

NORTHWESTERN UNIVERSITY
PROJECT NAME _____
JOB # _____

FOR: _____
ISSUED: 11/06/2018

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2\$ PVC T9/ - PSM S- ' -% P(/() *618!()54 &) , .&%* -%:

&\$ P(/ -: ASTM F 6AH6 T!1 ' &.. 34(5<) -++6 : -.. &) , +/(*03 20% *&+<-3- , =0()3+\$
:\$ F(33() *+: ASTM F6AH
5\$ #&+<-3+: ASTM F ?AA6 - .&+308 -%(5 +-&.+&

\$ PVC P%-++7%- P(/() *:

&\$ P(/ -: AWWA CH006 C.&++ 1@0 C.&++ 200 PVC /(/ - ' (34 : -..!&) , +/(*03 -) , + 20%
*&+<-3- , =0()3+\$
:\$ F(33() *+: AWWA CH006 C.&++ 1@0 C.&++ 200 PVC /(/ - ' (34 : -.. -) , +\$
5\$ #&+<-3+: ASTM F ?AA6 - .&+308 -%(5 +-&.+&
, \$ D753(-!%0)6 C08 /&53 F(33() *+: AWWA C1@ 6 20% /7+4!0) =0()3+\$
-\$ #&+<-3+ 20% D753(-!%0) F(33() *+: AWWA C1116 %7 : : -%\$

D\$ NO)!P%-++7%-!T9/ - T%&)+(3(0) C07/.() *+:

1\$ C08 / .9 ' (34 ASTM C 11A 6 - .&+308 -%(56 +. -1-!39/ -6 %- , 75() * 0% 3%&)+(3(0) 507/.() *6 20%
=0()() * 7) , -%*%07) ,)0)!/%-++7%- /(/() *\$ I)5.7 , - -) , + 02 +&8 - +(J- +&+ /(/() * 30 : - =0() - ,
&) , 50%0+(0)!%-(+3&)3!8 -3&. 3-)+(0) :&) , &) , 3(*43-)() * 8 -54&)+(8 0) -&54 -) , \$
2\$ S. - -1- M&3-%(&.+:

&\$ FO% C&+3!1%0) S0(P(/ -+: ASTM C @6?6 %7 : : -%\$
:\$ FO% P.&+3(5 P(/ -+: ASTM F ?AA6 - .&+308 -%(5 +-&. 0% ASTM D H266 PVC\$
5\$ FO% D(+ +8 (.&% P(/ -+: ASTM D @H266 PVC 0% 034 -% 8&3-%(&. 508 /&3(-. - ' (34 /(/ -
8&3-%(&. + : -) * =0() - , \$

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J\$ C.-&)073+:

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'(34 & 8())(878 7)->/&), -, 1-%3(5&. 4-(*43 02 8 ()54-+6 & 8())(878 34(5<)-++ 02 /16 ()546 5&/&:.- 02 ->/&), (*) 03.-++ 34&) 2 ()54-+ 1-%3(5&..9 ' 4-) ()+3&..-\$

1\$ S5%- ' +6 :0.3+ &),)73+: S3&().-++ +3--.6 ASTM F!@H &), @H? T9/- 0?§
2\$ E>/&)+(0) B&), + 4&.. : -16 *7*- 34(5<)-++6 1! /? ()54-+ ' (- &), 8&,- 02 +3&().-++ +3--. 8--3() * 34- %- ;7(%- 8 -)3+ 02 ASTM A2?06 T9/- 0?§

O\$ P%03-53(1- C0&3() *+: O) -! 0% 3 ' 0!50&36 50&.!3&% - /0>9! 1@! 8(. 8())(878 34(5<)-++6 7).-++ 034-% '(+ (-), (5&3- , I 2&530%9 0% 2(-, &/ /(-, 30 34- ->3-%(0% &), ()3-%(0% +7%2&5-+§

P\$ M&)40.- C4&)) -.+ &), B-)54-+: F&530%9 0% 2(-, 20% 8 - , 2%08 50)5%-3-\$ PO%3.&), 5-8 -)3 , -+(*) 8(>6 ?000 /+(8())(878 \$ I)5.7, - 54&)) -.+ &), :-)54-+ () 8&)40.-+§

1\$ C4&)) -.+ : C0)5%-3- ()1-%36 20%8 - , 30 +&8 - '(, 34 &+ 50)) -53- , /(/) *6 '(34 4-(*43 02 1-%3(5&. +(, -+ 30 34% -- !207%34+ 02 /(/- , (&8 -3-%\$ F0% 8 57%1- , 54&)) -.+ '(34 +8 00346 7)(20% 8 %&, (7+ &), +.0/ -\$
2\$ I)1-%3 S.0/ - : 1 /-%5-)3 34%07*4 8&)40.-\$
\$ B-)54-+: C0)5%-3-6 +.0/ - , 30 , %&() ()30 54&)) -.\$
?§ S.0/ - : 8 /-%5-)3§

PART 3 - EMECUTION

\$1 EARTHWORK

A\$ R-2-% 30 S-53(0) 12000 LE&%34 M01() *L 20% ->5&1&3() *6 3%-)54() *6 &), : &5<2(..) *\$

\$2 UTILITY LOCATION

A\$ P%(0% 30 &)9 73.(39 ()+3&..&3(0) ' 0%< 508 8 -)5() *6 C0)3%&530% +4&.. 5&.. JULIE / 0) -!5&.. I..()0(+ .05&3-\$

\$ INSPECTIONS

A\$ I)+/-53 &), %-/0%3 0) 34- ()3-%(0% 02 /(/) * 30 , -3-%8()- ' 4-34-% .() - , (+/.&5- 8 -)3 0% 034-% , &8 &* - 4&+ 0557%-%-\$ I)+/-53(0) +407. , 0557% &23-% &/ /%0>(8 &3-.9 2? ()54-+ 02 : &5<2(.. (+) /.&5-6 &), &* &() &3 50 8 /.-3(0) 02 P%0=-53\$

1\$ C0)3%&530% +4&.. +7: 8(3 +-/ &%&3- %-/0%3 20% -&54 +9+3- 8 ()+/-53(0)\$
2\$ D-2-53+ % - ;7(%) * 50%-%-53(0) ()5.7, - 34- 20..0 ' () *:

&\$ A.(*) 8 -)3: L-++ 34&) 27.. , (&8 -3-% 02 ()+(, - 02 /(/- (+ 1(+(: - : -3 ' - -) +3%7537% -+§
:\$ D-2-53(0): F.->(: - /(/) * '(34 , -2-53(0) 34&3 /%-1-)3+ /&+&* - 02 : &.. 0% 59.(, -% 02 + (J-)03 .-++ 34&) H2\$@ /-%5-)3 02 /(/) * , (&8 -3-%\$
5\$ D&8 &* -: C%7+4- , 6 :%0<-)6 5%&5<- , 6 0% 034-% '(+- , &8 &* - , /(/) *\$
,\$ I)2(.3%&3(0): W&3-% .-&<&* - ()30 /(/) *\$
-\$ E>2(.3%&3(0): W&3-% .-&<&* - 2%08 0% &%07), /(/) *\$

\$ C0)3%&530% +4&.. %-/.&5- , -2-53(1- /(/) * 7+(*) - ' 8 &3-%(&. +6 &), %- / -&3 ()+/-53(0) +7)3(. , -2-53+ &%- '(34() &..0 ' &)5-+ + /-5(2(-, \$
?§ C0)3%&530% +4&.. %-() + /-53 &), %- / -&3 /%05- , 7% - 7)3(. % - +7.3+ &%- +&3+2&530%9\$

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2\$ F0% %-()20%5- , 50)5%-3- /(/ - 2A!()54 , (&8 -3- % 0% .&%* -%6 () , (1(, 7&. =0()3 3--3() * +4&..
50)20%8 ' (34 ASTM C110 \$

C\$ H9, %0+3&3(5 T--3+: CO)3%&530% +4&.. 3--3 +&)(3&%9 +- ' -%&* - &550%, () * 30 %- ; 7(%- 8 -)3+ 02
&7340%(3(-+ 4&1() * =7%(+ , (53(0) &) , / - % E>2(.3%&3(0) &) , 1)2(.3%&3(0) M-340, P%05- , 7%-+ / - % 34-
S3&) , &% , S/ -5(2(5&3(0)+ 20% W&3- % &) , S- ' - % C0)+3%753(0) () l..()0(+ .&3-+3 - , (3(0) ' 4- % -)0
+- /&%&3- ' % (33-) +3&) , &% , + -->(+3\$

D\$ F0%5- M&() : P- %20%8 49, %0+3&3(5 3--3 &23- % 34%7+3 :.05<+6 +7/ /0%3+6 &) , &)540%+ 4&1- 4&% , -) - , \$
T--3 &3 / % -++7% -)03 .-++ 34&) 1!1/2 3(8 -+ 34- 8&>(878 +9+3- 8 0/ - %&3() * / % -++7% -6 :73)03 .-++

2?					2?0H2	22\$88A
2A					2A\$1@2	2@\$AH?
					T!2	
18					18\$202	1A\$2H2
21					21\$?@H	20\$ 86
2?					2?\$1?2	22\$H @
2A					2A\$208	2@\$8?8

?\$ A.. /0%3(0)+ 02 +- ' -% 207), 30 ->5-- , 34(+ .(8(3 +4&.. :- %-/.&5- , 0% %-/&(%- , :9 CONTRACTOR /%08 /3.9 () & 8 &)) -% +&3(+2&5309 30 NU\$ A23-% & /-%(0, 02 &3.-&+3 60 , &9 &23-% :&5<2(..) * 34- %- /&(%- , &%-&E+F6 34- +- ' -% +4&.. &* &() :- 3-+3- , 20% , -2.-53(0)\$ T4(+ /%05- ,7%- +4&.. :- %- /-&3- , &+) -5-++&%9 7)3(. 34- 8 &>(878 /(/- , -2.-53(0) (+ @ /-%5-)3 0% .-++\$ CONTRACTOR +4&.. :- &% 34- 303&. 50+3 02 &.. %- /&(%+ 0% %- /.&5- 8-)36 ()5.7, () * +7%2&5- %- +30%&3(0) () &550% , &)5- ' (34 S-53(0) 01 A? 006 C.-&) * \$

J\$ C.0+- , C&/3(0) T--1(+0) ECCTVF I)+/-53(0):

1\$ A.. +- ' -%+6 8 &)40.-+6 ().-3+ &) , 034-% &/7%3-)&)5-+ +4&.. :- +7:-53 30 CCTV &) , 1(+7& .) +/-53(0)+6 30 :- /-%20%8 - , :9 CONTRACTOR6 /%(0% 30 S7:+3&)3(&. C08 /.-3(0) 02 34- +- ' -% (3-8+\$ NO %- ;7-+3 :9 CONTRACTOR 20% ' &(1-% 02 34- ())+/-53(0)+ ' (.. :- 50)+(, -% , \$

2\$ T4- CCTV ())+/-53(0)+ +4&.. :- /-%20%8 - , &23-% 508 /.-3(0) 02 34- +- ' -% (3-8+6 :-20%- 34- S7:+3&)3(&. C08 /.-3(0) &) , %-.-&+- 02 34- %-3&()-% 0% :0) , \$ CONTRACTOR +4&.. 1-%(29 34&3 34- +- ' -%+ &) , 8 &)40.-+ &%- +7:+3&)3(&..9 508 /.-3- &) , %-&+0)&:.9 5.-&) /%(0% 30 /-%20%8 () * 34- ())+/-53(0)\$

\$ CCTV ())+/-53(0)+ +4&.. :- /-%20%8 - , () &550% , &)5- ' (34 N&3(0)&. A++05(&3(0) 02 S- ' -% S-%1(5- C08 /&)(-+ ENASSCOF P(/-.()) - A+++ +8 -)3 C-%3

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\$H FIELD PAINTIN#/COATIN#S

A\$ R - /&(% &)9 +40/ /&()3()*/50&3()*+ ,&8&* - , ,7%()* +30%&* - 0% ()+3&..&3(0) 30 NU||+ +&3(+2&53(0)\$

\$10 ADJUSTIN#

A\$ C00%,()&3- '(34 NU 20% &)9 2(-., & ,=7+38 -)3+\$ NU %--%1--+ 34- %(*43 30 %--53 &)9 2(-., & ,=7+38 -)3+\$

\$11 PROTECTION

A\$ P%03-53 +&)(3&%9 +- ' -%+ 2%08 ,&8&* - 34%07*4073 +