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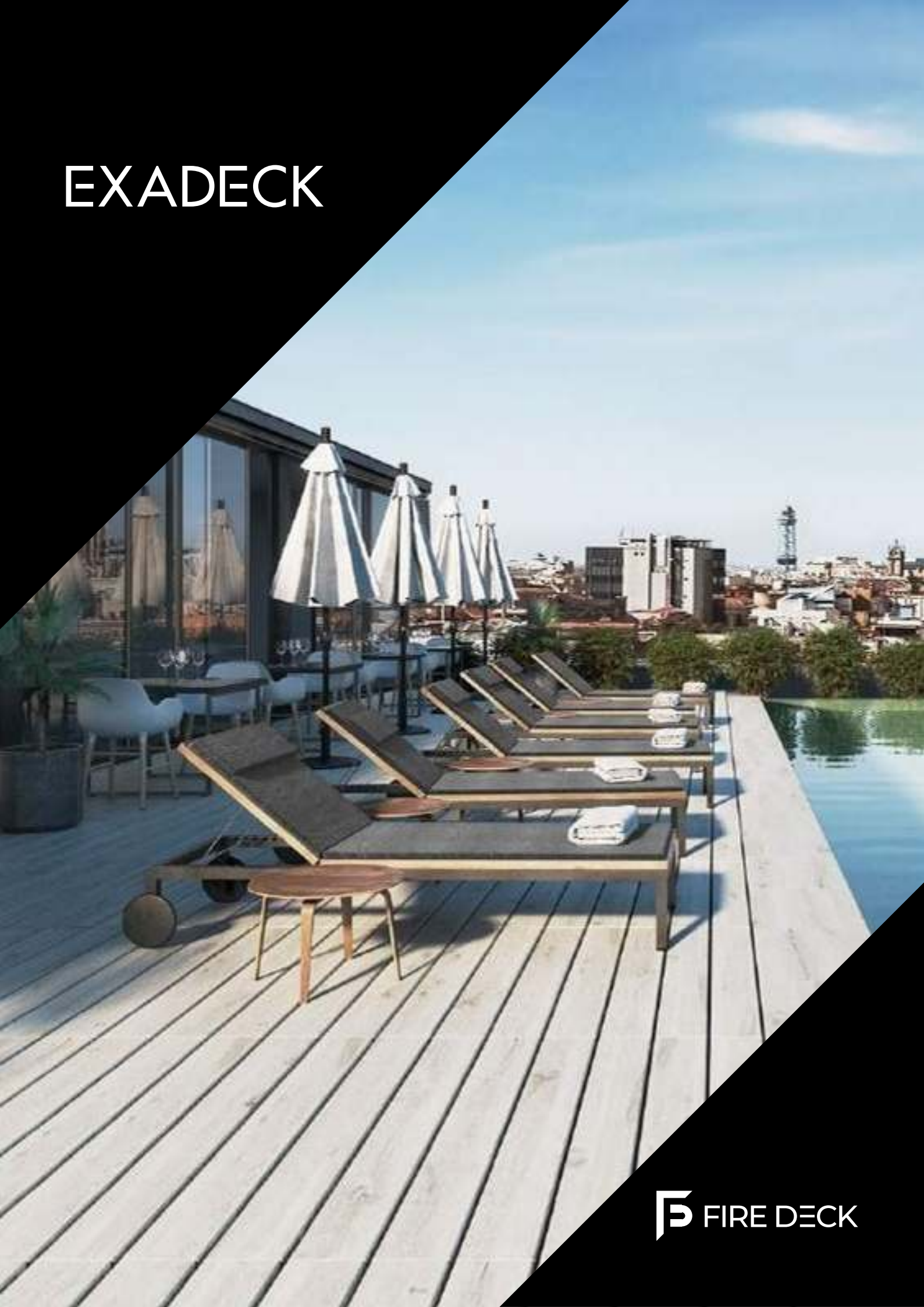

FIRE DECK







































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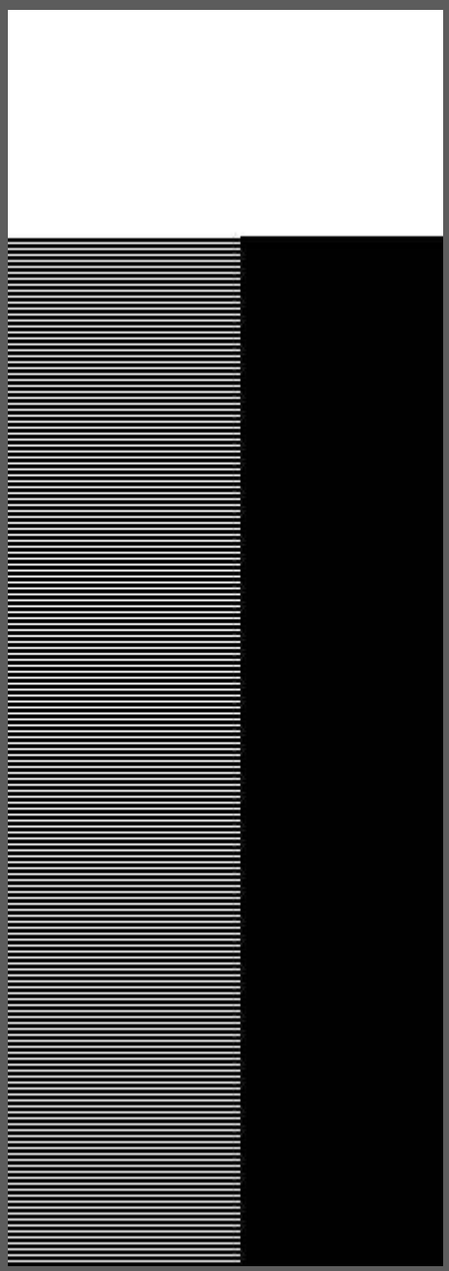

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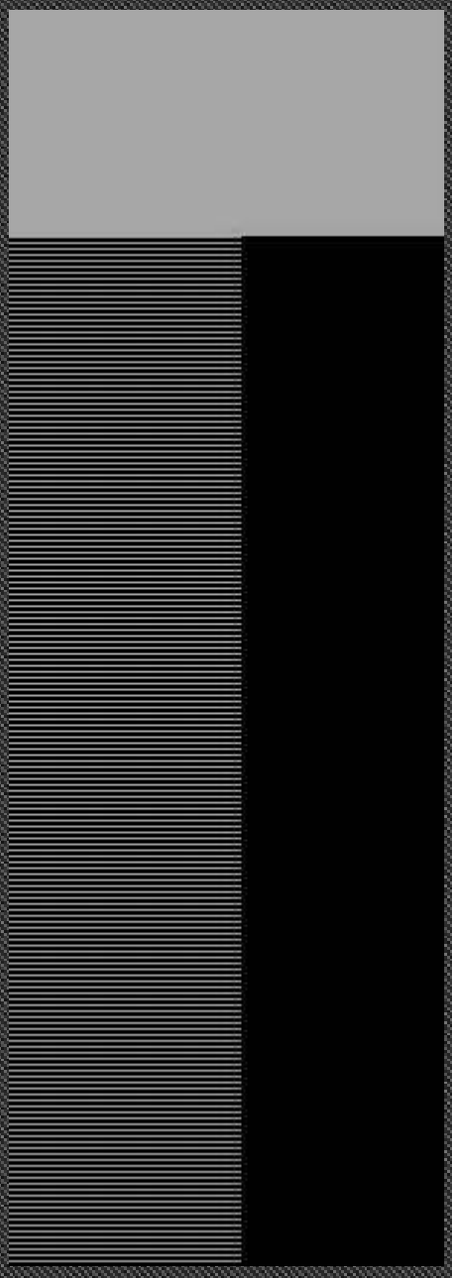

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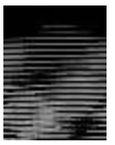
ENVIRONMENTAL PRODUCT DECLARATION

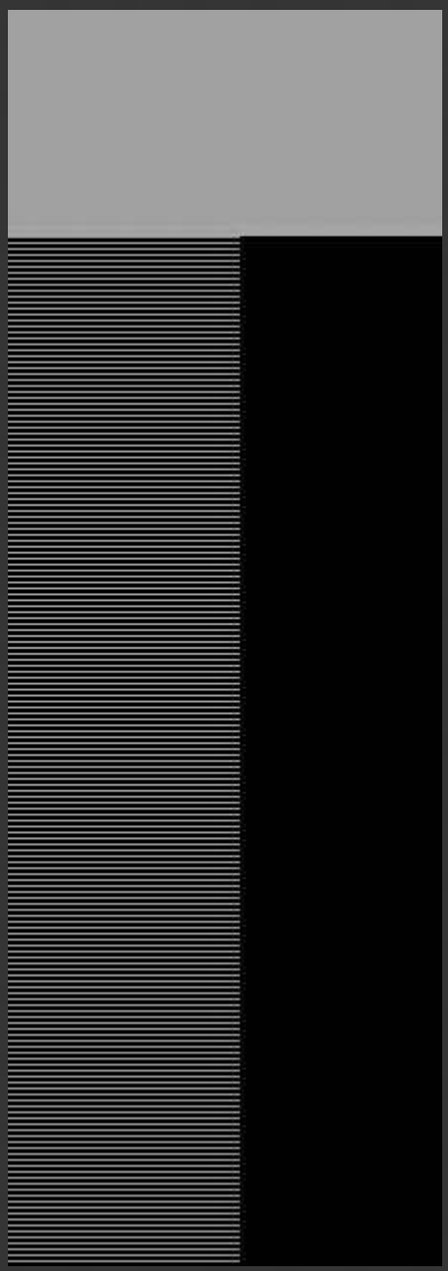












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([DJUHV UHFRYHUV RI VKH UHVLGXDO P DWHULDO JHQHUDWHG GXULQJ VKH SURGXFWLYH SURFHVV UHLQWURGXFLQJ DSSUR[LP DWH\ FDWG FRQWHQW LQ RXU DZ P DWHULDO

([DJUHV U‹FXSª UH GH OD P DW² UH U‹VLGXHOOH J«Q«U‹H SHQGDQW OH SURFHVVXV GH SURGXFWLRQ U‹LQWURGXLVDQW HQYLURQ GH FRQWHQX UHF\FOHG GDQV QRWH P DW² UH SUHP Lª UH

([DJUHV Ì ØÛÛÊ×ÊÌ ÕÒÌ ÊÏ Ü ØÛÊÜØá×ØÍØ ÖÊÜÏ ÚÒÊÕÊ ØËÚÉÑÝè ã Ï Í ØÛé Ì ÙÚØàÏ ÛÜÏ ÙÚØÒÑ ØÍ ÛÜ Ê Ì ×ØÍ æ Ì Ì ØÍ é Ì ÛØÛÛÊÌ ×Êà Ï Í Ø Ûå Úææ ØÔØÕØ ÙÏ ÚÏ ÚÊËØÛÊ×× ØÍ Ø ÖÊÜ ÚÒÊÕÊ

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* UDFLDV D Œ QXHVD GHSXUDGRUD VH UHLQWURGXFH Œ VRVWHQLGR GHOD XD UHVLGXDOLQGXVWULDO LQLP LJDQ HOFRQXP R GH UHFXUVRV K˜GULFRV SRUP HWR FXDGUDGR GH SURGXFWR I DEUFDGR

7KDQN VR VKH QHZ VWHDP HQWSODQWVDOWKH LQGXVWULDO Z DWHU DWHULV UHLQWURGXFHG P LQLP LJ LQJ VKH FRQXP SWRQ RI Z DWHU UHVRXUFHV SHUVTXDUH P HWRUI SURGXFWP DQXI DFWXUHG * UæFH Œ Œ QRXYHOŒ WŒDWRQ G«SXLDWRQ VRXWHV Œ HDX[XV«HV LQGXWHLHŒ VRQWU‹LQWURGXLVWHV P LQLP LVDQWŒ FRQVRP P DWRQ GH UHVRXUFHV HQ HDX SDUP ª WH FDLU« GH SURGXLW DEUTX« «ÕÊÍ Ø ÊÚé ×Ø ØÕÝ Øá ÒÛÜ×ØÖÝ ÛØØÚÝÐÏ ×Òè Ì Ü ÙÚØÒÑ Ø Ü Ø é Ô ÖÒ×ÒÖÝÖÝ ÚÊÛ ß Ø Ì ØÍ å Ì ØÑÑ ÚÊã Êè ÜÛé ØÊÚÊÜ×å Ó ÖÏ ÜÚ Ì å ÙÝÛÔÊÏ ÖØÓ ÙÚØÌ ÝÕà ÒÒ

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7KH XVH RI Œ FDOUDZ P DWHULDOV FŒ\ V FRQWLEXWHV WR P LQIP LJ H WKH HQYLURQP HQWDOP SDFWE\ UHGXFLQJ WKH FDUERQ IRRWSULQWV SURGXFHG E\ WKH WUDQVRUWDWRQ IURP WKH VRSUHWWR (; $* 5(6 IDFLOWHV

/ XWLOL]DWRQ GH P DW² UHV SUHP Lª UHV Œ FDOD DUJLQHV FRQWEXH¢ P LQIP LVHUQDP SDFWH\LURQQHP HQWO HQ U‹GXLVDQWHP SUHLQWM FDUERQ SURGXLWM SDUŒ WWDQVRUWGH Œ VRSUHLQWM (; $* 5(6

² ÙÙØÕÒæÑØÌ Ê×ÖÏ ÖÏ ÛÜ×ØÍØ Ûå Úææ ÍÕÒ×å ÙÙØÛØËÛÜ ÝÍ ÙÒÒ×ÒÖÑÊà ÒÒ Ì ØÑÑ Ì ÓÛÜ Òé ×Ê ØÕÚÝÐÊè ã Ýè ÛÜÏ Î Ý ÑÊ ÛãÏ ÜÛ×ÒÐÏ ×Òé ÝÍ ÕÏ ÚØÍ ×ØÍØ ÛÕÏ Í Ê Ì ØÑ×ÒÕÊè ã Ï Í Ø ÙÚÒ ÙÛÊ×ÙØÚÙÒÙØÍ Õ Ûå Úææ ØÜ ÒÛÜØá×ÒÔÊ Î Ø ÙÚÜÏ Î ÙÚÒéÜÒÓ (; $* 5(6

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/D &RQIHGHUDFLµQ (VSD³ROD GH OD /DHFRQHGHUDFLRQ(VSDROD GH(PSUHVD &(3<0(KD VHOHFFLRQDGR HDWWULEXWRV HWSUL[HPSUHVDV TXH OLGHUDQ HQ HO HWWHSEULQPTLXHFQ¹WQHRWD FURLWDQFH HPSUHVDULDO WDQWR SRU VXV UHVXOWDGRV HQ ORV ¼OWLPRV D³RV FRPR SRU VXV UHVSXHVWDV SDUD JHQHUDU DFWLYLGDG \ HPSOHR LQQRYDFLµQ \ VX SUR\HFFLµQ LQWHUQDFLRQDO

7KH 6SDQLVK &RQIHGHUDWLRQ RI 6P DOODQG 0 HGLXP 6L]H (QWHUSULVHV &(3<0(KDV FKRVHQ ([DJUHVV DV RQH RI WKH FRP SDQLHV WKDW DVVHVVHG EXVLQHVV JURZWK GXH WR LWV UHVXOWV REWDLQHG LQ UHFHQW HDUV WKH DELOLWY WR JHQHUDWH DFWLYLGDG \ HPSOR\P HQWLWY SRWHQWLDO DQG LQWHUQDWLRQDOLVDWLRQ LQLWLDWLYHV

3DHFRQHGHUDFLRQ(VSDROD GH(PSUHVDULDOHV HVWP R\HQQH (PSUHVD &(3<0(KD VHOHFFLRQDGR HDWWULEXWRV HWSUL[HPSUHVDULDO WDQWR SRU VXV UHVXOWDGRV HQ ORV ¼OWLPRV D³RV FRPR SRU VXV UHVSXHVWDV SDUD JHQHUDU DFWLYLGDG \ HPSOHR LQQRYDFLµQ \ VX SUR\HFFLµQ LQWHUQDFLRQDO

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(O FDP LQR HP SUHQGLGR SRU ([DJUHV KDFLD XQD IDEULFDFLµQ GLVF R \ ILQRVRI D P £V VRVWHQLEOH KD REWHQLGR XQ SUHP LR SRU SDUWH GH $UFKLSURGXFW XQD GH ODV SDODEUDV P £V LP SRUWDQWHV ([DJUHV KD VLGR JDDUGRQDGR FRQ HO SUHP LR 6RVWHQLEOHGGG HQ OD FDWHJRUÍD) LQLVKHV JUDFLDV D ([DGHFN XQD H[FOXVLYD WDULP D FHLEP LFD SRU VX LQQRYDGRU FRQFHSWR FDGGGG GH GLVHµR \ VREUH VRGR VX VRVWHQLEGGGG FRP R P DWULDOFRQWUKFWRR

7KH SDWK WDNHQ E\ ([DJUHV WRZDUGV D P RUH VXVWDLQDEOH P DQXIDFWXULQJ GHMJQ DQG SKLORVRSK\ KDV ZRQ DQ DZDUG IURP $UFKLSURGXFW RQH RI WKH P RVWP SRWDQWDUFKLWHFWXUDO SODWDRUP V ([DJUHV KDV EHHQ DZDUGHG WKH 6XVWDLQDEGLDW SUJH LQ WKH) LQLVKHV FDWHJRU WKDQV VR ([DGHFN DQ H[FOXVLYH FHUDP LF GHFNLQJ IRU LW LQQRYDWLYH FRQFHSW GHMJQ TXDOW DQG DERYH DOO LW VXVWDLQDEGLDW DV D EXLGGLQJ P DWULDO

/ H FKHP LQ SDUFRUK SDU ([DJUHV YHUV XQH IDEULFDFLRQ XQH FRQFHSWRQ HWXQH SKLGRVRSKLH SQXV GXUDEGHV D «W U«FRP SHQV« SDU $UFKLSURGXFW OXQH GHV SQXV LP SRUWDQWHV SGDWRP HV G DUFKLWHFWXUH ([DJUHV D UH©X GH SUJ 6XVWDLQDELDW GQV OD FDWJRUH) LQLVKHV SRXU ([DGHFN XQ UHY¬WHP HQW GH VRO F«UDP LTXH H[FXVL SRXU VRQ FRQFHSW LQQRYDQW VD TXDDW GH FRQFHSWRQ HW VXUWRXW VD GXDELDW HQ WQQW TXH P DW UDX GH FRQWKFWRQ

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¹ ÝÜæ ÙÚØÓÍ Ï ×××å Ó ÕØÖÙÊ×ÒÏ Ó ([DJUHV Ì ×ÊÙÚÊÌ ÕÏ ×ÒÒ ËØÕÕÏ çÕØÕØÍÒá×ØÍØ ÙÚØÒÑ ØÍ ÛÜ Î ÒÑÊÓ×Ê Ò ÞÒÕØÚÞÒÒ ÙØÕÝáÒÕ ×ÊÍÚÊÎ Ý ØÚ $UFKLSURGXFW ØÍ ×ØÓ ÒÑÛÊÖå ß Ì ÊÐ×å ß ÊÚß ÒÙ ÕÛÝÚ×å ß ÙÕÊÙÞØÚÖ ´ ØÖÙÊ×Òé ([DJUHV Ëå ÕÊ Ýî ØÚÜØÍ ×Ê ÙÚÍ ÖÒÒ 6XVWDLQDELDW Ì ÕÊÜÏ ÍØÚÒÒ ¸ ÛÏ Ï ÕÕÊ ÑÊ ([DGHFN çÕÛÕÕè ÑÒÌ ×ØÍ Õ ÚÊÒÒáÏ ÛÒØÍ ×ÊÙØÕæ×ØÍ ÙØÕÛå ÜÒÏ ÑÊ Ï ÍØ Ò××ØÍ Êà ÒØ×××Ýè ÕØ×à Ï Ùà Òè ÕÊáÏ ÛÛ Ø Î ÒÑÊÓ×Ê Ò ÙÚÏÏ ÐÎ Ï Ì Ï ÍØ çÕØÕØÍÒá×ØÚÜæ ÕÊÔ ÛÚÚØÒÜÏ Õæ×ØÍØ ÖÊÜ ÚÔÊÕÊ





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([DJUHV VRLQV WKH %÷Θ Z RUN V\ VWHP GLVWLEXWLQJ LW FHUDP LF SURGXFW VR WKH DJHQW LQYROYHG LQ EXLGGLQJ %÷Θ P RGHŒV FRQWDLQ WKH UHTXLUHG GDWD LQ RUGHU VR FRQWUKFWRQ VSHFLLHUV FDQ FKRRVH WKH ULJKW P DWULDODFFRUGLQJ VR WKH UHQHYDQWFULWHULD IRU HDFK XVH) XUWKHU RE WKH DUFKLWHFWZ LDGEH DE ŒH VR JHQHUDWH KLJK TXDŒW LP DJHV VR VKRZ WKH HQYLLRQP HQW VR KLV FXWRP HUV Z WK JUHDWHU DFFXUDF\

([DJUHV V DVVRFLH DX V\ VWP H GH WADYDLŒ%÷Θ HQ GLVWLEXDQWDX [DJ HQW LQWHUYHQDQW GH ŒD FRQWUKFWRQ ŒHXU SURGXLW HQ FHLEP LTXH / HV P RGª ŒHV %÷Θ FRQWHQQH QWŒHV GRQQ«HV Q«FHVDLLHV SRXT XH ŒHV SUHVFULSWHXV SXLW«HQWFRLVLUGH P DW«LHCHQ VXLYDQW SRXSRYRLUP RQWHUDX [FŒHQW ODP ELDQFH DYHF SQXV GH IILG«ŒDW

ÛÞÒÜÜÏÜÊÝ ÙÚÜÒØÞØÚÜÕæ«ÒÜÜÚ«ØÞØ ÛØÞÒÜÊÏÜÜÕÒÙÚØÞÒÜÊ×Òé %÷Θ ÚÉÊÛÙÚÏ Î Ï Õé ÛÚÏ Î Ò Ýá ÊÛÚÏ Ýè ã ÒØ Õ ÕÒà Î ØÛÚÜÞÐÏ ×Òé Ì Õï ÚÉÊÖÒáÏ ÛÞØÓ Î Ï éÜ Õæ×ØÛÜÞ ¶ ØÍ Ï ÕÒ %÷Θ ÛØÍ Ï ÚÉÞÊÛÌ Ü ËÏ Ì Ü ×Ï ØÉ ØÍ ÒÜ Î Ê×××å Ï ÙØÑÌ ØÕé ã ÖÏ Ì å ËÒÚÉÊÜæ ÖÉÜÏ ÚÒÉÕ Ì ÛØØÜÌ Ï ÚÜÌ ÒÒ Û ØÛØÞÉÏ ××ØÛÚé ÒÒ ÕÉÞÎ ØÍ Ø ÒÛÙØÛÕæÑØÍ Ê×Òé ´ ÚØÒÖÏ ÜØÍ Ø ÉÚ ÒÒÜ ÛÒØÞÜ ÎÏ Ü ÍÏ ×Ï ÚÒÚØÍ ËÜæ Ì å ÛØÞÒÜÕÉáÏ ÛÛ Ï ××å Ï ÒÑØËÚÉÞÐÏ ×Òé Ò Î Ï Ó Ø×ÛÚÒÚØÍ ÊÜæ ÔÕÒÏ ×ÊÉÖ ÙÚØÛÚÛÚÊ×ÛÛ Ê ÛËØÕæâ Ï Ó ÜØá×ØÛÜæè

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/ H SODQFKHUVXUk‹ÐHY« VWÁFKQLTXH ([DGHFN VHXOGHFNLQJ F«UDP LTXH VXU ÐH P DUFK« VH SU‹VHQWÁ FRP P H XQH VRÐXWRQ FRQWUXFWÁYH LQQRYDQWÁ GXQ JUDQG LQWU‹W SRXU ÐHV DUFKWÁFWÁV HWÐHV SUHVFULSWXUV HQ UDLVRQ GH VHV TXDOLWÁV VWÁFKQLTXHV HWÐH GK@JDQFH GH VRQ GHMJQ -ÐVDJLWG XQ VÁ VWÁP H GH SÐQFKHU IRUP « SDU GHV ÐDP HV HQ F«UDP LTXH GLQWÐDÐWÁRQ UDSLGH SRV«HV VXUGHV WÁDYHUHV¢ WÁDYHUV GHV FÐSV DP RYLEÐHV -Ð VDJLW GXQ P DWÁULDX HQ JU‹V F«UDP H H[WÁKG« VS«FLLTXH SRXU ÐHV H[WÁUHXUV R» ÐHV FRQGLWÁRQV HQYLRQQHP HQWÐHV QH FRQWÁWXHQW SDV XQ REVWÁFÐH SRXUÐHXU SRVH P H FHVWÐH FDV SRXG DXWÁV WSHV GH P DWÁULDX[WÁÐY TXH ÐH ERLV ÐHV U‹VLQHV RX ÐHV SÐDWÁTXHV &HWÁXQ SURGXLWÁJQLXJH WÁHUP LTXHP HQW WÁDE ÐH HWÁU‹VLWÁDQWÁDX JHO H SÐXV RQ SHXWÐH SRVHU VDQV EHVRLQ GH YLVHU «YÁDQW DLQL G«YHQXHÐHV LQI LQÁDÁWÁRQV HQ WÁULDVWÁV HWÁWÁRLW WÁULDVWÁV -ÐHVWÁ DFLÐH ¢ P RQWÁU HWÁ¢ G«P RQWÁU &RP P H LOV DJLW GXQ VRO DFFHWÁLE ÐH LO SHUP HW GH GLWÁLEXHU ÐHV LQWÐDÐWÁRQV GDQV ÐD SDUWÁH IQI«ULHXU ÐH HW VLP SÐH DYHF ÐD SRVLELÁW GRXYULU LQGLYLGXHÐHP HQWÐHV ÐWÁWÁV SRXUWÁRXVWÁSH GH EHVRLQ

([DGHFN UDLVHG DFFHVV IÐRRU WÁKH RQÐ FHUDP LF GHFNLQJ RI LW NLQG LV DQ LQQRYDWÁYH IÐRRULQJ \ WÁP Z LWÁ D KLJK LQWÁU‹WÁYDÐXH IRU DUFKLWÁFFW DQG P DWÁULDÐY VSHFLLHUV WÁDQN WÁR LW WÁFKQLFDOSURSHUWÁHV DQG WÁVDLK GHJQ 7KH \ WÁP LV P DGH XS RI HDV \ WÁR LQWÁDÐ FHUDP LF ERDUGV ÐDG RQ EDWÁP QV DQG IL[HG LQ SÐDFH Z LWÁ UHP RYDEÐH FÐSV

WÁSHFLLHP[DÐX GHG SRUFHDLQ ERDUGV DUH VXLWÁG WÁR RXÐRRUHQYLUQP HQW Z KHUH DWÁ RVSKHUF FRQGLWÁRQV DUH QR REVWÁFÐH IRUWÁHP XQÐNH RWÁHU P DWÁULDÐY ÐNH Z RRG UHWÁU‹VLQ RUSÐDWÁF 7KH \ WÁP LV UHWÁU‹VÐQWÁR ILUH WÁP SHUDWÁXUH FKDQJHV DQG IURWÁDQG LFH) XUWÁHP RUE LW VFUHZ IUHH LQWÁDÐDWÁRQ \ WÁP DYRLGV SRWÁLE ÐH Z DWÁUÐHDNV RQ WÁULDFH‹V DQG IÐWÁRRIV -WÁV HDV\ WÁR DWÁHP EÐH DQG FDQ EH GLVDWÁHP EÐHG $V LWÁV DQ DFFH‹WÁLE ÐH IÐRRULQJ LWÁDÐRZ VWÁH GLVWÁLEXWÁRQ RI LQWÁDÐDWÁRQV LQ WÁH RSWÁRQ RI LQGLYLGXDOSHQJ RI WÁH WÐDW IRUDQ\ WSHRI QHHG

¾ÊÕæâ ÙØZÕ ([DGHFN ÏÎÒ×ÛÜÏ ×××åÓ ÕÏ ÚÊÖÒàÏ ÛÔÒÓ ×ÊÜÜÒÕ ×Ê Úå×ÕÏ ÔØÜØÚå Ó ÙÚÏÎÛÊÈÏ ÕÏ × ÕÊÔ Ò××ØÏÊà ÒØ××ØÏ ÛÜÚØÒÜ Õæ×ØÏ ÚÏâÏ×ÒÏ Ì å ÑåÌÊè ã Ï Ï ËØÕÆâ ØÓ Ò×Ü ÚÏ Û Î Õé ÊÚßÒÜÏ ÔÜØÚØÌ Ò ÛÜÏà ÒÊÔÒÜØÌ Ì Ù÷Ï ÚÏ ÚÏ ÖØ×ÜÊ ÒÑÑÊÏ ÍØÜ ß×ÒàÏ ÛÔÒß ÕÊáÏ ÛÛ Ò çÕÌÍÊ×Ù×ØÜÒ Î ÒÑÊÓ×Ê ÇÜØ ÛÔÜÜ ÖÊ ×ÊÙØÕæ×åß ÙØÕÚåÜÒÓ ÛØÜØéã Êé ÒÑ Ëå ÛÜÚØ ÝÚÜÊ×ÊÌ ÕÒÌ ËÏ Öå ß Ú ÚÊÖÒàÏ ÛÔÒß ÙÜÊ×ØÔ ÝÕØÐÌ ××å ß ×Ê ØËÜÏ â Ï ÜÕÝÛÙØÖØã æè Ûà Ï Ö×å Ï ÑÊÐÒÖÖå ÇÜØ ÛÏ à Ò Òà ÏÛÔÒÓ çÔÛÜÚÝÎ ÒÚØÌ Ê×å Ó ÕÌ ÚÊÖØÍÚÊ×ÒÜ×å Ó ÖËÜÏ ÚÒÈÕ Î Õé çÔÛÜÏ Úæâ ÚØÌ ÍÎ Ï ÝÚÕØÌ Òé ØÕÚÝÐÊè ã Ï Ó ÛÏ Î å ×Ï éÌ Õéè ÜÜé ÙÚÏ Ùé ÜÛÛÎ ÒÏ Ò Î Õé Ï ÍØ ÚÊÑÖÏ ã Ï ×Òé ÔÊÔ çÜØ ÙÚØÒÜØÌ ÒÜ Û Î ÚÝÍÒÖÖÒ ÜÒÙÊÖÒ ÖÊÜÏ ÚÒÊÕØÌ ËÝÎ æ ÜØ Î Ï ÚÏ Ì Ø ÛÒØÕå ÒÕÒ ÙÕÊÜÜÒÊÛÕå ÇÜØ ØÍ×Ï ÝÙØÚ×å Ó ÙÚØÌ ÝÕÙ Ü ÚÒØÕÛÜËÈÒÕæ×å Ó Ò ÝÚÜØÓá ÒÌ å Ó Ô ÒØÚØÑÊÒ ¯ÍØ ÚÊÔÐÏ ÖØÐ×Ø ÚÊÑÖÏ ÛÒÙÜæ ËÏ Ñ ×Ï ØËßØÎ ÒÖØÛÛÒ ÑÊÌ Ò×áÒÌ ÊÜæ áÜØ ÙØÑÌ ØÕéÏ Ü ÒÑËÏ ÐÊÜæ Ì ØÑÖØÐ×å ß ÙÚØÜÏ áÏ Ô×Ê Ü ÚÚÊÛÊß ÒÕÒ ÛÅå â ÊßÞ , ×Ê ÕÏ ÍÔØ ÛØËÒÚÊÏ ÜÛé Ò ÖØÐÏ Ü Ëå Üæ ÚÊÑØËÚÊ×Ê ¹ ØÛÔØÕæÔÝ çÜØ Î ØÛÜÝÙ×å Ó ÙØÕ Ø× ÙØÑÌ ØÕéÏ Ü ÝÎ ØË×Ø Ò ÙÚØÜÛØ ÚÊÛÙÚÏ Î Ï ÕÒÜæ ÝÜÛÊ×ØÌ ÕÒ Ì ×ÒÐ×Ï Ó áÊÜÛÒ Û Ì ØÑÖØÐ×ØÛÜææ Ò×Î ÒÌ ÒÎ ÝÊÕæ×ØÍØ ØÜÛÚåÜÒé ÙÒÊ×ØÔ Î Õé Õè ËØÍØ ÙÒÙÊ ÙØÜÚÏ Ë×ØÛÜÏ Ó

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É Øá çÔÝÔæ]

$ GYDQMDGJ HV

$ YDQMDJ HV

1 ÚÏ ÒÖÝã Ï ÛÛÎ Ê

([DGHFN HV HO½QLFR VLVWMP D GHFN I DEULFDGR HQ SRUFHGQLFR H[WKLGR H[VWMQWM HQ HOP HUFDGR / DV FDUDFWMUÍWMFDV SURSLDV GHOS RUFHGQLFR ŒR KDFHQ LGHDO SDUD LQWMDDFLRQHV HQ H[WMURUHV HQ HQWMRUQRV GRQGH Œ KXP HGDG VHD XQ REWMFXŒR SDUD P DGHUDV UHMQDV SGŒVWMFRV \ RWMRV WSRV GH P DWMULDŒV SURSLRV GH HVWMRV VLVWMP DV $ GHP £V VX DOMD UHMVWMQFLD P HFŁQLFD D Œ URWXUD \ D Œ DEUMµQ ŒR FRQYLHUWMQ HQ DSWR SDUD] RQDV GH DOR WMŒQWMR 6X FRQGLFµQ GH LJQTXJR GD JDUDQMÍD GH VHJXULDGG H LQDOMUDELLDGG HV UHMVWMQWM D Œ DV KHŒDGV GHELGR D VX FDMLQXŒ DEVRUFµQ GH DJXD \ HVXQP DWMULDOHWMŒDEŒH WMUP LFDP HQWM \ D TXH VRSRUWMŒRV FDP ELRV EUXVFRV GH WMP SHUDWXUD \ Œ GLDMŒFLRQHV VLQ GHIRUP DUVH 3RU½Œ P R ŒRV SŒ] RV GH FRŒRFDFµQ VH YHQ DP SŒDP HQWM UHGXFLGRV JUDFLDV D

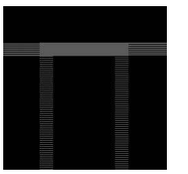
VX VLVWMP D GH P RQŒMŒH P HGLDQWM FŒSV

([DGHFN LV WKH RQŒ GHFNLQJ \ \ WMP RQ WKH P DUNHW P DGH RI H[WKGHG SRUFHŒLQ ERDGV 7KDQNV WR WKH FKDUDFWMULWMFV RI WKH SRUFHŒLQ GHFNLQJ LWLV SHUHFW IRUXVH RXŒRRUV LQ SŒDFHV Z KHUH H[SRVXUH WR GDP S Z RXŒ EH D SURE Œ P IRUZ RRG UHMQ SŒDWMF RURWKHU P DWMULDOV WSLFDŒ XVHG LQ UDLVHG DFFHVV IŒRRV : KDWLV P RUH LW KLJK P HFKDQLFDOLHMLWMQFH KLJK EUHDNLQJ WMHQJWMK DQG UHMLWMQFH WR DEUMRQ P DNH LWLGHDO RUSŒFHV VXEMFWMR KLJK SHGHMWMLD WMDI ILF %HFDXVH ([DGHFN LV ILLH UHMLWMQWMLWMV ERWK VDH DQG XQDŒMUDE Œ H -WLV DŒR UHMLWMQWMR IURWMDQG LEH GXH WR LW DOP RWM] HUR Z DWMUDE VRUSWMRQ 7KH VWMP V UHMLWMQFH WR WMP SHUDWXUH FKDQJHV P HDQV WKDWMFDQ Z LWK WMQG VKDUS GLI HUHQFHV LQ WMP SHUDWXUH Z LWKRXW EHFRP LQJ GHIRUP HG GXH WR H[SDQMRQ / DWMD WKDQNV WR WKH FŒFN VWMP XVHG WR P RXQWMLWMQWMŒDWMRQ WMP HV

DUH VXEWMŒQWMŒD UHGXFHG

([DGHFN HWWŒH VHXOGHFNLQJ IDEULTX« HQ JUª V F«UDP H H[WKG« H[LWMŒQW VXU ŒH P DUFK« * UªFH DX[FDUDFWMULWMTXHV SURSUHV DX JUª V F«UDP H LOHWWSDUDLW SRXU GHV HQYLRQQHP HQW R» ŒKXP LGLW VDYª UH XQ REWMŒFŒH SRXU ŒV ERLV ŒV U‹VLQHV ŒV SŒDWMTXHV HWG DXWH VSHV GH P DWMULDX[SURSUHV ¢ FHV VWMP HV ' H SŒXV VD KDXWM U‹VLWMŒQFH P «FDQLTXH ¢ Œ UKSWXUH HW¢ ŒDEUDMRQ ŒH UHQG DSWM SRXU GHV] RQHV GH JUDQG SDWMŒJH 6D FRQGLWMRQ LJQLXJH HWW XQH JDUQMŒH GH V«FXULW HW GLQDŒWMDELDW LOHWWSU‹VLWMŒQWMŒX JHOGH SDU VD TXDL QXŒH VKHP LTXHP HQWMWMŒEŒH FDULOVXSSRUWM ŒHV FKDQJHP HQW EUXVTXHV GH WMP S«UDWXUH HWŒHV GLŒDWMRQV VDQV VH G«IRUP HU) LQDŒHP HQW ŒHV G«ŒLV GH SRVH VRQW JUDQGHP HQWU‹GXLW JUªFH ¢ VRQ V\ WMP H GH P RQŒJH SDUFŒFV

([DGHFN éÌ Õéï ÜÛé ï Î Ò×ÛÎ Ï ××ØÓ ÛÒÛÜ ÖØÓ Î Ï ÕÒ×Í Ê ÒÑ çÔÜÜÚÝÎ ÒÚØÍ Ê××ØÍØ ÕÎ ÚÊÖØÍÚÊ×ÒÜÊ ×Ê Úå×Õî ¿ÊÚÊÕÜ ÚÒÛÜÒÕÒ Î Ê××ØÍØ ÒÊÜ ÚÒÊÕÊ Î Ï ÕÊè Ü Ï Í Ø ÒÎ Ï ÊÕæ×å Ö Î Õé ×ÊÚÝÐ×ØÍØ ÙÚÒÖÏ ×Ï ×Òé Ì ÛÚÎ Î Êß Í Î Ï Ì ÕÊÐ×ØÛÜæ éÌ Õéï ÜÛé ÙÚÎ Ùé ÜÛÛ ÒÎ Ö Î Õé ÝÛÜÊ×ØÍ ÕÒ Î Ï ÚÎ Ì Ê ÚÎ ÑÕ×å ÙÕÊÛÜÖÊÛÛ Ò Î ÚÝÍ ÒÞ ÙÒÙØÍ ÖÊÜ ÚÒÊÕØÍ ÜÒÙÒá×å ß Î Õé çÙÒÞ ÛÒÛÜ Ö ´ ÚØÖÏ ÜØÍØ Ï Í Ø Ì å ÛØÕÊé ÖÏ ßÊ×Òá Ï ÛÊÊé ÙÚØá×ØÛÜæÔÚÊÑÚÝâ Ï ×Òè Ò ÒÛÜÒÚÊ×Òè Î Ï ÕÊè Ü Ï Í Ø ÙÚÒÍØÍ ×å Ö Î Õé ÑØ× Û Ò×Ü ×ÛÒÌ ×å Ö Î Ì Òð Ï ×ÒÏ Ö ¸ Í×Ï ÜÜØÓÕØÛÜæ ÖÊÜ ÚÒÊÕÊ Î Êê Ü Í ÊÚÊ×ÜÒè ËÏ ÑØÙÊÛ×ØÛÜÒ Ò ×Ï ÒÑÖÏ ××ØÛÜÒ Ø× ÝÛÜØÓá ÒÌ Ô ÖØÚØÑÊÖ ËÕÊÍØÎ ÊÚé Û ØÍ ÖÝ ÙØá ÜÒ ×ÝÕÌ Ì ØÖÝ Ì ØÎ ØÙØÍÕØã Ï ×Òè Ò éÌ Õéï ÜÛé Ü ÚÒÖá Ï ÛÕÒ ÛÜÊÊÒÕæ×å Ö ÖÊÜ ÚÒÊÕØÖ ÜÊÔÕÊÔÌ å Î Ï ÚÐ ÒÌ ËÏ Ü ÚÍ ÑÕÖÏ ÙÏ ÚÍ ÙÊÎ å Ü ÖÙÏ ÚÊÜÝÚå Ò ÚÊÛâ ÒÚÍ ×Òé ËÏ Ñ Î Ï Þ ØÚÖÊà ÒÒ · ÊÕØ×Ï à Ì ÚÍ Öé ÖØ×ÚÊÐÊ Ñ×ÊáÒÜ Õæ×Ø ÛØÔÚÊã ËÍ ÜÛé ËÕÊÍØÎ ÊÚé ÛÒÛÜ ÖÏ ÔÚÍ ÙÕÌ ×Òé FŒS



–JQTXJR FODVH$) LUH UHVLVWDQWFDVV$
–JQLXJH FODVVH$ ¸Í×ÏÛÜØÓÔØÛÜåe ÔÕÊÛÛ$

/ DFHUEP LFDHVVRVWDP HQWU HVLVWQWU DCXHJR (VXQR GHORVSRFRVP DWMULDOHVTXH LQFQXVR HQFRQWDFWR GLUHFWR FRQDVODP DV QRVHTXHP D GHULUWM QLQEHUD QLQJXQD VXWDQFLD QRFLYD SDUD HCKRP EUHR HCP HGLR DP ELHQWM

&HUDP LFWDHP DWMULDOY DUHIXOD ILUH UHVLVWDQW&HUDP LFWDHV DUHRQH RI WKHIHZ P DWMULDOYWKDWGR QRWEXUQ P HOVRUUHOHDVH VXEWDQFHV WKDWDUHKDUP IXCIRU SHRSOHRUWKH HQYLRQP HQWH[YHQ LQ GLUHFWFRQWDFWZ LWK IODP HV

/ DF«UDP LTXEHVWWRVDCHP HQWk VLWDQWM DXIHX &HWOXQGHVUDHP DW¥ULDX[TXL P ¬P HHQ FRQWDFWGLUHFWDYHF ΘHVIODP P HV QHEU½ΘHSDV QHIRQG SDV HWQH ΘE UHDXFXQH VXEWDQFH QRFLYH SRXUG¬WWH KXP DLQ RX OHQYLRQQHP HQW

´ ÏÚÊÔÒÒÔÊ ÙØÕ×ØÛÜåèè ØÍ×ÏÛÜØÓÔÊé ÇÜØØÍÒ×ÒÑ×ÏÖ×ØÍÒß ÖÊÜÏÚÒÊÕØÌ ÔØÜØÚåÓÎÊÐÏ ÙÚÒ×ÏÙØÛÜÏÎÛÜÏ×××ØÖÔØ×ÜÊÔÜÏ ÛÙÕÊÖÏ×ÏÖ×ÏÍØÚÒÜ×Ï ÙÕÊÌ ÒÜÛé Ò×ÏÌåÎÏÕéÏÜ×ÒÔÊÔÒß Ì ÏãÏÛÜÌÚÏÎ×åßÎÕéáÏÕØÌÏÔÊÒÕÒØÔÚÝÐÊèãÏÓÛÜÏÎå

5HVLVWDQFH DOYLHQWR : LQG UHVLVWDQW
5«VLVWDQWDX YHQW¬Ï ÜÚØÝÛÜØÓáÒÌ ØÛÜåe

(OLVWP DFRQWWXFWWR ([DGHFNHV UHVLVWDQW DOD DFFµQ GHOYLHQWR HQ DP ELHQWV H[WUURUHV WDQWR DSUHVRQHV SRVLWDV HP SXNH GHOYLHQWR R QHJDWDV IXHU DV GH VXFFµQ

-Q RXWRRUHQYLURQP HQW ([DGHFNLV DZLQG UHVLWQWGHFNLQJ V\ VWP -WFDQ ZLWKWDQG ERWK SRVLWX XSOWDQG QHJDWX SUHVXUH VXFWRQ

/ H\ VWP H GH FRQWXFWWRQ ([DGHFNHVWk VLWDQWC ODFWRQ GX YHQWGQDV ΘHV DP ELDQFHV H[WUURUHV WDQWDX[SUHVRQV SRVLWYHV SRXW«H GX YHQW TX DX[Q«JDWYHV IRUFHV GH VXFFLRQ

»ÜÚØÒÜÕæ×ÊéÛÒÛÜ ÖÊ ([DGHFNÝÛÜØÓáÒÌÊÔÎÏÓÛÜÌÒè ÌÏÜÚÊÌ ×ÊÚÝÐ×åßÛÜÏÎÊß ÔÊÔÙÚÒÙØÕØÐÒÜÏÕæ×ØÖÎÊÌÕ×ÒÒ ÜßíÊÌÏÜÚÊ ÜÊÔÒÒÙÚÒ ØÚÜÒàÊÜÏÕæ×ØÖÎÊÌÕ×ÒÒ ÝÛÒÕÒèÌÛÊÛåÌÊ×Òé

0 RQWDWH VLQ QHFH-MLGDG GH DWRUQLQDU $ VFUHZ IUHH LQWDXDOWRQ V\ VWMP
0 RQWDJH VDQV EHVRLQ GH YLVVHU ¶ Ø×ÜÊÐ ËÏÑÑÊÌ Ò×áÒÌ Ê×Òé

(OLVWMP D([DGHFNHVLGµQHR SDUD VX LQWDXDOFµQ HQ D]RWDV\ VWMUD]DV GH HGLLFLRV \ DTXHRVUDWWHHVVH SXHGHQ ILWDUP HGLDQWM P DWMULDOHVFRP SRVLWM \ QR HVQHFHVVDUR DWRRUQLQDUVV HYLWWQGR DV¯SRVLEOHVILQWDFLRQHVGH DJXD

([DGHFNLV SHUHFWRUXVH RQ IDWURRIV DQG WMULDFHV EHFDXVH WKH EDWMQV FDQ EH DQFKRUHG ZLWK FRP SRVLWM P DWMULDOYUDWKHUWKDQ VFUHZ LQJ WKHP GRZQ 7KLV DYRLGV SRVLEOHIZ DWMUOHDNV

/ H\ VWP H([DGHFNHVWSDUDLWSRXU¬WH LQWDXQ VXUOHVWRLW WMULDVHVHVWHVWMULDVHVGHV E¤WP HQW FDUOHVWDYHUHV SHXYHQWH IL[HUP R\ HQQDQWGHV P DWMULDX[FRP SRVLWMV HWTX LQQHWSDV Q«FHVVDLH GHOYLVHU «YLWDQWDLQLG«YHQWXHOHVIOWDMRQV GHDX

»ÒÛÜÏ ÖÊ ([DGHFNÒÎ Ï ÊÔæ×Ø ÙØÎ ßØÎ ÒÛÜÎ Õé ÝÛÜÊ×ØÎ ÔÒ×ÊÕÅâ Êß Ò Ü ÚÜÊÔÊÔß ÑÎ Ê×ÒÓ ÜÊÔÔÊÔÙÒÕÊ×ÔÒ ÖØÍ ÝÜËå ÜæÑÊÔÚÏ ÙÕÎ ×å ÛÒÛÙØÕæÑØÎ Ê×ÒÏ Ö ÔØÖÙØÑÒÜ×åß ÖÊÜÏ ÚÒÊÔÕØÎ Ò×Ï Ü×Ï ØËßØÎ ÒÖØÚÜÒ ÙÚÒÕÛÝáÒÌ ËÜæÒß áÜØÙØÑÎ ØÕéÏ ÜÒÑËÏ ÐÊÜæÌ ØÑÖØÐ×åß ÝÜÏ áÏÔÌ ØÎå

1 œQLFR GHFNFHUEP LFR GHOP HUFDGR 7KHRQO FHUDP LF GHFNLQJ RQ WKH P DUNHW
6HXOGHFNLQJ F«UDP LTXHGX P DUFK« ¯Î Ò×ÙÛÏ ×××Êé ÕÏ ÚÊÖÒÔáÏ ÛÔÊé ÔØÕÔØÎ Ê×Ê Úå×ÕÏ

([DGHFNHV XQ JUHV SRUFHOLQLFR H[WUXLGR TXH RI UHFH XQ VLQI¯Q GH YHQWDWDV IUHQWM D ΘD P DGHUD QDWXUDO\ D ΘRV P DWMULDΘHV VLQWk WMFRV HQ FXDQWR D LQWDXDOFµQ YLGD ½MAO\ P ¯QLP R P DQWMQLP LHQWR

([DGHFNLV DQ H[WXGHG SRUFHODLQ GHFNLQJ V\ VWMP -Q FRP SDULVRQ Z LWk Z RRG RUV QWkHWF P DWMULDOY LWDI IRUGV DΘΘNLQGV RI DGYDQWDJHV LQ WMUP V RI LWV LQWDXΘΘWMRQ DQG XVHIXOΘΘH $GGLWMRQDΘΘ RQ P LQLP DCFDUH LV UHTXLUHG

([DGHFNHVWk JU¹V F«UDP H H[WXKG« TXLRI IUH GH P XΘWSΘHV DYDQWDJHV SDUUDSSRUWDX ERLV QDWXUHOHWDX[P DW¥ULDX[\ QWk«WTXHV TXDQW¢ LQWDXΘΘWMRQ YLH XWΘH HWHQWWHP P LQLP XP

([DGHFN çÜØçÔÜÚÝÎ ÒÚØÌ Ê×××åÓÕ ÚÊÖØÍÚÊ×ÒÜ ÔØÜØÚåÓÙÚÏÎÕÍÊÏ ÜÊÏ ÛÔØ×Ïá×åÏ ÙÚÏÒÖÝãÏÛÜ Ê ÙÏÍÚÏÎ ×ÊÜÝÚÊÕæ×åÖÎÏÌØÖÒÜÏÕæ×ØÍÒÌØËÜÕÝÐÒÌÊ×Òé ÖÖÒ×ÒÖÖÊÕæ×ØÍÒÌØËÜÕÝÐÒÌÊ×Òé ÖÊÜÏÒÖÖÔÊÕæ×ØÍÒÌØËÜÕÝÐÒÌÊ×Òé ÜÚÖÊÕÊÖÖÒÙÜØáÛÒÑÚÏ ×ÒéÖØ×ÜÊÐÊ ÛÜØÔÊ ÛÕÝÐËåÒÖÖÒ×ÒÖÖÊÕæ×ØÍÒÌØËÜÕÝÐÒÌÊ×Òé

q 3 Ur UZ ;

k ’ ¸ ×| -| ÑŒE

$GYDQWDJHV $YDQWDJHV ¹ ÚÏ ÒÖÝã Ï ÛÛÎ Ê



$QWLEDFWHULDQR $QWLEDFWHULDO
$QWLEDFWHULHQ ª ×ÙÒËÊÊÔÜ ÚÒÈÕæ×å Ó

/ DKJLHQH\ VHJXULGGVRQGRVDSHFWRVSURFXSDQWHVHQ OD VRFLHGGDFWXDO$OHUXQSURGXFWRFHLP LFR ([DGHFNWHQH XQD VHULH GH YHQWDMDV UHVSHFWR DOUHGHGRU GH SURGXFWRVFRP SHWGRUHV FRP RVRQ OD FDLQXOD DEVRUµQ GH DJXD OD IDFLOGGG GH OP SLH]D \ ODV SURSLHGDGHV EDFWHULFLGDV TXH RIUHFH

+\JLHQH DQG VDHWDUDH WZR NHA SURUWHVLQ WRGD\ VVRFLHW %HFDXVH ([DGHFNLV P DGH RI FHUDP LF P DWHULDO VHULHV RI DGYDQWDJHV RYHURWKHUVYDO SURGXFW 7KHVH LQFXGH DQHV\ WR FOHDQ VXUIDFH DQWEDFWHULDOSURSHUWHV DQG DP RWK]HUZ DWHUDEVRUSWRQ

/ K\JLªQH HWDD V«FXLW VRQWGHX[DVSHFW TXLSU«RFFXSHQWD VRFL«W DFWXHOOH &RP P HLO/DJ WG XQ SURGXLWF«UDP LTXH ([DGHFN SRVªGH XQH V«UIH GDYDQWDJHV SDUUDSSRUWDX[DXWHV SURGXLW FRQFXUUHQW FRP P HOD TXDL QXOH DEVRUSWRQ GHDX OD IDFLOW GH QHWWR\ DJH HWGHV SURSU«WVVEDFWULFLGHV TXLCRIIUH

- ÒÍ ×Ê Ò ËÏ ÑŽÙÊÛ×ØÚÜæéÌ Ôéè ÜÛé Î Ì ÝÖé Ì ÊÐ×å ÖÒ ÊÛÜÏ ÕÜÊÖÒ Ì ÛØÌ ÚÏ ÖÏ ××ØÖ ØËã Ï ÛÜ Ï «ÝÎ Ýá Ò ÕÌ ÚÊÖÒáÏ ÛÔÒÖ ÙÚØÎ ÝÔÙØÖ ([DGHFN ÒÖÏ Ï ÜÚéÎ ÙÚÏ ÒÖÝã Ï ÛÜ ÙÏ ÚÏ Î ØÛÜÊÔæ×å ÖÒ ÖËÜ ÚÒÊÔÊÖÒ ÜÊÔÖÏ ÔÊÔÙØáÜÐ ×ÝÕÌ Ì ØÎ Ì ØÎ ØÙØÍÕØã Ï ×ÖÏ ÙÚØÛÜØÛÊ ØáÒÚÜÔÒ Ò Ê×ÜÐËÊÔÜ ÚÒÊÔæ×å Ï Ü ØÓÚÜ Ê



5HVLVWDQWDQW DOOV P DQFKDV\ VLQ P DQWQLP LHQWR 6WDLQ UHVLVWDQWDQG P DLQWHQDQFH IUHH
5«VLVWDQWDX[VWDFKHVHVWDQV HQWHMHQ ½ÛÜØÓáÒÌ ØÛÜæÔÙéÜ×ÊÖ Ò ÙÚØÛÜØÛÊ ÝßØÎ Ê

6X DQWD UHVLVWDQFH IUHQW DOOV P DQFKDV KDFH TXH VHD XQ SURGXFWR SDUD H[WHULRUHV GH I£FLOOP SLH]D $GHP £V HV OD RSFµQ LGHDO SDUD UHQRYDUHVSDFLRV FRP R SDWRV R WHULDU DV VLQ WHQHUTXH SUHRFXSDUVH SRUVX P DQWQLP LHQWR \ D TXH QR UHTXLHUH WDDWP LHQWRV \ HV UHVLVWHQW DOVRO D OD ODYLD

7KDQNV WR LW KJK UHVLVWDQFH WR WDLQV ([DGHFN LV DQ HDV\ WR FOHDQ RXGRRU VROXWLQ –WLV DSYR SHUFHWWRU UHQRYDWLQJ SDWRV DQG WHULDFHV Z LWKRXW KDYLQJ WR Z RUU DERXWLW P DLQWHQDQFH VLQFH LWGRHV QRWUHTXLUH WHDWP HQW DQG LV UHVLVWDQWWR VXQ DQG UDLQ

6D JUDGH U«VLWDQFH DX[WDFKHV HQ IDLWX SURGXLWSRXU OH[W«UIDFLOH ¢ QHWWR\ HU & HVWHQ RXWH ORSWRQ LG«DØ SRXU U«QRYHUHV HVSDFHV FRP P H GHV SDWRV RX GHV WULDVHV VDQV GHYRLUVH SU«RFFXSHU GH QHWWH\HU HQW DQG LV UHVLVWDQWWR VXQ DQG UDLQ

¯Í ØÌ å ÛØÔÊé ÝÚÜØÓáÒÌ ØÛÜæÔÙéÜ×ÊÖ Î Ï ÕËÏ ÜÏ Í ØÕ Í ÔØáÒÚÜéã ÒÖÛé ÙÚØÎ ÝÔÙØÖ Î Õé ×ÊÚÝÐ×ØÍ Ø ÙÚÒÖÏ ×Ï ×Òé ´ ÚØÖÏ ÜØÍ Ø çÜØÒÎ Ï ÊÕæ×å Ó Ì ÊÚÒÊ×Ü Î Õé ØÞØÚÖÕÏ ×Òé ÜÊÔÒß ÑØ× ÔÊÔ Î Ì ØÚå ÒÕÒ Ü ÚÚÊÛå ÜÊÔ ÔÊÔ ÖØÐ×Ø ×Ï ËÏ ÛÙØÔØÒÖÙæÛé Ø Ï Í Ø ØËÜÕÝÐÒÌ Ê×ÒÒ ÙØÚÛÔØÕæÐÝ Ø× ×Ï ÜÚÎ ËÝÏ Ü ÛÕØÐ×å ß ÙÚØàÏ Î ÝÚ Ò ÝÚÜØÓáÒÌ ÔÛØÕ×àÝ Ò Î ØÐÎ è



$QWLUHVLVWDQFHLD P HFF£QLFD\ D OD DEUDVLµQ + LJK P HFKDQLFDODQG DEUDVLRQ UHVLVWDQFH
+ DXWH Ux VLVWDQFH P «FDQLTXH HWF¢ ODEUDVLRQ ¬å ÛØÔÊé ÒÑ×ØÛØÚÜØÓÔØÚÜæe

3URGXFWR FRQ XQRV YDORUHV GH IXHU] D GH URXUD P X\ HDYDGRV \ XQD DQTWLP D UHVLVWDQFLD D OD DEUDVLµQ VXSHULFLDO

$ SURGXFWZ LWK D YHU\ KJK EUHDNLQJ VWUHQJWK DQG RXWVWQGLQJ UHVLVWDQFH WR VXUDFH DEUDVLRQ

3URGXLWSU«VHQWDQGHV YDORUXV GH IRFH GH UXSWXUH WH V «HY«HVHVXQH V KDXWH U«VLVWDQFH¢ ODEUDVLRQ VXSHULFLHDH

² Ñ Ï ÕÖÏ ÛØáÏ ×æÌ å ÛØÔÒÖÒ Ñ×ÊáÏ ×ÒéÖÒ ÚÉÑÚÝâ Êè ã Ï Í Ø ÝÚÒÕÖé Ò Øáï ×æÌ å ÛØÔØÓ ÝÚÜØÓáÒÌ ØÛÜæè ÔÒÚÜÒÚÉ×Òè ÙØÌ Ï Úß×ØÛÜÒ



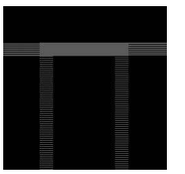
' XUDEOLGGDG \ UHVLVWDQFH D OR RV UD RV 89 ' XUDEOLOAV UHVLVWDQFH VR XOVD YLRGHWULD\ V
' XUDEOLOAV HWU«VLVWDQFH DX[UD\ RQV 89 ®ØÕÏ ØÌ Ï á×ØÛÜæÒ ÝÚÜØÓáÒÌ ØÛÜæÔÝÕæåÚÉÞ ÒØÕÏ ÜØÌ ØÖÝ ÒÑÕÝáÏ ×Òè

([DGHFN HWWE IDEULDGR FRQ SRUFHOEQLFR H[WXXLGR GH DOOD FDQGGDG OR TXH JDUDQWD D XQD JUDQ UHVLVWDQFH D OD URXUD \ GXUDEOLGGDG IUHQWH D OR RV UD RV 89 (WWDV FDUDFWWUVWWFDV KDFHQ TXH ([DGHFN VHD LQDOWUDEOH DOS SDVR GHOWHP SR

([DGHFN LV P DGH RI WRS TXDOW H[WXXHG SRUFHOLQ WDH P DWHULDO JXDUDQWHHQJ D KJK EUHDNLQJ WWHQJWK DQG UHVLVWDQFH WR XOWD YLRGHWULD\ V 7KHVH SURSHUWHV P DNH ([DGHFN XQDOWUDEOH RYHUWWP H

([DGHFN HWWDEULTX« DYHF GX JUª VF«UDP H H[WXXG« GH KDXWH TXDOW FH TXLJ DUDQWWXQH JUDQGH U«VLVWDQFH¢ OD UXSWXUH HWXQH JUDQGH GXUDEOLOAV IDFH DX[UD\ RQV 89 &HV FDUDFWWUVWWFXHV IRQWWX ([DGHFN VRLWLQDOOWUDEOH DX ILOGX WWP SV

([DGHFN ÒÑØÚØÌ ÕÏ × ÒÑÌ å ÛØÔØÕÊáÏ ÛÜ Ï ××ØÍØçÔÛÜÚÝÎ ÒÚØÌ Ê×ØÍØÕÏ ÚÉÒØÍÚÉ×ÒÚÚÉ áÜØÍÊÚÉ×ÒÚÚÝÏ ÜÌ å ÛØÔÝè ÝÚÜØÓáÒÌ ØÛÜæÔÙØÔØÕÏ Ò Î ØÕÍØÍ Ï á×ØÛÜæ ÙÚØÚÜÌ ÝÕæåÚÉÞ ÒØÔÏ ÜØÌ å ß ÕÝáÏ Ó çÜÒ ßÊÚÉÕÜ ÚÒÜÛÒÔÒ Î Ï ÕÊè Ü([DGHFN ×Ï ÒÑÒÏ ××å Ö ÛÜ áÏ ×ÖÏ Ö Ì ÚÏ ÖÏ ×Ò



(FR I UL HQG0 (FR I UL HQG0
5 HVSHFWGH OHQYLURQQHP HQWÇÔØÕØÍ ÒáÏ ÛÔÒ á ÒÛÜå Ó

(Q HOI LHOFRP SURP LVR GH (; $* 5 (6 FRQ HOP HGLR DP ELHQWH HOVLVWMP D (; $' (&. HVW£ GLVH³ DGR SDUD SRGHUVH GHVP RQWDU OR TXH I DFLOWD OD VHSDUDFLµQ GH VXV FRP SRQHQWMV SDUD SRGHU VHU UHFLFODGRV b / DV SLH] DV HVW£Q FRP SXHVWDV SRU P DWMULD SULP D YLUJHQ \ FHU£P LFD UHFLFODGD I DYRUHFLHQGR OD SUHYHQFLµQ GH UHVLGXRV $GHP £V ([DJ UHV VH RI UHFH FRP R SXQWR GH UHFRJ LGD GH ODV ODP DV ([DGHFN SDUD GDUOHV XQD QXHYD YLGD

-Q VKH I DLVKI XOFRP P LVP HQWRI (; $* 5 (6 Z LVK VKH HQYLURQP HQWVKH (; $' (&. VI VWMP LV GHVJ QHG VR EH GLVDVVHP EOHG Z KLFK I DFLOWDWMV VKH VHSDUDWRQ RI LW FRP SRQHQW VR EH UHF\ FOHG 7KH SLHFHV DUH FRP SRVHG RI YLUJ LQ UDZ P DWMULDOY DQG UHF\ FOHG FHUDP LFV I DYRULQJ Z DVWH SUHYHQWRQ -Q DGGLWRQ ([DJ UHV RI I HUV LWHO DV D FROHFWRQ SRLQWRU ([DGHFN ERDUGV VR JLYH VKHP D QHZ OLH

' DQV OH I HUP H HQJ DJ HP HQWG (; $* 5 (6 HQ I DYHXU GH OHQYLURQQHP HQW OH VI VWP H (; $' (&. HVWFRQ©X SRXU SRXYRLU ¬WH G«P RQW FH TXL I DFLOWM OD V«SDUDWRQ GH VHV FRP SRVDQW SRXU SRXYRLU ¬WH UHF\ F@V / HV SLª FHV VH FRP SRVHQWGH P DW² UH SUHP Lª UH YLHUJ H HWGH F«UDP LTXH UHF\ F@H I DYRULVDQW DLQVLOD SU«YHQWRQ GHV G«FKHW ' H SOXV (; $* 5 (6 VRI I UH FRP P H SRLQWGH UDP DVVDJ H GHV ODP HV (; $' (&. SRXUOHXUGRQQHUXQH QRXYHOH YLH

¬ ÛØØÜÎ Ï ÜÛÜÎ ÒÒ Û ÙÚÒÌ Ï ÚÐÏ ××ØÛÜæè ([DJ UHV Ô ÑÊËØÜÏ ØË ØÔÚÝÐÊè ã Ï Ó ÛÚÏ Î Ï ÛÒÛÜÏ ÖÊ (; $' (&. ÙÚÏ Î ×ÊÑ×ÊáÏ ×Ê Î Õé Î Ï ÖØ×ÜÊÐÊ áÜØ ØËÕÏ Í áÊÏ Ü ÚÊÑÎ Ï ÕÏ ×Ò Ï Ï ÔØÖÙØ×Ï ×ÜØÌ Î Õé ÙÏ ÚÏ ÚÊËØÜÔÒ ² ÑÎ Ï ÕÒé ÛØÛÜØéÜ ÒÑ ÙÏ ÚÌ Òá×ØÍØ ÛåÚæé Ò ÙÏ ÚÏ ÚÊËØÜÊ××ØÓ ÕÏ ÚÊÖÒÔÒ ÛÙØÛØËÛÜÎ Ýè ã Ï Ó ÙÚÏ Î ØÜÎ ÚÊã Ï ×Òè ØÜßØÎ ØÌ ´ ÚØÖÏ ÜØÍØ (; $* 5 (6 ÙÚÏ Î ÕÊÍ ÊÏ ÜÛé Ì ÔÊáÏ ÛÜÎ Ï ÙÝ×ÕÜÊ ÛËØÚÊ ÕÊÖÏ ÕÏ Ó (; $' (&. áÜØËå Î ÊÜæÒÖ ×ØÌ Ýè ÐÒÑ×æ

$ QWLGHVOL DQWH &ODVH 5 & &ODVV 5 & DQWLVOS SURSHUWLHV
$ QWLG«UDSDQW&ODVVH 5 & ´ ØçÞÞÒà ÒÏ ×Ü ÙÚØÜÒÌ ØÛÔØÕæÐÏ ×Òé 5 &

0 DWMULDOFHU£P LFR H[WXLGR FRQ XQ DOWR JUDGR GH DQWLGHVOL DP LHQWR &ODVL LFDFLµQ &/ $6(5 &

([WXGHG FHUDP LF WOH P DWMULDOZ LVK D KLJK DQWLVOS JULS 5 DWMG &/ $66 5 &

0 DWULDX F«UDP LTXH H[WXG« DYHF XQ KDXWGHJU« DQWLG«UDSDQW&ODVVL LFDWRQ &/ $66(5 &

ÇÔÛÜÚÝÎ ÒÚØÌ Ê××å Ó ÕÏ ÚÊÖØÍ ÚÊ×ÒÜ çÜØ ÖÊÜÏ ÚÒÊÕ ÛÌ å ÛØÔØÓ ÛÜÏ ÙÏ ×æè ÙÚØÜÒÌ ØÛÔØÕæÑéã ÑÊã ÒÜå ´ ÕÊÛÛÒÞÒÔÊà Òé ´ µª »» 5 &

q 3 Ur UZ ;

k ’ ¸ ×| -| ÑŒE

$GYDQWDJHV $YDQWDJHV ¹ ÚÏ ÒÖÝã Ï ÛÛÎ Ê

$SWR SDUD]RQDV UHVLGHQFLDOHV RFRP HUFLDOHV DQWR WEQWLWR
6XLWDEOH IRUUHVLGHQWLDORUFRP P HUFLDODUHDV KLJK WDIILF
$SWM SRXU]RQHV Uk VLGHQWLHOOHV RX FRP P HUFLDOHV JUDQG SDVVDJH
¹ ØÎ ßØÎ ÒÜÎ Õé Ð ÒÕå ß ÒÕÒ ÔØÖÖÏ Úá Ï ÛÔÒß ÙØÖÏ ã Ï ×ÒÓ Ì å ÛØÔÊé ÙÚØßØÎ ÒÖØÚÜæ

(OLWWP DUHJLWWDEOH ([DGHFNHV DSWR SDUD VX XVR HQ]RQDV GH DQWR WEQWLWR SRUX DQWDUHWLWQLD D OD DEUDµQ \ SRUXXVHOHYDGDV
FDUDFWWUJTWWFDV W¥FQLFDV

([DGHFNHGHFNLQJ LV VXLWDEOH IRUXVHLQ DUHDV VXEMHFWWR KLJK SHGHVWULDQ WWDIILF WKDQV WR LW KLJK DEUDVLRQ UHVLWDQFH DQG RXWWDQGLQJ
WWFKQLFDOSURSHUWHV

/ H V\ WW P H DP RYLEOH ([DGHFNHVWDSWM¢ ¬WH XWDL« GDQV GHV] RQHV GH JUDQG SDVVDJH SRXUVD KDXWM Uk VLWDQFH¢ ODEUDVLRQ HWWHV JUDQGHV
FDUDFW¥LUWJTXHV WMFKQLTXHV

»ÒÛÜ ÖÊ ([DGHFN ÙØÎ ßØÎ ÒÜÎ Õé ÒÛÙØÕæÑØÎ Ê×Òé Ì ÑØ×ÊßÛÒ×Ü ×ÛÒÌ ×å Ö Î Ì ÒÐÏ ×ÒÏ Ö ËÕÊÍØÎ ÊÚé Ì å ÛØÔØÓ ÜÙØÓÔØÛÜÒ ÔÒÛÜÒÚÊ×Òè ÒÌ å ÛØÔÒÒÖ
Ü ß×ÒáÏ ÛÔÒÖ ßÊÚÊÔÜÏ ÚÒÛÜÒÔÊÖ

5HVLWWMQWM DODV KHDGDV \ WMUP RHWWDEOH 5HVLWWDQFH WWR IURWWLFH WMP SHUDWXUH FKDQJHV
5«VLWWDQWDX JHOHWWWkHUP RWWDEOH ¶ ØÚØÑØÛÜØÓÔÒÓ Ò Ü ÚÖØÛÜØÓÔÒÓ

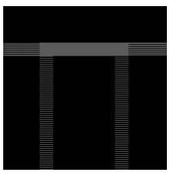
' HELGD D VX FDWLQXDD DEVRUPµQ GH DJXD ([DGHFNHVXQ SURGXFWWR UHVLWWMQWM D ODV KHDGDV $GHP £V VRSRUWWDBRV FDP ELRVEUXVFRV GH
WMP SHUDWXUD \ ODV GLDWWFLRQHV TXH HWWR SURYRFD 1 R VH GHIRUP D QLFRJHKRJXDV

' XH WR LW DP RWW] HUR Z DWMUDEVRUSWRQ UDWM ([DGHFNLV UHVLWDQWWR IURWWDQGLFH

-WFDQ DSOR Z LWKWWDQG VKDUS WMP SHUDWXUH FKDQJHV LWGRHV QRWEHFRP HGHIRUP HG DQG QHLWKHUGR WKH ERDUGV H[SDQG

(Q UDLVRQ GH VD TXDLQXDEH DEVRUSWRQ GHDX ([DGHFNHWWKQ SURGXLWk VLWWDQWDX JHO

' HSQXV LOVXSSRUWM BHV FKDQJHP HQW EUKVTXHV GH WMP S«UDWXUHHWBHV GLDWWMRQV TXH FHOD SURYRTXH 1 H VH G«IRUP HSDVHWQH Fk HSDVGHWMX[
«ÕÊÍØÎ ÊÚé ÙØáÙÒ×ÝÕÌ Ì ØÖÝÌ ØÎ ØÙØÎÕØã Ï ×Òè ([DGHFNéÌ Õéï ÜÜé ÖØÚØÑØÛÜØÓÔÒÖ ÙÚØÎ ÝÕÙØÖ
¸ × ÜÊÔÐÏ Ì å Î Ï ÚÐÒÌ ËÏ ÜÚÏ ÑÔÒÏ ÒÑÖÏ ×Ï ×Òé Ü ÖÜÏ ÚÊÜÝÚå Ò ÚÊÔâ ÒÚÏ ×Òé ÔØÜØÚå Ï çÙØÌ å Ñå Ì ËÏ Ü ¸ × ×Ï Î Ï Þ ØÚÖÒÙÝÏ ÜÛé Ò ×Ï ÚÊÛÜÚÏ ÛÔÒÌ ËÏ ÜÛé



6LVWMP D GH FRORFDFLµQ UHJLVWUDEOH 5HP RYDEOH V\ VWMP
6\ VW®P H GH SRVH ¢ ODP HV DP RYLEOHV »ÒÛÜÏ ÖÊ ÝÛÜÊ×ØÌ ÔÒ

/ D LQVWDODFLµQ GH ODV SLH] DV ([DGHFN VH UHDO] D P HGLDQWM XQ VLVWMP D SHUVRQDO] DGR GH FOSV SDUD FRQVHJXLUXQD FRORFDFLµQ U£SLGD \ £JLOFRQ OR TXH ORV SOD] RV GH HMMFXFLµQ GH REUD VH YHQ DP SODP HQWM UHGXFLGRV

([DGHFN SDUW DUH LQVWDOHG XVLQJ D FXVWRP L] HG FOS V\ VWMP 7KLV UHVXOW LQ D IDVWDQG DJLOH LQVWDODWRQ WKXV JUHDWO UHGXFLQJ WKH H[HFXWRQ WP H RI WKH Z RUN / LQVWDODWRQ GHV SLª FHV ([DGHFN VH U«DOH P R\ HQQDQWXQ V\ VW®P H GH FOFV SHUVRQQDOV« SRXUREWMQLUXQH SRVH UDSLGH HWOHVWM JU¤FH ¢ TXRLOHV G«ODLV GH[«FXWRQ GHV WDYDX[VRQWFRQVLG«UDEOHP HQWU«GXLW

¶ Ø×ÜÊÐ Î Ï ÜÊÕÏ Ó ([DGHFN ØÛÝã Ï ÛÜÎ ÕéÏ ÜÛé ÛÙØÖØã æè ÙÏ ÚÛØ×ÊÕÒÑÒÚØÌ Ê××ØÓ ÛÒÛÜÏ Öå ÔÕéÖÏ ÚØÌ Î ÕéÎ ØÛÜÒÐÏ ×Òé Ëå ÛÜÚØÓ Ò ÙÚØÛÜØÓ ÛËØÚÔÒ ÙÚÒ ÔØÜØÚØÓ Ñ×ÊáÒÜÏ Õæ×Ø ÛØÔÚÊã Êè ÜÛé ÛÚØÔÒ Ì å ÙØÕ×Ï ×Òé ÚÊËØÜ

$FFHVRULRV $FFHVVRULHV
$FFHVVRLLUHV ®ØÙØÕ×ÒÜÏ Õæ×å Ï çÕÏ ÖÏ ×Üå

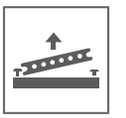
/ D DP SOD JDP D GH SURGXFWR ([DJUHV RIUHFH OD SRVLELOLGDG GH FRP ELQDUODV ODP DV ([DGHFN FRQ RWDV SLH] DV H[WXLGDV TXH VROXFLRQDQ GLIHUHQWMV DVSHFWRV WFQLFRV SHOGD³ RV \ FRURQDFLRQHV GH SLVFLQDV FRQ VLVWMP D VNLP P HU

7KH Z LGH UDQJH RI ([DJUHV SURGXFWV RIIHUV WKH SRVVLELOW RI FRP ELQLQJ ([DGHFN ERDUGV Z LWK RWKHUH[WXGHG HOHP HQWV WKDWWROYH GLIIHUHQWWMFKQLFDO DVSHFW VWMSV DQG FRSLQJ V IRUVNLP P HUV\ VWMP SRROV

/ DP SOH JDP P H GH SURGXLW ([DJUHV RIIUH OD SRVVLELOLW GH FRP ELQHUOHV ODP HV ([DGHFN DYHF G DXWHV SLª FHV H[WXG«HV TXLU«VROYHQWGLII«UHQW DVSHFW VMFKQLTXHV P DUFKHV HWFRXURQQHP HQW GH SLVFLQHV DYHF V\ VW®P H VNLP P HU

Â ÒÚØÔÒÓ ÊÛÛØÚÜÒÖÏ ×ÜÙÚØÎ ÝÔà ÒÒ ([DJUHV ÙÚÏ Î ÕÊÍ ÊÏ ÜÌ ØÑÖØÐ×ØÛÜæÔØÖËÒ×ÒÚØÌ Ê×Òé ÕÊÖÏ ÕÏ Ó ([DGHFN ÛÎ ÚÝÍ ÒÖÒ çÔÛÜÚÝÎ ÒÚØÌ Ê××å ÖÒ Î Ï ÜÊÕéÖÒ ÔØÜØÚå Ï ÚÏ â Êè ÜÚÊÑÕÒá×å Ï Ü ß×ÒáÏ ÛÔÒÏ ÊÛÙÏ ÔÜå ÛÜÝÙÏ ×Ò Ò ËØÚÜÒÔÒ ËÊÛÜÏ Ó×ØÌ ÛÛÒÛÜÏ ÖØÓ ÛÔÒÖÖÏ ÚÊ

´ è çâ×ØÖÖßÔåÔÖÜÉá ÔàÕÜØáçÔß×Øãåâ×èÖçâ- ×Üæ¢ØCÔ×âãÔåÔ ×Øæèà âáçÔå]



6HO GHFODUDWLRQ HQYLURQP HQWDOSURGXFWGHMJQHG VR GLVP DQWH 3URGXLWHQYLURQQHP HQWDODXWRG«FODU« FRQ©X SRXU¬WWH G«P DQWMK@ »ÊÖØÎ Ï ÔÕÊÚÒÙÝÏ Öå Ó çÔØÕØÍ Òá Ï ÛÔÒÓ ÙÚØÎ ÝÔÜ ÙÚÏ Î ×ÊÑ×ÊáÏ × Î Õé Î Ï ÖØ×ÜÊÐÊ

' –6(“ $' 2 &2 0 2 6–67(0 $ 5(&8 3(5$%/(

(OVLVWMP D GH FRQRFDFLµQ GH VRGRV QRV FRP SRQHQWMV GH ([DGHFN SHUP LWM TXH DO LQDOGH VX YLGD ½MO HCP DWMULDO FHUE P LFR DCJXDOTXH HCUHVWR GH HQHP HQWRV VH SXHGDQ VHSDUDU GH IRUP D LQGHSHQGLHQWM\ FODVLLFDUVH VHJ½Q QDWXUDQ] D\ WMSRQJ D GDQGR QXJDUD VX UHFXSHUDFLµQ\ GHVYLÉQGRVH GH OD FRUUHQWM GH UHMLGXRV (OGHMP RQWDWMHOVLWMP D KD GH QBYDUVH D FDER SRU SURWMFLµQ PXSHUDQWMV GH OD FRUUHQWM GH UHMLGXRV / OYH 72 5; GH P P P DJ D GH JRP D\ GHWMRUQLQGRUGH SXQWD SODQD (OSURFHGLP LHQWR GH UHFXSHUDFLµQ GHCP DWMULDO FRP HQJDUE SRUDIQRWMV SHUMLQHQWMV SDUD WMCHLQ DGHP £V GH DV XGDUVH GH ODV KHUUDP LHQWMV DGHFXDGDV / OYH 72 5; GH P P P DJ D GH JRP D\ GHWMRUQLQGRUGH SXQWM SODQD (OSURFHGLP LHQWR GH UHFXSHUDFLµQ GHCP DWMULDO FRP HQJDUE SRUDIQRWMV HQWMV VHUMLQ GH OD FRUUHQWM GH UHMLGXRV 3RVWMULRUP HQWM VH UHMLUE DE OD SUP HUD OOP D FHUE P LFD GH IRUP D REQOFXD DOVHQWMGR GH LQWMODFLµQ\ DV¯ SRGHUGBYDQWMU HCUHVWR GH ODV OOP DV FHUE P LFDV DGHP £V GH UHMLDUHVWRV FQSV 7RGRV QRV UDVWMHGV GH DQXP LQIR TXHGDE Q YLWRV HQ WRGR HCLQWMUYDQR GH OD LQWMODFLµQ D H[FHSFLµQ GHOSHUP HWMR GRQGH KDQ GH GHWMQ DUVH ODV OOP DV FHUE P LFDV HQ VHQWMGR FRQWMDUR D OD XELFDFLµQ GHO&/ –3 –1 –&–2) –1 VLHP SUH\ FXDQGR OD LQWMODFLµQ QR SHUP LWM HQ FDVR FRQWMDUR GHEHQ GHVLQWMODUVH QRV UDVWMHGV HQ SUP HUOXJDU «VWM KD GH H[WMDHUVH FRQ D\ XGD GH XQD P DJ D GH JRP D\ XQ GHWMRUQLQGRUGH SXQWM SODQD TXH HWMUFHUE SUHVµQ HQ VHQWMGR FRQWMDUR D OD QRJLWXG GHOLDWMHO) LQDOP HQWM HQ FDVR GH ILWMFLµQ FRQ VRUQLQGRV VH GHVDWMRUQLQDUE Q GHOVRSRUWM RV UDVWMHGV GH DQXP LQIR R EtHQ VL HWMXYLHUDQ SHJDGRV D VRSRUWM VH XVDUE OD P DJ D GH JRP D R HCP HQWMV VLP LODU HV SDUD VX UHMLDGD ([DJUHV VH RI UHFH FRP R SXQWM GH UHFRJLGD GH OD V OP DV ([DGHFN SDUD UHFXSHUDUDV FRP R P DWMULD SUP D SDUD OD IDEUFDFLµQ GH SURGXFWMRV FHUE P LFRV \ GDUBHV DV¯XQD QXHYD YLGD

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7KH VWMP RI SDFLQJ DOWKH ([DGHFN FRP SRQHQW DOBZ VWKDWDVWKH HQG RI LW XVHI XOLH WKH FHUDP LF P DWMULDO DV Z HCDV VWKH UHMWRI WKH HCP HQW FDQ EH VHSDUDWHG LQGHSHQGHQW DQG FDVLLHG WR QDWXUH DQG WSRQBJ\ JLYLQJ ULVH WR LW UHFRYHU DQG GLYHUVLQJ LW'URP WKH Z DVWM VWHDP 7KH GLVDVHP E\ RI WKH V\ WMP VKDOEH FDUULHG RXWE\ VSHFLDOLWW XVLQJ WKH DSSURSULDWM SHUVRQDOSURWMFWLYH HTXLSP HQWDQG XVLQJ WKH DSSURSULDWM WRROV P P 72 5; VSDQQHU UKEEHUP DOBWDQG IOWE ODGH VFUHZ GLLYHU 7KH P DWMULDOHFRYHU SURFHGXUH VK DOEEHJLQ E\ CRVHQLQJ WKH LQWMUP HGLDWM &/ –3 352 VEHWZHHQ FHUDP LF VDW XVLQJ WKH 72 5; VPSQQHUDQG DFFHWMLQJ HDFK FQS WKURXJK WKH JDS IRUP HG EHWZHHQ HDFK NRLQW 6XEVHTXHQW WKH IILWMFHUDP LF VDWMZ LOOEH UHP RYHG RECOTXHO WR WKH GLUHFWMRQ RI LQWMDODWMRQ LQ RUGHUWR EH DE@ WR QWWKH UHMWRI WKH FHUDP LF VDW LQ DGGLWMQ WR UHP RYLQJ WKH VH FQS \$QWKH DOXP LQLXP WMLSVZ LOO EH YLVE@ WKURXJKRXWKH LQWMDODWMRQ H[FHSWRUWKH SHUP HWMUZ KHUH WKH FHUDP LF VDW P XWMGH LQ WKH RSSRVLWM GLUHFWMRQ WR WKH &/ –3 SURYLGHG WKDWWKH LQWMDODWMRQ DOBZ VWRWKHUE LVH WKH WMLSV P XWMEH XQLQWMDODG ILWW WKLV P XWMEH UHP RYHG Z LWK WKH KHQS RI D UKEEHUP DOBWDQG D ODGW WMS VFUHZ GLLYHUWKDWZ LOOH[HUWSUHWXUH LQ WKH RSSRVLWM GLUHFWMRQ WR WKH FDVZ LOOH[HUWSUHWXUH LQ WKH WMLS) LQDOO LQ WKH FDVH RI VFUHZ IL[LQJ WKH DQXP LQLXP EDWMQV WKRXGS EH XQVFUHZ HG IURP WKH VXSSRUWWRU LL WKH\ DUH JQHG WR WKH VXSSRUWWKH UKEEHUP DOBWRU VLP LODU HBP HQW WKRXGS EH XVHG WR UHP RYH WKHP ([DJUHV RI IHUV LWWHO DV D FRQBFWRQ SRLQWRU([DGHFN VDW LQ RUGHUWR UHFRYHUWKHP DV UDZ P DWMULDO FRUWKH P DQXI DFWXUH RI FHUDP LF SURGXFW DQG WKXV J LYH WKHP D QHZ OLH

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/ H V\ VWP H GH P LVH HQ SODFH GH VRXV ΘHV FRP SRVDQW G([DGHFN SHUP HW ¢ Œ ILQ GH VD YLH XWΘH GH V«SDUHU LQG«SHQGDP P HQWΘH P DW«UDX F«UDP LTXH DLQVL TXH ΘH UHVWH GHV «@P HQW HWGH ΘHV FΘVVHUHQ IRQFWRQ GH ΘXU QDW«UH HW GH ΘXU WSRΘJLH FH TXL SHUP HW GH ΘHV U‹FXS«UHUHWGH ΘHV VRXVWΘLLH DX IΘX[GHV G«FKHW / H G«P RQΘJH GX V\ VWP H GRLW¬WH HIIHFW« SDU GHV VS«FLDOLWΘV XWΘDQW G«TXLSHP HQW GH SURWHFWRQ LQGLYLGXHΘH DSSURSU«HWΘHV RXWΘV DG«TXDW F@ 72 5; GH P P DLΘHWHQ FDRXWFKRXF HWΘRX QHYLV SΘDW / D SURF«GX UH GH U‹FXS«UDWRQ GHV P DW«UDX[FRP P HQFH SDUΘH GHVVHUUDJH GHV &/-3 352 LQWU«GLUHV HQWH ΘHV ΘP HΘHV GH F«UDP LTXH ¢ ΘDLGH GH Θ F@ 72 5; HWΘDFF ª V ¢ FKDTXH FΘS SDUΘHVSDFH IRUP « HQWH FKDTXH NRLQW3DU Θ VXLWH Θ SUHP lª UH ΘP H GH F«UDP LTXH VHUD UHWΘU«H REΘTXHP HQWSDUUDSSRUW¢ Θ GLUHFWRQ GLWΘΘWRQ DILQ GH SRYRLUVRXΘHV HU«WΘHV GHV ΘP HV GH F«UDP LTXH HQ SΘXV GHQΘHV HV FΘSV 7RXWΘV ΘHV EDQGHV GΘXP LQXP VHURQWYLVLEΘHV WRXWΘX GRQJ GH ΘΘQWΘΘWRQ ¢ OH[FHSWRQ GX S«Uª WH R» ΘHV ΘP HV GH F«UDP LTXH GRLYHQWJΘΘHU GΘQV Θ GLUHFWRQ RSSRV«H ¢ OHP SΘFHP HQWGX &/-3 ' ('‹3$57)-1 ¢ FRQGLWRQ TXH ΘΘQWΘΘWRQ ΘH SHUP HWΘH GΘQV Θ FΘV FRQWΘΘLH LΘ IDXWGDERUG G«VΘQWΘΘHU ΘHV EDQGHV FHΘXL FL GRLW¬WH UHWΘ« ¢ ΘDLGH GXQ P DΘΘHWHQ FDRXWFKRXF HWG XQ WRXΘHV «@P HQW VΘP SΘWH TXLH[HUFHUD XQH SUHVWRQ GΘV Θ GLUHFWRQ RSSRV«H ¢ FHΘH GH Θ ΘRQJXHU GH Θ EDQGH (QILQ GΘV ΘH FΘV GXQ I[DWRQ SΘWΘHV FRXWFKRXF HWG XQ WRXΘHV ¢ SRΘWH SΘWH TXLH[HUFHUD XQH SUHVWRQ GΘV Θ GLUHFWRQ RSSRV«H ¢ FHΘH GH Θ ΘRQJXHU GH Θ EDQGH (QILQ GΘV ΘH FΘV GXQ I[DWRQ SDU YLV ΘHV ΘWΘHV GΘXP LQXP GRLYHQW¬WH G«YLV«HV GX VXSSRUWRX VL HΘHV VRQWFRΘHV DX SSRUWΘH P DΘΘHWHQ FDRXWFKRXF RX GHV «@P HQW VΘP SΘWH LDLDLHV GRLYHQW¬WH XWΘΘ«V SRXU ΘHV UHWΘU (DJUHV VH SURSRVH FRP P H SRΘQWH FRΘHFWHΘ GHV ΘΘWΘHV ([DGHFN DILQ GH ΘHV U‹FXS«UHU FRP P H P DW lª UH SUHP lª UH SRXUΘ IDEULFDWRQ GH SURGXLW F«UDP LTXHV HWΘΘXGRQΘHUDLQVL XQH QRXYHΘΘH YLH

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»ÒÛÜÏ ÖÛÊ ÚÛÊÑÖÏ ã Ï ×Òé Ì ÜÏ ß ÔØØÖÙØ×Ï ×ÜØÌ ([DGHFN ÙØÑÌ ØÕéÏ Ü áÜØËå ÙØ ØÔØ×áÛÊ×ÒÒ ÛÚØÔÊ ÛÕÝÐËå ÕÏ ÚËÖÒáÏ ÛÔÒÓ ÖÊÜÏ ÚÒÛÊÕ ÔÛÔ Ò ØÛÜÊÕæ×å Ï çÕÏ ÖÏ ×Üå ÖØÐ×Ø ËåÕØ ÛÊÖØÛÜØéÜÏ Õæ×Ø ØÚÜ Ï ÜÕÜe Ò ÔÕÛÊÛÒÞÒàÒÚØÌ ÊÜe Ì ÛØØÚÜ Ï ÜÚÜ ÒÒ Û ÙÚÒÚØÌ ØÓ Ò ÜÒÙØÕÔÌ ÖÏ Ó áÜØÎ ËÏ ÜÌ ØÑÖØÐ×ØÚÜæÏ ÍØÌ ØÚÛÜÊ×ØÌ ÕÏ ×Òé ÒÌ å Ì Ï Î Ï ×Òé ÒÑÙØÜØÔÊ ØÚßØÏ Ø

ºÊÑËØÚÔÊ ÛÒÛÜ Öå Î ØÕÐ×Ê ÙÚØÒÑ ØÏ ÒÜæÛé ÛÙÏ àÒÊÕÒÛÜËÒÒ Û ÒÛÙØÕæÑØÌ Ê×ÖÏ Ö ÛØØÚÜ Ï ÜÚÜ Ýè ã ÒßÛÚÏ Î ÜÛ Ò×Î ÒÌ ÖÏ ÝÊÕæ×ØÓ ÑÊã ÒÜå Ò ÛØØÚÜ Ï ÜÚÜ Ýè ã ÒßÒ×ÛÜÚÝÖÏ ×ÜØÌ ÍËÏ á×ØÍØ ÔÕè áÊ 72 5; ÖÖ ÚÏ ÑÒ×ØÌ ØÍØ ÖØÕÒÜÕÊ Ò ÙÕØÛÔØÓ ØÛ Ï ÚÜÒÒ ¹ ÚØàÏ Î ÝÚÊ ÒÑ ÕÏ áÏ ×Òé ÖÊÜÏ ÚÒÊÔÊ ×ÊáÒ×ËÏ ÜÜé Û ØÛÕÊËÕÏ ×Òé ÙÚØÖÏ ÐÝÜØá×å ß &/-3 352 ÖÏ ÐÎ Ý Õ ÚËÖÒáÏ ÛÔÒÒÒ ÙÕÊ×ÔÊÖÒ Û ÙØÖØã æè ÍËÏ á×ØÍØ ÔÕè áÊ 72 5; Ò Î ØÛÜÝÙÊ Ô ÕÊÐÎ ØÓ ÕÕÒÙÛ áÏ ÚÏ ÑÑÊÑØÚ ØËÚÊÑØÌ ÊÌ â ÒÓÚé ÖÏ ÐÎ Ý ÔÊÐÎ å Ö ÛØÌ Î Ò×Ï ×ÖÏ Ö ±ÊÜ Ö Û×ÒÓËÏ ÜÜé ÙÏ ÚÏ Êé ÕÏ ÚËÖÒáÏ ÛÔÊé ÙÕÊ×ÔÊ ÙØÌ ÝÍÕØÖ Ô ×ÊÙÚÊÌ ÕÏ ×Òè ÝÕÕÊÎ ÔÒ áÜØËå ÖØÐ×Ø Ëå ÕØ ÙØÌ ×éÜe ØÛÜÊÕæ×å Ï ÕÏ ÚËÖÒáÏ ÛÔÒÏ ÙÕÊ×ÔÒ Ì Î ØÛØÕ×Ï ×ÖÏ Ô Û×éÜÒè çÜÒß ÕÕÒÙÛ ¬Ü ÊÕè ÖÒ×ÖÏ Ì å Ï ÙÕÊ×ÔÒ ËÝÍ ÝÚ Ì ÖÏ ×å ×Ê ÙÚØÜé Ð Ï ×ÒÒ Ì Ü Ï Ó ÝÚÜÊ×ØÌ ÔÒ ÑÊ ÒÜÕÕè áÏ ×ÖÏ Ö ÙÏ ÚÒÖÏ ÜÚÊ ÍÎ Ï ÕÏ ÚÊÖÒáÏ ÛÔÒÏ ÙÕÊ×ÔÒ Î ØÕÐ×å ÛØÕÕæÑÖÜbe Ì ×ÊÙÚÊÌ ÕÏ ×ÒÒ ÙÚØÜÒÌ ØÙØÕØÐ×ØÖÒ ÚÊÛÜÒØÕØÐÏ ×Òè 67$57 (1' &/-3 ÙÚÒ ÝÚÕØÌ ÒÒ áÜØ ÝÚÜÊ×ØÌ ÔÊ ÙØÑÌ ØÕéÏ Ü çÜØÛÏ Ï ÕÊÜbe Ì ÙÚØÜÒÌ ×ØÖ ÛÕÊ×ÔÒ Î ØÕÐ×å Ëå Ùbe Û×ÊáÊÕÊ Î Ï ÖØ×ÙÒÜØÌ Ê×å Ø×Ò Î ØÕÐ×å Ëå Ùbe ÝÍ ÊÕÏ ×å Û ÙØÖØã æè ÚÍ ÑÒ×ØÌ ØÍØ ÖØÕØÚÔÊ Ò ØÛÏ Ï ÚÜÒÒ Û ÙÕØÛÔÒÒÖ ×ÊÔØ×Ï á×ÒÔØÖ ÔØÚØÚÊé ËÝÍ Ï Ü ØÔÊÑå Ì ÊÜbe Î ÊÌ ÕÏ ×ÖÏ Ì ×ÊÙÚÊÌ ÕÏ ×ÒÒ ÙÚØÜÒÌ ØÙØÕØÐ×ØÖ Î ÕÒ×Ï Ì ÛÕÊ×ÔÒ · ÊÔØ×Ï à Ì ÛÕÝáËÏ Ì Ò×ÜØÌ ØÍØ ÛÚÏ ÙÕÏ ×Òé ÊÕè ÖÒ×ÖÏ Ì å Ï ÚÏ ÓÒÒ ÛÕÏ Î ÝÍ Ü ØÜÛÚÝÙÒÜbeØÜ ØÙØÚØÚå ÒÕÒ Ï ÛÕÒ Ø×Ò ÙÚÒÒÕÏ Ï ×å Ô ØÙØÚÜÏ Î Õé ÒßÒ ÝÍ ÊÕÏ ×Òé ÛÕÏ Î ÝÍ Ü ÒÙÙØÕæÑØÌ ÊÜbe ÚÍ ÑÒ×ØÌ å Ó ÖØÕÒÜÚØÔÒÒÕÒ Ê×ÊÕØÍÒá×å Ï çÕÏ ÖÏ ×Üå ´ ØÖÙÊ×Òé ([DJUHV ÙÚÏ Î ÕÊÍ ËÏ Ü ÛÏ Ëé Ì ÔÊáÏ ÛÛÏ Ï ÙÝ×ÔÜÊ ÚËØÚÊ ÙÕÊ×ØÔ ([DGHFN áÜØËå Ì Ï Ú×ÝÜbe ÒßÒ Ì ÔÊáÏ ÛÛÏ Ï ÛÅÚæé Î Õé ÙÚØÒÑ ØÍ ÛÜÏ Ê ÕÏ ÚËÖÒáÏ ÛÔÒßÒ ÒÑÏ Ï ÕÔÓ Ò ÜÊÔÒÖ ØËÚÊÑØÖÔ Î ËÜbeÒÖÖ ×ØÌ Ýè ÐÒÑ×æ

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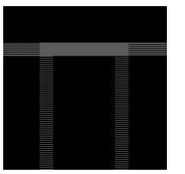
(OVLVWHP D ([DGHFN HWWZ GHWWLQDGR SULQFLSDOP HQWH FRP R VXHOR SDUD WHUUD] DV SDWLRV R SLVFLQDV HQ] RQDV UHVLGHQFLDOHV 6LQ HP EDUJR VX JUDQ UHVLVWHQFLD \ YHUVDWLOGDG OD KDQ FRQYHUWLGR HQ VROXFLµQ SDUD] RQDV GH DOWR WUÆQVLWR FRP R SDVHRV GH] RQDV P DUÑWP DV P XHOHV R] RQDV FRP XQHV GH KRWHOHV RILFLQDV HWF

/ H VI VWVP H ([DGHFN HWWSULQFLSDOHP HQWGHWWLQ« ¢ ¬WUH HP SOR\ « FRP P H VROGH WHUUDVVHV SDWLRV RX SLVFLQHV GDQV GHV] RQHV U‹VLGHQWLHOHV 1 «DQP RLQV VD JUDQGH U‹VLWWQFH HWWD YHUVDWLOWV HQ IRQWXQH VROXWLRQ SRXU OHV] RQHV GH JUDQG SDVVDJH FRP P H OHV SURP HQDGHV P DUWLP HV OHV WHWVHV RX OHV SDUWLHV FRP P XQHV GK¶WHOV EXUHDX[HWF

([DGHFN LV SULP DULO LQWHQGHG DV IORRULQJ IRU WHUUDFHV SDWLRV RUVZ LP P LQJ SRRO LQ UHVLGHQWLDO DUHDV + RZ HYHU GXH WR LW KLJK UHVLWWQFH DQG YHUVDWLOW LWLV DOR VXLWDE OH IRUKLJK WUDIILF DUHDV VXFK DV VHDI URQWSURP HQDGHV TXD\ VLGHV WKH FRP P XQDODUHDV RI KRWHOV DQG RIILFHV

»ÒÛÜÏ ÖÊ ([DGHFN Ì ØÛ×ØÌ ×ØÖ ÙÚÏÎ ×ÊÑ×ÊáÏ ×Ê Î Õé ×ÊÙØÕæ×å ß ÙØÕÚå ÜÒÓ Î Õé ÜÏ ÚÚÊÛ Î Ì ØÚØÌ ÒÕÒ ËÊÛÜÏ Ó×ØÌ Ì áÊÛÜ×å ß Î ØÖÊß ¼Ï Ö ×Ï ÖÏ ×ÏÏ ÏÍØ ËØÕæâ Êé ÝÛÜØÓáÒÌ ØÛÜæ Ò Ý×ÒÌ Ï ÚÛÊÕæ×ØÛÜæ ÛÎ Ï ÕÊÕÒ ÏÍØ ÚÏâ Ï ×ÒÏ Ö Î Õé ÑØ× Û Ì å ÛØÔØÓ ÙÚØßØÎ ÒÖØÛÜæè ÜÊÔÒß ÕÊÔ ÖØÚÛÔÒÏ ×ÊËÏ ÚÏ Ð×å Ï ÙÒÚÛå ÒÕÒ ØËã ÒÏ ÑØ×å ØÜÏ ÕÏ Ó ØÞÒÛØÌ Ò Ü Î



=RQDV UHVLGHQFLDOHV H[VWULRUHV VWULUD] DV D] RWHDV SRUFKHV NDUGLQHV
2 XWGRRU UHVLGHQWLDODUHDV VWULUFHV URRIVRSV SRUFKHV JDUGHQV HWF
=RQHV U«VLGHQWLHOHV VWULUVVHV VRLW VWULUVVHV SRUFKHV NDUGLQV
¸ ÜÕÚåÜåÏ ÐÒÕÕåÏ ÑØ×å Ü ÚÚÊÛå ÔÚåâÒÌÏÚÊ×Îå ÛÊÎå

([DGHFN HV HOSDYLP HQWR LGHDOSDUD HVSDFLRV H[VWULRUHV GH OD YLYLHQGD FRP R VWULD] DV D] RWHDV SRUFKHV SDWRV R NDUGLQHV (OVLVWWP D GH VXWHFµQ VH SXHGH FRQFDUP HGLDQWH P DWHULDOHV DGKHVLYRV \ QR HV QHFHVDUR DWRUQLOODUR DOSRUWH SRUOR TXH VH HYLWDQ SRVLEOHV IILOWDFLRQHV GH DJXD

([DGHFN LV LGHDO IRU RXWGRRU DUHDV RI WKH KRP H DV GHFNLQJ RQ WHULDFHV URRIWRSV SRUFKHV SDWRV DQG JDUGHQV –WFDQ EH DVVHP EOHG ZLWK DGKHVLYH P DWHULDOV LQWWDG RI VFUHZ LQJ WKH FRQQHWWRUV WKH VXEWUDWH VXSSRUW« YLWDQWDLQL«YHQWXHOHV IILOWDWRQV GHDX

([DGHFN HWWDOH SODQFKHUS DUDLWSRXUHV HVSDFHV H[WULHXUV GHVORJHP HQWV WKOY TXH WHULDVHV WRLW WHULDVHV SRUFKHV SDWRV RX NDUGLQV / H \ WWP H GH IL[DWRQ SHXW«WH FRQ HWCQ HWCQ HVSDV Q«FHWDDLH GH OHYLWHUDX VXSSRUW«YLWDQWDLQL«YHQWXHOHV IILOWDWRQV GHDX

([DGHFN éÏ ÕéÏ ÜÚé ÒÏ Ï ÊÕ»×å Ö ÙØÛÚå ÜÒÏ Ö Î Õé ØÚÕÚå Üå ß ÙÚØÛÚÊ×ÚÜÏ Î ØÖÊ ÜÊÔÒß ÔÊÔ Ü ÚÚÊÛå ÔÚåâÒÌÏÚÊ×Îå Î Ì ØÚå ÒÕÕ ÛÊÏå ´ÚÏÏ ÙÏÐ×Êé ÙÒÚÜ ÖÊ ÖØÐÏ ÜËå Üæ ÚÊÑÖÏ ã Ï ×Ê Û ÒÚÙØÕ»ÑØÌ Ê×ÒÏ Ö ÊÎ ÍÏ ÑÕÌ ×å ß ÖÊÜ ÚÒÊÕØÌ Ò ×Ï ×ÝÐ×Ø ÙÚÒÌ Ò×áÒÌ ÊÜæ Ï Ï Ô ØÙØÚÏ ÙØçÜØÖÝ ÖØÐ×Ø ÒÑËÏ ÐÊÜæ ÝÜ áÏ ÔÌ Ø Îå

ƒ UHDV S½EOLFDV 3XEOLF DUHDV
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3HUP LWWUHFXEULU] RQDV GH RFLR £UHDV GH SDVR \ FDP LQRV SHDWRQDOHV HQ NDUGLQHV SDUTXHV SOD\DV \ WWULD] DV ([DGHFN HV FDSD] GH LQWWJUDUVH FRQ RUJLQDOGGDG HQ FXDOTXLHUFRQWW[WR SDLVDTWWFR \ DGHP £V RI UHFH XQD HQHYDGD UHWLWWQFLD D OD KXP HGDG \ D OD DOWV DWWP SHUDWXUDV

–WFDQ EH XVHG DV GHFNLQJ LQ OHLVXUH DUHDV DFFHVV DUHDV WWULDFHV DQG SDWKZ D\ VLQ JDUGHQV SDUN DQG RQ EHDFKHV : KDWWYHUWKH EDFNJURXQG VHWWLQJ ([DGHFN ILW LQ Z LWK LW VXUURQGLQJ V Z LWK VWVDWK RUJLQDOV JXDUDQWHLQJ D KLJK UHVLWDQFH WR P RLWXUH DQG KLJK WMP SHUDWXUHV

3HUP HWGH UHFRXYULGHV DLU HV GH OR LVU GHV] RQHV GH SDVD] H HWGHV FKHP LQV SL«VRQQLHUV HQ NDUGLQV SDUFV SOD\HV HWXWWULDVHV &DSDEOH OH VLQWJUHU DYHF RUJLQDODW GDQV VRXWFRQWW[WH SD\ VDJHUGH SDUVD KDXWU«VLWDQFH ¢ OKXP LGLW¥ HWDX[WMP S«UDWXUHV «OHY«HV

¸ × ÙØÑ ØÕéÏ ÜØßÌ ÊÜÒÜæÑØ×å ØÚÏå ßåÊ ÙÚØßØÎå Ò ÙÏâ Ï ßØÎ ×å Ï Î ØÚÐÒÕÌ ÛÊÏ ÊßÌ ÙÊÚÕÊß ÙÕéÐÊß Ò ÜÚÚÊÛÊß ÛÙØÛÐÆ×å ß Ò×ÜÏ Í ÚÒÚØÎ ÊÜæÛé Û ØÚÒÍ Ò×ÊÕæ×ØÚÜæè Ì Õè ËØÖ ÕÊ×Î â Ê Þ Ü«ØÖ ÕØ×ÜÏ ÕÚÜÏ ËÕÊÍØÎ ÉÚé Ì å ÛØÐÕØÓ ÝÚÜØÓá ÒÌ ØÚÜÒ ÔÌ ÕÊÐ×ØÚÜÒ Ò Ì å ÛØÐÕÒÖ ÜÏ ÖÜÏ ÚÊÜÝÚÊÖ

=RQDV FRPP HUFLDOHV \ GH DOR WWE QWLWR &RPP P HUFLDOODUHDV KLJK SHGHVWULDQ WWDIILF DUHDV
=RQHV FRPP P HUFLDOHV HWGH JUDQG SDVVDJH ´ ØÖÖÖÏ ÚáÏ ÛÔÒÏ ÙØÖÖÏ ã Ï ×Òé Ò ÑØ×å ÛÒ×ÜÏ ×ÛÒÌ ×å Ö Î Ì ÒÐÏ ×ÒÏ Ö

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([DGHFN H[WXKGHG SRUFHODLQ ERDUGV DUH VXLWDEOH IRUKLJK SHGHVWULDQ WWDIILF DUHDV VXFK DV KRWWHOV UHWWDXUDQWV WKH KRVSLWDOV VHFWRUDQG XUEDQ GHYHBOPHQWV SURMHFWV GXH WR WKHLUKLJK P HFKDQLFDOWWLWXQFH DQG GXUDELOLWW GR SRUWWV DQG KLJK DEUDVLRQ DQG WWDLQ UHWWLWWQFH

/ H JU³ VF«UDP H H[WXG« ([DGHFN HWWDG«TXDWWSRXGHV] RQHV GH JUDQG SDWWDJH FRP P HK¶WWDOY UHWWDXUDQWV VHFWWXKRVSLWDOV HWSURMHWV XUEDQLWWTXHV JU³FH ¢ VD U«VLWWDQFH P «FDQLTXH HWW¢ ODEUDWRQ VD U«VLWWDQFH DX[WDFKHV DLQLTX ¢ VD KDXWW GXUDELOLW¥ HWSRUWWV DQG KLJK DEUDWRQ DQG WWDLQ UHWWLWWQFH

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([DGHFN FDQ EH XVHG WR FUHDWW SDWK Z D\ VEHWZ HHQ EHDFKHV RUDV GHFNLQJ DURXQG SRROV DQG OD–WFRP ELQHV D KLJK GHJUHH RI VDIHW¥ WKDQN WR LW &/ $66 QRQ VODS SURSHUWHV Z LWK K\JLHQLF DQWLEDFWULDOSURSHUWHV

1 RWH SURGXLWRI UH OD SRWLEL[GGDG GH FU«HUGHV SDWZD JHV HQWH SOD\ HQYLLRQQHP HQW GH SLVFLQH HWWDFV HQ JDUDQWWXVDQWD V«FXULW¥ FDULOV DJLWG XQ SURGXLWDQWG«UDSDQW&/ $66(HWK\ JL«QLTXH JU³FH ¢ VHV SURSU«W¥ DQWEDFWULQHQHV

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(Q FXDOTXLHUFDVR (DV SLH]DV ([DGHFN QR SRGLE Q HQ QLQJ XQD FLUFXQWØQFLD HVWØU VRSRUWØGDV SRUP HQRV GH UDWHHDV GH VXMHFFLµQ

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/ H V\ WWP H ([DGHFN SHXW VIQWØŒHU GH GLI«UHQWV P DQ UHV SRXU FU«HU GHV HVSDFHV SU«VHQWØQW GHV GHMQV YDU«V 2 Q SHXWØH SRVHU DYHF (DV (DP HV HQ (DJQH R» (DV NRLQW FR±QFLGHQWWØQW (D YHUWFDØH TX¢ OKRUL]RQWØH RX DYHF (DV (DP HV HQ G«FD@ XQ GHMQ FRP SRV« R» (DH NRLQW KRUL]RQWØO GH FKDTXH (DP H FR±QFLGH DYHF (D P RLWW« GH (D ŒRQJXHU GH (D (DP H DGNØFHQWH
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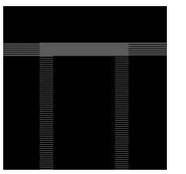

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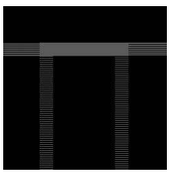
È ¦ÞÏDGHFNÞÓ ØÆÏÔÛÙÏ åÛÖÏÆÏÜÛÞ×åÛÜ ÚÆÏÑ××äÏØÆßØÎ ÒÖØÛÙÒ ÙØÛÙØé××ØÍØÒÎØÛÙØéã ÏÍØØÆÜÖÝÐÒÌ Ê×Òé ¸ × ÜÊÔÐÏ éÌ Õéï ÜÛé çÔØÕØÍÒáï ÛÔÒÁÒÛÛå Ö ÜÊÔÔÊÔ×Ï ÛÚÏ ËÝÏ ÜÒÛÙØÕæÑØÌ Ê×Òé ßÒÖÒáï ÛÔÒß Ì Ï ã Ï ÛÜ ÒÕÒ

Î Õé ØÆÏ ÛÙÏ áÏ ×Òé Ì ØÍ Ø×Ï ÙÚØ×ÒàÊÏ ÖØÛÙÒ ÍÏ ÚÓÏ ÜÒÑÊà ÒÒ ÙÚØÌ ÝÔÛÊ · ÊÙØÕæ×ØÌ ÙØÕÅ ÜÒÏ ([DGHFN Ì å ßØÌ ÒÜ ×Ê Úå ×ØÔ Û Î ÒÑÊÓ×ØÒ <RKR ÛÏ ÚÓÏ Ó Ì Î ØßÞ×ØÌ Õ ××ØÓ Î Ï ÚÏ Ì ØÓ Ì Ùé ÜÒ ØÜÜÏ ×ÔÊß 2 DN 0 DSŒH 1 DWXUDO 7HFD $QWFR Ò * UH\ ÚØÏ ÚÏ ÖÏ ××ØÍØ ÛÜÒÕé ÔØÜØÚå Ï ÒÌ Ï ÊÔæ×Ø Ì ÙÒâ ÝÜÛé Ì Õè ËØÌ ÙÚØÛÜÚÊ×ÛÜ Ø ÙØáÏ ÜÊé çÜÜÏ ÜÒÖÝ ÙÚØá×ØÜÛæ Ò Î ØÕÍØÌ Ï á×ØÛÜæ Û ÙÚØÛÜØÜØÓ ÛËØÚÔÒ Ò ØËÛÕÝÐÒÌ Ê×Òé ÇÜØÜ ÙÚØÌ ÝÔÜ ÖØÐÏ Ü Ëå Üæ ÚÊÑÚÊËØÜÛÊ× Û Î ÚÝÍ ÒÖÒ ÜÏ ÕÜÝÚÊÔÒ Ò à Ì Ï ÜËÔÒ Ì ÑÊÌ ÒÜÒÖØÛÜÒ ØÜ ÜÒÙÊ ÙÚØÌ ÛÛÊ Ò ÙØÛÚÏ Ë×ØÜÜ Ó



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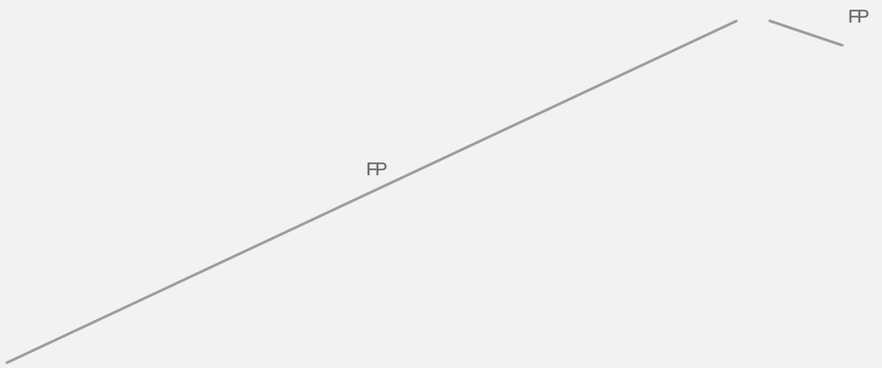

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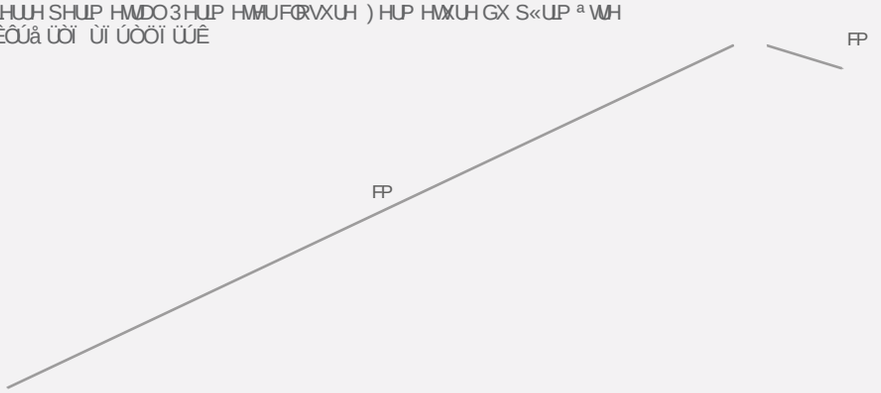

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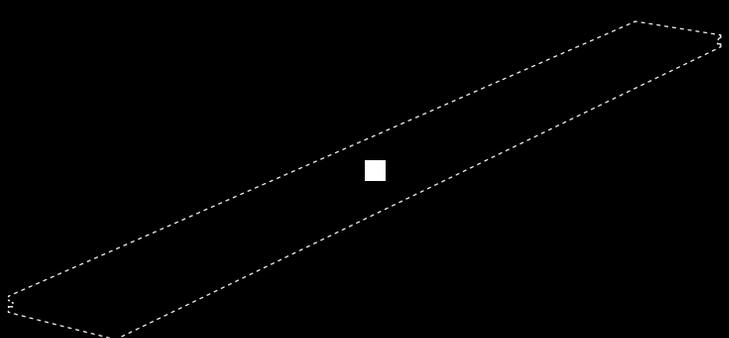

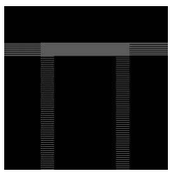

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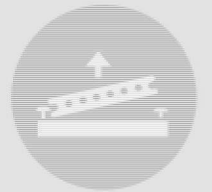
([DGHFN HWWXQ SDQFKU WMFKQLTXH SDUDLWSRUU GHV WMULDVHV HWWRLW WMULDVHV GHV ORJHP HQW Uk VLGHQWLHOY SRUU VD IDFLOLW GH SRVH HWSRUU RI ULUD SRVLEL GLQWXGHU GHV WMYP H DYHF GHV FRGHV FRP SRVLWM VDQV EHVRLQ GH YLVHU DX VRO «YLWQWDLQL G«YHQWXHGHV ILGWDWRQV GHDX

([DGHFN çÙØ ÞÊÕãâ ÙØÕ ÛØÙØÚå Ó ÒÏ Ï ÊÕãæ×Ø ÙØÎ ßØÎ ÒÙ Í Õé Ü ÚÚÊÛ Ò ÛÚåâ ÐÒÕÂß Î ØÓØÎ ÒÑ ÑÊ ÙÚØÙØÚå Ï Í Ø ÚÊÑÖÏ ã Ï ×Óé Ò Ì ØÑÖØÐ×ØÚÙÒ ÝÚÜÊ×ØÎ ÕÒ ÛÒÛÜ Öå ÜÛØÖÒÙØÑÖÜ×å ÖÒÒ ÕÕÏ éÖÒÒ ËÏ Ñ ×Í ØËßØÎ ÒÒØÚÙÒ ÙÚÒÌ Ò×áÒÌ ÊÜæ Ô ØÙ×ØÎ Ì áÜØ ÙØÑ ØÕéÏ ÜÒÑËÏ ÐÊÜæì ØÑÖØÐ×å ß ÝÜ áÏ ÔÌ ØÎ å



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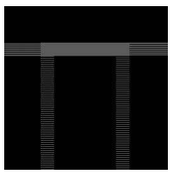



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DGHP £V GH VHUVRVDOP HQWM LJ QTXJR FRQ XQD
HOHYDGD UHVLVWMQFLD D OD KXP HGDG D ORV FDP ELRV
GH WMP SHUDWXUD \ D OD VXFFLµ Q GHOYLHQWR

([DGHFN LV SHUHFWRUZ DONZ D\ V IRRVSDWKV DQG
WMUUDFHV LQ JDUGHQV DQG SDUNV VLQFH LWE OHQGV
LQWR WKH EDFNJURXQG VHWMQJ Z LWK RUJ LQDOW –WV
DOVR IXOO ILUH UHVLVWDQWDV Z HOODV KDYLQJ D KLJK
UHVLVWDQFH WR P RLVWXUH WMP SHUDWXUH FKDQJHV DQG
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([DGHFN HVWOH FKRL[LG«DOSRXUUHFRXYULUOHV DOQ HV
HWOHV FKHP LQV GDQV OHV NDUGLQV OHV SDUFV HWOHV
WMUUDVVHV SRXYDQWVLQWJUHUDYHF RUJ LQDOW GDQV
QLP SRUWM TXHOFRQWM[VM SD\ VDJHU VRXWHQ «WDQW
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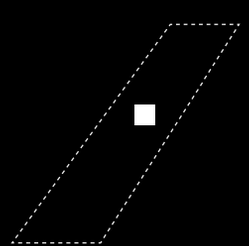

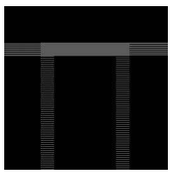

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SRUVX JUDQUHVLVWHQFLD DOWDEUDVLQ\ DOWDV
P DQFKDV VX GXUDELOLGDG\ EDMR SRUWLGDG

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DV KRWHOV UHVWDXUDQWV VKH KRVSLWDOV VHFWRUDQG
XUEDQ SURMHFWV JLYHQ LW KLJK WUDLQ WDQG DEUDVLRQ
UHVLVWDQFH LW GXUDELOLWV DQG LW ORZ SRURVLW

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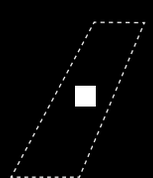

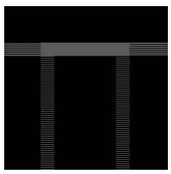

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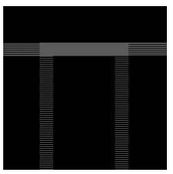

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ÇHDSSEHFN HVW LG«DO SRUU FH WSH FDUILSRVª GH XQ KDWGHJUU GH SURSU«WªV DQG«DPVHVHVKQ P DWUDX DQWLEDFWHQ &RP P HLOVDJLWG XQ SOŒQFKUVXU«ŒNY« LQ DFLOLWH «JDŒP HQWQ YDFXDWRQ GH QHDX ([DGHFN ÕÎ Ï ÊÕ«× Ø ÙØÎ ßØÎ ÒÙÎ Õé çÙØÍ Ø ÜÒÙÊ ÙÚØÙÚÊ× ÛÙ Ê ÚÊÔ ÕÊÔ ØÆËÕÊÎ ÊÏ ÙÌ å ÛØÔØÓ ÕÙ ÙÎ ×æè ÙÚØÙÒÌ ØÛÔØÕ«Ñéã Ï Ó ÑÊã ÒÙå Ò éÌ Õé Ï ÚÚé Ê× ÙÒÉÊÔÙ ÙÒÉÕ«× å Ò ÒÉÙ ÙÒÉÕØÓ · ÊÕÒá ÒÏ Þ ÊÕ«å ÙØÕÊ ÚÊÔÐÏ ØÆËÕÌ áÊÏ ÜÚÙØÒÌ Ø Î å

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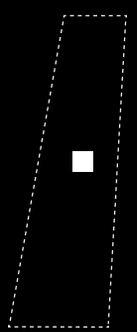

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&XHQWD DGHP £V FRQ ODV YHQWDMDV GH XQ VLVWHP D GH ILJDFµQ IRVDQWH FRP R O DEHUXUD LQGLYLGXDO GH WRGDV ODV OP DV R TXH IDFLOLWD HO DFFHVR DO £UHD LQIHULRU DQWH FXDOTXLHUWLSR GH QHFHVLGDG

([DGHFN LV DQ DFFHVV IORRU VWHP P RXQWG RQ WRLWV Z LWK D VSDFH XQGHUQHDWK Z KHUH FDEOHV SISLQJ DQG RWKHU QHVZRUNV FDQ HDVLO EH FRQFHDOHG -WKDV DOOWKH DGYDQWDJHV RI D IORDWLQJ IORRU VWHP VXFK DV WKH SRVVLEOH UHP RYDO RI LQGLYLGXDO ERDUGV LQ RUGHU WR DFFHVV WKH DUHD EHORZ

([DGHFN HWXQ VW WHP H HQUHJLVWUDEOH VXSSRUW SDU GHV ODVWHV TXL SHUP HW GH GLVWLEXHU OHV LQVWDOODWLRQV HWOH F¤EODJ GQV O SDUWH LQI«UIHXUH GH P DQ¹ UHFRQ RUWDEOH HWXP S OH
-OSUkVHQWH «JDOP HQVOHV DYDQWDJHV GXQ VW WP H GH IL¸DWRQ IORWWDQW FRP P H ORXYHUXUH LQGLYLGXHOH GH WRXWHV OHV OP HOHV FH TXL IDFLOWH OFFª V ¢ O] RQH LQI«UIHXUH SRXU WRXWWSH GH EHWRQ

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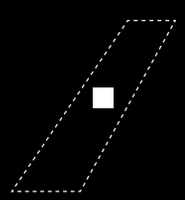

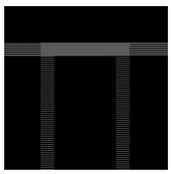

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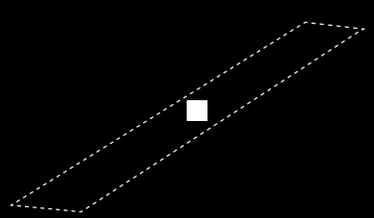

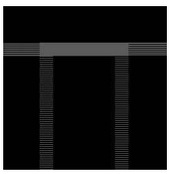



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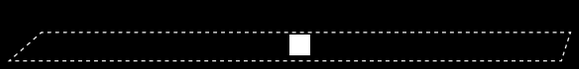

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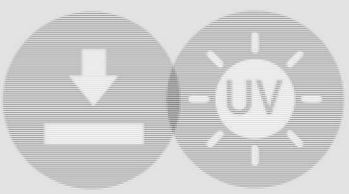

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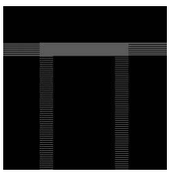

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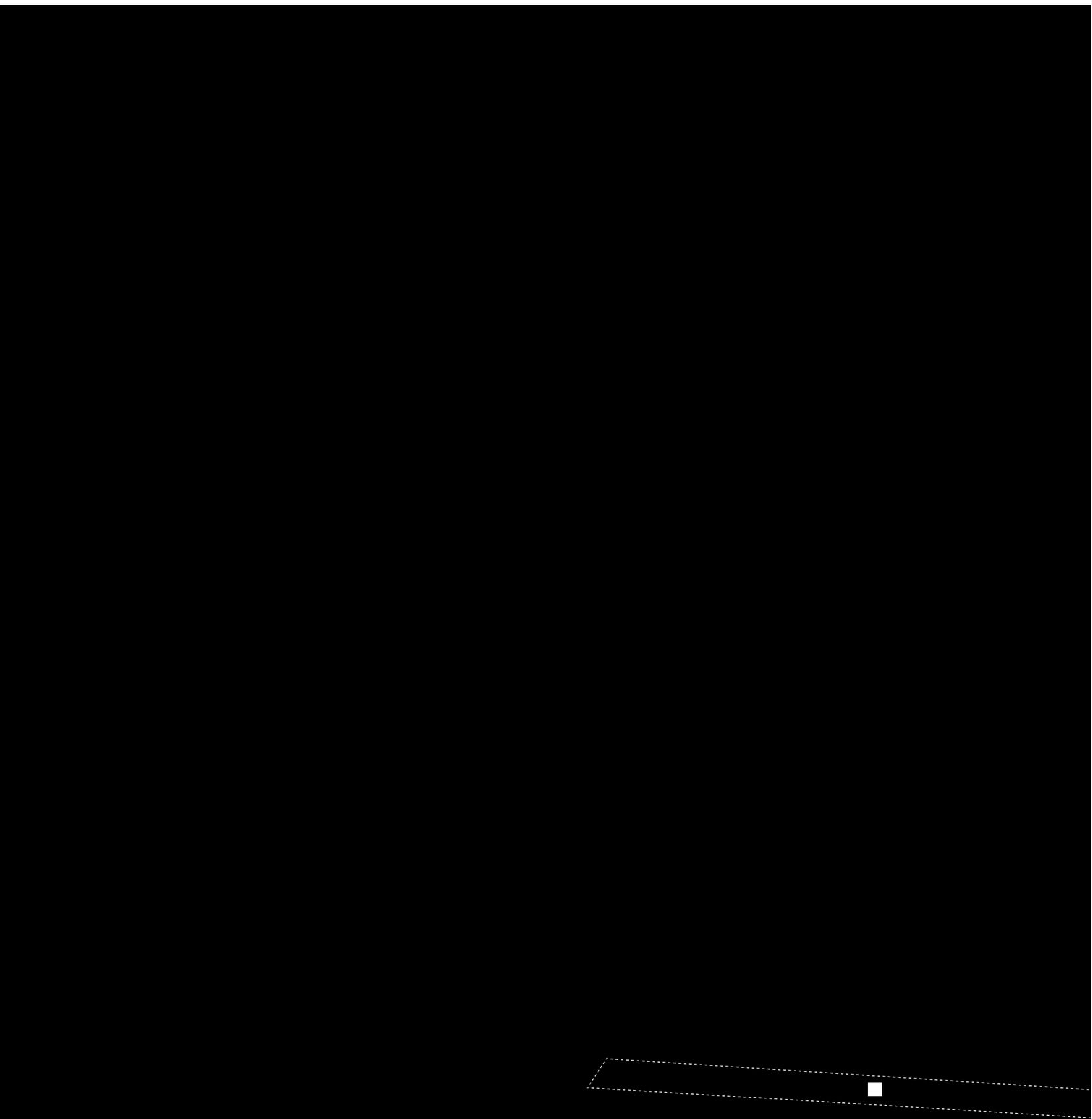

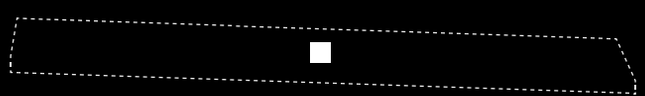

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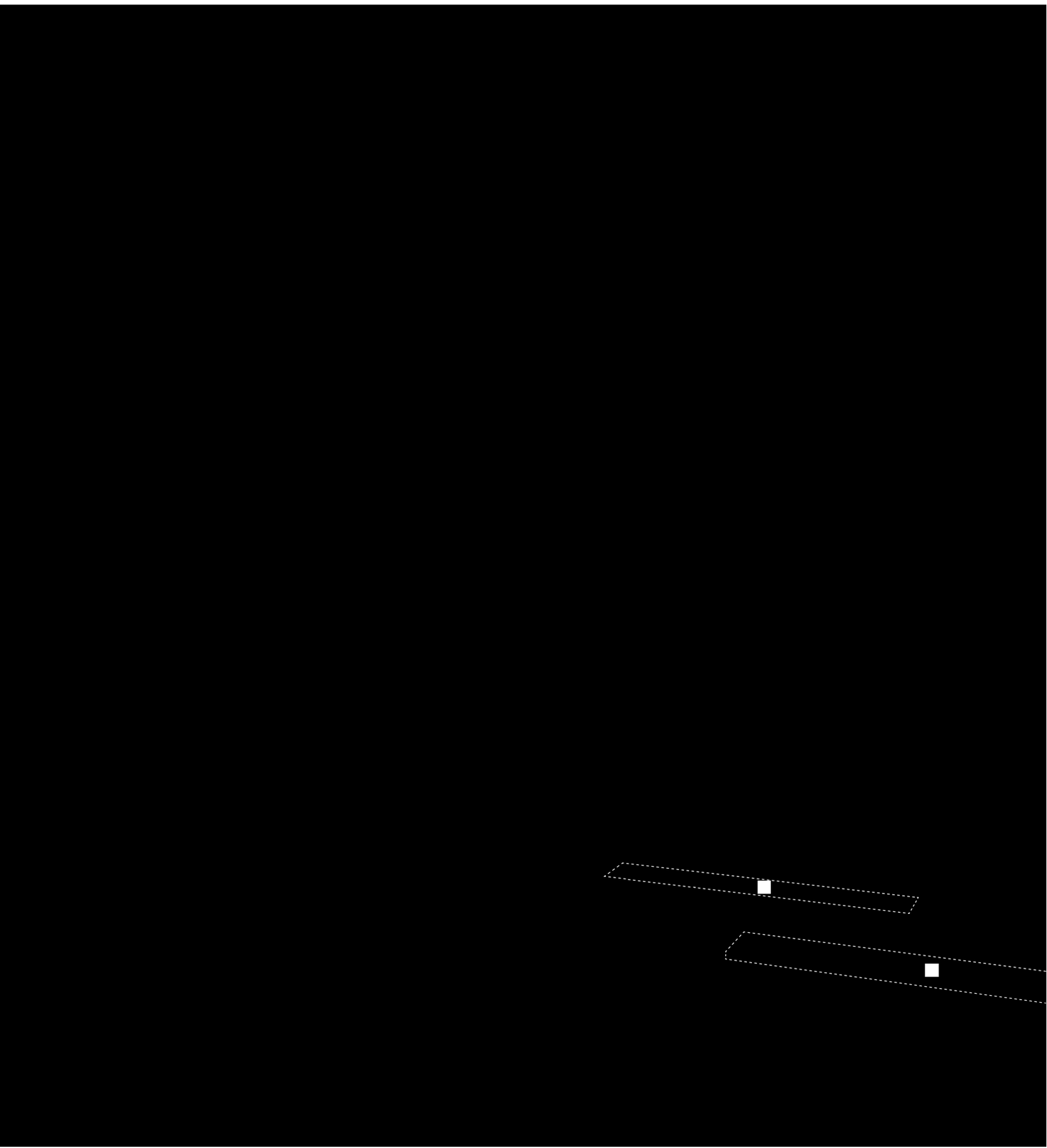

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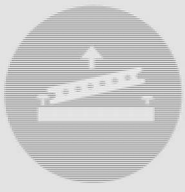

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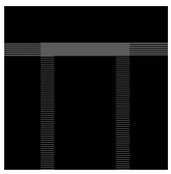

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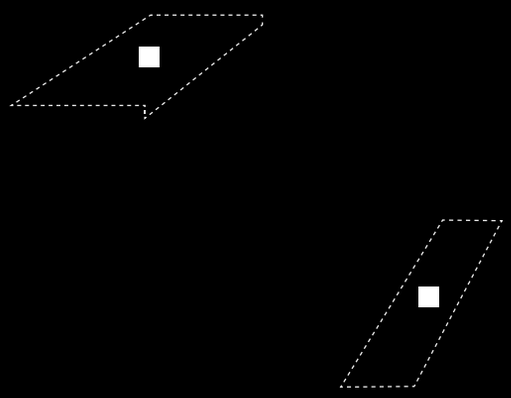

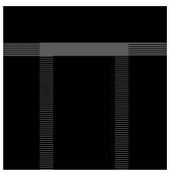



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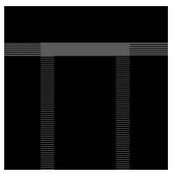

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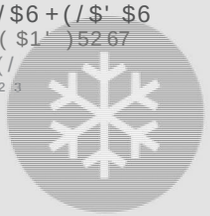

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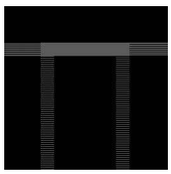

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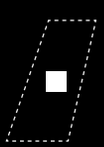

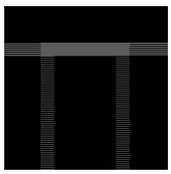



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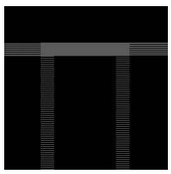

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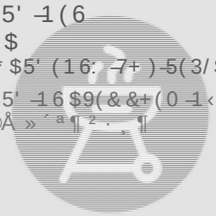

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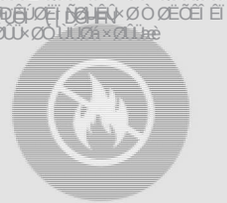

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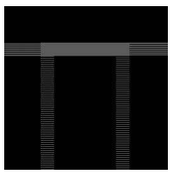



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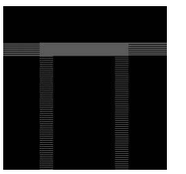

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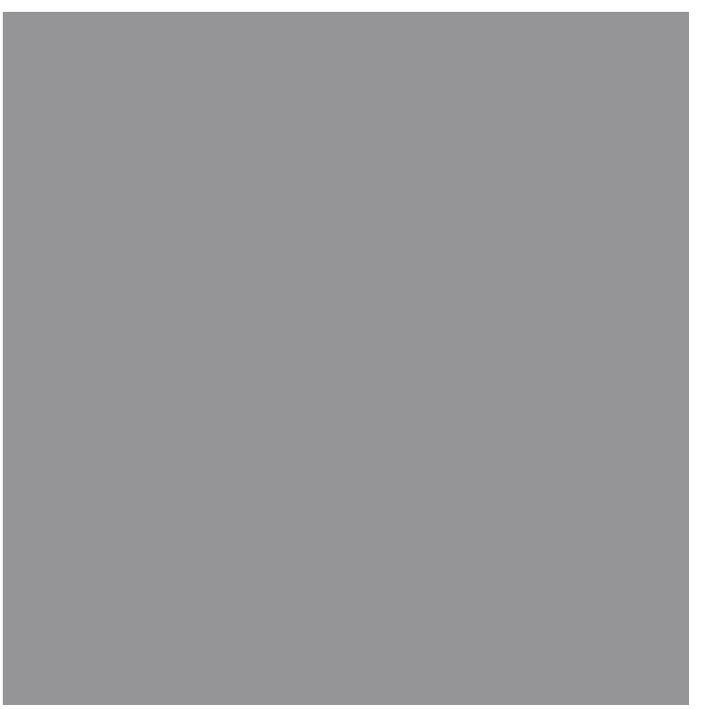



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ª Õè ÖÒ×ÒïÌ Êé ØËÚÍâ ï ÜÕÊ Ì ÜÏ ÍÎ Ê Î ØÕÐ×Ê ØÙÒÚÊÜæÛé ×Ê ÜÏ ï ÚÎ Ýè ÙØÌ ï ÚßÃ×ØÛÜæ ÙØ Ì ÜÏ Ó Î ÕÒ×ï ÑÊ ÒÛÔÕè áï ×ÒïÖ Þ ÊÕæâ ÔØ×ÛÜÚÝÔàÒÓ ÍÎ ï ÛÕÏ Î Ýï Ü ÒÛÙØÕæÑØÌ ÊÜæÛÜÏ àÒÊÕæ×Ýè ÊÕè ÖÒ×ÒïÌ Ýè ØËÚÍâ ï ÜÕÝ352
¸×ÒÎ ØÕÐ×å Ëå Üæ ÙÚÜÕÔØÐï ×å ÜËÔ áÜØËå ÙÚÍÎ Î ØÚÌ ÚÊÜÒÜæ ÛÔØÙÕÏ ×ÒïÌ Ø Î å ØËÏ ÛÙÌ áÒÜæÌ ØÎ ØØÚÌ Ø
([DGHFN ÙÚÍÎ ×ÊÑ×ÊáÏ × Î Õé ÒÛÙØÕæÑØÌ Ê×Òé ÒÛÔÕè áÒÜÌ Õæ×Ø Ì ÙïÎ â ï ßØÎ ×å ß ÑØ×ÊßŠ
ºï ÔØÖÎ ×Î ÝïÜÛé ÝÚÛÊ×ÊÌ ÕÒÌ ÊÜæ ÑÊÐÒÖå 352 Ì ÚÝá×Ýè Û ÙØÖØæã æè ØÚÌ ï ÚÜÔÒ 725; 7 ÒÑËÏ ÍÊé ÒÛÙØÕæÑØÌ Ê×Òé çÕÎ ÕÜÚÒáï ÛÔØÍØ ØËØÚÝÎ ØÎ Ê×Òé
¬ ÛÕÝáÊÏ ×ï ØËßØÎ ÒÖÒØÛÜÒ ÝÚÛÊ×ØÎ ÔÒ ÔØÜØÚÊé ×ï ÚÊÛÔÖÊÜÚÒÌ ËÏ ÜÛé Ì Î Ê×××ØÖ ÚÝÔØÎ ØÎ ÛÜÌ ï ÌÊÖ ÛÕÏ Î Ýï Ü Ûï éÑÊÜæÛé Û ([DJUHV Î Õé ÙØÕÝáï ×Òé Î ØÙØÕ×ÒÜï Õæ×å ß Ò×ÛÜÚÝÔàÒÓ

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35‹3$5$7–21 ' (/$ 685)$&(y¹¸®-¸¼¬´ª ¹¸¬¯º¿·¸»¼

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7KH VXEWWDMWV IRUWKH GHFNLQJ P XWWEH FRP SOHWMKO WWDE@H Z LWK D VOPSH RI DWB@HDWW P P SHUOQHDUP HWH LQ WKH GLUHFWRQ RI WKH EDWWHQV IRUZ DWWUWR GUDLQ DZ D\
/DVXUDFH GLQWDOODWRQ GHYUD¬WH FRP SOHWMP HQWWDE@H HWSUk VHQWMUXQH LQFRQDLVRQ SRXUOH UKLVVHOHP HQWGH OHDX GX P RLQV P P SRUFKDTXH P ªWH OQ«DLLH GDQV OH VHQV GHV WWDYHUHV
¹ ØÌ ï ÚßŠ×ØÛÜæ ÝÚÛÊ×ØÎ ÔÒ Î ØÕÐ×Ê Ëå Üæ Ì å ÚØÎ ×Ï ×Ê Ò ÒÖÏ ÜæÝÕÕØ× Î Õé ÛÜÌ ÔÊ×Òé Ì ØÎ å ×Ï ÖÏ ×Ï Ï ÖÖ ×Ê ÔÊÐÎ å Ó ÙØÎ Ø××å Ó ÖÏ ÜÚ Ì ×ÊÙÚÚÊÌ ÕÏ ×ÒÒ ÚÎ Ï Ô

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([DGHFNERDUGVVKRXOG QHYHUEHVXSSRUWHG E\ IHZHUWKDQIRXUEDWWHQV
/HVSLª FHV([DGHFNQHSRXUURQWHQDXFXQFDV¬WH VXSSRUWHVSDUP RLQVGH WDYHUVHV
ÇÕÏÖÏ×Üå ([DGHFN×Ï ÖØÍÝÜÙØÎÎÏÚÐÒÌÊÜæÛé ÖÏ×ÏÏ áÏÖ Öé ÚÏÓÔÊÖÒ

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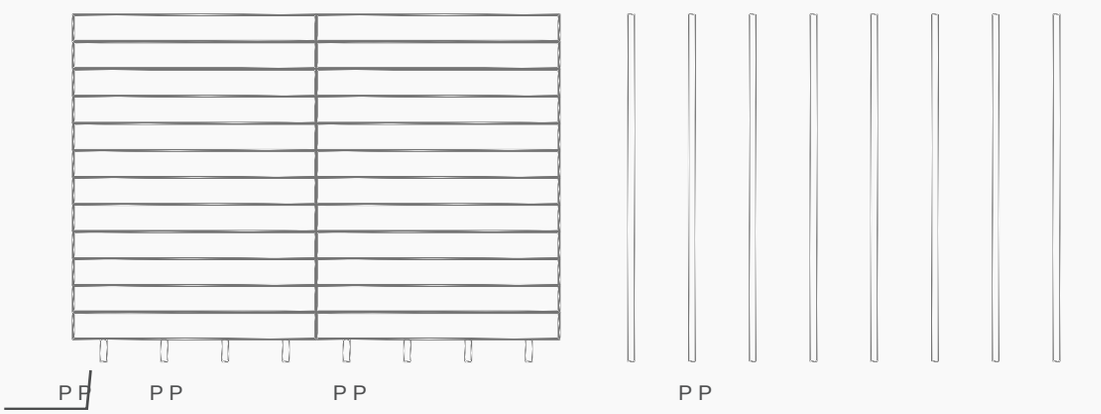

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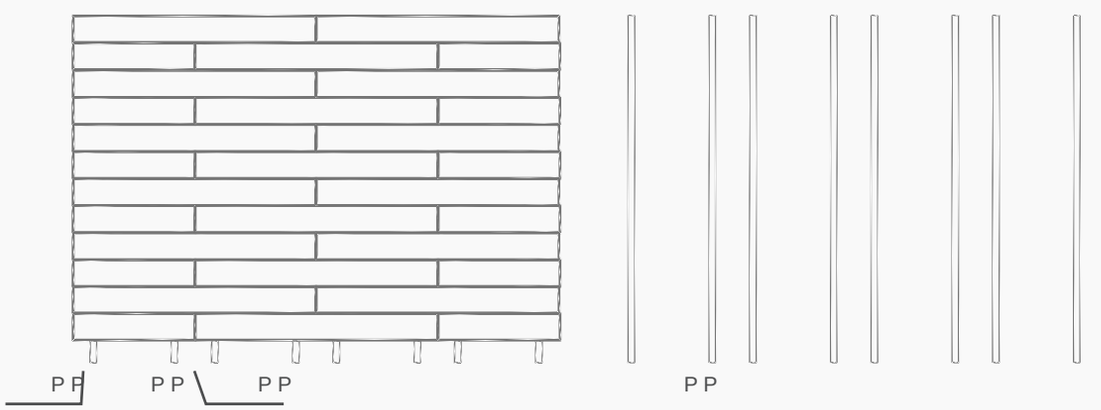

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+$87(85 72 7$/ (' 8 6<67Š0 (y¸ «Ã ª É ¬Å »¸ ½¾ »² »¼ ¶ Å

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6LWWP DFFRQUDWWHQGVGHDXXP LQLR y
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»ÒÛÜÌ ÖÊ ÛÊÕè ÖÒ×ÒÌ Ì ØÓ ØÊÛÌ â Ï ÙÛØÓ

6LWWP DFFRQUDWWHQGVGHDXXP LQLR VREUHSGRWWy
6\ VWP ZLWK DXXP LQLXP EDWWQVRQSGRWWy
6\ VWP HDYHFWDWWV HQDXXP LQLXP VXUSGRWWy
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' –67$1&(6 3‹5–3+‹5–4 8(6y±ª ±¸ º Å ¹ ¸ ¹ ¯º² ¶ ¯¼ ½

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)÷ $7–21 ' (6 75$9(56(6 $8 68 332 57 y´ º ¯¹ µ · ² ¯ º ¯¯´ ´ ¸ »· ¸ ¬ª · ² È

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)–; $7–2 1 ' (6 3–Š&(6 ' (; $' (&. y½»¼ª · ¸ ¬´ ª µª ¶ ¯µ¯³ (; $' (&.

3HJ DGR GH OD FLQWD DP RUWJ XDGRUD VREUH OR VUDWWHOHV * OXLQJ RI WKH VKRFN DEVRUELQJ WDSH RQ WKH EDWWHQV
&RODJH GH OD EDQGH G DEVRUSWRQ GHV FKRFV VXUOHV ODWWHV · ÊÕÕÏ ÒÌ Ê×ÒÏ ÊÖØÚÜÒÑÒÚÝè ã Ï Ó ÕÏ ×Üå ×Ê ØËÜÏ â Ï ÜÕÝ

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&RORFDFLµQ FOS LQLFLR ILQ) LWWQJ RI WKH VWDUWHQG FOS 3ODFHP HQWGX FOS GH G«SDUWILQ º ÊÑÖÏ ã Ï ×ÒÏ ×ÊáÊÕæ×ØÍ Ø ÔØ×Ï á×ØÍ Ø ÑÊÐÒÖÊ

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–QWDODWRQUHFRP P HQGDWRQV5 HFRP P DQGDWRQVGH SRVH
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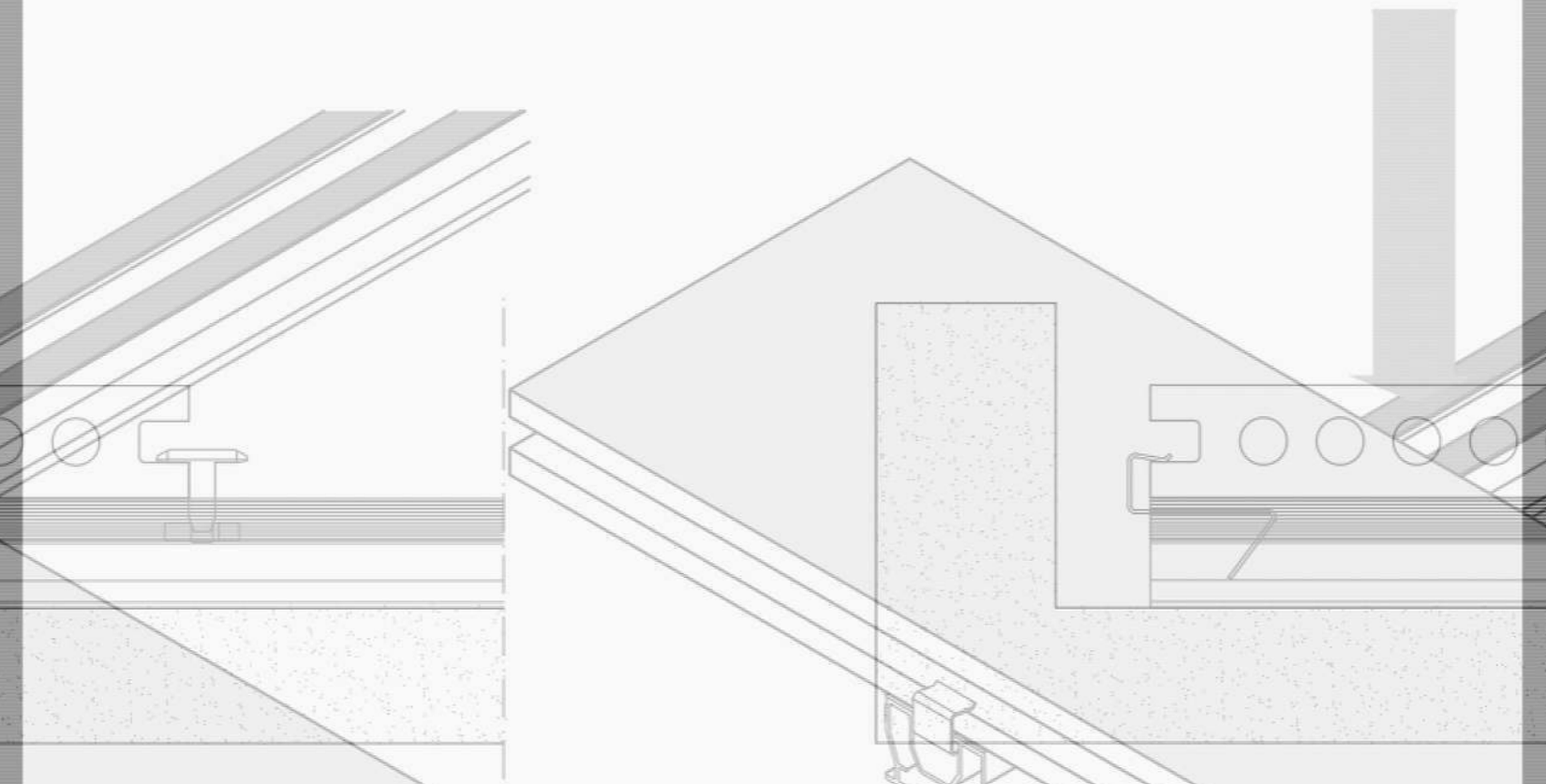
&RORFDFLµQ &OS 3UR) L[LQJ &OS 3UR) L[DWRQ &OS 3UR º ÊÑÖÏ ã Ï ×ÒÏ &OS 3UR

&RORFDFLµQ GH OD VLJXLHQWH SLH] D FHUE P LFD \ ILMDFLµQ GHO&OS 3UR 3ODFHP HQWRI WKH QH[WFHUDP LF SDUWDQG I L[LQJ RI WKH &OS 3UR 0 LVH HQ SODFH GH OD SLª FH F«UDP LTXH VXLYDQWH HWI L[DWRQ GX &OS 3UR ½ÛÜÊ×ØÏ ÔÊ ÛÕÏ Î Ýè ã Ï Ó ÕÏ ÚÊÖÒáÏ ÛÔØÓ áÊÛÜÒ Ò Þ ÒÔÛÊà Òé &OS 3UR





-XQWD HQWH ODV SLH] DV -RLQWEHWZ HHQ WKH ERDUGV
-HX HQWH OHV SLª FHV ¹ ÚØÌ ÒÛÊ×ÒÏ ÖÏ ÐÎ Ý áÊÛÜéÖÒ

P P

(OVRSRUWH µ OD SURSLD VXEHVWXFWXUD SRGUÎD LP SOFDUP RYLP LHQWRV / D NXQWD KD GH VHUDELHUWD \ D TXH HOVLWHP D HVWZ GLVH³ DGR SDUD UHDO] DUOD HYDFXDFLµQ GH DJXD SRU«VWD (OVRSRUWH R OD SURSLD VXEHVWXFWXUD GHOVLWHP D SRGUÎDQ LP SOFDUP RYLP LHQWRV R GLODWDFLRQHV GH IRUP D TXH VLHP SUH VH GHEH WHQHU HQ FXHQWD XQD NXQWD P ¯QLP D GH P P D SDUWLU GH DK¯ VH SXHGH NXJ DU FRQ XQ DQFKR GH NXQWD GLI HUHQWH D ORV P P HWZQGDU

+ DEU£ TXH WHQHU HQ FXHQWD OD] RQD FOP £WLFD GHOSUR\ HFWR \ GLP HQVLRQDUOD NXQWD SDUD XQD FRUUHFWD HYDFXDFLµQ GH DJXDV

7KH VXSSRUWRU WKH VXEVWXFWXUH LWHO P D\ LQYROYH P RYHP HQW7KH NRLQWP XVWEH RSHQ DV WKH V\ VWHP LV GHVLJQHG IRUZ DWHU GUDLQDJH WKURXJK WKH NRLQW7KH VXSSRUWRU WKH VXEVWXFWXUH RI WKH V\ VWHP LWHO FRXOG LQYROYH P RYHP HQWRUH[SDQVLRQ VR D P LQLP XP NRLQWRI P P VKRXOG DOZ D\ V EH WDNHQ LQWR DFFRXQWIURP WKLV SRLQWRQ \ RX FDQ SOD\ Z LWK D NRLQWZ LGWK RWKHUWKDQ VWDQGDUG P P

7KH FOP DWF] RQH RI WKH SURNHFWP XVWEH WDNHQ LQWR DFFRXQWDQG WKH NRLQWP XVWEH VL] HG IRUFRUUHFWZ DWHU GUDLQDJH

/ H VXSSRUWRX OD SURSUH VRXV VWXFWXUH SRXUUDLWLP SOTXHUGHV P RXYHP HQW / H NRLQWGRLW¬WH RXYHUWFDUOH V\ VW¥P H HVWFRQ©X SRXU «YDFXHUOHDX ¢ WDYHUV OXL / H VXSSRUWRX OD VRXV VWXFWXUH GX V\ VW¥P H OXLP ¬P H SRXYDQWXELUGHV P RXYHP HQW RX GHV GLODWDWRQV LOFRQYLHQWGH WRXNRXUV WHQLU FRP SWH GXQ NRLQWP LQLP XP GH P P ¢ SDUWLU GH O¢ RQ SHXWNRXHU DYHF XQH ODUJHXU GH NRLQW GLI «UHQWH ¢ OD ODUJHXUVWDQGDUG GH P P

-OIDXGUD SUHQGUH HQ FRP SWH OD] RQH FOP DWTXH GX SURNHWHWGLP HQVLRQQHUOH NRLQWSRXUXQH FRUUHFWH «YDFXDWRQ GH OHDX

¸ ÙØÚÊ ÒÕÒ ÛÊÖÊ ÙØÎ ÛÜÚÝÖÜÝÚÊ ÖØÍ ÝÜ Î Ì ÒÍ ÊÜæÛé »Ûå Ô Î ØÕÐÏ × Ëå Üæ ØÜÕÚå Ûå Ö ÜÊÔ ÔÊÔ ÛÒÛÜÏ ÖÊ ÙÚÏ Î ×ÊÑ×ÊáÏ ×Ê Î Õé ØÛÏ ØÎ Ê Ì ØÎ å áÏ ÚÏ Ñ ×Ï Í Ø ¸ ÙØÚÊ ÒÕÒ ÙØÎ ÔØ×ÛÜÚÝÔà Òé ÛÊÖØÓ ÛÒÛÜÏ Öå ÖØÐÏ Ü ÙØÎ Ì Ï ÚÍ ÊÜæÛé Î Ì ÒÐÏ ×Òè ÒÕÒ ÚÊÛâ ÒÚÏ ×Òè ÙØçÜØÓÝ Ì ÜÏ Í Î Ê ÛÕÏ Î ÝÏ Ü Ýá ÒÜå Ì ÊÜæ ÖÒ×ÒÖÊÕæ×å Ó â ØÌ ÖÖ ÜÊÔÐÏ ÖØÐ×Ø ÒÍ ÚÊÜæÛâ ÒÚÒ×ØÓ ÛØÏ Î Ò×Î ×Òé Ý 67$1' $5' ÖÖ

· Ì ØÊßØÎ ÒÖØ ÊÝÎ Ï Ü Ýá ÒÜå Ì ÊÜæÔÕÒÖÊÜÒáÏ ÛÔÝè ÑØ×Ý ÙÚØÏ ÔÜÊ Ò ÚÊÑÖÏ Ûå ÛÜå ÔÊ Î Õé ÙÚÊÌ ÒÕæ×ØÍØ ÙÚØßØÎ Ê Ì ØÎ å

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–QWDQDOMRQUHFRP P HQGDWRQV5HFRP P DQGDWRQVGH SRVH
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–1 67$//$7–2 1 ' (/$ 3–Š&(' ( )(50 (785(y½»¼ · ¸ ¬´ ª ±ª ¹ ¸ º · ¸ ³ ®¯¼ª µ²

7LSR GH FOS 6HFFLµQ SLH] D GH FLHUUH y&OS WSH &ORVLQJ SLHFH VHFWLRQ
7\SH GH FOS 6HFWLRQ GH OD SlªFH GH IHUP HWXUH y
½ÒÙ ÑÊÐÒÖÖÊ »Ï ÕàÒé ÑÊÔÚåÌ Êè ã Ï Ó Î Ï ÜÊÕÒ

3URFHVR GH LQWHUDFFLµQ -QWRGXFFLµQ &OS -QLFLR) LQ y -QWHUDFDQRQ SURFHVV
-QWRGXFWRRQ 6WDUW(QG &OS 3URFHVXV GLQWHUDFDQRQ -QWRGXFWRRQ &OS GH
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-QWRGXFFLµQ SRUHODWRUDOGH OBV FOSV -QLFLR) LQ -QWRGXFWRRQ IURP WKH VLGH
RI WKH FOSV 6WDUW(QG -QWRGXFWRRQ GX F¶W GHV FOSV 6WDUW(QG ¬Ì Î Î Ï ×ÒÏ
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' LWDQFLDV VHJ½Q WKSR GH P RQWDWH y-QWDQDOMRQ SURFHVV LQWRGXFWRRQ 6WDUW(QG &OS
3URFHVVXV GLQWDQDOMRQ -QWRGXFWRRQ &OS GH G«EXWLQ y
¹ ÚØàÏ ÛÜ ÝÛÜÊ×ØÎ ÕÒ ¬Ì Î Î Ï ×ÒÏ · ÊáÊÕæ×å Ó ÕØ×Ï á×å Ó ÕÕÒÙ

75$%$ 2 67$**(5(' /$<287 (1 '‹&$/‹ »¶ ¯Ã ¯· · Å³ $/-1($' 2 /-1($5/$<287 (1 /-1(¬Åº¸ ¬ ¯· Å³



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¹ º¸ À¯»» ¶ ¸ . ½ª º ª ½ µª ®´ ª ´ ¯º ª ¶ ² Á¯»´ ² ¿ ¹ µª . ¸ ´ . ª ¸ «º¯ Â ¯¼ ½

3 UHLQVWDOOFLµ Q GH ORV FOSV –1 –&–2) –1 HQ OD
UDQXUD SRVWMULRUGH OD OOP D FHU£P LFD y
3 UH LQVWDOOOWRQ RI VKH 67$57 (1 ' FOSV LQ VKH UHDU
JURRYH RI VKH FHUDP LF VODW y

3 U‹ LQVWDOOOWRQ GHV FOSV 67$57 (1 ' GDQV OD
UDLQXUH DULª UH GHV OOP HOOHV HQ F«UDP LTXH y
¹ ÚÏ Î Ì ÊÚÒÜÏ Õæ×Êé ÝÛÜÊ×ØÌ ÔÊ ÔÕÒÙÛ 67$57 (1 ' Ì
ÑÊÎ ×ÒÓ ÙÊÑÕÏ ÚÊÖÒáÏ ÛÔÒß ÙÕÊ×ØÔ

&RORFDU OD OOP D FHU£P LFD SRU P HGLR GH ORV FOSV
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D\ XG£QGRQRV GH OD P D]D GH JRP D \ HO
GHVWRUQQLOOGRU GH SXQWD SODQD TXHGDQGR VXMHWD D
OD OOP D SRU ORV FXDWUR H[WUHP RV GH ORV UDVWUHOHV y
3 OOFH VKH FHUDP LF VODW E\ P HDQV RI VKH SUH
LQVWDOOHG 67$57 (1 ' FOSV LQ VKH UHDU JURRYH XVLQJ
VKH UXEEHU P DOOHWDQG VKH IOOWEOOGH VFUHZ GULYHU
DQG IDVWMQ LVVWR VKH VODWDWDOOIRXU HQGV RI VKH
EDWMQV y

$ OOLGH GX P DLOOHWHQ FDRXWMKRXF HWGX WRXUQHYLV
SODW SOOFHU OD OOWM HQ F«UDP LTXH GDQV OD UDLQXUH
DULª UH ¢ OOLGH GHV FOSV 67$57 (1 ' SU‹LQVWDOOV HW
OD IL[HU ¢ OD OOWM DX[TXDWUH H[WU‹P LWV GHV OOWMV y
½ÛÜÊ×ØÌ ÒÜÏ ÕÏ ÚÉÖÒáÏ ÛÔÝè ÚÏ ÓÔÝ Û ÙØÖØã æè
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(1 ' Ì ÑÊÎ ×ÒÓ ÙÊÑ ÒÛÙØÕæÑÝé ÚÏ ÑÒ×ØÌ å Ó
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$VRUQLODUORV &/–36 352 SRUP HGLR GH OD MXQWD D\ XG£QGRQRV GH OD
KHUUDP LHQWD 72 5; y
6FUHZ WKH &/–36 352 WKURXJK WKH MRLQWXVLQJ WKH 72 5; WRRO y
9LVVHUOHV &/–36 352 ¢ WDYHUV OH MRLQW¢ ODLGH GH ORXWLO 72 5; y
±ÊÔÚÝÜÒÜÌ &/–36 352 áÏ ÚÏ ÑÛØÏ Î Ò×Ï ×ÒÏ ÛÙØÖØã æè Ò×ÛÜÚÝÖÏ ×ÜÊ 72 5;

5HVXOWDGR) LQDOy
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&2 1 75(/ (0 85 y½»½ · ¸ ¬´ ª ±ª ´ º Å ¬ª È Ã ¯-¸ Çµ ¯¶ ¯· ½ ½»¼· Å

&RORFDFLµQ GH OD OMP D FRQ &/ –3 –1 –&–2) –1 UHVLDQGR HCFRQWXQWR GH FRP SRQHQWHV UHVSHFWR GHCP XUR y
3ODFHP HQWRI WKH ERDUG Z LWK &/ –3 67$57) –1 E\ UHP RYLQJ WKH FRP SRQHQW DVVHP E0 IURP WKH Z DOOy
0 LVH HQ SODFH GH OD OMP HOBH DYHF &/ –3 67$57) –1 HQ U-HVLDQWOHQVHP EOH GHV FRP SRVDQW GX P XUy
½ÛÜÊ×ØÌ ÒÜÜ ÙÕÊ×ÔÝ Û &/ –3 67$57) –1 Û×éÌ ÔØÖÙØ×Ï ×Ü×å Ó ÝÑÏ Õ ÛØ ÛÜÏ ×å y

$SUR[LP DUHCFRQWXQWR GH FRP SRQHQWHV DCP XUR y
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5DSSURFKHUOHQVHP EOH GHV FRP SRVDQW GX P XUy
¹ ÚÒËÕÒÑæÜÏ ×ÊËØÚ ÛØÖÙØ×Ï ×ÜØÌ ÔÛÜÏ ×Ï y

' HMDU P P GH VHSDUDFLµQ HQWUH P XUR \ HOVLWWMP D ([DGHFNy
/ HDYH D P P JDS EHWZ HHQ WKH Z DOODQG WKH ([DGHFNV WWMP y
/ DLVHU XQ HVSDFH GH P P HQWUH OBH P XUHMOBH V WWP H ([DGHFNy
¸ ÛÜËÌ æÜÏ ÑÊÑØÚ ÖÖ ÖÏ ÐÎ Ý ÛÜÏ ×ØÓ Ò ÙÒÛÜÏ ÖØØÓ ([DGHFNy

&RORFDFLµQ GHOUHVWR GH OD DV FHUE LFDV ([DGHFNy
/ D\ LQJ RI WKH UHVWR ([DGHFN FHUDP LF ERDUGV y
3RVH GX UHVWH GHV OMP HVF«UDP LTXHV ([DGHFNy
½ÔÕÊÎ ÔÊ ØÛÜËÔæ×å ß ÕÏ ÚÊÖÒáÏ ÛÔÒÙ; ÙÕÊ×ØÔ ([DGHFNy

q 3 Ur UZ ;

Q’ %¾ ’ ¸ Ž| %¢¾ ’ ÑŽ’ %¾±¾ %¢¿ ¸ Œ

–QVWDOODWLRQUHFRP P HQGDWLRQV5 HFRP P DQGDWLRQVGH SRVH
º Ì ÒØÒÌ ×Ì Èà ÒÒ ÙØ ÝÜÜÊ×ØÌ ÒÌ

68 67–78 &–• 1 ' (3–(=$6 y5(3/ $&(0 (1 7 2) 3–(&(6 y
5(0 3/ $&(0 (1 7 ' (6 3–Š&(6 y±ª ¶ ¯· ª ®¯¼ª µ¯³

/ DP D D VXVWLWXLUy
6ODWWR EH UHSODFHG y/ DWWH ¢ UHP SODFHUy±ÊÖÏ ×éÏ ÖÊé ÙÕÊ×ÔÊ

' HVDSUHWDU&/ –36 352 y
8 QFODSSLQJ &/ –36 352 y' «FODSVHU&/ –36 352 yº ÊÛÛÜÏ ÍÒÌ Ê×ÒÏ &/ –36 352

' HVDSUHWDU&/ –36 352 y
8 QFODSSLQJ &/ –36 352 y' «FODSVHU&/ –36 352 y
º ÊÛÛÜÏ ÍÒÌ Ê×ÒÏ &/ –36 352

5 HWLUDUODP D D VXVWLWXLUy
5 HP RYH VODWWR EH UHSODFHG y5 HWLUHUOD ODWWH ¢ UHP SODFHUy
»×ÒÖÒÜÏ ÙÕÊ×ÔÝ ÔØÜØÚÝè ×Ï ØËßØÎ ÒÖØ ÑÊÖÏ ×ÒÜæ

/ HYDQWDUODV ODP DV GHVGH OD MXQWD HQWHDP EDV DSR\ £QGRVH HQ XQD
KHUUDP LHQWD HQ IRUP D GH 7 R / SRUHMHP SOR XQD ODYH $ODHQ
/ LLWWKH VODW IURP WKH MRLQWEHWZ HHQ WKH WZ R VODW XVLQJ D 7 RU/ VKDSHG WRRO
H J DQ $ODHQ NH\
6RXOHYHUOHV ODP HOHV GX MRLQWHQWH OHV GHX[ODP HOHV ¢ ODLGH G XQ RXWLOHQ IRUP H
GH 7 RX GH / SDUH[HP SOH XQH FO $ODHQ
¹ ØÎ ×ÒÖÒÜÏ ÙÕÊ×ÔÒ ÒÑÛØÏ Î Ò×Ï ×Òé ÖÏ ÐÎ ÝÎ Ì ÝÖé ÙÕÊ×ÔÊÖÒ Û ÙØÖØã æè ¼ ÒÕÒ
- ØËÚÊÑ×ØÍ Ø Ò×ÛÜÚÝÖÏ ×ÜÊ ×ÊÙÚÒÖÏ Ú â Ï ÛÜÒÍ ÚÊ××ØÍ Ø ÒÕè áÊ

5HMLDU&/-36 352 y
5HP RYH&/-36 352 y5HMLHUOHV&/-36 352 y¸ ÜØÑÎ ÊÜæ&/-36 352

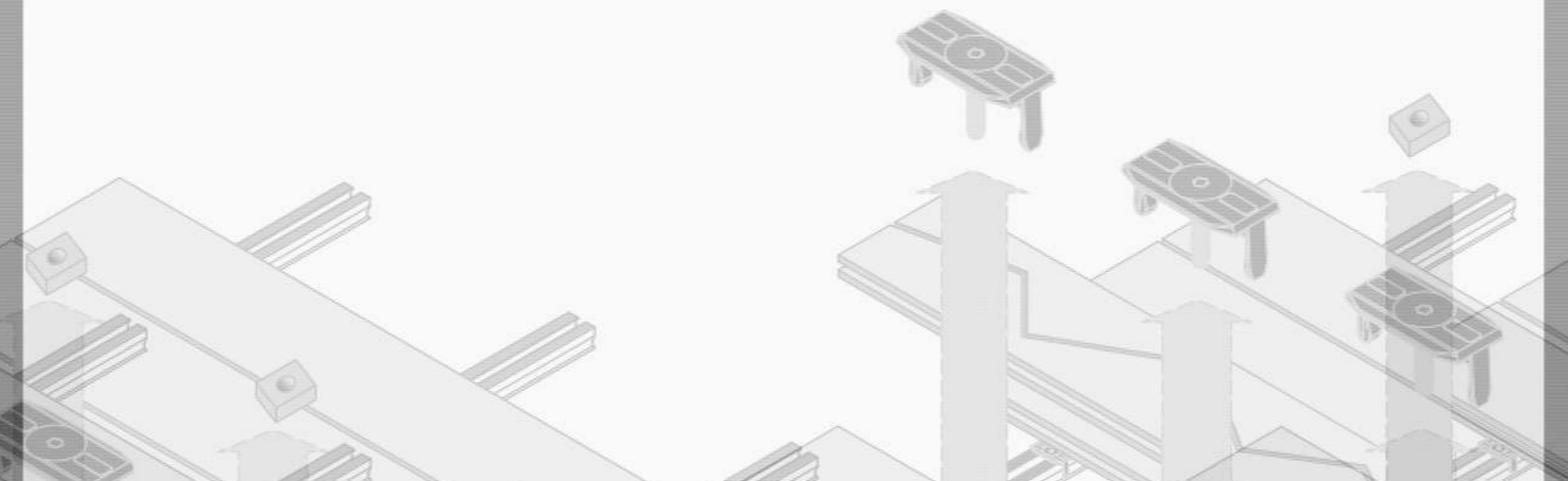
5HMLDUEDVHV&/-36 352 y
5HP RYH&/-36352 EDVHVy5HMLHUOHV EDVHV&/-36 352 y
½Î ÊÕÒÜÏ ØÛ×ØÌ Ê×Òé &/-36 352

EDVH&/-3 352

5HFRJHU½QLFDP HQWH ORV FOSV 352 HQWH OD ODP D D VXVWLWXLU\ OD FRQWJXD 2 EVHUYDU
TXH OD EDVH GHOFOS TXHGDU£ GHQWR GHOLDVWHODOGHVDSUHWDUOD URVFD GH «VWH
2 QO UHP RYH WKH 352 FOSV EHWZ HHQ WKH VODWWR EH UHSODFHG DQG WKH RQH QH[WWR LW
1 RWH WKDWWKH EDVH RI WKH FOS Z LODUHP DLQ LQVLGH WKH EDWHQ Z KHQ ORRVHQLQJ LW WKUHDG
1 H UHWLUH] TXH OHV FOSV 352 VLWX«V HQWH OD ODP HOH ¢ UHP SODFHU HWOD ODP HOH YRLVLQH
1 RWH] TXH OD EDVH GX FOS UHWHUD ¢ OLQWULHXU GH OD ODWH ORUVTXH YRXV GHVHUUH] VRQ
ILO¹ ØÎ ×ÒÖÊÓÜÏ ÔÕÒÙÛÅ 352 ÜØÕæÔØ ÖÏ ÐÎ Ý ÑÊÖÏ ×éÏ ÖØÓ ÙÕÊ×ÔØÓ Ò ÛÕÏ Î Ýè ã Ï Ó ÑÊ
×Ï Ó ¸ ËÚÊÜÒÜÏ Ì ×ÒÖÊ×ÒÏ áÜØ ØÛ×ØÌ Ê×ÒÏ ÔÕÒÙÛÅ ØÛÜÊ×Ï ÜÛé Ì ×ÝÜÚÒ ÙÕÊ×ÔÒ ÔØÎ Î Ê
ÚÏ ÑæÊÊ ÙÕÊ×ÔÒ ËÝÎ Ï ÜØÛÕÊËÕÏ ×Ê

0 RQWDUEDVH HQ&/-36 352 1 XHYD ODP Dy
0 RXQWEDVHRQ&/-36352 1 HZ VODWy0 RQWHUODEDVH VXU&/-36 352
1 RXYHOH ODP HOH y¶ Ø×ÜÒÚÝÓÜÏ ØÛ×ØÌ Ê×ÒÏ ×Ê&/-36 352 · ØÌ Êé ÙÕÊ×ÔÊ

0 RQWDU&/-36 352 HQ QXHYD ODP Dy
0 RXQWQJ &/-36352 RQQHZ VODWVy0 RQWDJH GHV&/-36 352 VXUOHV
QRXYHOHV ODP HOHVy¶ Ø×ÜÊÐ &/-36 352 ×Ê×ØÌ å Ï ÚÏ ÓÔÒ



q 3 Ur UZ ;

Q' %¾ ' ¸ Ž| %¢¾ ' ÑŽ' %¾ ¾ %| %¢¸ Œ

–QVWDOODWLRQUHFRP P HQGDWLRQV5 HFRP P DQGDWLRQVGH SRVH
º Ì ÔØÔÌ ×Î Êà ÒÒ ÙØ ÝÛÜÊ×ØÌ ÔÌ

0 RQWDNH GH &/ –36 352 HQ OD QXHYD ODP D ' HWDLORI LQVWDOODWLRQ RI &/ –36 352 LQ WKH QHZ VODWy
' «WDLOGH OLQVWDOODWLRQ GHV &/ –36 352 GDQV OD QRXYHOOH ODP HOOH
®Ï ÜÊÕæÝÛÜÊ×ØÌ ÔÒ &/ –36 352 Ì ×ØÌ Ýè Î ØÛÔÝ

P DVLOOD R FLQWD GREOH FDUD
SXWW RUGRXEOH VLGHG WDSH

) LWDUWMP SRUDOP HQWM ORV &/ –36 352 HQ OD ODP D DSR\ £QGRVH FRQ P DVLOOD R FLQWD GREOH FDUD SDUD D\ XGDUD OD LQVWDODFLµQ
\ HYLWDUT XHVHGHVSUHQGDQGXUDQWM HOP RQWDNH
7HP SRUDULO I L[WKH &/ –36 352 WR WKH VODWXVLQJ SXWW RUGRXEOH VLGHG WDSH WR DLG LQVWDOODWLRQ DQG SUHYHQWWKHP IURP
FRP LQJ ORRVH GXULQJ LQVWDOODWLRQ
) L[H] WMP SRUDLLHP HQWOHV &/ –36 352 ¢ OD ODP HOOH ¢ ODLGH GH P DVWF RX GH UXEDQ DGK«VLL GRXEOH IDFH SRXUI DFLOWMU
OLQVWDOODWLRQ HW«YLWMUT X LOY QH VH G«WDFKHQWSHQGDQWODVVHP EODJH y
¬ÛÏ ÖÏ ××Ø ÑÊÔÛÏ ÙÒÜÏ &/ –36 352 ×Ê Î ØÛÔÏ Û ÙØÖØã æè â ÙÊÔÕÏ Ì ÔÒ ÒÕÒ Î Ì ÝÛÜØÛØ××Ï Í Ø ÛÔØÛáÊ áÜØËå ØËÕÏ Í áÒÜæ
ÝÛÜÊ×ØÌ ÔÝ Ò ÙÛÏ Î ØÛÌ ÛÊÜÒÜæÒß ØÛÛØÌ Î Ò×Ï ×ÒÏ Ì Ø Ì ÛÏ Öé ÒØ×ÜÊÐÊ

' HWDOOH P RQWDNH QXHYD ODP D y
' HWDLORI QHZ VODWDVVHP EO y' «WDLOGH ODVVHP EODJH GHV QRXYHOOH ODP HOOHV y®Ï ÜÊÕæÖØ×ÜÊÐÊ ×ØÌ ØÓ ÛÏ ÓÔÒ

$IXWDU&/–36 352 y
$GXWV&/–36 352 y3DUDP «WDJHGH&/–36 352 y· ÊÛÜÚØÓÔÊ&/–36 352

5HVXOWDGRILQDOy
)LQDOUHVXOWy5«VXOWDGG«ILQLWR y¸ ÔØ×áÊÜÏ Õæ×å Ó ÚÏ ÑÝÕæÜÊÜ



q 3 Ur UZ ;

(¸ÑM ±¸%¢¸¸ Ñ¾Í ’ Ê±¼ÑÎE

-QWDZODWRQRQSHGHWDZDY-QWDZODWRQ VXUSORW ½ÛÜÊ×ØÌ ÔÊ×Ê ÛÜØÓÔÒ

/ DLQWDZDDFLµQ VH GHEHUHDQ DVREUH VXSHUFLHV VµQDGDV \ XQLRUP HV GH] RQDV H[WHULRUHV FRP R WHUUD] DV FXELHUWDV SDWRV NDUGLQHV R SLVFLQDV \ VHP SUH GH XR SHDWRQDO (WDD VROXFLµQ HV DGHFXDGD SDUD VDQHDPLHQWR HQ GRQGH HQHUJHQHWMV JHQHUDQGR VXSHUFLHV SDQDV VLQ SHQGLHQWHV / RV 3RWV GHEHQ HVWDU VHSDUDGRV ORQJLWXGLQDOP HQWH P P GHVGH HCFHQWUR SHUP LWHQGR XQ DSR\R GHUDWWHCHQWH SORW GH P P FRP R P £[LP R (Q DV LQWDDDFLRQHV VREUHHQHMYDGDV FRQ SORW GHEHQ XWLQ DUH UDWWHHQHMV GH DOXP LQR SUR / DLWDFLµQ GHUDWWHCDCSORWWH KDFH P HGLDQWH DGKHMLYR GH P DMLDD GH SROXUHMZQR R VL HOSORWWHQH FDEH] DOS DUD UDWWHHO DWRUQLDDGR SRUHDDWMUDO P HGLDQWH XQ VRUQLDOR DXVRWDDGUDQWH SDUD P HWDO

/ DMXQWD ORQJLWXGLQDOHV GH P P GH DQFKXUD GHILQLGD SRUHCFDS SUR GH P RQWDWH 4 XLFN) L[

/ DMXQWD WDQVYHUVDP ¯QLP D HV GH P P \ P £[LP D UHFRP HQGDGD GH P P

7KH V\VWHP VKRXOG EH P RXQWHG RQ D VROG VXEVWDWH Z LWK D XQLRUP FRQVLWHQF\ LQ RXGRRUDUHDV VROHO XVHG IRUSHGHVWDLDQ WDDILF VXFK DV WHUUDFHV IDWLRRVSV SDWRV JDUGHQV DQG SRROLGHV ([DGHFN LV DJRRG Z D\ RI RYHUFRP LQJ WKH SUREOHP RI XQHYHQ WHUUDLQ RURRI WRSSV Z LWK D VROSH VLQFH LWDDDRZ V IRUWKH FUHDWRQ RI WRWDDO IDWWXUDFHV

7KH SHGHWDDDY VKRXOG EH SRVLWHQHG DWD OHQJWK Z LVH GLWDQFH RI P P IURP RQH DQRWKHU P HDVXUHG IURP WKH FHQWUH RI HDFK SHGHWDDO VR WKDWWKHUH LV D P[LP XP GLWDQFH RI P P EHWZHHQ WKH EDWWQV

$OXP LQLXP SUR EDWWQV P XWLEH XVHG IRUUDLHG DFFHVV GHFNLQJ P RXQWHG RQ SHGHWDDDY

7KH EDWWQV VKRXOG EH ERQGHG WR WKH SHGHWDDDY Z LWK SRO XU HWKDQH DGKHMLYH $OWLQDDWHO LI WKH SHGHWDDDY KDVH D EDWWQ KHDG WKH EDWWQV VKRXOG EH VFUHZ HG DWWUDO WR LWZ LWK D VHO GUDDQJ P HWDOVFUHZ

7KH ORQJ LWXGLQDOWRLQV VKRXOG EH P P Z LGH GHILQHG E\ WKH 4 XLFN) L[DVVHP EO FOS SUR

7KH WDQVYHUVDWRLQV VKRXOG KDYH D UHFRP P HQGHG Z LGWK RI EHWZ HHQ P P DQG P P

/ LQWDDDWRQ GRLWWH U«DDUHUVXUGHVVXUDFHV VRDGHVHWKXQLRUP HV GH] RQHV H[WULRUHUHVFRP P H WHUUDVVHV WRLW SDWRV NDUGLQVRX SLVFLQHV HWWRXNRXU SRXUXQ XVDJH SL«WRQQLHU &HWWH VROWWRQ HWWDG«TXDWH SRXUDDWDSHUGHVG«QLYHOPP HQW HWSRXUOPV WRLW HQ SHQW HQ J«Q«UDQWGHV VXUFHV SDWWV VDQV SHQWV

/ HV SORW GRLYHQW¬WH V«SDU«V OBQJLWXGLQDOPP HQWGH P P GHSXLV OBFHQWH GH VRUW TXH OD GLWDQFH HQWH WWDYHUVHV WRLW SDWRV NDUGLQVRX SLVFLQHV HWWRXNRXU

' DQV OBV LQWDDDWRQV VXU«OBY«HV DYHF SORW RQ GRLWK WDDVHUGHV WWDYHUVHV HQ DXP LQLXP SUR

/ DIL[DWRQ GH OD WADYHUVH VXUOBI SORWWH IDWWDYHF GX P DWWF SRO XU«WKDQH RX VL OBI SORWFRP SRUWW XQH WWW SRXUWDYHUVH YLW«H VXUOBP¶W DYHF XQH YLV DXR SHUDDQWW SRXUP «WDO

/ HNRLQWRQJ LWXGLQDOHWWGH P P GH ODUJHXUG«IQLSDUBHFOS SUR GH P RQWDJH 4 XLFN) L[

/ HNRLQWWDQVYHUVDP LQLP XP HWWGH P P HWOBH P D[LP XP UHFRP P DQG« GH P P

½ÛÜÊ×ØÌ ÔÊ Î ØÕÐ×Ê ØÛÝã Ï ÜÜÌ Õé Üæåß ×Ê Ü Ï ÚÍ å ß Ò Øî ×ØÚØî ×å ß ÙØÌ Ï ÚßŠ×ØÜÜéß ØÜÕÚå Üå ß ÙÕØØã ÊÍ ØÔ ÜÊÔÒß ÔÊÔÜ ÚÚÊÚå ÔÚå â Ò Î Ì ØÚå ÛÊÍ å ÒÕÒ ËÊÛÜÌ Ó×å ÒÌ Ü Íî Ê Î Õé Üï â Ï ßØÎ ×ØÍ Ø ÒÜÙØÕæÑØÌ Ê×Òé ½ÊÔØÌ ÚÏ â Ï ×ÒÏ ÙØÎ ßØÎ ÒÜÎ Õé ÛØŠÚÊ×Ï ×Òé ×Î ÚØÌ ×ØÜÜ Ó Ò ÔÚå â ÛØ ÛÔÊÜÊÖÒ ÙØÑ ÊÌ Êé ÙÕØÛÔÒÏ ÙØÌ Ï ÚßŠ×ØÜÜÒ

»ÜØÓÔÒ Î ØÕÐ×å Ëå Üæ ØÜÎ Ï ÕÏ ×å ÙÚØÎ ØÕæ×Ø×Ê ÖÖ ØÜàÏ ×ÜÚÊ ÙØÑÎ ØÕéé ÙØÎ Î Ï ÚÐ ÒÌ ÊÜæÚÏ ÓÔÒ ÖÏ ÐÎ Ý ÛÜØÓÔÊÖÒ ÖÊÔÛÒÖÝÖ ÖÖ

¬ ÝÛÜÊ×ØÌ ÔÊß ÛØ ÛÜØÓÔÊÖÒ ÛÕÏ Î Ýî Ü ÒÛÙØÕæÑØÌ ÊÜæÊÔè ÖÒ×ÒÏ Ì å Ï ÚÍ ÓÔÒ

¾ÒÕÜÊàÒé ÚÏ ÓÔÒ Ô ÛÜØÓÕÏ ÙÚØÒÑ ØÎ ÒÜÜé ÙØÕÒÝÚÏ ÜÊ×ØÌ å Ö â ÙÊÔÕÏ Ì Øá×å Ö ÔÕÏ Ï Ö ÒÕÒ Ï ÛÕÒ ÛÜØÓÔÊ ÙØÑ ØÕéÏ Ü ÙÚÒÌ Ò×áÒÌ ÊÏ ÜÜé ÛËØÔÝ Û ÙØÖØã æè â ÝÚÝÙÊ

¹ ÚØÎ ØÕæ×å Ó ÛÜå Ô ÒÒÖÏ Ï Üâ ÒÚÒ×Ý ÖÖ ÔÊÔØÙÚÏ Î Ï ÕÏ ×Ø ÖØ×ÜÊÐ×å Ö ÑÊÐ ÒÖØÖ 4 XLFN) L[

¶ Ò×ÒÖÊÕæ×å Ó ÙØÙÏ ÚÏ á×å Ó ÑÊÑØÚ ÛØÛÜÊÌ Õéï Ü ÖÖ Ê ÚÏ ÔØÖÏ ×Î Ýî Öå Ó ÖÊÔÛÒÖÊÕæ×å Ó ÖÖ

-QVWDOODFLµQ VREUH SORWV FRQ GLVWLEXFLµQ GH ODP DV WDEDGDV
-QVWDOODWLRQ RQ SHGHVWDOV Z LWKERDUGV LQ VWDJ JHUHG ODV RXWV
-QVWDOODWLRQ VXU SORWV DYHF GLVWLEXWLRQ GH ODP HV HQ G«FDQ
½ÛÜÊ×ØÌ ÔÊ×Ê ÛÜØÓÔÒ ÛØÛÖÏ ã Ï××å ÖÒ ÕÊÖÏ ÕéÖÒ

5DVWHOGH DOXP LQLR 352
$OXP LQLXP WDFNHU352
&KHQLOH DOXP LQLXP 352
ª Õè ÖÒ×ÒÏ Ì å Ó ÜÚÏ ÔÕÏ Ú 352

G

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&OS 352

G

G

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&OS LQLFLR ILQ 352

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(ODSR\ R GH ODVWHOHQWH SORWV GHEH VHUGH P LOP HWURV FRP R P £[LP R
7KHUH VKRXOG EH D P D[LP XP GLVWDQFH RI P P EHWZ HHQ WKH EDWHQV
/ D GLVWDQFH HQWHH WDYHUVHV VHUD GH P LOOP ª WHVP D[LP XP
®ÒÒ ÊÚÏ ÓÔÒ ÖÏ ÐÌ Ý ÛÜØÓÔÊÖÒ Î ØÕÐ×Ê Ëå Üæ×Ï ËØÕÏ Ï ÖÒÕÕÒÖÏ ÜÚØÌ

(ODSR\ R GH ODOP D FHU£P LFD ([DGHFN VREUH UDVWHOHV GHEH VHUGH P LOP HWURV FRP R P £[LP R
7KH VXSSRUWRI WKH ([DGHFN FHUDP LF VODWRQ WKH EDWHQV P XWEH D P D[LP XP RI P LOOP HWHV
/ DSSXLGH ODOP H F«UDP LTXH ([DGHFN VXUOHV OWHDX[GRLW-WH GH P LOOP ª WHVP D[LP XP
¸ ÙØÚÊ ÕÏ ÚÊÖÒáÏ ÛÔØÓ ÙÕÊ×ÔÒ ([DGHFN×Ê ØÈÚÏ â Ï ÜÔÝ Î ØÕÐ×Ê ÛØÛÜÊÌ ÕéÜæÖÊÔÛÒÖÝÖ ÖÒÕÕÒÖÏ ÜÚØÌ

(¸ÑM ±%¢¸ Ñ¾ Í’ Ê±¼ÑÇE
-QWDZODWRQRQSHGHWDZDV-QWDZODWRQ VXUSORW ½ÛÜÊ×ØÌ ÔÊ×Ê ÛÜØÓÔÒ

-QWDZODFLµQ VREUH SORWV FRQ GLVWLQWLQFLµQ GH ODP DV DQQHGDV
-QWDZODWRQ RQ SHGHWDZDV Z LWK ERDUGV LQ QQHDUDWD RXW
-QWDZODWRQ VXUSORW DYHF GLVWLQFWLRQ GH ODP HV HQ QJQH
¶ Ø×ÜÊÐ ×Ê ÛÜØÓÔÒ ÛÌ å ÚØÌ ×Ï ××å ÖÒ ÕÊÖÏ ÕéÖÒ

5DWWHGH DXP LQR 352
$ØXP LQLXP WDFNHU352
&KHQLOH DXP LQLXP 352
ª Õè ÖÒ×ÒÏ Ì å Ó ÜÜï ÔÕÏ Ú352

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&OS 352

G

G

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&OS LQLFLR ILQ352

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y(ODSR\R GHOLDWHHQQHW SORW GHEHVHUGH P LOP HWURV FRP R P £[LP R
7KHUH VKRXOG EH D P LP XP GLVWDQFH R P P EHWZHHQ WKH EDWWQV
/ÐGLVWDQFH HQWHWDVH WDY HUHV VHUD GH P LOP ª WH VP D[LP XP
ÕÕ×Ê ÜÏ ÔÕÒ ÖÏ ÐÎ Ý ÛÜØÓÔÊÖÒ Î ØÕÐ×Ê Ëå Üè×Ï ËØÕÏ Ï ÖÒÕÕÒÖÏ ÜÜØÌ

(ODSR\R GH OD OP DFHUP LFD ([DGHFN VREUH UDWHHQV GHEHVHUGH P LOP HWURV FRP R P £[LP R
7KH VXSSRUWR WKH ([DGHFN FHUP LF VDWRQ WKH EDWWQV P XWEH D P [LP XP R P LOP HWURV
/ DSSXLGH OD OP HF«UP LTXH ([DGHFN VXUOHV OWDX[GRUW-WHGH P LOP ª WH VP D[LP XP
¸ ÙØÚÊ ÕÏ ÚÊÖÒáÏ ÛÜØÓ ÙÕÊ×ÔÕ ([DGHFN×Ê ØËÜÏ å Ï ÜÔÝÎ ØÕÐ ª Ê ÛÚÜÊÏ ÕéÜè×ÊÖÒÒÝÖ ÒÒÝÕÕÐÏ ÚÜØÌ

-QWDOD FLµQ VREUH SORW FRQ GLWLEXFLµQ GH OD P DV WDEDGDV \ RSWP L] DFLµQ GH SORW VHJ¼Q OX] P £[LP D HQWH HORV
-QWDOD WRQ RQ SHGHWDOY Z LWK ERDUGV LQ WDJ JHUHG OD\ RXW OHDYLQJ D Z LGHUJ DS EHWZ HHQ WKH SHGHWDOY
-QWDOD WRQ VXUSORW DYHF GLWLEXWRQ GH OD P HV HQ G«FDQ HWRSWP LVDWRQ GHV SORW HQ DXJ P HQWDQWOD GLWDQFH HQWH HX[
½ÛÜÊ×Ø Ì ÔÊ ×Ê ÛÜØÓÔÒ ÛØ ÛÖÏ ã Ï ××å ÖÒ ÙÕÊ×ÔÊÖÒ Ò ØÙÜÒÖÒÑÊà Òé ÛÜØÏ ÔÌ ÛØØÜÌ Ï ÜÛÜÌ ÒÒ Û ÖÊÔÛÒÖÊÕæ×å Ö ÑÊÑØÚØÖ ÖÏ ÐÎ Ý ×ÒÖÒ

5DWHOGH DOXP LQLR 352
$OXP LQLXP WDFNHU352
&KHQLOH DOXP LQLXP 352
ª Õè ÖÒ×ÒÏ Ì å Ó ÜÚÏ ÔÕÏ Ú 352

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&OS 352

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&OS LQLFLR ILQ 352

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y(ODSR\ R GHOUDWHOHQWH SORW GHEH VHUGH P LOP HWRV FRP R P £[LP R
7KHUH VKRXOG EH D P D[LP XP GLWDQFH RI P P EHWZ HHQ WKH EDWHQV
/ D GLWDQFH HQWH WDYHUHV VHUD GH P LOP ª WHV P D[LP XP
®ÕÒ×Ê ÜÏ ÓÔÒ ÖÏ ÐÎ Ý ÛÜØÓÔÊÖÒ Î ØÕÐ×Ê Ëå Üæ×Ï ËØÕÏ Ï ÖÒÕÕÒÖÏ ÜÚØÌ

(ODSR\ R GH OD OD P D FHU£P LFD ([DGHFN VREUH UDWHOHV GHEH VHUGH P LOP HWRV FRP R P £[LP R
7KH VXSSRUWRI WKH ([DGHFN FHUDP LF VODWRQ WKH EDWHQV P XWEH D P D[LP XP RI P LOP HWHV
/ DSSXLGH OD OD P H F«UDP LTXH ([DGHFN VXUOHV OWHDX[GRLW-WH GH P LOP ª WHV P D[LP XP
¸ ÙØÚÊ ÕÏ ÚÊÖÒáÏ ÛÔØÓ ÙÕÊ×ÔÒ ([DGHFN ×Ê ØËÚÏ â Ï ÜÔÝÎ ØÕÐ×Ê ÛØÛÜÊÌ ÕéÜæÖÊÔÛÒÖÝÖ ÖÒÕÕÒÖÏ ÜÚØÌ

(¸ÑÑ¦ ±‰¢¸ Ñ¾Í ’ ’ ÑÑÍ Ü‰ÜÍ¦ Ž’ · ¦ Ž’ Í¦ Œ

–QWWDCODWRQ RQZ RRGHQ VWWKFFWXUHV –QWWDCODWRQVXUWWKFFWXUHHQERLV

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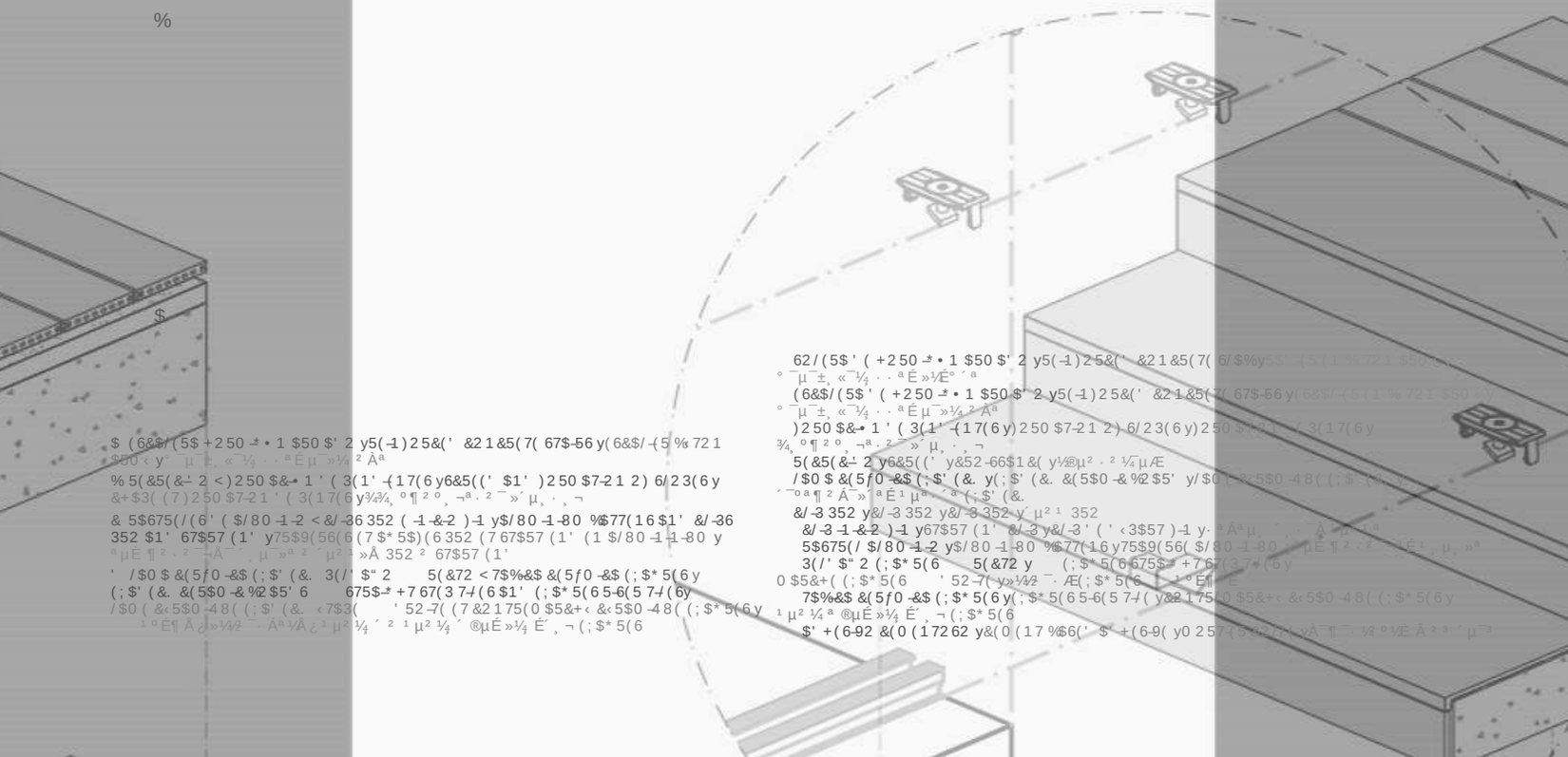

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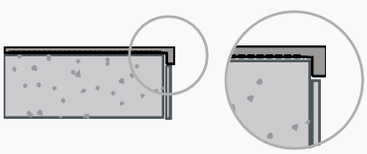

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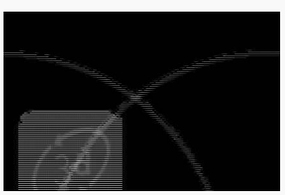

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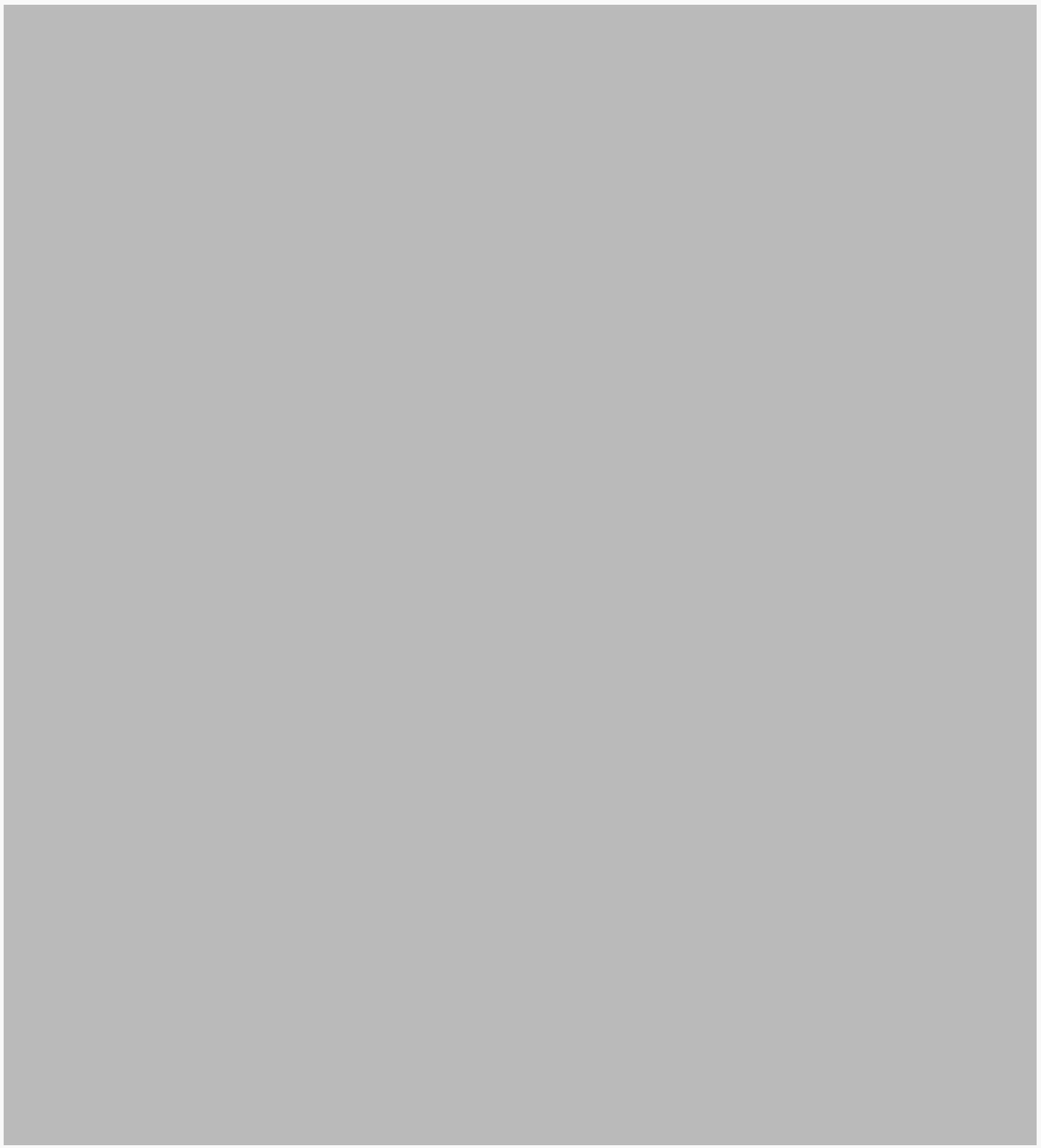

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8 QD YH] ILQDOL]DGRV WRGRV ORV WUDEDMRV ([DJUHV UHFRP LHQGD OP SLDUFRQ DJXD \ VHFDUFRQ XQ SD³ R OP SLR HCFRQMXQWR GH ODV OMP DV HMHFXWDGDV (Q FDVR GH P DQFKDV SHUVLVWMQWMV UHSHWLUL OD OP SLH] D FRQ DJXD \ NDEµQ QHXWR HYLWDQGR XWL] DU HCHP HQWRV DE UDMLYRV

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3 DUD OD FRUUHFW OP SLH] D GH HMWD VXFLHGDG VXSHUILFLDO OP SLDU FRQ DJXD D SUHMµQ \ VHFDU FRQ XQ SD³ R OP SLR (Q FDVR GH VXFLHGDG P £V UHMLWMQWM UHSHMU OD OP SLH] D FRQ DJXD \ NDEµQ QHXWR
(Q FDVRV GH] RQDV GH SROXFLµQ P HGLD R HOHYDGD TXH LP SQTXHQ XQ DOOR JUDGR GH DFXP XODFLµQ GH VXFLHGDG VREUH ODV OMP DV VH SXHGH XWL] DU XQ GHMWMJ HQWM GHMHQJUDVDQWM GLXLLGR HQ DJXD DSQFDU VREUH OD VXSHUILFLH GHMWQGROR DFWXDU P LQXWRV \ SRWMUR RUP HQWM IURWDU FRQ XQ FHSLOOR) LQDOP HQWM DFODUDUE LHQ FRQ DE XQGDQWM DJXD \ VHFDU FRQ XQ SD³ R

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$ SHVDU GHOUHGXFLGR P DQWMQLP LHQWR TXH UHTXLHUH VH UHFRP LHQGD XQD OP SLH] D SHUµGLFD GHOVLWMP D D ILQ GH P DQWMQHU VX EXHQ DVSHFWR \ HYLWZU XQ P DQWMQLP LHQWR P £V FRWRVR FRQ HOSDVR GHOWHP SR
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2 QFH DOOWKH Z RUN LV RYHU VKH QHZ OD ODLG GHFNLQJ VKRXOG EH FOHDQHG Z LWK Z DWMUDQG WKHQ GLHG Z LWK D FOHDQ FORWK –Q WKH FDVH RI SHUVLWMQWWZDLQV FOHDQ WKH ERDUGV DJDLQ Z LWK Z DWMUDQG D QHXWDOVRDS GHWMUJHQW DYRLGLQJ DEUDVLYH VXEWZQFHV

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–Q IDLUD RUYHU SROOXWMG DUHDV OHDGQJ WR D KLJK EXLGG XS RI GLUWRQ WKH ERDUGV D JUHDVH UHP RYHUGLOXWMG LQ Z DWMUFDQ EH XVHG $SSO\ WKH VROWRQ WR WKH VXUFFH DQG OHDYH LWWR DFWRU VR P LQXWMV 7KHQ VFUXE WKH VXUFFH Z LWK D EUKVK / DWMD ULQH WKH VXUFFH Z LWK SOHQW RI Z DWMUDQG GU\ LWZ LWK D FORWK

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7KH VXEWMDWM IRUWKH GHFNLQJ P XWMEH FRP SOHWMO WMDE OH Z LWK D VOR SH RI DWMBHDWM P P SHUOQHDUP HWMH LQ WKH GLUHFWMRQ RI WKH EDWMQV VR WKDWZ DWMU FDQ GUDLQ DZ D\ 7KH EDWMQV VKRXOG UXQ LQ WKH VDP H GLUHFWMRQ DV WKH VOR SH RI WKH VXEWMDWM RQ Z KLFK WKH \ WMP LV OLG WR JXDUDQWMH RSWMP XP Z DWMUGUDLQDJH

) RUFUGLQDU P DLQWMQDQFH WKHUH DUH VXLWMDE OH SURGXFW VSHFLFDO OD IRUFHUDP LFV –Q WKH HYHQWRI XVLQJ FRP SOHP HQWDU FOHDQLQJ P HWKRGV XVLQJ EUKVKHV RU SDGV GR QRWKVH WKHVH WWSHV RI DEUDVLYH HOEP HQW RI D GLI HUHQWQDWXUH XQGHUDQ\ FLUFXP WMDQFHV
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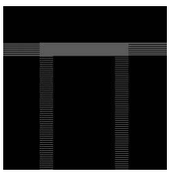

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(Q HO FRQIRUP DGR VH UHDOL]D LQWRGXFLHQGR Ø P DVD SØEVWFD HQ Ø H[WUKVRUD \ FRQ SU-VLµQ GH YDFÍR HV DP DVDGD \ HP SXNØGD D WUDY«V GH Ø ERTXLØD SDUD REWHQHU ØDV SLH]DV HLQDØHV FRP R SHKØD³ RV R ERUGHV SLVFLQDV HWF

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&RQ HVWH SURFHVR ØRV P DWHULDØHV SXHGHQ VHU UHFLFLØGRV HQ VX VØRWØDGDG \ DGP LWHQ KDWØ XQ GH P DWHULDØHV UHFLFLØGRV HQ VX SURFHVR HWØZQGDU

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* U‹FH ¢ FH SURF«G« LOHWW SRVWLEØH GREWQLU GHV SLª FHV VS«FLDØHV FRP P H GHV P DUFKHV RX GHV P DUJHØHV GH SLVFLQHV HWF

(QVXLW Ø HV SLª FHV G«Nl P RXQH\ VRQW SDW«HV ¢ ODLU FKDXG DILQ G«ØP LQHUØH FRQW¤QX GKXP LGLW

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([WUKVLRQ SURFHVV LV D IRUP LQJ W¤FKQLTXH IRU WKH P DQX IDFWUH RI FHUDP LF SURGXFW¤ %DWLFDØD WKLV SURFHVV FRQVLW¤ LQ IRUFLQJ WKH SDW¤DJH WKURJK WKH DSSØFDW¤RQ RI D SUHVVXUH RI WKH SDW¤W Z LW¤K D SØDW¤F FRQVLW¤QF\ WKURXJK D P DW¤[

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-Q WKH VKDSLQJ W¤ØJH WKH SØDW¤F P DW XVLQJ YDFXXP SU-HWXUH LV NQHDGHG DQG SXVKHG WKURJK WKH QR]]Ø¤ VR P DNH W¤P VØHV 7KLV SURFHVV LV Z LGHKØ XVHG VR P DNH VSHFLØO W¤Ø¤V SLHFH¤ Ø¤H W¤P VWSV RU VZ LP P LQJ SROOERUGHU W¤Ø¤V HWF

2 QFH WKH W¤Ø¤V KDYH EHHQ VKDSHG KRWØDLU LV XVHG VR UHP RYH WKH P RLWXUH FRQW¤QW

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ÇÔÛÜÚÝÑÒé Ü ß×ØÕØÍÒé ÒÛÙØÕæÑÝÏ ÖÊé Î Õé Þ¤ØÚÖØÌ ÔÒ Õ ÚÊÖÒàÍ ÛÔÒ3 ÒÑ Ï ÕÒÓ ÙÚÙ ÒÓ3 ÒÑ ØÙØÌ Õ ×ÒÒ ¬ ØÚ×Ø ×ØÖ ÙÚØàÏ ÛÛçÔÛÜÚÝÑÒÒ ÑÊÔÕè áËÏ ÜÉ Ì ÙÚØÍ ÊÌ ÕÒÌ Ê×ÒÒ ÙØÍ Î ÊÌ Õ ×ÒÏ Ö ÙÊÛÙØØÆÚÊÑ×Ø Ø Ûå Úææé áÏ ÚÏ ÑÞ¤ØÚÖÝè ã Ï Ï ØÚ Ï ÚÛÙÒÏ

¹ ÚØÒÑ Ø Ù Ø Õ ÚÊÖÒàÍ ÛÔØÓ ÙÕÒÙÔÒ Û ÙØÓ ÙÚØÖØã æè çÔÛÜÚÝÑÒÒ ÛØÛØÒÜÒÑàÍ Ûå ÚÏ ß ØÚ×Ø ×å ß çÛÊÙØÌ ÑÊÖÏ ÛÊ Þ¤ØÚÖØÌ ÔÒ Ûÿâ ÔÒ Ò ØÆÞÖÍÊ

±ÊÖÏ Û ÑÊÔÕè áËÏ ÜÉ Ì ÛÖÏ â ÒÌ Ê×ÒÒ Û Ì Ø Ó ÙÚÏ Î Ì ÊÚÙÒÜ Õæ×Ø ÙØÎ Í ØÚØÌ Õ ×× Ø Ø Ò ÒÑÖÏ Õæáï ×× Ø Ø Ûå Úææ ´ Ø×Ï á×å Ö ÚÏ ÑÝÕæÙÊÜØÓ çÙØÍ Ø ÙÚØàÏ ÛÛÊ éÌ Õéï ÜÉ ÕÎ Í ÓØ ÙØÎ Î Êè ã ÊéÛé ØÊÚÉËØÚÕÌ ÙÊÛÉ Î Õé çÔÛÜÚÝÑÒÒ

¾ØÚÖØÌ ÕÊ ÙÚÏ Î ÛÉÌ Õéï ÜÛØËØÓ ÑÊÍ ÚÝÑÔÝ ÙØÕÝáÏ ××ØÓ ÙÚÒ ÑÊÖÏ Õ Ù ÊÛÛå Ì çÔÛÜÚÝÎ Ï Ú Ì ÓØÙØÚØÖ Ø×Ê ÙÏ ÚÏ ÖÏ â ÒÌ ËÏ ÜÉ ÙØÍ Ì ÊÔÝÝÖ×å Ö Î ËÌ Õ ×ÒÏ Ö Ò ÙÚØÜÉÕÔÒÌ ËÏ ÜÉ áÏ ÚÏ ÑÛØÙÕØÎ Õé Þ¤ØÚÖØÌ ÒÒ Ó Ø×Ï á×å ß ÒÑ Ï ÕÒÓ

» ÙØÖØã æè çÙØÍ Ø ÙÚØàÏ ÛÊ ÖØÐ×Ø ÙØÕÝáÒÜbeÛÙÏ à ÒÊÕæ×å Ï ÒÑ Ï ÕÒé ÜÉÔÒÏ ÕÊÔÛÝÚÏ ×Ò ÒÕÒ ËØÚÎ è Úå Î Õé ËÉÛÛÏ Ó×Ø Ì Ò Î ØÚÒÒÐÏ ×Ò é ÖÒÒ ×Ï ØËßØÎ ÒÖØÓÌ ÒÚÚÒÞÒÖÊà ÒÒ ÜÏ ÕÕØÌ Ê×Òé » ÙØÖØã æè çÙØÍ Ø ÙÚØàÏ ÛÊ ÖÉÜ ÚÒÊÕå ÖØÍ ÝÜËå ÜbeÙØÕ×ØÚÜbæè ÙÏ ÚÏ ÚÊËØÚÊ×å ¬ ÜÛÊ×Î ÉÚÜ×ØÖ ÙÚØàÏ ÛÜ Î ØÙÝÛÊÉÏ ÜÛé ÖÙÙØÕæÑØÌ Ê×ÖÏ Î Ø ÙÏ ÚÏ ÚÊËØÚÊ××å ß ÖÉÜ ÚÖÊÕØÌ

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3URFHVRGH H[WUDVLQ ([WUVLRQSURFHVV
3URF«G« GH[WUVLRQ ¹ ÚØàÏ ÛÜçÔÛÜÚÝÑÒÒ

±è| ±¾Ž’ ‡ ’ î ×Í ÜÑ¢¸ Œ

([WUVLRQYDOXHV/ DYDOHXUGHGH[WUVLRQ ±×ÊáÏ ×ÒÏ çÔÛÜÚÝÑÒÒ

/DVP DWULDVSUP DVVHGHFFLRQDGDV\ HCFXLGDGR SURFHVR GH SURGXFFLµQ FRQ DVVWFQRORJ¯DVP £VDYDQ]DGDV\ DDDERUGH QXHVWUR KXP DQR KDFHQ TXH HCSURGXFWR REWQLGR SRVHD XQDV FDUDFWHUtVWLFDV WFQLFDV H[FHSFLRQDOHV
$GHP £VDD H[WUVLQ GRVDD DDV SLH]DV GH XQD P LFRRHWWUXFWLRQD KRP RJ«QHD HWWDEOH\ UHWLWWQQWHWXHJRVP HF£QLFRV
&RQHWWSURFHVR VH SXHGHQ REWQHUJHRP HWWDV WGLP HQWLRQDOHV HQ DDV SLH]DV LP SRVLEOHV GH FRQVHUXLRQ HCSURFHVR GH SUHQVDGR WDGLFLRQDO

7KH UDZ P DWHULDOSV HCHFWG WKH FDUHXCSURGXFWRQ SURFHVZ LWK WKH P RVWDGYDQFHG WFKQRORJLHV DQG WKH ZRUNI RXUKXP DQ WDP P HDQ WKDWWKH SURGXFW REWDLQHG KDV H[FHSWRQDOFFKLQFDCFKDUDFWHULWWFV
-Q DGGLWRQ H[WUVLRQ JLYHV WKH SDUW D KRP RJHQHRXV WDZEOH DQG P HFKDQLFDO UHVLWDQWLQVP DQG P HFKDQLFDO UHVLWDQWLQVP DCP LFURWUXFWUH
: LWK WKLV SURFHVV WUHH GLP HQVLRQDO HWWHV FDQ EH REWDLQHG RQ WKH SLHFHV Z KLFK DUH LP SRVLEOHV WR DFKLHYH Z LWK WKH WDGLWRQDOFRP SDFWQJ SURFHVV

/HV P DW UHV SUHP LªUHV FKRLVHV GH ULJRXUHX[SURF«G« GH SURGXFWRQ TXLXWDVH GHV WFKQRORJLHV GHV SQXV DYDQF«HV DLQVLTXH GH WDYDLOGH QRWH «TXLSH KXP DLQH IRQWTXH GH SURGXLWREWQX SRVªGH GHV FDUDFWUVWTXHV WFKQLTXHV H[FHSWRQQHGHV
(Q RXWH CH[WUVLRQ FRQª UH DX[SLªFHV XQH P LFRVWUXFWUH LQWHUQH KRP RJª QH WDZEGH HVP «FDQLTXHP HQWU«VWDZQW
* U»FH ¢ FH SURF«G« RQ SHXWREWQLGHV J«RP «WUHV WGLP HQVLRQQHGHV VXUGHV SLªFHV LP SRVLEGHV ¢ U«DDVHUDYHF GH SURF«G« GH SUHVDJH WDGLWRQQHO

«ÕÊÍØÎ ÊÚé ØÜËØÚ×ØÖÝÛå Úæè ÒÜã ÊÜ Õæ×ØÖÝÙÚØàÏ ÛÛÝÙÚØÒÎ ØÎ ÛÜÊÛ ÛÒÛÙØÕæÑØÎ Ê×ÒÏ Ö ÛÊÖå ß ÙÏ ÚÏ Î ØÎ å ß Ü ß×ØÕØÍÒÓ Ò ÚÊËØÚÜ ×Êâ Ï Í Ø ÔØÕÕÎ ÔÙÒÎ Ê ÙØÕÝáÏ ××å Ï ÒÑ Ï ÕÒé ØËÕÊÎ Êè ÜÒÛÔÕè áÒÜ Õæ×å ÖÒ Ü ß×ÒáÏ ÛÔÒÖÕ ßÊÚÊÔÕÜ ÚÒÛÙÒÔÊÖÒ
´ ÚØÖÏ ÙØÍØ çÔÛÜÚÝÑÒé ÙÚÒÎ ÊÏ ÜÎ Ï ÜÊÕéÖ ØÎ ×ØÚØÎ ×Ýè ÜÛÊËÒÕæ×Ýè Ò ÖÏ ßÊ×ÒáÏ ÛÔÒ ÝÛÙØÓáÒÏ Ýè Ì ×ÝÜÚÏ ××è è ÖÒÔÚØÛÜÚÝÔÙÝÚÝ
ÇÜØÜÙÚØàÏ ÛÛÙØÑÎ ØÕéÍ ÜÒÑÍØÜËÏ ÕÒÌ ÊÜæÍÜÎ ßÖÏ Ú×å Ï ÒÑÏ ÕÒé á ÛØ×Ï Ì ØÑÖØÞ×Ø ÙÚÒ ÒÛÙØÕæÑØÎ Ê×ÒÒ ÜÚËÏ ÙÚÜØàÏ ÜÛÊÙÚÜØÎ Ê×Òé

¶ ÔåÔçØå?æçLÜÖÔæç; Öá ÜÖÔæç

7HFKQLFDÕGDWD &ĐUDFWULWWT XHVWMFQLTXHV ¼ß×ÒáÏ ÛÔÒÏ ßÊÚÊÔÜÏ ÚÒÛÜÒÔÒ

* UHVH[WXLGR SRUFHODQHR HVP DOWDGR VHU½Q 81((1 JUXSR $-Đ
([WXGHG JDJHG SRUFHODQ VWRQHZ DUH DFFRUGLQJ WR 81((1 JURXS $-Đ
* U¹VF«UDP H«P DLQG H[WXG« VHORQ DQRUP H81((1 JURXSH$-Đ
ÇÔÛÜÚÝÎ ÒÚØÏ Êׇå ÓÍÕÊÑÝÚØÏ Êׇå Ó ÕÎ ÚÊÖØÍÚÊ×ÒÜÌ ÛØØÛÎ ÏÜÜÛ ÒÒÛ81((1 ÍÚÝÙÙÊ$-Đ

-62	' LP HQVLRQHV 6L]HV ' LP HQVLRQV ºÊÑÖÏÚå		
	/ RQJ LWXG \ DQFKXUD / HQJWK DQG Z LGWK / RQJ XHXUHWDUJHXU ®ÕÒ×Ê	s s PP	s s PP
	Ò â ÒÚÓ×Ê	s	s s PP
	(VSHVRU 7KLFNQHVV ‹ SDLVHXU ½ØÕâ Ò×Ê	s	s s PP
	5HPWXG GH ORVDGRV 6WDDJKWQHVV RI VLGHV 5HPWXGH GHVP¶WVV		
	¹ ÚéÖØÕÒ×Ï Ó×ØÚÜeÛÜØÚØ×	s	s
	2 UWRJRQDOGDG 5HPWDQJXODUW 2 UWKRJRQDOW ¸ ÚÜØÍØ×ÊÕe×ØÚÜe	s	s
	3DQDULGDG 6XUDFH)DWQHVV 3DQDULW ¹ ÕÊ×ÊÚ×ØÚÜe		
-62	$EVRUPµQ GH DJXD : DWU DEVRUSWRQ $EVRUSWRQ GH OHDX Ì ØÍ ØÚØÍÕØã Ï ×ÒÏ	1	1
-62	) XHJ D GH URWXUD %UHDNLQJ VWHQJWK 5«VLVWDQFH¢ DD UXSWXUH ¹ ÚØá×ØÚÜe×Ê ÚÊÑÚå Ì	2 1	2 1
-62	5HVLVWDQFH DD DEUDVµQ VXSHUILFLDO 5HVLVWDQFH WR VXUFH DEUDVRQ 5«VLVWDQFH¢ DEUDVRQ GH DD VXUFH ½ÛÜØÓáÒÌ ØÚÜeÔÒÛÛÒÚÊ×Òè ÙØÌ Ï Úß×ØÚÜÒ		
-62	5HVLVWDQFH DDFKRTXHWUP LFR 5HVLVWDQFH WR WKHUP DOVKRFN 5«VLVWDQFH DX[FKRPVWKHUP LTXHV ½ÛÜØÓáÒÌ ØÚÜeÔÜÏ ÚÏÎ ÝÜ ÖÜÏ ÚÊÜÝÚ	H[LJ LGD UHTXLUHG UHTXLVHyØËéÑÊÜ Õæ×å Ó	JDUDQWHHG JXDUDQWHHGyJDUDQWHH - ÊÚÊ×ÜÒÚØÌ Ê××Ø
-62	5HVLVWDQFH DDFXDUWR &UDJLQJ UHVLVWDQFH 5«VLVWDQFH¢ DD ILWXXUDWRQ ½ÛÜØÓáÒÌ ØÚÜeÔÚÊÜÜÏÎ ÛÔÒÌ Ê×Òè	H[LJ LGD UHTXLUHG UHTXLVHyØËéÑÊÜ Õæ×å Ó	JDUDQWHHG JXDUDQWHHGyJDUDQWHH - ÊÚÊ×ÜÒÚØÌ Ê××Ø
-62	5HVLVWDQFH DD DKHDGGD) URWWUHVLVWDQFH 5«VLVWDQFH DX JHO ¶ ØÚØÑØÜÛØÓÔØÚÜeÛ	H[LJ LGD UHTXLUHG UHTXLVHyØËéÑÊÜ Õæ×å Ó	JDUDQWHHG JXDUDQWHHGyJDUDQWHH - ÊÚÊ×ÜÒÚØÌ Ê××Ø
-62	5HVLVWDQFH DD ORV DJHQWV TXTP LFRV &KHP LFDOUHVLVWDQFH 5«VLVWDQFH DX[DJHQW FKLP LTXHV ½ÛÜØÓáÒÌ ØÚÜeÔßÒÖÒáÏ ÛÔÒÖ Ì Ï ã Ï ÜÜ ÊÖ	P ¯QLP R % P LQLP XP % P LQLP XP % ÖÒ×ÒÖÝÖ %	$ / $ +$
-62	5HVLVWDQFH DD ORV P DQFKDV 6WDLQ UHVLVWDQFH 5«VLVWDQFH DX[WDFKHV ½ÛÜØÓáÒÌ ØÚÜeÔÒÜéÜ×ÊÖ	P ¯QLP R FDVH P LQLP XP FDVH FDVH P LQLP XP ÖÒ×ÒÖÊÕæ×å Ó ÔÕÊÛÛ	FDVH FDVV FDVH ÔÕÊÛÜ
(1 $1(;2 $	5HVLVWDQFH DDGHVQ] DP LHQWR UDP SD SLH GHVFDQ)R $QWLVDS UHVLVWDQFH EDUHIRRWUDP S VWWV 5«VLVWDQFH DX JDLVHP HQWUDP SH SLHGVQXV »ØÙÚØÚÜÒÌ Õï ×ÒÏ ÛÔØÕæÐÏ ×Òè ÚÊÖÒÜÊ Î Õé ËØÚÂß×ØÍ		FDVH& FDVV& FDVH& ÔÕÊÛÜ&
(1 $1(;2 %	5HVLVWDQFH DDGHVQ] DP LHQWR UDP SD SLH FDQ)DGR $QWLVDS UHVLVWDQFH VKRG UDP S VWWV 5«VLVWDQFH DX JDLVHP HQWWWVSLHG FKDXW« »ØÙÚØÚÜÒÌ Õï ×ÒÏ ÛÔØÕæÐÏ ×Òè ÏÚÕÒßØÍ ÒÜØËÝÚå Ö		5
(1 $1(;2 &	5HVLVWDQFH DDGHVQ] DP LHQWR S«QGXQR 6QS UHVLVWDQFH SHQGXQXP WWW 5«VLVWDQFH DX JDLVHP HQWSHQGXQ »ØÙÚØÚÜÒÌ Õï ×ÒÏ ÛÔØÕæÐÏ ×Òè ÖÊéÜ×ÒÖÔ	H[LJ LGD UHTXLUHG UHTXLVHyØËéÑÊÜ Õæ×å Ó	FDVH FDVV FDVH ÔÕÊÛÜ





à ÕÔÎÔÝØ¡

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exagres
TECHNICAL SOLUTIONS

	) RUP DWR y 6L] H y) RUP DWy ¾ØÚÖÊÜ	3LH] DV FDMD 3LHFHV ER[3Lª FHV ER°WH Â ÜÝÔ ÔØÚØËÔÊ	. J FDMD . J ER[. J ER°WH Ô´ ÔØÚØËÔÊ	&DMDV SDOHW %R[HV SDOHW %R°WHV SDOHWHV ´ ØÚØËÔÒ ÙØÎ Î Ø×	. J SDOHW . J SDOHW . J SDOHW Ô´ ÙØÎ Î Ø×
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	72 51 -/ / 2 ; -1 2 ; 7$&2	SFV ER[	NJV ER[		NJ SF

3HGLGR P ¯QLP R FDMD GH XGV 0 LQLP XP RUGHU ER[RI WDHV &RP P DQGH P LQLP XP GH X ¶ Ò× ÒÖÊÕæ× å Ó ÑÊÔÊÑ ÔØÚØËÔÊ Ì ÔÕè áÊè ã Êé ï Î Ò× Òà
&LQWD DGKHVLYD SRUXQD FDUD * RP D GH FDXFKR FRQ I XQFLµQ GH DOP RKDGLOOD DP RUWJ XDGRUD $GKHVLYH WDSH RQ RQH VLGH 5XEEHUUXEEHUZ LWK FXVKLRQLQJ SDG I XQFWRQ %DQGH
DGK«VLYH VXUXQ P¶W &DRXWFKRXF DYHF I RQFWRQ GH WDP SRQ DP RUWWHXU ´ ÕÎ ÓÔÊé ÕÎ × ÜÊ Û Ø Î × ØÓ ÛÜØÚØ× å º Ï ÑÒ× ØÌ Êé ÚÏ ÑÒ× Ê Û Þ Ý× Ôà ÒÏ Ó ÊÖØÚÜÒÑÒÚÝè ã Ï Ó ÙÚØÔÕÊÎ ÔÒ
3HGLGR P ¯QLP R FDMD GH XGV 0 LQLP XP RUGHU ER[RI WDHV &RP P DQGH P LQLP XP GH X ¶ Ò× ÒÖÊÕæ× å Ó ÑÊÔÊÑ ÔØÚØËÔÊ Ì ÔÕè áÊè ã Êé ï Î Ò× Òà



FIRE DECK

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¬ Nª ã º ³ ã NÝã@¬• Nª ü ÕVº PÁÝº ¬ ü V8@8º 5 8 ³ V¬º ³ ã NÝã@¬• Nª ü ÕVº • 8º ã Nº ³ º ³ • @• ÕVã º • ³ • u n• 8u ã NÝº 8ãÕã • ü5 ã ¬º P
ÁÝº 5 8ã¬º ¬ ³ º @K º • @V8º @• ³ 8º Ô 8º ¬º @ V@N« º nº 8ãÛ ³ • @NÝº 8º • u « º Nu5 Õ8• 5 Ýã¬• ü º 8 8 8@º