

7\UFUWf]n]b['YUFnU[Y'UbX'gYUgcbU'YZZYVg'cb'g'UV'fYgdcbgY'hc'
Ybj]fcb a YbHU'`cUXg

>"A""J5B89B6CGG7<9žD'9"žD\`8
I b]j Yfg]mcZD]hgVi f[\žD]hgVi f[\žI G5

G""5""K 9@@G
I b]j Yfg]mcZD]hgVi f[\žD]hgVi f[\žI G5

56GHF57H. H\Y' ZcWg' cZ h\g' gh Xm]g' hc' dfcj]XY' U' XYHU]YX' UbUmg]g' cb' h\Y' grfU]b' h\U
XYj Y'cdg' Ug' U' fYg' h' cZ Ybj]fcb a YbHU' `cUXg" H\g' gh Xm V\UFUWf]nYg' g'UV' fYgdcbgY'
]a a YX]UH' m UZHY' V\bgf] V]cb" f]Zfgh +& \ci fg UZHY' dUj]b[E' UbX' U'gc' UXXfYggYg' gYUgcbU'
YZZYVg' cj Yf' h\Y' Z]fgh k c' nYUfg' Zc`ck]b[' V\bgf] V]cb"" 5' \YUj]m]bgf] a YbhYX' hYgh gYV]cb'
V\bhU]b]b[' Vch' Xck Y'YX' UbX' i bXck Y'YX' g'UVg' k Ug' V\bgf] V]X' hc' \Y'd' VYHYf' V\UFUWf]nY'
g'UV' fYgdcbgY' hc' Ybj]fcb a YbHU' `cUXg" Gi fZUW' dfcZ]Y' a YUg' fYa Ybhg' k YfY' U'gc' a UXY' cb'
h\YgY' g'UVg' Uh j Uf]ci g' h]a Yg' cZ h\Y' XUm Xi f]b[' YUW' g'YUgcb" H\Y' a U[b]h XY' cZ h\Y' Vi]h]b'
[fUX]Ybh k Ug' ei Ubh]Z]YX' Ucb[' k]h' h\Y' YUFnU[Y' fYgdcbgY' cZ h\Y' g'UV' hc' Ybj]fcb a YbHU'
`cUXg" =h k Ug' Zci bX' h\U h\Y' Yei]j U'Ybh']bYUf' hYa dYfU h fY' [fUX]Ybh Uh h\Y' h]a Y' cZ gYh k Ug'
\$"%& s7#V\ f]s"&& s: #]bE" H\Y' Uf[Ygh Vi]h]b' Wfj U h fY' a YUg' fYX' Ucb[' h\Y' X]U[cbU' Zcf h\Y'
Xck Y'YX' UbX' i bXck Y'YX' g'UVg' k Ug' "\$\$\$\$%&(' %a f]s"\$\$\$(\$, %ZL UbX' "\$\$\$\$%, %a
f]s"\$\$\$\$(' %ZLž fYgdYV]j Ym' H\Y']bVfYUgY']b' Wfj U h fY' k]h' Ub']bVfYUgY']b' Yei]j U'Ybh'
]bYUf' hYa dYfU h fY' [fUX]Ybh Zcf h\Y' i bXck Y'YX' g'UVg' k Ug' + dYfVbh \[\Yf' h\Ub' h\Y' Xck Y'YX'
g'UVg" K \]Y' h\Y' dfcZ]Y' a YUg' fYa Ybhg' UfY' i gYX' hc' ei Ubh]Z]m cj YfU" g'UV' XYZcfa Uh]cbž grfU]b'
[U[Yg' k YfY' i gYX' hc' UbUmmY' h\Y' g'UV' fYgdcbgY' Uh `cVW]nYX' dc]bhg' k]h]b' h\Y' g'UV" I g]b['
grfU]b' [U[Ygž]h k Ug' Zci bX' h\U h U' gi VgtUbh]U' Ua ci bh cZ h\Y' Xfn]b[' g\fb_U[Y' cVW]ffYX' k]h]b'
h\Y' Z]fgh) \$' XUmg UZHY' V\bgf] V]cb"" 8Ygd]hY' h\U h\Y' h\Yfa U' grfU]b' k Ug' g]` Zci bX' hc' VY'
k]W' Ug' \[\ Ug' h\Y' Xfn]b[' g\fb_U[Y' h\Y' Z]fgh k]bhYf' Zc`ck]b[' V\bgf] V]cb"" 5' h\cfci [\'
V\UFUWf]n]h]cb' cZ g'UV' fYgdcbgY' hc' [fUX]Ybhg']b' h\Y' g'UV']g' dfcj]XYX"" J Uf]UH]cbg']b' Xfn]b['
g\fb_U[Y' UbX' hYa dYfU h fY' UfY' V\UFUWf]nYX' bch cb'm h\cfci [\ci h h\Y' XYd\ cZ h\Y' g'UV' Vi h
U'gc' UW]cgg' h\Y' g'UV' gi fZUW"

?9MK CF8G. 7i f]b[ž k Ufd]b[ž [fUX]Ybhgž Wfj U h fY"

%" =BHFC8I 7H=CB

H\Y' fYbX' hc' a cj Y' hck UfXg' U' a cfY' a YWUb]gh]WUddfUW']b' `c]bhYX' d'U]b' V\bVfYHY' dUj Ya Ybh
f]D7DŁ: XYg] [b' \Ug' Ya d\Ug]nYX' h\Y' bYX' hc' a cfY' UWVfUH'm V\UFUWf]nY' dUj Ya Ybh fYgdcbgY'
hc' Ybj]fcb a YbHU' UbX' j Y\]W' `cUXg' fHF 6ž &\$\$('L" :]b]hY' YYa Ybh UbUmg]g' \Ug' VYYb' h\Y'
V\ta a cb'm i gYX' hc' Zcf' W]W'UH]b[' dUj Ya Ybh grfYgg' =h]g']a dcfUbh hc' j U]XUH' h\YgY'
h\YcfYh]W' a cXY'g' k]h' Z]YX' XUHU' g]bW' h\Y' fYgrfU]bh]b' h\Yfa U!` cf' a c]gh fY' fY'UH'X'
XYZcfa Uh]cb' W]i gYX' Vm h\Y' gY'Z k Y][\h cZ h\Y' g'UVž Z]V]cb' VYh YYb' h\Y' Vchca' cZ h\Y' g'UV'
UbX' i bXYf]n]b[' UnYfgž h]Y' UbX' Xck Y' VUfg' UbX' h\Y' g\ci 'XYf' UfY' fU h Yf' V\ta d'Yi' UbX' X]Z]W' h
hc' a cXY"

CbY' cZ H.Y' Zfghi cVgHUVWg' hc' cj YfVtza Y' k \Yb' i g]b[' Z]b]hY' Y'Ya Ybhi hc' a cXY' dUj Ya Ybhi fYgdcbgY' Jg' hc' WUfUWVf]nY' H.Y' a U[b]hi XY' cZ Vtbgfhi V]cb' Wf]b[' UbX' k Ufd]b[' H.Uh XYj Y'cdg] b' H.Y' ZYX' fMI ž &\$\$%&" 7cbgfi V]cb' Wf]b[' UbX' k Ufd]b[' Jg' H.Y' fYg' h' cZ U' Vi]H]b[[fUX]Ybhž k \]W' cVW'fg' Ug' VUub[Yg']b' HYa dYfUhi fY' UbX' a c]ghi fY' cVW'F' h'fci [\ci hi H.Y' XYdH' cZ H.Y' g'UV' df]cf' hc' \UfXYb]b[' cZ H.Y' DcfhiUbX' Wa Ybhi VtbgfVfY' fD77E" G'UVg' H.Uh UfY' Vtbgfhi V]X' YUf]Yf']b' H.Y' XUm[U]b' U' g]l[b]Z]Wbhi Ua ci bh'cZ \YUhi YbYf[m]Zca' gc'Uf' fUX]U]h]cb' UbX' \nXfU]h]cb' cZ H.Y' Wa Ybhi UbX' U' dcg]h]j' Y' Vi]H]b[HYa dYfUhi fY' [fUX]Ybh' WUb' XYj Y'cd'" 5h' b]l[\hž' H.Y' Ua V]Ybhi HYa dYfUhi fY' Xfcdg' UbX' Vch' a c]ghi fY' UbX' \YUhi YbYf[m]UFY' cghi bYUf' H.Y' gi fZUW' cZ H.Y' D77' gc' U' bY[Uh]j' Y' Vi]H]b[HYa dYfUhi fY' [fUX]Ybh' WUb' XYj Y'cd' k \Yb' g'UVg' UfY' Vtbgfhi V]X' 'Uhrf']b' H.Y' XUm' H.Y' g'UV' fYa U]bg' ZUhi Yj Yb']b' H.Y' dfYgYbW' cZ H.Y'g' [fUX]Ybh' VYUhi gY' H.Y' d'Ugh]VWtbgfVfYH' \Ug' bchi XYj Y'cdYX' gi Z]V]Ybh' gh]ZbYgg' hc' [YbYfUhr' gYfYgg' cf' gYfU]b'" H.Y' bYk' ; i]XY' Zcf' H.Y' 8Yg]l[b' cZ BYk' UbX' F.Y\U]]fUHX' DUj Ya Ybhi Gfhi V] fYg' fHF 6ž &\$\$ (E' \Ug' gYck b' H.Y' ja dcfU]bW' cZ ei Ubh]Z]b[' H.Y' Vi]H]b[[fUX]Ybh' cb' a cXY']b[' dUj Ya Ybhi dYfZca UbW' fMI ž &\$\$%&"

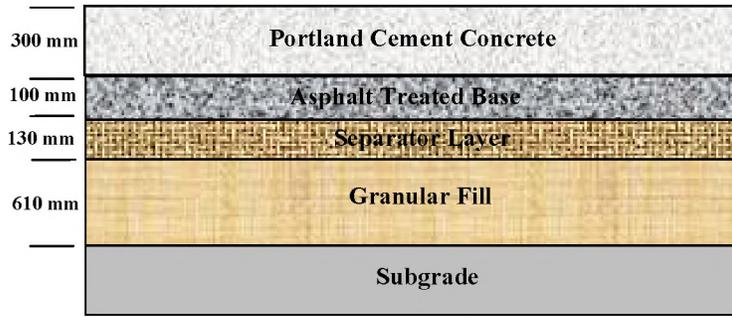
6ch' dUj Ya Ybhi]bgfhi a YbU]h]cb' UbX' X]fYV]i g'UV' dfcZ]Y' a YUgi fYa Ybhg' UfY' VY]b[' i gYX' hc' VYHf' WUfUWVf]nY' H.Y' YZ]V]i cZ HYa dYfUhi fY' UbX' a c]ghi fY' [fUX]Ybhg' cb' H.Y' dYfZca UbW' cZ VtbgfVfYH' dUj Ya Ybhg' GfYcb[ž &\$\$%&' fYcb[ž &\$\$ (Ež fGWA]Xhž &\$\$%&' UbX' fDcVYHž % , +E' H.Y'g']bZca Uh]cb' k]' VY' i gYž ' hc' \Y'd' j U]XUhr' ž hi fY' UbU]h]W' a cXY'g'" G]bW' gYfYgg' WUb' bchi VY' a YUgi fYX' X]fYV]iž gYfU]bg' UfY' hml]W' mi a YUgi fYX']b' H.Y' ZYX'" GfYgg' XYj Y'cdg' k \Yb' H.Y' g'UV']g' bchi U'ck YX' hc' Yi dUbX' cf' VtbgfU]i ZYfYm' k]h' WUub[Yg']b' HYa dYfUhi fY' cf' a c]ghi fY' VtbgfVfYH' GfYgg' [YbYfUhr' X' k]h]b' H.Y' g'UV' WUb' VY' ei Ubh]Z]YX' Vm WUfUWVf]n]b[' H.Y' fYXi V]cb']b' gYfU]b' H.Uh' cVW'fg' k]h' WUub[Yg']b' a c]ghi fY' VtbgfVfYH' UbX' HYa dYfUhi fY' Ug' U' fYg' h' cZ H.Y' fYgYfU]bhi VtbgfVfYH' fH]Y' VUfğž Xck Y' VUfğž' g'UV' VUgY']bHfZUW' Z]V]cb' cf' VcbX]b[ž' g'UV' gYž k Y]l[\hž' YH]V'" H.Y' ZcW'g' cZ H.Y'g' gh' Xmi]g' hc' dfcj]XY' U' XYH]YX' UbU]ng]g' cb' H.Y' gYfU]b' H.Uh' XYj Y'cdg' Ug' U' fYg' h' cZ Ybj]fcb' YbU' cUXg' UbX' hc' ei Ubh]Z]i Vtbgfhi V]cb' Wf]b[' UbX' k Ufd]b[' Zcf' U' []j Yb' gYh' cZ W]a Uhr' UbX' dUj Ya Ybhi XYg]l[b' VtbgfVfYH'g' 5' Hk' c!Zc' X' UddfcUW' k Ug' UXcdhYX' Zcf' h'g' UbU]ng]g'" K \]Y' dfcZ]Y' a YUgi fYa Ybhg' cZ H.Y' g'UV' gi fZUW' dfcj]XY' Ub' cj YfU'" j]Yk' cZ H.Y' g'fhi V] fU' fYgdcbgY' cZ H.Y' g'UVž H.Y' gYfU]b' a YUgi fYa Ybhg' Zca' H.Y']bgfhi a YbH]X' g'UVg' dfcj]XY']bZca Uh]cb' cb' H.Y' fYgdcbgY' cZ H.Y' g'UV' UhX]gVfYH' dc]bhg' k]h]b' H.Y' g'UV"

&" 89G7F =DH=CB 'C: 'H9GH'G97H=CB

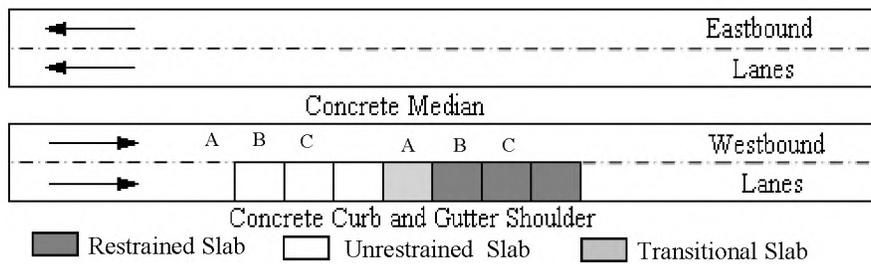
5' hYgh' gYV]cb' k Ug' Vtbgfhi V]X' hcž Ua cb[' chYf' h]b[gž' ei Ubh]Z]i H.Y' g'UV' XYZca Uh]cb' H.Uh' cVW'fg' Ug' U' fYg' h' cZ Ybj]fcb' YbU' cUXg' UbX' H.Y' Vtbgfhi V]cb' Wf]b[' UbX' k Ufd]b[' Zcf' U' []j Yb' gYh' cZ W]a Uh]WUbX' XYg]l[b' Z]V]cfg'" H.Y']bgfhi a YbH]X' hYgh' gYV]cb' VtbgfVfYH' cZ U' '\$!V] f]b]V]bV]E' DcfhiUbX' Wa Ybhi 'c]b]H]X' d'U]b' VtbgfVfYH' dUj Ya Ybhi fD7DE' Vtbgfhi V]X' cb' hcd' cZ U' %\$!V] f(!]b]V]E' cdYb[fUXYX' Ugd\U'hi gYU]]nYX' VUgYž U' %!V] f!)!b]V]E' XYbgY[fUXYX' gi VUgYž UbX' U' %*!V] f]b]V]E' VUW]Z'" a Uh]Yf]Už Ug' gYck b']b' Z]l[i fY' %' H.Y'g' dUj Ya Ybhi k Ug' Vtbgfhi V]X' cb' U' gYV]cb' cZ \]l[\k Um' cb' l "G" Fci H'Y' &&]b' Ai ffn]j]Yž DYbbgm] Ub]U' fK Y'gž &\$\$) E"

H.Y' bYk' >D7D']g' U' Zci f! UbY' X]j]XYX' \]l[\k Um' k]h' (" *!a' f]b] !Zccl' fUbgj YfYg' 'c]bhgž' " +!a' f]b]Zccl' ' UbYgž' UbX' \$", !a' f]b] *!Zccl' k]XY' VtbgfVfYH' WfV]UbX[i H]Yf' gYci 'XYfg'" H.Y' dUj Ya Ybhi VtbgfVfYH' ' ", !V] f]b])!]b]V]E' X]Ua Yhrf' Xck Y'g' U'cb[' H.Y' fUbgj YfYg' 'c]bhg' UbX' %*! V] f]b] * &)!]b]V]E' X]Ua Yhrf' h]Y' VUfğ' gdUW]X' h'fY' ZYH'cb' WbH]f' U'cb[' H.Y' WbH]f']bY' 'c]b]h' H.Y' hYgh' gYV]cb']g' cVUhr']b' H.Y' k Ygh'ci bX' h'f' W' UbY' cZ Fci H'Y' && UbX' VtbgfVfYH' cZ gYj Yb' D77' g'UVg'" H.Y' Xck Y' UbX' h]Y' VUfğ' k YfY' Yž' ci hi cZ H'fY' VtbgfVfYH']g' U'g' gc' H.Y' YZ]V]i cZ fYgYfU]bhi H.Y'm' ja dcgY' cb' H.Y' g'UV' V]i 'X' VY' ei Ubh]Z]YX'" 5' fUbg]h]cb' g'UV' gYdUfUhr'g' H.Y' fYgYfU]bYX' UbX' i bfYgYfU]bYX' g'UVgž Ug' gYck b']b' Z]l[i fY' &" 9UW' UbY' k Ug' dUj YX']bXYdYbXYbhm' i g]b[' U' g]b['Y! UbY' g]d!Zca' dUj Yf'" H.Y' dUgg]b[' UbY' k Ug' dUj YX' gYj YfU' k Y]g' df]cf' hc' H.Y' h'f' W' UbYž k \]W' VtbgfVfYH' H.Y']bgfhi a YbU]h]cb'" H.Y' 'U]ci hi cZ H.Y' hYgh' gYV]cb' WUb' VY' gYb']b' Z]l[i fY' &"

8y "kpqtpcvkqpcif grh'Wpkxgtuks{ "qh'Veje pqmji { 'Y qtmj qr "qp'Hwpf co qpcvriO qf grkpi "qh'yj g'F guki p'cpi Rgthqto cpeg'qhiEqpetgvg'Rexgo gpwu 'Dgni kwo ."Ugr vgo dgt'4228



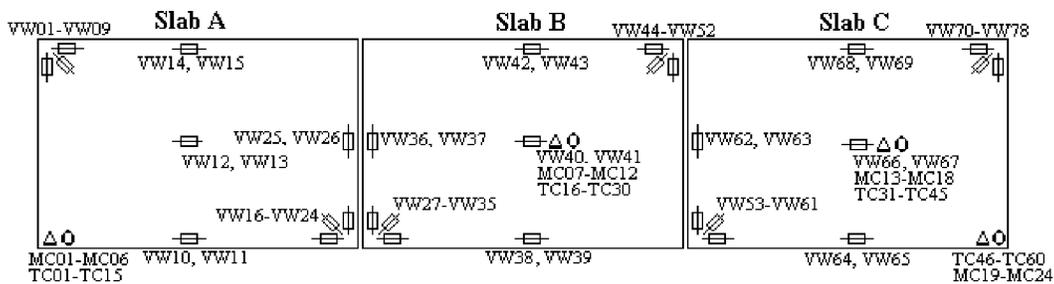
:][i fY % '8Yg][b h]WbYggYg'cZ h Y' dUj Ya Ybh' UnYfg"



:][i fY & ' @Unci h cZ h Yg h g Y M j c b "

' "' 89G7F =DH=CB 'C: ' F 9 @ 9 J 5BH' =BGHF I A 9BH5H=CB

:][i fY ' ' g\ck g' h Y' ' Unci h cZ h Y']bgf h a YbhU h j c b' fY' Yj Ubh' h c' h]g' d f c' YW h' Z c f' V c h' h Y' fYg h U] b Y X' Ub X' i b f Y g h U] b Y X' g' U V g' ' H Y'] b g h f i a Y b h Y X' g' U V g' V e b h U] b' ; Y c _ c b' (& \$ \$' j] V f U h] b [' k] f Y' g h U h] W g h f U] b [[U [Y g' ' H Y' [U [Y g' U f Y' ' c' W h Y X' &) ' a a' f b %] b e' Z f c a' h Y' g i f Z U W' Ub X' &) ' a a' f b %] b e' Z f c a' h Y' V c h t c a' c Z h Y' g' U V' ' H Y' ' Unci h c Z h Y' [U [Y g' k U g' f Y d'] W h Y X' Z c f' V c h' g' Y h g' c Z g' U V g' f f Y g h f U] b Y X' Ub X' i b f Y g h f U] b Y X' e' ' H Y' g' U V g' k Y f Y' U g c'] b g h f i a Y b h Y X' k] h' h Y a d Y f U h f Y' g Y b g c f g' H n d Y' H' h Y f a c V e i d' Y g' k Y f Y'] b g h U' Y X' U h j U f] c i g' X Y d h g' h f c i [\ c i h' h Y' V e b V Y h Y' Ub X' h f c i [\ c i h' h Y' d U j Ya Y b h' g r f i V h f Y' h c' U W V f U h Y' m' e i U b h] z m' h Y f a U' [f U X] Y b r g' ' H Y' h Y f a c V e i d' Y g' k Y f Y'] b g h U' Y X'] b' h Y' f Y g h f U] b Y X' g' U V g' U h a] X d U b Y' ' Ub X' U h h Y' V e b Y f Y' c Z h Y' g' U V'] b' h k c' f Y d'] W h Y' ' c' W h j c b g' " K] b X' g d Y Y X z' h Y a d Y f U h f Y' Ub X' f Y' U h j Y' \ i a] X] m' k Y f Y' a Y U g' f Y X'] b' h Y' Z] Y X' i g] b [' U b' c b] g h Y' k Y U h Y f'



:][i fY ' ' : - b g h f i a Y b h U h j c b' ' Unci h c Z h Yg h g Y M j c b "

("" BCB@B95F`H9A D9F 5HI F 9; F 58=9BHG

H\Y` hYa dYfUhi fY` [fUX]Ybhrj` XYgM]VYX` YUF]YF` UFY` W`W`UH\X` g]a d`mi Vm X]j]X]b[` h\Y` hYa dYfUhi fY` Uh`h\Y` hcd` UbX` h\Y` Vcltca` cZ`h\Y` dUj Ya Ybh Vm`h\Y` X]ghUbwW` VYhk`YYb` h\Ya "" H\Y` g\cftWta]b[`cZ`h\Y`g` a Yh`cX`]g` h\Uhi]h`dfcj]XYg` U`]bYUF` fY`Uh]cbg\]d` k` \]Y` bcb!`]bYUF` [fUX]Ybhrj` UFY` _bck`b` h`c` Yl]gh`]b` h\Y` dUj Ya Ybh` =b` cfXYf` h`c` UWt`i` bh` Zcf` h\Y` bcb!`]bYUF` hYa dYfUhi fY` [fUX]Ybhrjz` h\Y` dUfUa` YHf` [hYa dYfUhi fY` a` ca` Ybh` k` Ug` XYj` Y`cdYX` Vm` >UbggYb` UbX` GbnXYf` f&\$\$\$E"" H\Y` hYa dYfUhi fY` a` ca` Ybh` k` Ug` XYj` Y`cdYX` gc` h\Uhi` U` bcb!`]bYUF` [fUX]Ybh` Wlb` VY` Yei` UH\X` h`c` Ub` Yei`]j` U`Ybh`]bYUF` [fUX]Ybh` VUgYX` cb` Ub` Yei`]j` U`Ybh` gfrU]b` VtbX]h]cb"" HYa dYfUhi fY` a` ca` Ybh` Wlb` VY` W`W`UH\X` i` g]b[` Yei` Uh]cbg` %` UbX` &"" H\Y` hYa dYfUhi fY` a` ca` Ybh` Wlb` h\Yb` VY` i` gYX` h`c` Z]bX` h\Y` Yei`]j` U`Ybh`]bYUF` hYa dYfUhi fY` [fUX]Ybh` VUgYX` cb` Ub` Yei`]j` U`Ybh` gfrU]b` i` g]b[` Yei` Uh]cb` ""

$$VOq"? "2047\hat{U}_p \int_{R^3} *k- k- 3+^*f k/f f^4_{k-3} +4^*f^3/f p^4+V_{y\ c.xg} \underline{\quad}'' \quad \text{9ei Uh]cb` \%}$$

HA c`1` hYa dYfUhi fY` a` ca` Ybh`
h]1` hYa dYfUhi fY` Uh`c`W]h]cb`]
X]1` 8YdH` Uh`c`W]h]cb`]
Hk`uj`y`1` K` Y] [\h\X` Uj` YfU [Y` hYa dYfUhi fY` f]gY` Yei` Uh]cb` & k`

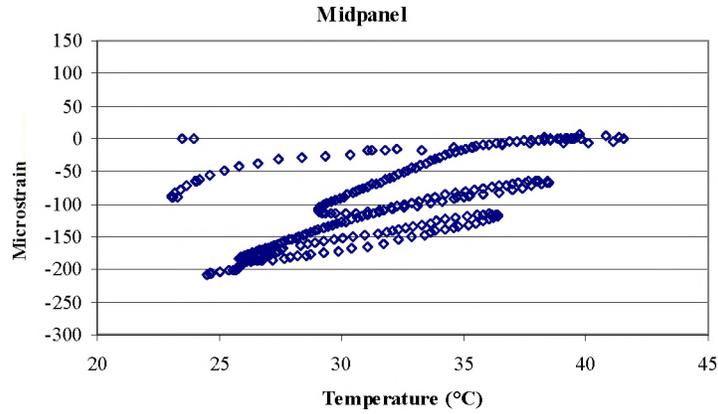
$$\bar{V}''_{y\ c.xg} ? \hat{U}''_{R^3} \left[\frac{*207+^*k/w k- 3+^*f k- f k- 3+}{*f^3/f p+} \right] \quad \text{9ei Uh]cb` \&}$$

$$GNT? / \frac{34*VOq+''}{j^5} \quad \text{9ei Uh]cb`''}$$

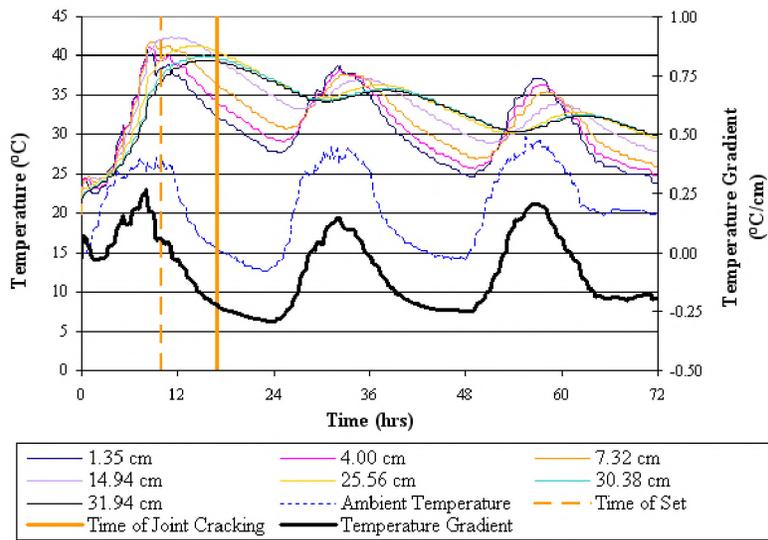
9@` `1` 9ei`]j` U`Ybh`]bYUF` [fUX]Ybh`
\`1` GUV` h\]W]bYgg`

)"" 6l` =@H!` =B` 7CBGFH!` 7H`=CB` 7l` F@B;` 5B8` K` 5FD`=B;

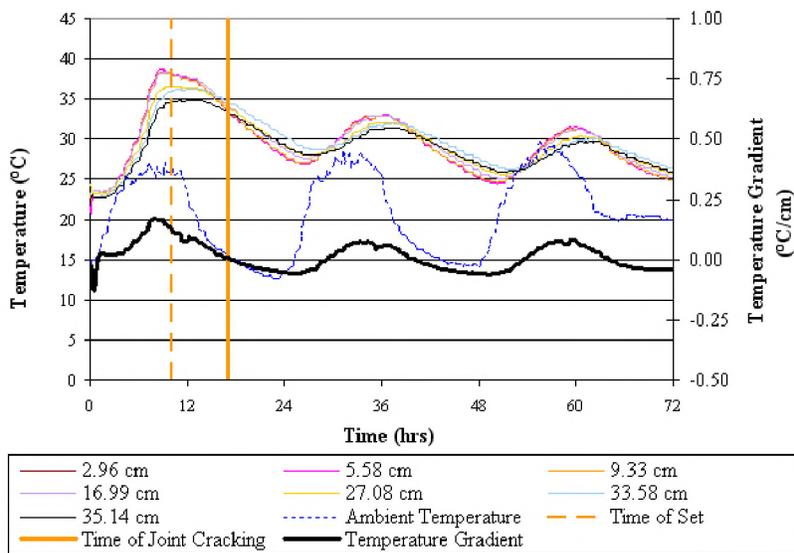
H\Y`]bgrfi` a` Ybh\X` dUj` Ya` Ybh` k` Ug` dUj` YX` cb` 5i` [i` gh` %z` &\$\$(` Uh` Uddfc]` Ja` UH`m` +. \$\$` 5A` "" :] [i` fY` (` g\ck` g` h\Y` hYa` dYfUhi` fY` X]gh]Vi` h]cb` h`fci` [\`ci` h` h\Y` dUj` Ya` Ybh` UbX` g]` V`UmYfg` Uh` h\Y` h]a` Y` cZ` dUj`]b[` z` gYh]b[` z` UbX` `c]`bh` W]W]b["" H\Y` Ygh]a` UH\X` h]a` Y` cZ` gYh` cZ` %\$` \`ci` fg` k` Ug` VUgYX` cb` g]h]W`gfrU]b[` a` YUgi` fYa` Ybhrj` :] [i` fY` (` g\ck` g` gfrU]b[` j` Yfgi` g` W]Ub[Y`]b` hYa` dYfUhi` fY` "" H\Y` gYh` h]a` Y` k` Ug` XYZ]bYX` Ug` h\Y` h]a` Y` gfrU]b[VY[Ub` h`c` XYj` Y`cd` k`]h` W]Ub[Yg`]b` hYa` dYfUhi` fY` "" H\]g` k` Ug` Ugc` UVci` h` h\Y` g]a` Y` h]a` Y` h\Y` `c]`bhrj` k` YfY` g]k` YX` "" 5h` h\Y` h]a` Y` cZ` gYh`z` h\YfY` k` Ug` Ub` Yei`]j` U`Ybh`]bYUF` [fUX]Ybh` cZ` \$`%+s` 7#W` f\$` ((` s` : #]bE` Uh` h\Y` YX[Y` UbX` \$`%&` s7#W` f\$`&&` s` : #]bE` Uh` a`]XdUbY` "" H\Y` `c]`bhrj` W]W]YX` Uddfc]` Ja` UH`m` %+` h`c` %` \`ci` fg` UZ]f` dUj`]b[` k` \Yb` U`]Uf[Y` bY[Uh]j` Y` [fUX]Ybh` cZ` UVci` h`!` \$`*%` s7#W` f!`%\$` s` : #]bE` k` Ug`]b[` dfYgYbh`z` Ug` g\ck` b`]b[` Z[i` fY`)"" :] [i` fYg`)` UbX` *` g\ck` h\Y` hYa` dYfUhi` fY` X]gh]Vi` h]cb` Uh` a`]XdUbY` UbX` h\Y` YX[Y` cZ` h\Y` gUVz` fYgdYV]j` Y`mi` H\YgY` [fUd\g`]i` gfrU]h` h\Y` Z]W]i` h\Uhi` h\Y` hYa` dYfUhi` fY` X]gh]Vi` h]cb` h`fci` [\`ci` h` h\Y` g]UV`]g` bchi` b]Zcfa` gc` h\Y` XYZcfa` Uh]cb` dfcXi` W]X` Vm`h\Y` hYa` dYfUhi` fY` [fUX]Ybhrj`]b` h\Y` g]UV` k`]` bchi` VY` gna` a` Yf]W] "" H\]g` d\Ybca` YbU` \Ug` VYyb` fYdcf]YX` Vm` dfYj`]ci` g` fYgYUfW]Yfgz`]bW` X]b[` >Ycb[` UbX` Nc`]b[Yf` f&\$\$\$E""



: [i fY (. 'GfU]b j Yfgj g'hYa dYFUh fY Uha]XdUbY`Zc'f'h Y Z]fghi+&`fg'UZhf'dUj]b["



: [i fY) . 'HYa dYFUh fY X]ghf]Vi h]cb UbX [fUX]Ybhtg'Uh'gUV'a]XdUbY"



: [i fY * . 'HYa dYFUh fY X]ghf]Vi h]cb UbX [fUX]Ybhtg'Uh'gUV'YX[Y"

8y "kpgtpevkpcnF grh'Wpkxtuks{ "qh'Vej pqrri { "Y qtmj qr "qp'Hwpf co gpcn'O qf grpi "qh'y g'F guki p'cpi Rgthqto cpeg'qh'Eppetgvg'Rcxgo gpu. 'Dgni kwo . "Ugr vgo dgt'4228

*" GI F: 579'DFC: @9'A 95GI F 9A 9BHG

=b' cfXYf' hc' ei UbhZm hY' YZYVh' cZ YUF mU[Y' fZfgh' +&' \ci fgl' YZYVh' cZ Wf]b[' UbX' k Ufd]b[' cb' VtbVYH' dUj Ya Ybhg' gi fZUW' dfcZ]Y' a YUgi fYa Ybhg' UFY' hU_Yb''' H\Ygy' dfcZ]Y' a YUgi fYa Ybhg' Wldh' fY' hY' g\UdY' cZ hY' gUV' i bXYf' j Uf]ci g' hYa dYfUhi fY' UbX' a c]ghi fY' [fUX]Ybhg''' =b' cfXYf' hc' a YUgi fY' hY' gi fZUW' dfcZ]Yg' cZ gUVg' Yl dYf]YbW]b[' hYfa U' UbX' a c]ghi fY' [fUX]Ybhg' Ub']bgh' a Ybh' W'YX' U' 8]dgh]Vz' a Ubi ZUM' fYX' Vm : UW' 7cbgh' V]cb' HYVbc'c[]Ygz' =bW' k Ug' i h]nYX''' hY' 8]dgh]V' d]M' fYX']b' Z[i fY' +"Uz']g' U' \[\m' gYbg]h] Y' XYj]W' hUh' a YUgi fYg' X]ZYfYbW']b' Y'Yj Uh]cb' VYk YYb' gi W]gg] Y' dc]bhg' Ucb[' U' gi fZUW''' K \Yb' k U_YX' U]cgg' U' gUVz' fY'Uhj' Y' Y'Yj Uh]cbg' cZ hY' gUV' dfcZ]Yz' UbX' \YbW' Wf]b[' UbX' k Ufd]b[' Wb' VY' a YUgi fYX''' Gi fZUW' dfcZ]Yg' k YfY' a YUgi fYX' U]cgg' hY' gUV']b' hY' 'cb[]h' X]bUz' X]U[cbUz' UbX' hUbg' YfgY' X]fYV]cbg' Ug' ci h]bYX']b' Z[i fY' +"W

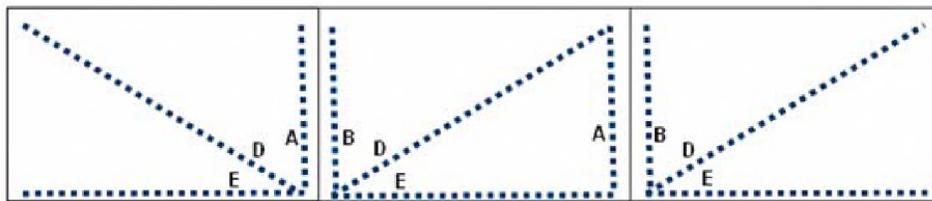
BchY' hY' k c' V]V' Uf' cV'YVh' cV]Vh' bYUf' hY' hUbg' YfgY' 'c]bhg' Ucb[' hY' g\ci 'XYf']b' Z[i fY' +"W' hY' gY' cV'YVh' fYdfYgYbh' hY' hcdg' cZ]b] Uf' fcXg' k \]W' k YfY' d'UWX']b' hY' [fci bX' Uhi U' XYdh' cZ Uddfcl]a UH'm' "+" a' f%& ZYH' =b' cfXYf' hc' Z' fH\Yf']b] fY' hY' Vtb]ghYbW' cZ h]g' fYZfYbW' Y'Yj Uh]cbz' hY' i ddYf' dcf]cb' cZ hY']b] Uf' fcXg' k YfY' YbW]gYX']b' [fYUgY]Z' YX' dc'nh']bmV' cf]XY' fDU 7E' hi V]b[']b' cfXYf' hc' dcf]Vh' hY' fcXg' Zca' hY' Yl dUbg] Y' ghYggYg']bXi WX' Vm Zcgh' Yl dcg' fY''' hY' hcd' cZ h]g' fcXz' d]M' fYX']b' Z[i fY' +"Vz' a U]b]U]bg' U' Vtb]ghYbW' Y'Yj Uh]cb' h]ci [\ci hi hY' nYUf' UbX']g' h]i g' i gYX' Ug' U' VYbW]a Uf' Zcf' U''' gUV' dfcZ]Y' a YUgi fYa Ybhg''' =b]h]U]b[' YUW' X]dgh]V' fi b' cZ Zca' hY' hcd' cZ hY' fcX' U'ck' g' U' fY'Uhj' Y' Y'Yj Uh]cbg' a YUgi fYX' k]h' hY' X]dgh]V' hc' VY' h]YX']b]hc' U]M' U' Y'Yj Uh]cbg''' BchY' hUh']a dYfZV]cbg']b' hY' gUV' k YfY' hU_Yb']b]hc' U]M' bh Vm nYfc]b[' YUW' dfcZ]Y' VUgYX' cb' hY' h]a Y' hY' VtbVYH' gYH'



a. Dipstick



b. Invar rod



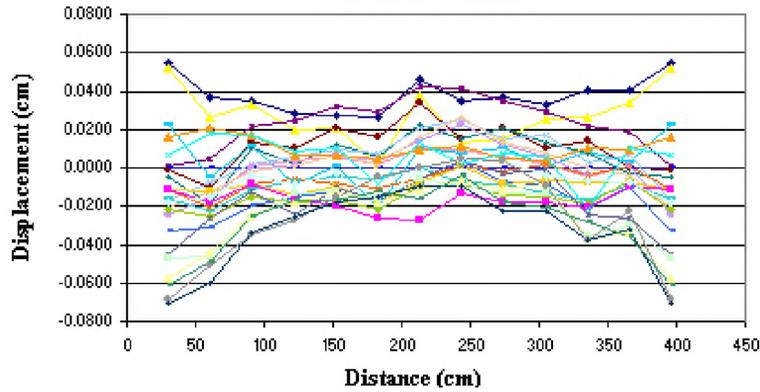
c. Surface profile measurement locations

: = I F 9 +. 'Gi fZUW' dfcZ]Y' a YUgi fYa YbhUhg''

H\Y' X]dgh]V' k Ug' UVY' hc' dfcj]XY' U' XmbUa]W' fYdfYgYbh]cb' cZ hY' VtbVYH' gUV' gi fZUW' dfcZ]Y' Ug' X]m hYa dYfUhi fY' a ca Ybhg' W] gYX']h' hc' Wf''' hY' a U]b' ZcW'g' cZ h]g' UbUng]g' k Ug' hc' Yj Ui UH' hY' Wf]b[' fYgdcbgY' hc' X]ZYfYbh' 'c]bh VtbX]h]cbg']b' dUfh]W' Uf' VYk YYb' h]cgy' k]h' UbX' k]h'ci hXck Y' UbX' h]Y' VUfg''

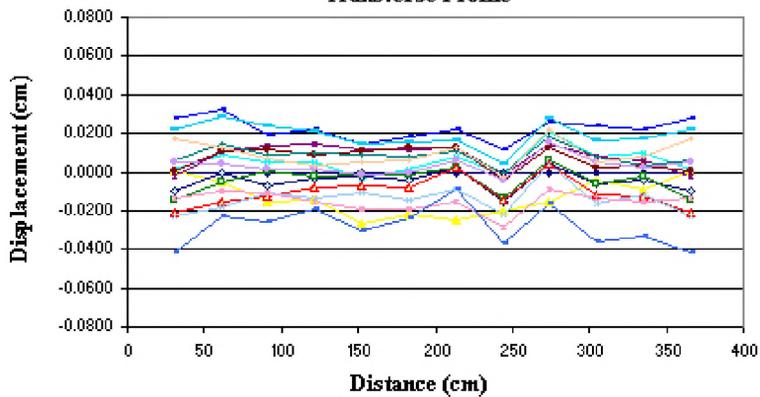
FYdfYgYbh]Y' gUV' dfcZ]Yg' a YUgi fYX']b' hY' hUbg' YfgY' X]fYV]cb' UfY' g\ck b']b' Z[i fY' , ' UbX' - "' DfcZ]Yg' a YUgi fYX' U'cb[' hY' 'cb[]h' X]bU' UbX' X]U[cbU' k YfY' bch']bW' YX' Xi Y' hc' gdUW' fYgh]V]cbg' Vi h'Wb' VY' Zci bX']b' fYZfYbW' Vm k Y' g' f&\$\$) E''' hY' Z[i fY' Vtb]U]bg

**Cell 3 - Unrestrained Slab B, Line B
Transverse Profile**



: = I F 9' , . HfUbgj YfgY' dfcZ' Yg' Zcf' Ub' i bfYgUJ]bYX' g'UV''

**Cell 4 - Restrained Slab B, Line B
Transverse Profile**



: = I F 9' - . HfUbgj YfgY' dfcZ' Yg' Zcf' U' fYgUJ]bYX' g'UV''

dfcZ' Yg' a YUgi fYX' Uhi X]ZZYfYbhi hja Yg' cZ hAY' XUm Zcf' Vch' hAY' fYgUJ]bYX' fg'UVg' VebUJ]b]b[' Xck Y' UbX' hY' VUfg' UbX' i bfYgUJ]bYX' fg'UVg' k]h'ci h' Xck Y' cf' hY' VUfg' g'UVg'' 5'' dfcZ' Yg' dfYgYbHYX' \YfY' k YfY' a YUgi fYX' k]h']b' hAY' Zfgh' k YY' _ UZHYf' dUj]b[' df]cf' hc' hAY' d'UW' a Ybhi cZ hAY' WfV' UbX' [i hYf''

5g' k ci ' X' VY' Yl dYVWXZ' hAY' a Ul]a i a ' X]gd'UW' a Ybhi Zcf' hAY' i bfYgUJ]bYX' g'UV' k Ug' gi VgUbh]U' m \] [\Yf' h'Ub' hAY' fYgUJ]bYX' g'UV'' hAY' a cj Ya Ybhi cZ hAY' YbX' cZ Ub' i bfYgUJ]bYX' g'UV' Ug' U' fYgi ' h' cZ Wf]b[' UbX' k Ufd]b[' WUb' VY' Ug' a i W' Ug' h' k]W' Ug' \] [\ Vta dUFYX' hc' hAY' fYgUJ]bYX' g'UV''

+'' \$'G@56'7I FJ5HI F9'69: CF9'5B8'5: H9F' H<9'>C=BHG'7F57?

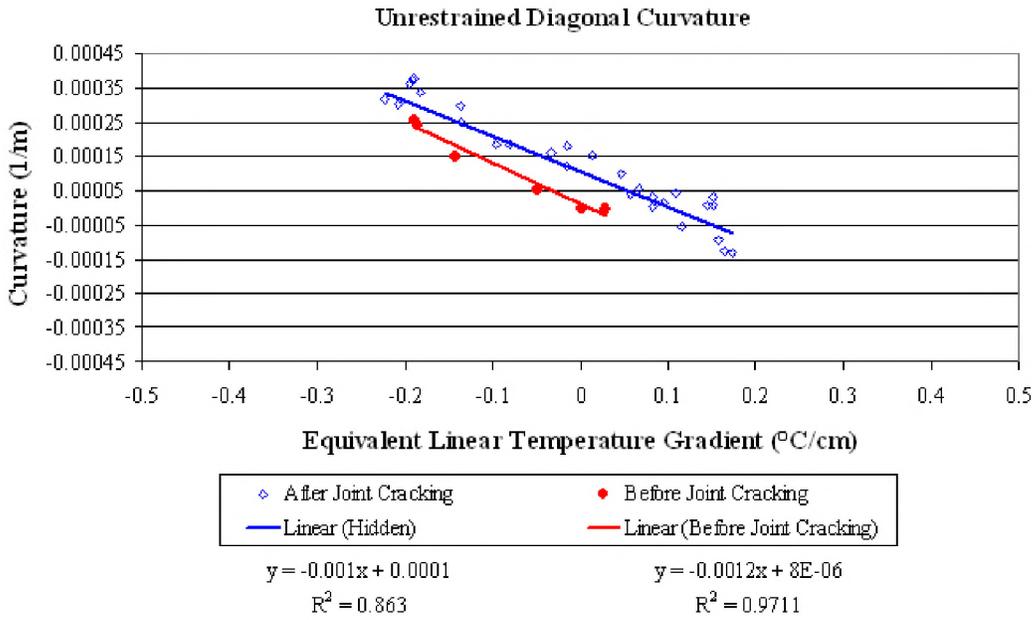
hAY' Wfj Uhi fY' Zcf' YUW' dfcZ' Y' k Ug' hAY' W' W' UHYX' Vm Z]h]b[' U' gYVebX' cfXYf' dc'ntbca]U' hc' hAY' a YUgi fYX' dfcZ' Y'' hAY' Wfj Uhi fY' cZ hAY' dc'ntbca]U' k Ug' W' W' UHYX' cbY' Zcchi]bhc' hAY' g'UV' Zfca' hAY' g'ci 'XYf'' 6m Vta V]b]b[' hAY' dfcZ' Y' XUHU' k]h' hAY' Yei]j UYbhi ']bYUf' [fUX]Ybhi XYf]j YX' Zfca' hAY' a]XdUbY' hAY' fa cVti d'YgZ' hAY' fY'Uh]cbg\]d' VYh' Yb' g'UV' Wfj Uhi fY' UbX' Yei]j UYbhi ']bYUf' hYa dYfUhi fY' WUb' VY' YgUUV']g' YX''

hAY' fYgdcbgY' cZ hAY' g'UV' hc' hYa dYfUhi fY' [fUX]Ybri VYZcfY' UbX' UZHYf' hAY' ^c]brg' W'UW']g' ei]h' X]ZZYfYbZ' Ug' k ci ' X' VY' Yl dYVWX' g]bW' hAY' YZZYV]j Y' g'UV' Yb[h']g' gi VgUbh]U' m 'cb[Yf'' :]i fY'

8j "kp'gt'pck'qpcn'F grh'Wpk'xtuku{ "qh'Vej' pqrqi { 'Y qtmj qr 'qp'Hwpf co qpcn'O qf grki "qh'y' g'F guki p'c'p' Rgthqto cpeg'qh'E'qpet'g'g' Rcxgo g'p'u' Dgni kwo . "Ugr' vgo dgt'4228

%\$' g\ck g h\Y Wfj Uhi fY W\W UHYX Zcf dfcZ]Yg a YUgi fYX VYZcfY UbX UZHYf h\Y 'c]b]g V\WU\YX Zcf G'UV 5' fbyY Z[i fY &E]b h\Y i bfYgfU]bYX W"" H\Y Wfj Uhi fY W\W UHYX VYZcfY h\Y 'c]b]g V\WU\YX f]g\ck b' Ug' gc']X' V\WU\YX UfY' k Y"" VYck h\Y VYgh Z]h]bY' cZ U"" cZ h\Y XUHU' dc]b]g" b' U"" WUgYg YI Wdhk \Yb h\Y Yei]j UYbh]bYUf [fUX]Ybh]g' ei]h' \[\z' Wfj Uhi fY W\W UHYX VYZcfY V\WU\]b['k]"" VY"" Ygg h\Ub' Wfj Uhi fY W\W UHYX UZHYf V\WU\]b['VmU'ZM\cf' cZ tk c"

H\Y' Uf[Ygh Vi]h]b' Wfj Uhi fY' a YUgi fYX' Ucb[' h\Y' X]U[cbU' Zcf' h\Y' fYgfU]bYX' UbX' i bfYgfU]bYX' g'UVg' k Ug' "\$\$\$\$%&' %a' fB\$\$\$\$(\$, '#Zt' UbX' "\$\$\$\$% , %a' fB\$\$\$\$() (' %ZtZ' fYgdYV]j Ym' h\Y' Uj YfU[Y' Vi]h]b' Wfj Uhi fY' Zcf' h\Y' fYgfU]bYX' g'UVg' k Ug' "\$\$\$\$%' %a' fB\$\$\$\$' + %Zt' k]h' U' ghUbXUFX' XY]]h]cb' cZ "\$\$\$\$&' %a' fB\$\$\$\$, * (' %Zt' h\Y' Uj YfU[Y' Vi]h]b' Wfj Uhi fY' Zcf' h\Y' i bfYgfU]bYX' g'UVg' k Ug' "\$\$\$\$%&' %a' fB\$\$\$\$(\$) '#Zt' k]h' U' ghUbXUFX' XY]]h]cb' cZ "\$\$\$\$%&' %a' fB\$\$\$\$(*) '#Zt'"



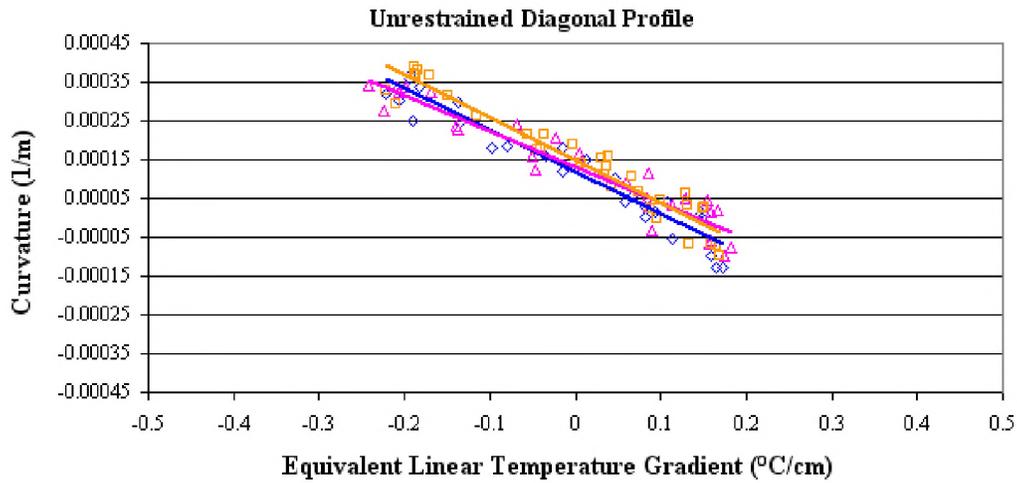
: = I F9' %\$. ' =i' g'fU]h]cb' cZ h\Y' fY'U]h]cb]g\]d' VYtk YYb' Yei]j UYbh]bYUf' h\Y' dYfU]h' fY' [fUX]Ybh UbX' Wfj Uhi fY' VYZcfY UbX' UZHYf' 'c]b]h' V\WU\]b[' Zcf' h\Y' X]U[cbU' dfcZ]Yg' cZ h\Y' i bfYgfU]bYX W""

, ' "\$'9: : 97H'C: 'A=8D5B9@H9A D9F 5HI F9'CB'G@56'7I FJ 5HI F9

:][i fYg' %% UbX' %&']'i' g'fU]h]cb]g\]d' VYtk YYb' Wfj Uhi fYg' Zcf' h\Y' X]U[cbU' dfcZ]Yg' a YUgi fYX' Zcf' h\Y' i bfYgfU]bYX' UbX' fYgfU]bYX' g'UVg' UbX' Yei]j UYbh]bYUf' h\Y' dYfU]h' fY' [fUX]Ybh' Cb'm h\Y' Wfj Uhi fYg' W\W UHYX' Zcf' h\Y' dfcZ]Yg' a YUgi fYX' UZHYf' h\Y' g'UV' V\WU\YX' k YfY' i gYX' hc' [YbYfU]h' h\Y' d'chg"

b' h\]g' UbU'ng]gZ' h\Y' g'cdY' cZ h\Y']bY']bX]W]h]g' h\Y' fU]h' cZ]bWYUgY']b' Wfj Uhi fY' k]h' Ub']bWYUgY']b' Yei]j UYbh]bYUf' h\Y' dYfU]h' fY' [fUX]Ybh' h\Y' g'cdYg' cZ h\Y' fYgfU]bYX' dfcZ]Yg' UfY' cb' Uj YfU[Y' + dYfWbh' Ygg' h\Ub' h\cgY' cZ h\Y' i bfYgfU]bYX' h\Y' a U]]a i a' Wfj Uhi fYg' Zcf' h\Y' fYgfU]bYX' g'UV' UfY' Ugc' gi Vg]Ub]U'm' Ygg' h\Ub' h\Y' i bfYgfU]bYX' h\Y' fYX] W]cb']b' Wfj Uhi fY' Zcf' h\Y' fYgfU]bYX' g'UV' dfc]]X]g' Ub']bX]W]h]cb' cZ h\Y' g'fYgg' h\Uh' XYj' Y'cdg' k]h']b' h\Y' g'UV' k \Yb' h\]g' Wfj Uhi fY']g' fYgfU]bYX"

H\Y' m]bhYfWdh] g] XYdYbXYbh' cb' h\Y' h]a' Y' h\Y' g'UV' gYh' UbX' h\Y' fYg']h]b[' Wfj Uhi fY' gYh']b]c' h\Y' g'UV' fVi]h]b' Wfj Uhi fY' =b' chYf' k cfXgZ']h]g' h\Y' Wfj Uhi fY' dfYgybh' k \Yb' U' h\Y' dYfU]h' fY' [fUX]Ybh']g' bch' dfYgybh']b' h\Y' g'UV' h\]g' k]"" VY' U' Z] bW]cb' cZ h\Y' h]a' Y' YUM' g'UV' k Ug' dUj' YXZ' h\Y' h\Y' dYfU]h' fY' [fUX]Ybh' h\Uh' XYj' Y'cdYX' h\fc] [\ci' h\h\Y' XUm'UbX' h\Y' fYgfU]bh' W\cb]h]cb]g"



◇ Slab A	△ Slab B	□ Slab C
— Linear (Slab A)	— Linear (Slab B)	— Linear (Slab C)

$$y = -0.0011x + 0.0001$$

$$R^2 = 0.9251$$

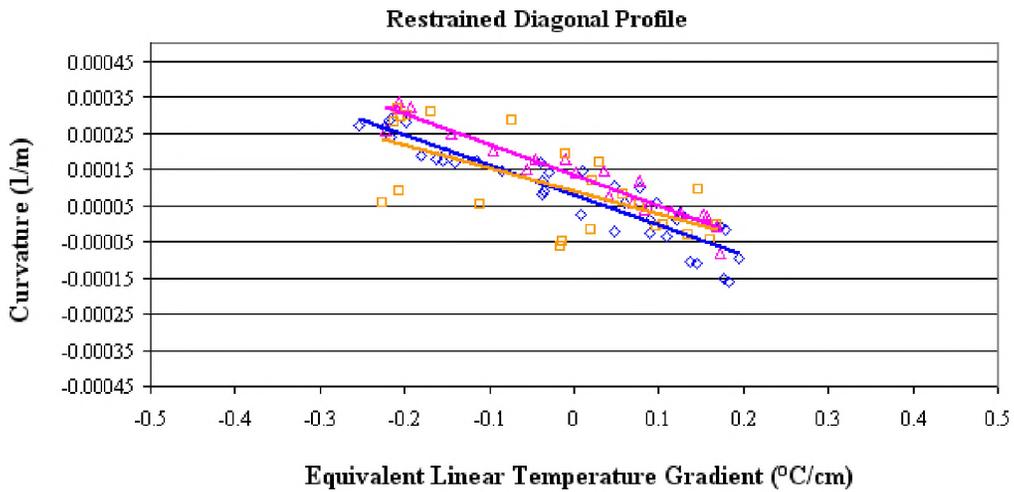
$$y = -0.0009x + 0.0001$$

$$R^2 = 0.9111$$

$$y = -0.0011x + 0.0001$$

$$R^2 = 0.9316$$

∴ I F9'%% '9ei jI UYbh`]bYUF hYa dYfUhi fY [fUX]Ybhj Yfgi g'W/fj Uh fY'Z:f'X]U[cbU`dfcZ]Yg'Uh i bfYgfU]bYX'g'UVg"



◇ Slab A	△ Slab B	□ Slab C
— Linear (Slab A)	— Linear (Slab B)	— Linear (Slab C)

$$y = -0.0008x + 8E-05$$

$$R^2 = 0.8652$$

$$y = -0.0008x + 0.0001$$

$$R^2 = 0.9326$$

$$y = -0.0006x + 9E-05$$

$$R^2 = 0.4471$$

∴ I F9'& '9ei jI UYbh`]bYUF hYa dYfUhi fY [fUX]Ybhj Yfgi g'W/fj Uh fY'Z:f'X]U[cbU`dfcZ]Yg'Uh fYgfU]bYX'g'UVg"

- "9: : 97H'C: 'A =8D5B9@H9A D9F 5HI F9'CB'G@56'7I FJ 5HI F9

K \JY' hAY' dfcZ'Y' a YUgi fYa Ybhtg' UfY' i gYX' hc' ei UbhZm cj YfU'' g'UV' XYZcfa Uh'cbz' g'fU]b' [U[Yg
k YfY' i gYX' hc' UbU'mmY' hAY' g'UV' fYgdcbgY' Uh' c'W]hYX' dc]bhtg' k]h']b' hAY' g'UV'' hAY' a YUgi fYX'
g'fU]bg' U'cb[' k]h' Yei Uh'cb' (' UfY' i gYX' hc' ei UbhZm hAY' YZYVtg' cZ V'Yd' UbX' W'U]b[Yg']b'
hYa dYfUhi fY' UbX' a c]gfi fY']b' hAY' g'UV''

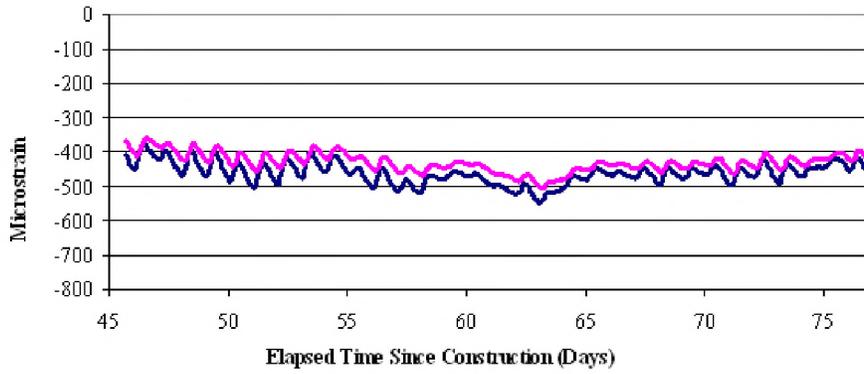
Üö .e.v'? '*T3/'T2+d"- '*V3/'V2+E3+" 9ei Uh'cb' (

- Üö .e.v'1 'g'fU]b']bZi YbW'X' Vm'V'Ydž'a c]gfi fYž' UbX' hYa dYfUhi fY' W'U]b[Yg
- Fs1 'fUk' 'g'fU]b' Uh'hja Y\$' f]b]h]U' V'ebV'YH' gYH.
- F%1 'fUk' 'g'fU]b' Uh'hja Y' %
- Hs1 'hYa dYfUhi fY' Uh'hja Y\$' f]b]h]U' V'ebV'YH' gYH.
- H%1 'hYa dYfUhi fY' Uh'hja Y' %
- 7%1 'hAYfa U' V'YZZ]V'YbhcZ'YI dUbg]cb' cZ g'fY']b' g'fU]b' [U[Y
- 1 '*'+, 'a]W'cgfU]b'#s:
- 6'1 'VUH' W']VfUh'cb' ZUM'cf' f]f]c]]XYX' Vm'hAY' a Ubi ZUM' fYH.

:][i fY' % ']g' U' d'ch' cZ hAY' g'fU]b' a YUgi fYX']b' hAY' 'cb[]h' X]bU' X]fYV]cb' U'cb[' hAY'
'UbY#g' \ci 'XYf' 'c]b]h' Zcf' Ub' i bfYg'fU]bYX' g'UV'' hAY' g'fU]b' a YUgi fYX']b' C'V'cV'Yfz' g' \cfhm' fB'
a cbh'gk' UZHYf' V'ebg'f]i V]cb' V'YV'i gY' hAY' hYa dYfUhi fY' h'fci [\ci h' hAY' XYd'h' cZ g'UV' Uh' hAY'
hja Y' cZ gYh']g' \] \Yf' h'Ub' hAY' g'UV' hYa dYfUhi fYg' h'm]m' m' YbV'ei bh'fYX' Xi f]b[' hAY' a cbh' cZ
C'V'cV'Yf'' hAY' g'fU]b' Uh' hAY' h'cd' cZ hAY' i bfYg'fU]bYX' g'UV']g' [fYUHYf' h'Ub' h'Uh' Uh' hAY' V'c]tca '
Xi Y' hc' hAY' \] [\Yf' XY[fY' cZ Xfm]b[' g'f]b_U[Y' h'Uh' hU' Yg' d'UW' Uh' hAY' g' fZUW' V'ea dUfYX' hc' hAY'
V'c]tca 'cZ hAY' g'UV''

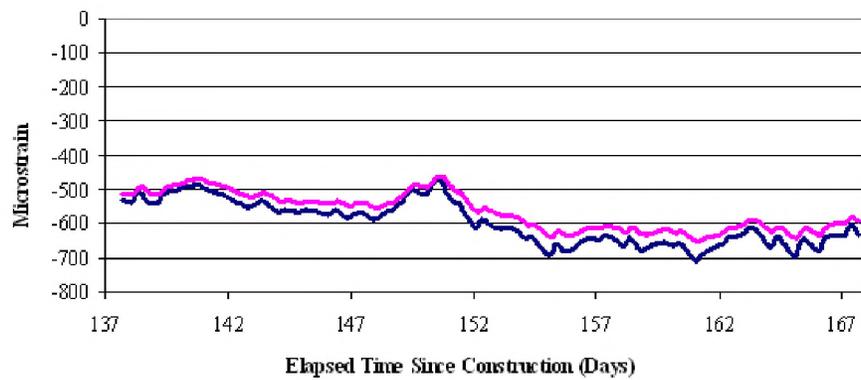
5g' Ua V]Ybhi hYa dYfUhi fYg' X'fcd']b' hAY' k]bhYfz' hAY' a YUgi fYX' g'fU]bg' V'YV'ea Y']b'W'YUg]b[' m
bY[Uh] Y' Ug']bX]W'HYX' Vm' Z[i fY' % "V" hAY' Uj YfU[Y' g'fU]b']b' hAY' Zc'ck]b[' ZU' k Ug' Ufci bX' !'
() \$' a]W'cgfU]b' k \JY' hAY' Uj YfU[Y' g'fU]b']b' hAY' k]bhYf' k Ug' !* \$\$' a]W'cgfU]b' hAY' X]i fbU'
hYa dYfUhi fY' gk]b[g' Ugc' XYW'YUgY']b' hAY' k]bhYf' Xi Y' hc' dfYj U]]b[' gYUgcbU' hYa dYfUhi fY'
dUHYf]bg' UbX' Yb[h' cZ XUm] [\h' \ci fg' h']g' dfcXi W'g' U' XYW'YUgY']b' X]i fbU' g'fU]b' Zi V'U' Uh'cbg'
Zcf' hAY' g'fU]bg' a YUgi fYX']b' hAY' ZU' fZ[i fY' % "Uk' V'ea dUfYX' hc' h'cgY' a YUgi fYX']b' hAY' k]bhYf'
fZ[i fY' % "Vl" hAY' Xfm]b[' g'f]b_U[Y' Uh' hAY' gi fZUW' cZ hAY' g'UV' Ugc' UddYUfYX' hc' VY' g] [\h'm'
\] [\Yf']b' hAY' k]bhYf' h'Ub' hAY' ZU' : U'V'c]fg' V'eb]f]Vi h]b[' hc' h']g' UfY' hAY' \i a]X]m]b' hAY' k]bhYf'
]g' 'ck Yf' UbX' hAYfY' UfY' ZYk Yf' d'fYV]d]h'Uh'cb' Yj Ybhtg' Di gž' U' gi Vg'U]b]U' Ua ci bh' cZ Xfm]b['
g'f]b_U[Y' k]' c'W'V'f' hAY' Z]fghi- \$' X'Ung' UZHYf' V'ebg'f]i V]cb''

G'fU]bg' a YUgi fYX']b' hAY' gi a a Yf' f]i bYk' UfY' g' \ck b']b' Z[i fY' % "W' hAY' Ua V]Ybhi hYa dYfUhi fYg'
]b'W'YUgY' Xi f]b[' hAY' gdf]b[' UbX' gi a a Yf'' h']g' fYgi 'hYX']b' U' XYW'YUgY']b' hAY' Uj YfU[Y' g'fU]b'
Z'ca ' !* \$\$' a]W'cgfU]b']b' hAY' k]bhYf' hc' !& \$' a]W'cgfU]b']b' hAY' gdf]b[' UbX' YUf'm' gi a a Yf''
:][i fY' % "Wg' \ck' g' h'Uh' hAY' XU]m]g'fU]b' Zi V'U' Uh'cbg' UfY' Ugc' a i W' Uf[Yf']b' hAY' gi a a Yf' h'Ub'
]b' hAY' k]bhYf' fZ[i fY' % "Vl" hAY' fYUgcb' Zcf' h']g' W'Ub' VY' V'eb]f]Vi hYX' hc' hAY' ZUM' h'Uh' hAYfY' UfY'
\] [\Yf' hYa dYfUhi fY' Zi V'U' Uh'cbg']b' hAY' gdf]b[' UbX' gi a a Yf'' h' YgY' hYa dYfUhi fY' Zi V'U' Uh'cbg'
UfY' a i W' Uf[Yf' cb' hAY' gi fZUW' h'Ub' hAY' V'c]tca 'cZ hAY' g'UV' UbX' h']g']g' fYZYV'YX']b' hAY' Uf[Yf'
g'fU]b' Zi V'U' Uh'cbg' a YUgi fYX' cb' hAY' gi fZUW' cZ hAY' g'UV''



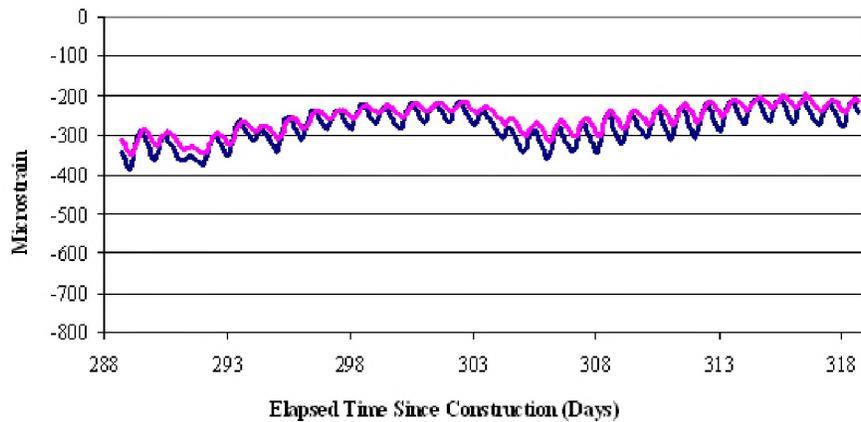
Slab A (Top) Slab A (Bottom)

U'' : U'



Slab A (Top) Slab A (Bottom)

V'' K]bhYf



Slab A (Top) Slab A (Bottom)

W' Gi a a Yf

: ÷ I F9'%. 'GHUjWghfU]b'a YUgi fYX'Ucb['h'Y'UbY#g\ci XYf'c]bhZcf'Ub'i bfYghfU]bYX'gUV''

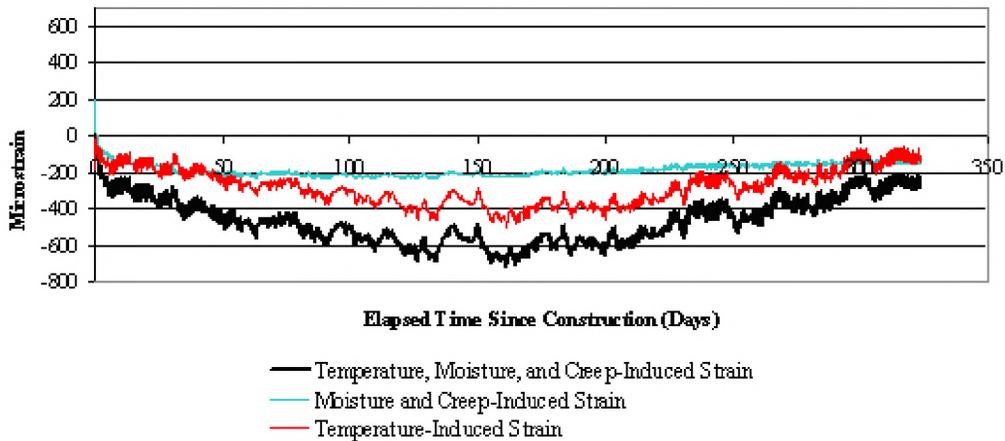
%\$"9: : 97HG C: ' 8FMB; ' G<F-B?5; 9' 5B8' 7F99D' CB' GHF 5-B' fl =FGH' H9B' A CBH<G' 5: H9F' D5J -B; Ł

H\Y' Zc`ck]b[' gYV]cb' dfcj]XYg' U' cc_ ' Uh h\Y' YZZV]g' cZ a c]gri fY! fY'UH\X' g\fl]b_U[Yž' V\Yd' UbX' h\Y' fYgfl]bh VčbX]hcbg' U' cW]hcbg' k]h]b' h\Y' gUV' h'fci [\ci h' h\Y' mYU' H\Yg' Vča dcbYbhg' UfY']gc'UH\X' Z'ca' h'a dYfU' fY!]bXi WX' gfl]b']b' h\g' UbUm]g'i g]b[' Yei Uhcb' ("

±a zw1 ' fF% ' F st6 Ž' fHd' Hstf7%E' 7&t' 9ei Uhcb')"
 ±a zw1 ' gfl]b']bZi YbWX' VmV\Yd' UbX' a c]gri fY' V\Ub[Yg'
 F%1 ' fUk' gfl]b' Uh]ja Y% f]b]h]U' VčbV\Y' gYt'
 F%1 ' fUk' gfl]b' Uh]ja Y%
 H%1 ' h'a dYfU' fY' Uh]ja Y%
 H%1 ' h'a dYfU' fY' Uh]ja Y%
 7%1 ' h\Yfa U' VčYZZV]bh cZ Yl dUbg]cb' cZ ghY']b' gfl]b' [U[Y' f' "+, ' a]Vc]gfl]b'#5:
 7&1 ' h\Yfa U' VčYZZV]bh cZ Yl dUbg]cb' cZ h\Y' VčbV\Y' f) "+%a]Vc]gfl]b'#5: ž'a YUg' fYX']b' h\Y' UVcfU'c'fnt'
 6'1 ' VUH\X' W]VfUhcb' ZM'cf' f'f'f'c]]XYX' Vm h\Y' a Ubi ZM' fYt'

BchY' h\Uh h\g' Yei Uhcb']g' g]a]Uf' hc' Yei Uhcb') / \ck Yj Yfž' h\Y' YZZV]g' cZ h\Yfa U' gfl]b' UfY' fYa c] YX' Vm gi VhfU]b[' ci h' h\Y' h\Yfa U' Yl dUbg]cb' cZ h\Y' VčbV\Y' :]i fY' % (' dfcj]XYg' U' X]fYV] Vča dUf]gcb' VYh Yyb' h\Y' Včbf]Vi hcbg' cZ h'a dYfU' fY! fY'UH\X' / a c]gri fY! fY'UH\X' V\Ub[Ygž' V\Yd' UbX' fYgfl]bh VčbX]hcbg' / a c]gri fY! UbX' h'a dYfU' fY! fY'UH\X' V\Ub[Ygž' V\Yd' UbX' fYgfl]bh hc' gfl]b' XYj Y'cda Ybh' H\Y' gfl]b]g']b' Z[i fY' % (' UfY' h\Y' Uj YfU[Y' cZ gfl]b]g' a YUg' fYX' Z'ca' h' fY' X]ZZYfYbhg'UVg' &) ' a a' f%]b' Z'ca' h\Y' gi fZM'

Average Strain - Unrestrained Longitudinal Lane/Shoulder (Top)



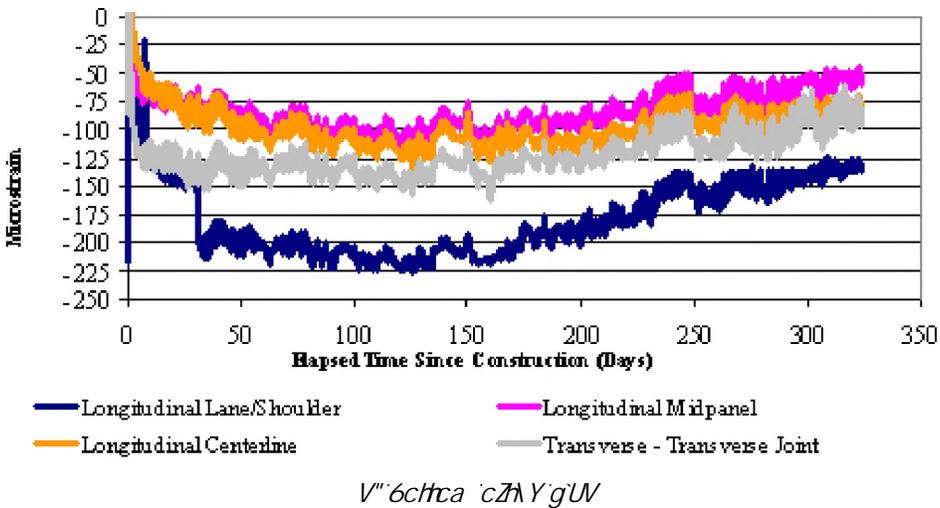
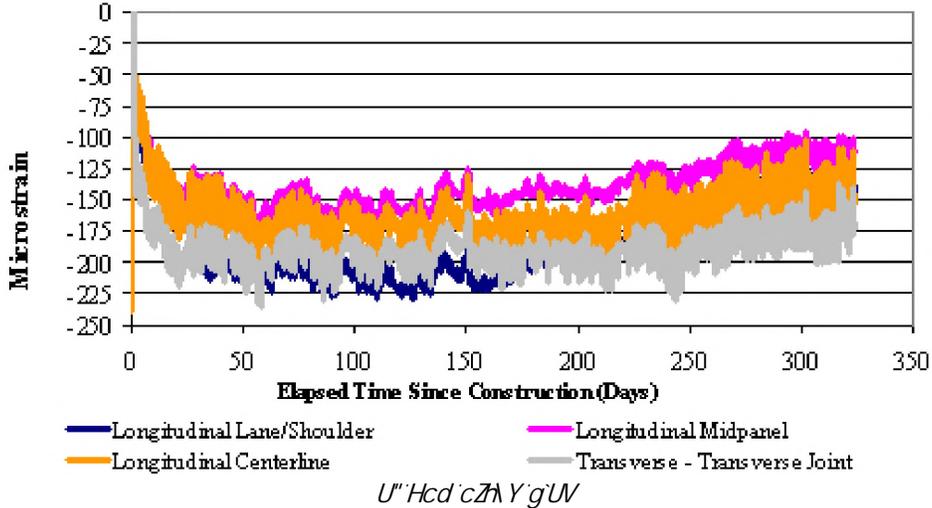
: = I F9%(' 7cbhf]Vi h]cb' cZ h'a dYfU' fYž' V\Ydž' UbX' Xfm]b[' g\fl]b_U[Y' cb' hc'U' gfl]b'

H'a dYfU' fY' k Ug' g\ck b' hc' \Uj Y' h\Y' [fYUH]g' YZZV]cb' gfl]b' h'fci [\ci h' h\Y' mYU' : fca' h\Y' h]a Y' cZ Včbghf] V]cbž' h\Y' h'a dYfU' fY']bXi WX' gfl]b' Zc`ck' g' h\Y' gYUgcbU' Ua V]Ybh h'a dYfU' fY' hfYbX' UbX' h\Y' a U[b]h' XY' cZ gfl]b' ghYUX]m]b]V\YUgYX' i bh] fYUW]b[' U' a U[]a i a']b' h\Y' k]bhY' h\Y' gfl]b' XYV\YUgYg' Ug' h\Y' Ua V]Ybh h'a dYfU' fYg']b]V\YUgY']b' h\Y' gdf]b[' UbX' gi a a Y'

A c]gri fY! fY'UH\X' g\fl]b_U[Y']g' h]d]M]m' Ygg' h\Ub' h\Yfa U' gfl]b' : fca' Z[i fY' % (ž' h\Yfa U' gfl]b' k Ug' Zci bX' hc' VY' h'k]W' Ug' \[\ U'g' h\Y' a c]gri fY! fY'UH\X' g\fl]b_U[Y' h\Y' Z]fgh' k]bhY' UZ\Y'

8j "kpgtpekvpcnf grh'Wpkxgtuks' qh'Vege pqrqi { 'Y qtmj qr 'qp'Hwpf co pvcn'O qf grki 'qh'y g'F guki p'cpl Rgthqto cpeg'qh'Eqpetgvg'Rexgo gpu. 'Dgni kwo . 'Ugr vgo dgt'4228

Vtbgfii Vtcb" A c]gh fY!fY'UHx' g\fb_U[Y']g']bZi YbWx' Vm fY'UHj Y' \i a]X]mz' Vi hi i b_]Y' h'a dYfUhi fYZ'fY'UHj Y' \i a]X]mXcYg'bchYi dYf]YbW' d'fcbci bWx'X]i fbU'Zi Vt Uh]cbg' =b' [YbYfUz' h'Y' a c]gh fY!fY'UHx' g\fb_U[Y']bVfYUgY' XfUgh]W'm h'Y' Z]fgh) \$' XUng' UZHYf' Vtbgfii Vtcb" h'Y']bVfYUgY']b' a c]gh fY!fY'UHx' g\fb_U[Y' Vtbi]bi Yg' h'fci [\ h'Y' k]bhYf' a cbh'g' Vi hi h'Yb' VY []bg' hc' XYVfYUgY' Xi f]b [\ h'Y' gdf]b [\ k \ Yb' dYfYd]fU]cb' Yj Yb'g' cWVf' a cY' ZYei Ybhm' h']g' [fUXi U' \ YggYb]b [\ cZ' a c]gh fY!fY'UHx' g\fb_U[Y' ffYj Yfg]VY' Xfm]b [\ g\fb_U[Y' YE' WUb' VY' gYb']b' Z [i fY' %]b' h'Y' fUb [Y' cZ % \$' hc' &) \$' XUng' UZHYf' Vtbgfii Vtcb" h']g' d\Ybca Ybcb' a U_Yg']h' d'cgg]VY' hc' XYHYfa]bY' h'Y' a U [b]h' XY' cZ' fYj Yfg]VY' g\fb_U[Y' h'Uh' k]' cWVf' h'fci [\ ci hi h'Y' g'UV' : cf' h'Y' fYgh]bYX' g'UVg'z' h'Y' a c]gh fY!fY'UHx' g\fb_U[Y' Ucb [\ h'Y' Wbhf]bY' k Ug' Vtgyf' hc' h'Y' a c]gh fY!fY'UHx' g\fb_U[Y' Uhi a]XdUbY' Zcf' h'Y' fYgh]bYX' g'UV' Vt' a dUFYX' hc' h'Y' i bfYgh]bYX' g'UV' h']g']g' VYWi gy' h'Y' h'Y' VUfg' _YYd' h'Y' Wbhf]bY' c]bh]h [\ h'UbX' fYXi W' h'Y' YI d'cg' fY' hc' h'Y' Ua V]Yb]U]f' UbX' k]bX"



: = I F9% . '8fm]b [\ g\fb_U[Y' UbX' WfYd' Uhi' cW]h]cbg' h'fci [\ ci hi Ub' i bfYgh]bYX' g'UV"

%%'7CB7@ G-CBG

h'Y' a U [b]h' XY' cZ' h'Y' Vi]H]b [\ fUX]Ybhi k Ug' ei Ub]Z]YX' Ucb [\ k]h' h'Y' YUFm]U[Y' fYgdcbgY' cZ' h'Y' g'UV' hc' Ybj]fcb' a Yb]U' \ cUXg' =hi k Ug' Zci bX' h'Uh' h'Y' Yei]j UYbhi']bYUF' h'a dYfUhi fY'

8j "kpgtpevkqpcnif grh'Wpkxgtuks{ "qh'Vegej pqrni { 'Y qtmj qr "qp'Hwpf co gpcn'O qf grpi "qh'y g'F guki p'cpi Rgthqto cpeg'qh'Eqpetgvg'Rexgo gpu. 'Dgni kwo . 'Ugr vgo dgt'4228

[fUX]Ybh Uhi hY' hja Y' cZ gYh k Ug; \$"%& š7#Aa' fB"&& š: #]bL' hY' Uf[Ygh Vi]H]b' Wfj Uhi fY' a YUg fYX' Ucb[' hY' X]U[cbU' Zcf' hY' Xck Y'YX' UbX' i bXck Y'YX' gUVg' k Ug; '\$\$\$\$\$%&(' %a' fB"\$\$\$\$(\$, ' %ZŁ' UbX' "\$\$\$\$\$% , ' %a' fB"\$\$\$\$() (' %ZŁ' fYgdYVW] Ym' hY']bVfYUgY']b' Wfj Uhi fY' k]h' Ub']bVfYUgY']b' Yei]j UYbhi]bYUf' hYa dYfUhi fY' [fUX]Ybh Zcf' hY' i bXck Y'YX' gUVg' k Ug; + dYfWbhi \]] \Yf' hU' hY' Xck Y'YX' gUVg' K \]Y' hY' dfcZ]Y' a YUg fYa Ybhg UfY' i gYX' hc' ei Ubh]m cj YfU' gUV' XYZcfa Uh]cbž' g]fU]b' [U[Yg' k YfY' i gYX' hc' UbUmmY' hY' gUV' fYgdcbgY' Uh' `cVW]nYX' dc]bhg' k]h]b' hY' gUV' I g]b[' g]fU]b' [U[Ygž']h' k Ug' Zci bX' hU' U' gi Vg]Ubh]U' Ua ci bh' cZ hY' Xfm]b[' g]f]b_U[Y' cVWffYX' k]h]b' hY' Z]fgh) \$' XUng' UZhf' Včbgrfi V]cb'" 8Ygd]h' hU' hY' hY'fa U' g]fU]b' k Ug' gh]' Zci bX' hc' VY' h']W' Ug' \]] \ Ug' hY' Xfm]b[' g]f]b_U[Y' hY' Z]fgh' k]bhYf' Z'ck]b[' Včbgrfi V]cb"

57?BCK @98; 9A 9BHG

hY' Ui h'cfg' k ci 'X']Y' hc' hUb_ hY' DYbbgnj Ub]U' 8YdUfha Ybh cZ HfUbgdcffUh]cb' fD9BB8CHE' UbX' hY' : YXYfU' <]] \k Um 5Xa]b]g]fU]cb' fl <K 5L' Zcf' hY]f' Z]bUbV]U' UbX' hYVb]W] gi ddcff]' =b' UXX]h]cb' hY' Ui h'cfg' k ci 'X']Y' hc' hUb_ U' hY' [fUXi UhY' UbX' i bXYf[fUXi UhY' ghi XYbhg' k \c' Ugg]ghX']b' hY' Vča d'Yh]cb' cZ h']g' dfc' YV'

F 9: 9F 9B 79G

7\ci VUbYž' 6" UbX' A" H]Už' "Bcb]bYUf' hYa dYfUhi fY' [fUX]Ybh YZZV' cb' a U] ja i a' k Ufd]b[' g]fYggYg']b' f]] X' dUj Ya Ybhgž' HfUbgdcffUh]cb' FYgyUfV' FYVčfX' % +šZ' K Ug\]b[hcbž' 87ž' % - &ž' dd"*)!+%"

; fUgYmž' N" 7"ž' 8" 5" @ub[Y' UbX' A" 8" 8B'a Vfcg]Už' [=bhYfbU' fY'Uhj Y' \i a]X]mi UbX' Xfm]b[' g]fYgg' [fUX]Ybhg']b' VčbVfYh]ž' DfcWYX]b]g' cZ 9b[]bYf]b[' 7cbZfYbWg' =bhYfbU]cbUž' 5Xj UbWg']b' 7Ya YbhUbX' 7cbVfYh' =Lž' 7cddYf' A ci b]U]bž' 7Cž' &\$š' "

<j YYa ž' : " B"ž' [GUV' k Ufd]b[' UZZV]g' dUj Ya Ybh' c]b]h' dYfZcfa UbWž' >ci fbU' cZ hY' 5a Yf]Wb' 7cbVfYh' =bh]h' hž' Jc'" &&ž' Bc'" %šZ' DfcWYX]b]g' j'" (+ž' > bY' %)' %"

>UbggYbž' 8" >" UbX' A" 6" GbnXYfž' [hY' hYa dYfUhi fY!a ca Ybh' VčbWdh' Zcf' Yj U' i Uh]b[' dUj Ya Ybh' hYa dYfUhi fY' XUfU' hYVb]W] bchY' I' >ci fbU' cZ =bZUg]fi V' fY' 9b[]bYf]b[ž' Jc'" *ž' Bc'" &" 5a Yf]Wb' GcVfYhmcZ 7]j']' 9b[]bYf]g' FYghcbž' J 5ž' > bY' &\$šž' dd" , % , ' "

>UbggYbž' 8" [A c]gh' fY']b' dcf]hUbX' W'a Ybh' VčbVfYh]ž' HfUbgdcffUh]cb' FYgyUfV' FYVčfX' %&&%ž' BU]cbU' FYgyUfV' 7ci bV]ž' K Ug\]b[hcbž' 87ž' % , +ž' d' (\$! (("

>Ycb[ž' >" <"ž' @' K Ub[' UbX' 8" ; " Nc"]b[Yfž' [5' hYa dYfUhi fY' UbX' a c]gh' fY' a cXi ' Y' Zcf' \nXfUh]b[' Dcf]hUbX' W'a Ybh' VčbVfYh' dUj Ya Ybhgž' +h' =bhYfbU]cbU' 7cbZfYbW' cb' 7cbVfYh' DUj Ya Ybhgž' CfUbXcž' : @' Gydh'a Vyf' &\$š%ž' dd" - ! &&"

>Ycb[ž' >" <" UbX' Nc"]b[Yfž' 8" ; " [9Uf]n]U[Y' Wf]b[' UbX' k Ufd]b[' VY\Uj]cf.]]bg[\hg' Zca' i U' ž' m']bg]fi a YbhYX' hYgh' gUV' gng]h'a ž' HfUbgdcffUh]cb' FYgyUfV' FYVčfX' % - *ž' BU]cbU' FYgyUfV' 7ci bV]ž' K Ug\]b[hcbž' 87ž' &\$š(ž' dd" **! +("

DcVfYhž' A "ž' F" GUg]]ž' 5" J U' Ybni Y' U' UbX' D' GdfU]mž' [:]YX' Yj U' i Uh]cb' cZ hY'fa U' XYZcfa Uh]cb']b' i bXck Y'YX' D77' dUj Ya Ybh' gUVgž' HfUbgdcffUh]cb' FYgyUfV' FYVčfX' %&\$ž' BU]cbU' FYgyUfV' 7ci bV]ž' K Ug\]b[hcbž' 87ž' % , +ž' dd" %&! && , "

FYXXnž 5" G"ž ; " 5" @YcbUFXgž UbX A " 9" <Uffž Í K Ufd]b[: gYfggYg UbX XYZYV]cbg :]b VčbVYHY dUj Ya Ybřg : DUfh —ž <][\k UmFYgYUFW FYVčFX Bc" (žK Ug\]b[hcbž 87ž% *' "

GVWa]Xhž GUFU\ž 6i]H=b 7i f]b[: UbX K Ufd]b[:]b D77 DUj Ya Ybřgž A "G" H\Yg]gž I b] Yfg]mi cZ A]obYgchUž &\$\$"

HfUbgdcfhU]cb F YgYUFW 6cUFXž BUh]cbU F YgYUFW 7ci bVž ; i]XY Žcf A YWUb]gh]W9a d]f]VW 8Yg] [b cZ BYk UbX FY\UV]]HUHY DUj Ya Ybh Gfi Vč fYg :]bU F Ydcfřž BUh]cbU 7ccdYfU]j Y <][\k UmFYgYUFW Dfc[fUa 'ž' +5ž A UFW &\$\$ ("

JUbXYbVcggWYž >" A " UbX A " 6" GbnXYfž Í 7ca dUf]gcb VYk YYb a YUgi fYX gUV dfcZ]Yg cZ VWFYX dUj Ya Ybřg UbX dfcZ]Yg [YbYfUHYX i g]b[: H\Y Ž]b]HY YYa Ybh a YHcXž , ž -bHYfbUH]cbU 7cbZYfYbW cb 7cbVYHY DUj Ya Ybřgž 8Ybj Yfž 7Cž 5i [i gh&\$\$) ž dd" %ž) !%ž&"

K Y`gž G" 5"ž 6" A " D\]]dgž >" A " JUbXYbVcggWYž Í G"F"! && ga Ufh dUj Ya Ybh d\UgY = YUfm U[Y a UHYf]U d fcdYfh]Yg UbX dUj Ya Ybh fYgdcbgY VUfUWf]gh]Vg Žcf 'č]bhYX dU]b VčbVYHY dUj Ya Ybřgž D\UgY = :]bU F Ydcfřž gi Va]HYX hc H\Y DYbbgmj Ub]U 8YdUfra Ybh cZ HfUbgdcfhU]cb UbX H\Y : YXYfU <][\k Um5Xa]b]ghU]cbž >i bY &\$\$) "

Mi ž <" H"ž UbX @' ?\UnUbcj]Wž Í 9ZZV]gž cZ Včbghf V]cbg Wf]b[: cb VčbVYHY dUj Ya Ybh VY\Uj]cfž +ž -bHYfbUH]cbU 7cbZYfYbW cb 7cbVYHY DUj Ya Ybřgž CfUbXcž : @ GYdHYa VYf &\$\$%ž dd") !* +"