2.29 Given:

$$\mathbf{R} = \begin{pmatrix} \mathbf{\Lambda} + \mathbf{A}^T\mathbf{L}\mathbf{A} & -\mathbf{A}^T\mathbf{L} \\ -\mathbf{L}\mathbf{A} & \mathbf{L} \end{pmatrix}$$

Using 2.77,

$$\mathbf{M} = ((\mathbf{\Lambda} + \mathbf{A}^T\mathbf{L}\mathbf{A}) - ((-\mathbf{A}^T\mathbf{L})(\mathbf{L})^{-1})(-\mathbf{L}\mathbf{A}))^{-1}$$

$$= ((\mathbf{\Lambda} + \mathbf{A}^T\mathbf{L}\mathbf{A}) - (\mathbf{A}^T\mathbf{L}\mathbf{A}))^{-1}$$

$$= (\mathbf{\Lambda} + \mathbf{A}^T\mathbf{L}\mathbf{A} - \mathbf{A}^T\mathbf{L}\mathbf{A})^{-1}$$

$$= \mathbf{\Lambda}^{-1}$$

Using 2.76,

$$\mathbf{R}^{-1} = \begin{pmatrix} \mathbf{\Lambda}^{-1} & -\mathbf{\Lambda}^{-1}(-\mathbf{A}^T\mathbf{L})(\mathbf{L})^{-1} \\ -(\mathbf{L})^{-1}(-\mathbf{L}\mathbf{A})(\mathbf{\Lambda}^{-1}) & (\mathbf{L})^{-1} + (\mathbf{L})^{-1}(-\mathbf{L}\mathbf{A})(\mathbf{\Lambda}^{-1})(-\mathbf{A}^T\mathbf{L})(\mathbf{L})^{-1} \end{pmatrix}$$

$$= \begin{pmatrix} \mathbf{\Lambda}^{-1} & \mathbf{\Lambda}^{-1}\mathbf{A}^T \\ \mathbf{A}\mathbf{\Lambda}^{-1} & \mathbf{L}^{-1} + \mathbf{A}\mathbf{\Lambda}^{-1}\mathbf{A}^T \end{pmatrix}$$

which is the same as in 2.105.