Manhole Tops and Drainage Gratings

10

General sheet

1. Standard for manhole tops
The official Standard for manhole tops in Israel is IS 489 (2003). This Standard is almost identical, except for a few minor differences, to European Standard EN-124.

2. Choosing a lid
The main types and most useful ones are B125, C250, D400

<table>
<thead>
<tr>
<th>Type</th>
<th>Purpose, areas of use</th>
<th>Test load kN</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>B125</td>
<td>Sidewalks, parking lots or parking surfaces, areas for pedestrians</td>
<td>125</td>
<td>2</td>
</tr>
<tr>
<td>C250</td>
<td>Close to curbstones, no further than 0.50 m into the road, mainly rectangular drain-</td>
<td>250</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>age gratings installed on catch basins in proximity to the curbstone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D400</td>
<td>Roads, pedestrian malls, hard road shoulders and parking areas</td>
<td>400</td>
<td>4</td>
</tr>
</tbody>
</table>

Manhole tops from group 1, type A50 for areas used only by pedestrians and cyclists are mostly not reused.

3. Choosing the lid diameter
The diameter of the lid means the diameter of the clear opening through the frame of the lid. One should differentiate between manhole tops through which a person is permitted to pass in order to enter an inspection chamber and manhole tops a person will not pass. The lid of a manhole 1.25 m or deeper is considered a lid through which a person is supposed to pass. The requirements for choosing the lid diameter are derived from section 7.3 of IS 489 and the Directives for Sanitation Facilities.

4. Setting the lid/grating within the frame
Manhole tops installed in roads have to withstand various traffic loads. The Standard requires that the planning of the cover be such that ensures proper functioning under the relevant traffic conditions. This can be obtained by means of one of the following arrangements or a insertion of them:
1. Locking device (see later reference).
2. Sufficient mass per area unit (as required by the Standard).
3. Special design (the reference is to depth of the insertion, structure of the seat, linings to dampen noise, processing of the contact surface and such like).

5. Depth of the insertion of the lid with the frame (depth of the seat)
Regarding type D400 manhole tops for roads, the Standard requires a insertion depth of at least 50 mm (in manhole tops without locks).

The Wolfman Company supplies its D400 type manhole tops with a insertion depth of 60 mm (greater than the Standard requirement). This ensures good stability of the lid and prevents the possibility of the lid coming out of the frame under conditions of fast-moving and heavy traffic.

6. Processing the contact surfaces
The D400 type manhole tops supplied by the Wolfman Company have machined contact surfaces. This improves the stability of the lid and prevents the lid from “rocking” in the frame.

7. Lining to dampen noise
In the D400 type manhole tops for roads supplied by the Wolfman Company, are installed special linings to dampen noise between the lid and the frame. The linings are manufactured from special materials that are installed in the frame and prevent direct vertical contact between the metal of the lid and the metal of the frame, thereby reducing the noise under fast-moving vehicular traffic.

8. Lockable manhole tops
The Wolfman Company’s D400 type “Click-Lock” manhole tops have a hinge and spring lock. In our opinion locking devices using bolts are invalid and are not recommended for use.

Advantages of the Wolfman manhole tops
1. In the D400 manhole tops for roads – the contact surfaces between the lid and the frame are machined.
2. All frames are supplied cast with a reinforced concrete frame, which improves the installation and makes it easier.
3. All the D400 type manhole tops are made of spheroidal cast iron that is unbreakable.
4. All the D400 manhole tops for roads have special linings to dampen noise.
5. All kinds of lids and gratings of the same type and same diameter are interchangeable in frames for instance a lid and grating are interchangeable.
**CLOCK-LOCK D400™ lid for roads**

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Clear opening diameter in cm</th>
<th>Outside diameter in cm</th>
<th>Frame height in cm</th>
<th>Classified by standard</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>380001049</td>
<td>CLICK-LOCK - 60 D400</td>
<td>D400 Ø 60 lid with a hinge and spring lock</td>
<td>60</td>
<td>77</td>
<td>12</td>
<td>Ø400</td>
<td>1,799.-</td>
<td>29.-</td>
</tr>
<tr>
<td>380001050</td>
<td>CLICK-LOCK - 60 D400 - NA</td>
<td>D400 Ø 60 lid with a hinge and spring lock with an emblem</td>
<td>60</td>
<td>77</td>
<td>12</td>
<td>Ø400</td>
<td>2,088.-</td>
<td>29.-</td>
</tr>
</tbody>
</table>

**Remarks**

1. A closed lid is always a locked lid. The lid is only pushed closed and easily opened without special tools. There are no bolts that could get lost or screw threads that could be damaged.
2. The lid does not “catch” for many years. Dirt does not hamper opening and closing.
3. The contact surfaces of the lid and frame are machined to prevent rocking and to improve the stability.
4. Between the lid and the frame is a dampening lining made of special plastic material to prevent noise.
5. The frame is made of cast iron combined with reinforced concrete. The height of the frame is 12 cm. This structure improves the quality and convenience of the installation.
6. The Click-Lock lid is an excellent lid for roads on which the volume of traffic is great.
7. The Click-Lock lid is made of spheroidal cast iron.

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**CARMEL-66 Model Iron Manhole Tops**

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model/description</th>
<th>Clear opening diameter in cm</th>
<th>Outside diameter in cm</th>
<th>Frame height in cm</th>
<th>Classified by standard</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>386530310</td>
<td>CARMEL-66 lid with cast iron lid</td>
<td>50x50</td>
<td>60x60</td>
<td>10~</td>
<td>Ø125</td>
<td>1,610.-</td>
<td>22.-</td>
</tr>
</tbody>
</table>

- This special lid, manufactured from cast iron, is intended for paved surfaces where the desire is to pave the lid itself with the standard paving around it.
- The CARMEL-66 model lid, after being paved, blends in well with the entire paved surface and does not visibly stand out.
- When the lid itself is paved, 6 cm thick interlocking stones should be used for paving the lid.
## Lid model D400 HD 33-CARMEL for roads

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Clear opening diameter in cm</th>
<th>Outside diameter in cm</th>
<th>Frame height in cm</th>
<th>Insertion depth in cm</th>
<th>Classified by standard</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>38001039</td>
<td>M33-50D400-BB</td>
<td>D400 Ø 50 cover CARMEL HD-33 with BB lid</td>
<td>50</td>
<td>66</td>
<td>12</td>
<td>60</td>
<td></td>
<td>1,209.-</td>
<td>26.-</td>
</tr>
<tr>
<td>38001040</td>
<td>M33-60D400-BB</td>
<td>D400 Ø 60 cover CARMEL HD-33 with BB lid</td>
<td>60</td>
<td>76</td>
<td>12</td>
<td>60</td>
<td></td>
<td>1,384.-</td>
<td>29.-</td>
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<tr>
<td>38001043</td>
<td>M33-50D400-NA</td>
<td>D400 Ø 50 lid CARMEL HD-33 with NAMON lid</td>
<td>50</td>
<td>66</td>
<td>12</td>
<td>60</td>
<td></td>
<td>1,914.-</td>
<td>26.-</td>
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<tr>
<td>38001032</td>
<td>M33-60D400-NA</td>
<td>D400 Ø 60 cover CARMEL HD-33 with NAMON lid</td>
<td>60</td>
<td>76</td>
<td>12</td>
<td>60</td>
<td></td>
<td>2,195.-</td>
<td>27.-</td>
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<tr>
<td>38001041</td>
<td>M33-50D400-RO</td>
<td>D400 Ø 50 lid CARMEL HD-33 with RONDO grating</td>
<td>50</td>
<td>66</td>
<td>12</td>
<td>60</td>
<td></td>
<td>1,484.-</td>
<td>26.-</td>
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<tr>
<td>38001042</td>
<td>M33-60D400-RO</td>
<td>D400 Ø 60 lid CARMEL HD-33 with RONDO grating</td>
<td>60</td>
<td>76</td>
<td>12</td>
<td>60</td>
<td></td>
<td>1,949.-</td>
<td>29.-</td>
</tr>
</tbody>
</table>

- **CARMEL** B125-33 model manhole tops are intended for roads, pedestrian streets, and parking areas.
- The frame is round – cast iron with reinforced concrete, with a pleasant and special shape and from above only the cast iron is visible.
- Lids of this type have a seat (pad) made of reinforced plastic between the lid and frame to prevent noise.
- The contact areas between the lid and frame are ground and precise to prevent "rocking". For lids
- It is possible to obtain the emblem of the local authority (made of bronze) in the center of the lid, also with BB lids for an additional cost of NIS 261.

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![Diagram of lid model D400 HD 33-CARMEL for roads](image_url)
## CARMEL-33 B125 manhole tops for sidewalks

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Clear opening diameter in cm</th>
<th>Outside diameter in cm</th>
<th>Frame height in cm</th>
<th>Insertion depth in cm</th>
<th>Classified by standard</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>383400000</td>
<td>M33-40B125-BB</td>
<td>Ø 40 lid B125 CARMEL 33 with BB lid</td>
<td>40</td>
<td>52</td>
<td>5</td>
<td>40</td>
<td></td>
<td>644.-</td>
<td>23.-</td>
</tr>
<tr>
<td>380001033</td>
<td>M33-50B125-BB</td>
<td>Ø 50 lid B125 CARMEL 33 with BB lid</td>
<td>50</td>
<td>66</td>
<td>10</td>
<td>40</td>
<td></td>
<td>878.-</td>
<td>23.-</td>
</tr>
<tr>
<td>380001027</td>
<td>M33-60B125-BB</td>
<td>Ø 60 lid B125 CARMEL 33 with BB lid</td>
<td>60</td>
<td>76</td>
<td>10</td>
<td>40</td>
<td></td>
<td>983.-</td>
<td>26.-</td>
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<tr>
<td>380001034</td>
<td>M33-50B125-NA</td>
<td>Ø 50 lid B125 CARMEL 33 with NAMON</td>
<td>50</td>
<td>66</td>
<td>10</td>
<td>40</td>
<td></td>
<td>1,299.-</td>
<td>21.-</td>
</tr>
<tr>
<td>380001029</td>
<td>M33-60B125-NA</td>
<td>Ø 60 lid B125 CARMEL 33 with NAMON</td>
<td>60</td>
<td>76</td>
<td>10</td>
<td>40</td>
<td></td>
<td>1,646.-</td>
<td>26.-</td>
</tr>
<tr>
<td>380011029</td>
<td>M33-60B125-C</td>
<td>Ø 50 lid B125 CARMEL 33 with lid made of reinforced plastic</td>
<td>60</td>
<td>76</td>
<td>10</td>
<td>40</td>
<td></td>
<td>1,646.-</td>
<td>26.-</td>
</tr>
<tr>
<td>380001035</td>
<td>M33-50B125-RO</td>
<td>Ø 50 lid B125 CARMEL 33 with RONDO grating</td>
<td>50</td>
<td>66</td>
<td>10</td>
<td>40</td>
<td></td>
<td>970.-</td>
<td>23.-</td>
</tr>
<tr>
<td>380001036</td>
<td>M33-60B125-RO</td>
<td>Ø 60 lid B125 CARMEL 33 with RONDO grating</td>
<td>60</td>
<td>76</td>
<td>10</td>
<td>40</td>
<td></td>
<td>1,052.-</td>
<td>26.-</td>
</tr>
<tr>
<td>380011036</td>
<td>M33-60B125-ROC</td>
<td>Ø 60 lid B125 CARMEL 33 with RONDO grating made of reinforced plastic</td>
<td>60</td>
<td>76</td>
<td>10</td>
<td>40</td>
<td></td>
<td>1,052.-</td>
<td>26.-</td>
</tr>
</tbody>
</table>

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- It is possible to obtain the emblem of the local authority (made of bronze) in the center of the lid, also with BB lids for an additional cost of NIS 261.
CARMELE-55 B125 manhole tops for sidewalks

- **CARMELE** B125-55 model manhole tops are intended for roads, pedestrian streets, and parking areas.
- The frame is square – cast iron with reinforced concrete, and suitable for paved areas.
- Composite Material.
- It is possible to obtain the emblem of the local authority (made of bronze) in the center of the lid, also with BB lids for an additional cost of NIS 261.

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Clear opening diameter in cm</th>
<th>Outside diameter in cm</th>
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<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>380001044</td>
<td>M55-50B125-BB</td>
<td>Ø 50 lid B125 CARMELE 55 with BB lid</td>
<td>50</td>
<td>60x60</td>
<td>8</td>
<td>40</td>
<td>B125</td>
<td>966.-</td>
<td>26.-</td>
</tr>
<tr>
<td>380001047</td>
<td>M55-60B125-BB</td>
<td>Ø 60 lid B125 CARMELE 55 with BB lid</td>
<td>60</td>
<td>70x70</td>
<td>8</td>
<td>40</td>
<td>B125</td>
<td>1,125.-</td>
<td>29.-</td>
</tr>
<tr>
<td>380001045</td>
<td>M55-50B125-NA</td>
<td>Ø 50 lid B125 CARMELE 55 with NAMON lid</td>
<td>50</td>
<td>60x60</td>
<td>8</td>
<td>40</td>
<td>NAMON</td>
<td>1,519.-</td>
<td>26.-</td>
</tr>
<tr>
<td>380001048</td>
<td>M55-60B125-NA</td>
<td>Ø 60 lid B125 CARMELE 55 with NAMON lid</td>
<td>60</td>
<td>70x70</td>
<td>8</td>
<td>40</td>
<td>NAMON</td>
<td>1,739.-</td>
<td>29.-</td>
</tr>
<tr>
<td>380011048</td>
<td>M55-60B125-C</td>
<td>Ø 60 lid CARMELE 55 with lid made of composite plastic material</td>
<td>60</td>
<td>70x70</td>
<td>8</td>
<td>40</td>
<td>B125</td>
<td>1,739.-</td>
<td>29.-</td>
</tr>
<tr>
<td>380001046</td>
<td>M55-50B125-RO</td>
<td>Ø 50 lid B125 CARMELE 55 with RONDO grating</td>
<td>50</td>
<td>60x60</td>
<td>8</td>
<td>40</td>
<td>RONDO</td>
<td>905.-</td>
<td>26.-</td>
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<td>380001037</td>
<td>M55-60B125-RO</td>
<td>Ø 60 lid B125 CARMELE 55 with RONDO grating</td>
<td>60</td>
<td>70x70</td>
<td>8</td>
<td>40</td>
<td>RONDO</td>
<td>1,055.-</td>
<td>29.-</td>
</tr>
<tr>
<td>380011037</td>
<td>M55-60B125-ROC</td>
<td>60 lid B125 CARMELE 55 with RONDO grating</td>
<td>60</td>
<td>70x70</td>
<td>8</td>
<td>40</td>
<td>RONDO</td>
<td>1,055.-</td>
<td>29.-</td>
</tr>
</tbody>
</table>

**Registered Design**

- **CARMELE** B125-55 model manhole tops are intended for roads, pedestrian streets, and parking areas.
- The frame is square – cast iron with reinforced concrete, and suitable for paved areas.
- Composite Material.
- It is possible to obtain the emblem of the local authority (made of bronze) in the center of the lid, also with BB lids for an additional cost of NIS 261.

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**Manhole Tops and Drainage Gratings**

- **Designation**: 55
- **Size classification**: B125
- **Clear Opening Diameter**: Ø 50
- **Outside Diameter**: 60
- **Frame Height**: 8
- **Insertion Depth**: 40
- **Material**: Cast iron

**Manhole Tops and Drainage Gratings**

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- **Outside Diameter**: 60
- **Frame Height**: 8
- **Insertion Depth**: 40
- **Material**: Cast iron

**Manhole T...
### Round lids

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Clear opening diameter in cm</th>
<th>Outside diameter in cm</th>
<th>Frame height in cm</th>
<th>Insertion depth in cm</th>
<th>Classified by standard</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>380400640</td>
<td>MTM-62-40</td>
<td>Ø 40 lid for Ø 50 inspection chamber 50</td>
<td>50</td>
<td>62</td>
<td>40</td>
<td>8125</td>
<td>50</td>
<td>690.-</td>
<td>23.-</td>
</tr>
<tr>
<td>380400740</td>
<td>MTM-75-40</td>
<td>Ø 40 lid for Ø 60 inspection chamber 60</td>
<td>60</td>
<td>75</td>
<td>40</td>
<td>8125</td>
<td>80</td>
<td>690.-</td>
<td>23.-</td>
</tr>
<tr>
<td>384500740</td>
<td>MTM-75B-50</td>
<td>Ø 50 medium lid for Ø 60 inspection chamber / cone</td>
<td>60</td>
<td>75</td>
<td>50</td>
<td>8125</td>
<td>90</td>
<td>887.-</td>
<td>36.-</td>
</tr>
<tr>
<td>387500740</td>
<td>MTM-75C-50</td>
<td>Ø 50 heavy lid for Ø 60 inspection chamber / cone</td>
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<td>75</td>
<td>50</td>
<td>Ø400</td>
<td>130</td>
<td>1,319.-</td>
<td>45.-</td>
</tr>
</tbody>
</table>

### Square manhole tops

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>External dimensions (cm)</th>
<th>External diameter (cm)</th>
<th>H thickness (cm)</th>
<th>Fit for chamber with internal dimensions of</th>
<th>Weight in kg</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>385500740</td>
<td>MTM-80X80B-50</td>
<td>Medium square lid 80 with Ø 50 opening</td>
<td>80x80</td>
<td>B125</td>
<td>10</td>
<td>60x60</td>
<td>150</td>
<td>983.-</td>
<td>45.-</td>
</tr>
<tr>
<td>388500740</td>
<td>MTM-80X80C-50</td>
<td>Heavy square lid 80 with Ø 50 opening</td>
<td>80x80</td>
<td>D400</td>
<td>15</td>
<td>60x60</td>
<td>230</td>
<td>1,397.-</td>
<td>49.-</td>
</tr>
</tbody>
</table>

- Suitable for installation on square chambers.
### Gratings and side stones of cast iron

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Classified by standard</th>
<th>Cost per unit in NIS</th>
<th>Delivery cost per unit in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>385417560</td>
<td>MR-40X90-C250</td>
<td>Cast iron frame and grating</td>
<td>c250</td>
<td>1,680.-</td>
<td>63.-</td>
</tr>
<tr>
<td>385417561</td>
<td>MR-40X90-C250-C</td>
<td>Cast iron frame and grating of reinforced plastic material</td>
<td>c250</td>
<td>1,680.-</td>
<td>63.-</td>
</tr>
<tr>
<td>036560560</td>
<td></td>
<td>Cast iron grating</td>
<td>c250</td>
<td>994.-</td>
<td>63.-</td>
</tr>
<tr>
<td>036560562</td>
<td></td>
<td>Reinforced plastic material grating</td>
<td>c250</td>
<td>994.-</td>
<td>63.-</td>
</tr>
<tr>
<td>036540170</td>
<td></td>
<td>Cast iron frame</td>
<td>c250</td>
<td>686.-</td>
<td>63.-</td>
</tr>
<tr>
<td>420258551</td>
<td>MR-40X90-D400</td>
<td>Cast iron frame and grating</td>
<td>p400</td>
<td>1,754.-</td>
<td>74.-</td>
</tr>
<tr>
<td>036540190</td>
<td></td>
<td>Cast iron frame</td>
<td>p400</td>
<td>1,052.-</td>
<td>74.-</td>
</tr>
<tr>
<td>036540180</td>
<td></td>
<td>Cast iron frame</td>
<td>p400</td>
<td>701.-</td>
<td>74.-</td>
</tr>
<tr>
<td>036570190</td>
<td>MZ-TL-90</td>
<td>Tel Aviv model side stone of cast iron</td>
<td>-</td>
<td>429.-</td>
<td>53.-</td>
</tr>
<tr>
<td>036570191</td>
<td>*MZ-H</td>
<td>Charish model side stone of cast iron</td>
<td>-</td>
<td>810.-</td>
<td>50.-</td>
</tr>
<tr>
<td>036570200</td>
<td>MZ-E-90</td>
<td>Cast iron stone island</td>
<td>-</td>
<td>585.-</td>
<td>58.-</td>
</tr>
<tr>
<td>385437380</td>
<td>MR-40X40-C250</td>
<td>Square drainage grating 40X40</td>
<td>c250</td>
<td>783.-</td>
<td>54.-</td>
</tr>
</tbody>
</table>

**Remarks**

1. The Tel Aviv grating with a side stone shall be installed on MD-1; MD-2; MD-4; MD-5; MD-6 catch basins.
2. The Tel Aviv grating without a side stone shall be installed on MD-21; MD-22; MD-24 catch basins.
3. The frame of the Tel Aviv grating has four lugs with holes for anchoring during installation.
4. The Tel Aviv gratings cannot be installed upside down because of their unique structure.
5. The 40 X 40 square drainage grating integrates well with twin-sloped channel stones.
6. The 40 X 40 square drainage grating can be installed on MD-22; MD-24 catch basins. Two gratings are required for the catch basin.
Wolfman SUPER Flow Model Rainwater Collector System

General
Wolfman’s SUPER FLOW Rainwater Collection System was developed in order to improve the rainwater collection systems prevalent in Israel in models based on catch basins and in proximity to curbstones or island stones. In addition, the new system was intended to prevent or at least make things more difficult for theft of gratings – which had become a “national epidemic”. The main improvements in the system:

- The gratings cannot be easily stolen – they are installed by means of hinges to the frame.
- Curbstone made of spheroidal cast iron and therefore unbreakable. The cast iron stone is connected via 4 bolts to the base of the system and therefore the installation is stable and robust and will not be dislodged as a result of the impact of vehicle wheels.
- In the current system the curbstone is secured in place by non-reinforced cement mortar and consequently the phenomenon of breakage and dislodging is common).
- The stone is attached by means of 4 bolts enabling the height to be adjusted as required by adding spacers under the stone.
- Each SUPER FLOW system is supplied with a strong frame made of B-50 reinforced concrete.
- This frame ensures and facilitates the following advantages:
  - The entire system is a single unit attached to a single base: the grating, frame and curbstone.
  - The integrated frame of the system facilitates good and easy installation on catch basins. There is no need for the asphalt to reach the grating. It has to reach only the reinforced concrete frame.
- The system has improved collection abilities as opposed to existing systems.
- Opening the gratings on their hinges (like a door) facilitates easier and safer working conditions for the maintenance personnel who have to clean the catch basin.
- The gratings are constructed on hinges and interlock one with the other.

Main dimensions of the SUPER FLOW system
- External dimensions of the reinforced concrete frame base: 74 X 104 cm, like the external dimensions of the catch basin.
- Height of the reinforced concrete frame: 12.5 cm.
- Size of the intake opening under the gratings: 30 X 80 cm.
- Total area of the slots in the gratings: 1140 square cm (the area of the slots constitutes 47.5% of the total area of the gratings).
- Size of the side opening in the curbstone: 10 X 80 cm.
- Size of the opening under the curbstone: 16 X 80 cm.

Suitable for installation on:
SUPER FLOW Rainwater Collection System is suitable for installation on the following catch basins: MD-1, MD-2, MD-6.

Traffic
Suitable for vehicular road traffic. Type C-250.

State of doors open on their hinges

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description/name</th>
<th>Unit price in NIS</th>
<th>Unit delivery price in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>382612620</td>
<td>SUPER FLOW</td>
<td>Rain water collection system</td>
<td>3,090.-</td>
<td>91.-</td>
</tr>
</tbody>
</table>

Attachment of the stone by means of 4 bolts with directional slots
Details of Installation of Manhole tops on Ceilings in Roads

Installation of a lid with a collar cast on site

Recommended stages of implementation:
1. Drill in the ceiling and prepare vertical iron and struts.
2. Place the frame at the proper height.
3. Install the inner and outer mold.
4. Cast the 8-40 concrete mixture.
5. Cure the concrete with a damp sack lid or polyethylene sheet.
6. Dismantle the molds, clean the frame and install the lid.

Installation of lid with prefabricated elevation rings

Recommended stages of implementation:
1. Select the pre-fabricated elevation rings for the required height. (One or more rings).
2. Install using quick drying compound of the CEMENT ALL type or equivalent.
3. Cure the concrete with a damp sack lid or polyethylene sheet.
4. Clean the frame and install the lid.

Prefabricated elevation rings

<table>
<thead>
<tr>
<th>Model</th>
<th>H in cm</th>
<th>Unit weight in kg</th>
<th>Unit price in NIS</th>
<th>Unit delivery price in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR-60X5</td>
<td>5</td>
<td>23</td>
<td>130.-</td>
<td>13.-</td>
</tr>
<tr>
<td>GR-60X7.5</td>
<td>7.5</td>
<td>35</td>
<td>130.-</td>
<td>13.-</td>
</tr>
<tr>
<td>GR-60X10</td>
<td>10</td>
<td>45</td>
<td>130.-</td>
<td>13.-</td>
</tr>
</tbody>
</table>

- Supplied in packages of 10 units of the same type on a wooden pallet.

Ready to use concrete mixes for installation of manhole tops

1. CEMENT ALL
2. CONCRETE MIX
3. DOT COMPOUND
4. SIKA FIX RSM
5. THORO STRUCTURITE 300

Shoshani & Weinstein Ltd.
Shoshani & Weinstein Ltd.
Shoshani & Weinstein Ltd.
Gilar Ltd.
TAMBOUR/SERAFON

Notes:
1. The planner should determine the installation method he requires.
2. Regarding ready to use concrete – check the details with the suppliers.
3. The method of installation recommended here is compatible with the manhole tops manufactured by Wolfman Industries Ltd.
### MRN model drainage gratings for rectangular chambers

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Intended for installation on</th>
<th>Unit weight in kg</th>
<th>Unit price in NIS</th>
<th>Unit delivery price in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>310508104</td>
<td>MRN-50X80</td>
<td>Catches MD-1, MD-2, MD-6</td>
<td>~ 40</td>
<td>3,898.-</td>
<td>93.-</td>
</tr>
<tr>
<td>311313104</td>
<td>MRN-100X100</td>
<td>Rectangular chamber 100X100</td>
<td>~ 80</td>
<td>4,960.-</td>
<td>116.-</td>
</tr>
<tr>
<td>311315104</td>
<td>MRN-100X120</td>
<td>Rectangular chamber 100X120</td>
<td>~ 90</td>
<td>5,558.-</td>
<td>139.-</td>
</tr>
<tr>
<td>311517104</td>
<td>MRN-120X140</td>
<td>Rectangular chamber 120X140</td>
<td>~ 120</td>
<td>6,575.-</td>
<td>161.-</td>
</tr>
<tr>
<td>311818104</td>
<td>MRN-150X150</td>
<td>Rectangular chamber 150X150</td>
<td>~ 160</td>
<td>8,479.-</td>
<td>216.-</td>
</tr>
</tbody>
</table>

### Remarks

1. The gratings are manufactured from hot galvanized steel (hot zinc coating).
2. The gratings are intended for installation on catch basins and rectangular inspection chambers in open areas. For larger chambers it is possible to manufacture a suitable transition ceiling.
3. Attachment of the grating to the rectangular chamber is by means of anchor bolts (dowels) that are not supplied by Wolfman Industries.
4. The grating is made of Ø 16 mm steel rods at intervals of 10 cm (10 X 10 cm squares) + steel profile circumference frame.
Dome ceilings and ceilings for plastic pits, chambers for water valves

Dome ceilings model MTH

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Intended for chamber diameter (cm)</th>
<th>Outer diameter (cm)</th>
<th>Thickness (cm)</th>
<th>Weight in Kg</th>
<th>Unit price in NIS</th>
<th>Unit delivery price in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>384501120</td>
<td>MTMH-112B-50</td>
<td>B125 dome ceiling Ø 112 With cast lid Ø 50</td>
<td>80</td>
<td>112</td>
<td>13</td>
<td>300</td>
<td>1,562.-</td>
<td>48.-</td>
</tr>
<tr>
<td>384501360</td>
<td>MTMH-136B-50</td>
<td>B125 dome ceiling Ø 136 With cast lid Ø 50</td>
<td>100</td>
<td>136</td>
<td>14</td>
<td>500</td>
<td>1,821.-</td>
<td>69.-</td>
</tr>
<tr>
<td>384500820</td>
<td>MTMH-110B-50</td>
<td>B125 dome lid for Ø 50 cone</td>
<td>100/125</td>
<td>110</td>
<td>14</td>
<td>280</td>
<td>1,584.-</td>
<td>48.-</td>
</tr>
</tbody>
</table>

- Dome ceilings are more vulnerable than regular ceilings, therefore it is recommended to usually use regular ceilings of the MT or MTM type.
- It is not possible to use “dome” type ceilings with bases of the MB or MAGNOLAST type.

Cast concrete lids for plastic pits

<table>
<thead>
<tr>
<th>Catalog no.</th>
<th>Model</th>
<th>Description</th>
<th>Intended for chamber diameter (cm)</th>
<th>Outer diameter (cm)</th>
<th>Thickness (cm)</th>
<th>Weight in Kg</th>
<th>Unit price in NIS</th>
<th>Unit delivery price in NIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>290080041</td>
<td>MTM-80B-40</td>
<td>B125 lid Ø 40 for plastic pit</td>
<td>40</td>
<td>80</td>
<td>12</td>
<td>92</td>
<td>1,203.-</td>
<td>32.-</td>
</tr>
<tr>
<td>290090250</td>
<td>MTM-90B-50</td>
<td>B125 lid Ø 50 for plastic pit</td>
<td>50</td>
<td>90</td>
<td>14</td>
<td>128</td>
<td>1,330.-</td>
<td>44.-</td>
</tr>
</tbody>
</table>

- The manhole tops are suitable for all plastic pits whose upper diameter is ~ 62.5 cm.
- Cast iron manhole tops for plastic pits are not standard products.

Chamber for water valves

- Purpose: Chamber for water valves in urban systems and paved areas.
- Advantages:
  1. The concrete sections have an expanded base in order to prevent possible sinking.
  2. The lid is centered in the concrete section in a special niche.
  3. The final height of the lid can be adjusted by filling in concrete between the lid and the section.
  4. The lid is attached to the frame by means of a hinge.
  5. The square frame is easy to use in paved areas.

Lid
- Made of cast iron.
- Diameter of opening – 30 cm.
- Outer dimensions of the frame – 40 / 40 cm.

Section
- Made of B-40 concrete
- Inner diameter – 30 cm.
- Height – 50 cm.
- Lower diameter – 50 cm.
- Weight – 75 kg.

Price of a valves chamber including a lid: NIS 989.- per unit