





## Introduction

### CATIA 3DEXPERIENCE Electrical 3D Design

Wrqp"eq o rnvkqp"qh"vjku"eqwtug"vjg"uvwfgpv"ujqwnf"jcxg"c"hwnn"wpfgtuvcpfkpi"qh"vjg  
hqnnqykpi"vqrkeu<

- / Fghkpg"gngevtkecn"igq o gvt{"cpf"dcpcejgu
- /" Fghkpg"eq o rnvvg"jctpguugu"ykvj"uwr rqtvu
- / Fgxnqr"jctpguugu"ykvjkpvjg"eqpvz"qh"c"rtqfwev
- / Fgxnqr"cpf"vknk|g"c"jctpguu"kp" o wvkrng"rtqfwevu
- / Etcvg"hqt o dqctfu"hqt"mncvvgpkpi"cpf"qrvk o k|kpi"c"jctpguu"hqt" o cpwhcevwtkpi

## Electrical 3D Design

Fghkpkp i "cp" gngevtkeci" jctpguu" tgs wktgu" v y q" uvgru0"" [ qw" o wuv" hktuv" fghkpg" v j g" tgs wktgf  
eqppgevtu" cpf" eqppgevkqp" r qkpvu0"" Qpeg" { qw" j cxg" v j gug" eqppgevkqpu." { qw" ctg" tgc f { "vq" dg i kp  
fghkpkp i "v j g" i gq o gvtke" dwpfng" v j cv" nkpmu" v j g" xctkwu" eqppgevkqp" r qkpvu0"" V j gug" i gq o gvtke

### Electrical Harness Design

Kp"vjku"ugevkqp." {qw"yknn"nqqm"cv"fgxgnqrkpi" c"uk o rng"ukping"dtcpej" jctpguu0""Mggr"kp" okpf.  
{qw"yknn"dg"wukpi" dqvj"vjg"Gngevtkecn"5F" Fgukip"cpf"Gngevtkecn"5F"Rctv" Fgukip  
yqtm dgpejgu0""Vjgug"vyq"yqtm dgpejgu"yqtm"vqigvjgt"vq" fghkpg"vjg"jctpguu"cpf"vjg" dwpfngu0

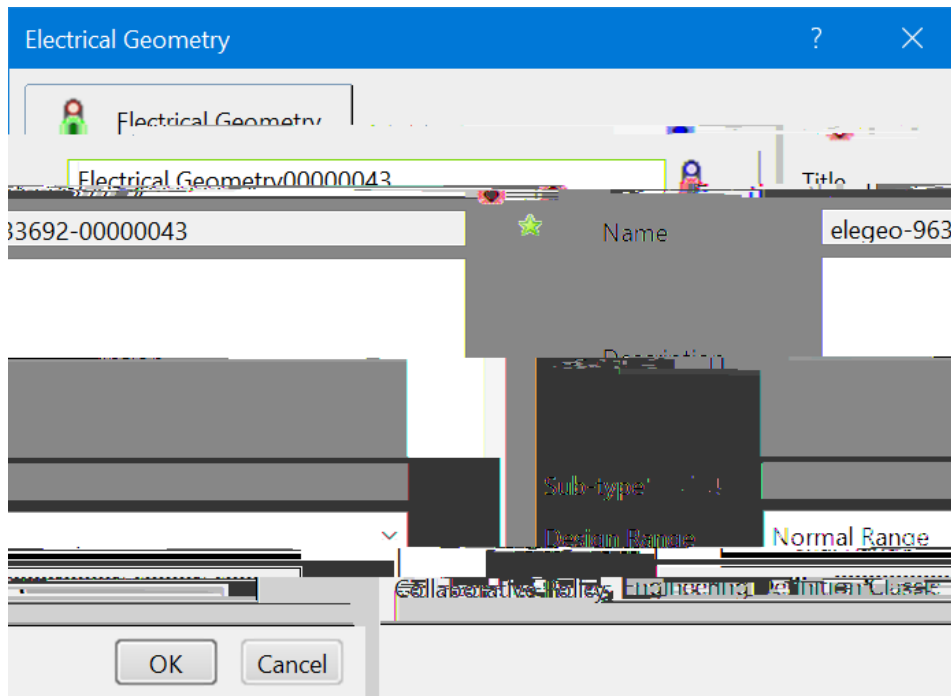
### Defining Electrical Branch Geometry

Kp"vjku"htuv"gzgtekuq." {qw"ctg"iqkpi"vq"nqqm"cv"etgcvkpi" c"dcuke"nggevtkecn"dtcpej" dgvyggp"vyq  
eqppgevtu0""Cu" {qw"eqpvkpwg"vjtwij"vjku"dqqm." {qw"yknn" hkp"vjg"jctpguu"cpf"dtcpejgu  
dgeqokpi" oqtg"cpf" oqtg"eqo rngz"cu"vjg"qrvkqpu"ctg"eqxgtgf"kp" oqtg" fgvckn0

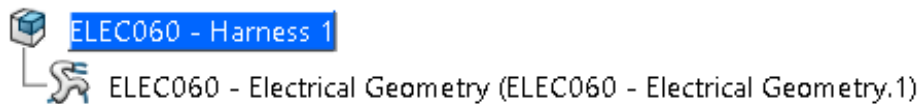
&UHDWH D QHZ SURGXFW QDP MjG"pgy"(r&fwew"yknn"dg"cu" H V V  
{qwt"htuv"jctpguu0"

,I QRW DOUHDG\ VKKH(OHFWZULWFDKO W'R'FWJL"y"cu"zR"U"NEH  
vq"dwknf"vjg"nggevtkecn"jctpguu0"

6HOH Electrical Geometry LFRQ W ELEC060 - Harness IURP WKH  
VSHFLILFD "Rjg"Electrical Geometry"ykpfy"crngctu0

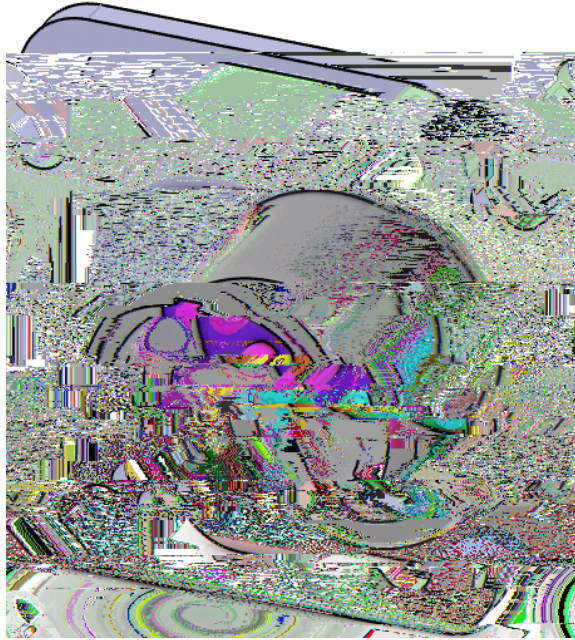


&K D Q J Hltw MVR (/(& (O H F W U L F O G O V K B R j W U r g c t " c u  
ujqyp0



5 L J K W F E L E C V 0 1 0 F E L E C V 0 1 0 Electrical Geometry L Q W K H V S H F L I L F D W S L R Q W U H H D O  
Existing 3D Part V j k u " y k n n " f k u r n c { " v j g " S e a r c h S e l e c t i o n " y k p f q y 0 "

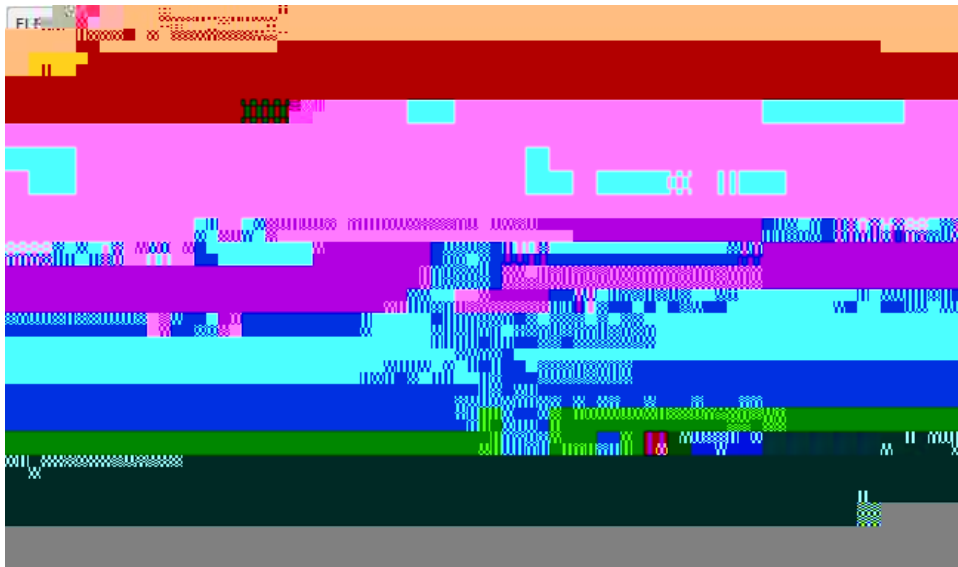
6 H D U F K I R U D E L E C V 0 1 0 P i n M o u n t C o n n e c t o r G R F X P H Q W I U R P W K H  
Electrical Harness I G L U H F W M R y L u n d g " c " u k o r n g " h q w t " r k p " o q w p k p i " e q p p g e v q t 0



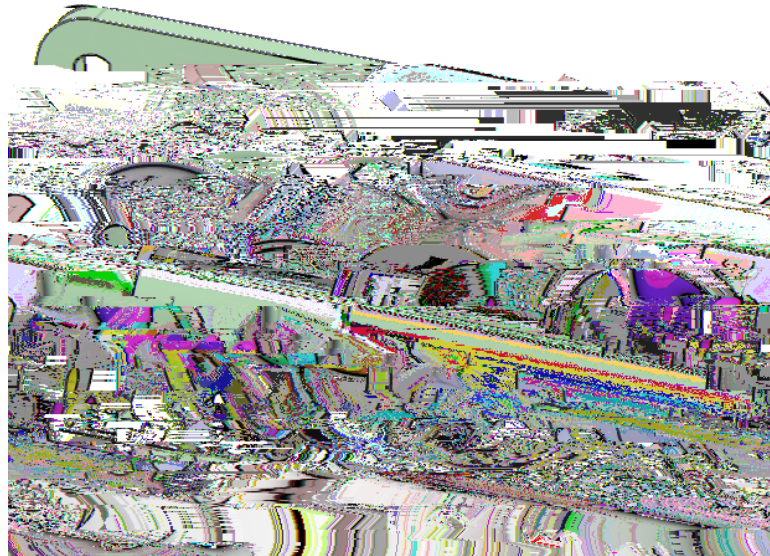
T g o g o d g t . { q w " e c p " c n u q " k p u g t v " e q o r q p p p v u " h t q o " v j g " e c v c n q i 0

6 H O H C a t a l o g B r o w s e r L F R Q I U R P W K H E R W W M R P j g W R S R O E D U  
u g e v k q p 0 " V j k u " y k n n " f k u r n c { " v j g " C a t a l o g B r o w s e r " y k p f q y 0 "

6 H D U F K I R U D E L E C V E l e c t r i c a l C a t a l o g W K H Q H [ S o n e C o r s W K H  
F K D S W H U D Q S i g n e l e c t r i c a l C a t a l o g H I D P L v O j q w n f " e r r g e t " c u " u j q y p 0



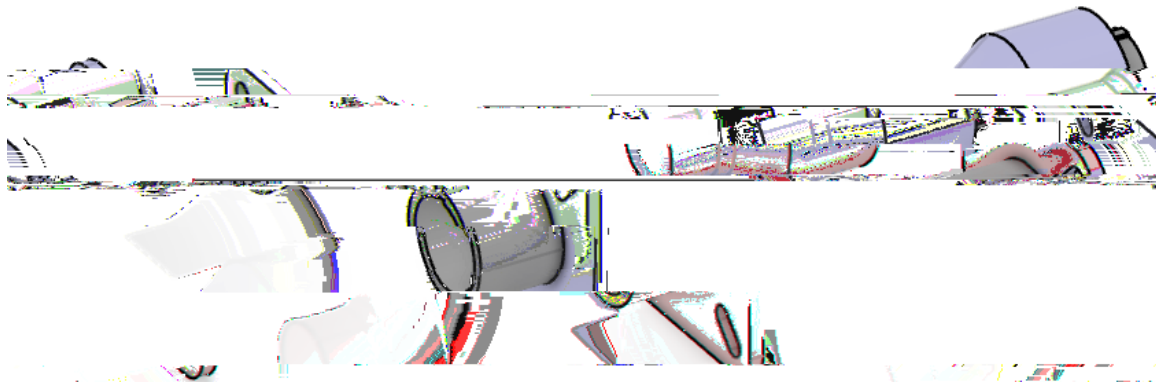
6 HOH ELEC-4 Electrical Geometry EUDQFK LQ WKH WUHH DQG WKH C  
ELEC - 4 Pin Connector IURP WKH FDWDORJ EURZVHU ZKHQ GRQH  
eqppgevqt"kpvc"vjg"cuug o dn{ "cu" y gmn0



&ORVH WKH FDWDORJ EURZVHU ZKHQ GRQH

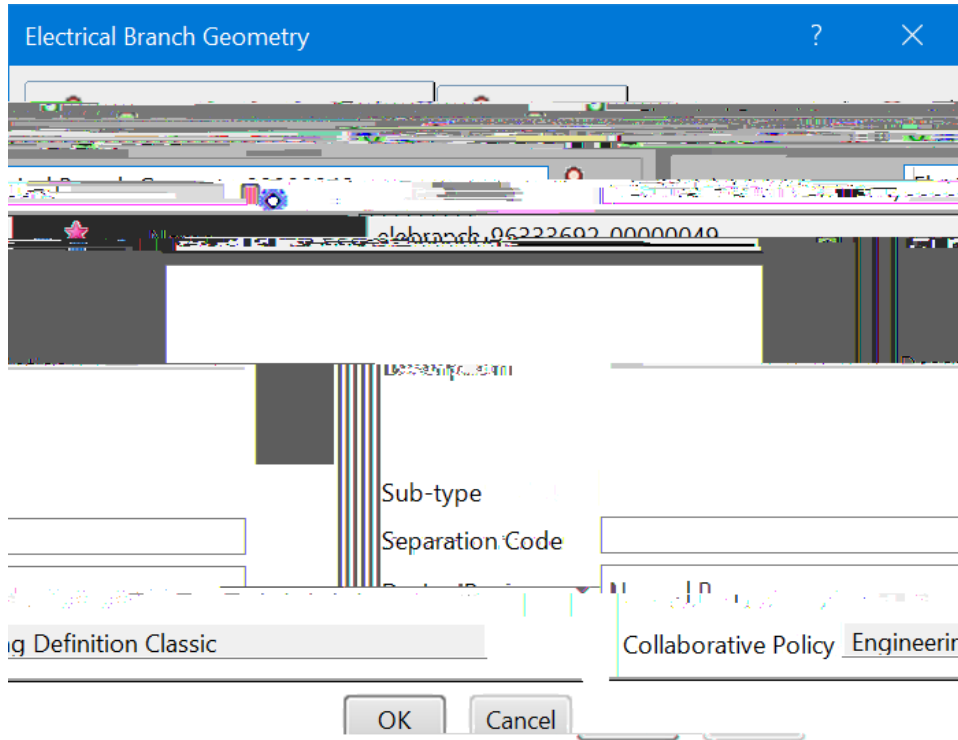
'RXEOH VHOELEC-4 Electrical Geometry EUDQFK WR"DFWMLYDWH LW  
cnnqy" {qw"vq" ocpkrwncvg"vjg"eqo rppgvu" ykvj kp"kv0"

8VLQJ WKH FRPSDVV DRWL R Q WWRUR DDQ IPSXQ \$ RQDWH FWRKH W F  
DSSUR[LPDWH ORFDWLRQ RQ WKH ZGKtgf."Iwuv"ugrctcvg"vjg"vyq  
rctvu0

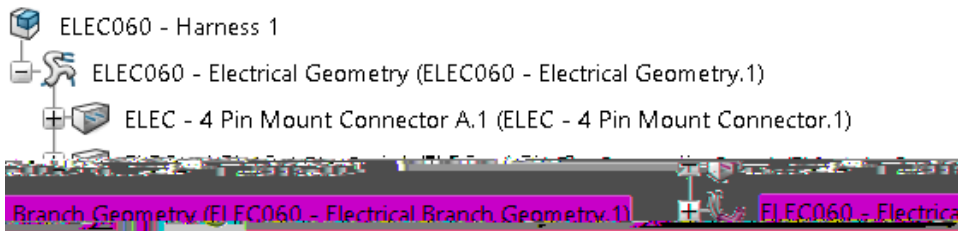


Cv"vjkurqkp." {qw"ctg"tgcf {"vq" fghkpg" c" dwpfng" dgvy ggp"vjg"vyq"eqppgevqtu0

6 H O H Electrical Branch Geometry L F i ( O H F W U L F D O  
\* H R P H W U \ " V j g " Electrical Branch Geometry" y k p f q y " c r r g c t u 0

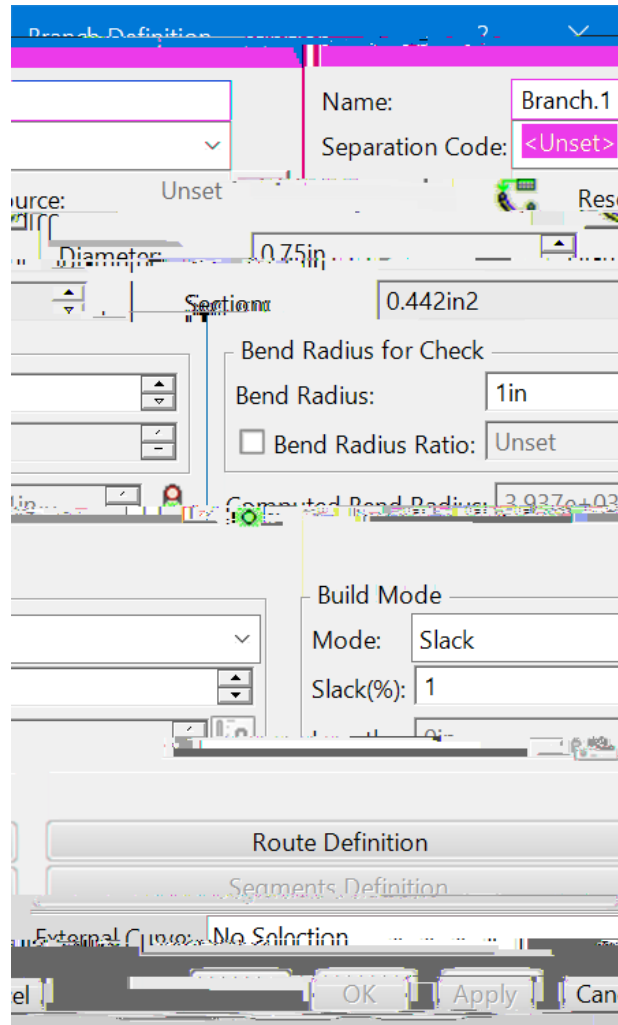


& K D Q J H R E H ( / ( & ( O H F W U L F D D Q % U D Q F H F W R P H W U \





Vjg"Branch Definition" ykpfqy"cnuq"cr rgctu0"



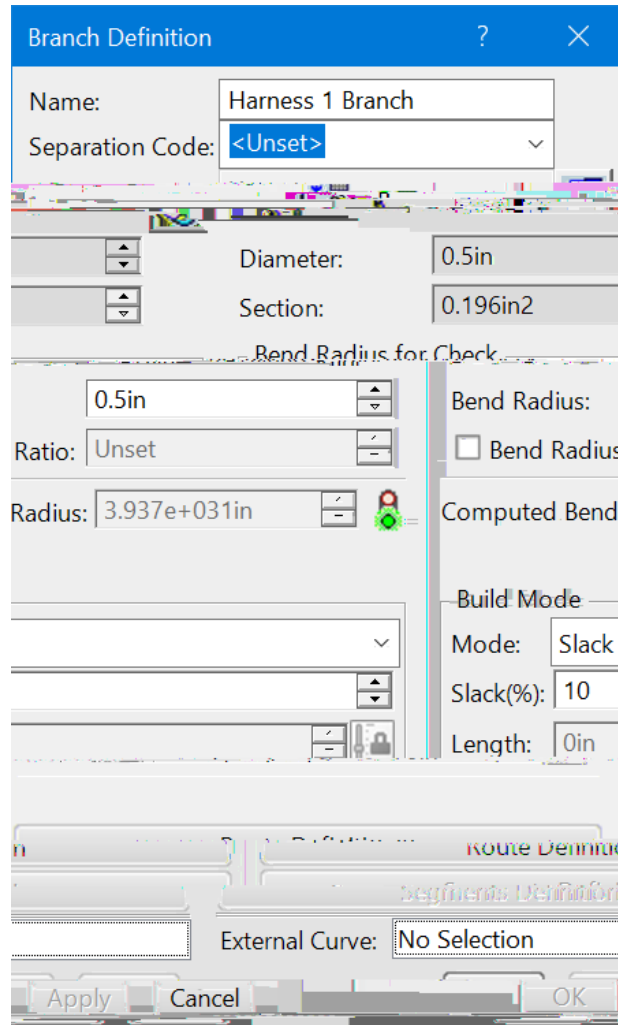
<i>Name</i>	Urgekhhkgu"vjg"pc o g"qh"vjg"dtcpe j
<i>Separation Code</i>	Urgekhhkgu"vjg"ug rctcvkqp"eq fg"xcnwg"hqt"vjg"dtcpe j
<i>Resource</i>	Fkurnc {u"vjg"wpkswg"kf gpvkhkg"ht"vjg"dtcpe j
<i>Diameter</i>	Urgekhhkgu"vjg"qvwukfg"fk c o gvg"qh"vjg"dtcpe j
<i>Section</i>	Urgekhhkgu"vjg"etquu"ugevkqpcn"ctgc"qh"vjg"dtcpe j
<i>Bend Radius</i>	Urgekhhkgu"vjg" o kpk o w o "dgp f"tc fkwu"cnqy gf"ht"vjg"dtcpe j
<i>Bend Radius Ratio</i>	Fghkpgu"vjg"dgp f"tc fkwu"dcug f"qp"vjg"fk c o gvg"qh"vjg"dtcpe j0""C"tcvkq qh"3" yknn"ugv"vjg" <i>Bend Radius</i> vq"vjg"uc o g"uk   g"cu"vjg"dtcpe j" <i>Diameter</i> 0

Build Mode

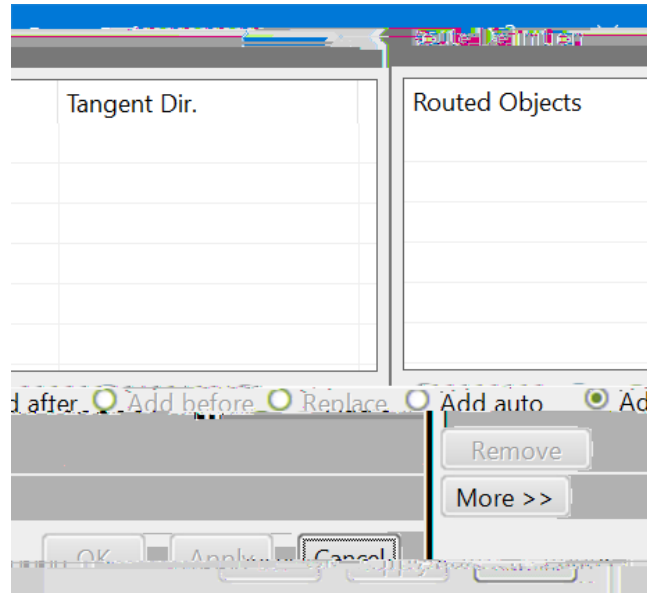
Mode"

<i>Slack</i>	Dtcpejgu"ctg"eq o r wvgf" y kvj "c" okpk o w o "fkuvcepeg."cpf vjgp" c" r gtegpvc i g"qh"uncem"ku"cf f g f"vq"vjg"dtcpej
<i>Length</i>	Dtcpejgu"ctg" c"ugv"ngpi vj. "tgi ct fnguu"qh"vjg" c o qwpv"qh uncem
<i>Bend</i>	ECVKC" yknn"eq o r wvg"vjg" okpk o w o "ngpi vj" rquukdng y jkng"tgur gev kpi "vjg" <i>Bend Radius</i>
<i>Straight Bend</i>	Ugi o gpv"ngpi vj "eqttgurqpfu"vq"vjg"rcvj" fghkpgf" d{ cteu"qh"ektengu"qh"hkzgf"tcfkwu"cpf"uvtcki j v"nkpgu" i qkpi vj tqw i j "r qkpvu0"
<i>Cornered Polyline</i>	Ugi o gpv"ngpi vj "eqttgurqpfu"vq"vjg"uj qtvguv"rcvj fghkpgf" d{ "cteu"qh"ektengu"qh"hkzgf"tcfkwu"cpf"nkpgu0 Vjg"ewtxg"fqgu"pqv" i q"vj tqw i j "vjg"r qkpvu. "gzegrv"kh"vjg dgpf"tcfkwu"ku"gs wcn"vq"   gtq0"Vcpi gpe{ "cv"tqwvg"r qkpvu ku"ki pqtgf0
<i>Slack (%)</i>	Fghkpgu"vjg" r gtegpvc i g"qh"uncem"dgvy ggp"eqppgevkqp"r qkpvu0" Cnvj qw i j "2 ' "ku"cnqy g f. "vjgtg"pggfu"vq"dg" c"uncem"qh"cv"ngcuv 03 ' "vq"cxqkf"wr fcvg"gttqtu" y kvj " J ctpguu"Hncvvgpkpi "vqqnu0
<i>Length</i>	Fghkpgu"vjg"ngpi vj "qh"vjg"dtcpej" y jgp"kp" <i>Length</i> o qfgl""Vjg ngpi vj " o wuv"dg"cu"nqpi. "qt"nqpi gt"vjcp"vjg"fkuvcepeg"dgvy ggp vjg"v y q"eqppgevkqp"r qkpvu0
<i>Route Definition"</i>	Fghkpgu"vjg"dtcpej"tqwvg
<i>Segments Definition</i>	Cnnqy u" hqt"vjg"dtcpej"vq"u y cr"ukfgu"qh" c"uwthceg"vjcv"ku"cvcejg f"vq vjg"dtcpej
<i>External Curve</i>	Cnnqy u"ugngevkqp"qh" c"ewtxg"vq" fghkpg"vjg"dtcpej"tqwvg
Ocp{ "qh"vjgug" rctc o gvgtu" y knn"dg"vguvgf"hwvtv jgt"qpeg"vjg"tqwvg"ku" fghkpgf0"	
<b>&amp; K D Q J <del>Name</del> W K M R + D U Q H V "W jku" y % U D Q F K</b>	
8 Q O H V V D O U H D G <del>Dimension</del> W R K D Q U Q I W K E H "vjg"Section" y knn cwwq o cvkecn{"ejcpi g"vq"203 ; 8kp40""Vjku"ku"fwg"vq"vjg"v y q"hgknfu"dgkpi"eq o r wvgf"dcugf"qp gcej"qvjgt0"	
<b>&amp; K D Q J <del>Bend Radius</del> W R V { L Q</b> { "qwt"dgpf"tcfkwu" y knn"dg"gs wcn"vq"qt" i tgcvt vjcp"vjg"fk o gvgto"Kh" {qw"ugv"vjg"dgpf"tcfkwu"u o cnngt"vjcp"vjg"fk o gvgt. "ECVKC" yknn"fkurnc { cp"gttqt" o guuci g"cdqvw"vjg" k o rtcevkecnkv { "qh"vjku0"	

& K D Q J **Build Mode** **Slack** D Q G **Slack** S M K I F H Q W D V j k H y k W j R x g " c m  
v j g " d t c p e j " q r v k q p u " f g h k p g f 0 " " P q y " v q " i g p g t e v g " v j g " d t c p e j " x k c " v j g " t q w v g " f g h k p k v k q p 0

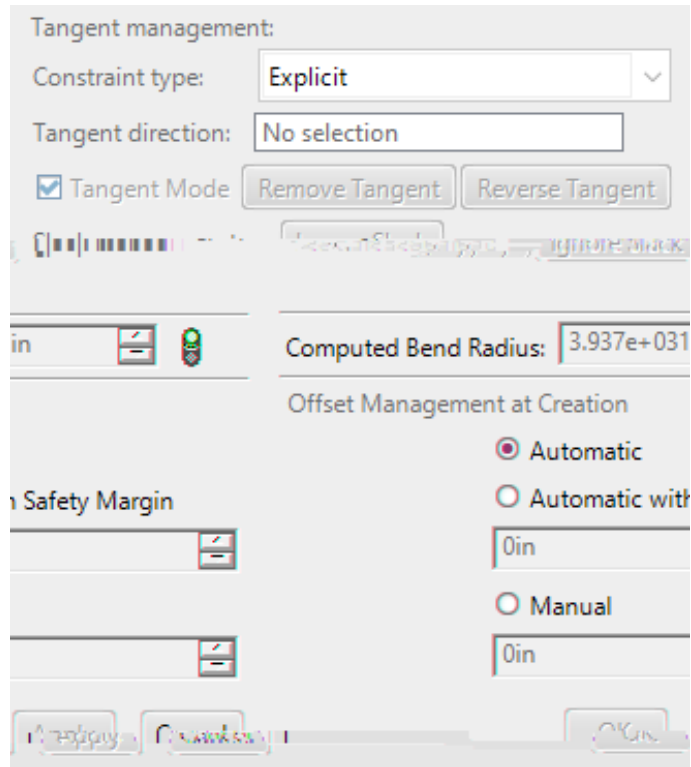


6 H **Route Definition** "Vjku"yknn"cnny" {qw"vq" fghkpg"vjg"tqwvg" hqt"vjg" dwpfng0""Vjg"Route  
 Definition" ykpfqy" yknn" fku rnc {0""Vcmg" c" swkem" nqqm" cv"vjg" xctkqu" qrvkqu" kp"vjg"Route  
 Definition" ykpfqy0"



- Routed Objects / Tangent Dir.* Fku rnc {u"vjg" qdlgevu" cpf" rkpvu" hqt"vjg" tqwvg" fghkpvkqp
- Add after* Cf fu" rkpvu" cpf" eqppgevkqp" rkpvu" chvgt"vjg" ugngevgf rkp
- Add before* Cf fu" rkpvu" cpf" eqppgevkqp" rkpvu" dghqtg"vjg" ugngevgf rkp
- Replace* Tgrncegu"vjg" ugngevgf" rkp" ykvj" cpqvjgt" ugngevkqp
- Replace* Tgrncegu"vjg" ugngevgf" rkp" ykvj" cpqvjgt" ugngevkqp
- Add auto* Cwvq o cvkecm { "qtfgtu"vjg" tqwvg" ugngevkqu" dcugf" qp vjgkt"v { rg

D{"ugngevkpi "v j g"More>> dwvvpq."{qw"i gy"c"hg y"cf fkvkqpcn"qrvkqpu0"



*Tangent management*

<i>Constraint type</i>	Fghkpgu"v j g"v{ rg"qh"vcp i gpe{"vq"dg"fghkpgf
<i>Explicit</i>	Vcp i gpe{"ku"fghkpgf"xc"o cpwcn"xgevt"fghkpvkqp0" Vcp i gpe{"fghkpvkqp"ku"fghkpgf"v j tqw i j"ctki j v"enkem"kp v j g" <i>Tangent Direction</i> "hkgnf0
<i>From curve</i>	Vcp i gpe{"ku"fghkpgf"htq o" c"ewtxg"qt"nkpg"ugngevkqp0" Y j gp" <i>From curve</i> "ku"ugngevgf."v j g" <i>Tangent direction</i> ejcpi gu"vq" <i>Element</i> 0"

*Slack management* K i pqtgu"qt"tg o qxgu"uncem"dg v y ggp" r qkpvu

*Offset Management at Creation*

<i>Automatic</i>	Nc{u"v j g"dwp fng"qp"v j g"uwthceg
<i>Automatic with...</i>	Nc{u"v j g"dwp fng"qp"v j g"uwthceg" y kv j"cp"cf fkvkqpcn"qh hugv"qh"v j g uchgv{" o c t i k p"fkuvcepg
<i>Manual</i>	Cnnq y u{"qw"vq"urgek h{"c"urgek hke"fkuvcepg" hqt"v j g"dwp fng"vq gzkuv"qh"v j g"uwthceg

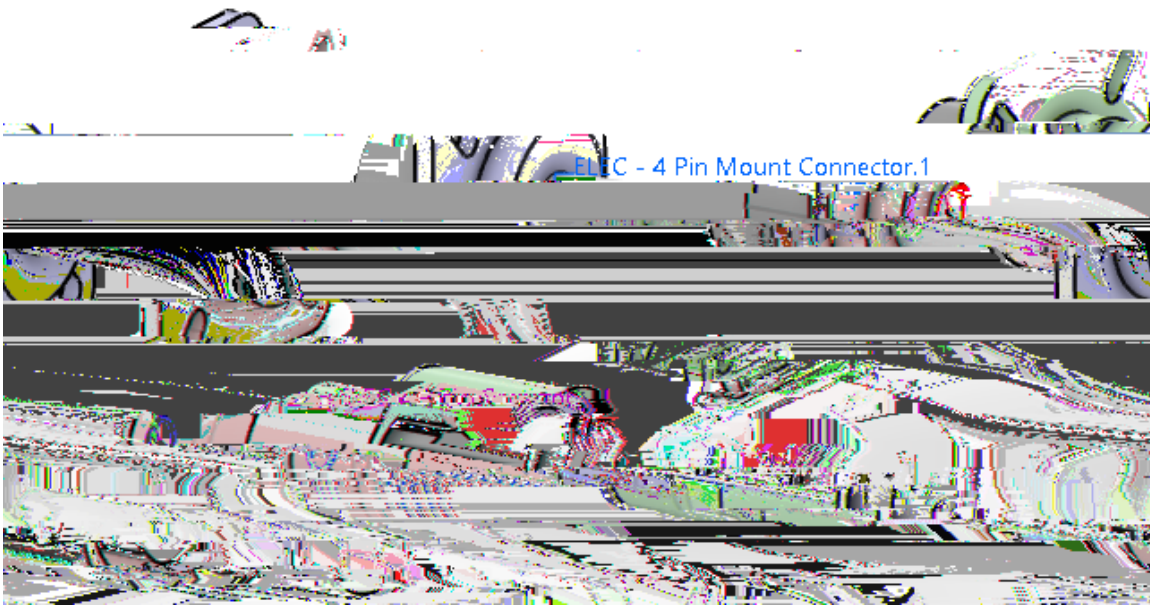
Pqy{"qw"ctg"tgc f{"vq"fghkpg"v j g"tqwvg0"

6 HOHFW WKH 3 LQ "PRXQW & RQQHFW Rn {"cffgf"vjg  
Route Definition" ykpfqy."cu" ygm"cu"vjg"ugi o gpv"eqppgevkqp" rkp"ku"cwvq o cvkecn {"fghkpgf0



Cp{vk o g" {qw"ugnev"cp"gngevtkecn" fgxkeg" ykvj "c"ugi o gpv"eqppgevkqp" rkpv."vjg"eqppgevkqp  
rqp" ykm"cwvq o cvkecn {"dg"ugngevgf"cpf"vjg"vcp i gpv" fktgevkqp" ykm"cwvq o cvkecn {"dg" fghkpg f  
kp"vjg"Initial Condition fktgevkqp" fghkpgf"kp"vjg"ugi o gpv"eqppgevkqp" rkp"vøu" rnceg o gpv  
eqpvtckpvu0"

6 HOHFW WKH 3 LQ "PRXQW & RQQHFW Rn {"cffgf"vjg  
Pqveg"vjg" dwpfng"ku"pqy" rtgugpv0"



Note: The physical shape of the branch may vary based on the position of the two connectors."



Pqvkeg"cv"vqqndct"er r gctu"kp"vjg"f kurnc{"cu"y gmn0



\$ X W R 5 R X W L Q J 0 R G H f kurnc{"u"vjg"ugngev"dtcpej"nqecvkqpu"qp"vjg"hn{"hqt  
tqwvkpi"vjg"dtcpej0



5 R X W H R Q % U D Q F K 3 R L Q W j " r q k p v " c p  
g z k u v k p i " d t c p e j



5 H P R Y D O 0 R G H T g o q x g u " d t c p e j " r q k p v u



& U H D W L R Q 0 R G H f kurnc{"u"vjg"etgcvkqp"qrvkqpu



\$ G G 6 W D Q G D U G % U D Q F K 3 R L Q W j " r q k p v " c p  
g z k u v k p i " d t c p e j



\$ G G \$ V V R F L D W L Y H % U D Q F K 3 R L Q W j " r q k p v " c p  
g z k u v k p i " d t c p e j



\$ G G 3 U R W H F W L Y H & R Y L U Q O g " e q x g t k p i " v q " c " d t c p e j



6 S O L W % U D Q F K U r n k v u " c p " g z k u v k p i " d t c p e j



7 U D Q V I R U P 0 R G H f kurnc{"u"vjg"vtcpuhqt o"qrvkqpu



7 U D Q V O D W H % U D Q F K t c p u n c v g u " c " d t c p e j



' H W D L O H G 3 U R I L O H 0 P D D J H R H Q W j " d t c p e j

& K D Q J ~~Dian~~ ~~Wen~~ H W R Slack ~~W~~ ~~M~~ ~~R~~ D ~~B~~ ~~G~~ ~~R~~ ~~N~~ ~~K~~ ~~S~~ H W R "" P q y " { q w " c t g  
t g e f { " v q " t q w v g " v j g " d t c p e j 0 ""



0RYH \RXU PRXVH RYHU WKH 3LQ 0R XIQFH & RVQ QRIE WIRFWDL  
WKDW DSRHDLFH D \HOORZ VSKHUH DSSHDUV DW WKH FR

\$Q\WLPH \RX VHOHFW D VHJPHQW FRQQHFWRU & SWRQVWL  
VHOHFWHG DQG WKH WDJJHQW GEULFH\WLNH\ZL LOO DXWRP  
GLUHFWRU GHILQH LQ WKH VHJPHQW FRQQHFWRU  
6HOHFW WKH VHJPHQW FRQQHFWRU FRQQHFWRU 3LQ & RQ  
GHILQH LQ WKH URXWHG REMHFW 1RWLFH WKH EXQG

Note: The physical shape of the branch may vary based on the position of the two connectors.

6HOHFW LQKHSDBBQFK LV FRPSOHWHG

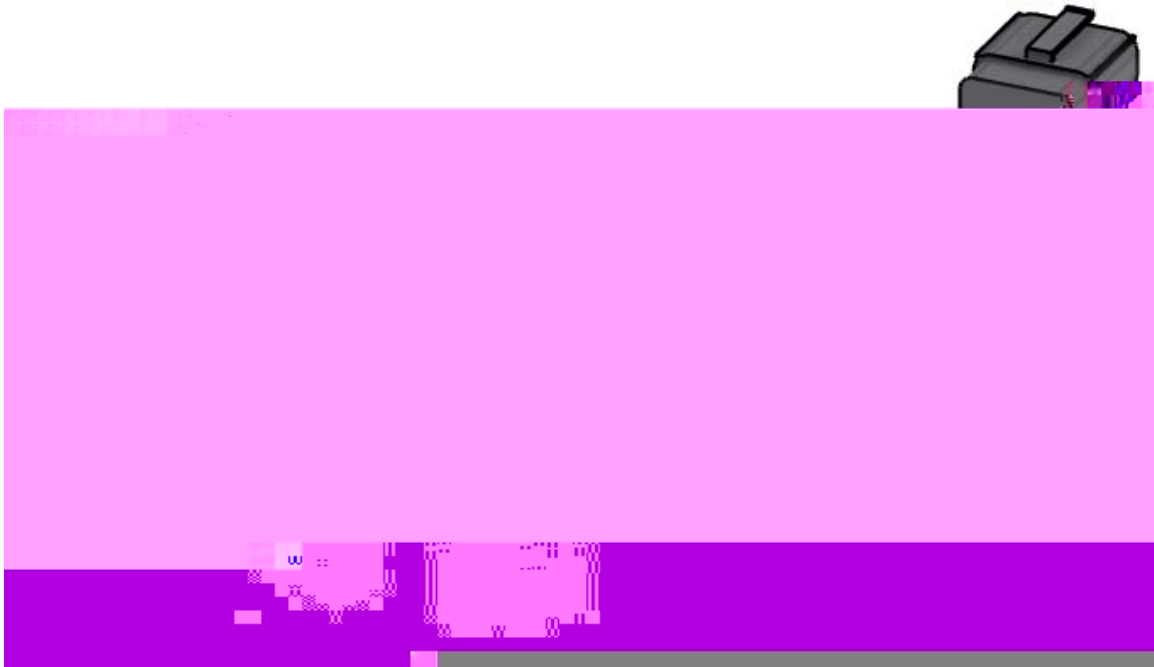
6HOHFWLWKRQ 7KLV ZLOO WDNH \RX EDFN WR WKH (OHFW  
DQG DFWLYDWH WKH HOHFWULFDO JHRPHWU\ EUDQFK

6DYH \RXU KDDQH\ZLVK 2SWLRQV ZRXOG EH DRJURG RSW  
EXQGOHV /HDYH \RXU KDUQHVVVHFWLRLQW ZLOO EH XVH


### Defining Multi-Branches

Cnvjqwi j "ukping" dtcpejgu"ctg"xgt{"wughwn" hqt"uk o rng" i gq o gvtke" dwpfngu." {qw" y knn" qhvgp" hkp f vjcv" {qw" ctg" pqv" cdng" vq" etgcvg" vjg" pgeguuct {"dwpfngu" y kvj" lwuv" c" ukping" dtcpej0" "Vjg" o quv eq o o qp" v {rg" qh" dwpfng" wugf. "gxgp" hqt" c" uk o rng" uvtcki jv" i gq o gvtke" dwpfng. "ku" c" o wnvk/ dtcpejcdng0"

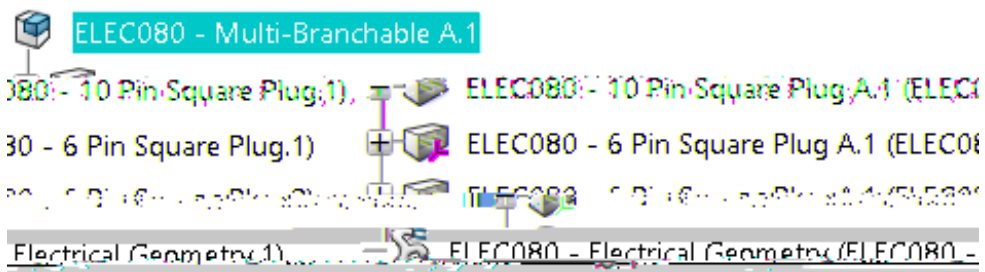
2 S H Q **ELEC080 - Multi-Branchable** G R F X P [H Q Y M "etgcvg" c" o wnvk/ dtcpejcdng fqw o gpv" qh" c" uk o rng" jctpguu" qh" vj tgg" eqppgevqtu" kp" c" õ [ ö" eqphk i wtcvkqp0"



, I Q R W D O U H D G \ V K K I H ( O H F W Z L M F F D O W ' R ' F W g h k p k Q " c ' Z R U N E H dtcpej" kpkvkcn {"ku" i qkp i "vq" dg" pq" fkhgtgpv" vj cp" c" ukping" dtcpej0"

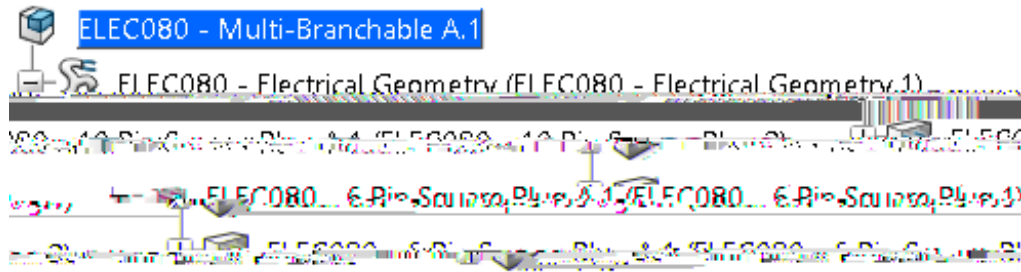
6 H O H **Electrical Geometry** L F R Q W K H **ELEC080 - Multi-Branchable** SURG  Wjg" Electrical Geometry" ykpfqy" crrgctu0"

& K D Q J **Fit** W M V R E H ( / ( & ( O H F W D I Q F D O K O H F W W i g t c u" ujqyp0"



Kp" vjku" ecug." {qw" y knn" o qxg" cnn" qh" vjg" eqppgevqtu" kp" vq" vjg" gngvtkecn" i gq o gvt {"uq" vjg" gpvktg vj kpi" y knn" dg" ugnh" eqpvckpgf0"

'UDJ HDFK RI WKH F ELEC080 - Electrical Geometry "WuKqmf"errgct  
cu"ujqyp"y jgp"{qw"ctg"hkpku jgf0

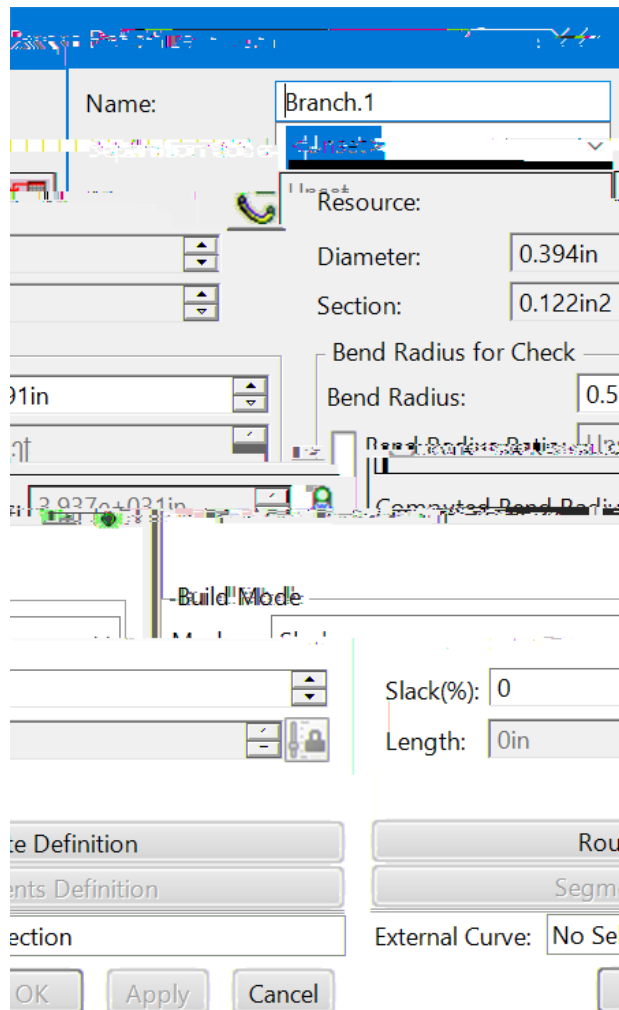


Cv"vjku"rqkpv."{qw"ctg"tgcf{"vq"fghkpg"vjg"dtepej"ugi o gpv0

\$ F W L Y ~~ELEC080 - Electrical Geometry~~ "

6 H O H ~~Electrical Branch Geometry~~ L F "Vjg"Electrical Branch Geometry  
y k p f q y "c r r g c t u 0

. H \ L Q ( / ( & ( O H F W U L F D O I % U T W K E H Q G H V R O M V L Y M n  
u v c t v " c " d t e p e j 0



& K D Q J ~~Wan~~ K R H W K H E U D Q F K W R ~~Q D L Q % U D Q F K~~  
dtepej" {qw"ctg"iqkpi"vq"etgcvg0"

& K D Q J ~~Dian~~ K R H W R L Q ~~Bn~~ Q ~~Rad~~ W K M R C i k p "k v "k u "c" i q q f "t w n g "q h  
v j w o d "v q " o c m g "u w t g "v j c v" {q w t "d g p f" t c f k w u "k u "n c t i g t "v j c p" {q w t "d t c p e j" f k c o g v g t 0"

: L W K W K H

6 HOH Segment Connection Point WH[W WR EHJLQ WKH URXWH DQG WKH  
VTXDUH SOXJ DV VKRZQ



6 HOHFW WKH FRQQHFWRQ SRVWV WFKH SLQ VTXDUH S



6 H OOF VPCVKEG"pc y

# 1

1 – Segment Definition

Vjku"ctgc"cmnqyu" {qw"vq"xkgy"vjg"xctkqu"ugi o gpvu"kp"c  
o wnvk/dtpej

( [ L W V % U D Q F K 3 R L Q W v j g " d t c p e j " r q k p v " k p " c " d w p f n g



5 H P R Y H % U D Q F K 3 R L Q W v j g " d t c p e j " r q k p v " k p " c " d w p f n g

<i>Name</i>	Urgekhhkgu"vjg"pc o g"qh"vjg"ugi o gpv
<i>Color</i>	Urgekhhkgu"vjg"eqnqt"qh"vjg"ugi o gpv
<i>Resource</i>	Fkurnc { u"vjg"wpkswg"kf gpvkhgt" hqt"vjg"ugi o gpv
<i>Profile Type</i>	Urgekhhkgu"vjg"ujcrg"qh"vjg"ugi o gpv
<i>Section Parameters</i>	Urgekhhkgu"vjg"uk   g"ejctcevgtkuvkeu"qh"vjg"ugi o gpv
<i>Section Area</i>	Urgekhhkgu"vjg"etquu"ugevkqp"ctgc"qh"vjg"ugi o gpv0""Kv"ku nkpmgf"vq"vjg"Section Parameters."uq" o qfkh { kpi "qpg yknn"wr fcvg"vjg"qvjgt
<i>Detailed Profile Management</i>	Cnmq yu" o qtg"kp" fgrvj " o qfkhkecvkqp"qh"vjg" r tqhknгу cnqp i "vjg"ugi o gpv
<i>Extremity Management</i>	
<i>Start point</i>	Fghkpgu"vjg"tcvkq"qh"vjg"ewtxg"vjg"dtcpej" r qkp v"uvctvu
<i>End point</i>	Fghkpgu"vjg"tcvkq"qh"vjg"ewtxg"ngp i vj"vjg"dtcpej" r qkp v gpfu
<i>Visualization Management</i>	
<i>Reframe on Selection</i>	Tghtc o gu"cpf" hkvu"vjg"dwpfng"ugi o gpv"kp"vjg"fkurnc { Cv"vjku" r qkp v." { qw"ctg"tgcf { "vq" fghkpg"vjg"dtcpej" r qkp v0"
	& K D Q J K o l w k w R O L J w E o j x H qh"dnwg"ku"pqv"ko r qtvcpv." { qw"lwuv" y cpv"vq ugg"vjcv"vjg"eqnqt"qh"vjg"dwpfng"ecp"dg"ejcpigf0"
	Pqy "vq"cff" c" dtcpej " r qkp v0"

6HOHF\$G W DH%UDQFLF BRLQV FH \RX VHOHFW WKH LFRQ W  
XQWLO \RX VHOHFW WKH EXQGOH SRLQWQLO \RX ZDQW WF

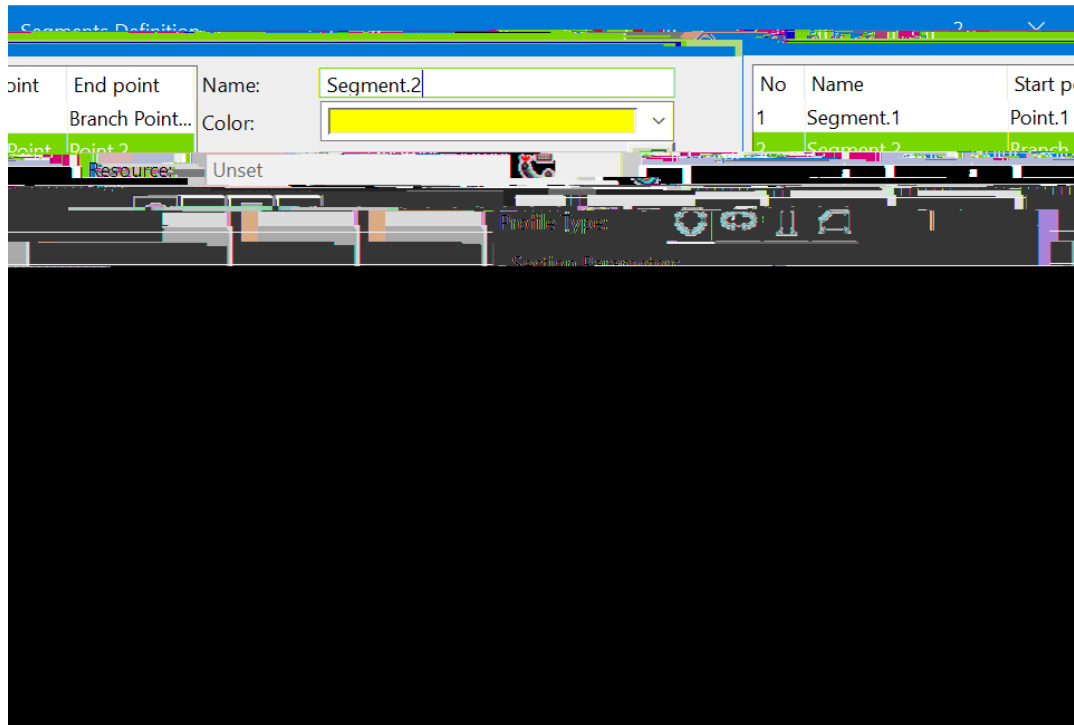
6HOHF&K DQJH 5HIHUHQEFRRZEDS WHOHFW WKH V\PERO QI  
VTXDUH SOXJKLV ZLOO VZLWFK VLGHV RI WKH UHIHUHQFI

\$W WKLW SRLQW \RX QHGH WR GHWQWPGQHLQRZ \RQ ZDQ  
DVVXPH \RX ZDQW WKH EUDQFK SBLZOWIGRFLQKH DSBHW  
FRQQHFWRU





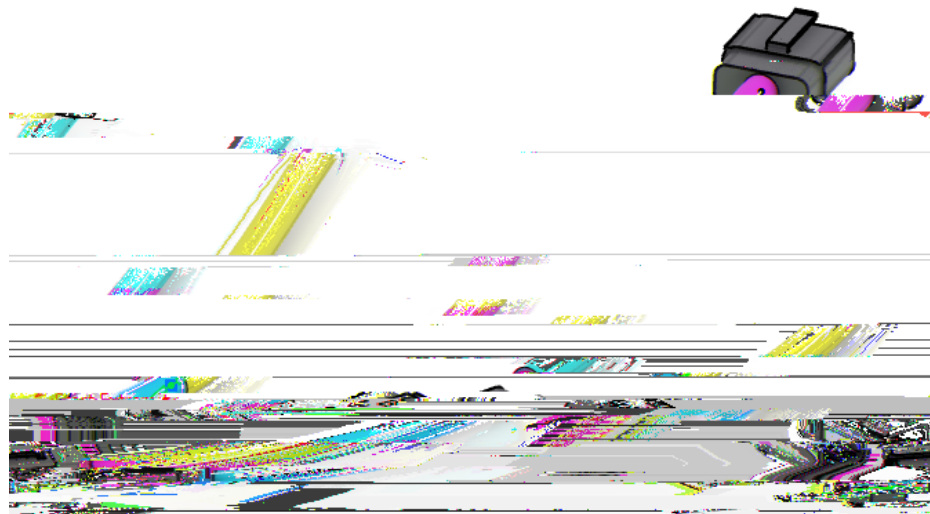
6 H O H ~~EXT~~ WKRIQ ZKHQ "G R Q H"urnkv"vjg"dtcpej"kp vq"vyq"ugi o gpvu0"  
Pqvkeg"vjg"ugi o gpvu"ygtg"tgpc o gf"dcem"vq"vjg"fgbcwv"pc okpi "uejg o g0"



:LWK WKH ILUVW VHJPHQW VHOH ~~EW~~ R Q H W Q R Z L Q G R Z F  
jgnr" {qw"mggr"vtcem"qh"vjg"xctkqwu"ugi o gpvu0"

Cnuq."pqvkeg"vjg"uvctv"cpf"gp f"rqkpvu"kp"vjg"Extremity Management0""Vjgug"xcnwgu"ctg"pqy  
ceeguukdng"vq"cf lwuv"vjg"uvctv"cpf"gp f"nqecvkqpu"qh"vjg"ugi o gpvu0"

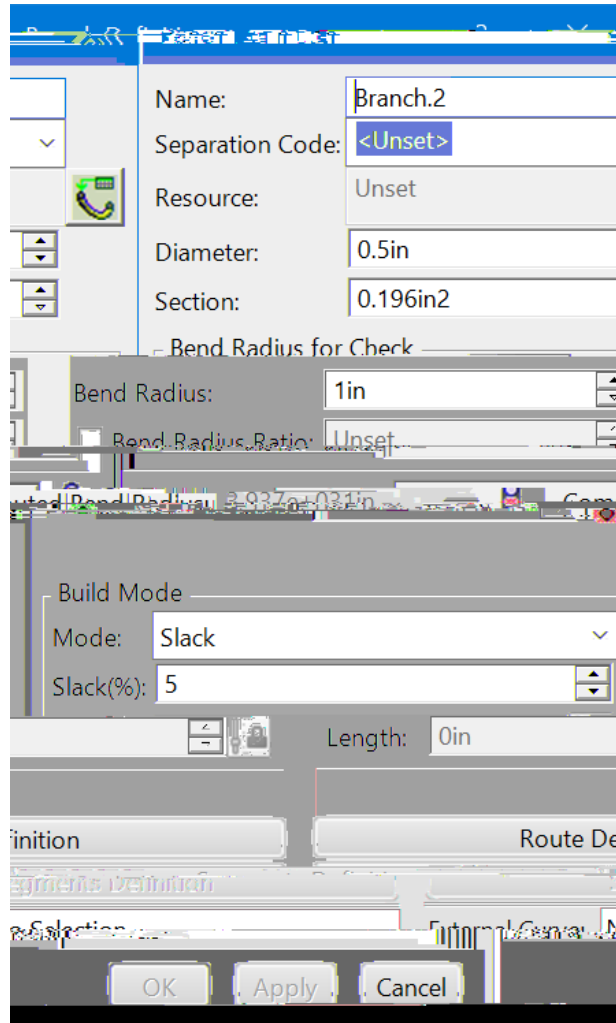
6 H O S ~~Segment.2~~ DQG F K D ~~Quarter~~ WKRI " [ qw" Qc {"pggf"vq"ugngev"Apply"vq  
igv"vjg"dwpfng"vq"wr fcvg"rtqrgtn{0"



6 H O ~~OK~~ F W R ~~Segments Definition~~ Z L Q G R Z yknn"jcxg"vjg"pgy"ugi o gpvu" fghkpgf0"

6 H O K F W R B M k H Definition Z L Q G V R k Z y k n n " e t g c v g " v j g " d t c p e j 0 "

6 H O H C l a s s i c B r a n c h D e f i n i t i o n L F I U " " V j k u " y k n n " c n n q y " { q w " v q " e t g c v g " c " p g y d t c p e j " y k v j k p " v j g " g z k u v k p i " d t c p e j " u g v 0 "

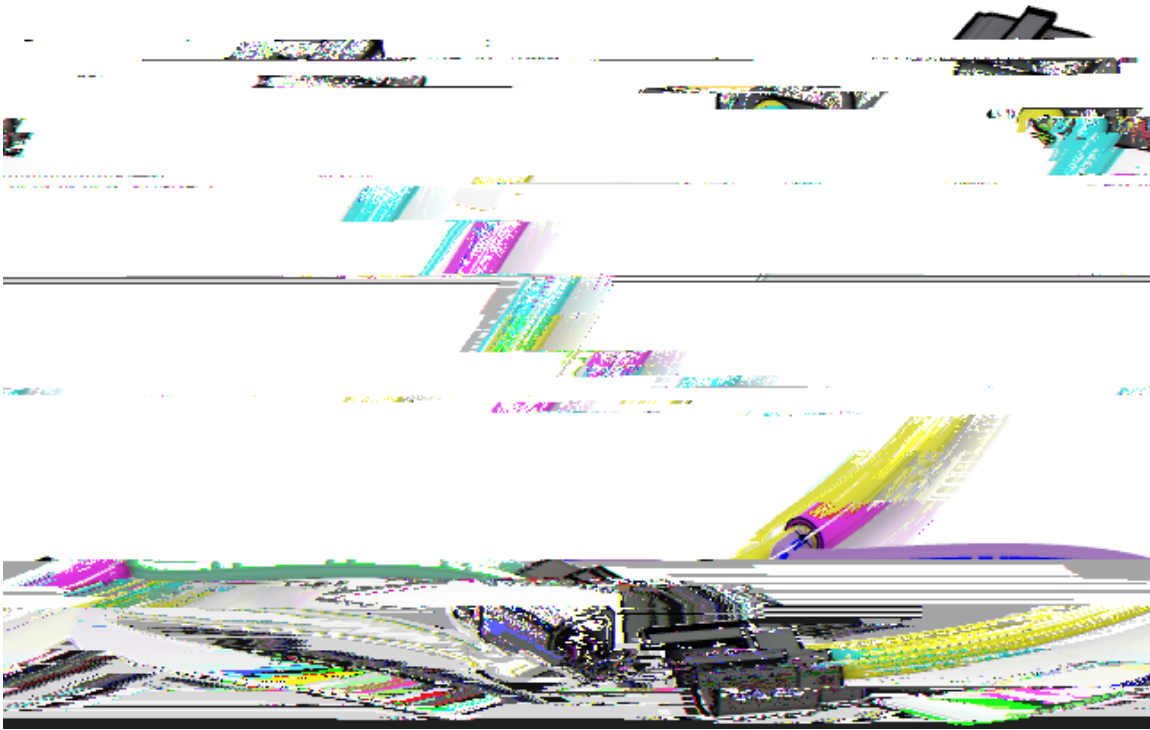


& K D Q J W a n e W R H 6 L G H % M K D H O F D N a m e W R H P q y " Q w " c t g " t g c f { v q " f g h k p g " v j g " t q w v g " h q t " v j g " u k f g " d t c p e j 0 "

6 H O R o u t e D e f i n i t i o n C v " v j k u " r q k p v . " { q w " e c p " u g n g e v " c p { " q h " v j g " e q p p g e v q t u " q t " d t c p e j r q k p v u " v q " u v c t v " v j g " t q w v g 0 " " Y j g p " { q w " u g n g e v " c " d t c p e j " r q k p v . " v j g " u g i o g p v " { q w " u g n g e v " y k n n " j g n r f g v g t o k p g " y j c v " g z v t g o k v { " v j g " d t c p e j " y k n n " c u u q e k c v g " v q 0 "



6 H OOKF WR BmKkH Definition Z L Q GVRkZ yknn"jcxg"vjg"pgzv"dtcej" fghkpgf0"Kv  
ujqwnf"cr rget"cu"ujqyp0



6 H O H Ext WKRIQ WR U H W XULG DOR W'KIN L(CQ ZW'U N E H Q F K

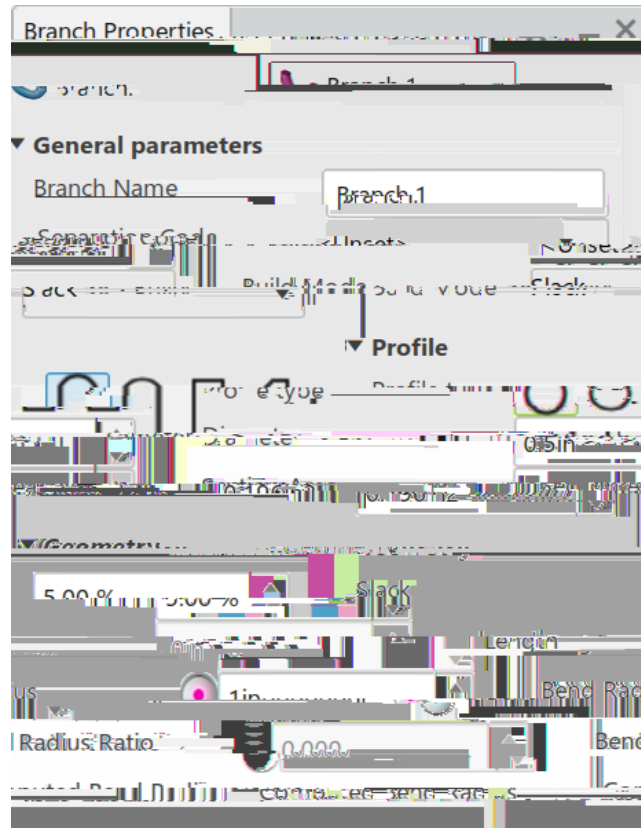
' H O H WEBC080 Electrical Branch Geometry IURP W K[hw"Wknl"etg"vjg  
ucog"jctpguu"wukpi"vjg"ko ogtukxg"qrvkqpu0

6 H O H Electrical Branch Geometry L F"U"Vjg"Electrical Branch Geometry  
ykpfaqy"cr rgetu0

. H \ L Q ( / ( & ( O H F W U L F D O I P % U T W K E H Q G H V R O M V U W  
uvtv"c"dtcej"cpf"vjg"Dtcej" Fghkpkvqap"ykpfaqy"cr rgetu0

6 H O CdrFcaW"

6 H O H ~~Wire~~ ~~Branch~~ ~~Definition~~ L F "Vjg" *Branch Properties* ykpfqy  
crrgctu0

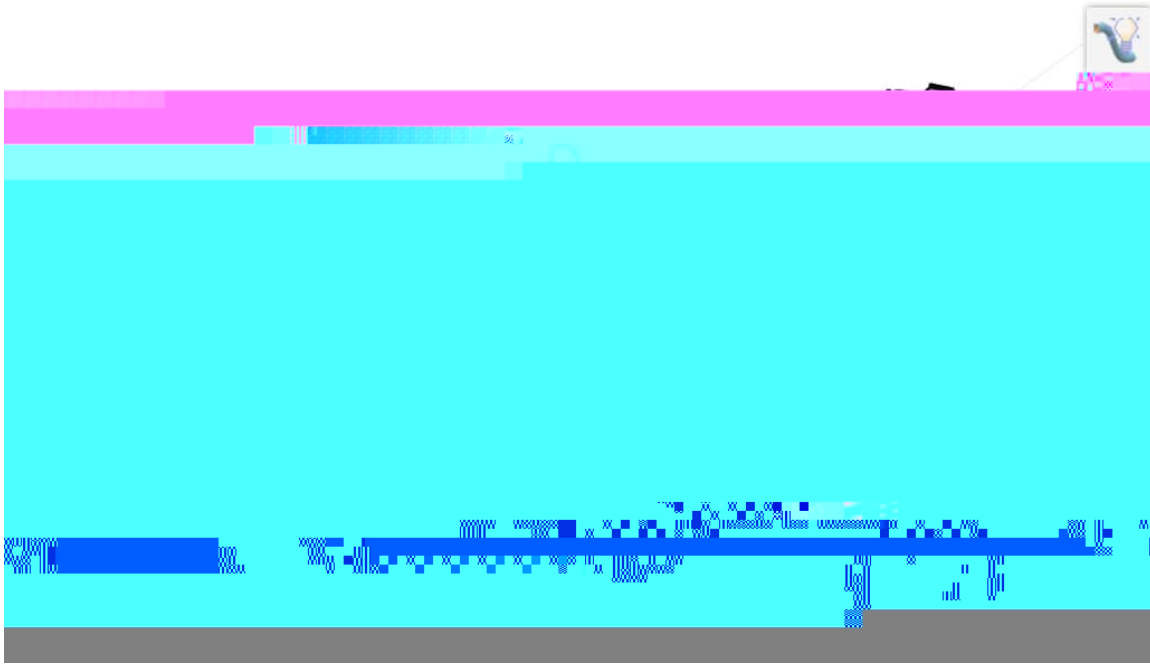


& K D Q J ~~Name~~ W K H E U D Q F K W R ku" 0 d" lg Q j g % d D Q F k  
dtepej" {qw"ctg" i qkpi" vq" etgcvg0"

& K D Q J ~~Diameter~~ W R L Q ~~Bend Radius~~ W K M R C i k p "kv" ku" c" i q q f "twng" qh  
vjw o d" vq" o cmg" uwtg" vjcv" {qwt" dgp f" tcfkwu" ku" nct i gt" vjcp" {qwt" dtepej" fkc o gygt0"

: L W K ~~Build Mode~~ V H ~~Slack~~ R V H ~~Slack~~ & H U F H Q W D J H W R

6HOH Segment Connection Point WH[W WR EHJLQ WKH URXWH DQG WKH  
VTXDUH SOXJ DV VKRZQ

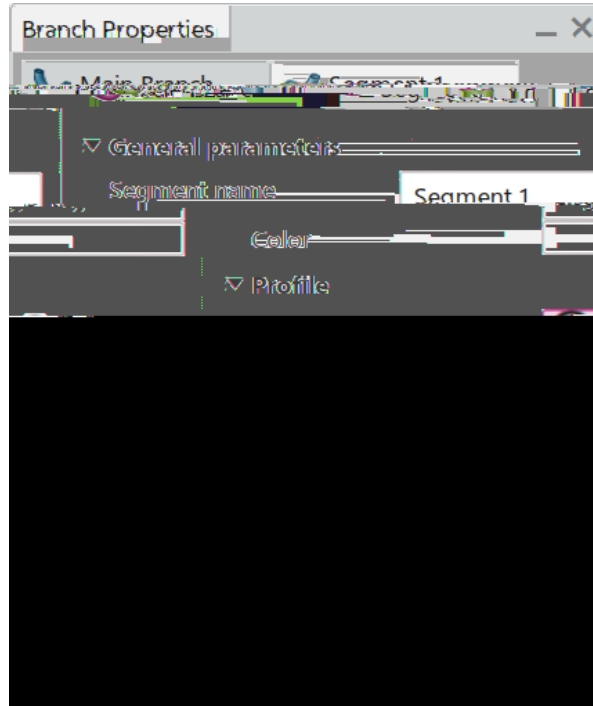


6HOHFW WKH FRQQHFWRQ SRLQW FRUWV WKH SLQ VTXDUH S



Pqvkqy"vjg"Segment.1"vcd"cr rgctu" ykvjkpvjg"Branch Properties" ykpfqy0"

6 H O H Segment.k HW Dvj qwnf" cr rgct"cu"ujqyp0

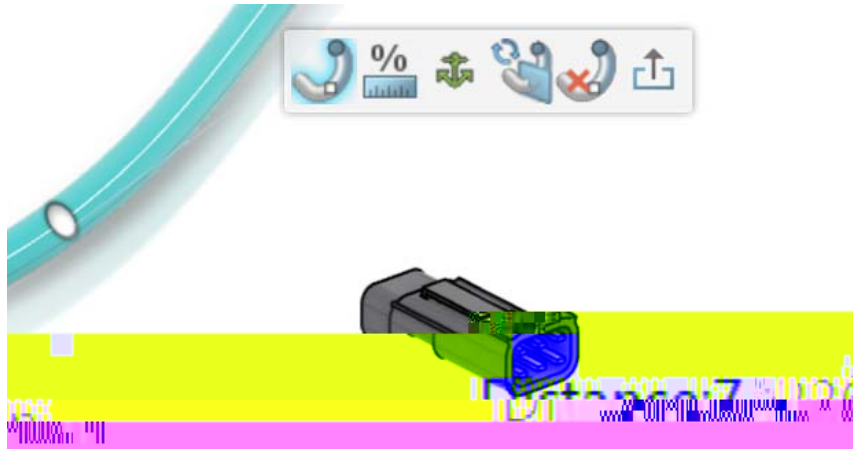


<i>Segment name</i>	Urgekhhkgu"vjg"pc o g"qh"vjg"ugi o gpv
<i>Color</i>	Urgekhhkgu"vjg"eqnqt"qh"vjg"ugi o gpv
<i>Profile Type</i>	Urgekhhkgu"vjg"ujcrg"qh"vjg"ugi o gpv
<i>Diameter</i>	Urgekhhkgu"vjg"fkc o gvg"qh"vjg"ugi o gpv
<i>Section Area</i>	Urgekhhkgu"vjg"etquu"ugevkqp"ctgc"qh"vjg"ugi o gpv0""Kv"ku nkpmgf"vq"vjg" <i>Diameter</i>



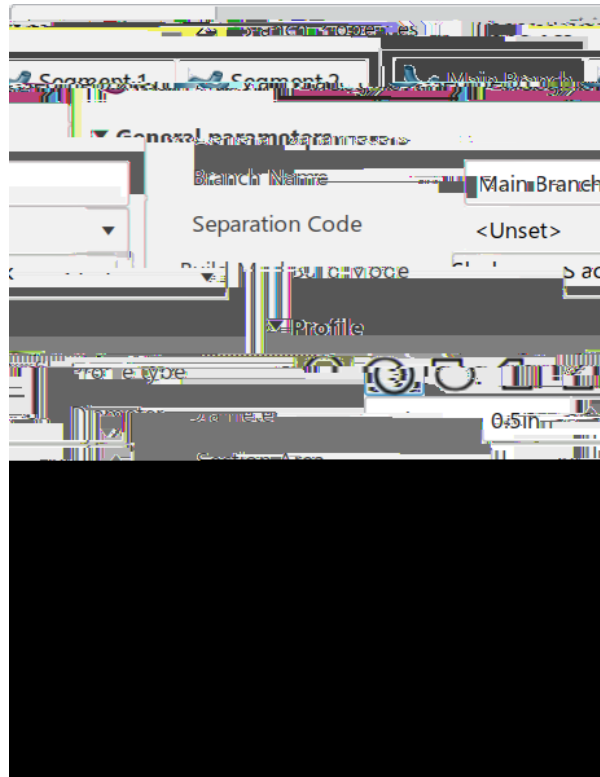
# *CATIA Electrical Harness Design*

8 V H **Change Branch Point Unit** LFRQ LI QHHG HDG StandeR V ZV Lj WFK WR  
vgzv"kp"vjg"fkurnc{"ujqwnf"dg"Distance"tcvjgt"vjcp"Ratio0"



6 H O H **Distance** KW H [ W NH \ L Q Enter DVQC G vgl"Q" H F W  
8"kpjgu0""Pqy."pq"ocvgt"jqy"nqpi"vjg"igqogvtke"dwpfng"dgeqoguyjgp"{qw"kpucnm"kv."vjg  
fkucpeg"vq"vjg"dtgcm"rqpv"yknncnyc{u"dg"8"kpjgu0""Kh}{qw"ygtg"vq"ugv"kv"vq"ctcvkq."vjgp"vjg  
fkucpeg"yqwnf"cfuwv"dcugf"qp"vjg"ngpi"vj"qh"vjg"dwpfng0"

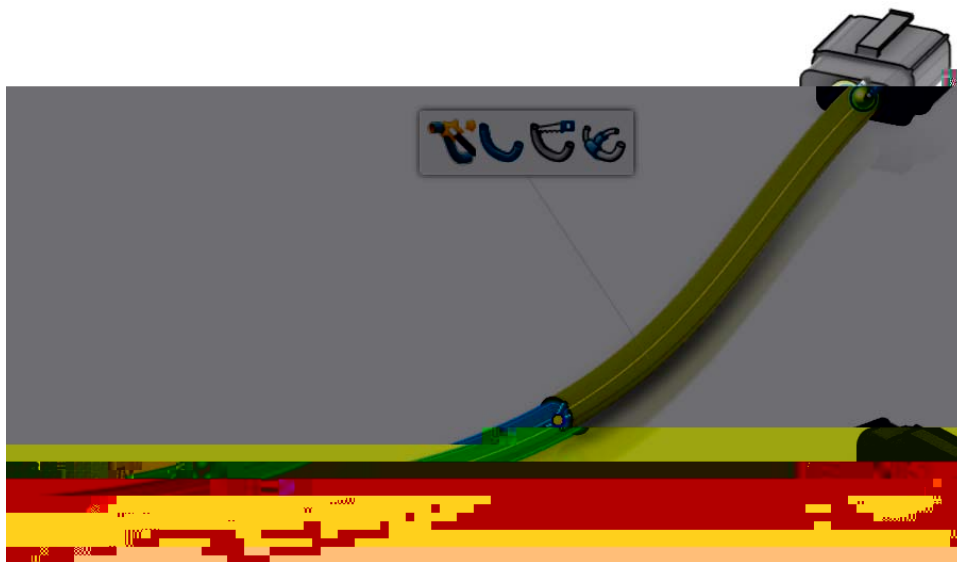
6 H O H ~~EXT~~ WKRIQ ZKHQ "GRQ" "urnkv"vjg"dtcpej"kp"vq"vyq"ugi o gpvu0"  
Pqvkeg"vjg"ugi o gpvu"ygtg"tgpc o gf"dcem"vq"vjg" fghcwnv"pc okpi "uejg o g0"



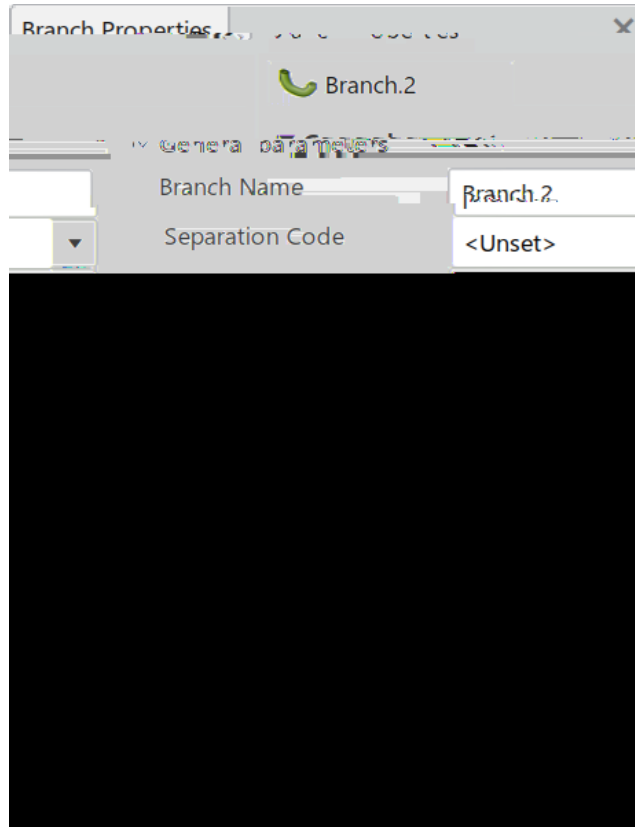
6 ZLWFKSWP ~~WKH~~ KWDE LQ WKH ZLQGR ~~Color~~ DQG FKHQ ~~WKH~~ WKH  
jgnr" {qw"mggr"vtcem"qh"vjg"xctkqwu"ugi o gpvu0"

Cnuq."pqvkeg"vjg"uvctv"cpf"gpf"rqkpvu"kp"vjg"Extremity Management0""Vjgug"xcnwgu"ctg"pqy  
ceeguukdng"vq"cf"lwuv"vjg"uvctv"cpf"gpf"nqecvkqpu"qh"vjg"ugi o gpvu0"

6 H O H ~~Segment~~ KWDE DQG ~~Diagram~~ W W K H" [ qw"Qc{"pggf"vq"ugngev  
vjg" 7 D"eg{"vq"igv"vjg"dwpfng"vq"wrfcvg"rtqrtn{0"

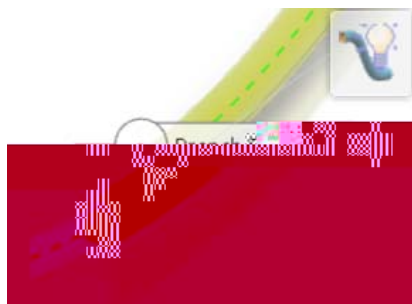


6 HOH Start New Branch LFRQ IURP W I"VWR R Q E D l w "vq"etgcvg  
c"pgy"dtepej" ykvj kp"vjg"gzkuvkpi"dtepej"ugv0"



& KDQJ Name WKR 6 LGH %UKDHOFD Name WKR Pqly Qw"ctg"tgcf {  
vq" fghkpg"vjg"tqwvg" hqt"vjg"ukfg"dtepej0"

6 HOHFW WKH \HOORZ P x i G q h " c F h d y U k u " W d y b l q p W j g " D w p f W 0 "

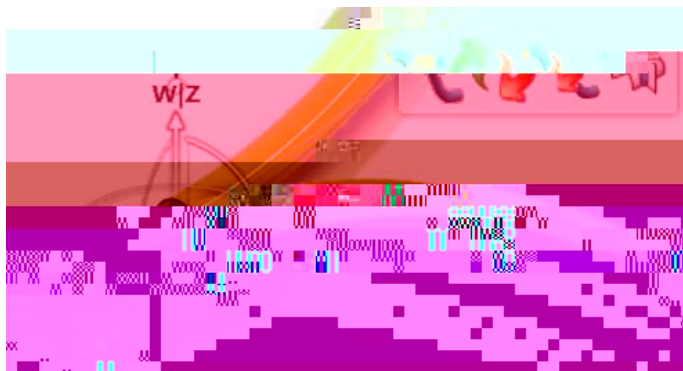


6HOHFW WKH RWKHU jku" ynd"Of"vvg"tkpju H SOXJ

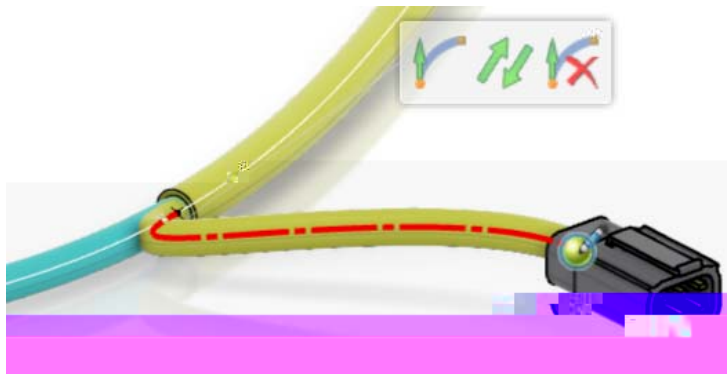


Pqvkeg"vjg"vcpigpe{"fqgupøv"nqqm"tki jv0

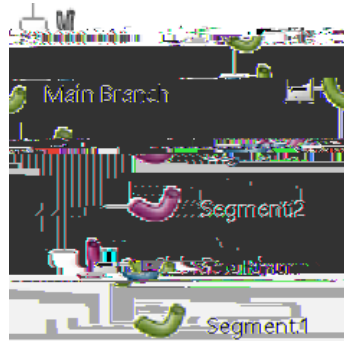
6HOHFW WKH EUDQFK SRLQW Vg"Kunfc"Ujqwvf"DrvgcVckulqz p0 DERYH



6HOHFW **Tangency Mode** LFRQ LQ WKH WRROEDU D 3Kv VHOHFW WKH  
ujqwnf"crrgct"cu"ujqyp0



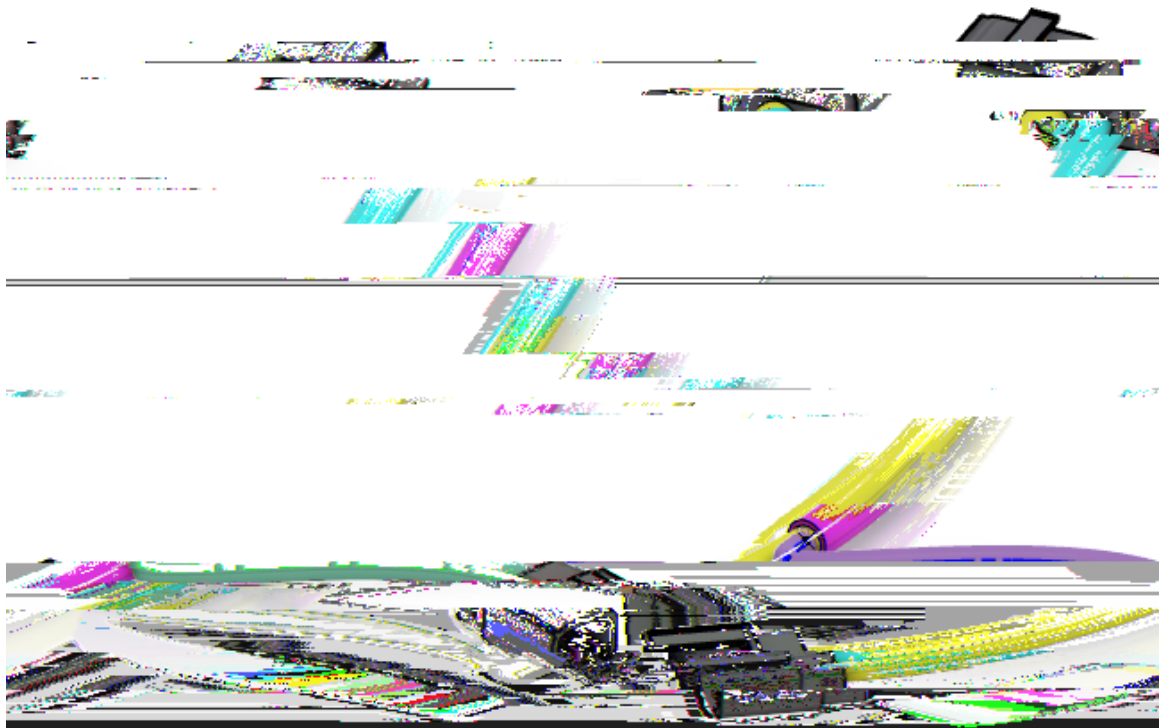
Nqqm"enqugn{"cv"vjg"ur gekhkecvkqp"vtgg0"



Vjg"pgy"dtcepej"jcu"cp"gzenc o cvkqp"rqkpv"ykvj" c" { gnnqy "qxcn"ctqwpf"kv"vq"kp fkecvg"vjcv"vjg  
 dgpf"tcfkwu"oki jv"pqv"jcxg"dggp"tgur gevgf0""Vjku"ku"pqv" c"etkvecn"gttqt."dvw"kv"ku"uq o gv jkpi  
 {qw"ykmn"ycpv"vq"yvej" hqt"y jgp" {qw"kpucnn"vjg"jctpguu"kpqv" {qwt"cuug o dn{0""Kh" {qw" hkp f"vjcv  
 {qw"uvknn"jcxg"tcfkwu"kuuwgu"cv"kpucnn"cvkqp."vjgp" {qw" oc { "pggf"vq"nqqm"cv" cflwuvkpi"vjg"dtcepej  
 rqkpv"qt"cffkpi"cffkvkqpcn"uncem0""

6HOH Segment1 KWDE DQG FORVH \RXU GRFXPHQW

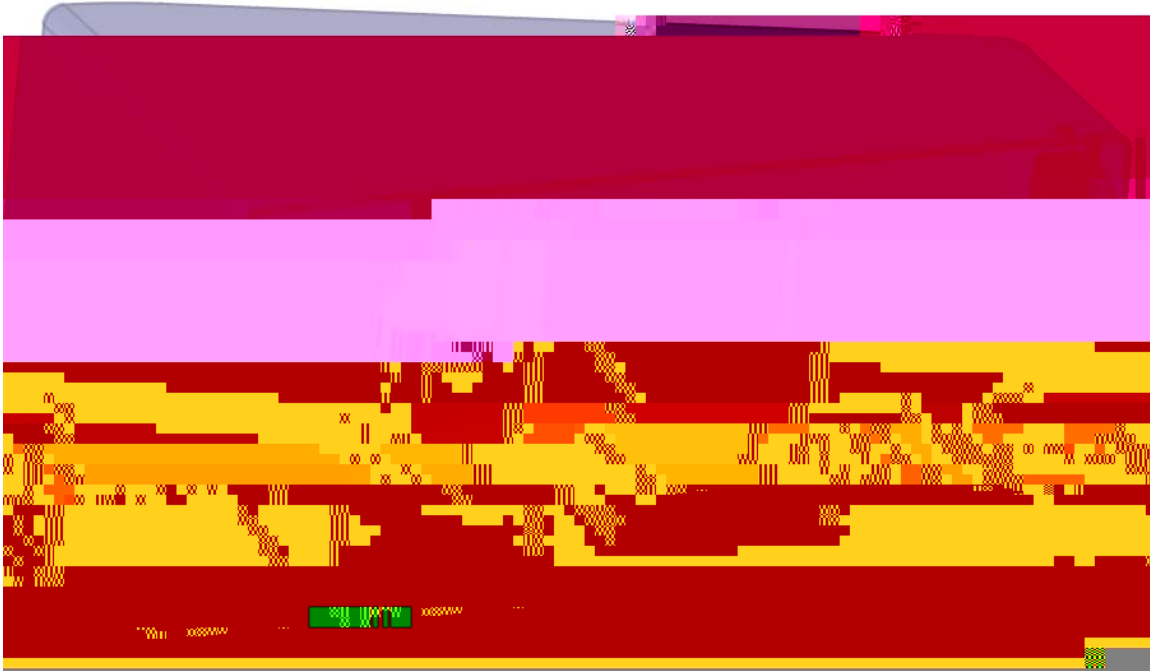
6HOHFW LQ WKH GLVSOD\WVW RY knn J & g vjg p g z v W d e j W k k p f 0 E v U D Q F K  
 ujqwnf"crrgct"cu"ujqyp0



6HOH EXH WKRIQ WR UHWXULQ DOR W'KW LQJH ZW'UNEHQFK

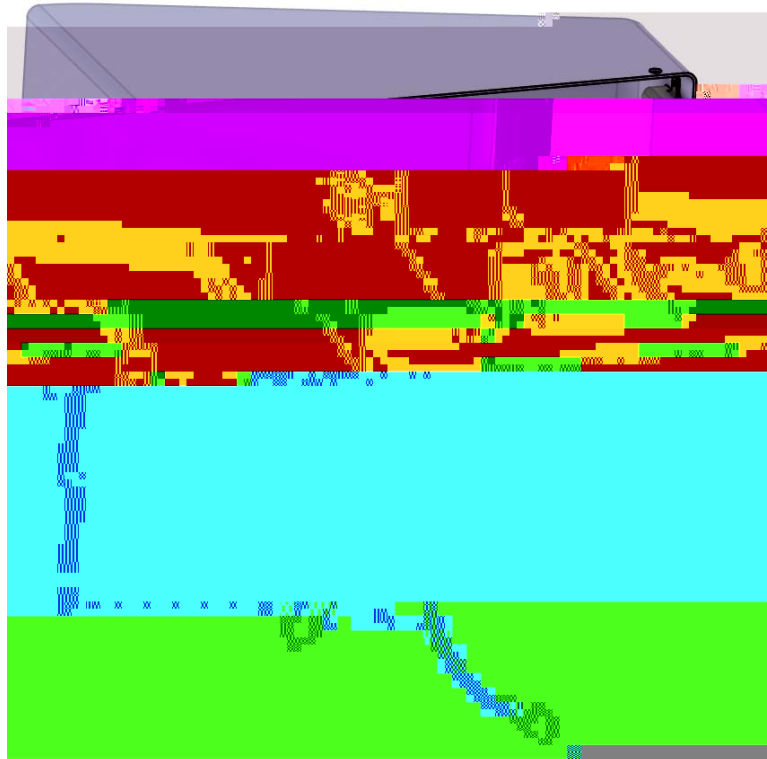
6DYH DQG FORVH \RXU GRFXPHQW

2 S H Q ELEC090 - Branch Installation SUR GXJFW"uk o rng"dqz"vq"rww"vjg" yktg  
jctpguu" {qw"lwuv"etgcygf"kpvcq0"Kv"ujqwnf"cr rget"cu"ujqyp0




:LWK WKH ULJKW PRXVHEELEC090N Branch Installation VS URFG WIKW  
IURP WKH VSHFLILFD Insert Existing Product DQG VHOHFW

6 HDU FK IRU D ELEC090 Multi-Branchable SUR GXJFW"cr rget"cu  
ujqyp0

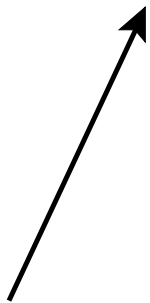


Cv"vjku"rqkv."{qw"ctg"tgcf{"vq"dgi"kp"o cmkpi"vjg"pgeguuct{"eqppgevkqpu"vq"kpucnm"vjg"jctpguu  
kpvq"vjg"dqz0"

,I QRW DOUHDG\ VKKH(UHFWZULWFDKOW'R'FWKpeg{Qw"Zg ZR U N E H  
eqppgevkpi"vyq"nggevtkecn"eqppgevtu"vqigvjgt."{qw"ecp"wug"vjg"eqppgev"fgxkegu"vqqnu0"

6 HOH **Connect Devices** LFRQ WKHQ VHOHFW WKH FRQQHFWRU  
VHJP  Wjku"yknn"kp fkecvg"y jcv"eqppgevt{"qw"ctg"iqpi"vq"eqppgev"hktuv0"

6 HOHFW WKH SLQ FRQQHFWRU"RQ WkHjgQpW  
vykeg"kh"kv"ku"kp"xkuwcnk|cvkqp"oqfg0""

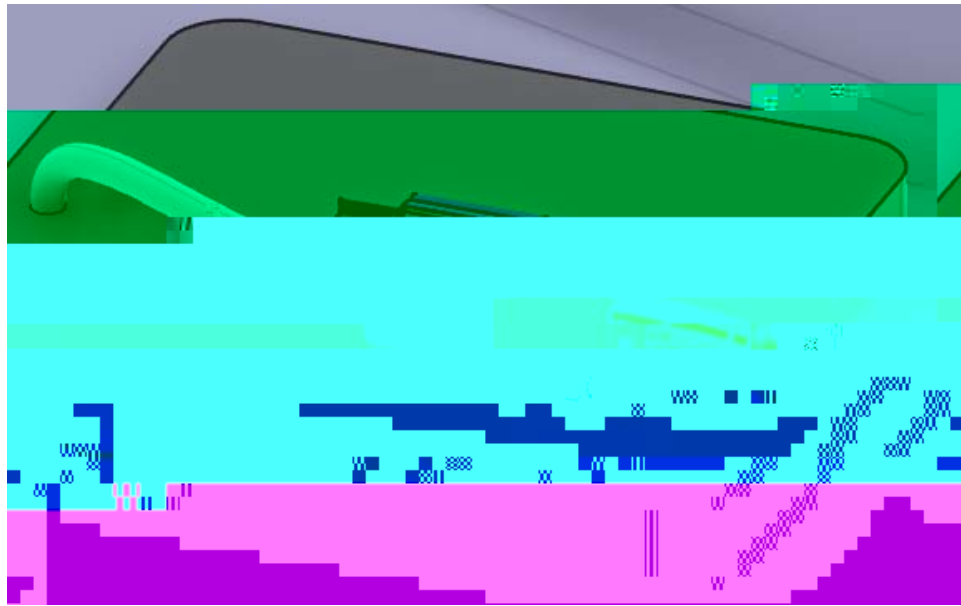




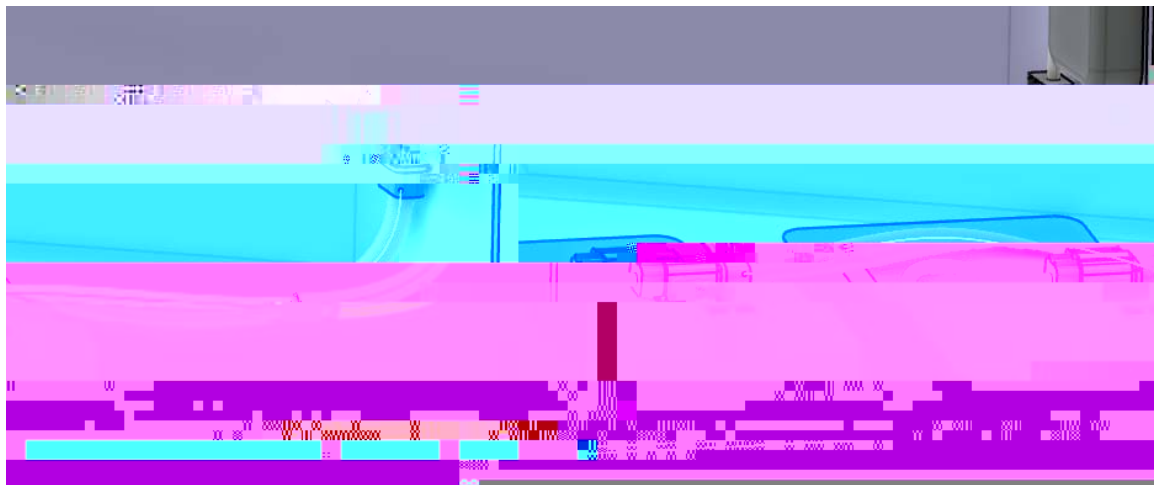
Vcmg"pqvg"qh"vjg"tguwnvki"yktg"dwpfngl"

Pqvkeg"vjg"ugi o gpv"urnk"nqecvkqp0""Ukpeg" {qw" fghkpgf"vjg"urnk" r qkp"vq"dg"8" kpejgu"htq o "vjg

6 HOH Connect Devices LFRQ DJDLQ WKHQ VHOHFW WKH FRQQH  
VHJPHQW DQG WKH SLQ  RQVWUHQV RQVWUHQV RQVWUHQV  
eqppgevqt0"



& RQQHFW WKH RQVWUHQV FRQQHFW RUV



Pqvkeg"vjg"vykuvgf"dtepej0""Vjku"yknn"igv"hkzgf"cu">{qw"dgikp"cfkpi"uwr rqtvu"cpf"qvjgt"nkpmu  
vq">{qwt"dtepejgu0"

6DYH DQG FORVH "\RXU GRFXPHQW

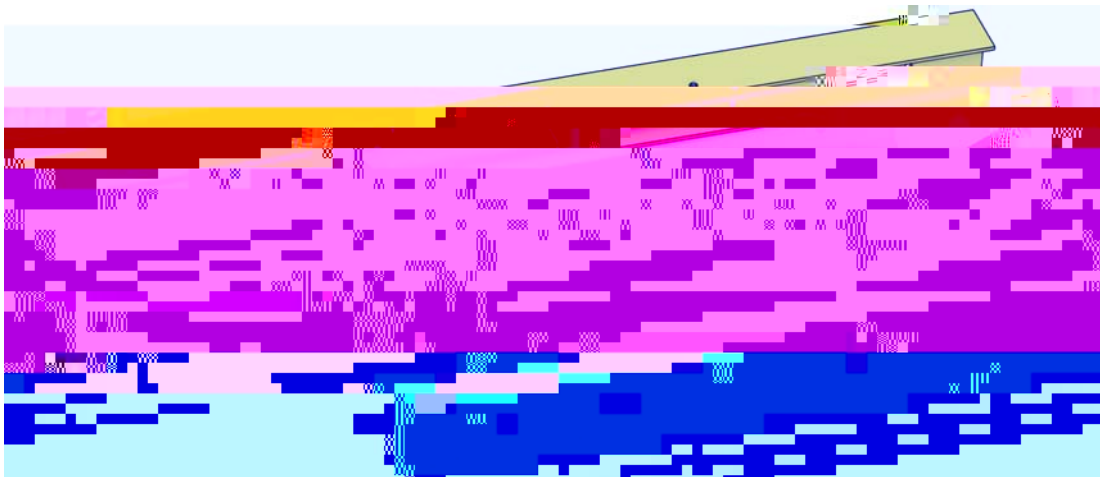
### Electrical Manufacturing Preparation

Hncvvgpkpi "vjg" dwpfng "ku" i gpgtcnn { "vjg" hkpcn "uvgr" vq "cp" { "fgxgnqr o gpv" qh "c" i gq o gvtkecn "dwpfng" Dghqtg "c" dwpfng "ecp" dg "o cpwhcevtg" f. "kv" y knn " i gpgtcnn { "pggf" vq "dg" hncvvgpgf "hqt" fk o gpukqpu qp "yktg" ngp i vj. "cu" y gnn "cu" hqt o "dqctf" fgxgnqr o gpv "cpf" eqppgevqt "ecnn" qwvu0 "" Vjgtg "ctg" c "hg y mg { "rqkpvu" vq "mgrp" "kp" o kpf " y jgp " hncvvgpkpi " { qwt " i gq o gvtke " dwpfng0 "" Hktuv. "vjg" hncvvgpgf i gq o gvtke "dwpfng" ku "ugrctcvg" htq o "vjg" dgpv " i gq o gvtke " dwpfng0 "" Vjku " cnnq y u " vjg " hncvvgpgf i gq o gvtke " dwpfng" vq " o ckpvckp " cuuqekcvkxkv { "kp" fk o gpukqpu " cpf " i gq o gvt { . "dvw" pqv "kp" vjg " ujcrg qh " vjg " dwpfng0 "" Vjg " ugeqpf " vjki " vq " mgrp " kp " o kpf " ku " vjcv " vjg " hncvvgpgf " fqew o gpv " ku " i gpgtcnn { wugf " hqt " ftchvki " cpf " HVC " o ctmwr " cpf " cppqvckqpu0 "" Cnvjqi j " vjku " y knn " dg " vqwejgf " qp " jgtg. vjku " y knn " pqv " dg " vjg " hqewu " qh " vjku " ugevqpu0 ""

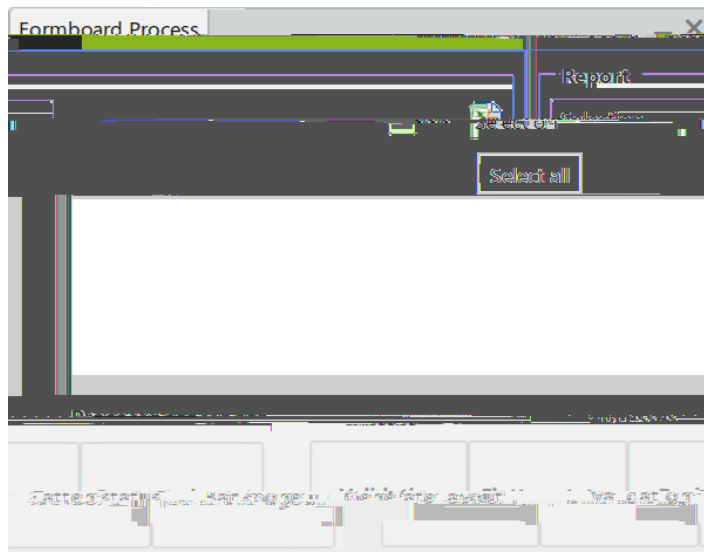
### Formboard Creation

Vjg " hqt o dqctf " cpf " rtgrctg " nc { qvw " qrvkqpu " ctg " vjg " pgy guv " o gvjqfu " hqt " etgcvki " jctpguu hncvvgpkpi0 "" Vjku " ugevqpu " y knn " fg o qpvtcvg " vjg " rtqegu0 ""

2 S H Q **EMEC340 - Flattening Orientation** G R F X P **HuQWf** " crrgct " cu " uj qyp0

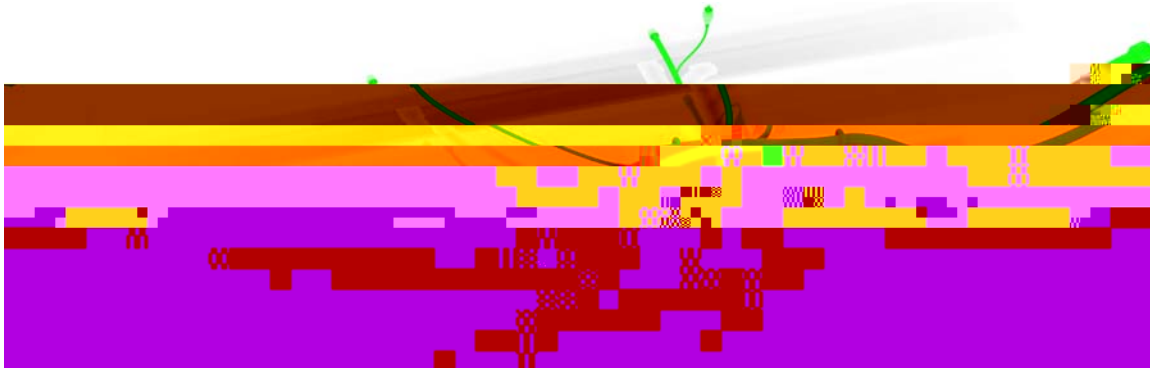


6 H O H **Formboard** L F  " Vjg " Formboard Process y kpfqy " crrgctu0



6 H O H ~~Electrical~~ **Electrical Geometry** L Q W K H W U H H W R G H I L Q M Z K D W Z L O  
ujqwnf"errget"kp"vjg"ykpfqy"cpf"kv"ujqwnf"jki jnki jv"kp"vjg"fkurnc{0

6 H O H ~~Validation~~ **HE X W Wg Rj Q** pguu"ujqwnf"jki jnki jv"itggp"cu"ujqyp0



I tggp Urgekhkgu"vjg"dtcpej"ecp"dg"hncvpgpf

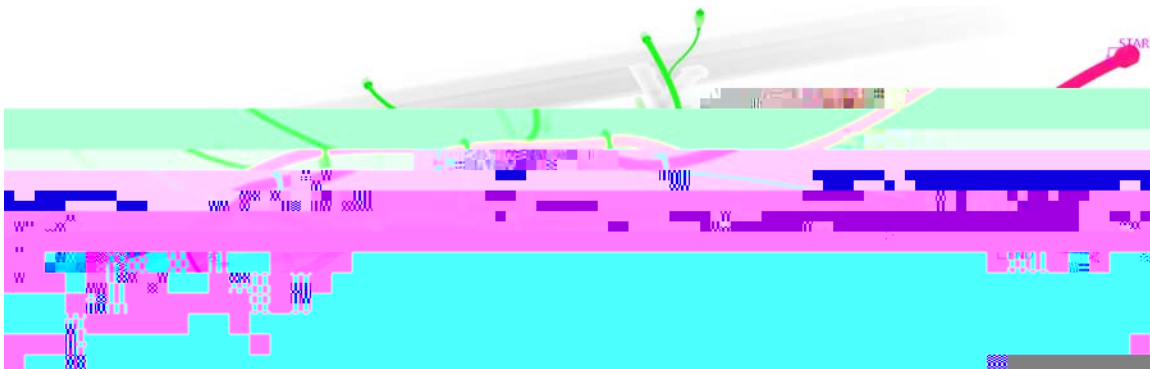
[ gmqy Urgekhkgu"vjg"dtcpej"ecppqv"dg"hncvpgpf

Oci gpcv Urgekhkgu"vjg"dtcpej"ecp"dg"hncvpgpf."dvw"y km"pqv"dg"vutcki jvpgpf

Dnwg Urgekhkgu"vjg"dtcpej"ku"cntgcf{"hncvpgpf

6 H O H ~~Attention~~ **HE X W W R Q L Q W K H Z L j Q R Z** kp"vjg"itggp0

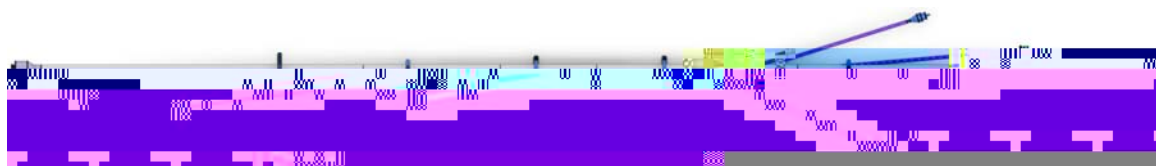
6 H O H ~~Backbone~~ **HE X W Wg Rj Q** p"dtcpej"ujqwnf"ejcpig"vq"rkpm"cpf"ujqwnf"jcxg"vjg  
uvctv"cpf"gpf"ncdngf0



6 H O H G u n e r W e k a y b u t E X W W p y Q r t q f w e v " k u " e t g c v g f " k p " c " p g y " v c d 0 " " V j g  
Formboard Process" y k p f q y " u j q w n f " c r r g c t " c u " u j q y p 0



& O R V F o r m b o a r d P r o c e s s Z L Q G R Z D Q G V Z L W F K W R K v W y d w h Q H Z S U R G  
c r r g c t " c u " u j q y p 0

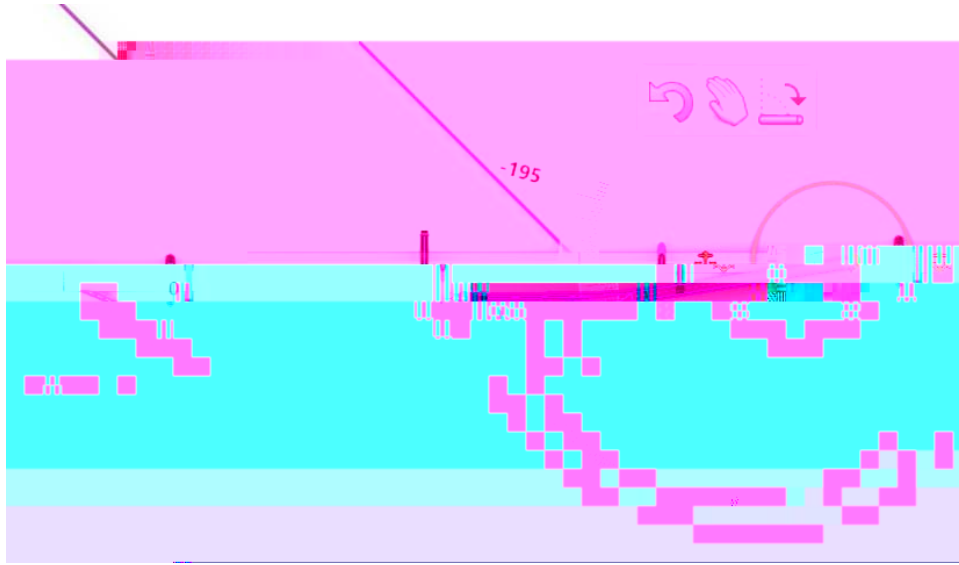


V j g " g p v k t g " j c t p g u u " y c u " d t q w i j v " q x g t " k p e n w f k p i " c p { " k p v g t p c n " g n g e v t k e c n " e q p p g e v q t u 0 " " P q v k e g " c  
u g r c t c v g " r t q f w e v " y c u " e n u q " e t g c v g f " v j c v " k p e n w f g u " c p { " u w r r q t v u " v j c v " y g t g " w u g f " d { " d w v " p q y  
k p v g t p c n " v q " v j g " j c t p g u u 0 " " "

**Prepare Layout**

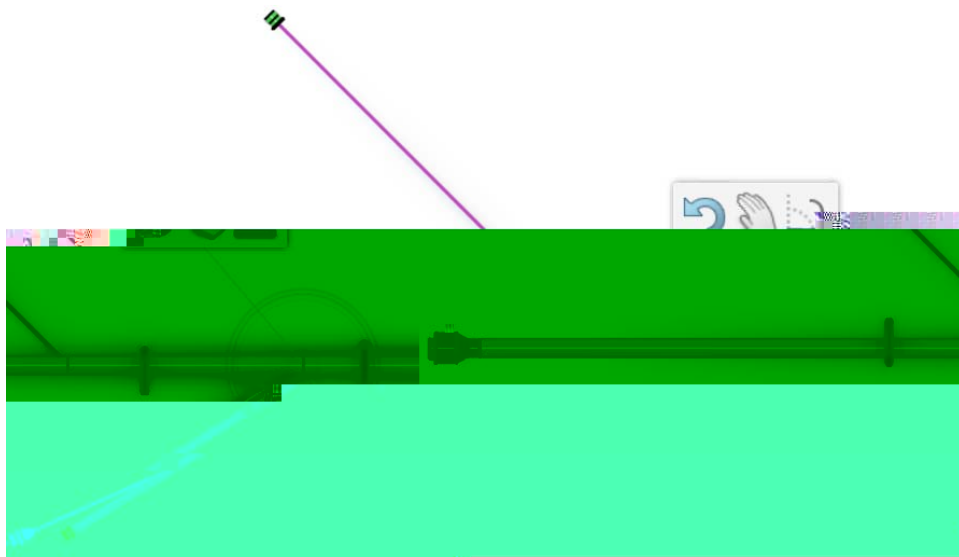
# *CATIA Electrical Harness Design*

6HOHFW QH DU WKH HQG RI WKH VPD OO EUDQFK

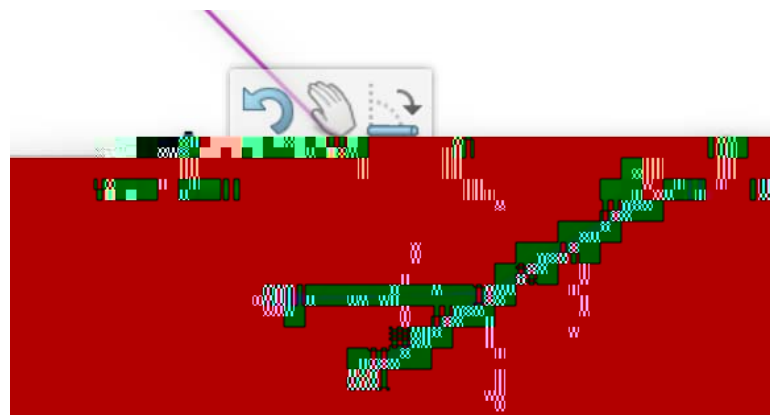


5RWDWH WKH EUDQFK WR

GHJUHHV DQG VHOHFW LQ VSI



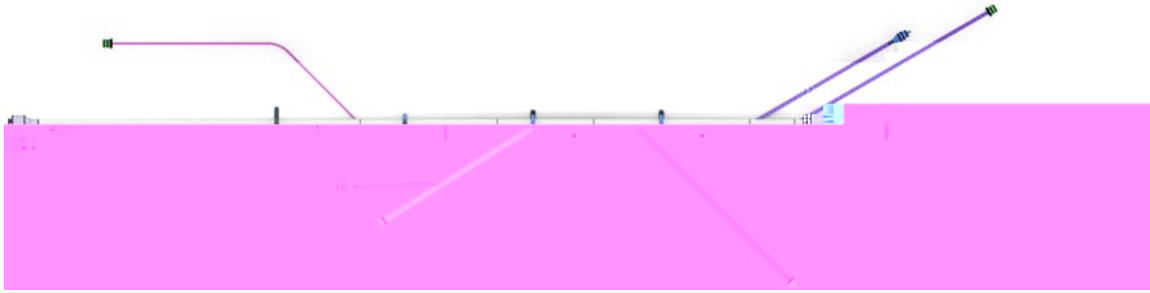
6HOHFW WKH HQG RI WKH VPD OO EUDQFK D QSG RVR W)DGLHQ J WU W  
 GHJUHHV 6HOHFW "VQ" yknsD" F" Htczng" Vj" Qg" GkP" Qdpej0







6 HOH **Prepare Layout** LFRQ WR FRPSOHWF "Kjg" j Rpgu Q DDQLSXODWLRQ  
ujqwnf"crrgct"cu"ujqyp0



5HQDPH WKH WRS OHYHO SURGXFW DQG WKH VXE DVVHPEO



6DYH WKH **EXPLODE** "Bng" QW jg"pgzv"gzgtekug0