

**Annual Report on
Accident Statistics and Analyses for Public Works Contracts 2017**

This report provides a summary of the accident statistics and analysis of the accidents occurred in public works construction sites during 2017.

Accident Statistics (Appendices A to F)

2. Some key accident statistical data and their trends are summarized below:

| | Key Statistical Data | Remarks |
|-----|---|---|
| (a) | Accident rate for 2017 (fatal + non-fatal) | The accident rates for 2016 and 2017 were 0.217 and 0.224 accidents per 100,000 man-hours worked (or equivalent to 7.8 and 8.1 accidents per 1,000 workers per year) respectively. An increase of about 4% was observed. |
| (b) | No. of reportable accidents (fatal + non-fatal) | The total numbers of reportable accidents for 2016 and 2017 were 236 and 278 respectively. An increase of about 18% was observed. The numbers of man-hours worked for 2016 and 2017 were 108,768,078 and 124,058,977 respectively. An increase of about 14% was observed. |
| (c) | Fatal accidents | 6 fatal accidents occurred in public works sites in 2017 whilst a total of 22 fatal accidents happened under the whole industry. |

3. A brief account of the 6 fatal accidents happened under public works contracts is given below:

| Date of Accident | Accident Nature | Brief Description of Accident |
|-------------------------|-------------------------------|---|
| 21/01/2017 | Trapped in or between objects | A driver and operator of truck crane mounted with a crane/grab was fatally trapped between the dumping platform and the chassis of the loader. The incident happened under WSD capital works Contract No. 12/WSD/10 – Replacement and Rehabilitation of Water Mains Stage 4 Phase 1 – Mains in Eastern and Southern Districts. |

| Date of Accident | Accident Nature | Brief Description of Accident |
|-------------------------|---|---|
| 29/03/2017 | Fall of person from height | <p>While 5 workers working on a viaduct under construction, 3 of them fell about 5.4m together with a collapsed temporary working platform suspended under the viaduct into the sea. Two were dead and the others sustained bodily injuries.</p> <p>The incident happened under HyD capital works Contract No. HY/2011/09 – Design and Construction of the Section of HKLR between the HKSAR Boundary and Scenic Hill.</p> |
| 16/06/2017 | Trapped by collapsing or overturning object | <p>A sole-proprietor of subcontractor was fatally crushed beneath an excavator which was being repaired by him.</p> <p>The incident happened under DSD capital works Contract No. DC/2009/20 – Harbour Area Treatment Scheme Stage 2A – Demolition of Chemically Enhanced Primary Treatment Tanks and Associated Facilities at Cyberport Sewage Treatment Works.</p> |
| 31/08/2017 | Trapped by collapsing or overturning object | <p>A crane operator, while engaged in lifting operation by using a truck-mounted crane, was suspected to have been struck to death by an excavator originally loaded on the crane that dropped when the crane was overturned.</p> <p>The incident happened under WSD capital works Contract No. 13/WSD/10 – Replacement and Rehabilitation of Water Mains, Stage 4 Phase 1 – Mains in West Kowloon, Kwai Tsing and Tsuen Wan.</p> |
| 20/10/2017 | Striking against or struck by moving object | <p>A worker was suspected to be struck by an excavator in operation and subsequently passed away.</p> <p>The incident happened under ArchSD capital works Contract No. SS E507 – Provision of Columbarium at Wo Hop Shek Cemetery – Phase 1.</p> |

4. The 2017 accident rates for works departments are summarized below:

| Departments | No. of Fatal Accident(s) | Accident Rates (Fatal + Non-fatal) | |
|-------------|--------------------------|---|---|
| | | No. of accidents per 100,000 man-hours worked | No. of accidents per 1,000 workers per year |
| ArchSD | 1 | 0.28 | 10.1 |
| CEDD | 0 | 0.13 | 4.5 |
| DSD | 1 | 0.18 | 6.4 |
| EMSD | 0 | 0.16 | 5.7 |
| HyD | 2 | 0.26 | 9.4 |
| WSD | 2 | 0.18 | 6.6 |
| Overall | 6 | 0.22 | 8.1 |

Note: The limit set by DEVB with effect from 1 February 2011 is 0.60 accidents per 100,000 man-hours worked (or equivalent to 22 accidents per 1,000 workers per year).

5. The severity rates (in terms of no. of man-days lost per 100,000 man-hours worked) for 2016 and 2017 were 47.1 and 45.9 respectively. A decrease of 3% was observed.

Accident Analyses

6. The accident analyses for the following aspects are given in **Appendices G** to **O** of this Report respectively. Some key findings are summarized below.

(a) **Types of Contracts (Appendix G)**

The four types of contracts having the highest accident rates are listed below:

| Types of Contracts | Accident rate (no. of accident per 1,000 workers per year) | | | |
|--------------------|---|------|------|-----------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Building | 11.0 | 9.3 | 9.4 | 0.1 (1%) |

| Types of Contracts | Accident rate (no. of accident per 1,000 workers per year) | | | |
|---------------------------------|---|------|------|-----------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Tunneling | 11.6 | 8.9 | 8.7 | -0.2 (-2%) |
| Roads and Drainage | 7.8 | 8.3 | 8.5 | 0.2 (2%) |
| Electrical and Mechanical Works | 8.3 | 9.7 | 8.0 | -1.7 (-18%) |

Since the accident rates under Buildings and Roads and Drainage contracts in 2017 are increased, the corresponding contract administrators and site supervisory staff are reminded to pay particular attention to the safety performance on sites.

Although there is a slight decrease reflected in item 2 and a significant decrease reflected in item 4 above, Works Departments with ongoing Tunneling and Electrical and Mechanical Works contracts should continue to be vigilant in supervising the contractors' works.

(b) Types of Accidents (Appendix H)

The four most common types of accidents are listed below:

| Types of Accidents | No. of Accidents (% of total no. of accidents) | | | |
|--|---|---------------|---------------|-----------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Slip, Trip or Fall On Same Level | 48 (19.0%) | 46 (19.5%) | 55 (19.8%) | 9 (20%) |
| Injured Whilst Manual Lifting or Carrying/ Manual Lifting/ Manual Handling/ Handling Without Machinery | 39 (15.5%) | 33 (14.0%) | 41 (14.7%) | 8 (24%) |
| Fall of Person From Height | 30 (11.9%) | 28 (11.9%) | 28 (10.1%) | 0 (0%) |

| Types of Accidents | No. of Accidents (% of total no. of accidents) | | | |
|----------------------------------|---|--------------|--------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Trapped In or Between Objects | 15 (6.0%) | 17 (7.2%) | 27 (9.7%) | 10 (59%) |

The aggregate of these four categories has been accounted for 54.3% of the total number of accidents in 2017. Works Departments are to devise effective means to further reduce the number of accident in these categories.

(c) Trades of Workers (Appendix I)

The three most common trades involved in the accidents are listed below:

| Trades of Workers | No. of Accidents (% of total no. of accidents) | | | |
|---------------------------|---|----------------|----------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Labourer | 138 (56.3%) | 119 (50.4%) | 148 (53.2%) | 29 (24%) |
| Carpenter (formworker) | 9 (3.7%) | 14 (5.9%) | 17 (6.1%) | 3 (21%) |
| Bar Bender and Fixer | 11 (4.5%) | 6 (2.5%) | 15 (5.4%) | 9 (150%) |

More morning briefings or toolbox talks for labourers are recommended in order to enhance their safety awareness.

(d) Natures of Injury (Appendix J)

The three most common natures of injury are listed below:

| Natures of Injury | No. of Accidents (% of total no. of accidents) | | | |
|-----------------------|---|---------------|---------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Fracture | 78 (27.0%) | 77 (26.9%) | 94 (28.4%) | 17 (22%) |
| Contusion & Bruise | 65 (22.5%) | 63 (22.0%) | 62 (18.7%) | -1 (-2%) |
| Laceration and Cut | 29 (10.0%) | 28 (9.8%) | 39 (11.8%) | 11 (39%) |

The numbers of accident associated with 'Fracture' have been the highest for the past five years.

(e) Parts of Body Injured (Appendix K)

The three most common body parts injured in the accidents are listed below:

| Parts of Body Injured | No. of Accidents (% of total no. of accidents) | | | |
|-----------------------|---|---------------|---------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Finger | 54 (18.8%) | 60 (19.8%) | 64 (19.3%) | 4 (7%) |
| Back | 27 (9.4%) | 31 (10.2%) | 35 (10.6%) | 4 (13%) |
| Leg | 12 (4.2%) | 16 (5.3%) | 20 (6.0%) | 4 (25%) |

The numbers of accident under 'Finger' injury have been the highest for the past five years. Works Departments should continue to pay close attention to the safe use of hand tools, lifting operations, portable power equipment, wearing of suitable gloves and provide sufficient training and instruction to workers to ensure their safety at work.

(f) Agents Involved (Appendix L)

The three most common agents involved in the accidents are listed below:

| Agents Involved | No. of Accidents (% of total no. of accidents) | | | |
|--|---|---------------|---------------|--|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Floor, Ground, Stairs or Any Working Surface | 52 (20.2%) | 41 (15.1%) | 54 (18.6%) | 13 (32%) |
| Material / Product Being Handled or Stored | 50 (19.4%) | 42 (15.5%) | 51 (17.6%) | 9 (21%) |
| Portable Power or Hand Tools | 17 (6.6%) | 33 (12.2%) | 27 (9.3%) | -6 (-18%) |

The numbers of accidents associated with 'Floor, ground, stairs or any working surface' and 'Material / product being handled or stored' have been the highest two for the past five years. Contractors should be asked to make extra efforts to improve these areas.

(g) Unsafe Actions (Appendix M)

The three most common unsafe actions leading to accidents are listed below:

| Unsafe Actions | No. of Accidents (% of total no. of accidents) | | | |
|---|---|----------------|----------------|--|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Lapse of Attention | 100 (36.4%) | 105 (36.2%) | 105 (33.8%) | 0 (0%) |
| Adopting Unsafe Position or Posture | 43 (15.6%) | 39 (13.4%) | 63 (20.3%) | 24 (62%) |

| Unsafe Actions | No. of Accidents (% of total no. of accidents) | | | |
|--|---|--------------|--------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Use Unsuitable Access/ Failure to Use Access | 18 (6.5%) | 11 (3.8%) | 16 (5.1%) | 5 (45%) |

The numbers of accident under ‘Lapse of attention’ have been the highest for the past five years. Contractors are to provide sufficient information and instructions to workers so that the workers would be more alert in the work place.

(h) Unsafe Conditions (Appendix N)

The three most common unsafe conditions involved in the accidents are listed below:

| Unsafe Conditions | No. of Accidents (% of total no. of accidents) | | | |
|----------------------------------|---|---------------|---------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Unsafe Process or Job Methods | 24 (9.2%) | 29 (10.4%) | 41 (14.0%) | 12 (41%) |
| Improper Procedure | 33 (12.6%) | 29 (10.4%) | 32 (10.9%) | 3 (10%) |
| Slippery Area | 15 (5.7%) | 18 (6.5%) | 19 (6.5%) | 1 (6%) |

The aggregate of these three categories represented about 31.4% of the total number of accidents, which showed that the unsafe conditions involved in accident varied substantially. Works Departments should closely monitor the contractors’ performance, and take prompt actions to rectify any unsafe actions or conditions observed on site.

(i) Personal Factors (Appendix O)

The distributions of accidents arising from personal factors are given below:

| Personal Factors | No. of Accidents (% of total no. of accidents) | | | |
|-----------------------------------|---|----------------|----------------|--------------------------------|
| | 2015 | 2016 | 2017 | Changes between 2016 & 2017 |
| Carelessness / Not Concentrate | 158 (57.9%) | 178 (59.9%) | 169 (55.6%) | -9 (-5%) |
| Lack of Knowledge or Skill | 29 (10.6%) | 19 (6.4%) | 33 (10.9%) | 14 (74%) |
| Incorrect Attitude / Motive | 40 (14.7%) | 28 (9.4%) | 28 (9.2%) | 0 (0%) |

The numbers of accident associated with ‘Carelessness / Not Concentrate’ have been the highest for the past five years. Contractors shall strengthen the workers’ safety awareness and working attitude through training including morning briefings and toolbox talks.

7. To uphold the continuous improvement in site safety, Works Departments are recommended to pay particular attention to the following aspects:

- (i) promoting workers’ safety awareness in manual lifting or carrying, against fall from height, to prevent trapped in or between objects, and to prevent slip, trip and fall on same level;
- (ii) improving on site cleanliness and tidiness;
- (iii) providing sufficient instruction, training and supervision to workers to ensure their safety at work in particular for working at height, electrical works, confined space work, working in the vicinity to water and exposure to explosion;
- (iv) providing suitable fall arresting equipment e.g. safety harness, fall arrester and independent lifeline to workers who are at risk of falling from a height;
- (v) maintaining an effective monitoring system to ensure workers and supervisory staff (both RSS and in-house staff) make full and proper use of PPE and safety equipment;
- (vi) enforcing the requirement to conduct risk assessment, and/or permit-to-work system, for all electrical works before commencement of the work;
- (vii) maintaining a safe system of work including proper site layout and

- work plan to segregate workers from construction plant and vehicles;
- (viii) providing adequate safety training, morning briefings or toolbox talks to labourers in order to raise their safety awareness and working attitude;
- (ix) providing sufficient information and instruction to workers and paying particular attention to the workers' misbehaviours during safety inspection and supervision on site. Any unsafe actions or posture observed on site should be stopped immediately; and
- (x) checking of completeness of ICE's design certificates and as-built certificates for the detailed design and method statements of temporary works before loading, and statutory form(s) for temporary works/scaffolding/working platform.

8. Apart from the analyses given in this report, Works Departments are recommended to carry out further detailed analyses of the accidents under their purview with a view to developing specific safety measures and programme for further improvement.

Development Bureau
July 2018

Attachments:

| <u>Appendix</u> | <u>Title</u> |
|-----------------|---|
| A | Accident Rates for Public Works Contracts and the Construction Industry from 2008 to 2017 |
| B | Chart of Yearly Accident Rates for Public Works Contracts and the Construction Industry from 2008 to 2017 |
| C | Chart of Monthly Average Accident Rates for Public Works Contracts from January 2008 to December 2017 |
| D | Number of Accidents for Public Works Contracts with Breakdown by Works Departments from 2008 to 2017 |
| E | Accident Rates for Public Works Contracts with Breakdown by Works Departments from 2008 to 2017 |
| F | Severity for Public Works Contracts with Breakdown by Works Departments from 2013 to 2017 |
| G | Accident Rates for Public Works Contracts from 2008 to 2017 Analyzed by Types of Contracts |
| H | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Types of Accident |
| I | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Trades of Workers |
| J | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Natures of Injury |
| K | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Parts of Body Injured in Accidents |
| L | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Agents Involved in Accidents |
| M | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Unsafe Actions Involved in Accidents |
| N | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Unsafe Conditions Involved in Accidents |
| O | No. of Accidents for Public Works Contracts from 2013 to 2017 Analyzed by Personal Factors Involved in Accidents |