FINANCIAL PROVISION FOR HEALTH AND SAFETY

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Introduction

- Cost Engineers / Quantity Surveyors:
  - Practice as project managers
  - Often prepare project estimates
  - May advise regarding the type of procurement system
  - May advise regarding project duration
  - Often prepare contract documentation
  - Often compile bills of quantities / schedule of rates
  - Assess pre-qualification and tender submissions

- The cost of accidents contributes to the cost of construction

- Construction Regulations include ‘surveyor specifying articles or drawing up specifications’ under definition of *designer*
Construction Regulations (1)

- ‘Surveyor specifying articles or drawing up specifications’ included under definition of designer

Relative to structures 9 (2) designers are required to:

- (a) Provide clients with all relevant information that may affect the pricing of the work
- (b) Inform Principal Contractors (PCs) of any dangers or hazards and provide information for the safe construction of the design
- (c) Include a geo-science technical report, the design loading of the structure, and the methods and sequence of construction in a report made available to the PC
- (d) Modify the design or make use of substitute materials where the design necessitates the use of dangerous structural or other procedures, or materials hazardous to H&S
Construction Regulations (2)

Clients required to:

- 4 (1) (a) Prepare and provide Principal Contractor with H&S specifications
- 4 (1) (b) Provide PC with any information that may affect H&S
- 4 (1) (f) Provide sufficient H&S information when changes made to design and construction
- 4 (1) (h) Ensure that PCs have made provision for the cost of H&S in their tenders
A holistic perspective

- Client needs to be able to make a scientific assessment of the PC’s provision for H&S
- The H&S specification should provide a reference
- The H&S plan should provide a reference:
  - However, H&S plan to be applied from date of commencement i.e. not necessarily available at tender / bid stage
  - The requirement on the client to ensure that the PC has made adequate provision for H&S amplifies the need for a pre-tender H&S plan (not required by the Construction Regulations)
- Each project is unique despite many common activities
- A provisional sum would not do justice
- PCs and contractors have varying levels of expertise
- Emerging contractors should be guided
Specific contributions (1)

Can facilitate adequate provision for H&S by PCs in terms of Regulation 4 (1) (h) through inclusion of, among other, an ‘H&S’ section in the Preliminaries:

- H&S plan
- H&S file
- Risk assessment
- SWPs and method statements
- Design of temporary works
- Design of permanent structures
- Engineering design and / or certification
- Medicals
- Biological monitoring
- Environmental measurement
- Education and training
Specific contributions (2)

- Full-time or part-time Construction H&S Officer or management of H&S as a whole (preferably not)
- H&S Representatives
- Meetings
- General administration
- Hoarding and / or public walkways
- Catch platforms
- Facilities related requirements – Regulation 28:
  - WCs
  - WHBs
  - Showers
  - Mess room
  - Living accommodation

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Specific contributions (3)

- Guarding and barricading
- Storage
- Storage for flammable goods – Regulation 27 (b)
- Temporary electrical installations
- Scaffolding
- Special scaffolding
- Suspended scaffolding
- Access
- Signage
- Housekeeping
- Personal protective equipment
- Fire precautions
Specific contributions (4)

- First aid
- Transport of workers
- Inspections
- Maintenance
- Emergency plan

Other provisions such as material and personnel hoists, and mobile and tower cranes can be addressed in the traditional manner
Provision for H&S: Appropriate?

- What percentage is appropriate?
- Research conducted in Hong Kong - contractors set aside < 0.5% and some < 0.25% of project value (Tang et al., 1997)
- Research conducted in South Africa - 0.22% of project cost (Smallwood, 1992)
- Subsequent ‘cost of H&S’ study (Smallwood, 2004):
  - ‘Better practice’ H&S GCs
  - Percentage ‘PC’ cost of H&S constitutes of total project cost:
    - 3% (1 No.)
    - 0 ≤ 1% (3 No.)
    - > 1 ≤ 2% (2 No.)
- Detailed provision for pricing will engender a scientific approach
Research – Sample strata

- Two sample strata:
  - Members of the Association of Construction Health and Safety Management (ACHASM)
  - General Contractor (GC) members of the Kwazulu Natal Master Builders KZNMB that achieved places in the regional H&S competition

- Response:
  - ACHASM
  - MBKZN
Research – Findings (1)

<table>
<thead>
<tr>
<th>Document / Reference</th>
<th>ACHASM</th>
<th></th>
<th>KZN MBA</th>
<th></th>
<th>Mean</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MS</td>
<td>Rank</td>
<td>MS</td>
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<td>Contracts:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>• JBCC</td>
<td>1.40</td>
<td>3</td>
<td>2.43</td>
<td>5</td>
<td>1.92</td>
<td>5</td>
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<tr>
<td>• GCC</td>
<td>1.33</td>
<td>5</td>
<td>3.80</td>
<td>3</td>
<td>2.57</td>
<td>3</td>
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<tr>
<td>• NEC</td>
<td>1.60</td>
<td>1</td>
<td>4.75</td>
<td>1</td>
<td>3.18</td>
<td>1</td>
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<tr>
<td>• FIDIC</td>
<td>1.57</td>
<td>2</td>
<td>4.25</td>
<td>2</td>
<td>2.91</td>
<td>2</td>
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<tr>
<td>Model preambles</td>
<td>1.31</td>
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<td>2.17</td>
<td>6</td>
<td>1.74</td>
<td>6</td>
</tr>
<tr>
<td>Standard System of Measuring Builders Work</td>
<td>1.36</td>
<td>4</td>
<td>2.60</td>
<td>4</td>
<td>1.98</td>
<td>4</td>
</tr>
</tbody>
</table>

Table 1: Extent to which documents / references address / mention H&S.
## Research – Findings (2)

Table 2A: Basis on which contract documents have facilitated / made financial provision for H&S subsequent to the promulgation of the Construction Regulations (18 July 2003) according to ACHASM members.

<table>
<thead>
<tr>
<th>Form of provision</th>
<th>Response %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsure 0%</td>
</tr>
<tr>
<td>Provisional sum</td>
<td>0.0    20.0  33.3  20.0  13.3  0.0  0.0  0.0  6.7  0.0  6.7  0.0  0.0</td>
</tr>
<tr>
<td>Preliminaries ‘item’</td>
<td>0.0    13.3  40.0   6.7  6.7  6.7  0.0  6.7  0.0  0.0  13.3  6.7  0.0</td>
</tr>
<tr>
<td>Detailed H&amp;S preliminaries</td>
<td>0.0    35.7  21.4  21.4  0.0  7.1  0.0  7.1  7.1  0.0  0.0  0.0  0.0</td>
</tr>
<tr>
<td>H&amp;S ‘trade’ / section</td>
<td>0.0    21.4  35.7  21.4  0.0  0.0  7.1  7.1  0.0  0.0  0.0  0.0  7.1</td>
</tr>
</tbody>
</table>

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Table 2B: Basis on which contract documents have facilitated / made financial provision for H&S subsequent to the promulgation of the Construction Regulations (18 July 2003) according to KZNMB GC members.
Research – Findings (4)

<table>
<thead>
<tr>
<th>Statement</th>
<th>ACHASM</th>
<th>KZN MBA</th>
<th>Mean</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>A detailed H&amp;S section should be included in the Preliminaries</td>
<td>4.47</td>
<td>4.63</td>
<td>4.55</td>
<td>1</td>
</tr>
<tr>
<td>Competitive tendering without reference to H&amp;S marginalises H&amp;S</td>
<td>4.69</td>
<td>4.13</td>
<td>4.41</td>
<td>2</td>
</tr>
<tr>
<td>A provisional sum should be provided for H&amp;S in the preliminaries</td>
<td>4.06</td>
<td>4.50</td>
<td>4.28</td>
<td>3</td>
</tr>
<tr>
<td>Competitive tendering marginalises H&amp;S</td>
<td>4.24</td>
<td>3.88</td>
<td>4.06</td>
<td>4</td>
</tr>
<tr>
<td>Standard contract documentation generally makes cursive reference to H&amp;S</td>
<td>3.76</td>
<td>3.75</td>
<td>3.76</td>
<td>5</td>
</tr>
<tr>
<td>Appropriate contract documentation promotes H&amp;S</td>
<td>3.19</td>
<td>4.13</td>
<td>3.66</td>
<td>6</td>
</tr>
<tr>
<td>Contract document enabled financial provision for H&amp;S promotes H&amp;S</td>
<td>3.06</td>
<td>4.25</td>
<td>3.66</td>
<td>7</td>
</tr>
<tr>
<td>H&amp;S specifications are project specific</td>
<td>3.00</td>
<td>4.00</td>
<td>3.50</td>
<td>8</td>
</tr>
<tr>
<td>H&amp;S specifications are included with tender documentation</td>
<td>2.71</td>
<td>3.63</td>
<td>3.17</td>
<td>9</td>
</tr>
<tr>
<td>Contract documentation promotes H&amp;S</td>
<td>2.06</td>
<td>3.63</td>
<td>2.85</td>
<td>10</td>
</tr>
<tr>
<td>H&amp;S specifications highlight hazards*</td>
<td>2.12</td>
<td>3.50</td>
<td>2.81</td>
<td>11</td>
</tr>
<tr>
<td>Contractors are afforded the opportunity to price H&amp;S on an equitable basis</td>
<td>2.06</td>
<td>3.38</td>
<td>2.72</td>
<td>12</td>
</tr>
<tr>
<td>Contractors are afforded the opportunity to price items included in H&amp;S specifications on an equitable basis</td>
<td>2.00</td>
<td>3.38</td>
<td>2.69</td>
<td>13</td>
</tr>
<tr>
<td>H&amp;S specifications include designer ‘design and construction’ method statements</td>
<td>1.53</td>
<td>3.25</td>
<td>2.39</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 3: Degree of concurrence with statements on a range of strongly disagree to strongly agree.
## Research – Findings (5)

<table>
<thead>
<tr>
<th>Cost type</th>
<th>Yes (%)</th>
<th>Mean (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACHASM</td>
<td>KZNMB</td>
</tr>
<tr>
<td>Tender cost estimate</td>
<td>38.9</td>
<td>66.7</td>
</tr>
<tr>
<td>Project cost</td>
<td>33.3</td>
<td>33.3</td>
</tr>
</tbody>
</table>

Table 4: Percentage H&S constitutes of tender cost and project cost.
Key points

- The cost of accidents is substantial
- H&S does ‘cost money’, but there is a substantial ROI
- As cost consultants, QSs have a critical role to play
- H&S can be facilitated through specific references and provision for budgeting in contract documentation – provide an equitable basis for competing
References


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