

7\$%/(2) &217(176

,QWURGXFWLRQ

' 7ROHUDQFLQJ DQG \$QQRWDWLRQ

' 7ROHUDQFLQJ \$QQRWDWLRQ :RUNEHQFK

6WDQGDUG ,FRQV

)XQFWLRQDO 7ROHUDQFLQJ

9LHZ /D\RXW

\$QQRWDWLRQ

9LHZ

7RXFK

* ' 7 5HYLHZ

*HRPHWULF &KDUDFWHWLVWLF 6\PERO

ORGLI\LQJ 6\PEROV

2WKHU 6\PEROV

9LHZV

9LHZ &UHDWLRQ

2IIVHW 6HFWLRQ 9LHZ 6HFWLRQ &XW

\$OLJQH 6HFWLRQ 9LHZ 6HFWLRQ &XW

2ULHQWDWLRQ

7UDQVIHU

8VLQJ \$[LV 6\VWHPV

3URSHUWLHV

&KDQJLQJ 6XSSRUW

'DWXPV

3ODQDU 'DWXPV

7ROHUDQFLQJ \$GYLVRU

'DWXP 5HIHUHQFH)UDPHV

0DQXDOO\

3RVLWRQLQJ D'DWXP

'DWXP 7DUJHWV

3RLQWV

7ROHUDQFLQJ \$GYLVRU

0DQXDOO\

/LQH V

7ROHUDQFLQJ \$GYLVRU

0DQXDOO\

\$UHDV

7ROHUDQFLQJ \$GYLVRU

0DQXDOO\

'DWXP \$[HV DQG &HQWHU 3ODQH V

7ROHUDQFLQJ \$GYLVRU

0DQXDOO\

\$GGLQJ D /HDGHU
/ L Q N V
2ULHQWDWLRQ /LQN
3RVLWLRQDO /LQN
\$WWULEXWH /LQN
4XHU\ 2EMHFW /LQNV
,VRODWH 7H[W
)ODJ 1RWHV
6XUIDFH 7H[WXUH
:HOG 6\PEROV
*UDSKLF 3URSHUWLHV
&RS\ 2EMHFW)RUPDW
7ROHUDQFLQJ \$GYLVRU
7H[W
)ODJ QRWHV
6XUIDFH 7H[WXUH

*HRPHWU\ IRU '
5HVWULFWHG \$UHD
&RQVWUXFWLRQ *HRPHWU\ &UHDWLRQ
&RQVWUXFWLRQ *HRPHWU\ 0DQDJHPHQW
7KUHDG 5HSUHVHQWDWLRQ &UHDWLRQ
*HRPHWU\ &RQQHFWLRQ 0DQDJHPHQW
\$QQRWDWLRQ 3RLQWLQJ

9LVXDOLJDWLRQ
+LGH 6KRZ LQ '
' \$QQRWDWLRQ 4XHU\
)LOWHULQJ
0LUURU

3 U R E O H P V
3 U R E O H P
3 U R E O H P
3 U R E O H P
3 U R E O H P

| | | |
|--|-------------------|-----------------------------|
| \$ S S H Q G L [\$ | | |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| * H R P H W U \ | | |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| 9 L H Z \$ Q Q R W D W L R Q 3 O D Q H | | |
| \$ S S 3 U H I H U H Q F H V | ' 0 R G H O L Q J | 0 H F K D Q L F D O 6 \ V W |
| \$ G P L Q L V W U D W L R Q | | |

, QWURGXFWLRQ

&\$7,\$ 9HUVLRQ DQFIRQHDQG \$QQRWDWLRQ

8SRQ FRPSOHWLRQHRVWXGMRQVXUHQWVWVDEGLQJORI WK

' 7ROHUDQFLQJ DQG \$QQRWDWLRQ

' WROHUDQFLQJ DQG DQQRWDWLRQ \$DUMWH QGR SGHRIG QFWV
HQYLURQPHQW %RROWL QZIRQG LW KW VHDVODROW GUHJZG QVR EH
FUHDWHG 0DQ\ FRPSDQLHV KDYH DLSUHN QMGURQ RQQWHUH
EXW ILQG LW GLILFXOW WR DFFRVLV RQ'HWRFOW URD QFR RQ
KHOS PDNH WKH WUDQVLWLRQ D UHDLW\

7R HIIHFWLYHO\ LPSOHPHQW WKHI DFRLOD UL Q LWKL WFRXUVH
IXQGDPHQWDOV RQ VILFRPLQ UL Q GG WRHO, MU DQ FQRW WKH LQWHQ
WKLV FRXUVH WR WHDFK *' 7 7KH LW KLLQ WR RHH IDXQFLWLRQDQDFO
WKH ZRUNEHQFK EXW LW ZLOO VWFHODQDODQZ RWR QWR DL RSHU

7ROHUDQFLQJ \$GYLVRU

6HOHFVR WLUHQFLQJL \$GQLWRKHQ VHOHFV WKHRWRZL QD WKH
FUHDWH D IODWQHVV WROHUDQFH IRU WKLVIDFH



<RXU ZLQGRZ VKRXOG DSSHU DV VQRZHU V RKHW7R QH URDQFLR
DUH QRW YDOLG IRU D VLQJOH VZUDDFBH QQRXWKH GHLQWLD
H[HUFLVH

6 H O H Unit Basis M D E

+H U H \ R X F D Q V S H F L I \ D U H I L Q H P R I Q W K M R V X H U I D Q F H D C R U Q J
W R W D O Y D U L D W L R Q R U \ R X F D Q Z X O I D V S H F L L W D V H U H I L Q E P
W K D W I R U D E \ V T X D U H D U R I D O W E K H P D [L P X P Y D U L

6 H O H Applied Unit Basis Refinement Tolerance R S W L R Q V W K H Q F K D Q J H
Numerical value R I W K H U H I L Q H P R I Q W 1 W R D Q Q . V H C H F W
W R O H U D Q F H D S S H D U V

3RVLWLRQ WKH WROHUD\ QFH D\W D\WRZQ EHKORZ WKH PD[L PXP
HQWLUH VXUIDFH FDQ RQO\ EH PD[L PXPVY D\QD W\KRQ HR IFD
LQFKHV ZLWKLQ D LQFK VTXDUH DUHD

&DXWLRQ VKRXOG EH JLYHQ IRU D\XQ LYD LEIDWL V\RW REHFUDXQ/H
ERZ LQ WKH ERWWRP RI WKH SDUEX WRK\DGHPH KWJD XQLWDE
DFURVV WKH HQWLUH VXUIDFH

6DYH DQG FORVH WKH GRFXPHQW

0DQXDOO\

1RZ \RX ZLOO FUHDWH WKH VDPH JHRPHWULFDO WROHU
HH
2SHQ WKH RULJLQDOLVPHQW DJDLQ

6HOHFWRPHWULFDO ZRUDQVHLV ORFDWHGHFWWRQ
S@Ø"€I0DTA ôpí À @p €•đ@p €

6WUDLJKWQHVV

6WUDLJKWQHVV WROHUDQFHV FDR WKHDŠLOLRG WHRQWXHU
IHDWXUHV RI VL]H

,I DSSOLHG WR D VXUIDFH LW FVR QW WRKOV VXRZ DFWHUPXLV W
WR PHHW WKH GHVLJQ UHTXLUHPHQWV D YŠIOV ROH QLV W OZHLR
WROHUDQFH]RQH VSHFLILHG E\ HVGZ RE\ŠW KB OVRHOHO DOHFN V

,I DSSOLHG WR DQ D[LV RU FHRWVILJGLQW RRODWFURQQG W
RI WKH D[LV 7KHW DZILW PLQW WKH LVLRIOHGJ EQDHF]ROQRG/ŠH Z
GLDPHWHU LV HTXDO WR WKH WROHUDQFH YDOXH

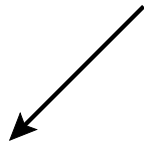
,I DSSOLHG WR D FHQWHU SODQH HLW(YHUFRQWURBOHOBHW
SODQH PXVW H[LHW DZEMK]RQHWKŠHDFROHOŠEQDZRV ŠDKUDW D
VHSDUDWHG E\ WKH WROHUDQFH YDOXH

2SHQ WŠH 6WUDLJKWQHVV YLHZV DQG WZR GLPHQVLR
H[LVW

7ROHUDQFLQJ ŠGYLVRU

ŠV VWDWHG EHIRUH WKH 7ROHUDQFLQJ ŠGYLVRU ŠWLVLRDCHQVRQ
FUHDWHG

6HOHFWRQWUDQFLQJLŠQLWRKHQ VHOHFW WKH F\OLQGULF
EHORZ <RX ZLOO FUHDWH D VWUDLJKWQHVVWRWROHHUDW
VL]H VR WKH WROHUDQFH ZLOOWKH DŠŠODFŠ WRRWWRQL
FHQWHUOLQH



7 K~~Static~~ *Tbaniq* *Adio*

ZLQGRZ H[SDQGV DQG WKH RSWLRQV WK
WKH FXUUHQW VHOHFWLRQ KDYH EHHQ ILOWHUHG DZD\

6 HOHF6W WDKL KWQHVV 6 SFRQILF *Dehal* *Bo* *fcain*
ZLQGRZ DSSHDUV

& KDQJ *Num* *Kol* YDOXH WR OKDQH *MOR* *HW* DQFH DSSHDUV DC
7ROHUDQFLQJ \$GYLVRU UHPDLQV DFWLYH

6HOCH5dW WKHQ SRVLWLRQ WKH WROHUDQFH DV VKRZQ EH

6HOHFW WKH WROHUDQFH WKH SURWV PRXVH EXRZWL
7ZR \HOORZ OLQHV DSSHDU 7KRZKHVLDGJFDIQ WKHPBOWK
IRU WKH FXUUHQW VSHFLILFDWLRQ

6HOHFW WKH WROHUDQFH WKH SURWV PRXVH EXRZWL
WLPH \RX ZLOO VHOHFW DQ H[LVVHQW VSHFLILFDWLRQ
IHDWXUH RI VL]H

6HOHFW WKH WROHUDQFH WKH SURWV PRXVH EXRZWL
ZLQGRZ DSSHDUV

&KDQJ NumeKdaI YDOXH WRKH GLDPHWHU V\PERO DXWRPDWLFDC
IHDWXUH FRQWURO IUDPH VLQFH @ \$W, \$ONHURZQFHW KDOHLW\$ QV
PDWHULDO FRQGLWLRQ LFRQV DUH QRZ DYDLODEOH

6HOHFWD [WRKXP 0DWHULDOL & RQ GLWLRQDOORZV IRU H[WUD W
ZKLOH VWLOO HQVXULQJ WKH IXQFWLRQ RI DVVHPEO\

6HOKFWKHQCise 7KFWW WUDLJKWQHVV WROHUDQFH DSSHUV
WROHUDQFH DQG KDV D SRVLWLRQRYHVLW KHWR RLOHUDQFH V
PRYH ZLWK LW 7KH VWUDLJKW PHVYLWZ QWUDQFHGDQVQVHLR

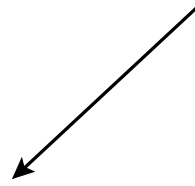
6HOHF7R QVHLDQFLQJL\$BQLWRKHQ VHOHFW WKH GLPHO
6HOHFWLQJ WKLW GLPHQVLRQ LVD FHLF LOTKH WHRI RWHIO HEWW LLO
WR *DAb* D

6HOHF6W WKLJKWQHVV 6SHRQILF7DWHBQ
ZLQGRZ DSSHUV

&KDQJ *Num*cal YDOXH WR DODGLPHO HFDW MUKLDO &RQGLW
LFRQ WIKQ FOL\$N/PDOO PHVVDJH DSSHUV LQ WKH ORZ
&\$7,\$ ZLQGRZ EHFDXVH QR GLUHFWLRQ KDV EHHQ VSHFL

6HOH5W WKHQ GRXEOH FOLFN RQ WKH VWUSDGLKWHMMLVQ
IRU WKH WROHUDQFH JRQH PXVWGEWRG BISO BQHVLQFH LW

6HOHFW DefindonWEnt ILHOG DQG VHOHFW WKH HGJH VKRZQ EH



6HOKFW RUPDOO\ WKH WRDWBQFZLWIKOWEHGLPHQVLRQ
3RVLWLRQ WKH WROHUDQFH VR WKDW LW LV EHQHDWK WKH

6HOHFW WKH WROHUDQFH WKHQ SUHOVRWKLDPKROG DWXWK
HQQ RI WKH OHBEWLEDEGEXHCHIFWP WKH FRQWFKMXDO PHQ
OHDGHU LV UHPRYHG

&KDQJH WKH GLPHQZLRQVWVHDGFBYMRWKH GLPHQVLRQ EHC
ERWWRP H[WHQVLRQWROHUDQFH IROORZV

\$ VWUDLJKWQHVV WROHUDQFH FDQ DOVR EH DSSOLHG WR D

2SHQ W7\$H 6WUDLJKWQHVVGRBQRWQWZ/LOO GHILQH VRPH
VWUDLJKWQHVV WROHUDQFHV WQFH WHILQH WKHP ZLWK X

6HOHFWR QWUHQFLQJL\$BQLV R\$UHQ *Tbanig Adio* ZLQGRZ
DSSHUV

6HOHFW WKH WRS IDFH RI 6WUHQSDUHQHWKHQSHRQIRLFDWLHQ
7K*ticalSpicfain* ZLQGRZ DSSHUV \$ YLHZ ZDV DXWRPDWL
WKHUH ZHUH QRQH EHIRUHKDQG

&KDQJN*Merka* YDOXH WR DQ*Bais*VDHEFWHWKSWLRQV KHUH D
YHU\ VLPLODU WR WKH IODWQHVRQRSHRQWKHQFHLSQW WLRQW

7K*Bais* WDE VSHFLILHV D UHILQHPPHW WRSODUHQDORQU D
ZLWK D WRWDO YDULDWLRQ RQVHW RDXQE OXWISG FEL\LD WHO

0DQXDOO\

1RZ \RX ZLOO PDQXDOO\ FUHDWH WKH VDPH JHRPHWULFDO

2SHQ WKH RULJLQDULJLWDFW DJDLQ WKHQ VHOHFW W

*HRPHWULFDO ZRUDQFH

&KDQJH WKH6WWDPRDKWLRWV D YDOXH ROK DQTKMHOHFW
WROHUDQFH DSSHDUV

6HOHF*WRPKHWULFDO ZRGGUDQFH VHOHFW WKH 7KH GLPH
GenicalTbaniig ZLQGRZ DSSHDUV

&KDQJH WKH6WWDPRDKWLRWV WLV D GLDPHWHU V\PE
LQFOXGHG ZLWK WKH YDOXH VLQFH & \$7, \$HZ MCKH QRV HDX
\$GYLVRU GRHV

6HOHF Edit To *GenicalTbaniig* HILHOG DQG FOLFN WKH EODFN DUURZ RQ
VKRZQ EHSRZQX ZLWK YDULRXV V\PEROV DSSHDUV



6HOHFWDWKWVPERO 7KH GLDPHWHU V\PERO LV LQVHUW
.H\ LQ WKHQ VHOHFW WKH EODFN DQDZFRQRWKHWKQ
0D[LXP 0DWHULDQV & PERQLWZRQ V\PERO LV LQVHUWHG D

6HOHFWKH WROHUDQFH DSSHDUV EXWOLVKOHV XQGHQ RQ
7KH *HRPHWULFDO 7ROHUDQFH RSWLRQVGBHJKQRM VFXWR
EH GHILQH \$V D UHVXOW LW ZLOO VKRZ DV QRQ VHPD

6HOHF*WRPKHWULFDO ZRGGUDQFH VHOHFW WKH7KH GLPH
GenicalTbaniig ZLQGRZ DSSHDUV

&KDQJH WKH 6W B B R O K W L R W K V D YDOXH RI

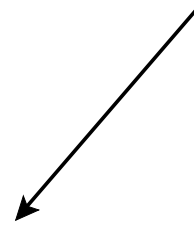
\$GG W D H L P X P 0 D W H U L D O V & P R E C G L V L W R O U W K H A N C E D I O X I O G Q W K H
D Q G W K O H F W 7 K H W R O H U D Q F H D S S H D U V

&KDQJH WKH OHDGHU RI W Z R 3 D U W W G H R H Q R V L R W L W R W K H W R O
E H Q H D W K L W D V V K R Z Q K H U H

7 K H U H D U H D F R X S H O K H R U H W K L Q Q V H D W R V W R W H U L D Q F H Q Z D V X Q D E
G H I L Q H G D Q G V W H D W H K W Q E D Q H R G W R K O H R W D Q F H X G L U H F W L F

' R X E O H V H O H F W W K H O D V W K W L S D J K W Q H V Z L W R R Z H U D Q F H
D S S H D U V

6 HOHF Defind On WEent ILHOG DW WKHZE QWRZ D QG S KFN WKH I
VKRZQ E HORZ O W K Q R V G D H FWR GFHL Q HU W K W L R R O W U D Q W R
EH HGLWHG DIWHU LW LV FUHDWHG



&ORVH WKH GRFXPHQW