

Introduction

CATIA 3DEXPERIENCE Electrical 3D Design

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hqnnqykpi"vqrkeu<

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- / 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

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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

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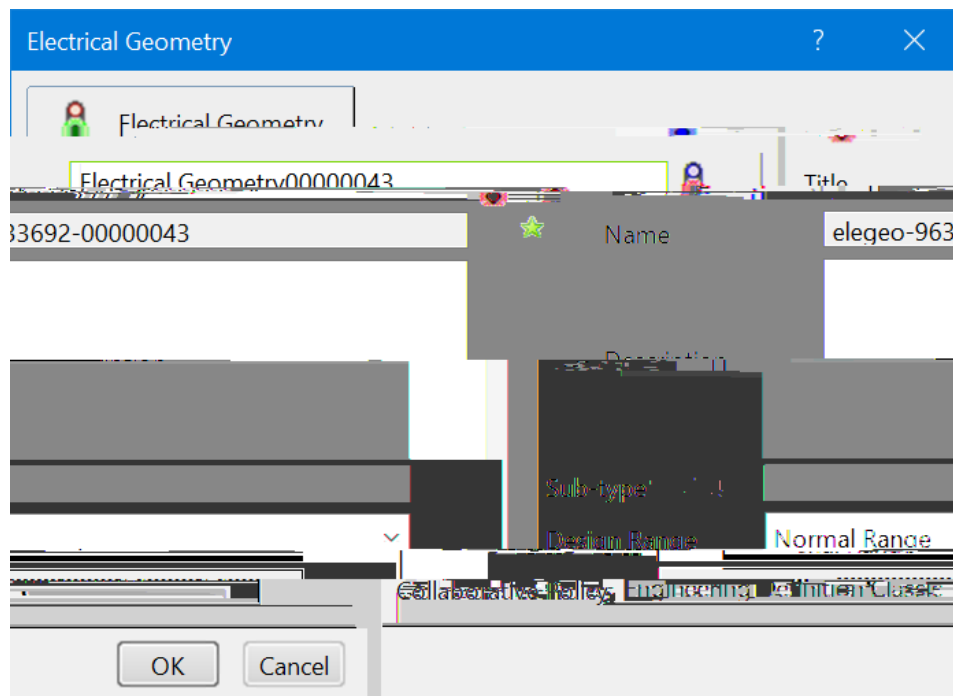
Defining Electrical Branch Geometry

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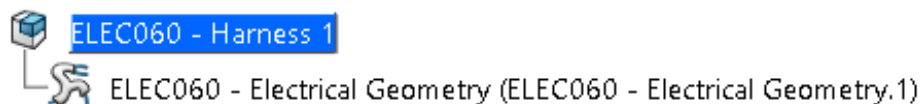
&UHDWH D QHZ SURGXFW QDP MjG"pgy"(r&fwv"yknndx"u HVV
 {qwt" hktuv"jctpguu0"

,I QRW DOUHDG\ VKKH(OHFWZULWFDKO W'R'FWJL"y"u" czqR"U"NEH
 vq"dwknf"vjg"gngevtkecn"jctpguu0"

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

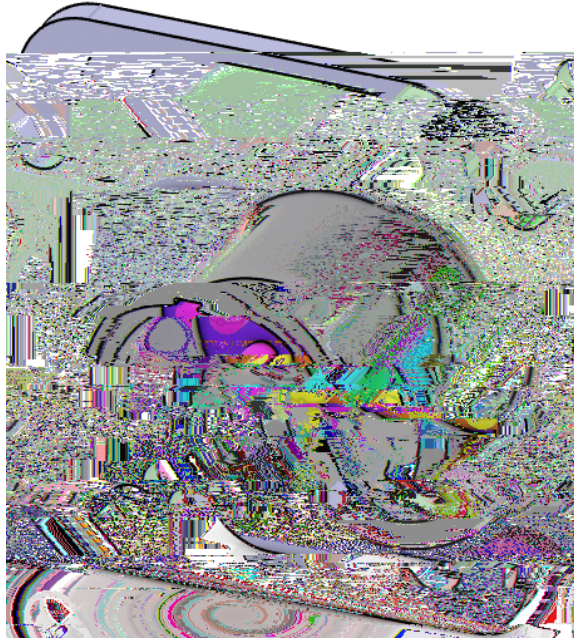


&K D Q J HW MHR (/(& (O H F W U L F O G V K B R J W U r g c t " c u
 u j q y p 0



5 LJKW FLEEC010 Electrical Geometry LQ WKH VSHFLILFD WskRQ WUHH D
Existing 3D Part Vjku" yknn" fku rnc{"v jg" Search Selection" ykpfqy0"

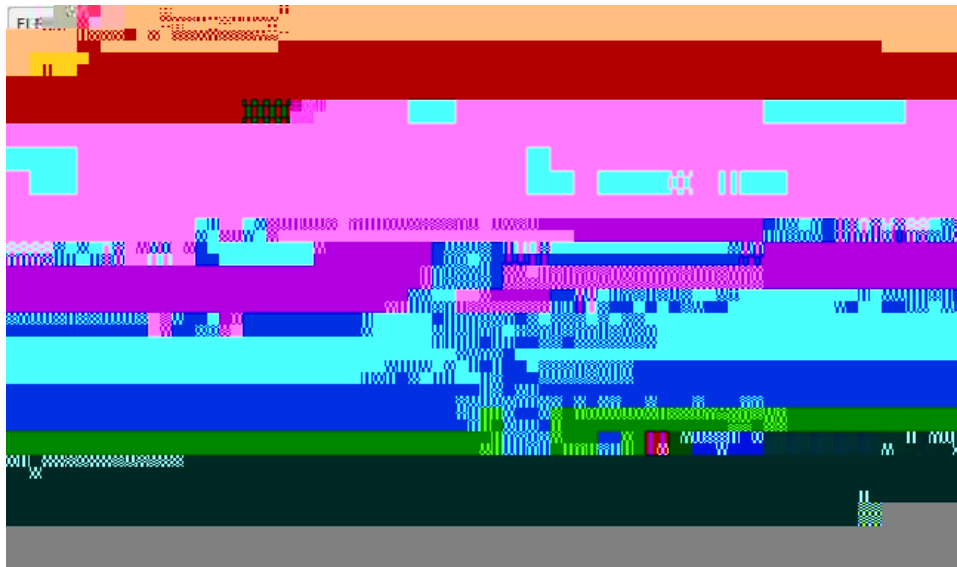
6 HDUFK IRU D ELEC-V-H Pin Mount Connector GRFXPHQW IURP WKH
Electrical Harness I G L U H F W R y l n d g " c " u k o r n g " h q w t " r k p " o q w p k p i " e q p p g e v q t 0



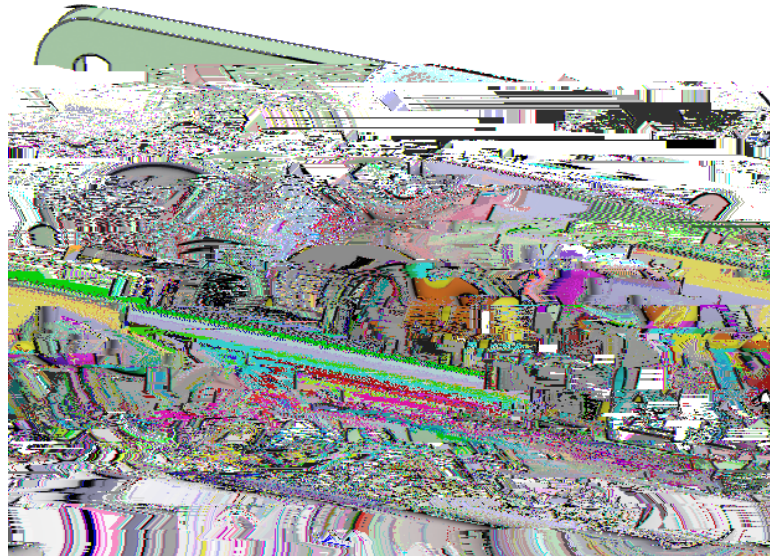
Tg o g o d g t . " { q w " e c p " c n u q " k p u g t v " e q o r q p p p v u " h t q o " v j g " e c v c n q i 0

6 HOH Catalog Browser LFRQ IURP WKH ERW W R P j g W R O E D U
ugevkqp0" Vjku" yknn" fku rnc{"v jg" Catalog Browser" ykpfqy0"

6 HDUFK IRU D ELEC-Electrical Catalog WKHQ H [S o n e c o r s W K H
FKDSWHU D Q S i g n e h o r t c o n n e c t o r k 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



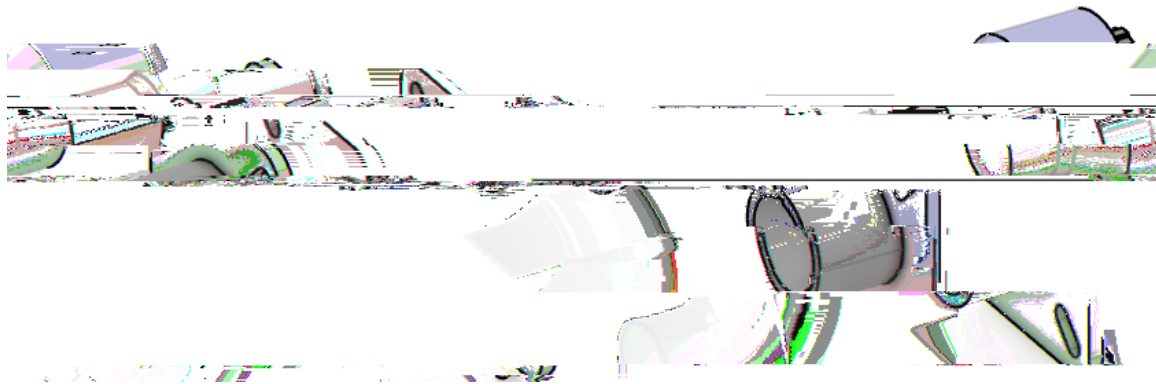
6 HOH ELEC-4 Electrical Geometry EUDQFK LQ WKH WUHH DQG WKH C
ELEC - 4 Pin Connector IURP WKH FDWDORJ EURZVHU ZKHQ GRQH
eqppgevqt"kpvc"vjg"cuug o dn{ "cu" y gmn0



&ORVH WKH FDWDORJ EURZVHU ZKHQ GRQH

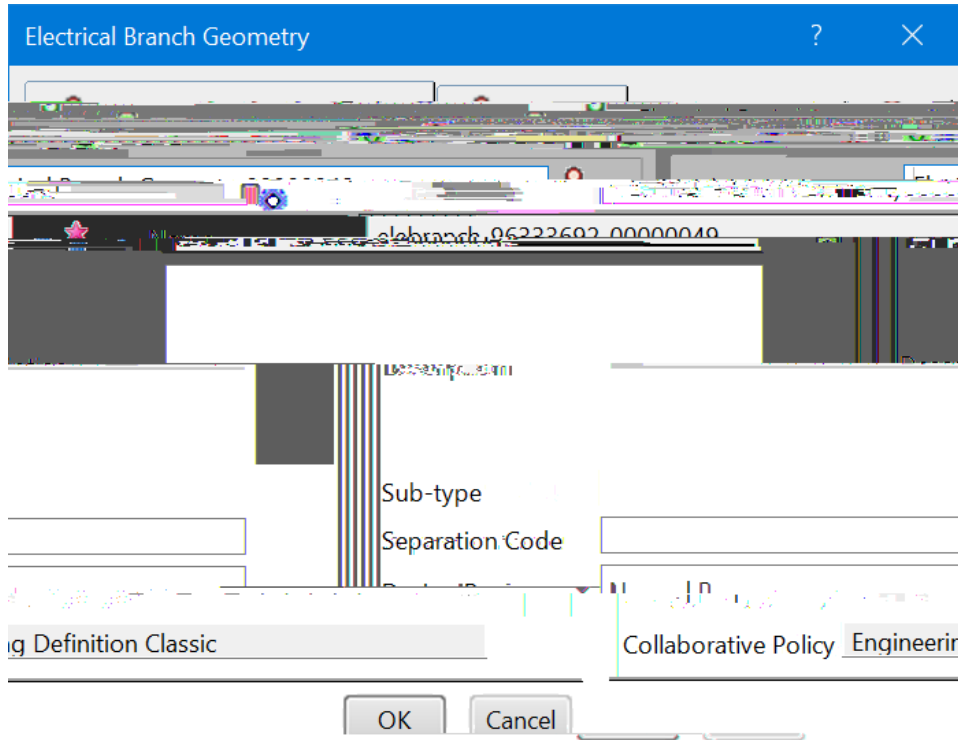
'RXEOH VHOELEC-4 Electrical Geometry EUDQFK WR"DFWMLYDWH LW
cnnqy" {qw"vq" ocpkrwncvg"vjg"eqo rppgvu" ykvj kp"kv0"

8VLQJ WKH FRPSDVV DRWL R Q WWRUR DDQ IPSXQ \$ R Q D W F W R K U H W F
DSSUR[LPDWH O R F D W L R Q W K R Z G k t g f . " l w u v " u g r c t c v g " v j g " v y q
rctvu0

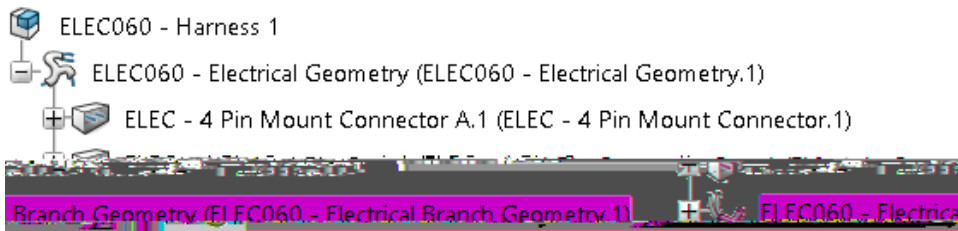


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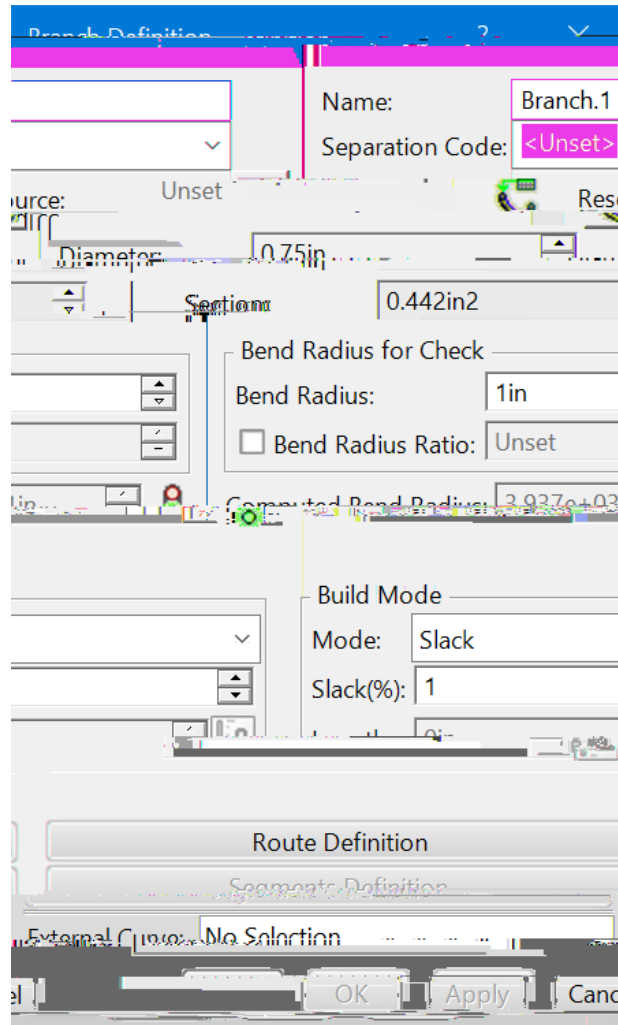
6 H O H Electrical Branch Geometry L F i (O H F W U L F D O
* H R P H W U \ " V j g " Electrical Branch Geometry" y k p f q y " c r r g c t u 0



& K D Q J H W M 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"hqt"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"

Slack Dtcpejgu"ctg"eq o rwwgf" ykvj" c" okpk o w o "fkuvcepeg."cpf vjgp" c" rgtegpvc ig"qh"uncem"ku" cffgf"vq"vjg"dtcpej

Length Dtcpejgu"ctg" c"ugv"ngpi vj. "tgi ctfnгуu"qh"vjg" c o qwpv"qh uncem

Bend ECVKC" yknn"eq o rwwg"vjg" okpk o w o "ngpi vj" rquukdng y jkng"tgurgevki"vjg"*Bend Radius*"

Straight Bend Ugi o gpv"ngpi vj" eqttgurqpfu"vq"vjg" rcvj" fghkpgf" d{ cteu"qh"ektengu"qh"hkzgf" tcfkwu"cpf" uwtcki jv"nkpgu" i qkpi vj tqwi j" rqkpvu0"

Cornered Polyline Ugi o gpv"ngpi vj" eqttgurqpfu"vq"vjg"ujqtvguv" rcvj fghkpgf" d{ "cteu"qh"ektengu"qh"hkzgf" tcfkwu"cpf"nkpgu0 Vjg"ewtxg"fqgu"pqv" i q"vj tqwi j"vjg" rqkpvu. "gzegrv"kh"vjg dgpf" tcfkwu"ku"gs wcn"vq" | gtq0"Vcpi gpe{ "cv" tqwvg" rqkpvu ku"ki pqtgf0

Slack (%) Fghkpgu"vjg" rgtegpvc ig"qh"uncem" dgy y ggp"eqppgevkqp" rqkpvu0" Cnv j qw i j "2 ' "ku"cnny g f."vjgtg"pggfu"vq"dg" c"uncem"qh"cv"ngcuv 03 ' "vq"cxqkf"wr fcvg"gttqtu" ykvj" J ctpguu"Hncvvgpkpi "vqqnu0

Length Fghkpgu"vjg"ngpi vj"qh"vjg"dtcpej" y jgp"kp"*Length* o qfgl""Vjg ngpi vj" o wuv"dg"cu"nqpi. "qt"nqpi gt"vjcp"vjg"fkuvcepeg" dgy y ggp vjg"v y q"eqppgevkqp" rqkpvu0

Route Definition" Fghkpgu"vjg"dtcpej"tqwvg

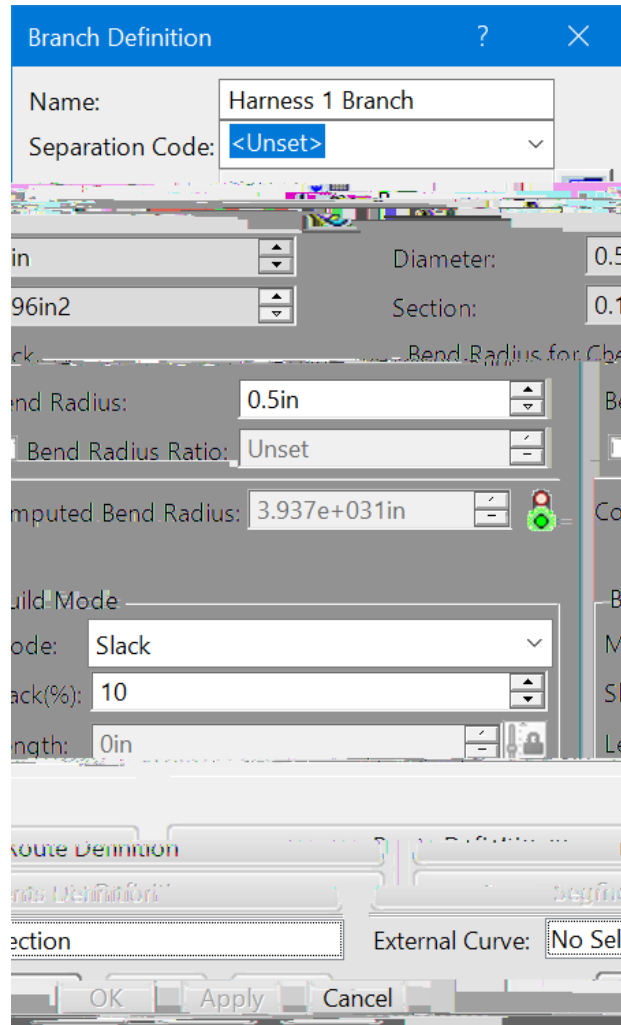
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External Curve Cnnq y u"ugngevkqp"qh" c"ewtxg"vq" fghkpg"vjg"dtcpej"tqwvg

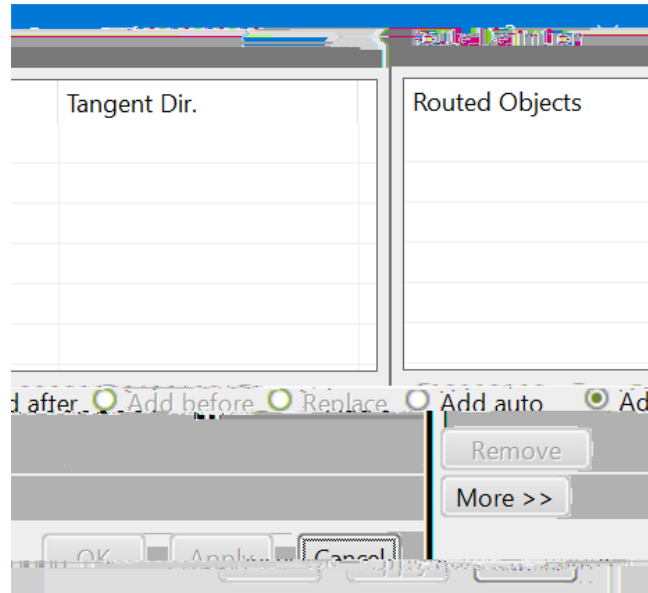
Ocp{ "qh"vjgug" rctc o gvgtu" yknn"dg"vguvgf"hwvtvjgt"qpeg"vjg"tqwvg"ku" fghkpgf0"

& K D Q J ~~W~~ K H

& 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 c 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

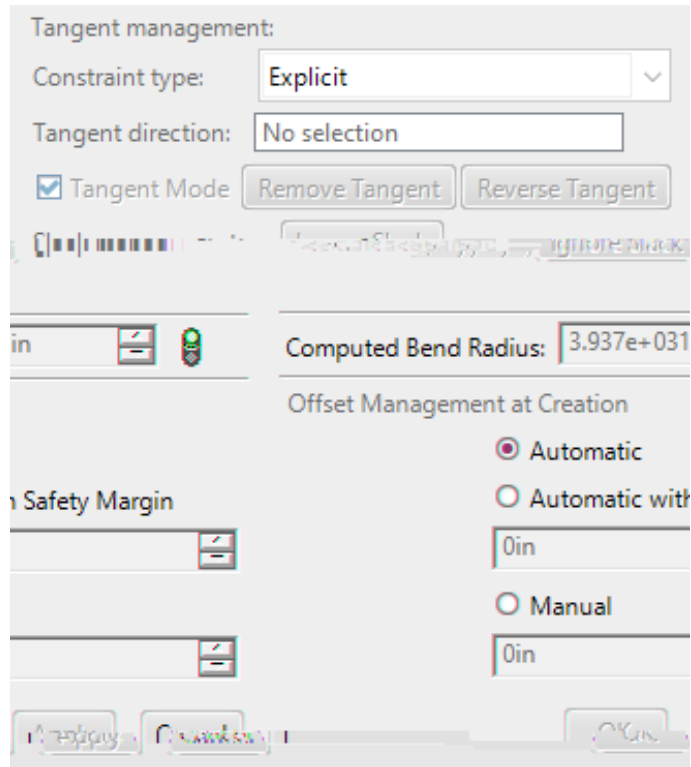


6 H **Route Definition** "Vjku"yknn"cnny" {qw"vq" fghkpg"vjg"tqwvg" hqt"vjg" dwpfng0""Vjg"Route
 Definition" ykpfqy" yknn" fku rnc {0""Vcmg" c" swkem" nqqm" cv"vjg" xctkqu" qrvkqu" kp"vjg"Route
 Definition" ykpfqy0"



<i>Routed Objects / Tangent Dir.</i>	Fku rnc {u"vjg" qdlgevu" cpf" rkpvu" hqt"vjg" tqwvg" fghkpvkqp
<i>Add after</i>	Cf fu" rkpvu" cpf" eqppgevkqp" rkpvu" chvgt"vjg" ugngevgf rqp v
<i>Add before</i>	Cf fu" rkpvu" cpf" eqppgevkqp" rkpvu" dghqtg"vjg" ugngevgf rqp v
<i>Replace</i>	Tgrncegu"vjg" ugngevgf" rkp v" ykvj" cpqv jgt" ugngevkqp
<i>Replace</i>	Tgrncegu"vjg" ugngevgf" rkp v" ykvj" cpqv jgt" ugngevkqp
<i>Add auto</i>	Cwvq o cvkecm { "qt fgtu"vjg" tqwvg" ugngevkqu" dcugf" qp vjgkt" v { rg

D{"ugngevkpi "v j g"More>> dwvvpq."{qw"i g v" c" h g y" c f f k v k q p c n" q r v k q p u 0"



Tangent management

<i>Constraint type</i>	Fghkpgu"v j g"v { r g" q h" v c p i g p e { " v q" d g" f g h k p g f
<i>Explicit</i>	Vc p i g p e { " k u" f g h k p g f" x k c" c" o c p w c n" x g e v q t" f g h k p k v k q p 0" Vc p i g p e { " f g h k p k v k q p" k u" f g h k p g f" v j t q w i j" c" t k i j v" e n k e m" k p v j g" <i>Tangent Direction</i> " h k g n f 0
<i>From curve</i>	Vc p i g p e { " k u" f g h k p g f" h t q o" c" e w t x g" q t" n k p g" u g n g e v k q p 0" Y j g p" <i>From curve</i> " k u" u g n g e v g f. " v j g" <i>Tangent direction</i> e j c p i g u" v q" <i>Element</i> 0"

Slack management K i p q t g u" q t" t g o q x g u" u n c e m" d g v y g g p" r q k p v u

Offset Management at Creation

<i>Automatic</i>	Nc { u" v j g" d w p f n g" q p" v j g" u w t h c e g
<i>Automatic with...</i>	Nc { u" v j g" d w p f n g" q p" v j g" u w t h c e g" y k v j" c p" c f f k v k q p c n" q h h u g v" q h" v j g u c h g v { " o c t i k p" f k u v c p e g
<i>Manual</i>	C n n q y u" { q w" v q" u r g e k h { " c" u r g e k h k e" f k u v c p e g" h q t" v j g" d w p f n g" v q g z k u v" q h h" v j g" u w t h c e g

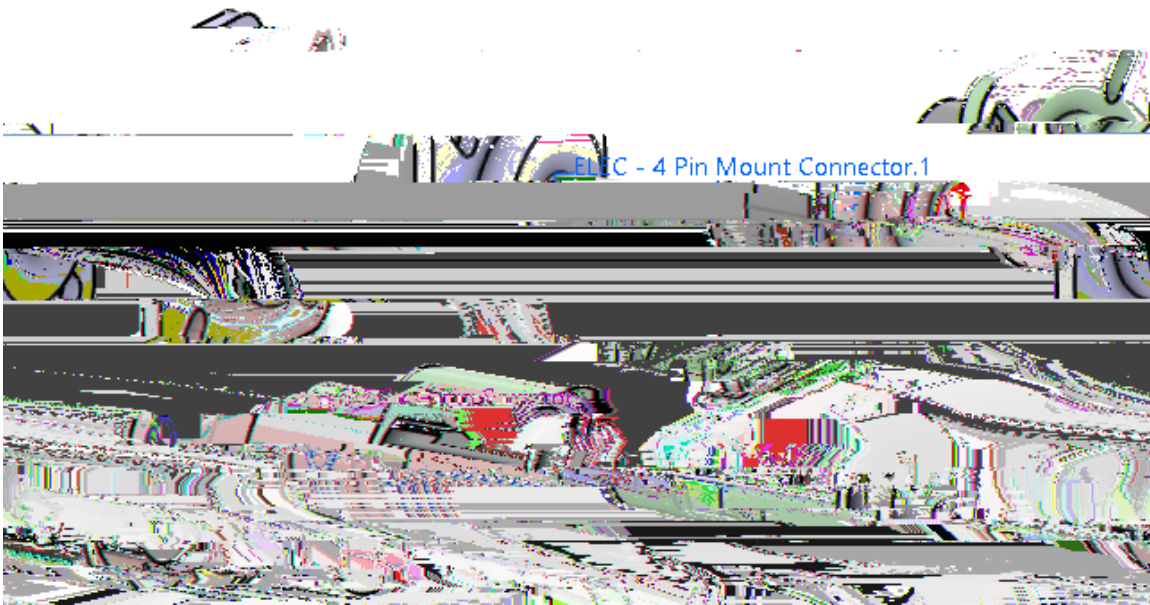
P q y" { q w" c t g" t g c f { " v q" f g h k p g" v j g" t q w v g 0"

6 HOHFW WKH 3 LQ "PRXQW & RQQHFW Rcu { "cffgf"vq"vjg
Route Definition" ykpfaqy."cu"ygm"cu"vjg"ugi o gpv"eqppgevkqp"rqkp"ku"cwvq o cvkecnn {"fghkpgf0



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

6 HOHFW WKH 3 LQ "PRXQW & RQQHFW Rcu { "cffgf"vq"vjg
Pqvkeg"vjg"dwpfng"ku"pqy" rtgugpv0"



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

6 H O O K F W R R ~~W~~ ~~K~~ ~~H~~ ~~D~~ ~~e~~ ~~f~~ ~~i~~ ~~n~~ ~~i~~ ~~o~~ ~~n~~ ~~0~~ Definition Z L Q G V R Z y knn"vcmg" {qw"dcem"vq"vjg"Branch
Definition0"

6 H O O K F W R R ~~W~~ ~~K~~ ~~H~~ ~~D~~ ~~e~~ ~~f~~ ~~i~~ ~~n~~ ~~i~~ ~~o~~ ~~n~~ ~~0~~ Definition Z L Q G V R Z dtcpej "ku" fghkpgf0"

Pqvkeg"vjcv" {qw"ctg"uvknn"kp"vjg"Gngevtkecn"5F"Rctv" Fgukip" y qtm dgpej0"

6 H O H ~~E~~ ~~X~~ ~~I~~ ~~T~~ ~~W~~ ~~K~~ ~~R~~ ~~I~~ ~~Q~~ "Vjku" y knn"vcmg" {qw"dcem"vq"vjg"Gngevtkecn"5F" Fgukip" y qtm dgpej

Pqvkcg"cv"vqqndct"cr rgctu"kp"vjg"fkurnc{"cu"y gmn0



\$ X W R 5 R X W L Q J 0 R G H fkurnc{"u"vjg"etgcvkqp"qrvkqpu
tqwvkpi"vjg"dtcpej0



5 R X W H R Q % U D Q F K 3 R L Q W j"rqp"vq"cp
gzkuvkpi"dtcpej



5 H P R Y D O 0 R G H Tgoqxgu"dtcpej"rqpvu



& U H D W L R Q 0 R G H fkurnc{"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"rqp"vq"cp
gzkuvkpi"dtcpej



\$ G G \$ V V R F L D W L Y H % U D Q F K 3 R L Q W j"rqp"vq"cp
gzkuvkpi"dtcpej



\$ G G 3 U R W H F W L Y H & R Y L U Q O g"eqxgtkpi"vq"c"dtcpej



6 S O L W % U D Q F K Urnkvu"cp"gzkuvkpi"dtcpej



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



7 U D Q V O D W H % U D Q F K tcpuvcgu"c"dtcpej



' 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"dtcpej

& K D Q J ~~Dian~~ ~~Wen~~ H W R Slack ~~W~~ M R D ~~Be~~ ~~Gl~~ ~~R~~ ~~W~~ ~~K~~ ~~u~~ H W R "" Pqy" {qw"ctg
tgc f {"vq"tqwvg"vjg"dtcpej0""

0RYH \RXU PRXVH RYHU WKH 3LQ 0R XIQPH & RVQQRH & WRFUWD
WKDW DSRHDLFH D \HOORZ VSKHUH DSSHDUV DW WKH FR

\$Q\WLPH \RX VHOHFW D VHJPHQW FRQQHFWRU & SWRQVW
VHOHFWHG DQG WKH WDJJHQW GEULFH & WLFH & DZL
GLUHFWRU GHILQH LQ WKH VHJPHQW FRQQHFWRU
6HOHFW WKH VHJPHQW FRQQHFWRU & SWRQVW
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 LQKHS & BQFK LV FRPSOHWHG

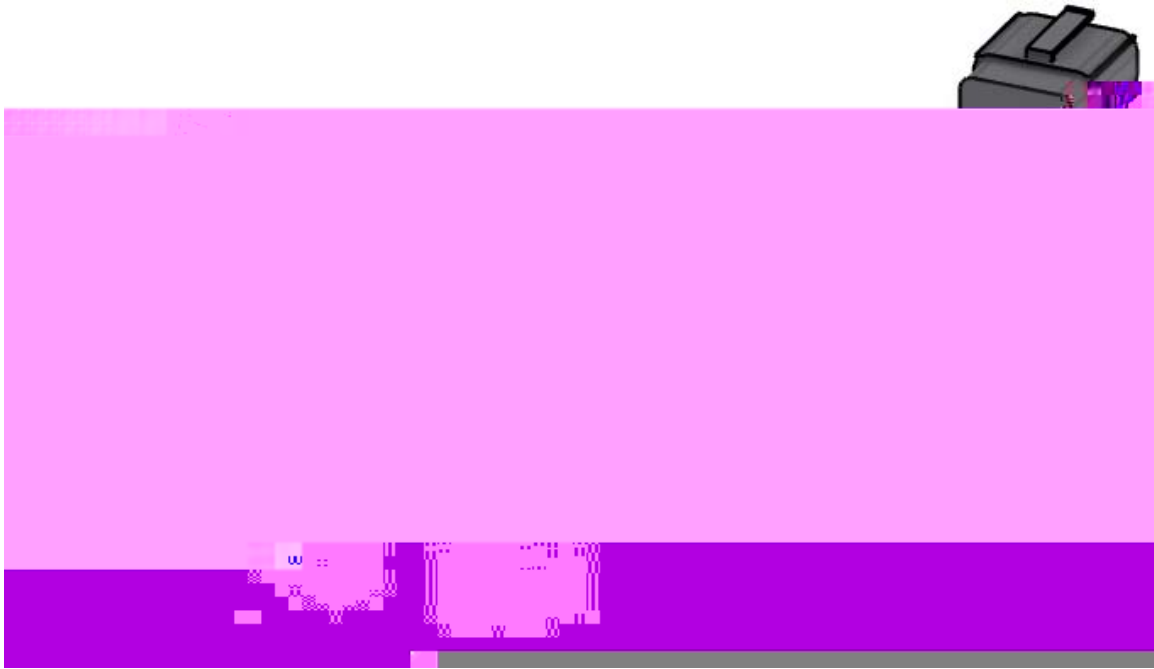
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DQG DFWLYDWH WKH HOHFWULFDO JHRPHWU\ EUDQFK

6DYH \RXU KDUQHVVWK 2SWLRQV ZRXOG EH DRJURG RSW
EXQGOHV /HDYH \RXU KDUQHVVWK RSW ZLOO EH XVH


Defining Multi-Branches

Cnvjqwi j "ukping" dtcpejgu"ctg"xgt{"wughwn" hqt"uk o rng" i gq o gvtke" dwpfngu." {qw" yknn" qhvgp" hkp f vjcv" {qw" ctg" pqv" cdng" vq" etgcvg" vjg" pgeguuct {"dwpfngu" ykvj" 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"

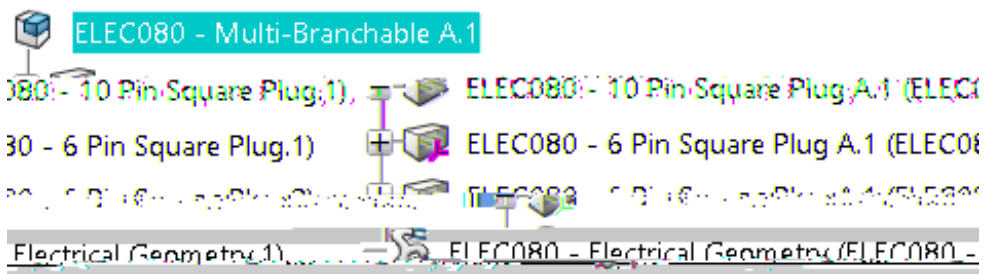
2 S H Q **ELEC080 - Multi-Branchable** G R F X P [H Q W "etgcvg" c" o wnvk/ dtcpejcdng fqw o gpv" qh" c" uk o rng" jctpguu" qh" vj tgg" eqppgevqtu" kp" c" õ [ö" eqphk i wtcvkqp0"



, 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"

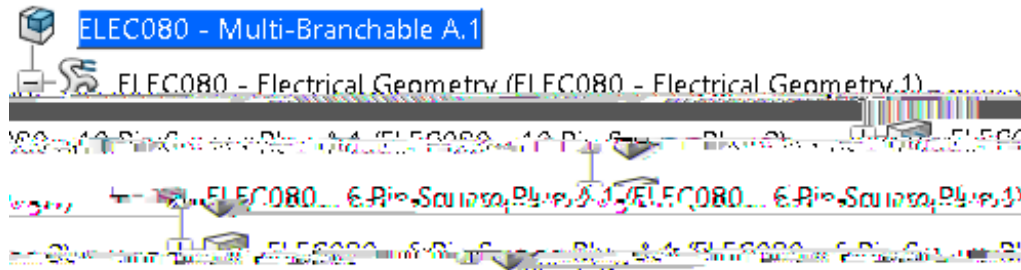
6 H O H **Electrical Geometry** L F R Q W K H **ELEC080 - Multi-Branchable** SURG  Wjg" Electrical Geometry" ykpfqy" crrgctu0"

& 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" yknn" o qxg" cnn" qh" vjg" eqppgevqtu" kp" vq" vjg" gngvtkecn" i gq o gvt {"uq" vjg" gpvktg vj kpi" yknn" dg" ugnh" eqpvckpgf0"

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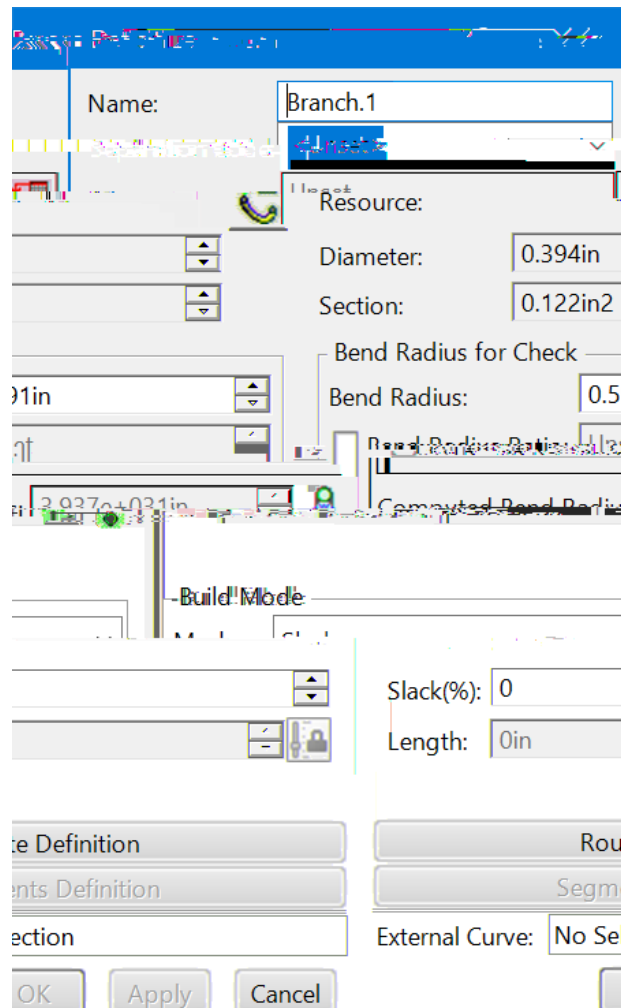


Cv"vjku"rqkp." {qw"ctg"tgcf {"vq" fghkpg"vjg"dtepej"ugi o gpv0

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

6 H O H ~~Electrical Branch Geometry~~ L F " "Vjg"Electrical Branch Geometry
y kpfqy "crrgctu0

. H \ L Q (/ (& (O H F W U L F D O I % U T W K H Q G H V R O M V L Y M n
uvctv" c" dtcpej0"



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

& K D Q J ~~D~~ ~~i~~ ~~a~~ ~~W~~ ~~K~~ ~~H~~ W R L Q ~~B~~ ~~D~~ ~~Q~~ ~~F~~ ~~K~~ ~~W~~ ~~R~~ C i k ~~Q~~ "kv"ku"c"iqqf"twng"qh
vjw od"vq" ocmg"uwtg"vjcv" {qwt"dgpf"tcfkwu"ku"nctigt"vjcp" {qwt"dtepej"fk o gvg0"

: 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 SRVW LQ WKH FRQWU W KH SLQ VTXDUH S



6 H OOF W cvkeg"pc y

1

1 – Segment Definition

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

([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

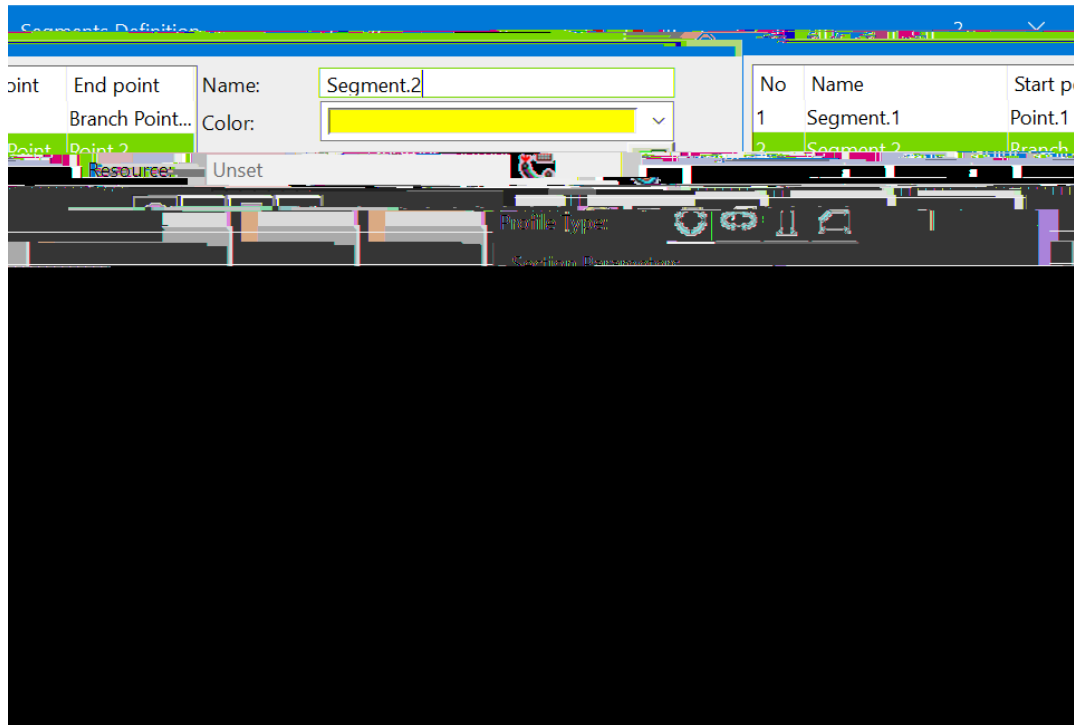
<i>Name</i>	Urgekhhkgu"vjg"pc o g"qh"vjg"ugi o gpv
<i>Color</i>	Urgekhhkgu"vjg"eqnqt"qh"vjg"ugi o gpv
<i>Resource</i>	Fkurnc { "u"vjg"wpkswg"kf gpvkhgt" hqt"vjg"ugi o gpv
<i>Profile Type</i>	Urgekhhkgu"vjg"ujcrg"qh"vjg"ugi o gpv
<i>Section Parameters</i>	Urgekhhkgu"vjg"uk g"ejctcevgtkuvkeu"qh"vjg"ugi 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"ngpi 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" ycpv"vq ugg"vjcv"vjg"eqnqt"qh"vjg"dwpfng"ecp"dg"ejcpi g f0"
	Pqy "vq"cff" c" dtcpej " r qkp v0"

6HOHF\$G VDH%UDQFLFBRLOQV\FH \RX VHOHFW WKH LFRQ W
XQWLO \RX VHOHFW WKH EXQGOH SRLQWQLO \RX ZDQW WF

6HOHF&K DQJH 5HIHUHQEFRRZEDS VHOHFW 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 DSDHW
FRQQHFWRU

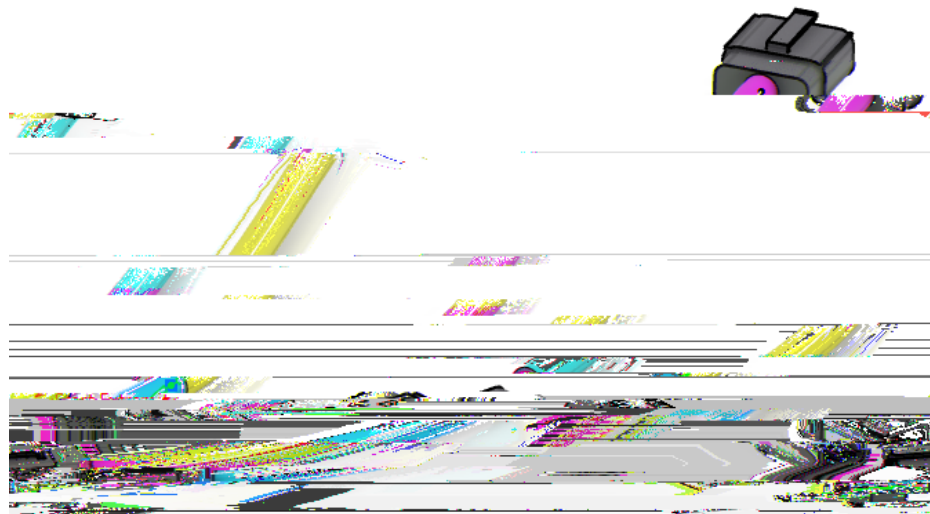
6 H O H ~~EXT~~ WKRIQ ZKHQ "GFRQH"urnkv"vjg"dtcpej"kp"vq"vyq"ugi o gpvu0"
 Pqvkqeg"vjg"ugi o gpvu"ygtg"tgpc o gf"dcem"vq"vjg"fgbcwv"pc o kpi "uejg o g0"



:LWK WKH ILUVW VHJPHQW VHOH ~~EW~~ WR QHWKORZ LQG RZ F
 jgnr" {qw"mggr"vtcem"qh"vjg"xctkqwu"ugi o gpvu0"

Cnuq."pqvkqeg"vjg"uvctv"cpf"gpf"rqkpvu"kp"vjg"Extremity Management0""Vjgug"xcnwgu"ctg"pqy
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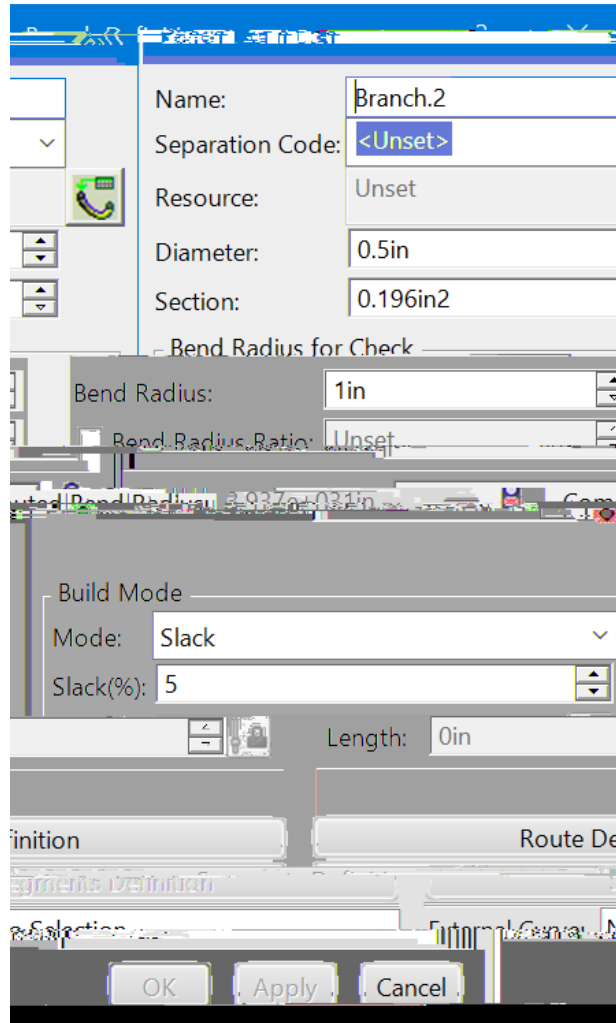
6 H O S ~~Segment.2~~ DQG F K D ~~Quarter~~ WKRI " [qw" Qc { "pggf"vq"ugngev"Apply"vq
 igv"vjg"dwpfng"vq"wr fcvg"rtqrgtn {0"



6 H O ~~OK~~ FWR ~~Segments Definition~~ ZLQGRZ 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 "

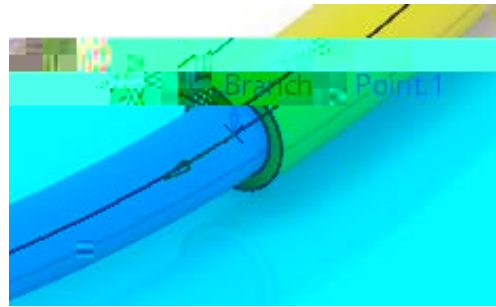
6 H O H C l a s s i c B r a n c h D e f i n i t i o n L F I U " " V j k u " y k n n " c n n q y " { q w " v q " e t g c v g " c " p g y d t c p e j " y k v j k p " v j g " g z k u v k p i " d t c p e j " u g v 0 "



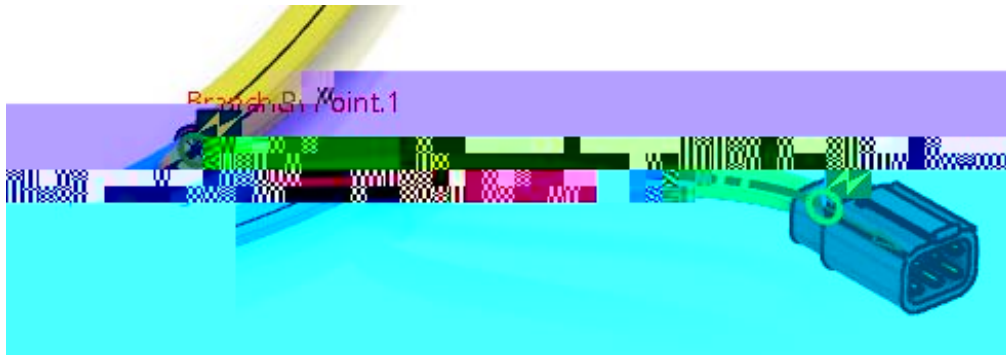
& K D Q J W a n e W R H 6 L G H % M K D H O F D a n e W R H P q y " Q w " c t g " t g c f { v q " f g h k p g " v j g " t q w v g " h q t " v j g " u k f g " d t c p e j 0 "

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 "

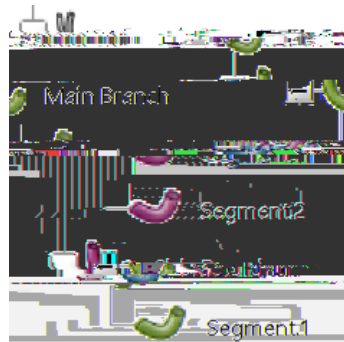
6HOHFW WKH \HOORZ PxiG'GqH"cp"ttdy"ku"ydy"lp"q"p"ff"0"



6HOHFW WKH RWKHU jku"y"n"l"o"v"y"t"p"j"0 H SOXJ



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



Vjg"pgy"dtcpej"jcu"cp"gzenc"o"cvkqp"rqkpv"ykvj"c"{"gmnqy"qxcn"ctqwpf"kv"vq"kp"fkcevg"vjcv"vjg
dgpf"tcfkwu"oki"jv"pqv"jcxg"dggp"tgurgevgf0"Vjku"ku"pqv"c"etkvecn"gttqt."dwv"kv"ku"uq"ogvj"kp"i
{qw"yknm"ycpv"vq"ycvej"hqt"y"jgp"{"qw"kp"uvcnn"vjg"j"ctpguu"kp"vq"{"qwt"cuug"odn{0"Kh"{"qw"hk"pf"vjcv

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

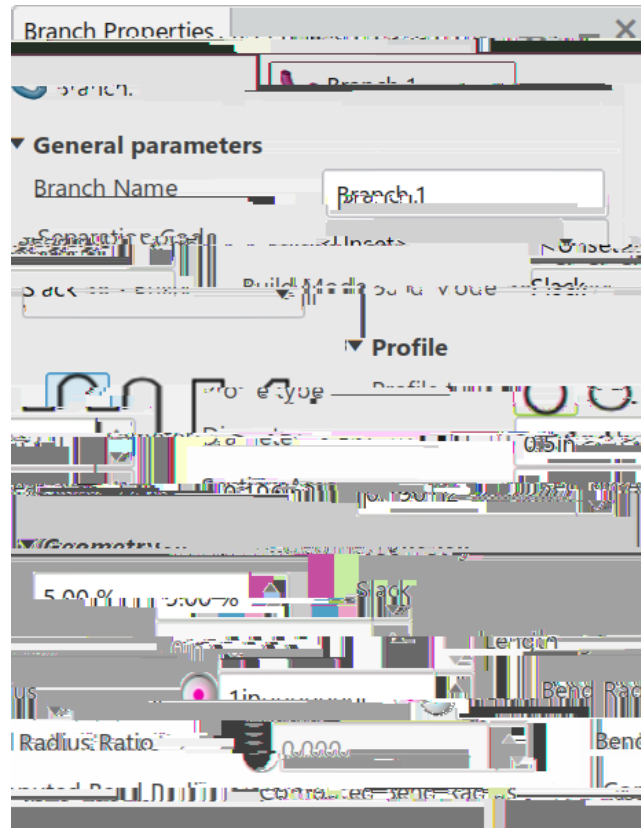
' H O H WEBC080 Electrical Branch Geometry IURP W K[hw"Wkn"l"e"t"v"vjg
ucog"jctpguu"wukpi"vjg"ko ogtukxg"qrvkqpu0

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

. H \ LQ (/ (& (OHFWULFD OI P% U T W K E H Q G H V R O M V U W
uvtv"c"dtcej"cpf"vjg"Dtcej" Fghkpkvq"ykpfaq"cr rgetu0

6 H O CdrFcaW"

6 H O H ~~Wire~~ ~~Branch~~ ~~Definition~~ L F"1 ""Vjg"Branch Properties"y kpfqy
crrgctu0

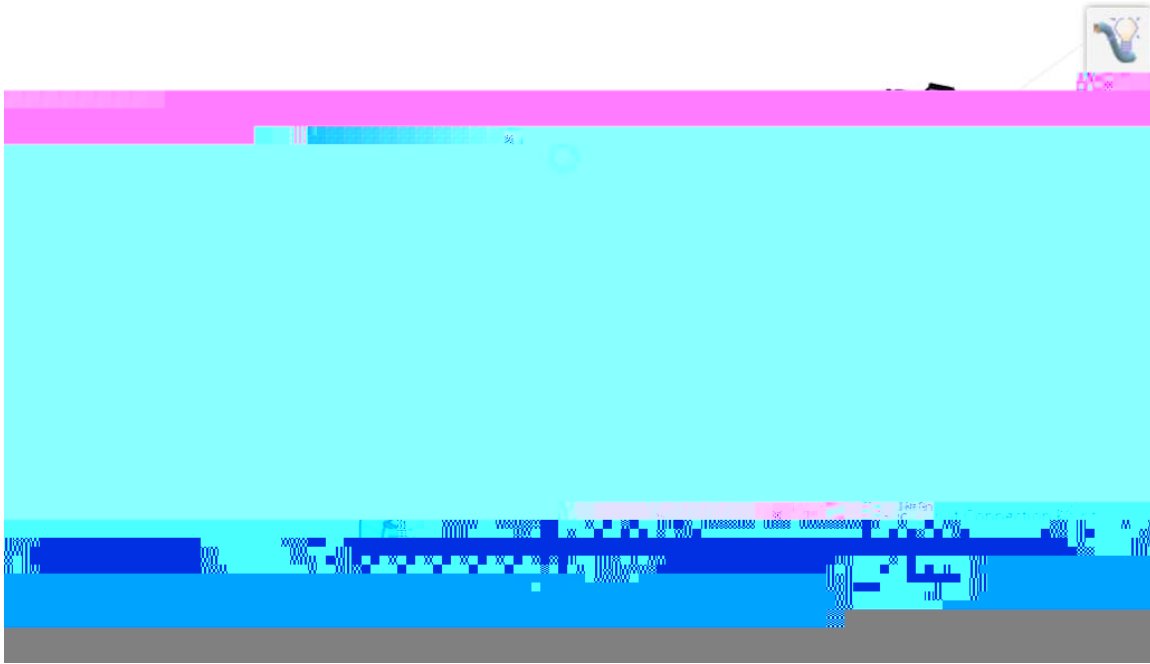


& K D Q J ~~Name~~ K R H W K H E U D Q F K W R ku"0 k"lg"Qjg%ld D Q F k
dtepej" {qw"ctg"iqkpi"vq"etgcvg0"

& K D Q J ~~Diameter~~ H W R L Q ~~Bend Radius~~ K M R C i k p "kv"ku"e"iqqf"twng"qh
vjw od"vq"o cmg"uwtg"vjcv" {qwt"dgpf"tcfkwu"ku"nctigt"vjcp" {qwt"dtepej"fkco 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

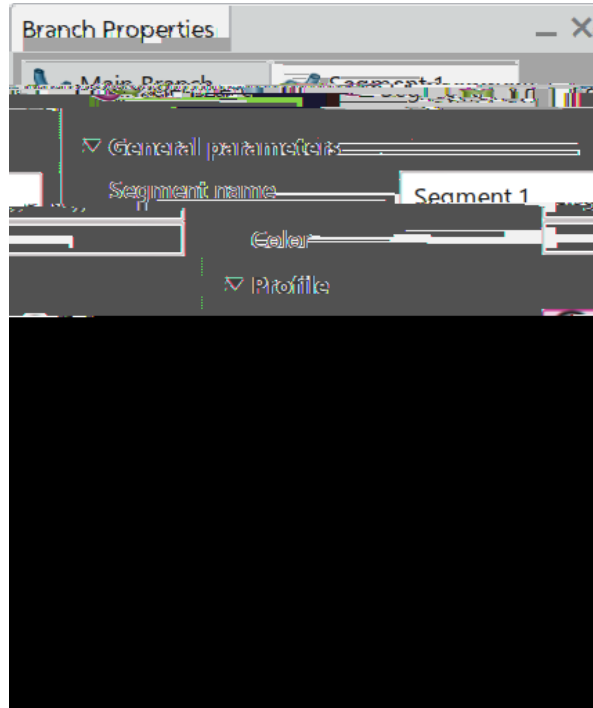


6HOHFW WKH FRQQHFwLRQ SRLQW FRUWV WKH SLQ VTXDUH S



Pqvkqg"pqy"vjg"Segment.I"vcd"cr rgctu" ykvj"kp"vjg"Branch Properties" ykpfqy0"

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



Segment name

Urgekhkgu"vjg"pc o g"qh"vjg"ugi o gpv

Color

Urgekhkgu"vjg"eqnqt"qh"vjg"ugi o gpv

Profile Type

Urgekhkgu"vjg"ujcrg"qh"vjg"ugi o gpv

Diameter

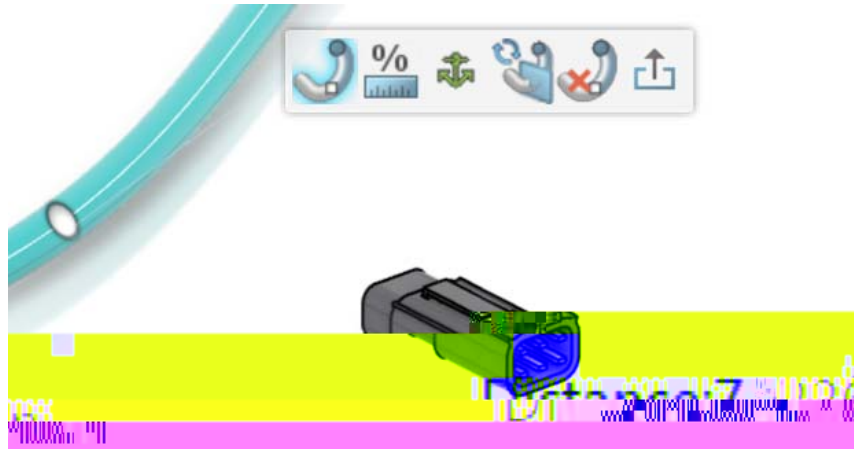
Urgekhkgu"vjg"fkc o gvg"qh"vjg"ugi o gpv

Section Area

Urgekhkgu"vjg"etquu"ugevkqp"ctgc"qh"vjg"ugi o gpv0""Kv"ku
nkpmgf"vq"vjg" *Diameter*

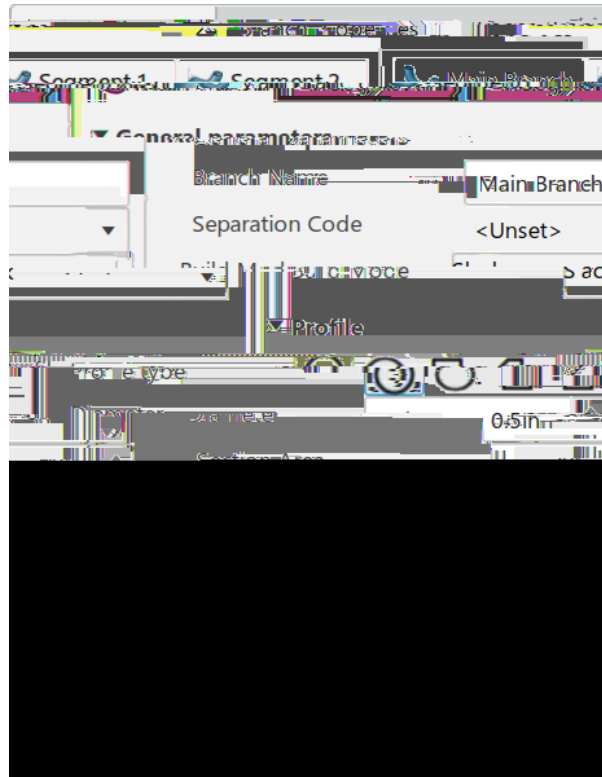
CATIA Electrical Harness Design

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"kpjegu0""Pqy."pq"ocvgt"jqy"nqpi"vjg"igqogvtke"dwpfng"dgeqoguyjgp"{qw"kpucnm"kv."vjg
fkucpeg"vq"vjg"dtgcm"rqpv"yknncnyc{u"dg"8"kpjegu0""Kh"{qw"ygtg"vq"ugv"kv"vq"c"tcvkq."vjgp"vjg
fkucpeg"yqwnf"cfuwv"dcugf"qp"vjg"ngpi"vj"qh"vjg"dwpfng0"

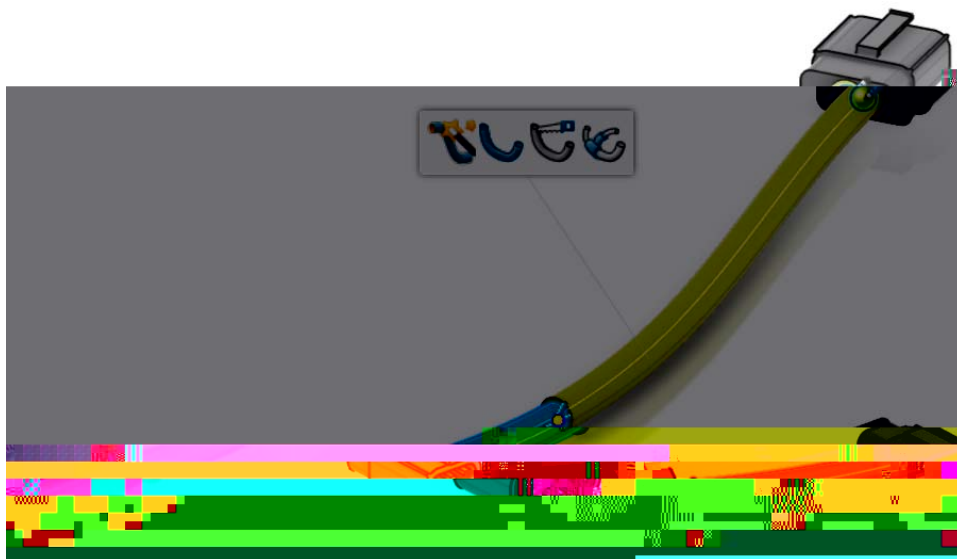
6 H O H ~~EXT~~ WKRIQ ZKHQ "GRUQ"urnkv"vjg"dtcpej"kp"vq"vyq"ugi o gpvu0"
Pqvkeg"vjg"ugi o gpvu"ygtg"tgpc o gf"dcem"vq"vjg"fghcwnv"pc o kpi "uejg o g0"



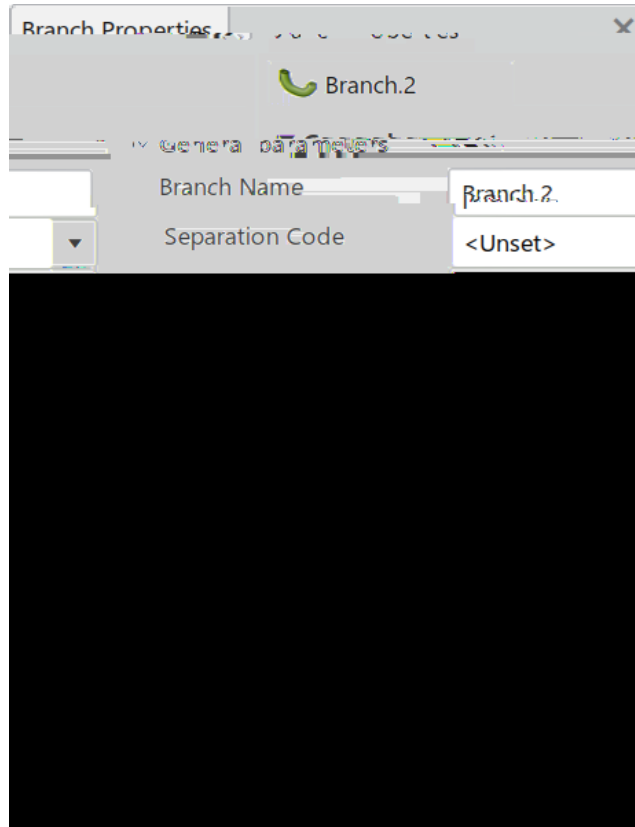
6 ZLWFKS ~~Segment~~ KWDE LQ WKH ZLQGR ~~Color~~ DQG FKHQ ~~WKH~~ WKH
jgnr" {qw"mggr"vtcem"qh"vjg"xctkqwu"ugi o gpvu0"

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

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

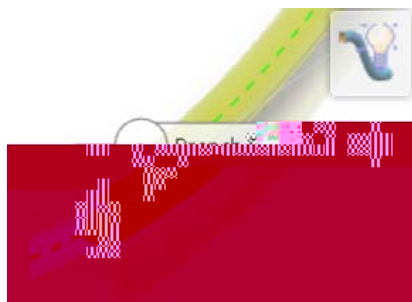


6 HOH Start New Branch LFRQ IURP W I"VWR R Q E D l w "vq"etgcvg
c"pgy"dtepej" ykvj kp"vjg"gzkuvkpi"dtepej"ugv0"



& 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 p l q p W j g " D w p f W 0 "



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

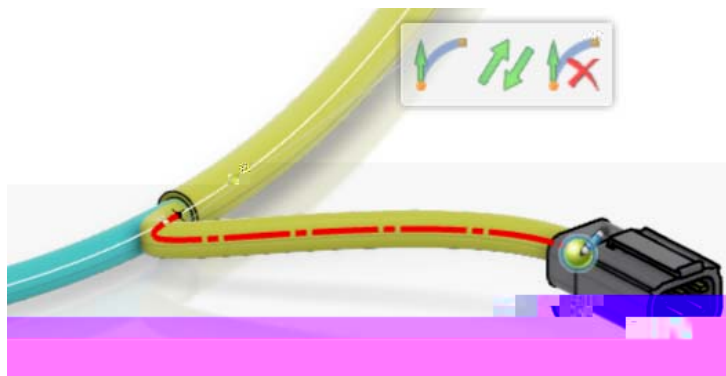


Pqvkqg"vjg"vcpigpe{"fqgupøv"nqqm"tki jv0

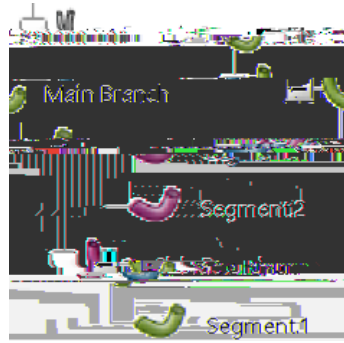
6HOHFW WKH EUDQFK SRLQW Vg"Kunfc"Ujqwnf"DrvgcVckulqz p0 DERYH



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"cf lwuvkpi"vjg"dtcepej
 rqkpv"qt"cffkpi"cffkvkqpcn"uncem0""

6HOH Segment1 KWDE DQG FORVH \RXU GRFXPHQW

6HOHFW LQ WKH GLVSOD\WVW RY knn J & g vjg Qgz W dpej Wgkpf f0" E vUDQFK
 ujqwnf"crrgct"cu"ujqyp0



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

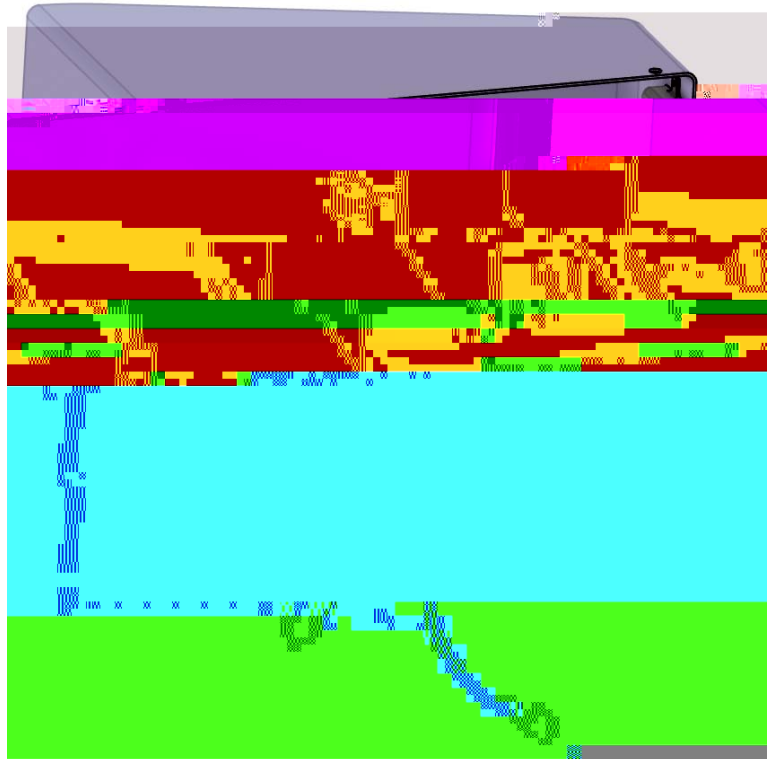
6DYH DQG FORVH \RXU GRFXPHQW

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

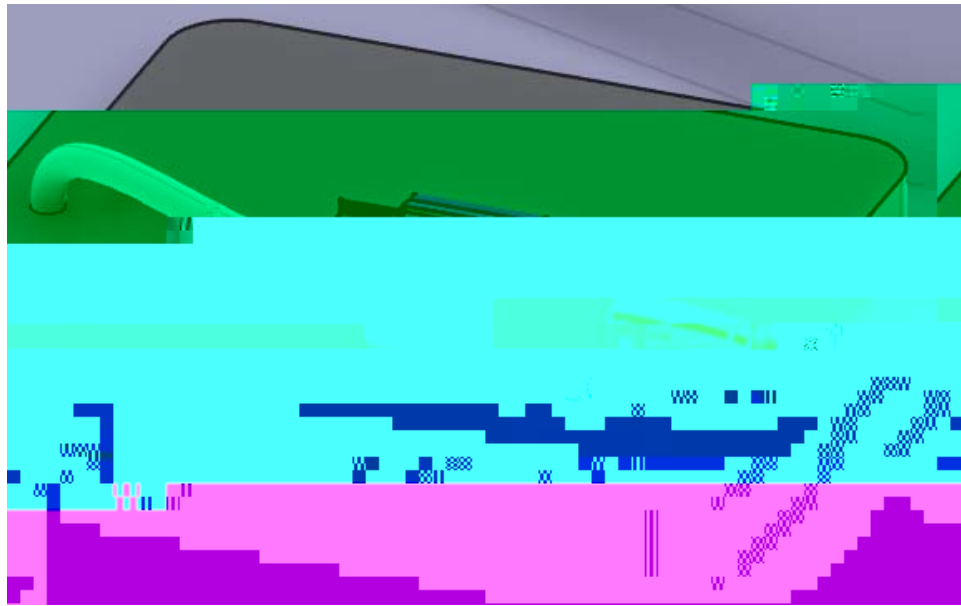
6 HDU FK IRU D ELEC090 Multi-Branchable SUR GXJFW"cr rget"cu
ujqyp0



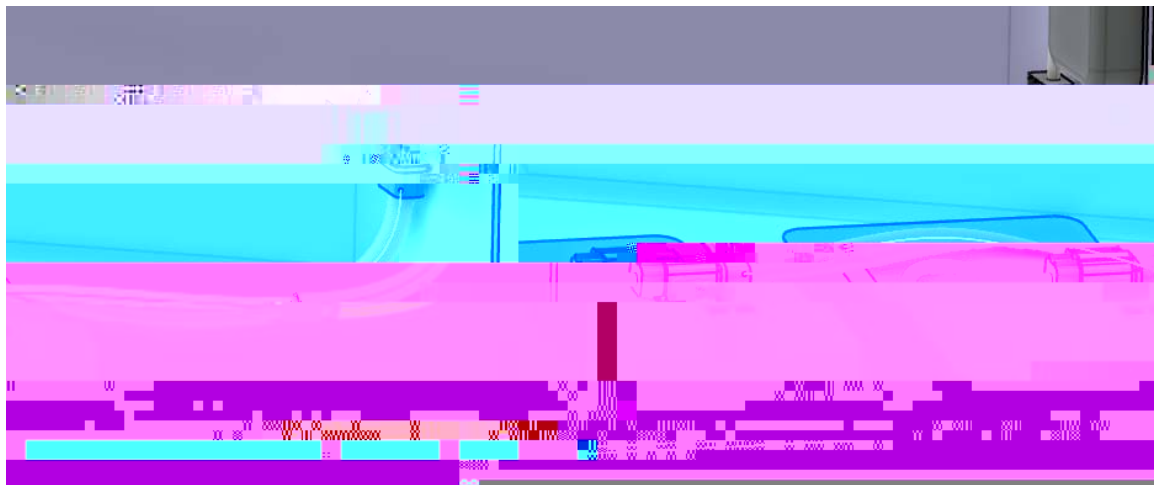
Vcmg"pqvg"qh"vjg"tguwnvki"yktg"dwpfngl"

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 R  FROQHFW RUV



Pqvkeg"vjg"vykuvgf"dtcej0""Vjku"yknn"igv"hkzgf"cu">{qw"dgikp"cfkpi"uwr rqtvu"cpf"qvjgt"nkpmu
vq">{qwt"dtcejgu0"

6DYH DQG FORVH "\RXU GRFXPHQW

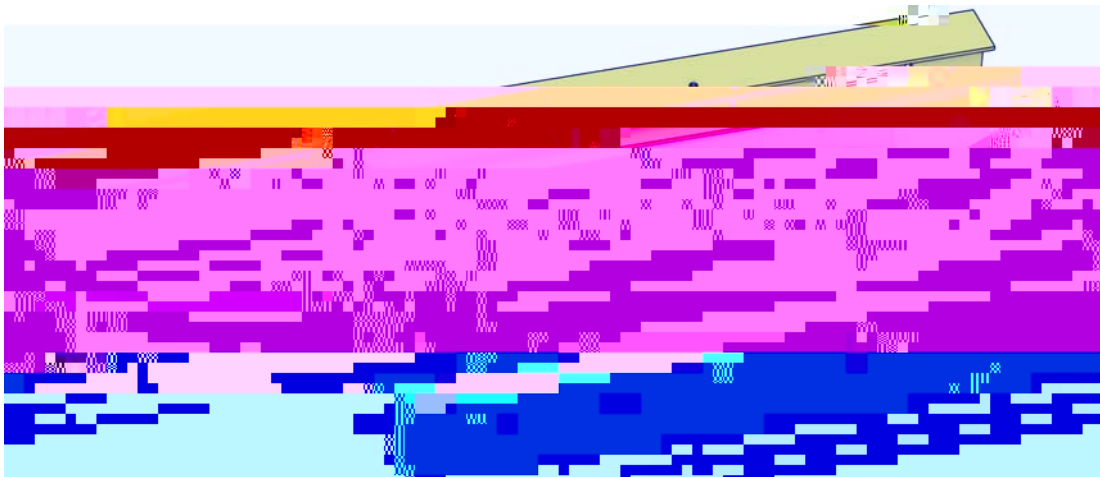
Electrical Manufacturing Preparation

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 cpwhcevtgfg."kv" y knn" i gpgtcnn{"pggf"vq"dg"hncvvgpgf"hqt" fk o gpukqpu qp" y ktg"ngpi vj ."cu" y gnn"cu" hqt o "dqctf" fgxgnqr o gpv"cpf"eqppgevqt"ecnn"qwwu0""Vjgtg"ctg"chgy mg{"rqpku"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"cnny u"vjg"hncvvgpgf i gq o gvtke"dwpfng"vq" o ckpvckp"cuuqekcvkxkv{"kp"fk o gpukqpu"cpf" i gq o gvt{"dwv"pqv"kp"vjg"ujcrq 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""Cnvjqwi j"vjku" y knn"dg"vqwejgf"qp"jgtg. vjku" y knn"pqv"dg"vjg"hgewu"qh"vjku"ugevkqp0"

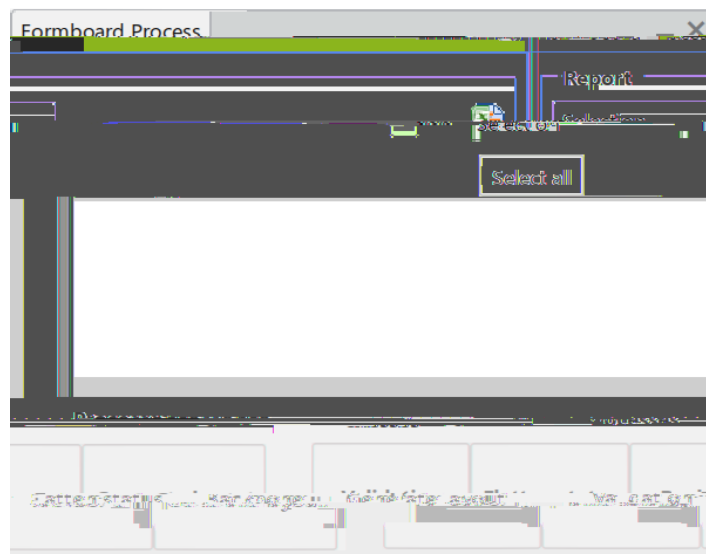
Formboard Creation

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

2 S H Q **EMEC340 - Flattening Orientation** G R F X P H U Q W f"crngct"cu"ujqyp0

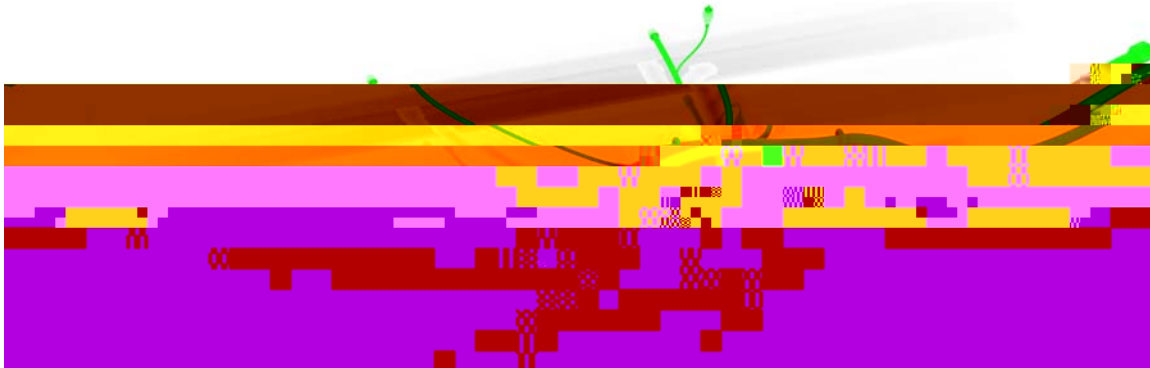


6 H O H **Formboard** L F  "Vjg"Formboard Process y kpfqy"crngctu0



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"ykpfaqy"cpf"kv"ujqwnf"jki jnki jv"kp"vjg"fkurnc{0

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



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

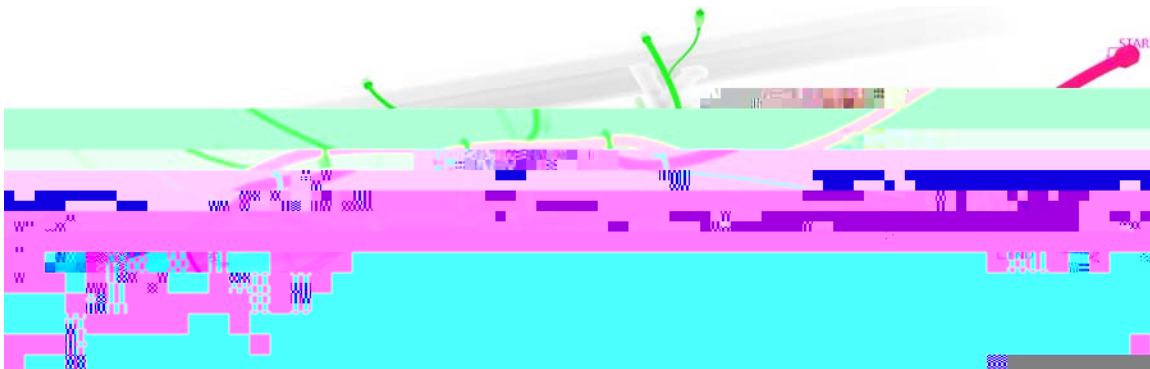
[gmqy Urgekhkgu"vjg"dtcpej"ecppqv"dg"hncvvgpgf

Oci gpcv Urgekhkgu"vjg"dtcpej"ecp"dg"hncvvgpgf."dvw"y km"pqv"dg"uvtcki jvpgpf

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

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

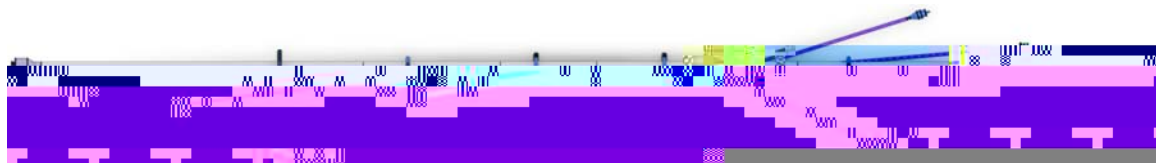
6 H O H ~~Backbone~~ **HE X W WgRj Q** p"dtcpej"ujqwnf"ejcpig"vq"rkpm"cpf"ujqwnf"jcxg"vjg
uvctv"cpf"gpf"ncdngf0



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 n h Q H Z S U R G
c r r g c t " c u " u j q y p 0

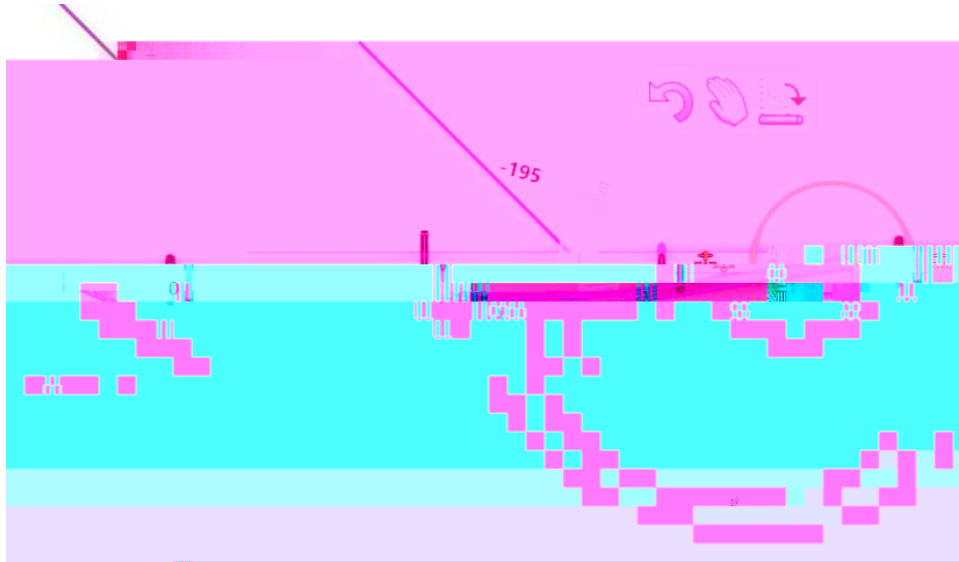


V j g " g p v k t g " j c t p g u u " y c u " d t q w i j v " q x g t " k p e n w f k p i " c p { " k p v g t p c n " g n g e v t k e c n " e q p p g e v q t u 0 " " P q v k e g " c
u g r c t c v g " r t q f w e v " y c u " e n u q " e t g c v g f " v j c v " k p e n w f g u " c p { " u w r r q t v u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

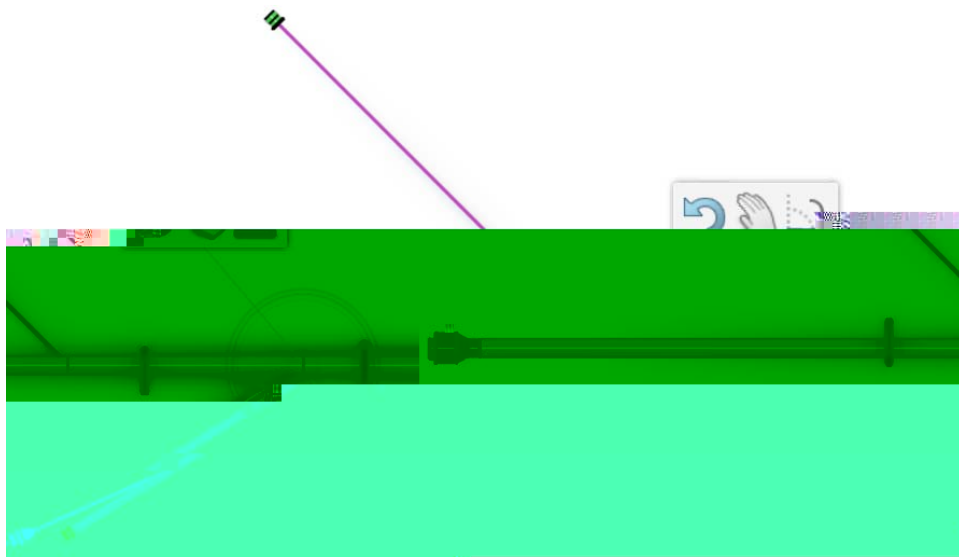
CATIA Electrical Harness Design

6HOHFW QH DU WKH HQG RI WKH VPD OO EUDQFK

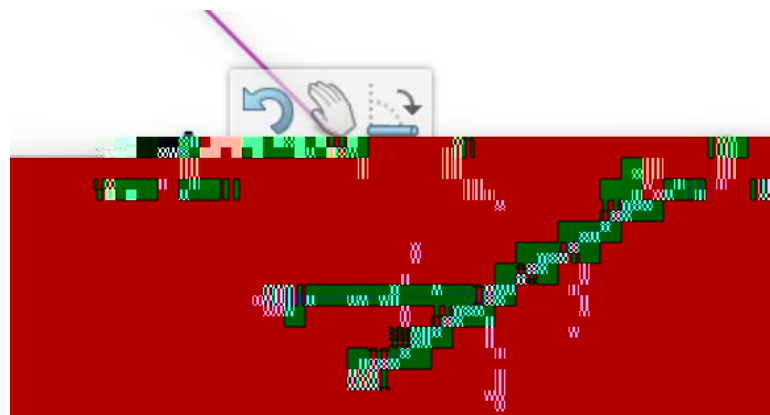


5RWDWH WKH EUDQFK WR

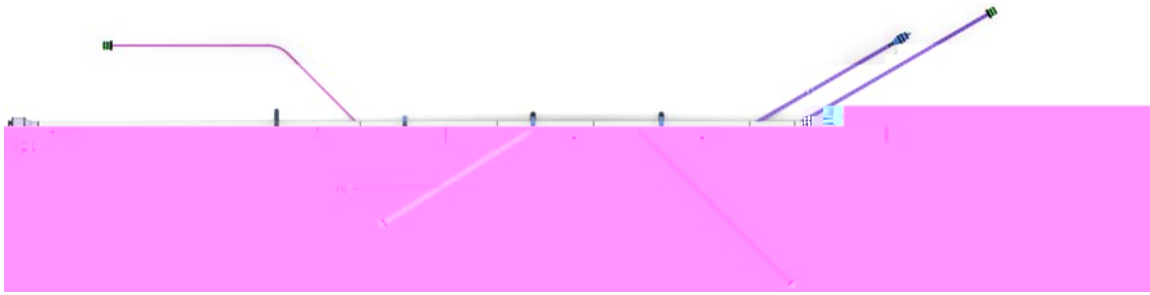
GHJUHHV DQG VHOHFW LQ VSI



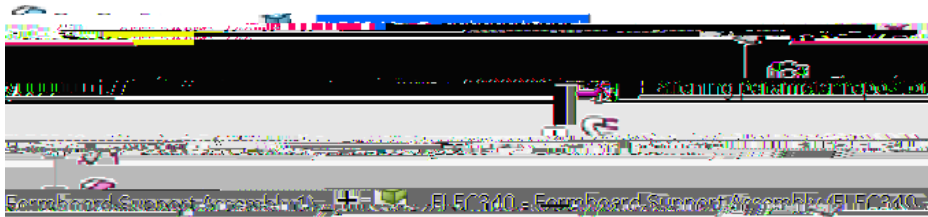
6HOHFW WKH HQG RI WKH VPD OO EUDQFK D QSG RVR W/DGLHQ J WU W
GHJUHHV 6HOHFW "VQ" yknsD "F" Htczngk"vj" Qg" GkP" Qdpej0



6 HOH **Prepare Layout** LFRQ WR FRPSOHWF "Kjg" j Rgdu PDQLSXODWLRQ
ujqwnf"crrgct"cu"ujqyp0



5HQDPH WKH WRS OHYHO SURGXFW DQG WKH VXE DVVHPEO



6DYH WKH **EXPLODE** "Bng" QWjg"pgzv"gzgtekug0