These marking guidelines consist of 18 pages.
QUESTION 1: OHSA, MATERIALS, TOOLS, EQUIPMENT AND JOINING (GENERIC)

1.1

1.1.1 F ✓ (1)
1.1.2 A ✓ (1)
1.1.3 G ✓ (1)
1.1.4 E ✓ (1)
1.1.5 B ✓ (1)

1.2

• Do not throw any tools or materials from a scaffold. ✓
• Never jump on to and off a scaffold. ✓
• Never overload a scaffold.
• Remove or cover sharp edges or corners.
• Always attach free-standing scaffoldings to a building.
• Use a ladder to get on and off a scaffold.
• Keep free of waste or any other obstruction.
• Never jump on a scaffold while working on it.
• Responsible/qualified person must ensure that scaffolding is safe, rigid, stable and firm or has no defects.
• Scaffold must be supplied with guard rails/toe boards.
• Scaffolds must be levelled on uneven ground.
• Do not work on a scaffold in bad weather.
• Wear a safety harness when working on scaffolding.
• Do not throw tools on/off a scaffold.

ANY TWO OF THE ABOVE (2)

1.3

• It prevents workers from falling off the scaffold. ✓
• It is used as a handrail. ✓
• It is used to strap on safety harnesses.
• To protect the worker working on the scaffold.

ANY TWO OF THE ABOVE (2)

1.4

• The primary purpose of painting is to protect metals, wood and other material against corrosion and decay. ✓
• Provides a decorative/aesthetic appearance/finishing. ✓
• Protects surfaces from moisture penetration.
• Protects surfaces from rust/uv rays.

ANY TWO OF THE ABOVE (2)
1.5 The curing of concrete:
- Increases the strength of concrete.
- Decreases the permeability of hardened concrete.
- Improves durability of concrete by reducing cracks.
- Makes concrete more watertight.
- Minimises shrinkage cracks in concrete.
- Provides volume stability.
- Cured concrete can carry more weight without breaking/crumbling than uncured concrete.
- Prevents rapid drying of concrete.
- Curing ensures that the hydration process continues.

ANY ONE OF THE ABOVE

1.6

1.6.1 Multi detector ✓

1.6.2 Tool A is used:
- to detect materials found in/behind walls, ceilings and underneath floors, including ferrous and non-ferrous metals, electrical wiring, wood and metal studs. ✓
- to locate steel bars and copper pipes. ✓
- in carpentry, plumbing, and construction.
- to measure the distance to/from covered objects.

ANY TWO OF THE ABOVE

1.6.3 The batteries must be removed from the tool:
- to prevent the battery from running flat/battery can die. ✓
- to prevent acid leaks from batteries damaging the tool.

ANY ONE OF THE ABOVE

1.7

1.7.1 A – Bolt and nut/Bolt ✓
- B – Rawl bolt ✓

1.7.2 Bolt and nut
- Bolts and nuts are used to secure pipe supports to metal parts. ✓
- To join components together.

Rawl bolt
- A Rawl bolt is used to fix a truss hanger to a wall. ✓
- To fix brackets/structures/panels to a wall/concrete.
- For construction, renovation and industrial work

ANY TWO OF THE ABOVE

[20]
QUESTION 2: GRAPHICS AS METHOD OF COMMUNICATION (GENERIC)

**ANSWER SHEET 2**

<table>
<thead>
<tr>
<th>NO.</th>
<th>QUESTIONS</th>
<th>ANSWERS</th>
<th>MARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify FIGURE A.</td>
<td>South Elevation/Elevation ✓</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Identify FIGURE B.</td>
<td>Ground floor plan/Floorplan ✓</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Identify number 4.</td>
<td>First floor level/Second floor level/Suspended floor/Floor level/Dash line/FFL/Expansion joint ✓</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Identify number 5.</td>
<td>Window Sill ✓</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Identify number 9.</td>
<td>Hand wash basin/Wash basin/Washing basin/HWB/Basin ✓</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Identify number 10.</td>
<td>Water closet/WC/Toilet pan ✓</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Identify number 11.</td>
<td>Bath/B ✓</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>On what date was the plan printed?</td>
<td>2018/10/02 ✓</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Who drew the building plan?</td>
<td>JP Maloi ✓</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>Name the feature in the column for the notes in FIGURE 2 that must be installed in front of the sliding door.</td>
<td>Ramp ✓</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Name the feature in the column for the notes in FIGURE 2 that must give access to the first floor.</td>
<td>Staircase/Stairs/Stairway ✓</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Identify the type of roof that is used for the building in FIGURE A.</td>
<td>Gable roof ✓</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Explain the purpose of number 1.</td>
<td>To cover the opening/close the gap between the two slopes of the roof. ✓</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prevent water and other elements from entering the roof.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ANY ONE OF THE ABOVE</strong></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Description</td>
<td>Answer</td>
<td>Marks</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>--------</td>
<td>-------</td>
</tr>
</tbody>
</table>
| 14       | Explain the purpose of number 2. | • To prevent water from falling onto the ground ✓  
• To collect rainwater  
• To channel the rainwater into the downpipe  
• To protect the wall from water  
• To hide the rafters/finish off the roof  
ANY ONE OF THE ABOVE | 1 |
| 15       | Explain the abbreviation FFL at number 6. | Finished floor level ✓ | 1 |
| 16       | Explain the purpose of number 7. | To channel the water from the gutter to the ground. ✓ | 1 |
| 17       | Explain the meaning of the arrow on the feature that must be installed in front of the sliding door. | It indicates the direction of the slope of the ramp/it indicates the slope. ✓ | 1 |
| 18       | Explain what is meant by 1:10 indicated on the symbol in the notes. | It indicates the slope or the gradient of the ramp/for every 10 metres horizontally rises 1 metre vertically. ✓ | 1 |
| 19       | Which room will feature 15 serve? | The bathroom. ✓ | 1 |
| 20       | Explain the short dash lines on the windows. | • Indicates what direction the window is opening/window opening. ✓  
• Indicates the location of the hinges.  
• Indicates the location of the casement stay.  
ANY ONE OF THE ABOVE | 1 |
| 21       | Deduce the height of window 2 from the window schedule. | 1,2 m or 1 200 mm ✓ (Ignore units) | 1 |
| 22       | Deduce the width of window 3 from the window schedule. | 2 m or 2 000 mm ✓ (Ignore units) | 1 |
| 23       | On what elevation of the building is the bathroom window situated? | Western elevation/Western side ✓ | 1 |
24 Differentiate between component number 3 and component number 8.

<table>
<thead>
<tr>
<th>Component Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>window/window frame/reveal frame stile/casement stile ✓</td>
</tr>
<tr>
<td>8</td>
<td>sliding door /door frame/ door/reveal /sliding door stile ✓</td>
</tr>
</tbody>
</table>

25 Differentiate between the light in the lounge and the light in the bathroom.

<table>
<thead>
<tr>
<th>Light Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lounge</td>
<td>fluorescent light/1 x 40W/2x40/3x40 fluorescent light ✓ and the light in the bathroom is a normal ceiling light ✓</td>
</tr>
<tr>
<td>Bathroom</td>
<td>normal ceiling light</td>
</tr>
</tbody>
</table>

26 Recommend a suitable floor covering for the bathroom.

<table>
<thead>
<tr>
<th>Floor Covering</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tile</td>
<td>Vinyl flooring (Novilon) / Coloured screed / Polished or stained concrete flooring / Waterproof laminated floor / carpet. ✓</td>
</tr>
<tr>
<td>ANY ACCEPTABLE ANSWER</td>
<td></td>
</tr>
</tbody>
</table>

27 Recommend an appropriate scale to which FIGURE A should be drawn, according to SANS.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:50</td>
<td>✓</td>
</tr>
<tr>
<td>100</td>
<td>✓</td>
</tr>
<tr>
<td>200</td>
<td>✓</td>
</tr>
</tbody>
</table>

28 Recommend an alternative sanitary fitment to replace number 11 that will serve a similar purpose.

<table>
<thead>
<tr>
<th>Sanitary Fitment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shower</td>
<td>✓</td>
</tr>
</tbody>
</table>

29 Calculate the internal area of the office in m² Show ALL calculations.

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 m ✓ x 3 m ✓</td>
<td>= 12 m² ✓ OR 12,000,000 mm²</td>
</tr>
</tbody>
</table>

30 Calculate the perimeter of the building. Show ALL calculations.

<table>
<thead>
<tr>
<th>Calculation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive marking</td>
<td>(220 + 3,000 + 110 + 2,800 + 220) ✓ x 2 ✓</td>
</tr>
<tr>
<td></td>
<td>= 6,350 x 2</td>
</tr>
<tr>
<td></td>
<td>= 12,700 mm ✓</td>
</tr>
<tr>
<td></td>
<td>(220 + 4,000 + 110 + 2,000 + 220) ✓ x 2 ✓</td>
</tr>
<tr>
<td></td>
<td>= 6,550 x 2</td>
</tr>
<tr>
<td></td>
<td>= 13,100 mm ✓</td>
</tr>
<tr>
<td></td>
<td>12,700 + 13,100 mm</td>
</tr>
<tr>
<td></td>
<td>= 25,800 mm ✓ OR</td>
</tr>
<tr>
<td></td>
<td>= 25.8 m</td>
</tr>
</tbody>
</table>

TOTAL 40
QUESTION 3: CONSTRUCTION ASSOCIATED WITH CIVIL SERVICES, OHS AND QUANTITIES (SPECIFIC)

3.1  3.1.1 A manhole is a chamber that allows entrance to a drain. ✓
Allow access to the sewage pipes of a sewage system. (1)

ANY ONE OF THE ABOVE

3.1.2 Benching/Sloping/Haunching ✓ (1)
3.1.3 Pipe channel/Open channel/Channel ✓ (1)
3.1.4 Manholes are set in frames and have greased double seals for the following reasons:
• To make the manhole airtight. ✓
• To make the manhole watertight. ✓
• To ensure that gasses cannot escape.
• To ensure that liquids cannot escape. (2)

3.2

ASSESSMENT CRITERIA | MARK | LEARNER MARK
--- | --- | ---
FIVE courses of bricks in stretcher bond correctly drawn | 5 | 5
Alternate half bricks on left side | 3 | 3
Section correctly drawn | 1 | 1
Hatching lines | 1 | 1
TOTAL: | 10 | 10
3.3

- If the sides are not properly supported, no person is allowed to work in the trench. ✓
- The supervisor ensures that no load, material or heavy machinery is placed near the edge of any excavation. ✓
- Excavations must be adequately protected by a fence. ✓
- Red warning lights and signs should be placed at regular intervals and be clearly visible.
- Orange warning signals must always be visible.
- Deep trenches should have shoring.
- Wear a harness.
- Any person entering an excavation trench must wear personal protective equipment.

ANY THREE OF THE ABOVE (3)

3.4

3.4.1 Shoring A ✓ (1)

3.4.2 Vertical members/poling boards are closer together. This means loose or waterlogged soil cannot filter through the openings. ✓

The loose or waterlogged soil will easily filter through the openings of B.

ANY ONE OF THE ABOVE (1)

3.5

3.5.1 Manhole ✓ (1)

3.5.2 Lifeline ✓ (1)

3.6

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Volume of concrete for foundation:</strong></td>
<td></td>
</tr>
<tr>
<td>3.6.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Volume = l x b x h</td>
<td></td>
</tr>
<tr>
<td>1/</td>
<td>1,150 ✓</td>
<td>1,0 ✓</td>
<td></td>
</tr>
<tr>
<td>0,125 ✓</td>
<td>0,14 m³ ✓</td>
<td>0,14 m³ of concrete is needed</td>
<td></td>
</tr>
<tr>
<td>3.6.2</td>
<td></td>
<td><strong>Number of bricks needed for the manhole:</strong></td>
<td></td>
</tr>
<tr>
<td>1/</td>
<td>4,96 ✓</td>
<td>1,0 ✓</td>
<td></td>
</tr>
<tr>
<td>100 ✓</td>
<td>496 ✓</td>
<td>496 bricks are needed</td>
<td></td>
</tr>
</tbody>
</table>
QUESTION 4: COLD AND HOT-WATER SUPPLY, TOOLS, EQUIPMENT AND MATERIALS (SPECIFIC)

4.1

4.1.1 High pressure geyser/Electrical geyser ✓ (1)

4.1.2 Element ✓ (1)

4.1.3 Gas geyser/Solar geyser/Coal/Biofuel/Wood geyser/Donkey/Solar panel ✓ (1)

4.2

4.2.1 A dripping geyser overflow may be an indication that the pressure control/relief valve/vacuum breaker is faulty/pipe joint leakage. ✓ (1)

4.2.2 If there is no hot water, one of the following may be the cause:
   - No power to the geyser ✓
   - Circuit breaker is faulty
   - Electricity supply is interrupted
   - Thermostat may be faulty
   - Element may be faulty
   - Blocked hot-water pipe
   - No sun for solar geyser
   - No gas for gas geyser

ANY ONE OF THE ABOVE (1)

4.2.3 If water is leaking through the ceiling, one of the following may be the reason:
   - Burst geyser or major leak. ✓
   - Drip tray outlet pipe is blocked or overflowing.
   - The drip tray may be cracked/no drip tray.
   - Pipe joint leakage.

ANY ONE OF THE ABOVE (1)

4.3

4.3.1 F ✓ (1)

4.3.2 G ✓ (1)

4.3.3 E ✓ (1)

4.3.4 D ✓ (1)

4.3.5 B ✓ (1)
4.4

4.4.1

4.4.2

4.4.3

4.5

• Cut the damaged section from the pipe, using a pipe cutter. ✓
• Move the pipe slightly sideways to allow the fixing of compression fittings. ✓
• Measure and cut the length of pipe to be replaced. ✓
• Slip the nuts over the pipes followed by the ferrules. Push the pipes into the fittings and tighten using the correct tools. ✓

OR

• Dismantle the joint
• Ensure sealing of joint (thread sealing tape)
• Replace compression joint
• Tighten all nuts properly
• Test for leaks

4.6

4.6.1 P-Trap/Water trap ✓
4.6.2 PVC/Plastic/Rubber ✓
4.6.3 B ✓
4.6.4 The seal will ensure a watertight seal and prevent it from leaking. ✓

4.7

4.7.1 A Bibcock/Bib tap ✓

B Stopcock/Stop tap ✓

4.7.2 A A bibcock can be used for sanitary fitments such as kitchen sinks, wash troughs, washbasins, dishwashers, washing machine, fridges, ice machines and baths. ✓

Outside of a house for hose pipes.

ANY ONE OF THE ABOVE

B A stopcock is used to close or shut off the water supply. ✓

Copyright reserved Please turn over
4.7.3 • Plastic taps do not have the same resale value ✓ as brass taps and is therefore not worth stealing/cheaper.
• Plastic taps are cheaper than brass taps. (1)

4.8 • To enable local authorities/consumer to calculate the amount of water consumed by a household. ✓
• To indicate if there is a leakage in water pipes.
• To enable the user to upload pre-paid water coupons. (1)

4.9 4.9.1 Description of dezincification:
• Dezincification is the selective leaching of zinc from copper alloys. ✓
• It is an electrochemical reaction between zinc and water. ✓ (2)

4.9.2 Problems caused:
• Zinc gradually dissolves from the surface of an alloy. ✓
• The material that remains is a weak, spongy copper layer. ✓
• It can progress through the part/fitting, causing leaks. ✓
• It can form blockages if it forms a deposit. (3)

ANY THREE OF THE ABOVE

4.10 Electrolytic cleaning/chemicals/scrubbing with wire brush/sand paper. ✓ (1)

4.11 Hydro-dynamic energy ✓ (1)

4.12 • Drain cleaning rods ✓
• Jetting machine/drain cleaning machine/plunger

ANY ONE OF THE ABOVE

4.13 Compressed-air test apparatus ✓ (1)

[40]
QUESTION 5: GRAPHICS AS MEANS OF COMMUNICATION, ROOF WORK AND STORM WATER (SPECIFIC)

5.1

5.1.1 Stop end ✓ (1)
5.1.2 Pitch of the roof ✓ (1)
5.1.3 Galvanised sheet metal ✓ (1)
5.1.4 Gutter ✓ (1)
5.1.5 Kerb ✓ (1)

5.2

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>MARK</th>
<th>LEARNER MARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Square gutter</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Downpipe with offset</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Holder bat</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>7</strong></td>
<td></td>
</tr>
</tbody>
</table>
Candidates can use any one of the 2 methods:

1. Calculate the circumference and divide by 12
   \[ C = 2 \times 3.14 \times 25 = 157/12 = 13 \]
   1 mark

OR

2. Measure distance between any 2 parts on top view (circle)

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>MARK</th>
<th>CM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction lines to top of cone</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Construction lines of outer circle</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Divide outer circle in 12 parts</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Construction lines from top of cone to outer circle</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Cone measurement (marked/transferred) from front view to determine top part of development (ONE mark for every FOUR coordinates = 3)</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Outside lines of development</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>3 mm seam on both sides</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>18</strong></td>
<td></td>
</tr>
</tbody>
</table>
5.3

Candidates can use any one of the 2 methods:

1. Calculate the circumference and divide by 12
   \[ C = 2 \times 3.14 \times 25 = 157/12 = 13 \]
   1 mark

OR

2. Measure distance between any 2 parts on top view (circle)

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<tr>
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<tr>
<td>Divide outer circle in 12 parts</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Construction lines from top of cone to outer circle</td>
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<td>3</td>
</tr>
<tr>
<td>Cone measurement (marked/transferred) from front view to determine top part of development</td>
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<td>6</td>
</tr>
<tr>
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</tr>
<tr>
<td>3 mm seam on both sides</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td>18</td>
<td></td>
</tr>
</tbody>
</table>
QUESTION 6: SEWERAGE, SANITARY FITTINGS AND JOINING (SPECIFIC)

6.1

6.1.1 B ✔ (1)
6.1.2 A ✔ (1)
6.1.3 A ✔ (1)
6.1.4 C ✔ (1)
6.1.5 B ✔ (1)

6.2

6.2.1 C Waste junction135°/Y-junction 135° ✔ (1)

6.2.2 • To allow access to the drainage system. ✔
• To remove blockages from the drainage system.

ANY ONE OF THE ABOVE (1)

6.2.3 • So that drain rods can be inserted easily into the pipe with the direction of flow. ✔
• A 90° junction at this point will make it impossible to use drain rods.
• A 90° junction will damage the main sewerage pipe if drain rods are forced into the pipe.

ANY ONE OF THE ABOVE (1)
6.3

ASSESSMENT CRITERIA | MARK | CANDIDATE’S MARK
--- | --- | ---
2 x rodding eyes correctly positioned | 2 |
5 x inspection eyes correctly positioned | 5 |
1 x ventilation pipe correctly positioned | 1 |
Drain pipes drawn correctly (Main and branch pipes) | 2 |
TOTAL | 10 |

6.4.1 15 mm ✓ (1)
6.4.2 Shower rose/head ✓ (1)
6.4.3 To channel the water towards C. ✓ (1)
6.4.4 • The shower trap allows water to flow down the drainage pipes. ✓
• Keeps unwanted odours from entering the atmosphere.
• To ensure that water flows to the shower trap. (1)
6.4.5 Capillary joint/Soldered joint ✓ (1)

6.5 The function of an anti-siphonage pipe is:
• To supply air to the short branch pipe of the lower fixture at the time of suction to prevent loss of the water seal. ✓
• To act as a ventilation pipe for the lower fixtures. (1)

ANY ONE OF THE ABOVE (1)
6.6 FIGURE A: Used above ground where soil pipe must bend. ✓
Where access to sewage pipes are needed/unblocking of pipes.
To join sewage pipes at 90°.

FIGURE B: Used to connect soil pipes at an angle. ✓
To join three soil pipes at an angle of 135°

6.7
- Water closet ✓
- Bidet
- Urinal

ANY ONE OF THE ABOVE

6.8
6.8.1

\[
\text{ Urinal } \quad \text{ OR } \quad \text{ Grease trap}
\]

6.8.2

\[
\text{ Urinal } \quad \text{ Grease trap}
\]

6.8.3

\[
\text{ Urinal } \quad \text{ Grease trap}
\]

6.9 Materials that are commonly used for sanitary fittings are:
- Ceramics ✓
- Cast iron ✓
- Stainless steel
- Plastic/PVC
- Pressed steel
- Terrazzo
- Glass fibre/fibreglass
- Copper/aluminium

ANY TWO OF THE ABOVE

6.10
- 50/50 solder (plain/tinman's solder) ✓
- Wiping solder (plumber's solder) ✓
- 60/40 solder (fine solder)
- Lead-free solder

ANY TWO OF THE ABOVE
6.11 Chemical anchors can be used to:
- Mount air conditioners
- Fit outdoor lights
- Fix brackets to walls
- Fix brackets to secure I-beams
- Fix balconies
- Fix railings
- Repair bathrooms

ANY ONE OF THE ABOVE (1)

6.12

6.12.1 Rivet head (1)

6.12.2 Flange is created by the rivet gun to complete the bond between the two pieces of material/keep/secure the two parts together. (1)

TOTAL: 200