S280 CONTRACT
(Chiayi Station)

EOT Analysis Programme Report

Taiwan High Speed Rail Corporation
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For: REO 280
Date: 18 July 2006
SECTION 2 EOT Analysis Programme Report

1. Introduction

The JV has submitted extension of time claims against Section 2 Completion (SC2) for the following events:

- 22 April 2005 (Submission ref. S280-OL-RExx-2287, prog. ref. DR18) – 276 days
- 23 Sept 2005 (Submission ref. S280-OL-RExx-2983, prog. ref. WP01) – 187 days
- 08 Nov. 2005 (Submission ref. S280-OL-RExx-3105, prog. ref. MR18) – 279 days

On 27 January 2006, JV has formally submitted a revised application for extension of time claim, with latest JV’s assessment to be nett of 585 days. The following latest submission highlighted below:

- 27 Jan 2006 (Submission ref. S280-OL-RExx-3319, prog. ref. LR18) – 585 days
- 22 Mar 2006 (Resubmission ref. S280-OL-RExx-3490, Prog. ref. LR18)-585 days

In the latest submission, the JV has identified five VO’s and numerous RFIs that caused delay impact to the SC2 completion date.

1.1 The Contractor’s primary arguments for claiming an extension of time are mainly due to the following delaying additional works/changes and RFIs:

- VO41 Provision of Power Supply and Brackets to Signage and Graphics Enclosures
- VO42 Additional of Access Stair to Core Area Plant Room
- VO44 Additional Traffic Lights and Pedestrian Crossing Markers to Station Area.
- VO65 Amended and Additional Storm Water Drainage at Station Plaza
- VO72 Provision Conc. Landings & Steps to External Exit Stairs Incl. Stainless Steel Handrails.
- Late reply of THSRC to RFI's (see appendix 2, a list of RFI’s potentially influencing the works).

1.2 It should be noted that this assessment includes the effect of increased scope of work instructions issued to the contractor. Issue of late design information and increased scope of works is the alleged solidarity delay items under review in this analysis.

1.3 The purpose of this assessment is to reviews key date Section 2 of the works, in order to assess any Extension of Time entitlement, thereby extinguishing Liquated Damages that are due.

1.4 A parallel exercise for Extension of Time entitlement have been undertaken independent of the Contractor, update impacted analysis was performed that focused on comparing updated
SONO’ed baseline programme, and impacted programme to identify and quantify delays to the critical and near critical path of S280 contract. Concurrent delays are also analysed to properly understand the THSRC and Contractors liability for delays and impact damages. The update impacted programme analysis using windows of time to evaluate the contemporaneous, cumulative impact of delays caused by each on the completion dates was performed. The result of the analysis of delays to these schedule windows serve as the basis for an equitable apportionment of responsibility for delay and impact damages to both THSRC and the TTJV.

1.5 In the parallel exercise for Extension of Time entitlement, the selected valid events were taken into consideration. New activities have been added to the programme updates to take account for the new works associated with the approved VO’s. These new activities in the VO’s were properly quantified by making estimates of the additional time required to perform the additional works, new activities have been added to take into account the delay by THSRC in providing required design clarification to TTJV’s works. The following VOs instructions and RFI delaying events have been introduced ought to be THSRC delays and impacted to Contractor’s monthly programme update. The following delaying events are:

- VO41 Provision of Power Supply and Brackets to Signage and Graphics Enclosures.
- VO42 Additional of Access Stair to Core Area Plant Room.
- VO44 Additional Traffic Lights and Pedestrian Crossing Markers to Station Area.
- VO46 Provide Cable Duct from Station to Bus Terminal and Taxi Pick-up Area.
- VO65 Amended and Additional Storm Water Drainage at Station Plaza.
- VO72 Provision Conc. Landings & Steps to External Exit Stairs Incl. Stainless Steel Handrails.
- VO73 Additional Fill Material to Plaza Area.
- VO 116 Install Cooling Tower and Slave Clock Foundation.
- VO 123 Additional Catch Basins beneath C280 Viaduct.
- And 40 RFIs delaying event that potentially influencing the works of the JV (see appendix 2).

2. Basis of analysis

2.1 The basis of analysis uses the same logic links as in SONO’ed Baseline Programme (CR01) and does not consider any acceleration work that require additional manpower.

2.1.1 The programme windows are based upon the actual progress of the Contractor’s monthly programme updates.

2.1.2 The Contractor’s caused concurrent delays have been recognized by utilizing Contractor’s progress information in the analysis.

2.1.3 The windows analysis also recognizes any mitigation measures implemented.

2.1.4 These time impact analyses cover Section 2 (whole of the works).

2.2 The section 2 of the works (External Works) was planned to complete in 685 calendar days (10th Nov 2003 ~ 25th Sept 2006). The duration of the works however forecasted to be 1,025 calendar days (10th Nov 2003 ~ 31 Aug 2006). Therefore, the nett number of days
delay is 340 calendar days. The slice window / update impacted windows approached was performed to allocate the responsibility for the 340 days.

2.3 The following time impact windows analysis determined compensable delays for each programme windows.

3. Detailed analysis

3.1 In Window 1, CR01 Baseline Programme was used to update the programme. The programme was updated as at 9th of February 2004 (ref. EP02), SC2 completion is delayed by 179 days (see appendix 7, Ref. EP02), using Contractor’s update programme Ref. EP02, by adding excusable delays at start of the programme window to determine how much time extension the Contractor’s entitled to received as a result of excusable delay that occurred during this schedule window.

3.2 In the analysis the following event (allegedly THSRC’s delay event) was added to updated programme; That On 9th February 2004, the JV raised a clarification with regards to external works details. THSRC replied on 28th February, in the process, the review time took 19 days. The activity duration of 19 days was used to impact the Contractor’s programme (ref. EP03 as impacted programme), activity description and duration highlighted below:

3.2.1 RFI 110b, Clarification of external work details (III) - 19 days delay

3.3 To determine the impact of the delaying event above, the incremental delay between EP02 and EP03 will be considered as THSRC delay responsibility, after the impact process however appeared that no incremental delay change on EP03 therefore no additional delay impact to Section 2 completion (refer to impacted programme ref. EP03). The reason that the alleged THSRC delaying event does not fall within the Critical Path, therefore, the said event is not a delaying factor or less dominant to the delays suffered by the Contractor.

3.4 The same Window Analysis approach was applied from Window No 2 all over Window No 10. However, the alleged delay events by THSRC not a factor that delayed contractor’s works and pushes SC2 achievement. Therefore, the Contractor is not entitled for a time extension but he is entitled for a direct cost is most of the VOS or additional works.

3.5 In Window 11, as at 10 August 2005, the SC2 completion is delayed 598 calendar days, of which 229 days are considered to be THSRC’s responsibility and the remaining number days delayed are Contractor. THSRC acknowledged that the ER has introduced a number of changes and VO after SC2 contractual date, which are mainly caused a delayed and pushes the completion date of SC2, contributing to this a concurrent delayed by the Contractor. The following VO below were properly quantified of the additional time required to complete these additional work which has been instructed after the contractual date of 25-Sept-05.
3.6 An engineering allowance to every VO’s that carried construction works has been considered and applied to the number of employer issued drawings applicable to the event and includes drawing review time, shop drawing preparation and the like.

3.7 The following VO’s were highlighted below was issued after SC Contract date and also established in Appendix - 3 (New Activities Caused by Issuance of VOs).

- VO44 Additional Traffic Lights and Pedestrian Crossing Markers to Station Area.
- VO 116 Install Cooling Tower and Slave Clock Foundation.
- VO72 Provision Conc. Landings & Steps to External Exit Stairs Incl. Stainless Steel Handrails.
- VO65 Amended and Additional Storm Water Drainage at Station Plaza.
- VO 123 Additional Catch Basins beneath C280 Viaduct.

4. ‘Justifiable’ Entitlement to EOT Analysis

4.1 In is considered that out of 340 days delay, THSRC is responsible for 229 days as established in the assessment in Appendix 4 whilst the Contractor is responsible for 111 days up to 31 Aug 2006.

4.2 The table below shows the summary of the party responsible for the delays of each windows and the overall period.

Table 1 – Summary of Pre-Event Analysis

<table>
<thead>
<tr>
<th>Ref.</th>
<th>As at Completion Date – SC2</th>
<th>Delays during the period</th>
<th>Delays</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>THSRC</td>
</tr>
<tr>
<td>EP03</td>
<td>09-Feb-04 23-Mar-06</td>
<td>179</td>
<td>-</td>
</tr>
<tr>
<td>EP05</td>
<td>30-Apr-04 14-Jun-06</td>
<td>262</td>
<td>-</td>
</tr>
<tr>
<td>EP07</td>
<td>05-May-04 19-Jun-06</td>
<td>267</td>
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<td>EP09</td>
<td>10-Jun-04 24-Jul-06</td>
<td>302</td>
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<td>EP13</td>
<td>19-Aug-04 30-Sep-06</td>
<td>370</td>
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<td>09-Sep-04 24-Oct-06</td>
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<td>EP17</td>
<td>14-Oct-04 25-Nov-06</td>
<td>426</td>
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<tr>
<td>EP19</td>
<td>14-Dec-04 11-Jan-07</td>
<td>473</td>
<td>-</td>
</tr>
<tr>
<td>EP21</td>
<td>04-Jun-05 31-May-07</td>
<td>613</td>
<td>-</td>
</tr>
<tr>
<td>EP23</td>
<td>10-Aug-05 16-May-07</td>
<td>598</td>
<td>-229</td>
</tr>
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</table>

Table 2 – Responsible Party Delay Allocation

<table>
<thead>
<tr>
<th>Ref.</th>
<th>As at Completion Date – SC2</th>
<th>Delays during the period</th>
<th>Delays</th>
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<tr>
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<td></td>
<td></td>
<td>THSRC</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td><strong>229</strong></td>
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COB/S28 REO derived a delay to the critical path and proposed to notify the award of an interim extension of time against Section Completion dates as follows.

<table>
<thead>
<tr>
<th>Section</th>
<th>Completion Date</th>
<th>Delays</th>
<th>Delays</th>
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</thead>
<tbody>
<tr>
<td>Section - 2 (whole Works)</td>
<td>31-Aug-06</td>
<td>340</td>
<td>-229</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-111</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Section</th>
<th>Contract Section Completion Date</th>
<th>COB/S28 REO Assessment</th>
<th>Revised Contract Section Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section - 2 (Whole Works)</td>
<td>25-Sept-05</td>
<td>229</td>
<td>12-May-06</td>
</tr>
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</table>

4.3 The conclusions reached from the application of the above are shown on attached schedule (Appendix 3) but are summarised herewith.

4.3.1 Section 2 Complete the whole of the works: 340 days delay; EOT entitlement 229 days.

4.3.2 See Appendix 5 for graphical representation of this section.

5. **Liquidated Damage liability**

5.1 From the above, where delay has not been fully extinguished by EOT, liquidated damages become due in the amount of NT$99,750,000. Appendix 6.

5.2 The maximum sum under the Contract is 12% of the Contract Sum; NT$ 1,624,795,200 bil.

6. **Appendix A – Programmes**

6.1 S280 SC2 App 1 KD&SC Schedule.xls
6.2 S280 SC2 App 2 Chosen RFI Claims & VOs.xls
6.3 S280 SC2 App 3 New Activities Caused by Issuance of Vos.pdf
6.4 S280 SC2 App 4 Summary EOT.xls
6.5 S280 SC2 App 5 KD and SC Graphical Summary.xls
6.6 S280 SC2 App 6 LD Liability
6.7 S280 SC2 App 7 EP02-EP23 updated and impacted programme