ee) t2e reCuire / ent(!, t2e(e #u;*i- ti!n(n) (t n) r)(t2e S#e-i,i- ti!n('i** g!+ern&

1%=%8%1 St te Bui*)ing C!)e @SBCA

1%=%8%2 Bui*)ing De# rt / ent *n(#e-ti!n * Ser+i-e(

1%=%8%= A / eri- n S!-iet0,!r Te(ting n) M teri *(@ASTMA

1%=%8%5 Un)er 'riterE(L ;!r t!rie(. In-% @ULA

1%=%8%8 In(u* te) C ;*e Engineer(A((!-i ti!n @ICEAA

1%=%8%3 N ti!n * E*e-tri- * M nu, -turer(A((!-i ti!n @NEMAA

1%=%8%7 In(titute !, E*e-tri- * n) E*e-tr!ni-(Engineer(. In-% @IEEEA

1%=%8%7 A / eri- n N ti!n * St n) r)(In(titute. In-% @ANSIA

1%=%8%6 N ti!n * Fire $r!te-ti!n A((!-i ti!n @NF$AA

1%=%8%10 L!- * E*e-tri- C!)e

1%=%8%11 De# rt / ent !, $u;*i- S ,et0 @D$SA

1%=%8%12 Bui*)ing O,,i-i *(n) C!)e A) / ini(tr t!r(Intern ti!n *. In-% @BOCAA

1%=%8%1= De# rt / ent !, L ;!r USA% S ,et0 n) He *t2 Regu* ti!n(,!r C!n(tru-ti!n @OSHAA

1%=%8%15 Energ0 C!)e(

1%=%8%18 N ti!n * E*e-tri- * C!ntr -t!r(A((!-i ti!n @NECAA

1%=%8%13 N ti!n * Bure u !, St n) r)(@NBSA

1%=%8%17 Fe)er * C! / / uni- ti!n(C! / / i((i!n @FCCA

1%=%8%17 Uti*itie(Ser+ing $r!Be-t%

1%=%8%16 Fire De# rt / ent%

1%=%8%20 A / eri- n(' it2 Di(;i*itie(A-t A##*i- ti!n(Gui)e*ine(@ADAAGA%

1%=%8%21 A--e((i;i*it0 Gui)e*ine(,!r Bui*)ing(n) F -i*itie(%

1%=%8%22 An0 n) ** Fe)er *. St te n) L!- * St n) r)(. C!)e(n) Aut2!ritie(2 +ing Furi()i-ti!n%

1%=%3 In))iti!n. ** #2 (e(!, t2e Stru-ture) C ;*ing S0(te / in(t ** ti!n ' i**)2ere t! ##*i- ;*e L!- * Are Net ' !r1 @LANA S#e-i,i- ti!n(!, t2e IEEE. E*e-tr!ni-(In)u(tr0 A((!-i ti!n4Te*e-! / / uni- ti!n(In)u(tr0 A((!-i ti!n @TIA4EIAA. n) Bui*)ing In)u(tr0 C!n(u*ting Ser+i-e Intern ti!n * @BICSIA% T2e entire (0(te / n) ** -! / #!nent(' i** ;e NRTL -erti,ie) t! ##r!#ri te TIA4EIA #er,!r / n-e r ting C teg!r0. L te(t ANS*4TIA4EIA St n) r)(588-A. 562. 837. 836-A. 870. 303. 307 n) 787 @* te(t re+i(i!n(A. n) ANSI4TIA TSB 37. TSB 72. TSB 78. TSB 68 #*u(!t2er (t n) r)((##*i- ;*e%

1%=%7 T2e In(t **er ' i** 2 +e + i* ;*e t t2eB!; (ite t ** ti / e(!ne -!#0 !, t2e * te(t e)iti!n !, t2e E*e-tri- * C!)e. TIA n) BICSI St n) r)(##*i- ;*e t! t2e ' !r1 ((#e-i,ie) ' it2in t2i( )!-u / ent%

1%7%1%1 $!((e((t2!(e *i-en(e(4#er / it(reCuire) t! #er,!r / te*e-! / / uni- ti!n(in(t ** ti!n(in t2e (#e-i,ie) 8uri()i-ti!n%

1%7%1%2 $r!+i)e re,eren-e(!, t2e t0#e !, in(t ** ti!n #r!+i)e in t2i((#e-i,i- ti!n%

1%7%1%= $er(!nne* tr ine) n) -erti,ie) in ,i;er !#ti- - ;*ing. (#*i-ing. ter / in ti!n n) te(ting te-2niCue(% $er(!nne* / u(t 2 +e e:#erien-e u(ing *ig2t / eter n) OTDR%

1%7%1%5 $er(!nne* tr ine) in t2e in(t ** ti!n !, # t2 ' 0(n) (u##!rt ,!r 2!u(ing 2!ri9!nt * n) ; -1;!ne - ;*ing%

1%7%1%8 $er(!nne* 1n! '*e)ge ;*e in*!- *. (t te. #r!+in-e n) n ti!n *-!)e(. n) regu* ti!n(% A** '!r1 (2 ** -! / #*0 ' it2 t2e * te(t re+i(i!n !, t2e -!)e(!r regu* ti!n(% ?2en -!n,*i-t e:i(t(;et 'een *!- * !r n ti!n * -!)e(!r regu* ti!n(. t2e / !(t (tringent -!)e(!r regu* ti!n((2 ** ;e ,!**! 'e)%

1%6%2 A** -!re 2!*e(t2r!ug2 -!n-rete. / et *. ,ini(2e) 2 r) ' ! !) !r / (!nr0J in-,*! !r tr!ug2(@D ? *1er Du-tDA. n) #!1e t2r!ug2)e+i-e(in t2e ,*! !r ,!r t2e in(t ** ti!n !, C! / / uni- ti!n(- ;*ing% De+i-e #* te(,!r * n)ing -! / / uni- ti!n - ;*e((2!u*) ;e in-*u)e) in t2e C! / / uni- ti!n((-!#e%

1%6%= A** -!re 2!*e(n) EMT (*ee+e(;et ' een ,*! !r(,!r t2e r!uting !, C! / / uni- ti!n(- ;*ing%

1%6%5 B -1 ;!:e(,!r t2e / !unting !, NEMA r te) , -e#* te(%

1%6%8 Dr g *ine !r #u** (tring t t2e ; -1 ;!:e(,i(2e) t2r!ug2 e:i(ting EMT. -!n)uit. !r ' ** - +itie(@DRing n) StringDA t! t2e --e((i;*e -ei*ing !r !t2er en) !, -!n)uit. ,!r in(t **ing 5 # ir. / u*ti-# ir !r ,i;er !#ti- @2!ri9!nt * n) ; -1;!neA - ;*e(%

1%6%3 Mini / u / !, t ' ! @2A ' **(-!+ere) in K in-2 AC gr)e #*0 ' ! !) # inte) ' 2ite ' it2 ,ire ret r) nt # int in e -2 -r!((-!nne-t -*!(et !r -!nne-ti!n #!int ,!r) t . +!i-e. +i)e!. (e-urit0 n) ;ui*)ing ut! / ti!n (0(te / (% $*0 ' ! !) ' **((2 ** ;e -!+ere) 5 ,t ? : 7 ,t H ' 2ene+er #!((i;*e%

1%6%7 B (1et tr 0 !r*))er r -1ing t! (u##!rt / in # t2 ' 0 - ;*e ;un)*e(t2r!ug2 2 **' 0(. !#en re (!r e:iting te*e-! / r! ! / (un*e((!t2er ' i(e reCue(te) t ti / e !, ;i)%

1%6%7 L240 gr!un) ' ire !r !t2er (i9e (##r!#ri te. ,r! / Te*e-! / / uni- ti!n(Gr!un)ing Bu(B r@(A t! Bui*)ing Gr!un)% U(e !, N!% 3 gr!un) ' ire. !r (/ **er (**! ' e). ,!r gr!un)ing !, te*e-! / / uni- ti!n(eCui# / ent in(t **e) un)er t2i(S-!#e i(in-*u)e) ' it2in t2e Te*e-! / / uni- ti!n((-!#e !, ' !r1%

1%6%6 E*e-tri- * (u;-!ntr -t!r(/ 0 ;e reCuire) t! #r!+i)e))iti!n **ig2ting. #! ' er !r gr!un)ing -!nne-ti!n(t! t2e e*e-tri- *# ne*. n) t! #r!+i)e n) in(t ** e*e-tri- *)e+i-e((nee)e)% It ' i** ;e t2e re(#!n(i;i*it0 !, t2e C!ntr -t!r t! (e-ure ** reCuire) (#e-i *i(t(n) (u;-!ntr -t!r(in !r)er t! ,u**0 #er,!r / un)er t2e reCuire / ent(,!r t2e(e #r!Be-t(%

$ART 2 - $RODUCTS

2%1 GENERAL

2%1%1 $r!+i)e -! / #*ete r -e ' 0. !ut*et ;!:e(n) / i(-e** ne!u(ite / ((reCuire)%

2%1%2 Uti*i9e 5-11413 in-2 (Cu re !ut*et ;!: @ / inA t e -2 !ut*et *!- ti!n ' it2 (ing*e g ng #* (ter !r ti*e ring n) 1 in-2 -!n)uit t! - ;*e tr 0. ; -1;! r). !r --e((i;*e -ei*ing !r ,*! !r (# -e%

2%1%= $r!+i)e -! / #*ete) t - ;*ing n))e+i-e (0(te / ( )e(-ri;e) 2erein%

2%1%5 ? !r1 re -!nne-t!r((2 ** ;e !, n!n-#r!#riet r0 DGe0(t!neD-(t0*e #!rt -!n,igur ti!n. (u-2 t2 t t2e0 ,it int! ** ,urniture. # ne*(. ' **#* te(. r -e ' 0(. ,*! !r / !nu / ent(. #!1e-t2r!ug2(n) A> ;!:e(' it2!ut) #ter(% M :i / u /

)en(it0 !, 3 CAT3A !ut*et((2 ** ;e + i* ;*e in De-!r ,!!t#rint '2ere reCuire).
n) 57 #!rt(in 1RU # ne* / 0 ;e reCuire) in (e*e-t 2ig2)en(it0 *!- t09(2)0.5900cmA / R7 g

2%8%1%1%1 Be 7-#!(iti!n4 7 -!n)u-t!r @7$7C. RF58-(t0*eA /!)u* r B -1(%

2%8%1%1%2 Uti*i9e uni+er(* Ge0(t!ne-(t0*e in(erti!n ,!!t#rint (t2e
/ nu, -turerP(/ in D,* g(2i#D *ine !, #r!)u-t(%

2%8%1%1%= C!/#*0 'it2 FCC $ rt 37J UL *i(te) n) CSA Certi,ie)% >eri,ie)
t!e:-ee) ** -2 nne* #er,!r/ n-e reCuire / ent(in TIA-837-
B%2-10 ,r!/ 1 MH9 t! 800MH9 t! (u##!rt t2e IEEE 702% n
(t n) r) ,!r 10 Gig ;it Et2ernet !+er UT$ C ;*e%

2%8%1%1%5 E -2 10G -!nne-t!r i(t! ,e ture n in8e-ti!n /!*)e) C!ne !,
Si*en-eQ te-2n!*!g0 t! e*i / in te *ien -r!((t *1 @AMTA%

2%8%1%1%8 E+er0 10G -!nne-t!r t! in-*u)e #!*0 / er (#ring(;!+e t2e tine(

2%8%1%2%8 IDC #! (t((2 ** e / #*! 0 / e-2 ni(/ t! **! ' ,! r ter / in ti! n(

2%8%1%=%3 S2 ** ;e te(te) ;0 n In)e#en)ent te(ting ;!)0 (u-2 (*nterte1 @ETLA
,!r -! / #!nent -! / #*i n-e @i%e% DC! / #!nent r te)DA t! ANS*4TIA-837
n) ,!r $OER ##*i- ti!n(% Te(t re(u*t((2 ** ;e #u;*i(2e) n) #u;*i-*0
+ i* ;*e ' it2!ut (#e-i * reCue(t%

2%8%1%=%7 S2 ** ;e in -! / #*i n-e ' i** ** N ti!n * E*e-tri- * C!)e(J -! / #*i nt ' it2
ANS*4TIA- 1063-A @,!r / er*0 FCC $ rt 37AJ -ULu(Li(te)%

** CAT3 n) CAT3A ter / in ti!n(t IDF n) MDF *!- ti!n(% $ ne*((2 ** ;e&

2%8%2%1%1 Un(2ie*)e) ,!r UT$. n) S2ie*)e) ,!r FT$!r FT$4UT$ -! / ;ine) ##*i- ti!n(%

2%8%2%1%2 S2ie*)e) # ne*((2 ** --e#t ;!t2 (t0*e(@UT$4FT$A !, B -1(in t2e (/ e # ne*. n) (2 ** in-*u)e (t r ' (2er(n) gr!un)ing *ug ,!r ,*e:i;i*it0 in # ne* gr!un)ing. n)4!r 2 r) ' re t! --e#t (t n) r)(--! / #*i nt gr!un)ing -!nne-t!r(%

2%8%2%1%= A+ i* ;*e in eit2er 25- !r 57-#!rt(1RU. !r 57-#!rt 2RU +er(i!n(%

2%8%2%1%5 In)e#en)ent*0 te(te) n) +eri,ie) ;0 *nterte1 @ETLA t! / eet !r e:-ee) ** TIA -! / #!nent. #er / nent *in1. n) -2 nne* reCuire / ent(!, TIA-837 ,!r CAT 8e. CAT 3. n) CAT 3A. FCC # rt 37. n) IEC 3030=-7% An ##r!#ri te - ;*e / n ge / ent ; r (2 ** ;e in-*u)e) ' it2 (t n) r))en(it0 ,* t # ne*(%

2%8%2%1%8 I ui-1$!rt Hig2-Den(it0 / !)u* r # ne*((2 ** ;e + i* ;*e in 57-#!rt(41 RU ,!r / , -t!r(,!r ut2!ri9e) (itu ti!n(%

2%8%2%1%3 S2 ** ;e (i9e) t! ,it n EIA (t n) r). 16 in-2 re* 0 r -1 n) 2!*e # ttern%

2%8%2%1%7 S2 ** uti*i9e uni+er(* Ge0(t!ne-(t0*e in(erti!n ,!!t#rint (t2e / nu, -turerE(/ in D,* g(2i#D *ine !, #r!)u-t(n) re-ei+e t2e (/ e B -1((re u(e) in t2e ' !r1(t ti!n !ut*et(% N! (#e-i * D$ ne* B -1D (2 ** ;e reCuire)%

2%8%2%1%7 >eri,0 ng*e) !r ,* t # ne* u(e #er)e(ign)!-u / ent ti!n !r +eri,i- ti!n ' it2 O 'nerE(Re#re(ent ti+e%

2%8%= FACE$LATES

2%8%=%1 F -e#* te(@' **#* te(A (e-ure in,!r / ti!n !ut*et(t! t2e ' !r1 re % C!ntr -t!r (2 **#r!+i)e n) in(t ** (ing*e g ng , -e#* te 1it(t! 2!u(e ** B -1((reCuire) ,!r ** ' !r1 re !ut*et(. ' !r1(tr!t

2%8%8%=%= C ;*e (2 ** ;e $*enu / -r te) @CM$A ,!r n0*!- ti!n '2ere #*enu / - ;*e i(reCuire)%

2%8%8%=%5 C!*!r& B*ue. !r ( )ire-te)%

2%8%8%=%8 Outer Di / eter& 0%2=0 in-2 / :%

2%8%8%=%3 C ;*e (2 ** ;e gu r ntee) t! e:-ee) ** TIA-837 *in1 n) -2 nne* #er,!r / n-e reCuire / ent(n) ;e - # ;*e !, (u##!rting 1000B (e-T @702%= ;A n) ISO4IEC 11701 C* ((E ##*i- ti!n(,!r t!t *)i(t n-e !, 100 / eter('it2 eCui# / ent -!r)(%

2%8%8%5 C teg!r0 3 @CAT3A S2ie*)e) T 'i(te)-$ ir @FT$A - ;*e

2%8%8%5%1 100-O2 / . 2= A?G. C teg!r0 3 5-# ir ; * n-e) un(2ie*)e) t 'i(te) # ir (!*i) nne *e) -!##er -!n)u-t!r(%

2%8%8%5%2 C ;*e (2 ** ;e gu r ntee) t! 800 MH9 n) UL4ETL Li(te) ;0 t2e M nu, -turer #rinte) !n t2e - ;*e B -1et n) # -1 ge. ('e** (ETL >eri,ie) t! TIA-837 C teg!r0 3 n) ISO4IEC 11701

2%8%3%1%1 $ t-2 -!r) #*ug (2 ** ;e S*i / *ine. integr te) (n g-*e((#*ug)e(ign /)e !, in)u(tr0 (t n) r). FCC -! / #*i nt 65>-0 -*e r / teri * ' it2!ut in-!r#!r ting t2e u(e !, ru; ;er / !*)e) !+er; ! !t%

2%8%3%1%2 A n rr! ' #r!,i*e ,!r *e((-!nge(ti!n in 2ig2er)en(it0 ##*i- ti!n(n) -*e r #* (ti- (tr in re*ie, ; ! !t en(ure(*!ng-ter / net ' !r1 #er,!r / n-e

2%8%3%1%= In)e#en)ent*0 te(te) n) +eri,ie) ;0 *nterte1 @ETLA ,!r CAT 3A -! / #!nent #er,!r / n-e%

2%8%3%1%5 C ;*e -!n(tru-ti!n #r!+i)e(e:-e**ent *ien -r!((t *1 (u##re((i!n n) EM*4RFI #r!te-ti!n%

2%8%3%1%8 C!n(tru-te) !, (2ie*)e) 23 A?G (tr n)e) -!n)u-t!r - ;*e ,!r / :i / u / ,*e:i;i*it0 n) !ut(i)e)i / eter !, 0%250 in-2. ,!r u(e in (2ie*)e) n) un(2ie*)e) (0(te / (%

2%8%3%1%3 $ t-2 -!r)(in $*enu / re ((2 ** ;e $*enu / -r te). n) uti*i9e (!*i) -!n)u-t!r - ;*e ' it2 S*i / *ine (n g*e((; ! !t%

2%8%3%1%7 C! / #*ie(' it2 TIA 837-C%2-10 -! / #!nent reCuire / ent(,!r -!nne-ting 2 r) ' re ,r! / 1 MH9 t! 800 MH9. ISO 11701 C* ((EA

2%8%3%2%5 M :i / u / Outer Di / eter !, 0%25 in-2

2%8%3%2%8 $! ' er !+er Et2ernet @$!E n) $!ERA -! / # ti;*e

2%8%3%2%3 Su##!rt 1 Gig ;it ##*i- ti!n(!+er 60- / eter #er / nent *in1(' it2 u# t! 10 / eter(!, -!r) ge

2%8%3%2%7 Meet(** ##*i- ;*e (t n) r)(n) *i(ting(& ANS*4TIA-1063-A @,!r / er*0 FCC $ rt 37A. R!HS -! / #*i nt. IEEE 702%=. $!E& IEEE 702%= t " 2012

2%8%3%2%7 T2e # t-2 -!r) (2 ** ;e + i* ;*e in 7 (t n) r) -!*!r(% T0#i- * CAT3 UT$ -!*!r& B*ue

2%8%3%= St n) r)-)i / eter -!##er # t-2 -!r)(,!r CAT3 FT$ u(er*!- ti!n((2 ** e:2i;it t2e ,!*! ' ing -2 r -teri(ti-(&

2%8%3%=%1 23-g uge. un(2ie*)e). t ' i(te) # ir. (tr n)e) -!n)u-t!r -!n(tru-ti!n ' it2 (t n) r) 7-#!(iti!n / !)u* r #*ug !n ;!t2 en)(%

2%8%3%=%2 $*ug -!nt -t((2 ** ;e #* te) ' it2 / ini / u / !, 80 / i-r!-in-2e(@< / A !, g!*)

2%8%3%=%= S*i / *ine. integr te) (n g-*e((/ !*)e) #*ug)e(ign ' it2 integr te) (tr in re*ie,. ' it2!ut in-!r#!r ting t2e u(e !, n0 (e-!n) r0 !r 2-#ie-e ru;;er !+er-;!!t%

2%8%3%=%5 M :i / u / Outer Di / eter !, 0%25 in-2

2%8%3%=%8 $! ' er !+er Et2ernet @$!E n) $!ERA -! / # ti;*e

2%8%3%=%3 Su##!rt 1 Gig ;it ##*i- ti!n(!+er 60- / eter #er / nent *in1(' it2 u# t! 10 / eter(!, -!r) ge

2%8%3%=%7 Meet(** ##*i- ;*e (t n) r)(n) *i(ting(& ANS*4TIA-1063-A @,!r / er*0 FCC $ rt 37A. R!HS -! / #*i nt. IEEE 702%=. $!E& IEEE 702%= t " 2012

2%8%3%=%7 CAT3 FT$ -!*!r& Gr 0

2%8%3%5 Hig2-,*e: -!##er # t-2 -!r)(,!r CAT3 UT$ - ;*e (0(te / (u(e) in(i)e Te*e-! / En-*!(ure(. R!! / (n) r -1((2 ** e:2i;it t2e ,!*! ' ing -2 r -teri(ti-(&

2%8%3%5%1 27-g uge. un(2ie*)e). t ' i(te) # ir. (tr n)e) -!n)u-t!r -!n(tru-ti!n ' it2 (t n) r) 7-#!(iti!n / !)u* r #*ug !n ;!t2 en)(%

2%8%3%5%2 $*ug -!nt -t((2 ** ;e #* te) ' it2 / ini / u / !, 80 / i-r!-in-2e(@< / A !, g!*)

en+ir!n / ent in ' 2i-2 it i(in(t **e) @In) ! !r. In) ! !r4Out) ! !r. Out(i)e $* nt. OFN$!r OFNRA%

2%3%=%2%2 Fi;er !#ti- - ;*e(' i** uti*i9e n inter*!-1ing r / !r !uter -!+er r!un) n integr te) Tig2t-Bu,,ere) @in) ! !r !n*0A - ;*e -!n(tru-ti!n n) ,i;er (tr n)(' it2 600 / i-r!n #r!te-ti+e (2e t2%

2%3%=%2%= See #* n(n) (-!#e !, ' !r1 ,!r t!t * (tr n) -!unt ;et ' een *!- ti!n(%

2%3%=%= MULTIMODE FIBER O$TIC CABLES - FACTORY $RETERMINATED

2%3%=%=%1 O#ti- * ,i;er - ;*e((2 ** / eet ** !, t2e reCuire / ent( )e*ine te) ' it2in t2e (#e-i,i- ti!n(!, ANSI4TIA-837% C ;*e(/ u(t ;e / ini / u / !, 25 (tr n)(!, 804128< / @ / i-r!nA OM5 L (er-O#ti / i9e) Mu*ti-M!)e Fi;er @LOMMFA ,!r ; -1;!ne - ;*ing% C ;*e(/ u(t ;e ##r!#ri te ,!r t2e en+ir!n / ent in ' 2i-2 it i(in(t **e) @In) ! !r. In) ! !r4Out) ! !r. OFN$!r OFNRA ;ut re n!t (uit ;*e ,!r Out(i)e $* nt @ eri * !r un)ergr!un)A% B -1;!ne - ;*e(/ 0 ;e u(e) r -1-t!-r -1. MDF-t!-IDF. !r (i / i* r intr ;ui*)ing ##*i- ti!n(%

2%3%=%=%2 $re-ter / in te) ; -1;!ne - ;*e(' i** uti*i9e t2e MT$T -!nne-t!r. e / #*!0ing / u*ti (tr n) ,erru*e - # ;*e !, (u##!rting 1G. 10G. 50G !r 100G Et2ernet n) ;e0!n)% T2e MT$T -!nne-t!r i(n!t ,ie*)-in(t ** ;*e -!nne-t!r. n) / u(t ;e , -t!r0 #!*i(2e) n) te(te) t! en(ure #re-i(e ,i;er *ign / ent n) ,ini(2%

2%3%=%=%= A** !#ti- * ,i;er ; -1;!ne - ;*e(@trun1(

2%3%=%=%=%= O#ti- * ,i;er - ;*e trun1((2 ** 2 +e / ini / u /
;re 1!ut !, = ,eet% A** ,i;er trun1((2 ** uti*i9e 2e t
(2rin1 t t2e en) (!, ** ;re 1!ut(t! -re te (/ !!t2
;re 1!ut !, t2e ,i;er (u;unit *eg(%

2%3%=%=%=%5 O#ti- * ,i;er (u;unit((2 ** uti*i9e r!un)
-!n(tru-ti!n% Ri; ; !n -!n(tru-ti!n i(n!t --e#t ;*e%

2%3%=%=%=%8 A** ,i;er -!nne-t!r(/ u(t / eet TIA 305%M ,!r
-! / # ti;i*it0%

2%3%=%=%=%3 A** Mu*ti / !)e !#ti- * ,i;er (u;unit(!, 25 (tr n)(
(2 ** uti*i9e t2e 25-(tr n) MT$ -!nne-t!r% O#ti- *
Fi;er (u;unit(!, 12 (tr n)((2 ** uti*i9e 12-(tr n)
MT$ -!nne-t!r% N! !#ti- * ,i;er (u;unit((2 ** ;e
(/ **er t2 n 12 (tr n)(e:-e#t ,!r ,i;er !#ti-
3u / #er(u(e) ' it2in t2e (/ e r -1(%

2%3%=%=%=%7 Mu*ti / !)e ,i;er !#ti- trun1((2 ** uti*i9e ,e / *e MT$
-!nne-t!r(% 25-(tr n) MT$ -!nne-t!r((2 ** 2 +e
Re) ;!!t. n) 12-(tr n) MT$ (2 ** u(e B* -1 !r
ACu ;!!t%

2%3%=%=%=%7 Sing*e / !)e MT$ -!nne-t!r((2 ** ;e 12-(tr n).
Ang*e-$!*i(2. n) (2 ** 2 +e Green ;!!t%

2%3%=%=%=%6 M nu, -turer (2 ** #r!+i)e MT$T ;r n) -!nne-t!r(
,!r (#e-i,i- (u#eri!r #er,!r / n-e -2 r -teri(ti-(%
Generi- M$O-(t0*e -!nne-t!r(re n!t --e#t ;*e
Cu *it0% U(e !, !n*0 ,erru*e(!r !t2er e((enti *
-! / #!nent(' i** n!t ;e --e#t ;*e. ;ut !n*0 t2e
-! / #*ete MT$ (0(te / !, -! / #!nent(u(e) t e -2
-!nne-t!r ((e / ;*0%

n 2%3%=%=%=%10 A** MT$ -!nne-t!r((2 ** ;e * (er -*e +e) t( )0.590251(547A /)-5

2%3%=%=%=%1= A #u**ing e0e (2 ** ;e in(t **e) !n !ne en) !, ** trun1(t! 2e*# , -i*it te in(t ** ti!n%

2%3%=%=%=%15 A** !#ti- * ,i;er trun1((2 ** ;e (2i##e) t! #r!ße-t (ite 'it2 nu / ;er !n t2e ;!: t2 t 'i** -!rre(#!n) t! t2e * 0!ut !, t2e , -i*it0 ,!r e (0 i)enti,i- ti!n ;0 t2e >en) !r% A** ,i;er trun1((2 ** in-*u)e #rinte) (u / / r0 te(t ,i*e !, ** ,i;er (tr n)(in(i)e t2e ;!: ,!r t2e >en) !r% A))iti!n **0. t2e M nu, -turer (2 ** 2!*) ** ,u** te(t) t unti* t2e #r!ße-t i(-! / #*ete n) #r!+i)e t2e / t! O 'ner *!ng 'it2 t2e ##*i- ti!n(((ur n-e ' rr nt0 ,ter t2e #r!ße-t i(-! / #*ete)

2%3%=%=%=%18 In(t ** ti!n -!ntr -t!r 'i** re-te(t ** ,i;er trun1(u#!n -! / #*ete) in(t ** ti!n n) #r!+i)e te(t re(u*t(t! M nu, -turer ,!r -! / #*eti!n !, ,u** #r!)u-t ' rr nt0 reCuire / ent(%

2%3%=%=%=%13 T2e C!ntr -t!r (2 ** ;e re(#!n(i;*e ,!r t2e -!rre-t ,i;er trun1 *engt2(. -!n,igur ti!n. n) !r)ering% Fi;er Trun1 # rt nu / ;er((2 ** ;e gener te) ,r! / Le+it!n%-! / On*ine C!n,igur t!r n) / u(t ;e +eri,ie) 'it2 t2e M nu, -turer #ri!r t! !r)ering%

2%3%5 RACG-MOUNT FIBER O$TIC ENCLOSURES. $ANELS AND TRAYS

2%3%5%1 A** Fi;er en-*!(ure((2 ** #r!+i)e -r!((-!nne-t. inter -!nne-t. n) (#*i-ing - # ;i*itie(n) -!nt in - ;*e / n ge / ent ,!r (u##!rting n) r!uting t2e ,i;er - ;*e(4ßu / #er(%

2%3%5%2 Fi;er A) #ter # ne* !#ening((2 ** --e#t Fi;er A) #ter $* te(@;u*12e)(A. S#*i-e M!)u*e(. n) #*ug-n-#* 0 MT$ / !)u*e(4- ((ette(!r n0 -! / ;in ti!n t2ere!,%

2%3%5%= 1RU. 2RU n) 5RU en-*!(ure((2 ** 2!*) u# t! =. 3 !r 12) #ter #* te(!r - ((ette(. re(#e-ti+e*0%

2%3%5%5 A** Fi;er en-*!(ure(. # ne*(n) tr 0(@unit(A (2 ** #r!+i)e -r!((- -!nne-t. inter--!nne-t. n) (#*i-ing - # ;i*itie(n) -!nt in - ;*e / n ge / ent ,!r (u##!rting n) r!uting t2e ,i;er - ;*e(4ßu / #er(%

2%3%5%8 Fi;er en-*!(ure((2 ** e:2i;it t2e ,!*! 'ing -2 r -teri(ti-(&

2%3%5%8%1 Fi;er en-*!(ure (2 ** ;e + i* ;*e in 1RU. 2RU !r 5RU +er(i!n(t! --! / / !) te ,i;er) #ter #* te(. MT$ M!)u*e(. n)4!r ter / in ti!n n) (#*i-ing !, ,i;er (nee)e)

2%3%5%8%2 En-*!(ure (2 ** in2erent*0 --e#t 1-# ne* integr te) (#*i-e - ((ette%

2%3%8%5 A** Fi;er en-*!(ure(. # ne*(n) tr 0(@unit(A (2 ** #r!+i)e -r!((-
-!nne-t. inter--!nne-t. n) (#*i-ing - # ;i*itie(n) -!nt in - ;*e

2%3%8%8%7%8 A--e((!r0 1it -!n(i(ting !, >ELCRO ;r n) - ;*e
tie(. / !unting (-re ' (. - ;*e / n ger(. #!rt ID
* ;e*(. ;* n1 #* te(n) CAM *!-1 @,!r (#*i-e-!n*0
en-*!(ureA

2%3%8%3 Mini ? **- / !unte) Fi;er En-*!(ure (2 ** e:2i;it t2e ,!**! ' ing
-2 r -teri(ti-(&

2%3%8%3%1 Fi;er en-*!(ure (2 ** ;e + i* ;*e in 3%0 in-2 : 3%8= in-2 : 1%78
in-2 (i9e t! --! / / !) te ,i;er) #ter #* te(. MT$ M!)u*e(.
n)4!r ter / in ti!n n) (#*i-ing !, ,i;er (nee)e)%

2%3%8%3%2 En-*!(ure - n ;e !riente) ,!r *e,t- !r ri

2%3%3 FIBER TERMINATION $RODUCTS

2%3%3%1 FIBER O$TIC S$LICE CASSETTES AND MODULES

2%3%3%1%1 U(e !, ,u(i!n (#*i-e - ((ette ((e / ;*ie((2 ** ;e t2e (t n) r) / e n(!, (#*i-ing ,i;er !#ti- - ;*e(t t2e en-*!(ure%

2%3%3%1%2 Fi;er O#ti- S#*i-e((2 ** ;e)!ne u(ing ,u(i!n (#*i-e eCui# / ent% Me-2 ni- * (#*i-e(re n!t #er / itte)%

2%3%3%1%= S#*i-e - ((ette((2 ** ;e !,,ere) in 12- !r 25-,i;er LC -!n,igur ti!n(in OS2 ,i;er t0#e% C!n(tru-ti!n !, / !)u*e (2 ** ;e !, 15-g uge *u / inu / ,!r r!;u(tne((n) *ig2t ' eig2t%

2%3%3%1%5 S#*i-e - ((ette((2 ** ;e #re-*!)e) n) r!ute) ' it2 re(#e-ti+e =- / eter. -!*!r--!)e) #igt i* ((e / ;*0%

2%3%3%1%8 In)i+i)u * OS2 #igt i*((2 ** 2 +e / :i / u / in(erti!n *!((!, 0%=)B% Return L!(((2 ** ;e gre ter t2 n 88)B%

2%3%3%1%3 In)i+i)u * -! / # rt / ent((2 ** #r!+i)e (* -1 (t!r ge n) ;en) r)iu(#r!te-ti!n ,!r in-! / ing ; -1;!ne ,i;er(. 600 < / tig2t-;u,,er ,i;er(. n) ,u(i!n-(#*i-e) ,i;er(%

2%3%3%1%7 In-! / ing 280 < / ; -1;!ne ,i;er((2 ** ;e #r!te-te) ;0 ;r i)e) / e(2 (*ee+e% He t (2rin1 (t0*e (#*i-e (*ee+e(. ;r i)e) / e(2 (*ee+e. n) tie ' r #((2 ** ;e in-*u)e) ' it2 / !)u*e%

2%3%3%2 FIBER CONNECTORS

2%3%3%2%1 $re-#!*i(2e) ,i;er !#ti- -!nne-t!r((2 ** ;e t2)u* (3 / e!##t;e t2)23 0.109863

2%3%3%2%3 S2 ** ;e #r!+i)e) in LC. (ing*e- / !)e !r /u*ti / !)e @* (er
!#ti / i9e)A - !n,igur ti!n(. ter / in te) !n 280 !r 600 < /
;u,,ere) ,i;er n)4!r 2 / / !r = / / B -1ete) ,i;er%

2%3%3%5%= 12- !r 25-(tr n) Sing*e / !)e Fi;er !#ti- MT$-LC - ((ette(
(2 ** ;e - !n,igure) ' it2 12-(tr n) MT$ - !nne-ti!n(in re r%

2%3%3%5%5 T2e MT$ / !)u*e((2 ** / eet t2e ,!**! ' ing reCuire / ent(&

2%3%3%8%1%3 >eri,0 *engt2(. Cu ntitie(n) -!n,igur ti!n 'it2 O'ner #ri!r t!)e*i+er0%

2%3%3%8%2 Fi;er-O#ti- MT$-MT$ D rr 0-!r)(D (2 ** uti*i9e 7-(tr n) MT$ @,e/ *eA t! 7-(tr n) MT$ @/ *eA -!nne-t!r(in =/ / ;re 1!ut B -1et% T2e rr 0-!r)('i** / eet t2e ,!**! 'ing reCuire / ent(&

2%3%3%8%2%1 Arr 0-!r)((2 ** / eet n !#ti- *in(erti!n *!((n!t t! e:-ee) 0%=8)B #er / te) -!nne-t!r # ir%

2%3%3%8%2%2 Arr 0-!r)((2 ** ;e + i* ;*e in 1-. 2-. =-. 8-. n) 10- / eter *engt2(%

2%3%3%8%2%= Arr 0-!r)((2 ** ;e -! /#*i nt 'it2 TIA-837-C %= n) IEEE 702%=; n) + i* ;*e in UL Ri(er !r $*enu/ r te) - ;*e(@Ri(er i(--e#t ;*e ,!r in-r -1 # t-2ingA

2%3%3%8%2%5 Meet(TIA-837-C%= n) IEEE 702%=; (t n) r)(@504100G;EA. n))2ere(t! TIA-652) t -enter)e(ign gui)e*ine(%

2%3%3%8%2%8 B!!t-!*!r,!r 7-(tr n) MT$ rr 0-!r)((2 ** ;e D r1 Gr 0%

2%3%3%8%2%3 MT$ (2 ** ;e #inne) !n !ne en). un#inne) !n t2e !t2er. n) uti*i9e Met2!) B #!* rit0%

2%7 AUDIO >ISUAL SYSTEMS

2%7%1 HDBASE-T DE>ICES

2%7%1%1 GENERAL

2%7%1%1%1 Unit((2 ** ;e -erti,ie) ;0 t2e HDB (eT A**i n-e t! en(ure -!/# ti;i*it0 n) #er,!r/ n-e%

2%7%1%1%2 C* ((2 E:ten)er((2 ** ;e Certi,ie) t! (u##!rt #*ug- n)-#* 0 in(t ** ti!n in-*u)ing HD +i)e!. /u*ti--2 nne* u)i!. ;i-)ire-ti!n *#!'er. ;i-)ire-ti!n *IR. n) RS-2=2 -!ntr!*%

2%7%1%1%= C* ((1 E:ten)er((2 ** in-*u)e (u##!rt,!r ** C* ((1)e+i-e('it2 t2e))iti!n !, HDB (eT 8$* 0Q 100M; Et2ernet. u# t! 100 / eter(%

2%7%1%1%5 E:ten)er((2 ** ;e -!/# ti;*e 'it2 n) (u##!rt 1e0,e ture(!, HDMI 1%5 in-*u)ing E$G. CEC. EDID. n) HDC$%

2%7%1%1%8 E:ten)er((2 ** in-*u)e ;i-)ire-ti!n * $!H @#!'er !+er HDBTA. IR. RS-2=2%

2%7%1%1%3 Tr n(/ itter n) re-ei+er (2 ** in-*u)e #! ' er. !#er ting
(t tu(. *in1 n) HDC$ (t tu(in)i- t!r LED(t! i) in (etu#

2%7%1%1%7 Tr n(/ itter n) re-ei+er (2 ** ;e FCC $ rt 18J (u;# rt B.
C* ((B -! / #*i nt

2%7%1%1%7 L!-1ing ,e ture ,!r HDMI n) #! ' er in#ut -!nne-ti!n((2 **
;e in-*u)e)% E:ten)er tr n(/ itter n) re-ei+er (2 ** 2 +e
/ et * en-*!(ure n) in-*u)e / !unting ;r -1et(%

2%7%1%5 HDMI4>GA Aut!('it-2ing E:ten)er ? **#* te

2%7%1%5%1 S2 ** ,un-ti!n (u(er in#ut)e+i-e ,!r (!ur-e A/V eCui# / ent
'it2 HDMI !r >GA4Au)i! !ut#ut(n) ,!r ' r) t2!(e (ign *(t!
##r!#ri te)i(#* 0)e+i-e@(A -r!((n HDB (e-T *in1%

2%7%1%5%2 In#ut((2 ** in-*u)e t ' ! @2A HDMI. !ne @1A >GA. n) !ne @1A
An *!g Au)i! @,!r >GAA -!nne-ti!n(. !ut#ut (2 ** ;e !ne @1A
RF-58 @HDB (eTA%

2%7%1%5%= In#ut((2 ** ;e ut! / ti- **0 ('it-2e) ;

2%7%1%8 Re / !te S ' it-2ing Mu*ti;utt!n C!ntr!* ? **#* te

2%7%1%8%1 S2 ** integr te ' it2 t2e Aut!(' it-2ing E:ten)er ? **#* te t!)) n))iti!n *re / !te -!ntr!**!- ti!n%

2%7%1%8%2 S2 ** 2 +e eig2t @7A -!n,igur ;*e ;utt!n(n) ,it in)u *-g ng ,!r / , -t!r%

2%7%1%8%= S2 ** ;e **- / et * -!n(tru-ti!n n) 2 +e / tte n!)i9e) *u / inu / ,ini(2%

2%7%1%8%5 Butt!n((2 ** ;e #re--!n,igure) ,!r #! ' er !n4!,,. +!*u / e u#4)! ' n. HD251(2)0.59093 0.590251(4)-5.15007(0.590251()-5.590251(4)-5.0

2%7%2%= USB 1%1 E:ten)er Tr n(/ itter n) Re-ei+er

2%7%2%=%1 USB E:ten)er (2 ** e:ten) USB 1%1 (ign *(,r! / -! / #uter t!)e+i-e !r 2u; u# t! 80 / eter(@135 ,tA !+er (ing*e - teg!r0- r te) - ;*e%

2%7%2%=%2 USB E:ten)er (2 ** -! / #*0 ' it2 USB 1%1 (#e-i,i- ti!n%

2%7%2%=%= USB E:ten)er (2 ** (u##!rt 2ig2-(#ee) 12M;4(n) *! ' -(#ee) 1%8M;#4(#r!t!-!*(%

2%7%2%=%5 N! e:tern *#! ' er (2 ** ;e reCuire)%

2%7%2%=%8 Tr n(/ itter (2 ** in-*u)e integr * 0%= / @1,tA - ;*e ,!r ,*e:i;*e -!nne-ti!n t! -! / #uter #!rt%

2%7%2%=%3 Tr n(/ itter n) Re-ei+er inter, -e 2!u(ing (2 ** ;e /)e !, 2ig2 i / # -t #* (ti- n) ;e n! * rger t2 n 2%83 in-2 L : 1%22 in-2 ? : 0%78 in-2 H%

2%7%2%=%7 Tr n(/ itter n) re-ei+er (2 ** ;e FCC $ rt 18J (u;# rt B. C* ((B -! / #*i nt

2%7%= AUDIO AM$LIFICATION

2%7%=%1 Stere! Mi:ing Au)i! A / #*i,ier

2%7%=%1%1 Mi:ing Au)i! A / #*i,ier (2 ** in-*u)e t ' ! (tere! u)i! in#ut(. n) !ne ; * n-e) / i-r!#2!ne in#ut%

2%7%=%1%2 T2e / #*i,ier (2 ** !,,er t2ree !ut#ut / !)e(& 2 M 20 ? (tere!. 1 M 50 ? ;ri)ge / !n!. n) 2 M 20 ?)u * / !n!%

2%7%=%1%= T2ree (' it-2 ;*e in#ut(& t ' ! (tere! u)i! n) !ne / i-

2%7%=%1%5 T2e / #*i,ier (2 ** in-*u)e Mi- / i:er ,un-ti!n ' it2 in)e#en)ent -!ntr!*J Mi- in#ut (2 ** (u##!rt 57 > #2 nt! / #! ' er%

2%7%=%1%8 T2e / #*i,ier (2 ** in-*u)e *ine- u)i! !ut#ut B -1 ' it2 -!ntr!** ;*e +!*u / e. +!*u / e. ; ((. tre;*e. n) / ute -!ntr!*(n) ut! !ut#ut / ute !n n! in#ut%

2%7%=%1%3 T2e / #*i,ier (2 ** 2 +e 20H9 - 20GH9 ,reCuen-0 re(#!n(e r nge

2%7%=%1%7 T2e / #*i,ier (2 ** in-*u)e LED in)i- t!r(,!r #! ' er n) -!ntr!* ,un-ti!n ,ee) ; -1%

2%7%=%1%6 T2e / #*i,ier (2 ** in-*u)e *!-1ing #! ' er (u##*0 -!nne-t!r

2%7%5%2%2 C!nne-t!r((2 ** ;e)ie - (t. I ui-1#!rt @Ge0(t!neA,!!t#rint. n) ,it in n0, -e#* te. ;i(-uit ;*!-1 !r -ei*ing4;!: / !unt #r!+i)e) ,!r in t2i(S#e-i,i- ti!n%

2%7%5%2%= C!nne-t!r / !)u*e (2 ** ;e UL 205= $*enu / Certi,ie)% ?iring (2 ** ;e uni+er(* n) 'i** --! / / !) te ;!t2 T837A n) T837B # ir4#in ((ign / ent(%

2%7%5%2%5 C!nne-t!r M!)u*e (2 ** ;e (u##*ie) 'it2 inter-2 nge ;*e i-!n(@+!i-e.) t .A4>. n) ;* n1. -!*!r -!)e) t! / t-2 t2e -!nne-t!r, -eA,!r e (0 i)enti,i- ti!n n) tr -1ing !,) t . +!i-e. !r !t2er ,un-ti!n(n) (2 ** ;e + i* ;*e in 1=)i,,erent -!*!r(%

2%7%5%= HDMI C!nne-t!r(

2%7%5%=%1 HDMI # ((-t2r!ug2 -!nne-t!r(* n)ing in, -e#* te((2 **,it (urr!un)ing -!nne-t!r(in t2e (/ e I ui-1#!rt 1e0(t!ne-(t0*e)e+i-e #* te%

2%7%5%5 HDB (eT C!r)(

2%7%5%5%1 C teg!r0 3A C! / #!nent r te) S*i / *ine $ t-2 C!r)(( )e(-ri;e) ;!+e in H!ri9!nt * C ;*ing (e-ti!n (2 ** ;e u(e),!r HDB (eT inter-!nne-ti!n(in t2e tr n(iti!n,r! / HDMI !r >GA int! UT$ - ;*ing%

2%7%5%8 HDMI C ;*e A((e / ;*ie(

2%7%5%8%1 C ;*e (2 ** ;e Hig2-S#ee) HDMI 'it2 Et2ernet n) (2 ** ;e HDMI -erti,ie)%

2%7%5%8%2 T2e - ;*e (2 ** ;e r te) CL2,!r in-' ** in(t ** ti!n(. ;e -ULu(Li(te) t! UL 173= n) CAN4CSA C22%2 N!% 2==-06%

2%7%5%8%= HDMI - ;*e((2 ** ;e / nu, -ture) 'it2 g!*) #* te) T0#e A / *e HDMI -!nne-t!r('it2 / !*)e) T$E -!nne-t!r !uter ;!)0%

2%7%5%8%5 HDMI - ;*e((2 ** ;e / nu, -ture) 'it2 27g -!n)u-t!r(n) 2 +e n !ut(i)e)i / eter !, n! gre ter t2 n 0%27 in-2

2%7%5%8%8 HDMI - ;*e((2 ** (u##!rt Au)i! Return C2 nne*%

2%7%5%8%3 HDMI - ;*e((2 ** ;e + i* ;*e 'it2 !#ti!n * uni+er(**!-1ing 1it,!r) #ting t! 'i)e r nge !, HDMI -!nne-t!r !+er / !*) (i9e(% L!-1ing 1it (2 ** in-*u)e ;!t2 M=M0%8 n) 50-50UNC (-re' (%

2%7 FRAMES. RACGS AND CABINETS

2%7%1 FLOOR-MOUNTED 5-$OST RACGS

2%7%1%1 O#en 16 in-2 5-#!(t ,r / e ' it2 L12-25 t ##e) 2!*e e:tru)e) *u / inu / / !unting r i*( )e(igne) t! #r!+i)e ne r*0 =30)egree(!, --e((i;i*it0 n) unre(tri-te) ir ,*! ' %

2%7%1%2 75 in-2 @21== / / A 58RMU 2eig2t ' it2 EIA4ECA-=10-E uni+er(* 847 in-2 @13 / / A. 847 in-2 @13 / / A. W in-2 @1= / / A 2!*e # ttern% $er / nent*0 (t / #e) r -1 / !unt unit @RMUA / r1ing(n) @100A L12-25 / !unting (-re ' (in-*u)e)%

2%7%1%= De#t2)Bu(t ;*e in 1 in-2 @28%5 / / A in-re / ent(,r! / =0 in-2 @732 / / A t! =3 in-2 @615 / / A !+er **)e#t2%

2%7%1%5 L!) R ting& 2000 *;% @6071gA - # -it0. e+en*0)i(tri;ute) *!ng r -1 2eig2t%

2%7%1%8 UL Li(te) t! t2e UL30680 St n) r) - Fi*e N!% E1716=3%

2%7%2 FLOOR-MOUNTED 2-$OST RACGS

2%7%2%1 Uni+er(*Bun-ti!n 2!*e # ttern / t-2e(/ !(t / nu, -turer(r -1(% L12-25 # ne* / !unting 2!*e(% C!n,!r / n-e t! EIA4ECA-=10-E n) UL Li(te) @Fi*e N!% E1716=3A (-! / / uni- ti!n(-ir-uit --e((!r0%

2%7%2%2 L!) R ting& 1200 L;(% @8551gA ' eig2t - # -it0 ' 2en e+en*0)i(tri;ute) ,!r t2e 2eig2t !, t2e r -1 @75 in-2 @21== / / A n) (2!rterA%

2%7%2%= M teri *& A*u / inu / % T ' in t!# ng*e(,!r rigi)it0%

2%7%2%5 A)) @1A ,r!nt4re r +erti- * ' ire / n ger !n e -2 (i)e !r ;et ' een r -1(% See ? ire M n ge / ent. ;e*! ' %

2%7%2%8 $er / nent*0 (t / #e) r -1 / !unt unit @RMUA / r1ing(in-*u)e)% D!u;*e (i)e) uni+er(* @847 in-2 @13 / / A. 847 in-2 @13 / / A. W in-2 @1= / / AA / !unting (# -ing%

2%7%2%3 In-*u)e(=0)!g #!int -! / ;! 2e) @$2i**i#(n) ,* t ;*)eA / !unting (-re ' (%

2%7%2%7 T ##e) ((e / ;*0 2!*e(e*i / in te t2e nee) ,!r nut(n) (i / #*i,ie(((e / ;*0 n) (Cu ring%

2%7%= ? ALL-MOUNTED CABINETS

2%7%=%1 16RU u(;*e =3 in-2 t **. =0 in-2)e#t2. 25 in-2 ' i)e. 16 in-2 2!*e # ttern. *!-1ing $*e:ig* (( )!!r

2%7%=%2 En-*!(ure ,e ture(,u**0 'e*)e). 13 g uge @1%8 / /A-!*) r!**e) (tee* -!n(tru-ti!n%

2%7%=%= M!unt(t! ' ** (*e,t 2inge) !r rig2t 2inge) !#ening 'it2 He +0)ut0. ,ie*) re+er(i;*e 2inge n) *!-1 (0(te / %

2%7%=%5 Re r (e-ti!n - n e (i*0 ;e (e# r te) ,r! / t2e - ;inet ,!r (i / #*e in(t ** ti!n !nt! ' ** n) re r (e-ti!n(,e ture re / !+ ;*e #* te('it2 eit2er / u*ti#*e 1n!-1!ut(,!r -!n)uit !r ;u(2ing in(t ** ti!n. !r 2ig2-)en(it0 ,! / g* n) #* te ,!r e (e !, in(t **ing #re- ter / in te) # t-2 # ne*(%

2%7%=%8 G* n) $* te Git (2 ** ;e + i* ;*e t!) #t - ;inet t! ,it !+er e:i(ting in(t **e) !r ter / in te) - ;*e(. (nee)e)%

2%7%=%3 $r!+i(i!ne) ,!r 13 in-2 @503 / /A !n--enter / !unting n) / u*ti#*e 'ire / n ge / ent * n-e(,!r - ;*e tie #!int(!r --e((!r0 / !unting% $r!+i)e !ne >erti- * - ;*e * -ing ; r ,!r e -2 ' ** / !unt - ;inet

2%7%=%7 Fu**0)%u(t ;*e EIA4ECA-=10-E -! / #*i nt / !unting r i* (0(te / 'it2 L12-25 t ##e) r i*(% UL *i(te) t! t2e UL30680

2%7%=%7 =3 in-2 @615 / /A 2ig2 - ;inet(r te) ,!r 200 *; @611gA *!)J 57 in-2 @1216 / /A 2ig2 - ;inet(re r te) ,!r =00 *; @1=31gA *!)%=3L - ;inet i((t n) r). u(e 57 in-2 (reCuire)%

2%7%5 >ERTICAL ?IRE MANAGERS

2%7%5%1 $r!+i)e ,u** 2eig2t. ,r!nt- n)-re r. 7 in-2 'i)e >erti- * ?ire M n ger(t t2e (i)e !, n) ;et 'een e -2 2-#!(t n)4!r 5-#!(t ter / in ti!n r -1 !r ,r /e% I, (# -e 'i** n!t **! '. t2e 8 in-2 'i)e 'ire / n ger / 0 ;e (u;(titute) t r! ' en)(!n*0. *e +ing t2e 7 in-2 +erti- * 'ire / n ger ;et 'een e -2 r -1% O 'ner ##r!+ *in 'riting i(reCuire) #ri!r t! t2i((u;(tituti!n%

2%7%5%1%1 T2e +erti- * - ;*e / n ge / ent (0(te / (2 ** ;e -ULu(*i(te). $CI r te) ,!r 65>-O. ABS r te) ,!r UL65HB. n) -! / #*i nt 'it2 ANS*4TIA4EIA 837-B (t n) r)(%

2%7%5%1%2 M!unting 2 r) ' re (2 ** ;e in-*u)e) t! in(ure t2e #r!#er in(t ** ti!n t! in,r (tru-ture% It (2 ** / !unt !nt! (t n) r) TIA4EIA re-!gni9e) eCui# / ent r -1%

2%7%5%1%= T2e / n ge / ent (0(te / (2 ** !,,er n ((!rt / ent !, --e((!rie(. in-*u)ing ;en) r)iu((* -1*!!# !rg ni9er. - ;*e ret iner(. n) (2 ** --! / / !) te t!#. ;!tt! /. (i)e n) # ((-t2r!ug2 - ;*e r!uting% Du *2inge). - ;*e -!n-e *ing -!+er((2 ** ;e in-*u)e)%

2%7%8 HORI0ONTAL ? IRE MANAGERS -

2%7%8%1 $r!+i)e 2RU)u-t-(t0*e 2!ri9!nt * ' ire / n ger(;!+e n) ;e*! ' !r ;et ' een e+er0 2RU !, # t-2 # ne*. ((# -e **! ' (%

2%7%8%1%1 C ;*e / n ger((2 ** ;e ,* t. -!+ere))u-t (t0*e ' it2 ,r!nt n) re r -2 nne*(%

2%7%8%1%2 D! n!t -!i* !r ' in) # t-2 -!r)(in(i)e ' ire / n ger(%

2%7%8%1%= U(e re-e((e) ,* t ' ire / n ger (nee)e) ' it2in en-*!(e) - ;inet(t! r!ute # t-2 -!r)(t! !##!(ite (i)e(. ' 2ere t2e ring(!, t2e ,* t ' ire / n ger(' !u*) inter,ere ' it2 - ;inet) ! !r -*!(ure%

2%6 CABLE SU$$ORTS

2%6%1 F-HOOGS

2%6%1%1 A** - ;*e (2 ** ;e (u##!rte) ;!+e -ei*ing !n)e)i- te) - ;*e (u##!rt 2 r) ' re%

2%6%1%2 C ;*e ( ))*e(n) F-2!!1((2 ** ;e u(e) ' 2ere - ;*e tr 0 !r ' ire ; (1et i(n!t + i* ;*e% T2e(e /u(t ;e (u##!rte) !n t2eir ! ' n -ei*ing ' ire(. t2re)e) r!). !r ,,i:e) t! ;ui*)ing (tru-ture ;0 u(e !, ;e / -* /#(@!n /et * ;e /(A !r ' !!) (-re ' (@!n ' !!) ;e /(A% A,,i:ing -!/ /uni- ti!n - ;*e (u##!rt(t! e:i(ting -ei*ing (u##!rt ' ire(i(n!t **! ' e)%

2%6%2 CABLE TRAY

2%6%2%1 In Te*e-!/ R!!/(. - ;*e tr 0 @*))er run ' 0A (2 ** ;e in(t **e) t! (u##!rt ** - ;*e running t! r -1(n) - ;inet(%

2%6%2%2 C ;*e tr 0 t! ;e))e) t! ** Te*e-!/ R!!/(in #* -e(' 2ere - ;*e i(run 2!ri9!nt **0%

2%6%= FACG4OUTLET BRACGETS

2%6%=%1 A;!+e--ei*ing - ;*e ter / in ti!n*!- ti!n((2 ** ;e eit2er ' **- / !unte) !r (u(#en)e) ,r! / (tru-ture ;!+e t2e)r!# -ei*ing% C ;*e(!r ter / in ti!n((2 ** n!t re(t !n -ei*ing gri) !r eCui# / ent ;!+e -ei*ing gri)%

2%6%=%2 F!r ?ire*e((A--e(($!int(n) !t2er ;!+e--ei*ing- / !unte) -!/ / uni- ti!n( )e+i-e(. - ;*e((2 ** n) in n ;!+e--ei*ing ;r -1et '2i-2 i(,,i:e) t!)e)i- te) - ;*e (u##!rt 2 r) ' re%

2%6%=%= T'! - teg!r0-r te) B -1(/ 0 ;e in(t **e) in e -2 ;!+e--ei*ing ;r -1et% E -2 ;!+e- -ei*ing ;r -1et 'i** 2!*) 2-#!rt Sur, -e-M!unt B!: !r 1-U MOS SMB ,!r / u*ti / e)i ##*i- ti!n(%

2%6%=%5 F!r ' **- / !unte))e+i-e*!- ti!n(@ ;!+e !r ;e*!' -ei*ingA.)e+i-e(nee)ing t! ;e / !unte))ire-t*0 t! ; -1;!: 'i** uti*i9e t2e in-' ** / !unting ;r -1et t! (e-ure t2e B -1 in(i)e t2e ; -1;!:%

2%6%=%8 One - teg!r0-r te) B -1 - n ;e in(t **e) in e -2 in-' ** ; -1;!: B -1 / !unting ;r -1et% F!r)e+i-e(reCuiring @2A - teg!r0-r te) B -1(. @2A in-' ** ;r -1et(/ u(t ;e u(e)%

2%10 $O?ER DISTRIBUTION UNITS @$DUA

2%10%1 $r!+i)e @1A $DU #er r -1 !r ' ** - ;inet% Un('it-2e). n!n-(urge (u##re((e)% 16 in-2 H!ri9!nt *,!r ' ** - ;inet(n) 57 in-2 >erti- *,!r,*!!r- / !unte) - ;inet(%

2%10%2 Uti*i9e #*ug n) re-e#t -*e (t0*e ##r!#ri te ,!r in(t ** ti!n -ir-uit(n) eCui# / ent inter, -e(%

2%11 FIRESTO$$ING

2%11%1 Fire r te) # t2' 0)e+i-e((2 ** ;e t2e #re,

2%12%1%2 C ;*e* ;e*((2 ** ;e / -2ine-gener te) 'r #- r!un) * ;e*('it2
/ u*ti#*e - ;*e ID?(#rinte) (u-2 t2 t it - n ;e +ie ' ;*e in #* -e 'it2!ut
turning t2e - ;*e%

=%1%1%12 Tr ining

=%1%1%1= C*e ning

=%1%1%15 $r!Be-t C*!(e!ut

=%2 CABLE HANDLING I CABLE MANAGEMENT

=%2%1 $r!#er - ;*e 2 n)*ing i(-riti- *t! / int ining t2e)e(ign integrit0 !, 2ig2-
#er,!r / n-e - ;*ing% C ;*e 2 n)*ing re-! / / en) ti!n(in-*u)e&

=%2%1%1 C ;*e / u(t ;e -!n)iti!ne) ;!+e =2)egree(F,!r 57 2!ur(#ri!r t!
in(t ** ti!n%

=%2%1%2 D! n!t u(e e:-e((i+e,!r-e '2en #u**ing - ;*e% T2e / :i / u / #u**-,!r-e
gui)e*ine,!r 5-# ir 2!ri9!nt *UT$ (2!u*) n!t e:-ee) 110N @28*;,A%
Meeting t2i(gui)e*ine +!i)((tret-2ing -!n)u-t!r( )uring in(t ** ti!n
n) t2e ((!-i te) tr n(/ i((i!n)egr) ti!n%

=%2%1%= T2e / ini / u / ;en) r)iu(,!r UT$ (2!u*) n!t e:-ee) 5 ti / e(t2e - ;*e
!ut(i)e)i / eter @O%D%A T2e O%D% !, CAT 3A 100 !2 / . ; * n-e) UT$
- ;*e i(%=0 in% @5 : %= X 1%2 in% ;en) r)iu(A%

=%2%1%5 T2e / ini / u / ;en) r)iu(,!r,i;er (2!u*) n!t e:-ee) 10: t2e - ;*e
!ut(i)e)i / eter%

=%2%1%8 Tr)iti!n *-! / ;ing n))re((ing @;un)*ingA !, C teg!r0 3 n) 3A
- ;*ing,!r -! / ;e) ##e r n-e i(reCuire) in **e:#!(e) *!- ti!n(%

=%2%1%3 In TR. u(e ##r!#ri te 2!ri9!nt *- ;*e / n ge / ent,!r # t-2 -!r)(!n
,r!nt !, # t-2 # ne*(% A*(!. u(e ##r!#ri te - ;*e / n ge / ent ; r@(A,!r
(u##!rt !, ter / in te) 2!ri9!nt *- ;*e%

=%2%1%7 D! n!t u(e +in0* !r #* (ti- - ;*e tie( )ue t! t2e #!tenti *,!r !+er-
-in-2ing !, - ;*e ;un)*e('2i-2 - n *ter t2e - ;*e ge! / etr0 n)
)egr)e t2e (0(te / - ;*ing #er,!r / n-e% U(e !n*0 2!!1 n) *!!#
@D>e*-r!DA, (tener(,!r ;un)*ing !, 2!ri9!nt *- ;*e(%

=%2%1%7 St!re - ;*e (* -1 in n e:ten)e) *!!# -!n,igur ti!n t! **e+i te - ;*e
(tre((% E:-e((i+e - ;*e (* -1 in ;un)*e) *!!#(!r tr)iti!n *E(er+i-e
*!!#(E t! #r!+i)e))iti!n *- ;*e *engt2 in TR 2 (;een (2!'n t!
)egr)e - ;*ing #er,!r / n-e n) re n!t re-! / / en)e)%

=%= SE$ARATION OF DATA AND $O?ER CABLING

=%=%1 De(ign - ;*e # t2' 0(t! +!i) #!tenti *(!ur-e(!, EMI% A+!i) in(t **ing - ;*e
ne r (!ur-e(!, EMI @M-r 0 eCui# / ent.* rge / !t!r(4gener t!r(. e*e-tri- *
#!'er - ;*ing n) tr n(,!r / er(. R)i!,reCuen-0 @RFA (!ur-e(n)
tr n(/ itter(. *ig2ting. -!#ier(. et-%A%

=%=%2 $20(i- **0 (e# r te #! ' er n)) t - ;*ing --!r)ing t! re*e+ nt -!)e n) (t n) r) reCuire / ent(' 2en run in -! / / !n # t2 ' 0%

=%=%2%1 Ne+er run) t n) C* ((1 #! ' er - ;*ing in # r **e* -*!(er t2 n 2 in-2%

=%=%2%2 A+!i) -r!((ing - ;*e(i, #!((i;*e% I, ne-e((r0. *' 0(-r!((- ;*e(t 60)egree(%

=%=%2%= M int in / ini / u / !, 8 in-2 (e# r ti!n ;et ' een) t - ;*e n) ** ; ** (t -!ntr!**e) *ig2ting%

=%=%= Mini / u / (e# r ti!n)i(t n-e(!, te*e-! / / uni- ti!n(- ;*ing ,r! / #!tenti * (!ur-e(!, EMI e:-ee)ing 81>A&

=%=%=%1 25 in-2e(' 0 ,r! / Un(2ie*)e) #! ' er *ine(!r e*e-tri- * eCui# / ent in #r!:i / it0 t! !#en !r n!n / et *# t2 ' 0(

=%=%=%2 12 in-2e(' 0 ,r! / Un(2ie*)e) #! ' er *ine(!r e*e-tri- * eCui# / ent in #r!:i / it0 t! gr!un)e) / et *-!n)uit # t2 ' 0

=%=%=%= 3 in-2e(' 0 ,r! / $! ' er *ine(en-*!(e) in gr!un)e) / et *-!n)uit @!r eCui+ *ent (2ie*)ingA in #r!:i / it0 t! gr!un)e) / et *-!n)uit # t2 ' 0

=%=%=%5 57 in-2e(' 0 ,r! / E*e-tri- * / !t!r(n) tr n(,!r / er(

=%5 INSTALLATION OF STRUCTURED CABLING SYSTEM

=%5%1 $RE-INSTALLATION CONFERENCE

=%5%1%1 S-2e)u*e -!n,eren-e / ini / u / !, ,i+e @8A - *en) r) 0(#ri!r t! ;eginning ' !r1 !, t2i((e-ti!n%

=%5%1%2 Agen) & C* ri,0 Cue(ti!n(re* te) t! ' !r1 t! ;e #er,!r / e). (-2e)u*ing. -!!r)in ti!n. et-%

=%5%1%= Atten) n-e& C! / / uni- ti!n((0(te / in(t **er. Gener * C!ntr -t!r. O ' ner(Re#re(ent ti+e(n) n0))iti!n *# rtie(,,e-te) ;0 ' !r1 !, t2i((e-ti!n% O ' ner£(In,!r / ti!n Te-2n!*!g0 / u(t ;e re#re(ente) t #re-!n,eren-e / eeting #ri!r t! (-2e)u*ing !, n0 ' !r1%

=%5%1%5 C!#0 !, Le+it!n ' rr nt0 ##*i- ti!n ' i** ;e #r!+i)e) ;0 C!ntr -t!r%

=%5%1%8 $re-In(t ** ti!n -!n,eren-e / 0 ;e ' i+e) !n*0 ;0 O ' ner%

=%5%2 ? ARRANTY

=%5%2%1 A *i,eti / e #er,!r / n-e ' rr nt0 -!+ering ** -! / #!nent(. eCui# / ent n) ' !r1 / n(2i# (2 ** ;e (u; / itte) in ' riting ' it2 (0(te /)!-u / ent ti!n% T2e ' rr nt0 #eri!) (2 ** ;egin !n t2e (0(te / £(,ir(t u(e ;0 t2e O ' ner%

=%5%5 O ? NER RE I UIREMENTS AND STANDARDS%

YT2i((e-ti!n ' i** -2 nge ; (e) !n ! ' ner (t n) r) (n) #r -ti-e(Z

=%5%5%1 A / ini / u / !, F!ur @5A CAT3A UT$ - ;*e(n) B -1(@2 D t . 2 > !i-eA

(2 ** ;e in(t **e) in ** (t n) r) ' !r1 re !ut*et *!- ti!n(!n 3-!ut*et ,*u(2 / !unte) , -e#* te. in-*u)ing !,,i-e(. uti*it0 (er+i-e(. n) !t2er -! / / !n te*e-! / / uni- ti!n(*!- ti!n(% F -1 -!n,igur ti!n(' i** ;e > !i-e #!(iti!ne) t t2e t!# !, t2e , -e#* te n) D t i(t! ;e #!(iti!ne) t t2e ; !tt! / !, t2e , -e#* te% T2e t ' ! -enter #!(iti!n(re t! re / in ;* n1 ,!r ,uture u(e%

=%5%5%2 A** / !)u* r ,urniture ' i** 2 +e (ing*e ' !r1(t ti!n !ut*et #er -u;i-*e.

un*e(((#e-i,i- **0 n!te) !t2er ' i(e% A** # rtiti!n-' ** !r)e / i(ing-' **e) re (2 +e ' !r1(t ti!n !ut*et((#e-i,i- **0 n!te) !n t2e E:2i;it 4F*! !r $* n(%

=%5%5%= T ' ! @2A CAT3A UT$ - ;*e(n) B -1((2 ** ;e in(t **e) t ** ?ire*e((

A--e(($!int *!- ti!n(% Se-urit0 - / er n) A> I Mu*ti / e)i *!- ti!n(*(! reCuire CAT3A - ;*e(n) B -1(. ;ut / 0 reCuire ,e ' er !r / !re - ;*e(% Re,er t!)r ' ing(,!r (#e-i,i-)et i*(%

=%5%5%5 ? **#2!ne !ut*et *!- ti!n(reCuire (ing*e - ;*e n) B -1 !n (t in*e((

(tee* (tu))e) ' **#* te% Ot2er *!- ti!n(/ 0 reCuire / !re - ;*e(n) B -1 !ut*et(% Re,er t!)r ' ing(,!r (#e-i,i-)et i*(%

=%5%5%8 D t B -1 L1 (2 ** ;e ORANGE. D t B -1 L2 (2 ** ;e BLUE% > !i-e

B -1((2 ** ;e I>ORY% A** ter / in ti!n ' iring (2 ** ;e T837B%

=%5%5%3 A / ini / u / !, 5 - 5 in-2 (*ee+e(/ u(t ;e #re(ent in e -2 IDF% S*ee+e(

,!r #enetr ti!n !, ' **(n) ,*! !r((2 ** 2 +e 100 #er-ent (# re - # -it0 n) (2 ** ;e ,ire-(t!##e) (#er - !)e% C!ntr -t!r i(t! #r!+i)e))iti!n * (*ee+e(i, t2e r! ! / ( ) ! n!t / eet !r e:-ee) / ini / u / reCuire / ent(

=%5%8 $ATH ? AYS AND TO$OLOGY

=%5%8%1 Uti*i9e Dt2in ,i* / D *u;ri- nt(!n*0[It 2 (;een (2! ' n t2 t - ;*e-#i**ing

*u;ri- nt(' i** ,,e-t 0!ur te(ting (t2e - ;*e nee)((e+er * ' ee1(t!)r0 ;e,!re ttenu ti!n *e+e*(re-!+er% U(e !, in-!rre-t - ;*e *u;ri- nt(' i** er!)e - ;*e B -1et n) +!i) - ;*e ' rr nt0%

=%5%8%2 A** - ;*e n) ' ire (2 ** ;e - !n-e *e) in - !n)uit(. ,*! !r)u-t(. # ne*ing.

-ei*ing !r (i / i* r re (e:-e#t t / utu **0 gree) u#!n re (%

=%5%8%= Fi** - # -it0 in - !n)uit. / !)u* r ,urniture n) !t2er 2!ri9!nt *# t2 ' 0(

(2!u*) n!t e:-ee) 50 #er-ent% A / :i / u / !, 30 #er-ent # t2 ' 0 ,i** i(**! ' e) t! --! / / !) te un#* nne)))iti!n(,ter initi *in(t ** ti!n% T2e CAT 3A - ;*e i(* rger O%D% @0%278 in-2 - 0%=0 in-2 +(% 0%2= in-2 ,!r t0#i- *,!r CAT3 - ;*eA% T2e in-re (e))i / eter !, CAT 3A - ;*e ' i** reCuire ##r!#ri te)e(ign - !n(i)er ti!n(' 2en (i9ing - !n)uit n) !t2er

t2 ' 0(% In / !(t in(t ** ti!n(. -!n)uit (i9e('i** 2 +e t! ;e in-re (e) in !r)er t! --! / / !) te ** !, t2e - ;*e(;eing in(t **e)% T2i('i** i / # -t t2e)e(ign n) / teri * (e*e-ti!n !, t2e #r!3e-t% T! - *-u* te t2e ,i** r ti!.)i+i)e t2e (u / !, t2e -r!((-(e-ti!n * re !, ** - ;*e(. ;0 t2e / !(t re(tri-te) -r!((-(e-ti!n * re !, t2e # t2 ' 0%

=%5%8%5 Fi** r ti!(,!r Aug / ente) CAT3 - ;*e @CAT3AA reCuire(1 in-2 EMT ,!r 5 - ;*e(n) (i9e) * rger ,!r))iti!n * - ;*e((reCuire) t! / int in 30 #er-ent ,i** r ti!%

=%5%8%8 F* t-rung n)4!r (!*i) ;!tt! / - ;*e tr 0 (2 ** ;e uti*i9e) ,!r * rge. 2ig2-)en(it0 in(t ** ti!n(% F-2!!1(n) !t2er (#e-i,i- - ;*e (u##!rt 2 r) ' re (2 ** ;e u(e) t ** *!- ti!n(!ut(i)e !, - ;*e tr 0%

=%5%8%3 $ t2 ' 0)e(ign (2!u*) n!t e:-ee) t ' ! @2A 60)egree ;en)(;et 'een #u** #!int(!r #u** ;!:e(@$BA% I, / !re t2 n t ' ! @2A 60)egree ;en)(re reCuire). in(t ** #u** ;!: ;et 'een ;en)(%

=%5%8%7 $r!+i)e NEC-(i9e) #u**;!:e(,!r n0 run gre ter t2 n 100 ,eet. !r 'it2 / !re t2 n t ' ! 60)egree ;en)(%

=%5%8%7 F-2!!1((2!u*) ;e r n)! /*0 (# -e) 30 in-2 !r*e((% D! n!t e:-ee) F-2!!1 - # -it0 ,!r (i9e n) 'eig2t*i / it ti!n(%

=%5%8%2= C!ntr -t!r (2 ** ,ire(t!# ** u(e) # t2 ' 0(' 2i-2 enter !r *e +e t2e
te*e-! / r!! / (+i -!n)uit. - ;*e tr 0 !r (*!t% C!ntr -t!r i(re(#!n(i;*e
,!r in(t **ing (*ee+e(t e -2 ' ** !r # rtiti!n #enetr ti!n. n)

=%5%3%7 E*e-tri-i n ' i** #r!+i)e -!nne-ti!n ;et ' een TGB n) ;ui*)ing gr!un)J
Te*e-! / C!ntr -t!r @i, (e# r te. !t2er ' i(e e*e-tri-i nA ' i** #r!+i)e
;u(; r n) gr!un) ** eCui# / ent n) te*e-! / / et *(t! t2e ;u(; r%

=%5%3%6 Te*e-! / in(t **er ' i** gr!un) n) ;!n) ** r / !re) n)4!r (2ie*)e)
- ;*e(. r -1(. - ;inet(. - ;*e tr 0. *))er r -1ing. n) (2ie*)e) # ne*(

=%5%7%11 C! / #*0 ' it2 ANSI4TIA-836 ,!r -!n)uit n) (#*i-e ;!: (i9ing%

=%5%7%12 In(t ** / !)u* r B -1(t ** !ut*et((2! 'nJ !ne) t B -1 ,!r e -2) t - ;*e t e -2 , -e#* te !r ter / in ti!n #!int% In(t **))iti!n * - ;*e(n) / !)u* r B -1((in)i- te) !n t2e)r ' ing(% D! n!t D(#*it # ir(D ;et ' een)i,,erent B -1(%

=%5%7%1= Ter / in te - ;*e(t e -2 B -1 *!- ti!n n) t ter / in ti!n ;! r) !r # t-2 # ne*% F!*! ' in)u(tr0 gui)e*ine(n) / nu, -turer(E re-! / / en) ti!n(n) #r!-e)ure((reCuire)% A** ter / in ti!n 2 r) ' re (2 ** ;e r te) t! e:-ee) t2eir ((!-i te) C teg!r0 r ting ((#e-i,ie) ;!+e%

=%5%7%15 Fie*)-in(t ** ;*e RF58 #*ug(re n!t t! ;e u(e)%

=%5%7%18 F!r en-*!(e) -ei*ing ? A$ *!- ti!n(. in(t ** n) ter / in te CAT3A - ;*e(t! ##r!:i / te *!- ti!n ((2! 'n !n #* n(% F!r !#en--ei*ing en+ir!n / ent(. (e-ure - ;*e(n) (ur, -e- / !unt ;!:e(t! ne re(t ##r!#ri te (u##!rt (tru-ture%

=%5%7%2= D! n!t)re((- ;*e(in ;un)*e(* rger t2 n 25 - ;*e(% Mu*ti#*e 25-- ;*e ;un)*e(/ 0 ;e run in # r **e* ' it2 e+en*0-(# -e) >e*-r! - ;*e tie(in n !r)er*0 (eCuen-e%

=%5%7%25 F!r - ;*e / n ge / ent !n re r !, # t-2 # ne*. - ;*e (2 ** (' ee# int! ter / in ti!n #!int(n) ;e (u##!rte) ;0 ##r!#ri te re r - ;*e / n ge / ent%

=%5%7%28 H!ri9!nt * # t-2 -!r) / n ge / ent i(reCuire) !n ** in(t ** ti!n(' 2i-2)! n!t u(e ng*e) # t-2 # ne*(%

=%5%7%23 M int in - ;*e ;en) r)iu(5M !uter)i / eter @UT$!n*0A ' 2en / !unting , -e#* te !nt! EMT ; -1; !:. ; !:-e*i / in t!r(!r ,urniture 1n!-1-!ut(%

=%5%7%27 F -e#* te(n) SMB((2 ** ;e ,u**0 in(t **e) n) * ;e*e) #ri!r t! te(ting%

=%5%7 ABO>E-CEILING 8538( )H%1AB3.23309(I)3.23309( )-574033( )?20175 018nMI--LN

-!r)(,r! / t2e !+er2e) ?A$!ut*et(t! t2e A$% C!ntr -t!r (2 ** ne t*0 -ut 2!*e(int! t2e -ei*ing ti*e n) ,ini(2 t2e 2!*e('it2 gr! / /et(!r !t2er in)u(tr0-(t n) r) ,ini(2ing #ie-e ,!r #r!,e((i!n **!!1%

=%5%6 AUDIO->ISUAL DE>ICES

=%5%6%1 HDBASE-T DE>ICES

=%5%6%1%1 F!**!' / nu, -turer:(u(er:(/ nu *,!r #r!#er in(t ** ti!n%

=%5%6%1%2 One DC 25> #!'er) #t!r i(reCuire) n) - n ;e tt -2e) t eit2er en) (t2e !t2er - n ;e energi9e) +i t2e $!H ,un-ti!n !, t2e inter-!nne-ting t'i(te) # ir - ;*e%

=%5%6%1%= F!r ;e(t #er,!r / n-e. C teg!r0 3A @i(!* ti!n 'r # !r (2ie*)e)A t'i(te) # ir - ;*e (2!u*) ;e in(t **e) in --!r) n-e 'it2 ##*i- ;*e ANS*4TIA-837 (t n) r)(n) ;e ,ie*) -erti,ie) t! 800 MH9 u(ing ##r!+e) te(ter(%

=%5%6%1%5 $r!#er*0 (e-ure HDMI - ;*e(t!)e+i-e('it2*!-1 1it ;r -1et(n) tie 'r #(%

=%5%6%1%8 In(t ** ti!n /et2!)((2 **)2ere t! NF$A N ti!n *E*e-tri- * C!)e n) **!- *;ui*)ing n) ,ire -!)e(%

=%5%6%2 STANDARD A> EMTENSION DE>ICES

=%5%6%2%1 F!**!' / nu, -turer:(in(tru-ti!n (2eet ,!r #r!#er in(t ** ti!n n))Bu(t/ent%

=%5%6%2%2 F!r ;e(t #er,!r / n-e. C teg!r0 r te) t'i(te) # ir - ;*e (2!u*) ;e in(t **e) in --!r) n-e 'it2 ##*i- ;*e ANS*4TIA

=%5%6%=%5 In(t ** ti!n / et2!)((2 **)2ere t! NF$A N ti!n * E*e-tri- * C!)e n) **!- * ;ui*)ing n) ,ire -!)e(%

=%5%6%5 HDMI CABLES

=%5%6%5%1 F!*! ' / nu, -turer:(in(tru-ti!n (2eet ,!r #r!#er in(t ** ti!n

=%5%6%5%2 Se-ure HDMI - ;*e(t! -ti+e)e+i-e #!rt('it2 - ;*e*!-1ing 1it(!r in)u(tr0 ;e(t #r -ti-e t! / itig te in)+ertent - ;*e)i(-!nne-t(%

=%5%6%8 HDBASET CABLING CHANNELS

=%5%6%8%1 100 #er-ent !, - ;*ing -2 nne*((2 ** ;e te(te) t! / eet !r e:-ee) ISO4IEC C* ((EA #er,!r / n-e # r / eter(%

=%5%6%8%2 C ;*ing (2 ** ;e in(t **e) in --!r) n-e 'it2 / nu, -turer:(re-! / / en) ti!n(n) ;e(t in)u(tr0 #r -ti-e(('e** (-! / #*i n-e 'it2 ** ##*i- ;*e (e-ti!n(!, t2i(S#e-i,i- ti!n reg r)ing C teg!r0-r te) (tru-ture) - ;*ing%

=%5%6%8%= ?2en - ;*e(re ;eing in(t **e). (* -1@(er+i-e*!!#(A (2 ** ;e #r!+i)e) t ;!t2 en)(t! --!/ / !) te ,uture -2 nge(in t2e (tru-ture) - ;*ing (0(te / %

=%5%11%= Gr!un) ** (2ie*)e) # t-2 # ne*(t! te*e-! / gr!un) (!ur-e +i # int-#ier-ing ' (2er(t! gr!un)e) r -1. !r +i)ire-t gr!un) 'ire t! te*e-! / ;u(; r%

=%5%12 IDF ROOMS

=%5%12%1 T2e D t n) Te*-! R!! / (re tr n(iti!n #!int ;et 'een t2e ; -1;!ne n) 2!ri9!nt *)i(tri;uti!n # t2 ' 0(% T2e r!! / ((2 ** ;e ;*e t! -!nt in) t !r te*e-! / / uni- ti!n(E eCui# / ent. - ;*e ter / in ti!n(n) ((!-i te) -r!((--!nne-ti!n 'iring% C*!(et (# -e(re n!t t! ;e (2 re) 'it2 e*e-tri- * in(t ** ti!n(. !t2er t2 n t2!(e)ire-t*0 ,!r te*e-! / / uni- ti!n(. +i)e!. (e-urit0 n) in,!r / ti!n (0(te / (eCui# / ent% T2e r!! / (re n!t t! ;e (2 re) 'it2 !t2er unre* te) ;ui*)ing (er+i-e. ,!r e: / #*e #*u / ;ing% An0 -!n,*i-t('it2 t2e(e (#e-i,i- ti!n(reCuire t2e ##r!+ * !, t2e O 'nerE($r!Be-t M n ger%

=%5%12%2 C!ntr -t!r (2 ** (u; / it)r 'ing !, t2e IDF r!! / (2! 'ing * 0!ut !, **

=%5%12%7 A 12 in-2 *))er r -1 (0(te / i(reCuire) n) 'i** ;e #r!+i)e) ;0 t2e C!ntr -t!r n) in(t **e) in t2e IDF t! #r!+i)e - ;*e (u##!rt t! t2e r -1 (0(te / % T2i(in-*u)e(** !, t2e reCuire) *))er r -1 (u##!rt ite / ((u-2 (r -1 t! run ' 0 1it(. ' ** ng*e ;r -1et(. -ei*ing (u##!rt(. (#*i-e(@Bun-ti!n n) ;uttA. r)iu( )r!#(n) B-;!*t(% T2e ,in **))er r -1 * 0!ut 'i** ;e in-*u)e) in t2e IDF * 0!ut)r 'ing)e(-ri;e) ;!+e%

=%5%12%6 $r!+i)e n) in(t ** (nee)e) in t2e IDF r!! / 5 ,t : 7 in-2e(: K in-2 ,ire-r te) #*0 '!!) ;! r) n) * ;e*e) 'it2 ,ire r ting (t / #, -ing int! t2e r!! / t! --! / / !) te r -1 *))er (u##!rt. - ;*ing (u##!rt. gr!un)ing #* t,!r / .) t n) +!i-e eCui# / ent% $ int ; -1;! r) '2ite @*e +e (t / # +i(i;*eA t! / t-2 e:i(ting ; -1;! r) in r!! / . i, ##r!#ri te% L!- ti!n !, in(t ** ti!n i(t! ;e)eter / ine) 'it2 ##r!+ * ;0 O 'ner%

=%5%1= $ATCH CORDS&

=%5%1=%1 C!ntr -t!r t! #r!+i)e n) in(t **,i;er n) -!##er # t-2 -!r)(in Cu ntitie(( )e(-ri;e) ;e*! '% Ne t*0 in(t ** # t-2 -!r)(in *engt2((##r!#ri te t! re)u-e unne-e((r0 *engt2 in 'ire / n ger(%

=%5%1=%2 In(t ** # t-2 -!r)(t t2e eCui# / ent - ;inet ;et 'een # t-2 # ne* n) O 'ner-#r!+i)e) ('it-2e(,!r e -2 # t-2 # ne* n) '!r1(t ti!n *!- ti!n% $ t-2 -!r)((2 **)ire-t--!nne-t ;et 'een # t-2 # ne* n) net '!r1ing ('it-2 !r !t2er e*e-tr!ni-(eCui# / ent% Dre((n) ;un)*e # t-2 -!r)((##r!#ri te ,!r ,in * in(t ** ti!n% $r!+i)e n0 unu(e) eCui# / ent # t-2 - ;*e(t! O 'ner in !rigin * # -1 ging u#!n -! / #*eti!n !, #r!Be-t%

=%5%1=%= In(t ** ?ire*e((A--e(($!int # t-2 -!r)(( )e(-ri;e) ;!+e. n) -!nne-t C / er (n) !t2er ,ie*)-in(t **e) net '!r1 ;*e)e+i-e +i +en)!r-(u##*ie) # t-2 -!r) t t2e re / !te *!- ti!n(% Return unu(e) # t-2 -!r)(t! O 'ner in !rigin * # -1 ging%

=%5%1=%5 $r!+i)e '!r1(t ti!n # t-2 -!r)(t! O 'ner in !rigin * # -1 ging%

=%5%1=%8 U(e t2e ,!**! 'ing gui)e*ine(,!r #r!Be-t ;i)% >eri,0 ** *engt2('it2 O 'ner #ri!r t! #ur-2 (e&

=%5%1=%8%1 $r!+i)e n) in(t ** !ne @1A 7-,!!t # t-2 -!r). !, t2e (/ e - teg!r0 r ting. ,!r e -2 - ;*e ter / in te) t t2e # t-2 # ne*

=%5%1=%8%2 $r!+i)e !ne @1A 10-,!!t # t-2 -!r). !, t2e (/ e - teg!r0 r ting. ,!r e -2 - ;*e ter / in te) t t2e ter / in * !ut*et *!- ti!n

=%5%1=%8%= $r!+i)e !ne @1A 2- / eter # t-2 -!r). !, t2e (/ e gr)e !,

=%5%1=%3 A** ,i;er # t-2 -!r)(n) reCuire) ' !r1(t ti!n4eCui# / ent # t-2 -!r)(n!t in(t **e) (2 ** ;e #r!+i)e) in 2 n) t! O 'ner(Re#re(ent ti+e #ri!r t! #r!Be-t -*!(e!ut%

=%5%15 LABELING

=%8%5 Lig2ting * 0!ut ,i:ture # ttern i(t! #r!+i)e (u,,i-ient *ig2ting !+er ,r!nt n) ; -1
!, e -2 eCui# / ent r -1%

=%8%8 In t2e IDF r! ! / . / ini / u / !, @2A 20- / #.)e)

=%3%=%= In-*u)e $DF !, ,u** te(t re(u*t(. (u / / r0 in)e: in e*e-tr!ni- ,!r / t !n CD !r / e / !r0 (ti-1 in t2e OHM # -1 ge u#!n #r!Be-t -! / #*eti!n%

=%3%=%5 C ;*ing (0(te / ((2 ** / eet !r e:-ee) t2e e*e-tri- * n) tr n(/ i((i!n -2 r -teri(ti-(!, t2e (0(te / ((#e-i,ie)%

=%3%=%8 C ;*e (eg / ent(n) *in1((2 ** ;e te(te) ,r! / ; !t2 en)(!, t2e - ;*e ,!r e -2 !, t2e -!n(tru-ti!n #2 (e(%@>eri,0 t2 t - ;*e * ;e*ing / t-2e(t ; !t2 en)(A%

=%3%=%3 T2e (0(te / (2 ** n!t ;e -!n(i)ere) -erti,ie) unti* t2e te(ter 2 (-1n! '*e)ge) t2 t t2e #er,!r / n-e !, t2e #20(i- ** 0er !, t2e (0(te / 2 (;een ,u**0 te(te) n) i(!#er ti!n * t t2e -! /

=%3%=%12%= Cir-uit *%D% nu / ;er ' it2 -!rre(#!n)ing B -1 i)enti,ier

=%3%=%12%5 ?ire M #- (2 ** in-*u)e t2e ,!*! ' ing&

=%3%=%12%5%1 C!ntinuit0 t! t2e re / !te en)

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=%3%=%12%7 $S-NEMT @$! ' er Su / Ne r En) Cr!((T *1A

=%3%=%12%6 FEMT @F r En) Cr!((t *1A

=%3%=%12%10 ELFEMT @ECu * Le+e* F r En) Cr!((T *1A

=%3%=%12%11 $S-ELFEMT @$! ' er Su / ECu * Le+e* F r En) Cr!((T *1A

=%3%=%12%12 $r!# g ti!n De* 0

=%3%=%12%1= De* 0 S1e '

=%3%=%12%15 Return *!((

=%3%=%12%18 $SFEMT @$! ' er Su / F r En) Cr!((t *1A

=%3%=%12%13 $SACRF @$! ' er Su / Attenu ti!n t! Cr!((t *1 R ti!. F r En)A

=%3%=%1= Te(t Re(u*t(,!r CAT3A (2 ** in-*u)e ** !, t2e ;!+e. #*u(t2e ,!*! ' ing&

=%3%=%1=%1 AACRF @A*ien Attenu ti!n t! Cr!((t *1 R ti!. F r En)A

=%3%=%1=%2 AFEMT @ En)AF007(1)0.590251(2)0.590251(%)-5.15007(1)0.590251(0)110

1'4'22 USDA RUS 455-;4 - G#+ Tu-e Su "e A e+t$ + /PE-;0 US De&# t * ent $ A" !)u(tu e

1'5 SUBMITTALS

1'5'1 See Se)t!$n 01 40 00 - A. * !n!+t #t!,e Re8u! e * ent+ $ +u- * !tt#(& $)e.u e+'

1'5'2 P $.u)t D#t#- M#nu#)tu e + .#t# +1eet+ $n e#)1 & $.u)t t$ -e u+e. !n)(u.!n"-

1'5'2'1 In+t#((#t!$n * et1$.+'

1'5'4 S1$& D #2!n"+- S1$2)$ * &(!#n)e 2!t1 e8u! e * ent+ $n !+$ * et !) +)1e * #t!) .!#" # * $ net2$ @ (#3$ut +1$2!n")#-(e $ut!n"+ te(e)$ * * un!)#t!$n)($+et+ #)@ #n. en)($+u e (#3$ut+ #n. ($)#t!$n+ +e ,!)e ent #n)e #n. " $un.!n" & e&# e. #n. #&& $,e. -3 BICSI Re"!+te e. C$ * * un!)#t!$n+ D!+t !-ut!$n De+!"ne /RCDD'

1'5'5 M#nu#)tu e 9u#(!)#t!$n+'

1'5'5 In+t#((e 9u#(!)#t!$n+'

2'2'1'2 P $,!.e 6!>e.)#-(e+ #n. &#t12#3+ t1#t)$*&(3 2!t1 NFPA 70 #n.
ANS(CD-STD- <07 #n. # e UL (!+te. $ t1! . &# t3 !n.e&en.ent te+t!n"
(#-$ #t$ 3)e t!6!e.'

2'2'1'4 P $,!.e)$nne)t!$n.e,!)e+ t1#t # e #te. 6$ $&e #t!$n un.e)$n.!t!$n+
$6 42 t$ 150 .e" ee+ F #t e(#t!,e 1u*!.!t3 $6 0 t$:-5.15007(7(7(104u.439 0 TdB[(.)07( )-

2'4 PATH ? AYS

2'4'1 C$n . u!t= A+ +&e)!6!e . !n Se)t!$n 2< 05 45A & $,! . e &u(( )$. + !n #(( )$n . u!t'

2'4'2 Un . e " $un . Se ,!)e Ent #n)e= PVC7 T3&e EPC-50)$n . u!t'

2'5 COPPER CABLE AND TERMINATIONS

2'5'1 C$&&e B#)@ - $ne C#-(e= TIA©EIA-5<; C#te"$ 3 < +$(! .)$n . u)t$ un+1!e(. e . t2!+te . &#! /UTP07 25 A ? G7 100 $1 * A 100 &#! + 6$ * e . !nt$ 25-&#! -!n . e " $u&+A)$,e e . 2!t1 " #3 t1e * $&(#+t!) F#)@et #n .)$ * &(3!n" 2!t1 #((e(e,#nt &# t+ $6 #n . #. . en . # t$ (#te+t e . !t!$n+ $6 TIA©EIA-5<; #n . ICEA S-:0-<<17 #n . UL 555'

2'5'1'1 In ($)#t!$n+ $t1e t1#n !n &(enu * +7 & $,! . e NFPA 70 t3&e CMR !+e - #te . $ t3&e CMP &(enu * - #te .)#-(e'

2'5'1'2 In &(enu * +7 & $,! . e NFPA 70 t3&e CMP &(enu * - #te .)#-(e'

2'5'1'4 P $,! . e)#-(e 1#,!n")$n . u)t$ + t2!+te . #t * !n! * u * #te $6 t2$ &e 6$$tA #)tu#((en"t1 #n . 6 e8uen)3 $6 t2!+t+ #t * #nu6#)tu e F+ $&t!$n'

2'5'1'5 C$($)$. e)$n . u)t$ + !n #))$. #n)e 2!t1 ICEA S-:0-<<1'

2'5'1'5 Te+t!n"= Fu n!+1 6#)t$ 3 ee(te+t+'

2'5'2 C$&&e H$!G$nt#(C#-(e= TIA©EIA-5<; C#te"$ 3 < +$(! .)$n . u)t$ un+1!e(. e . t2!+te . &#! /UTP07 25 A ? G7 100 $1 * A 5 !n . !,! . u#((3 t2!+te . &#! +A)$,e e . 2!t1 -(ue F#)@et #n .)$ * &(3!n" 2!t1 #((e(e,#nt &# t+ $6 #n . #. . en . # t$ (#te+t e . !t!$n $6 TIA©EIA-5<; #n . UL 555'

2'5'2'1 In ($)#t!$n+ $t1e t1#n !n &(enu * +7 & $,! . e NFPA 70 t3&e CMG "ene #(&u &$+e7 CMR !+e - #te . 7 $ t3&e CMP &(enu * - #te .)#-(e'

2'5'2'2 In &(enu * +7 & $,! . e NFPA 70 t3&e CMP &(enu * - #te .)#-(e'

2'5'2'4 Te+t!n"= Fu n!+1 6#)t$ 3 ee(te+t+'

2'5'4 C$&&e C#-(e Te * !n#t!$n+= In+u(#t!$n . !+&(#)e * ent)$nne)t!$n /IDC0 t3&e u+!n" #&& $& !#te t$$(A u+e +) e22n'

2'<'2'4 L#-e(+= F#)t$ 3 !n+t#((e. (#*!n#te. &(#+t!) n#*e&(#te+ #-$,e e#)1 &$ t7 nu*-e e.)$n+e)ut!,e(3A)$*&(3 2!t1 TIA℃EIA-<0< u+!n" en)$.e. !.ent!6!e +'

2'<'2'5 P $,!.e !n)$*!n")#-(e +t #!n e(!e6 #n. $ut!n" "u!.e+ $n -#)@ $6 &#ne('

2'<'2'5 P#t)1 C$.+= P $,!.e $ne /10 &#t)1)$. 6$ e#)1 &#! $6 &#t)1 &#ne(&$ t+'

2'<'4 P#t)1 P#ne(+ 6$ F!-e O&t!) C#-(!n"= S!Ge. t$ 6!t EIA +t#n.# . 1: !n)1 2!.e e8u!&*ent #)@+A 0'0: !n)1 t1!)@ #(u*!nu*'

2'<'4'1 A.#&t$ += A+ +&e)!6!e. #-$,e un.e FIBER OPTIC CABLINGA *#>!*u* $6 25 .u&(e> #.#&t$ + &e +t#n.# . &#ne(2!.t1'

2'<'4'2 L#-e(+= F#)t$ 3 !n+t#((e. (#*!n#te. &(#+t!) n#*e&(#te+ #-$,e e#)1 &$ t7 nu*-e e.)$n+e)ut!,e(3A)$*&(3 2!t1 TIA℃EIA-<0< u+!n" en)$.e. !.ent!6!e +'

2'<'4'4 P $,!.e !n)$*!n")#-(e +t #!n e(!e6 #n. $ut!n" "u!.e+ $n -#)@ $6 &#ne('

2'<'4'5 P $,!.e e#)#-(e *#n#"e*ent t #3 #t (e#+t ; !n)1e+ .ee& 2!t1 e*$,#-(e)$,e '

2'<'4'5 P $,!.e .u+t)$,e + 6$ unu+e. #.#&t$ +'

2'<'4'< P#t)1 C$.+= P $,!.e $ne /10 &#t)1)$. 6$ e#)1 &#! $6 &#t)1 &#ne(&$ t+'

2'7 ENCLOSURES

2'7'1 B#)@-$# .+= Inte !$ " #.e &(32$$. 2!t1$ut ,$!.+7 4℃5 !n)1 t1!)@A UL-(#-e(e. 6! e- et# .#nt'

2'7'1'1 S!Ge= A+ !n.!)#te. $n . #2!n"+'

2'7'1'2 D$ n$t &#!nt $,e UL (#-e('

2'7'2 E8u!&*ent R#)@+ #n. C#-!net+= 7 6t DAMAC CEA-410 +t#n.# . 1: !n)1 2!.e)$*&$nent #)@+'

2'7'2'1 F($$ M$unte. R#)@+= 1< "#"e +tee( )$n+t u)t!$n 2!t1)$ $+!$n e+!+t#nt 6!n!+1A ,e t!)#(#n. 1$!G$nt#( )#-(e *#n#"e*ent)1#nne(+7 t$& #n. -$tt$*)#-(e t $u1 1+7 #n. " $un.!n" (u"'

2'7'4'1 C#&#)!t3= One & $te)t$ * $.u(e &e &#! !n !n)$ * !n")#-(e'

2'7'4'2 P $te)t$ M$.u(e+= T3&e #te. ◊$ t1e #&&(!)#t!$n'

4'4'4 C$&&e C#-(!n"=

4'4'4'1 C#te"$ 3 5e(<= M#!nt#!n)#-(e "e$* et 3A .$ n$t unt2!+t *$ e t1#n 1(2 !n)1 6 $* &$!nt $6 te *!n#t!$n'

4'4'4'2 F$ 5-&#!)#-(e+ !n)$n.u!t7 .$ n$t e>)ee. 25 &$un.+ &u((ten+!$n'

4'4'4'4 C$&&e C#-(!n" N$t !n C$n.u!t= U+e $n(3 t3&e CMP &(enu*- #te.)#-(e #+ +&e)!6!e.'

4'4'5 F!-e O&t!) C#-(!n"=

4'4'5'1 P e&# e 6$ &u((!n" -3)utt!n" $ute F#)@et 6$ 10 !n)1e+ 6 $* en.7 (e#,!n" +t en"t1 *e*-e + e>&$+e.' T2!+t +t en"t1 *e*-e + t$"et1e #n. #tt#)1 t$ &u((!n" e3e'

4'4'5'2 Su&&$ t ,e t!)#( )#-(e #t !nte ,#(+ #+ e)$* *en.e. -3 *#nu6#)tu e

4'4'5'4 F ee-#! 2!((-e #n !n !nne .u)t 1 M !n)1'

4'4'5 F($$ -M$unte. R#)@+ #n. En)($+u e+= Pe *#nent(3 #n)1$ t$ 6($$!n

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( ) - - 0 4 / 0 + (0 // 0 (4 (* * 0. 2
0+ ,6 - +4 # , *4 * + , , ( ) - - 0 ++ * *
$: ,6 %

% % % = +* 0+ $ - (?

% % % %) 0 // * , * , 9 %

% % % % * ; * $ *%

% % % % + C (A - ,) 0 // * / 0 (%

0 , 0+ (( ) ++ 0 # ((7 . =+ ,6 +)
((* ; * $+ - 4 = 6 6 $ - ((
(0 * ; % (0 807(4) - 5.15275( )]

% % 0 , , (

%@% % $ * , ? @ # & " $4 . < , 0+ 4) * # . 9 / *
7, * ++ # ((7 @< ; ><B # - (%
((7 @< 4 5 +4 * 1 - - - 3%
0+ (*)) #+ - (() ++ 0 # ((7 $
@< = * 2) (- # / - , # - (%) ++ 0 0+
(## ; ; =$ 1 # "0#(3%

%@% % " * # / - , >)C?

%@% % % 1 3 N %< *= - 7%

%@% % % O N @ % *= - %

%@% % % N %B *= - %

%@% % %@ $ O N @ % *= - %

%@% % %> $ N @%B *= - %

%@% % %< O 1 3 N %B *= - %

%@% % % $ O 1$ 3 N %B *= - %

%@% % %B ((N %> *= - %

%@% % 5 * , , (((* F (1 * & ++ , (3?

%@% % % & ++ $+ ? ,(,)) , 2 ++#+ (- 0
' $ AA ' $@ AA # @ # 1(+ *
- + 34 2) * (2 * 2(4 2) 0+ 6 / ++ (%

%@% % % . < L ,6(? ,(' < %

%@% % % (, ++ (? $ 9 * ## # - * + (2) ## #
, , (/) (.(- * 9 , ((,) (? < <4
' = >4 ' = ,%

%@% %@)) 2 ++ (++ (1 % %4 , 2 .(4 /+ 0 7 (4 ,%3 # 9 *
,(. < : ,6(/ ##+ , %

%@% (++ ? (++ () ++ 0 , * , * , , * , 2) * + (
(0+ () * 0.) # * , - / , * * (. (* *(% & ++ #+ (
() ++ 0 - * (,))) 9 , + * - ((#+ - 0% ,) 2 ++ #+
() ++ 0 + 0 + * 2) ((# , 9 2 6 (- 0 % ,) - * +
- / - () ++ 0 + 0 + * 2) ((# , 9 2 6 (- 0 %
& ++#+ (*: , + , , + *) 2 ++#+ (() ++ 0) (-
+ 9 0 9 / () * /+ %

%> = 1 3

%>% (, # ? ((2)) , 0+ *(,) /) (
2 6( ) 0 +* ( ) - (4 ** + (() ++ 0
, (, *% &) ,+ ((# , (9 + 0+ 4 ,) () ++ +C 2 ++ ,6(%
&) ,+ ((# , (9 + 0+ 4) () ++ 0 , 0 %

%>% % $ * ,(* F (?

% = " ; = "

% % $ # , 0+) *+ (, , + -) * (. /))
# / - , , 0+ % 0+) *+ , - - * (,+ * ?

% % % 0+ - (0 , * * 0 9 * (/ @B) (#
(++ %

% % % (7, ((9 / , 2) # ++ , 0+ %) - 7 - - # ++ / ,
* + / @ #) C + $ ( ) +* 7, * 1 >+0/3%
) (* + 9 *((,) , * , (

%@% % - - - /> ,) (# 0 2 * , 0+ * ++
0 ++ (, ++ * +) %

%@% - - (# *(, (/ + , - - , (, 0+ / - # +
(, (/ 7, * >6E ?

%@% % @ ,) 2 ./ - () +* *# 2 + (+ , , + 5 #-
# 7 - . # - +#)2 .(

%@% % ,) 2 ./ - () +* *# 2 + (+ , , + 5 #-
# 7 - . * * - +, * #)2 .

%@% % < ,) (2 ./ - $ 2 + (,+ (* * * - +, * 1
5 9 + () +* 3 # 7 - . * * - +, * #)2 .

%@% %@ @ ,) (2 ./ - + , , + - (* (/ - (

%>%@% ++ , # , . , * 4 - * + / *)) C +#)2 .(
() +* 7, *@ # , % - 7 - - /< # , #)2 . /++ (
++ 2 * ,, - - * #+ * ** (/ + (++ %)
< , 0+ (+ % %1 % > ,) ! % ,) 9(% % ,) /
.# , +/ < , 0+ 3%) , (* * - / < , 0+ 2++
5 ## # * (, (* (2) (C , * *)
)2 .(% - ((++ (4 , * (C (2++) 9 0 , (*
* ,, - - * ++ /) , 0+ (0 (++ *%) (2++ -# ,
) * (* - +(+ , /) # : , % , +, +) /++ 4
9) (- /) , (((, + / ++ , 0+ (40.) - (
(, * , (((, + /) #)2 .%

%>%@%@ ++ (/ - * < , 0+ 1 < 3 5 (,) / @
, 0+ (* (C *+ / ** +, 0+ ((5 * - <
, /++ %

%>%@%> + *; (+*0 - , 0+ . () ++0 +C */ + 4))
* (. (++ (%L) 6(*) (# , / , , 0+ (##) *2
() ++0 (* ++ + , ((* / , 0+ .%

%>%@%< $)2 . * (() +* 7, *13A * 0 *(0 2 # ++
(# ++0 7 (1$=3% / -) 13A * 0 *(5 *4
(++ # ++0 70 2 0 *(%

%>%@% $ 9* (C *# ++0 7 (/ .) / 4 2)
-) 2 . * 0 *(%

%>%@%BL) 6(() +* 0 * -+. (# , *< ,) + ((% 7, *L
) 6 , # , ./ (C * 2) + - (%

%>%@%A * 2 + ((,, ((, 0+ 0 9 , + 4(, * , +
0 ,6 % (+ ,6+ #)) C +, 0+ (5 *% +C
9 . +)# ,) , *(2) (++ 2 + ((,, ((# * 9 , (
/ /+ 70+ . +)%

%>%@% .74033( ) -5.15007( )0616 -12.6 Td [(@89606( ) -4.59439(+)4.590251( )11.4807( )

%>%@% * (, / + (,) (/ - ++# 2 , * (*
, 0+ (4 * < ,) (/ - ++/+ (, +) /7 (% (++
2 / * (-#(0 9 2) >/ /
+ , - - , (0 ,60 *% (++ + , - - , (
, * (0 9 # 2 # +((2 ,)0 *(%

%>%@% , () ++ / (# ++ (* #)2 .(2) ,) + 9)
+ , - -(9 , * 4 , 0+ . (+ % , ((# (0+
/ (++ (+ 9 (,) 2 ++ # # 4 *
/ (## ++ / * # (% - (, , +6 () ++ 0
##+ * *) (* / ,) (+ 9 4 * - (, # . (*
) (+ 9 , * (*) , 0+ (% ## # / ++ (- (0
/ ++ 2 * 2) # / * 2 ++(%

%>%@% @ /0 , 0+ (, * (2) ,) + (( ) ,)
* - %

%>%@% > 0 * * , 0+ () ++ 0 - 9 * / - #)2 .(1 % %4 / - +(4
-) + (4 #+ - (# , (4 * , * 3 * (, # /) (# : , %
$ 9 (+. 6 2 * / * , 0+ 2) ,) (## +.
0 * * # 2 6 () ++ 0 0)) /) 2
/) C # - 9 +%

%>%> " "?

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(* *(* + (%

%>%<% * ((, 0+ (0 *+ (+) @ , 0+ (% + #+ @ , 0+
0 *+ (- . 0 # ++ + 2) 9 +. (# , * E +, , 0+ (
* +. (5 , %

%>%<% @ , 0+ - - / # ,) # +4 , 0+ () ++ (2 #
- # (* 0 (## * 0. ## # , 0+
- - %

%>%<% > C +# ,) , * - - (5 * ++ (++ (2) ,)
* (+ * # ,) # +(%

%>%<% < , 0+ 0 * * (@O * - 1 $ +.3 2)
- / , #+ 0 ,60 74 0 7 + - (/
6 ,6 (%

%>%<% , #+ (* =(() ++ 0 / ++. (++ * * + 0 + * # (%

%>% = E " & & $
E

%>% % & $4 $ - *) , - - , (, 0+ (() ++ -
,) # +( ) ; 1 3%

%>% % & $, 0+ (() ++ 0 (## * 0. , + - 0 ,6 %
// 7 / # =) 0 ,6 (, - - * *%

%>% % =4 : ,6(4 * # ,) , *((* #+ - (# , (() ++ 0 #+ -
*%

%>% %@ = () ++ 0 - *) , + (# , ++. * (* ,+ # ,) *
, 0+ (## , + 2) * * * (## # , 0+
- - (, $ % = () ++ 0 2 ## * (## (4
+ / , + + ( ) 5 # - + , * 0 9) , + %

%>% %> & ++ - * * 9 , (5 / , #+ (2 ++ 0 - * * , +.
) 0 ,60 7% L ,6(2 ++ 0 (, * (* 0 ,60 7 (# , ++.
* (* 2 ++ 0 ,6 ,+ # # , 0+ - - (, $ %

%>%B = "

%>%B%) , 2 ++ # ++ ++ 9 , * * , 0+ (*9 , /)
(++ /) - * + / 2 6((4 * , + 0 (/ *
0 9 , + / # 2 # + / *(% # / 9 +4) ,
2 ++ / *) , 0+ ( )) # 2 # + (0 (/ *;2 ++ , , *
* ; + , - , * 4 * - ((# , / *) /+ #+ (%

%>%B% , , * 2) 2 H(/ 9 * / - /)
(++ / (. (- (/ 4 * (++ / + , , + *
9 , ;* , 0+ % 9 - - . 0 5 * /) (*) #) ((/
) # : , 2 64 * 0 *(4 #+ (* (,) * + (- (/+ , , + 2 6
* - *(% , () ++ , (* ++ , (( ) 0 *(/ (++ %

%>%A = ' $ $?

%>%A% ++ - + 0+ ,6(-) ++ 2(+ 2
((* - - C (, ((/ 2 (%

%>%A% ((* , - 0 ++ , - , 0+ 0 *+ (#(/ @ , 0+ (,)%
+ - , ((* , 0+ (* I* 9 (J%

%>%A% " * ++ () +* * # ,) # +(+ , - * (, 9 #

%>% %<) , () ## 9 *)) , # , .) C + * 9 , +, 0+
- ,) +(5 * ## * * 5 #- ,6(4 *)
,6(2 ##, (//, 9 , + *) C +, 0+ - (
/ , +) # ,) # + * (. * #+ , - (## * 0.)
, , %

%>% % , 2 ## (## , 2 .(4 0 7 (4 - (4 * ,+ (((
* , * ,, * - / , H(2 (, (% , +.
/ (,) , -#) (/ , 2) ,) (- * * - 9
0 (* () # * (/ - ##, 0+ .%

%>% %B ,) + ** ,6 (.(- (5 * * 2 ## 0 # 9 * * 0.)
, , * (## *) # 9 * , 0+ (##) ,6
(.(-%) (,+ * (## /) 5 * + ** ,6 (## -((,)
(,6 2 . 6 (4 2 ## + 0 ,6 (4 , + (## (4 (#+ , (
1: , * 0 34 * (* #(* : 0 + (%) / ++ ** ,6 + .
2 ## 0 ,+ * *) + . * 2 * (, 0 * 0 9 %

%>% %A$ 9 * * (## (* *) - @ / 7 B ,) 7 S ,) /
* #+. 2 * 0 * * + 0 + * 2) / (-# / ,)
- ,, - - * ,6 + ** (## 4 , 0+ (## 4 *

%<% % $ 9 * ((+ (/ , * 2 # (9 9

+

%<% % % ##+ , 0+ + , - - , (- -0

%<% % % , % % -0 2) , (# * : ,6 * /

%<% % %@ & # ! ( ) ++ ,+ *) / ++ 2 ?

%<% % %@% .) - *

%<% % %@%) (0 2 . 2 - , * , (

%<% % %@% ((* # (

%<% % %@%@ 9 (* # (

%<% % %@%> #+ # (

%<% % %@%< .) - (2

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%<% % %< (((

%<% % % * ((+6 1 O 3 ((

%<% % %B $ O 1$ 2 - * ((+63

%<% % %A O 1 * ((+63

%<% % % O 1 5 + 9 + * ((+63

%<% % % $ O 1$ 2 - 5 + 9 + * ((+63

%<% % % $ # + .

%<% % % + . 6 2

%<% % % @ + ((

%<% % % > $ O 1$ 2 - * ((+63

%<% % % < $ 1$ 2 - ((+6 4
*3

%<% % ((+ (/ < ( ) ++ ,+ * ++ /) 0 9 4 #+ ( ) / ++ 2 ?

%%<% +19616( )5.740396 ( ) 1315 f +48( ) - 168.674( ) 2.68086( ) 2.19616( )5.7403007(

%<% % %@ $ O 1$ 2 - + * ((+63

%<% % %> $ 1$ 2 - + ((+6 4
*3

9 * ($ * , (?

/ & O# (((
+ 6 O + #+ / - 0+ / , ((
62 , * - / 2

% $ L

% % # * - , - +(() ++ 0 (0 - * # (/)
(.(- % + /) 1 3 - +(() ++ 0 * +9 *) 2 % +(
() ++ ,+ * ++ (9 , 4 (++ 4 * # - - / - %

% % $ 9 * / ++ (/ I (0 +J 1 *+ 3 * 2 (& " * $
/ - % 2 (* # , / + + , * * #; , 0+ * / , - 0 (
* + 0 +(2) ,) - ,)) (# (% ,+ * 1 3) * , #. # # / - / ++
(0 +(,) 7 @ ,) (C 5 9 + 4 # (* ,) + , - -
9 +9 *) # : , %

% % , # 9 * ++ 2 . / - 9 / # , ((% 9
2 ++ (* 2 . * , - * , 2 %

%B "

%B% $ 9 * @) ( ) # * (++ /) * (.(- 4
: 0 (4 , (2 %

1'8'7'8'5 Fert /"ꜝ eꜝe,"t #n #- /"4ꜝe tr"2) "4#,e t.e -ꜝ##r #r 4#tt#1 #-
/eꜝn!)tru/ture'

1'8'7'8'7 L#"* /"ꜝ/uꜝ"t #n) t#).#(*e"* "n*ꜝ,eꜝ#"*) ") n#t
e6/ee* n! 1"nu-"/turer) r"t n! -#r tr"2 "n* t))u%%#rt
eꜝe 1 ent)'

1'8'7'8'5 Ret" n - r)t %"r"!r"%. 4eꜝ#((.en (#r<)t"t #n #utꜝet -"/e%ꜝ"te)

1'7'1'5 Ret" n - r)t %"r" ! r"%. 4e+# (- C#ntr" /t#r #r 1 "nu-" /turer)e+e/t) te)t n !
" !en/2 #r - C#ntr" /t#r) re?u re* t# %r#, *e)er, /e) #- " ?u"+ - e*

1'10 COORDINATION

1'10'1 C##r* n"te +"2#ut "n* n)t"+"t #n #- te+e/#1 1un /"t #n) %"t. ("2) "n* /"4+ n! (t. O(ner) te+e/#1 1un /"t #n) "n* LAN e?u %1ent "n*)er, /e)u%%+ er)'

[illegible]

2'5'1'1 Be+*en CDT In/'N E+e/tr#n /) D ,) #n'

2'5'1'2 C#1 1S/#%e0 In/'

2'5'1'5 Su%er #r E))e6 In/'

2'5'2 De)/r %t #n3 100-#. 10 7-%" r UT&0 -#r1e* nt# 25-%" r0 4n*er !r#u%) /#,ere* (t. " 4+ue t.er1#%+")t / E"/<et'

2'5'2'1 C#1%+2 (t. ICEA S->0-881 -#r 1e/."n /"+ %r#%ert e)'

2'5'2'2 C#1%+2 (t. TIA9EIA-58:-B'1 -#r %er-#r1"n/e)%e/ - /"t #n)'

2'5'2'5 C#1%+2 (t. TIA9EIA-58:-B'20 C"te!#r2 8'

2'5'2'7 L)te* "n* +"4e+e* 42 "n NRTL "//e%t"4+e t# "ut.#r te) .", n! Eur)* /t #n ") /#1%+2 n! (t. UL 777 "n* NF&A 70 -#r t.e -#+#(n! t2%e)3

2'5'2'7'1 C#1 1un /"t #n)0 Gener"+ &ur%#)e3 T2%e CM #r CMG JN #r M&&0 CM&0 M&R0 CMR0 M&0 #r M&GK'

2'5'2'7'2 C#1 1un /"t #n)0 &+enu1 R"te*3 T2%e CM& J#r M&&K0 /#1%+2 n! (t. NF&A 282'

2'5'2'7'5 Mu+t %ur%#)e0 &+enu1 R"te*3 T2%e M&&0 /#1%+2 n! (t. NF&A 282'

2'7 UtM

2'5'2'8 M"6 1u1 Attenu"t #n3 J5'50K *B9<1 "t :50 n1'

2'5'2'7 M n 1u1 M#*"+ B"n*(*t.3 180 MH=-<1 "t :50 n1N 500 MH=-<1 "t 1500 n1'

2'5'5 C"/<et3

2'5'5'1 C"/<et C#+#r3 A?u" -#r 509125-1 /r#1eter /"4+e0 Ye+#(-#r)n!+e 1#*e0 Or"n!e -#r 82'59125-1 /r#1eter /"4+e'

2'5'5'2 C"4+e /#r*"!e E"/<et0 - 4er0 unt0 "n* !r#u% /#+#r)."++ 4e "//#r* n! t# TIA9EIA- 5>:-B'

2'5'5'5 I1%r nte*(t. - 4er /#unt0 - 4er t2%e0 "n* "!!re!"te +en!t. "t re!u+"r nter,"+) n#t t# e6/ee* 70 n/.e) @1000 1 1A'

2'8 O&TICAL FIBER CABLE HARDDARE

2'8'1 M"nu-"/turer)3 Su4Ee/t t# /#1%+ "n/e (t. re?u re1ent)0 %r#, *e %r#*u/t) 42 #ne #- t.e -#+#(n!3

2'8'1'1 Ortr#n /)

2'8'2 Cr#))-C#nne/t) "n* &"t/. &"ne+)3 M#*u+"r %"ne+) .#u) n! 1u+t %+e-nu14ere*0 *u%+e6 /"4+e /#nne/t#r)'

2'8'5 C##r* n"te)u4%"r"!r"%. 4e+#((t. Dr"(n!) -#r ?u"nt t2 #- /#nne/t#r)'

2'8'5'1 Nu14er #- C#nne/t#r) %er F e+*3 JOneK LIn)ert nu14erM -#r e"/. - 4er #- /"4+e #r /"4+e) "))!ne* t# - e+*0 %+u))%"re) "n* 4+"n< %#) t #n) "*e?u"te t#)u t)%e/ - e* e6%"n) #n /r ter "'

2'8'7 &"t/. C#r*)3 F"/t#r2-1"*e0 *u"+-- 4er /"4+e) n 58- n/. @>00-1 1A +en!t.)'

2'8'5 C"4+e C#nne/t n! H"r*("re3

2'8'5'1 C#1%+2 (t. O%t /"+ F 4er C#nne/t#r +nter1"te "4+t2 St"n*"r*) @FOCISA)%e/ - /"t #n) #- TIA9EIA-807-20 TIA9EIA-807-5-A0 "n* TIA9EIA-807-12' C#1%+2 (t. TIA9EIA-58:-B'5'

2'8'5'2 Bu /<-/#nne/t0) 1%+e6 "n* *u%+e60 T2%e LC /#nne/t#r)' In)ert #n +#)) n#t 1#re t."n 0'75 *B'

2'7 COAQIAL CABLE

2'7'1 M"nu-"/turer)3 Su4Ee/t t# /#1%+ "n/e (t. re?u re1ent)0 %r#, *e %r#*u/t) 42 #ne #- t.e -#++#(n!3

2'7'1'1 A+%." D re C#1%"n2'

2'7'1'2 Be+*en CDT In/'N E+e/tr#n /) D ,) #n'

2'7'1'5 C#1 1S/#%e0 In/'

2'7'2 C"4+e C."r"/ter)t /)3 Br#"*4"n* t2%e0 re/#1 1en*e* 42 /"4+e 1"nu-"/turer)%e/ - /"++2 -#r 4r#"*4"n* *"t" tr"n)1)) #n "%%+ /"t #n)' C#"6 "+ /"4+e "n* "//e))#r e))."++ ."e 75-#.1 n#1 n"+ 1%e*"n/e (t. " return +#)) #- 20 *B 1"6 1u1 -r#1 7 t# :08 MH='

2'>'2'2'2 One -#r e" / . -#ur-%" r /#n*u/t#r !r#u% #- n* /"te* /"4+e)0 %+u)
25 %er/ent)%"re %#) t #n)'

2'>'2'5 M#unt n!3 Re/e))e* n /e+n!0 D"+'

2'>'2'7 NRTL+)te* ") /#1%+2n! (t. UL 50 "n* UL 1:85'

2'>'2'5 D.en n)t"+e* n %+enu1) u)e* -#r en, r#n1ent"+ " r0 NRTL+)te* ") /#1%+2n!
(0236(#)0.5902511(n)11.4807(1)]TJ256.0900Td [(e)0.5902511(n)0.5902511(t)5.7657025t85

2'11 TELECOMMUNICATIONS OUTLET9CONNECTORS

2'11'1 C"/<)3 100-#. 10 4"+"n/e*0 t( )te*-%" r /#nne/t#rN -#ur-%" r0 e !.t-%#) t #n 1#*u+"r' C#1%+2 (t. TIA9EIA-58:-B'1'

2'11'2 D#r<)t"t #n Out+et)3 F#ur-%#rt-/#nne/t#r "))e14+e) 1#unte* n J1u+t !"n! -"/e%+"te'

2'11'2'1 Met"+ F"/e%+"te3 St" n+e)))tee+0 /#1%+2n! (t. re?u re1ent) n D ,) #n 28 Se/t #n ;D r n! De, /e)';

5'7'8 Out*##r C#"6 "+ C"4+e In)t"++"t #n3

5'7'8'1 In)t"++ #ut*##r /#nne/t #n) n en/+#)ure) /#1%+2 n! (t. NEMA 2500 T2%e 7Q' In)t"++ /#rr#) #n-re))t"nt /#nne/t#r) (t. %r#%er+2 *e) !ne* 0-r n!) t# <ee% #ut 1#)ture'

5'7'8'2 Att"/. "ntenn" +e"*-n /"4+e t#)u%%#rt)tru/ture "t nter,"+) n#t e6/ee* n! 58 n/.e) @>15 1 1A'

5'7'7 Gr#u% /#nne/t n! ."r*("re -#r /"4+e) nt#)e%"r"te +#! /"+-e+*)'

5'7': Se%"r"t #n -r#1 EMI S#ur/e)3

5'7':'1 C#1%+2 (t. BICSI TDMM "n* TIA9EIA-58>-A -#r)e%"r"t n! un).e+*e* /#%%er ,#/e "n* *"t" /#1 1un /"t #n /"4+e -r#1 %#tent "+ EMI)#ur/e)0 n/+u* n! e+e/tr /"+ %#(er+ne) "n* e?u%1ent'

5'7':'2 Se%"r"t #n 4et(een #%en /#1 1un /"t #n) /"4+e) #r /"4+e) n n#n1et"++ / r"/e("2) "n* un).e+*e* %#(er /#n*u/t#r) "n* e+e/tr /"+ e?u%1ent)."++4e ") -#++#()3

5'7':'2'1 E+e/tr /"+ E?u%1ent R"t n! Le)) T."n 2 <FA3 A 1 n 1u1 #-5 n/.e) @127 1 1A'

5'7':'2'2 E+e/tr /"+ E?u%1ent R"t n! 4et(een 2 "n* 5 <FA3 A 1 n 1u1 #-12 n/.e) @500 1 1A'

5'7':'2'5 E+e/tr /"+ E?u%1ent R"t n! M#re T."n 5 <FA3 A 1 n 1u1 #-27 n/.e) @810 1 1A'

5'7':'5 Se%"r"t #n 4et(een /#1 1un /"t #n) /"4+e) n !r#un*e* 1et"++ / r"/e("2) "n* un).e+*e* %#(er+ne) #r e+e/tr /"+ e?u%1ent)."++4e ") -#++#()3

5'7':'5'1 E+e/tr /"+ E?u%1ent R"t n! Le)) T."n 2 <FA3 A 1 n 1u1 #-2-192 n/.e) @87 1 1A'

5'7':'5'2 E+e/tr /"+ E?u%1ent R"t n! 4et(een 2 "n* 5 <FA3 A 1 n 1u1 #-8 n/.e) @150 1 1A'

5'7':'5'5 E+e/tr /"+ E?u%1ent R"t n! M#re T."n 5 <FA3 A 1 n 1u1 #-12 n/.e) @500 1 1A'

5'7':'7 Se%"r"t #n 4et(een /#1 1un /"t #n) /"4+e) n !r#un*e* 1et"++ / r"/e("2) "n* %#(er+ne) "n* e+e/tr /"+ e?u%1ent +#/"te* n !r#un*e* 1et"++ / /#n*u t) #r en/+#)ure))."++4e ") -#++#()3

5'7':'7'1 E+e/tr /"+ E?u%1ent R"t n! Le)) T."n 2 <FA3 N# re?u re1ent'

5'7' : '7'2 E+e/tr /"+ E?u %1ent R"tn! 4et(een 2 "n* 5 <FA3 A 1 n 1u1 #- 5 n/.e) @78 1 1A'

5'7' : '7'5 E+e/tr /"+ E?u %1ent R"tn! M#re T."n 5 <FA3 A 1 n 1u1 #- 8 n/.e) @150 1 1A'

5'7' : '5 Se%"r"t#n 4et(een C#1 1un /"t#n) C"4+e) "n* E+e/tr /"+ M#t#r) "n* Tr"n)-#r1er)0 5 <FA #r H& "n* L"r!er3 A 1 n 1u1 #- 7: n/.e) @1200 1 1A'

5'7' : '8 Se%"r"t#n 4et(een C#1 1un /"t#n) C"4+e) "n* F+u#re)/ent F 6ture)3 A 1 n 1u1 #- 5 n/.e) @127 1 1A'

5'5 FIRESTO&&ING

5'5'1 C#1%+2 (t. re?u re1ent) n D ,) #n 07 Se/t#n ;&enetr"t#n F re)t#%% n!';

5'5'2 C#1%+2 (t. TIA9EIA-58>-A0 Anne6 A0 ;F re)t#%% n!';

5'5'5 C#1%+2 (t. BICSI TDMM0 ;F re)t#%% n! S2)te1); Art /+e'

5'8 GROUNDING

5'8'1 In)t"+ !r#un* n! "//#r* n! t# BICSI TDMM0 HGr#un* n!0 B#n* n!0 "n* E+e/tr /"+ &r#te/t#n; C."%ter'

5'8'2 C#1%+2 (t. ANS+-C-STD-807-A'

5'8'5 L#/"te !r#un* n! 4u) 4"r t# 1 n 1 =e t.e +en!t. #- 4#n* n! /#n*u/t#r)' F")ten

5'7'5 C#1%+2 (t. re?u re1ent) n D ,) #n 0> Se/t #n ;Inter #r &" nt n!; -#r %" nt n! 4"/<4#"r*)' F#r - re-re))t"nt %+2 (##*0 *# n#t %" nt #,er 1 "nu-"/turer©) +"4e+'

5'7'7 &" nt "n* +"4e+ /#+#r) -#r e?u %1ent *ent - /"t #n) . "++ /#1%+2 (t. TIA9EIA-808-A -#r JC+")) 2K JC+")) 5K JC+")) 7K+e,e+ #- "*1 n)tr"t #n J0 n/+u* n! #%t #n"+ *ent - /"t #n re?u re1ent) #- t.))t"n*"r*K'

5'7'5 C"4+e S/. e*u+e3 &#)t n %r#1nent +#/"t #n n e"/. e?u %1ent r##1 "n* (r n! /+#)et' L)t n/#1 n! "n* #ut!# n! /"4+e) "n* t.e r *e) !n"t #n)0 #r ! n)0 "n* *e)t n"t #n)' &r#te/t (t. r ! * -r" 1e "n* /+e"r %+")t / /#,er' Furn) . "n e+e/tr#n / /#%2 #- - n"+ /#1%re. en) ,e)/. e*u+e) -#r &r#e/t'

5'7'8 C"4+n! A* 1 n)tr"t #n Dr" (n!)3 S.#(4u+* n! -+##r %+"n) (t. /"4+n! "* 1 n)tr"t #n-%# nt +"4e+n!' I*ent -2 +"4e+n! /#n,ent #n "n*).#(+"4e+) -#r te+e/#1 1un /"t #n) /+#)et)0 J4"/<4#ne %"t. ("2) "n* /"4+e)0K Jentr"n/e %"t. ("2) "n* /"4+e)0K ter1 n"+ ."r* ("re "n* %#) t #n)0 .#r =#nt"+ /"4+e)0 (#r< "re") "n* (#r<)t"t #n ter1 n"+ %#) t #n)0 !r#un* n! 4u)e) "n* %"t. ("2)0 "n* e?u %1ent !r#un* n! /#n*u/t#r)' F#+#(/#n,ent #n #- TIA9EIA-808-A' Furn) . e+e/tr#n / re/#r* #- "++ *r" (n!)0 n)#-t ("re "n* -#r1 "t)e+e/te* 42 O (ner'

5'7'7 C"4+e "n* D re I*ent - /"t #n3

5'7'7'1 L"4e+ e"/. /"4+e (t. n 7 n/. e) @100 1 1A #- e"/. ter1 n"t #n "n* t"%0 (. ere t) "//e)) 4+e n " /"4 net #r Eun/t #n #r #ut+et 4#60 "n* e+)e (. ere ") n* /"te*'

5'7'7'2 E"/. (re /#nne/te* t# 4u+* n! -1#unte* *e, /e)) n#t re?u re* t# 4e nu14ere* "t *e, /e - /#+#r #- (re) /#n))tent (t. "))#/ "te* (re /#nne/te* "n* nu14ere* (t. n %"ne+ #r /"4 net'

5'7'7'5 E6%#)e* C"4+e) "n* C"4+e) n C"4+e Tr"2) "n* D re Tr#u!.)3 L"4e+ e"/. /"4+e "t nter,"+) n#t e6/ee* n! 15 -eet @7'5 1A'

5'7'7'7 L"4e+ e"/. ter1 n"+)tr % "n*)/re (ter1 n"+ n e"/. /"4 net0 r"/<0 #r %"ne+'

5'7'7'7'1 In* , *u"++2 nu14er (r n! /#n*u/t#r) /#nne/te* t# ter1 n"+)tr %)0 "n* *ent -2 e"/. /"4+e #r (r n! !r#u% 4e n! e6ten*e* -r#1 " %"ne+ #r /"4 net t# " 4u+* n! -1#unte* *e, /e). "++ 4e *ent - e* (t. n" 1e "n* nu14er #- %"rt /u+"r *e, /e ")).#(n'

5'7'7'7'2 L"4e+ e"/. un t "n* - e+* (t. n *)tr 4ut #n r"/<) "n* -r" 1e)'

5'7'7'5 I*ent - /"t #n (t. n C#nne/t#r F e+*) n E?u %1ent R##1) "n* D r n! C+#)et)3 L"4e+ e"/. /#nne/t#r "n* e"/. *)/rete un t #- /"4+e-ter1 n"t n! "n* /#nne/t n! ."r* ("re' D .ere) 1 +"r E"/<) "n* %+u!) "re u)e* -#r 4#t. ,# /e "n* *"t" /#1 1un /"t #n /"4+n!0 u)e " * --erent /#+#r -#r E"/<) "n* %+u!) #- e"/.)er, /e'

5'7'7'8 Un ?ue+2 *ent -2 "n* +"4e+ (#r< "re" /"4+e) e6ten* n! -r#1 t.e MUTOA t# t.e (#r< "re"' T.e)e /"4+e) 1"2 n#t e6/ee* t.e +en!t.)t"te* #n t.e MUTOA +"4e+'

5'7': L"4e+)).":+ 4e %re%r nte* #r /#1%uter-%r nte* t2%e (t. %r nt n! "re" "n* -#nt /#+#r t."t /#ntr")t) (t. /"4+e E"/<et /#+#r 4ut)t+ /#1%+ e) (t. re?u re1ent) n TIA9EIA- 808-A'

5'7':'1 C"4+e) u)e -+e6 4+e , n2+ #r %#+2e)ter t."t -+e6 ") /"4+e) "re 4ent'

5': FIELD BUALITY CONTROL'

5':'1 Te)t n! A!en/23 En!"!e " ?u"+-e* te)t n! "!en/2 t# %er-#r1 te)t) "n* n)%e/t #n)'

5':'2 Te)t) "n* In)%e/t #n)3

5':'2'1 F)u"+2 n)%e/t UT& "n* #%t /"+-4er /"4+e E"/<et 1"ter "+) -#r NRTL /ert-/"t #n 1"r<n!)' In)%e/t /"4+n! ter1 n"t #n) n /#1 1un /"t #n) e?u%1ent r##1) -#r /#1%+ "n/e (t. /#+#r-/#* n! -#r %n ")) !n1ent)0 "n* n)%e/t /"4+n! /#nne/t #n) -#r /#1%+ "n/e (t. TIA9EIA-58:-B'1'

5':'2'2 F)u"+2 /#n-r1 C"te!#r2 80 1"r<n! #- #ut+et)0 /#,er %+"te)0 #ut+et9/#nne/t#r)0 "n* %"t/. %"ne+)'

5':'2'5 F)u"+2 n)%e/t /"4+e %+"/e1ent0 /"4+e ter1 n"t #n0 !r#un* n! "n* 4#n* n!0 e?u%1ent "n* %"t/. /#r*)0 "n* +"4e+n! #- ":+ /#1%#nent)'

5':'2'7 Te)t UT& 4"/<4#ne /#%%er /"4+n! -#r DC +##% re))t"n/e0).#rt)0 #%en)0 nter1 ttent -"u+t)0 "n* %#+"r t2 4et (een /#n*u/t#r)' Te)t #%er"t #n #-).#rt n! 4"r) n /#nne/t #n 4+#/<)' Te)t /"4+e) "-ter ter1 n"t #n 4ut n#t /r#))- /#nne/t #n'

5':'2'7'1 Te)t n)tru1ent))."+ 1eet #r e6/ee* "%%+ /"4+e re?u re1ent) n TIA9EIA- 58:-B'2' &er-#r1 te)t) (t. " te)ter t."t /#1%+ e) (t. %er-#r1 "n/e re?u re1ent) n ;Te)t In)tru1ent) @N#r1 "t ,eA; Anne60 /#1%+2n! (t. 1e")ure1ent "//ur"/2)%e/-e* n ;Me")ure1ent A//ur"/2 @In-#r1 "t ,eA; Anne6' U)e #n+2 te)t /#r*) "n* "*"%ter) t."t "re ?u"+-e* 42 te)t e?u%1ent 1"nu-"/turer -#r /."nne+ #r+n< te)t /#n- !ur"t #n'

5':'2'5 O%t /"+ F 4er C"4+e Te)t)3

5':'2'5'1 Te)t n)tru1ent))."+ 1eet #r e6/ee* "%%+ /"4+e re?u re1ent) n TIA9EIA- 58:-B'1' U)e #n+2 te)t /#r*) "n* "*"%ter) t."t "re ?u"+-e* 42 te)t e?u%1ent 1"nu-"/turer -#r /."nne+ #r+n< te)t /#n- !ur"t #n'

5' : '2'5'2 L n< En*-t#-En* Attenu"t #n Te)t)⅗

5' : '2'5'2'1 H#r =#nt"+ "n* 1u+t 1#*e 4" /<4#ne + n<
1e") ure1ent)⅗ Te)t "t :50 #r 1500 n1 n 1 * re/t #n
"//#r* n! t# TIA9EIA-528-17-A0 Met.#* B0 One
Re-eren/e Cu1%er'

5' : '2'5'2'2 Attenu"t #n te)t re)u+t) -#r 4" /<4#ne + n<)) . "+ 4e
+e)) t. "n 2'0 *B' Attenu"t #n te)t re)u+t)) . "+ 4e +e))
t. "n t. "t /"+/u+"te* "//#r* n! t# e?u"t #n n TIA9EIA-
58 : -B'1'

5' : '2'8 UT& &er-#r 1 "n/e Te)t)⅗

5' : '2'8'1 Te)t -#r e"/. #ut+et "n* MUTOA' &er-#r 1 t.e -#+#(n! te)t)
"//#r* n! t# TIA9EIA-58 : - : '1 "n* TIA9EIA-58 : - : '2⅗

5' : '2'8'1'1 D re 1 "%'

5' : '2'8'1'2 Len!t. @%.2) /"+ ,)' e+e/tr /"+0 "n* +en!t.
re?u re1ent)A'

5' : '2'8'1'5 In)ert #n +#))'

5' : '2'8'1'7 Ne"r-en* /r#))t"+< @NEQTA +#))'

5' : '2'8'1'5 &#(er)u1 ne"r-en* /r#))t"+< @&SNEQTA +#))'

5' : '2'8'1'8 E?u"+-+e,e+ -"r-en* /r#))t"+< @ELFEQTA'

5' : '2'8'1'7 &#(er)u1 e?u"+-+e,e+ -"r-en* /r#))t"+<
@&SELFEQTA'

5' : '2'8'1' : Return +#))'

5' : '2'8'1'> &r#%"!"t #n *e+"2'

5' : '2'8'1'10 De+"2)<e('

5' : '2'7 O%t /"+ F 4er C"4+e &er-#r 1 "n/e Te)t)⅗ &er-#r 1 #%t /"+ - 4er en*-t#-en*
+n< te)t) "//#r* n! t# TIA9EIA-58 : - : '1 "n* TIA9EIA-58 : - : '5'

5' : '2' : Ret" n - r)t)u4%"r"!r"%. 4e+#((.en /"4+e) u)e* -#r 4r#"*4"n*
/+#)e*-/ r/u t te+e,) #n "%%+ /"t #n)' Re,)e t#)u t te)t) t# ,er -2 /"4+e
%er-#r 1 "n/e -#r #t.er)2)te 1) u) n! /#"6 "+ /"4+e'

5' : '2'> C#"6 "+ C"4+e Te)t)⅗ C#n*u/t te)t) "//#r* n! t# D ,) #n 27 Se/t #n
;M")ter Antenn" Te+e,) #n S2)te 1';

5' : '2'10 F n"+ Fer - / "t #n Te)t)3 &er-#r 1 ,er - / "t #n te)t) -#r UT& "n* #%t / "+
- 4er)2)te 1) "-ter t . e /# 1 %+ete /# 1 1 un / "t #n) / "4+ n ! "n*
(#r<)t"t #n #ut+et9/#nne/t#r) "re n)t"+e*'

5' : '2'10'1 F# /e Te)t)3 T . e)e te)t) "))u 1 e t . "t * "+ t#ne)er, /e . ")
4een n)t"+e*' C#nne/t t# t . e net (#r< nter-"/e *e, /e "t
t . e *e 1 "r/ "t #n %# nt' G# #--- . ##< "n* +)ten "n* re/e ,e
" * "+ t#ne' I- " te)t nu 1 4er) ", " +"4+e0 1 "<e "n* re/e ,e
" +#/ "+0 +#n ! *)t"n/e0 "n* * ! t"+)u4) /r %t #n 5 1 (/)-0 . 957 1 929 1 ( )-r

PART 1 - GENERAL

1'1 SUMMARY

1'1'1 DESCRIPTION P $(!)e COMMUNICATIONS INFRASTRUCTURE* !n+,u)!n" -#+. -$#)/* te 0!n#t!$n)e(!+e/* $ut,et #n) & e0!/e 1! !n" #/ /2$1n #n) /&e+!3!e) &e C$nt #+t D$+u0ent/'

1'1'2 Re,#te) Se+t!$n/4

1'1'3 D!(!/!$n 15* #,, #&&,!+#-,e /e+t!$n/'

1'2 REFERENCES OF INDUSTRY STANDARDS TO ADHERE TO

1'2'1 TIA6EIA 758-B'1* B'2* B'3 - C$0 0e +!#, Bu!,)!n" Te,e+$0 0un!+#t!$n C#-,!n" St#n)#)* P# t 14 Gene #, Re9u! e0ent/* P# t 24 B#,#n+e) T1!/te) P#! C#-,!n" C$0&$nent/ : P# t 34 O&t!+#, F!-e C#-,!n" C$0&$nent/ St#n)#)'

1'2'2 TIA6EIA 75;-A - C$0 0e +!#, Bu!,)!n" St#n)#) 3$ Te,e+$0 0un!+#t!$n/ P#t21#</ #n) S&#+e/*

1'2'3 TIA6EIA 505-A-A) 0!n!/t #t!$n St#n)#) 3$ C$0 0e +!#, Te,e+$0 0un!+#t!$n/ In3 #/t u+tu e'

1'2'= ANSI6TIA6EIA-507-A4 C$0 0e +!#, Bu!,)!n" G $un)!n" #n) B$n)!n" Re9u! e0ent/ 3$ Te,e+$0 0un!+#t!$n/'

1'2'7 TIA6EIA ;=2- Te,e+$0 0un!+#t!$n/ St#n)#) 3$ D#t# Cente / >2007?

1'2'5 NETA ATS >Inte n#t!$n#, E,e+t !+#, Te/t!n" A//$+!#t!$n?-A++e&t#n+e Te/t!n" S&e+!3!+#t!$n/ 3$ E,e+t !+#, P$1e D!/t !-ut!$n E9u!&0ent #n) S</te0/'

1'2'7 A t!+,e 270 $3 t2e 2001 C#,!3$ n!# E,e+t !+#, C$)e >CEC?'

1'2'8 A t!+,e 800 $3 t2e 2001 C#,!3$ n!# E,e+t !+#, C$)e >CEC?'

1'2';ANSI6NECA6BICSI Te,e+$0 0un!+#t!$n/ D!/t !-ut!$n Met2$)/ M#nu#, >TDMM?* BICSI C#-,!n" In/t#,,#t!$n M#nu#, #n) BICSI LAN De/!"n M#nu#,* BICSI Cu/t$0e -O1ne) Out/!)e P,#nt De/!"n M#nu#,'

1'2'10 FCC P# t 78'700'

1'2'11 NFPA 70

1'3 DI@ISION OF RESPONSIBILITY

1'3'1 O1ne 4
1'3'1'1 A,, L$+#, A e# Net1$. >LAN? 2u- e9u!&0ent

1'3'1'3 Se (e R$$0 C#-!net/

1'3'2 C$nt #+t$ 4

1'3'2'1 A/ !n)!+#te) $n &,#n/ #n) /&e+!3!+#t!$n/'

1'3'2'2 Te/t!n"

1'= SYSTEM DESCRIPTION

1'='1 H$!A$nt#, P#t21#<4 C$n3$ 0 t$ TIA6EIA 75;-A* u/!n" #+e1#<* -#+.-$#)/* #n) +#-!net/ #/ !n)!+#te)'

1'='2 G $un)!n" S</te04 C$n3$ 0 t$ TIA6EIA 5076;=2'

1'='3 @$!+e B#+.-$ne W! !n"4 C$0&,ete 3 $0 t2e M#!n C $//-+$nne+t t$ e#+2 Inte 0e)!#te C $//-+$nne+t* u/!n" +$&&e #n) $&t!+#, 3!-e -#+.-$ne +#-,e/'

1'='= D#t# B#+.-$ne W! !n"4 C$0&,ete 3 $0 t2e M#!n C $//-+$nne+t t$ e#+2 Inte 0e)!#te C $//-+$nne+t* u/!n" $&t!+#, 3!-e -#+.-$ne +#-,e/'

1'='7 @$!+e H$!A$nt#, W! !n"4 C$0&,ete 3 $0 2$!A$nt#, C $//-+$nne+t/ t$ e#+2 $ut,et u/!n" -#,#n+e) t1!/te) &#! 2$!A$nt#, +#-,e/'

1'='5 D#t# H$!A$nt#, W! !n"4 C$0&,ete 3 $0 2$!A$nt#, C $//-+$nne+t/ t$ e#+2 $ut,et

2'1'2'1 O t $n!+/

2'1'2'2 A&& $(e) e9u#,

2'1'3 C$&&e -#+. -$ne +#-,e4

2'1'3'1 BICC Gene #,

2'1'3'2 A&& $(e) e9u#,

2'1'= O&t!+#, 3!-e -#+. -$ne +#-,e* 2$!A$nt#, +#-,e4

2'1'='1 Su&e !$ E//eC

2'1'='2 BICC Gene #,

2'1'='3 A&& $(e) e9u#,

2'1'7 A,, 1! !n" #n))e(!+e/ 0u/t -e 3 $0 # /!n",e 0#nu3#+tu e * $ 3 $0 # " $u& $3 0#nu3#+tu e / t2#t 2#(e te#0e) t$"et2e t$ & $(!)e # /</te0 /$,ut!$n "u# #ntee) t$ 0eet t2e &e 3$ 0#n+e /&e+!3!+#t!$n'

2'2 SUBMITTALS

2'2'1 T2e 3$,,$1!n" 0u/t -e /u-0!tte) 1!t2!n >30? +#,en)#)#</ #3te #1#) $3 t2e +$nt #+t #n) -e3$ e 3#- !+#t!$n #n) !n/t#,,#t!$n $3 #n< 0#te !#,/' Su-0!t 3$ #&& $(#, /!C >5? +$&!e/'

2'2'2 A +$0&,ete ,!/t $3 e9u!&0ent #n) 0#te !#,/* !n+,u)!n" 0#nu3#+tu e 3/)e/+ !&t!(e #n) +#t#,$" +ut/ /2eet/'

2'2'3 C$0&#n< Ce t!3!+#t!$n4 T2e P $&$/e 0u/t -e +e t!3!e) -< t2e 0#nu3#+tu e $3 t2e /u-0!tte) /</te0' I3)!33e ent 0#nu3#+tu e / 1!,, -e u/e) t2e e 0u/t -e # +$0&#n< +e t!3!+#t!$n 3$ e#+2* #n) !t/ u/e t$ -e #&& $(e) #n) #ut2$!Ae) -< C$unt< Te,e+$0 0un!+#t!$n/ St#33' T2e P $&$/e 0u/t & $(!)e e(!)en+e $3 t2!/ +e t!3!+#t!$n #/ &# t $3 t2e /u-0!tt#, & $+e//'

2'2'= F$ e0#n #n) In/t#,,e Ce t!3!+#t!$n4 T2e 3$ e0#n $(e /ee!n" t2e D$- #n) #,, +#-,e !n/t#,,e / 1$.!n" $n t2e !n/t#,,#t!$n $3 t2e +$0 0un!+#t!$n/ +#-,!n" 0u/t -e +e t!3!e) -< t2e 0#nu3#+tu e $3 t2e /u-0!tte) /</te0' T2e P $&$/e 0u/t & $(!)e e(!)en+e $3 !t/ +e t!3!+#t!$n t$!n/t#,, t2e & $&$/e) +$0 0un!+#t!$n/ +#-,e #n) +$0&$nent/'

2'2'7 Te/t Re&$ t/4 P $(!)e /#0&,e te/t e&$ t/ 3$ +$&&e * 3!-e * et+'

2'2'5 A,, /u-0!tt#,/ 0u/t -e +2e+.e) -< t2e C$nt #+t$ 3$ +$n3$ 0#n+e t$ t2e e9u! e0ent/ $3 t2e +$n/t u+t!$n)$+u0ent/ -e3$ e 3$ 1#)!n" 3$ #&& $(#, -< C$unt< Te,e+$0 0un!+#t!$n/ St#33 C$nt #+t$ 0u/t -e e/&$n/!-,e 3$ #,, 9u#nt!t!e/ #n) e $ / $ $0!//!$n/ $3 /u-0!tt#,/'

2'3 EUALIFICATIONS

2'3'1 M#nu3#+tu e 4 C$0&#n< /&e+!#,!A!n" !n 0#nu3#+tu !n" & $)u+t/ /&e+!3!e) !n t2!/ /e+t!$n 1!t2 0!n!0u0 t2 ee >3? <e# / eC&e !en+e'

2'3'2 In/t#,,e 4 C$0&#n< /&e+!#,!A!n" !n !n/t#,,!n" & $)u+t/ /&e+!3!e) !n t2!/ /e+t!$n 1!t2 # 0!n!0u0 t2 ee >3? <e# / eC&e !en+e* #n) 1!t2 /e (!+e 3#+!,!t!e/ 1!t2!n 100 0!,e/ $3 & $0e+t* n$ eC+e&t!$n/'

2'3'3 T2 ee >3? e3e en+e/ 3 $0 & $0e+t/ $3 /!0!,# /!Ae #n) /+$&e 1!t2!n t2e ,#/t <e# '

2'3'= Re9u! e) In/u #n+e/* Gene #, L!#-!,!t< #n) W$. 0#nF/ C$0&en/#t!$n !n #++$)#n+e 1!t2 t2e C$unt<F/ /&e+!3!+ !n/u #n+e e9u! e0ent/'

2'3'7 T2e #-!,!t< t$ & $(!)e # 0#nu3#+tu e F/ 1# #nt< #/)e/+ !-e) !n t2e W# #nt< Se+t!$n $3 t2!/)$+u0ent'

2'= PRE-INSTALLATION CONFERENCE

2'='1 S+2e)u,e # +$n3e en+e # 0!n!0u0 $3 3!(e >7? +#,en)#)#</ & !$ t$ -e"!nn!n" 1$.'

2'='2 C,# !3< #n< 9ue/t!$n/ e,#te) t$ t2e 1$. t$ -e &e 3$ 0e)* /+2e)u,!n" #n) +$$)!n#t!$n $3 0#te !#,/* 1$.!n" 2$u /* et+

2'='3 C$n3! 0 1 !tten /u-0!tt#, #n) 1 !tten +2#n"e & $+e//'

2'7 TELECOMMUNICATIONS GROUNDING

2'7'1 C$nt #+t$!/ e9u! e) t$!n/t#,, # +$0&,ete te,e+$0 0un!+#t!$n/ " $un)!n" /</te0 !n +$0&,!#n+e 1!t2 ANSI6TIA6EIA-5074 C$0 0e +!#, Bu!,)!n" G $un)!n" #n) B$n)!n" Re9u! e0ent/ 3$ Te,e+$0 0un!+#t!$n/ >2002?* TIA6EIA ;=24 Te,e+$0 0un!+#t!$n/ St#n)#) 3$ D#t# Cente / >2007?'

2'7'2 M#nu3#+tu e 4

2'7'3 DAMAC* In+'

2'7'= A&& $(e) e9u#,

2'7'7 P $)u+t De/+ !&t!$n4 DAMAC PLR1210-3 $ A&& $(e) e9u#,' U'L' ,!/te)* & e) !,,e)* e,e+t $t!n &,#te) +$&&e -u/-# 1!t2 2$,e/ 3$ /t#n)#) /!Ae) 2 2$,e +$0& e//!$n /t<,e ,u"/ 0$unte) $n 2-!n+2 !n/u,#t$ /'

2'7'5 D!0en/!$n/4 = !n+2e/ 1!)e C G !n+2 t2!+. C 20 !n+2e/ ,$n"'

2'5 TELEPHONE TERMINATION BACHBOARDS

2'5'1 P $)u+t De/+ !&t!$n4 F! e et#)#nt P,<1$$)'

2'8'3 D!/t !-ut!$n R!n"/6Iu0&e T $u"2/

2'8'3'1 P $)u+t De/+ !&t!$n4 P#n)u!t P110ITW-J $ #&& $(e) e9u#,'

2'8'3'2 L$+#t!$n4 On #,, -#+.-$#)/ #/ e9u! e) 3$ $ut!n" $3 ($!+e +#-,e/ !n # ne#t 3#/2!$n'

2'; CABLE LADDERS

2';'1 P $)u+t De/+ !&t!$n4 DAMAC PLR1210-3 $ #&& $(e) e9u#,'

2';'2 D!0en/!$n/4 12 !n+2 1!)e* 1!t2 /!)e -# / 1 !n+2 t$ 2 !n+2 2!"2'

2';'3 P $(!)e #,, 2#)1# e* t1$ 2$,e +$0& e//!$n /t<,e " $un)!n" ,u"/* t1$ 2$,e +$0& e//!$n /t<,e " $un)!n" /t #&/* 3#/tene /* #n) ,#))e 0$unt!n" - #+.et/'

2'10 OPTICAL FIBER ENCLOSURES AND COUPLER PANELS

2'10'1 P $)u+t De/+ !&t!$n4 O t $n!+/ ORFC03UC* $

2'22'= P $(!)e JJ e#* 2 0ete / !n ,en"t2* LC t$ LC* Du&,eC 3!-e ⍞u0&e /* A,,en Te,,
P $)u+t/* $ #/ e9u! e) 3$ /&e+!3!+ & $⍞e+t n$te/'

2'23 CABLE SUPPORTS

2'23'1 M#nu3#+tu e /4

2'23'1'1 C#))<

2'23'1'2 E !+$

2'23'1'3 A&& $(e) e9u#,

2'23'2 P $)u+t De/+ !&t!$n4 W!)e B#/e I 2$$./ $ C#-,e S,!n"/ 0$unte) t$
!n)e&en)ent +e!,!n" 1! e/ 3$ /0#,,e +#-,e &#t21#</' C,!&/ 0u/t +$0&,< 1!t2
UL* CUL* CEC #n) TIA6EIA e9u! e0ent/ 3$ /t u+tu e) +#-,!n" /</te0/' See
) #1!n")et#!,/' E#+2 ,$1 ($,t#"e /</te0 /2#,, 2#(e !t/ $1n !n)e&en)ent
/u&&$ t /</te0' >D$ n$t u/e /e+u !t< /</te0* CCT@* 3! e* 2#n"e / et+'?

2'2= SLEE@ES

2'2='1 P $)u+t De/+ !&t!$n4 F! e R#te) W#,,/ 0u/t -e &enet #te) 1!t2 STI EK-PATH O
B #n)* $ #&& $(e) e9u#,*)e(!+e 0$)u,e/ +$0& !/e) $3 /tee, #+e1#< 1!t2
!ntu0e/+ent 3$#0 &#)/ #,,$1!n" 0 % 100 &e +ent +#-,e 3!,,' Un #te) 1#,,/ 0#< -e
&enet #te) 1!t2 = !n+2 +$n)u!t /,ee(e/* & $(!)e) 1!t2) #3t /t$& 0#te !#,' Re3e
t$ Se+t!$n 250783'

2'27 CABLE LABELS

2'27'1 M#nu3#+tu e /4

2'27'1'1 O t $n!+/

2'27'1'2 A&& $(e) e9u#,

2'27'2 P $)u+t De/+ !&t!$n4 1 #&-# $un) /0$.e #te) ,#-e,/* ne#t,< 2#n) 1 !tten $

2'27 CABLE TIES AND ACCESSORIES

2'27'1 H$$. #n) ,$$& +#-,e 1 #&/* +#-,e +,#0&/* /&,!t 0e/2 " !&/* +#-,e 2$$. /* #n) +#-,e /u&&$ t/* #/ e9u! e) t$ /u&&$ t t2e +#-,e/ #n)) e// t2e +#-,e/ !n # t!)< 0#nne ' H$$. #n) ,$$& +#-,e 1 #&/ # e t$ ut!,!Ae) 3$ #,, C#t' 5 #n) 3!-e +#-,!n"'

2'28 OTHER HARDWARE

2'28'1 S+ e1/* 1#/2e /* nut/* ,u"/* -$,t/* #n) $t2e 2#)1# e e9u! e) 3$ t2e & $&e !n/t#,,#t!$n $3 t2e +#-,!n" /</te0'

PART 3 - EJECUTION

3'1 EJISTING WORH

3'1'1 En/u e #++e// t$ eC!/t!n" te,e+$0 0un!+#t!$n/ e9u!&0ent* +#-,!n"* #n) te 0!n#t!$n/ #n) $t2e !n/t#,,#t!$n/ 12!+2 e0#!n #+t!(e #n) 12!+2 e9u! e #++e//' A,, EC!/t!n" /</te0/ /2#,, -e & $te+te) 3 $0)u/t #n))e- !/* #n<)#0#"e e/u,t!n" 3 $0)u/t $)e- !/ /2#,, -e #t t2e eC&en/e $3 t2e C$nt #+t$ ' In+,u)!n" #n< +,e#nu& $3 eC!/t!n" e9u!&0ent'

3'2 PERFORMANCE

3'2'1 A,, !n/t#,,#t!$n 1$. 0u/t -e)$ne -< 9u#,!3!e) 6 0#nu3#+tu e +e t!3!e) + #3t/&e$&,e !n # ne#t* 2!"2 9u#,!t< 0#nne #n) 0u/t +$n3$ 0 t$ t2e 0$/t /t !n"ent $3 #&&,!+#-,e ,$+#,* /t#te* 3e)e #, -u!,)!n" +$)e/* #n) e3e en+e) /t#n)#)/'

3'2'2 C$nt #+t$ 0u/t & $(!)e # & $0e+t 0#n#"e 12$ 2#/)e0$n/t #te) t2e #-!,!t< t$ /u&e (!/e # & $0e+t $3 t2!/ 0#"n!tu)e'

3'2'3 Ce!,!n" t!,e/ - $.en $)e3#+e) -< t2e C$nt #+t$)u !n" t2e !n/t#,,#t!$n #n) te/t!n" & $+e// 0u/t -e e&,#+e) #t t2e eC&en/e $3 t2e C$nt #+t$ '

3'2'= C$nt #+t$ 1!,, -e e/&$n/!-,e 3$ #,, 3 e!"2t +2# "e/ e,#te) t$ 0#te !#,/ &u +2#/e/' F#!,u e t$ $)e 0#te !#,/ !n # t!0e,< 0#nne e/u,t!n" !n #))e) 3 e!"2t +2# "e/ $ #(#!,#-!,!t< !//ue/ 1$u,) n$t -e +$n/!)e e) # (#,!) e#/$n t$ /u-/t!tute 0#te !#,/'

3'3 INSTALLATION

3'3'1 In/t#,, te 0!n#t!$n -#+.-$#)/ #n) #+./ &,u0-* #n) #tt#+2 /e+u e,< t$ -u!,)!n" 1#,, #t e#+2 +$ ne '

3'3'2 Te,e&2$ne B#+.-$#) 0u/t -e +$n3!"u e) !n # 0#nne t2#t &,#+e/ te,e&2$ne -,$+./ $n t2e ,e3t 2#n) /!)e #n) 3ee) -,$+./ $n t2e !"2t 2#n) /!)e $3 t2e -$#)* $!n # 0#nne t2#t 2#/ -een & e#&& $(e) -< C$unt< Te,e+$0 0un!+#t!$n/ St#33' A)e9u#te 1! e 0#n#"e0ent)!/t !-ut!$n !n"/ 0u/t -e &,#+e !n #n # #n"e0ent

3'3'5'8 En/u e t2#t " $un)!n" ,u"/ 0#.e # 0et#,-t$-0et#, +$nt#+t 1!t2 #,, e9u!&0ent #+./* +#-,e t #</* ,#))e / #n) " $un) /,ee(e/' Re0$(e &#!nt 3 $0 /u 3#+e/ #/ nee)e)'

3'3'7 In/t#,, &#t21#</ !n #++$)#n+e 1!t2 TIA6EIA 75;-A'

3'3'7'1 C#-,e +,#0&/ $ /u&&$ t/ # e nee)e) 3$!/e -#+.-$ne +#-,e/' C#-,e 2$$./ # e e9u! e) 3$ 2$!A$nt#, +#-,!n"'

3'3'7'2 In/t#,, +,!&/ t$ & $(!)e /t #!n e,!e3 #n) $ute +#-,e/ /$ -en) #)!u/ +$n3$ 0/ t$ TIA6EIA 758B /t#n)#)'

3'3'7'3 C$nt #+t$ 1!,, -e e/&$n/!-,e 3$ en"!nee !n" 9u#nt!t!e/ $3 #n) !n/t#,,!n" #n< ne+e//# < 1! e -#/.et* 3,eC!-,e 0et#, t #<* I-2$$./ #n)6$ +#-,e /,!n"/ 3$ $ut!n" +#-,e/ !n +e!,!n" /&#+e' F,eC!-,e +#-,e 0#n#"e0ent t #< 0u/t -e /u&&$ te) &e 0#nu3#+tu e /F !n/t u+t!$n/' T2e< /2$u,) #,/$ -e &,#+e) #t e(e <) $& &$!nt /u+2 #/ +$n)u!t /tu--u&* 1!t2$ut eC+e&t!$n* #n) 12e e(e /u&&$ t!/ nee)e) t$ #($!) /#""!n" $ t$ #($!) t$u+2!n" &!&!n"*)u+t!n" $ $t2e t #)e/3 1$.' Att#+2!n" $) #&!n" +#-,e/ t$ +e!,!n" 1! e " !)* $t2e &!&e/* ,!"2t 3!Ctu e/* et+'* 1!,, n$t -e &e 0!tte)' R#t2e C$nt #+t$ 0u/t & $(!)e /e&# #te +e!,!n" 1! e 3$ /e+u !n" I-2$$./' U/e $3 t2e +e!,!n" " !) 1! e !n/t#,,e) -< $t2e / !/ n$t &e 0!tte)'

3'3'7'= A,, /,ee(e/ 0u/t -e 3! e & $$3e) #/ e9u! e)' Se#, #,, /,ee(e/ #3te +#-,!n" 2#/ -een te/te) #n) #&& $(e)' A,, e0&t< /,ee(e/ 0u/t -e /e#,"e'

3'3'7'7 Re&,#+e0ent &u,, $&e/ 0u/t 0#t+2 t2e $!"!n#, &u,, $&e/ !n/t#,,e) !n t2e !nte -)u+t/'

3'3'8 In/t#,, 1! e #n) +#-,e !n #++#n)$$ 3811.48( )-767.9025(/)-0.95-5.15007(2)0.590251(e

3'3'8'5 A,, eCte !$ +$n)u!t/ /2#,, -e /e#,e) ut!,!A!n" #&& $(e) &utt< $ /e#,e t$ & e(ent #n!0#, #n) 1#te !nt u/!$n !nt$ /&#+e'

3'3'8'7 W2en !n/t#,,!n" +#-,e/ !n +$n)u!t/ 1!t2 &u,,-/t !n"/* e&,#+e &u,,-/t !n"/ u/e) 1!t2 ne1 $ne/'

3'3'8'8 In n$ e(ent 0u/t #n< 2$!A$nt#, +#-,e/ -e /&,!+e) -et1een te,e+$0 0 $$0/#n) 1$ ./t#t!$n/'

3'3'8'; N$ 2$!A$nt#, +#-,e un/ ,e// t2#n 3!3t< 3eet !n ,en"t2 1!,, -e &e 0!tte)'

3'3'8'10 F!-e $&t!+ +#-,e t$ 2#(e 30 3t /e (!+e ,$$&/ & !$ t$ ent < !nt$ F!-e O&t!+ En+,$/u e/' Ne#t,< +$!, #n) /e+u e /e (!+e ,$$&/ $n ne# e/t 1#,, & !$ t$ ente !n" #+. $ +#-!net'

3'3'8'11 H$!A$nt#, /t#t!$n +#-,!n" 0u/t 2#(e n$,e// t2#n 10 3t /e (!+e ,$$&/ #t t2e /t#t!$n en) #n) 7 3t #t t2e &#t+2 &#ne, en)' In t2e +#/e $3 2$0e un +$n)u!t ut!,!A#t!$n #,, /,#+. >17 3t? 1!,, -e +$!,e) #t t2e -#+. -$#) en) #3te #&& $(#, -< Te,e+$0 0un!+#t!$n/ /t#33 #/ t$)e/!"n'

3'3'8'12 In +u-!+,e 1$ ./t#t!$n ,$+#t!$n/* e#+2 1$ ./t#t!$n # e# 1!,, 2#(e t1$ >2? +$0 0un!+#t!$n 3u n!tu e 3#+e&,#te/ !3 0$ e t2#n 3$u +#-,e/ # e !n)!+#te) $n) #1!n"/' T2e 3#+e&,#te/ 1!,, -e /e&# #te) 1!t2 #/ /2$1n $n t2e) #1!n"/' A,, +u-!+,e 3u n!tu e 3#+e&,#te/ 1!,, e9u! e 3#+e&,#te eCten)e /'

3'3'; T2e C$nt #+t$ 0u/t en/u e t2#t #,, 3,$$ #n) 1#,, &enet #t!$n/ 1!,, -e 3! e-/t$& #te) t$ t2e /#t!/3#+t!$n $3 C$unt< Te,e+$0 0un!+#t!$n/ #n) #/ e9u! e) -< #&&,!+#-,e +$)e/' P $(!)e 3! e /t$&* #3te +#-,e/ 2#(e -een !n/t#,,e)* te/te) #n))$+u0ente)'

3'='3 H$!A$nt#, L!n. L#-e,!n" S+2e0e4

3'='3'1 H$!A$nt#, +#-,e/ # e t$ -e ,#-e,e) #t -$t2 en)/ !n +$0&,!#n+e 1!t2 t2e TIA6EIA 505-A St#n)#)' T2e &un+2)$1n -,$+./6&#t+2 &#ne,/* #n) 3#+e $3 t2e 1$ ./t#t!$n $ut,et/ 0u/t -e ,#-e,e) 1!t2 0#+2!ne ,#-e,/'

3'='3'2 C#-,e 0u/t -e !)ent!3!e) 1!t2 t2e 3$,,$1!n"4

3'='3'3 Bu!,)!n" nu0-e >P $(!)e) -< C$unt< Te,e+$0 0un!+#t!$n/?

3'='3'= C,$/et nu0-e $ te,e+$0 0un!+#t!$n/ B#+.-$#) nu0-e

3'='3'7 St#t!$n nu0-e

3'='3'5 I#+. nu0-e

I#+. De/!"n#t$ 4

C$,$ 4	U/e4	De/!"n#t!$n4
I($ <	@$!+e 1	@1
I($ <	D#t# 1	D1
I($ <	D#t# 2	D2
I($ <	D#t# 3	D3
G een	WAP 1	W=
G een	WAP 2	W7

3'='3'7 An eC#0&,e $3 # +#-,e ,#-e, !/ /2$1n $n t2e) #1!n"/' F!n#, $ut,et #n) -,$+. ,#-e,!n" 0et2$)/ t$ -e #&& $(e) -< C$unt< Te,e+$0 0un!+#t!$n/ St#33 -e3$ e ,#-e,!n" !/)$ne $n $ut,et/ #n) -,$+./'

3'='3'8 M# . t2e en)/ $3 t2e +#-,e e(e < 12 !n+2 3$ = 3eet' A,, 1$ ./t#t!$n $ut,et/ 0u/t -e ,#-e,e) #/ !)ent!3!e) &e t2e) #1!n"/'

3'='3' ; A,, L#-e,!n" #t 1$ ./t#t!$n #n) &#t+2 &#ne, en)/ /2#,, -e +$0&,ete) & !$ t$ te/t!n"'

3'='3'10 @$!+e Te 0!n#t!$n F #0e/ 0u/t 2#(e B,ue De/!"n#t!$n St !&/'

3'='3'11 D#t# P#t+2 P#ne,/ 0u/t 2#(e W2!te De/!"n#t!$n L#-e,/'

3'='3'12 L#-e, #,, H$!A$nt#, F!-e O&t!+ C#-,e6Inne)u+t e(e < 70F !n $&en # e#/ 1!t2 M#nu3#+tu e) F!-e O&t!+ C#ut!$n W# n!n" T#"/ ,#-e,/ /2#,, /t#te 3!-e +$unt* t$ #n) 3 $0)e/!"n#t$ / #n))#te $3 !n/t#,,#t!$n'

3'='3'13 A,, ($!+e 3 #0e/ #n))#t# &#t+2 &#ne,/ 0u/t -e nu0-e e) /e9uent!#,,< !n # n$n- e+u !n" 0#nne ' Nu0-e !n" 0u/t !n+,u)e -u!,)!n" nu0-e 6-#+.-$#))e/!"n#t$ * &,u/ /t#t!$n nu0-e /t# t!n" #t 1 #n) +$nt!nue t$ t2e 2!"2e/t nu0-e e9u! e)' A,, /t#t!$n/ 0u/t -e nu0-e e) #t t2e! te 0!n#t!$n en)/ -< # 0#+2!ne 0#)e ,#-e, #n) #tt#+2e) t$ t2e 3#+e&,#te'

3'='3'1= @$!+e Te 0!n#t!$n F #0e nu0-e !n" 0u/t /t# t #t t2e u&&e ,e3t 2#n) +$ ne $3 t2e te 0!n#t!$n -,$+. #n) & $+ee) 3 $0 ,e3t t$!"2t* t$& t$ -tt0 $3 -,$+. /e9uent!#,,<' D#t# P#t+2 P#ne, nu0-e !n" 0u/t /t# t #t t2e u&&e ,e3t-2#n) +$ ne $3 t2e &#ne, #n) & $+ee) 3 $0 ,e3t t$!"2t #n) t$& t$ -tt0 /e9uent!#,,<'

3'7 CONDUITS

3'7'1 A,, +$n)u!t/ 3$ +$0 0un!+#t!$n/ +#-,e/ 0u/t4

3'7'1'1 H#(e #n #&& $(e) &u,, 1! e 1!t2 # 0!n!0u0 &u,,!n" ten/!$n $3 200 ,-/'

3'7'1'2 Be & $&e (#).9331( )-5.150 07(1)11.4807(0)-5.55953( )-07(&)0.590251(u)0
3'7'1'2 H#(e # $&n!60615 8(t)-5.10251(")0.590251( )-5.150 07(t)-5.1-251(&)0.5902

3N	20N	=2N	12N
3 1662N	30N	=8N	2=N
=N	30N	50N	2=N

3'7'= Pu,, -$Ce/ 0u/t -e & $(!)e) 1!t2 !nte n#, 1#,, #+. #//e0 -,!e/ t$ /u&&$ t +#-,!n"'

3'7'='1 Pu,, -$C ,!)/ 1!,, -e $3 t2e -$,t)$1n $,$+.!n" t<&e !3 e9u! e) #n) +$n/t u+te) $3 t2e /#0e 0#te !#, #/ t2e -$C 1!t2 eC+e&t!$n t$ t #33!+ #te) #&&,!+#t!$n/'

3'5 TESTING

3'5'1 A,, +$&&e #n) 3!-e +#-,e/ 0u/t -e te/te) ut!,!A!n" t2e & $&e +#te"$ < #te) te/t/'

3'5'2 A,, 2$!A$nt#, +#-,e/* $ut,et/ #n) te 0!n#t!$n/ 0u/t 0eet $ eC+ee) #,, &e 3$ 0#n+e /&e+!3!+#t!$n/)e/!"n#te) -< ANSI* TIA6EIA 758B2-1* #n) IEEE'

3'5'3 A,, 3!-e $&t!+ +#-,!n" 0u/t -e te/te) en)-t$-en) 3$ $(e #,,)- ,$// #t 870n0 #) 1300 n0 3$ 0u,t!-0$)e #n) 1310 n0 #n) 1770 n0 3$ /!n",e-0$)e !n -$t2)! e+t!$n/' F!-e O&t!+ C$nne+t$)- ,$// 0u/t -e 0'7 $,e//'

3'5'= Te/t!n" #n) ,#-e,!n" 0u/t -e +$0&,ete)* 1!t2 te/t e/u,t/ & e/ente) t$ t2e O1ne n$,#te t2#n t2 ee >3?)#</ & !$ t$ & $0e+t +$0&,et!$n'

3'5'7 Te/t!n" $3 t2e &e 0#nent ,!n. #/)e3!ne) -< TIA6EIA 758B2-1* #n) !n+,u)!n" t2e

3'5'5'8 S!"n#, #ttenu#t!$n #t 200 HHA t$ 370 MHA !n 100 HHA !n+ e0ent/

3'5'5' ; In/e t!$n ,$// P 200 HHA t$ 370 MHA !n 100 HHA !n+ e0ent/

3'5'5'10 NEJT >ne# -en) + $// t#,.? P 200 HHA t$ 370 MHA !n 100 HHA !n+ e0ent/

3'5'5'11 St#t!$n +#-,e ,en"t2⁶$(e #,, ,$$&/ e/!/t#n+e'

3'5'5'12 A0 -!ent N$!/e'

3'5'5'13 Attenu#t!$n t$ C $//-T#,. R#t!$ >ACR?'

3'5'5'1= P $&#"#t!$n De,#<

3'5'5'17 De,#< S.e1

3'5'7 An< +#-,e/ ³#!,!n" t$ 0eet #-$(e !n)!+#te) /t#n)#)/ 0u/t -e e0$(e) #n) e&,#+e)* #t n$ +$/t t$ t2e O1ne * 1!t2 +#-,e/ t2#t & $(e* !n te/t!n"* t$ 0eet t2e /t#n)#)/' T2e !n/t#,,#t!$n 1!,, n$t -e #++e&te) unt!, te/t!n" 2#/ e&$ te) t2#t #,, &#! / !n #,, +#-,e/ 0eet t2e #&& $& !#te /t#n)#)/'

3'7 EJAMINATION⁶FIELD EUALITY CONTROL

3'7'1 On #)#!,< -#/!/* t2e C$nt #+t$ ⁷/ & $⁰e+t 0#n#"e 1!,, !n/&e+t t2e !n/t#,,#t!$n t$ en/u e t2#t !n/t#,,e / # e ³$,,$1!n" t2e /&e+!³!+#t!$n/ #n) 9u#,!t< + #³t/ 0#n/2!&'

3'7'2 T2e C$unt< Te,e+$0 0un!+#t!$n/ D!(!/!$n' Re/e (e/ t2e !"2t t$!n/&e+t t2e !n/t#,,#t!$n #t #n< t!0e' I³ t2e C$unt< $ C$unt<⁷/ e& e/ent#t!(e 0#.e/ # +2#n"e t$ t2e)e/!"n $!n/t#,,#t!$n* t2!/ +2#n"e 0u/t -e n$te) !n 1 !t!n"' T2e +$nt #+t$ /2#,, n$t +$0&,ete t2!/ +2#n"e unt!, #&& $(#, !/ "!(en -< t2e C$unt<⁷/ Te,e+$0 0un!+#t!$n/⁷#) 0!n!/t #t$!n 1 !t!n"' T2 $u"2 t2e & $⁰e+t 0#n#"e0ent & $+e//'

3'7'3 A³te !n/t#,,#t!$n* t2e C$unt

3'11 OUTSIDE UTILITY SER@ICE

3'11'1 C$nt #+t$ 0u/t #)2e e t$ $ut/!)e ut!,!t< 0!n!0u0 /&e+!3!e) e9u! e0ent/ 3$ t en+2!n"* +$n)u!t* -$Ce/ #n) 0#n2$,e/* #e !#, ent #n+e 0#/t/* /e (!+e +#-!net/* -$n)!n" #n) " $un)!n"' T2!/ !n+,u)e/ e9u! e0ent/ 3$ #&& $(#, $3)e/!"n &,#n/ & !$ t$ /e (!+e !n/t#,,#t!$n'

3'12 GENERAL NOTES AND REEUIREMENTS

3'12'1 Su-/t!tut!$n/ $3 0#te !#, $ & $)u+t 0u/t -e #&& $(e) -< C$unt< Te,e+$0 0un!+#t!$n/F St#33 & !$ t$ #1#) $3 ,$1 ($,t#"e +$nt #+t$ ' A,, +$ e/&$n)en+e /2#,, -e !n 1 !t!n" 3$,,$1!n" t2e & $0e+t 0#n#"e0ent & $+e//'

3'12'2 Gene #, +$nt #+t$ /2#,, -e e/&$n/!-,e 3$ (e !3!+#t!$n $3 /u-+$nt #+t$ F/ +$0&,!#n+e t$ -#/e -!) /&e+!3!+#t!$n/' C$unt< /2#,, n$t -e 2e,) e/&$n/!-,e 3$ /u-+$nt #+t$ F/ n$n +$0&,!#n+e 1!t2 /&e+!3!+#t!$n e9u! e0ent/ #/ ,!/te) !n t2!/)$+u0ent'

3'12'3 T2!/ /&e+!3!+#t!$n)$+u0ent /u&e /e)e/ #n<) #1!n" $ -!))$+u0ent un,e// $t2e 1!/e #&& $(e) -< C$unt< Te,e+$0 0un!+#t!$n/ St#33 In 1 !t!n"'

END OF SECTION

1(3(1(5 ' r#, 8e " r *er 8 "!r" . /#r t)e *3*te . *)#2 n! n te+)n+"113 "++ur"te 8et" 1 "11 +#nne+t #n*6 nter+#nne+t #n*6 "n8 "11 &r#, * #n* ", " 1"91e "n8 . "8e /#r "8"&t"9 1 t3 #/ "11 *&e+/e8 /uture /un+t #n* "n8 n+1u8 n! "11 +"1+u1"t #n*6 +)"rt*6 "n8 te*t 8"t" ne+e**"r3 t# 8e . #n*tr"te t)"t "11 *3*te . * "n8 *3*te . +# . &#nent* 8e1 ,er t)e *&e+/e8 * !n"1*6 !r"8e*6 "n8 1e, e1* "t "11 re-u re8 &# nt* "n8 1#+"t #n*(

1(3(1(< Su9 . t " +ert/+"te #/ +# . &1et #n #/ n*t"11"t #n "n8 *er, +e tr" n n!(

1(; >UALITY ASSURANCE

1(;(1 A11 te . * #/ e-u &. ent n+1u8 n! 2 re "n8 +"91e *)"11 9e 8e* !ne8 93 t)e . "nu/"+turer t# /un+t #n "* " +# . &1ete *3*te . "n8 *)"11 9e "++# . &"n e8 93 t)e . "nu/"+turer?* +# . &1ete *er, +e n#te* "n8 8r"2 n!* 8et" 1 n! "11 nter+#nne+t #n*(

1(;(2 T)e C#ntr"+t#r *)"11 9e "n e*t"91 *)e8 +# . . un+"t #n* "n8 e1e+tr#n+* +#ntr"+t#r t)"t)"*)"8 "n8 +urrent13 . " nt" n* " 1#+"113 run "n8 #&er"te8 9u* ne** /#r "t 1e"*t/,e @5A 3e"r*(T)e C#ntr"+t#r *)"11 ut1Be " 8u13 "ut)#r Be8 8 *tr 9ut#r #/ t)e e-u &. ent *u&&1e8 /#r t) * &r#0e+t 1#+"t #n 2 t) /u11 . "nu/"+turer?* 2"rr"nt3 &r, 1e!e*(

1(;(3 T)e C#ntr"+t#r *)"11 *)#2 *"t */"+t#r3 e, 8en+e6 u&#n re-ue*t6 t)"t t)e *u&&1er . " nt" n* " /u113 e-u &&e8 *er, +e #r!"n B"t #n +"&"91e #/ /urn *)n! "8e-u"te n*&e+t #n "n8 *er, +e t# t)e *3*te . (T)e *u&&1er *)"11 . " nt" n "t)* /"+1t3 t)e ne+e**"r3 *&"re &"rt* n t)e &r#&er &r#&#rt #n "* re+# . . en8e8 93 t)e . "nu/"+turer t# . " nt" n "n8 *er, +e t)e e-u &. ent 9e n! *u&&1e8(

1(;(; E1e+tr+"1 C# . &#nent St"n8"r84 ' r#, 8e 2#r7 +# . &13 n! 2 t) "&&1+"91e re-u re . ent* #/ t)e C"1/#rn " E1e+tr+"1 C#8e @CECA n+1u8 n!6 9ut n#t 1 . te8 t#4

1(;(;(1 Art+1e 25$6 Gr#un8 n!(

1(;(;(2 Art+1e 3$$6 ' "rt A(W r n! Met)#8(

1(;(;(3 Art+1e 31$6 C#n8u+t#r* /#r Gener"1 W r n!(

1(;(;(; Art+1e 7256 Re . #te C#ntr#16 S !n"1 n! C r+u t*(

1(;(;(5 Art+1e D$$6 C# . . un+"t #n S3*te . *(

1(;(5 T)e "!en+3 &r#, 8 n! e-u &. ent *)"11 9e re*&#n* 91e /#r &r#, 8 n! "11 *&e+/e8 e-u &. ent "n8 . ent #ne8 *er, +e* /#r "11 e-u &. ent "* *&e+/e8)ere n(

1(;(< T)e *u&&1er *)"11 , * t t)e * te* "n8 /" . 1 "r Be) . *e1/ 2 t) t)e e0 *t n! +#n8 t #n* "n8 /e18 re-u re . ent* &r #r t# *u9 . tt n! " &r#&#*"1(

1(5 DELIVERY6 STORAGE6 AND HANDLING

1(5(1 De1 ,er &r#8u+t* n /"+t#r3 +#nt" ner*(St#re n +1e"n6 8r3 *&"+e n #r ! n"1 +#nt" ner*(' r#te+t &r#8u+t* /r# . /u . e* "n8 +#n*tru+t #n tr"// +(H"n81e +"re/u113 t# ",# 8 8" . "!e(

' ART 2 - ' RODUCTS

2(1 MANUFACTURER

2(1(1 Ne2 *3*te . +# . &#nent* *)"11 9e +# . &"t 91e 2 t) t)e r re*&e+t ,e *3*te . *(

2(1(2 A11 en8-t#-en8 +# . &#nent* #/ " *3*te . *)"11 9e . "nu/"+ture8 93 " * n!1e . "nu/"+turer #r +#n*#rt u . *# "* t# e*t"91 *) " +# . &1ete6 2"rr"nt"91e *#1ut #n 93 t)e . "nu/"+turer(

2(2 CLOCES6 S ' EAEERS AND ENCLOSURES

2(2(1 C1#+7*6 *&e"7er* "n8 en+1#*ure* *)"11 . "t+) t)e e0 *t n! R"u1"n8 *3*te . (

2(<(3 ' r#, 8e " RI ;5 t3&e C"te!#r3 < D-& n . #8u1"r ℃"+7 "t t)e *t"t #n en8 #/ "11 ; &" r +"91e*(A11 ℃"+7* 2 11 u*e t)e ANSI5TIA T5<D= 2 r n! +#n/ !ur"t #n(' r#, 8e . #8u1"r ℃"+7 2 "11&1"te* n Ee3*t#ne @>u +7 ' #rtA /#r . "t(U*e +# . . #n 2 "11&1"te* 2 t) 8"t" ℃"+7* 2)ere "&&1 +"91e(

2(<(; T2 *te8 ' " r Entr"n+e "n8 D *tr 9ut #n C"91e4 A11 t2 *te8 &" r entr"n+e +"91e* *) "11 9e C"te!#r3-36 22 !"u!e6 t2 *te8 &" r*(T)e3 *) "11 +# . &13 2 t) UL "n8 CEC Art +1e D$$ re-u re . ent*(In8##r +"91e *) "11 9e r"te8 /#r t)e en, r#n . ent6 CM /#r n#n &1enu . 5r *er "re"* "n8 CM ' /#r r *er "n8 &1enu . "re"*(Out8##r +"91e *) "11 9e *u t"91e /#r 8 re+t 9ur "16 OS ' t3&e(

2(<(5 Ter . n"te Entr"n+e "n8 D *tr 9ut #n +"91e* #n 11$ 91#+7* 2 t) 1e!* #r &"t+) &"ne1* #n r"+7(' r#, 8e +r#** +#nne+t +"91 n! n/r"*tru+ture /r# . 2 "11 91#+7* t# *t"t #n +"91e &"t+) &"ne1*(

2(7 MISCELLANEOUS

2(7(1 F#r "11 *3*te . *6 &r#, 8e &er &)er"1 8e, +e* "n8 "++e**#r e* "* nee8e8 t# . eet *3*te . *J nee8*(T) * n+1u8e* &#2025 1(1)4 . 192( ) -5 . 3251(8)0 . 5896 06( ) -5 . 3189 1(')2 . 685 . 7351(

3(2(; C#ntr#1 C r+u t W r n !4

3(2(;(1 In*t"11 +#ntr#1 + r+u t* n "++#r8"n+e 2 t) NF ' A 7$ "n8 "* n8 +"te8(
' r#, 8e nu . 9er #/ +#n8u+t#r* "* re+# . . en8e8 93 *3*te .
. "nu/"+turer t# &r#, 8e +#ntr#1 /un+t #n* n8 +"te8 #r *&e+ / e8(

3(; FIELD >UALITY CONTROL