PRODUCT CATALOGUE
British Columbia

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## Notes:

- All concrete products within this catalogue are manufactured using cement meeting the requirements of CSA A3000 and / or ASTM C150 where applicable. Sulfate-resistant concrete is available by special order.
- Applicable taxes and freight charges are extra.
- Prices effective February 2014.
- Restocking fees are $15 \%$ for returned undamaged stock items. Cancelled orders may be subject to $100 \%$ restocking charges.
- Listed product weights are approximate and intended for shipping purposes. Exact weights can be calculated upon request.
- Prices shown in this catalogue are intended as an estimating guide and are subject to change. Detailed quotations are available upon request.
- Cast-in fixtures and appurtenances, other than swift lifts, are subject to approval by design Engineer and extra costs will apply.


## ロГEAN



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## Concrete Storm Sewer Pipe ASTM C14 \& ASTM C76

| PIPE | PIPEWEIGHT ( $\mathrm{kg} / \mathrm{m}$ ) | PRICE (\$/m) |  |  |  | $\begin{aligned} & \text { GASKET } \\ & \text { PRICE } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (mm) |  | $\begin{aligned} & \hline \text { C14 } \\ & \text { CL3 } \end{aligned}$ | $\begin{aligned} & \hline \text { C76 } \\ & \text { CLIII } \end{aligned}$ | $\begin{aligned} & \text { C76 } \\ & \text { CLIV } \end{aligned}$ | $\begin{aligned} & \text { C76 } \\ & \text { CLV } \end{aligned}$ |  |
| 300 | 180 | \$39.00 | - | - | \$76.00 | \$8.00 |
| 375 | 235 | \$46.00 | - | \$76.00 | \$82.00 | \$9.00 |
| 450 | 300 | \$67.00 | - | \$96.00 | \$104.00 | \$10.00 |
| 525 | 380 | \$79.00 | \$103.00 | \$123.00 | \$131.00 | \$11.00 |
| 600 | 600 | \$110.00 | \$142.00 | \$171.00 | \$183.00 | \$12.00 |
| 675 | 710 | \$138.00 | \$177.00 | \$190.00 | \$219.00 | \$13.00 |
| 750 | 830 | \$163.00 | \$195.00 | \$237.00 | \$266.00 | \$14.00 |
| 900 | 1130 | \$204.00 | \$260.00 | \$296.00 | \$364.00 | \$16.00 |
| 1050 | 1400 | - | \$439.00 | \$491.00 | \$602.00 | \$30.00 |
| 1200 | 1700 | - | \$540.00 | \$633.00 | \$736.00 | \$34.00 |
| 1350 | 1980 | - | \$722.00 | \$850.00 | \$1,170.00 | \$35.00 |
| 1500 | 2350 | - | \$886.00 | \$1,049.00 | \$1,564.00 | \$38.00 |
| 1650 | 2670 | - | \$1,132.00 | \$1,364.00 | \$1,765.00 | \$39.00 |
| 1800 | 3130 | - | \$1,207.00 | \$1,518.00 | \$2,160.00 | \$43.00 |
| 1950 | 3830 | AVAILABLE BY SPECIAL ORDER CONTACT PIPE SALES FOR PRICING |  |  |  |  |
| 2100 | 4130 |  |  |  |  |  |  |
| 2400 | 5300 |  |  |  |  |  |  |
| 2750 | 6600 |  |  |  |  |  |  |
| 3050 | 7300 |  |  |  |  |  |  |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Standard pipe is suitable for non-tested storm sewer or culvert application
- Pipes come in 2.5 m standard lengths.
- Diameters listed are nominal - please refer to page 4 for further details
- Products manufactured using Type GU cement; Type HS cement available upon request. Call sales office for pricing
- All pipe gaskets are "Super Seal", except 1650 mm pipe gaskets are "Profile"
- Reinforced pipe in 900 mm and larger sizes supplied with lifting inserts
- For pipe fittings please refer to pages 6 \& 7


## Tested Concrete Sanitary Sewer Pipe ASTM C14 \& ASTM C76

| PIPE DIAMETER (mm) | PIPE WEIGHT (kg/m) | PRICE (\$/m) |  |  |  | $\begin{aligned} & \text { GASKET } \\ & \text { PRICE } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{aligned} & \hline \text { C14 } \\ & \text { CL3 } \end{aligned}$ | $\begin{aligned} & \hline \text { C76 } \\ & \text { CLIII } \end{aligned}$ | $\begin{aligned} & \hline \text { C76 } \\ & \text { CLIV } \end{aligned}$ | $\begin{aligned} & \hline \text { C76 } \\ & \text { CLV } \end{aligned}$ |  |
| 300 | 180 | \$54.00 | - | - | \$101.00 | \$8.00 |
| 375 | 235 | \$73.00 | - | \$111.00 | \$118.00 | \$9.00 |
| 450 | 300 | \$96.00 | - | \$126.00 | \$133.00 | \$10.00 |
| 525 | 380 | \$101.00 | \$133.00 | \$153.00 | \$161.00 | \$11.00 |
| 600 | 600 | \$144.00 | \$178.00 | \$206.00 | \$219.00 | \$12.00 |
| 675 | 710 | \$174.00 | \$209.00 | \$226.00 | \$256.00 | \$13.00 |
| 750 | 830 | \$198.00 | \$232.00 | \$272.00 | \$303.00 | \$14.00 |
| 900 | 1130 | \$240.00 | \$298.00 | \$333.00 | \$397.00 | \$16.00 |
| 1050 | 1400 | - | \$496.00 | \$546.00 | \$658.00 | \$30.00 |
| 1200 | 1700 | - | \$598.00 | \$690.00 | \$793.00 | \$34.00 |
| 1350 | 1980 | - | \$781.00 | \$907.00 | \$1,226.00 | \$35.00 |
| 1500 | 2350 | - | \$942.00 | \$1,108.00 | \$1,621.00 | \$38.00 |
| 1650 | 2670 | - | \$1,190.00 | \$1,420.00 | \$1,821.00 | \$39.00 |
| 1800 | 3130 | - | \$1,276.00 | \$1,585.00 | \$2,230.00 | \$43.00 |
| 1950 | 3830 | AVAILABLE BY SPECIAL ORDER CONTACT PIPE SALES FOR PRICING |  |  |  |  |
| 2100 | 4130 | AVAILABLE BY SPECIAL ORDER CONTACT PIPE SALES FOR PRICING |  |  |  |  |
| 2400 | 5300 |  |  |  |  |  |  |
| 2750 | 6600 |  |  |  |  |  |  |
| 3050 | 7300 |  |  |  |  |  |  |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Tested pipe is air tested at our plant to meet infiltration requirements of MMCD
- Pipes come in 2.5 m standard lengths.
- Diameters listed are nominal - please refer to page 4 for further details
- Products manufactured using Type GU cement; Type HS cement available upon request. Call sales office for pricing
- All pipe gaskets are "Super Seal", except 1650mm pipe gaskets are "Profile"
- Reinforced pipe in 900 mm and larger sizes supplied with lifting inserts
- For pipe fittings please refer to pages 6 \& 7


## Concrete Pipe

Dimensional Data

| NOMINAL INSIDE DIA. |  | WEICHT kg/m | $\begin{gathered} \text { VOLUME } \\ (\mathrm{L} / \mathrm{m}) \end{gathered}$ | ACTUAL PIPE DIMENSIONS (mm) |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| mm | in |  |  | Di | Do | LL | Lo | Tw | B | G |
| 300 | 12 | 195 | 73 | 305 | 445 | 2500 | 2590 | 70 | 508 | 90 |
| 375 | 15 | 235 | 114 | 381 | 495 | 2500 | 2590 | 57 | 606 | 90 |
| 450 | 18 | 300 | 164 | 457 | 584 | 2500 | 2595 | 64 | 702 | 95 |
| 525 | 21 | 380 | 223 | 533 | 673 | 2500 | 2595 | 70 | 803 | 95 |
| 600 | 24 | 600 | 292 | 610 | 800 | 2500 | 2598 | 95 | 905 | 98 |
| 675 | 27 | 710 | 370 | 686 | 889 | 2500 | 2598 | 102 | 1006 | 98 |
| 750 | 30 | 830 | 456 | 762 | 978 | 2500 | 2598 | 108 | 1095 | 98 |
| 900 | 36 | 1130 | 656 | 914 | 1156 | 2500 | 2598 | 121 | 1299 | 98 |
| 1050 | 42 | 1400 | 894 | 1067 | 1334 | 2500 | 2617 | 133 | 1500 | 117 |
| 1200 | 48 | 1700 | 1167 | 1219 | 1511 | 2500 | 2621 | 146 | 1683 | 121 |
| 1350 | 54 | 1980 | 1478 | 1372 | 1689 | 2500 | 2608 | 159 | - | 108 |
| 1500 | 60 | 2350 | 1824 | 1524 | 1867 | 2500 | 2621 | 171 | - | 121 |
| 1650 | 66 | 2670 | 2206 | 1677 | 2045 | 2500 | 2627 | 184 | - | 127 |
| 1800 | 72 | 3130 | 2627 | 1829 | 2223 | 2500 | 2627 | 197 | - | 127 |
| 1950 | 78 | 3830 | 3082 | 1981 | 2400 | 2500 | 2627 | 210 | - | 127 |
| 2100 | 84 | 4130 | 3577 | 2134 | 2578 | 2500 | 2627 | 222 | - | 127 |
| 2400 | 96 | 5300 | 4668 | 2438 | 2934 | 2500 | 2627 | 248 | - | 127 |
| 2750 | 108 | 6600 | 5909 | 2743 | 3289 | 2440 | 2649 | 273 | - | 149 |
| 3050 | 120 | 7300 | 7297 | 3048 | 3607 | 2500 | 2652 | 279 | - | 152 |



HEIDELBERGCEMENTGroup

## Plugs / Caps / Adaptors

| $\begin{aligned} & \text { DIAMETER } \\ & (\mathrm{mm}) \end{aligned}$ | INCREASER / REDUCER |  | CAP / PLUG |  |
| :---: | :---: | :---: | :---: | :---: |
|  | WEICHT <br> (kg/ea.) | PRICE (\$/ea.) | WEIGHT <br> (kg/ea.) | PRICE <br> (\$/ea.) |
| 300 | 565 | \$577.00 | 37 | \$129.00 |
| 375 | 756 | \$697.00 | 55 | \$145.00 |
| 450 | 993 | \$769.00 | 81 | \$154.00 |
| 525 | 1264 | \$921.00 | 108 | \$170.00 |
| 600 | 1946 | \$1,103.00 | 152 | \$201.00 |
| 675 | 2327 | \$1,279.00 | 188 | \$226.00 |
| 750 | 2875 | \$1,447.00 | 274 | \$247.00 |
| 900 | 3838 | \$1,686.00 | 386 | \$282.00 |
| 1050 | 5191 | \$2,534.00 | 567 | \$299.00 |
| 1200 | 6505 | \$3,014.00 | 744 | \$370.00 |
| 1350 | 7609 | \$3,558.00 | 933 | \$448.00 |
| 1500 | 8638 | \$4,227.00 | 1142 | \$601.00 |
| 1650 | 10078 | \$4,854.00 | 1414 | \$825.00 |
| 1800 | 12028 | \$5,405.00 | 1674 | \$1,041.00 |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- For Increaser/Decreaser price refer to larger end diameter
- Increaser/Decreaser weights are based on a change of one diameter
- Plugs fit into bell ends; caps fit into spigot end
- Sizes larger than 1800 mm are available; call Pipe Sales for details
- These products are considered custom. Credit will not be given for returned custom items.
- Custom items manufactured for order and not taken will be invoiced to the customer.
- Increaser/Decreaser can be provided as invert-to-invert, obvert-to-obvert, or springline-to-springline. Customer to specify.



## Prefabricated Bends

| DIAMETER <br> $(\mathrm{mm})$ | SINGLE MITRED BEND |  | DOUBLE MITRED BEND |  |
| :---: | :---: | :---: | :---: | :---: |
|  | WEIGHT <br> $(\mathrm{kg} / \mathrm{ea})$. | PRICE <br> $(\$ / \mathrm{ea})$. | WEIGHT <br> $(\mathrm{kg} / \mathrm{ea})$. | PRICE <br> $(\$ / \mathrm{ea})$. |
| 300 | 504 | $\$ 487.00$ | 554 | $\$ 820.00$ |
| 375 | 648 | $\$ 587.00$ | 708 | $\$ 953.00$ |
| 450 | 820 | $\$ 734.00$ | 890 | $\$ 1,074.00$ |
| 525 | 1050 | $\$ 820.00$ | 1160 | $\$ 1,188.00$ |
| 600 | 1670 | $\$ 1,005.00$ | 1850 | $\$ 1,495.00$ |
| 675 | 1960 | $\$ 1,117.00$ | 2160 | $\$ 1,640.00$ |
| 750 | 2330 | $\$ 1,301.00$ | 2610 | $\$ 1,984.00$ |
| 900 | 3010 | $\$ 1,456.00$ | 3340 | $\$ 2,445.00$ |
| 1050 | 3990 | $\$ 2,015.00$ | 4490 | $\$ 3,583.00$ |
| 1200 | 4840 | $\$ 2,720.00$ | 5410 | $\$ 4,205.00$ |
| 1350 | 5580 | $\$ 3,455.00$ | 6350 | $\$ 4,346.00$ |
| 1500 | 6850 | $\$ 3,987.00$ | 7920 | $\$ 5,023.00$ |
| 1650 | 7710 | $\$ 4,976.00$ | 8800 | $\$ 6,243.00$ |
| 1800 | 9110 | $\$ 5,398.00$ | 10380 | $\$ 6,556.00$ |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Bends larger than 1800 mm are available; call for pricing and availability
- These products are considered custom. Credit will not be given for returned custom items.
- Custom items manufactured for order and not taken will be invoiced to the customer.



## Wyes / Tees

| DIAMETER <br> $(\mathrm{mm})$ | PIPE WYE $/$ TEE <br> $(\$ / \mathrm{ea})$. | MANHOLE TEE <br> $(\$ / \mathrm{ea})$. |
| :---: | :---: | :---: |
| 100 | $\$ 131.00$ | - |
| 150 | $\$ 170.00$ | - |
| 200 | $\$ 190.00$ | - |
| 250 | $\$ 225.00$ | - |
| 300 | $\$ 414.00$ | - |
| 375 | $\$ 561.00$ | - |
| 450 | $\$ 735.00$ | - |
| 525 | $\$ 886.00$ | - |
| 600 | $\$ 978.00$ | - |
| 675 | $\$ 1,247.00$ | $\$ 1,458.00$ |
| 750 | $\$ 1,409.00$ | $\$ 1,798.00$ |
| 900 | $\$ 1,744.00$ | $\$ 2,024.00$ |
| 1050 | $\$ 2,094.00$ | $\$ 2,152.00$ |
| 1200 | $\$ 2,542.00$ |  |
| 1350 | $\$ 3,110.00$ |  |
| 1500 | $\$ 3,647.00$ |  |
| 1650 | $\$ 4,185.00$ |  |
| 1800 | $\$ 4,745.00$ |  |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Prices shown do not include main concrete pipe
- Prices shown are for PVC wyes/tees up to 300 mm ; all other sizes priced are for concrete
- Other materials available; contact Pipe Sales for pricing
- Sizes larger than 1800 mm are available; call for pricing and availability
- These products are considered custom. Credit will not be given for returned custom items.
- Wyes \& lateral tees are installed at springline - other locations at customer's request.


MANHOLE TEE

## Manhole Material

| INSIDE | BARRELS |  | LIDS |  | SUPERSEAL <br> GIASKET | FLAT INNER <br> BASES | EXTENDED <br> BASES |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | WEIGHT <br> $(\mathrm{kg} / \mathrm{m})$ | PRICE <br> $(\$ / \mathrm{m})$ | $(\mathrm{kg} / \mathrm{ea})$ | $(\$ / \mathrm{ea})$ | $(\$ / \mathrm{ea})$ | $(\$ / \mathrm{ea})$ | $(\$ / \mathrm{ea})$ |
| 900 | 800 | $\$ 424.00$ | 290 | $\$ 223.00$ | - | $\$ 183.00$ | $\$ 229.00$ |
| 1050 | 1080 | $\$ 463.00$ | 435 | $\$ 282.00$ | $\$ 30.00$ | $\$ 224.00$ | $\$ 260.00$ |
| 1200 | 1330 | $\$ 686.00$ | 770 | $\$ 320.00$ | $\$ 34.00$ | $\$ 235.00$ | $\$ 293.00$ |
| 1350 | 1980 | $\$ 973.00$ | 1125 | $\$ 512.00$ | $\$ 35.00$ | $\$ 367.00$ | $\$ 412.00$ |
| 1500 | 2350 | $\$ 1,273.00$ | 1630 | $\$ 742.00$ | $\$ 38.00$ | $\$ 504.00$ | $\$ 550.00$ |
| 1800 | 3130 | $\$ 1,690.00$ | 2450 | $\$ 1,008.00$ | $\$ 43.00$ | $\$ 598.00$ | $\$ 687.00$ |
| 2400 | 4730 | $\$ 2,396.00$ | 4170 | $\$ 1,960.00$ | $\$ 103.00$ | $\$ 1,890.00$ | $\$ 2,154.00$ |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- 900 mm diameter manholes are mortar joint; $1050-2400 \mathrm{~mm}$ manholes use super-seal gaskets
- Manholes are available in $0.3 \mathrm{~m}, 0.6 \mathrm{~m}, 0.9 \mathrm{~m}$ and 1.2 m standard lengths.
- Manholes manufactured to ASTM C478 specification; gaskets to ASTM C443
- Manhole lids are designed for HS20 truck loading with 635 mm openings; other configurations are available
- Base prices are for flat bases - prebenched base pricing extra (see below)
- Rough cut and cored openings in barrels are available at extra cost; call Sales Office for details
- 900 mm diameter barrels are supplied with lifting holes; all other sizes supplied with lifting inserts
- Butyl joint sealant is also available (see page 17)
- Other sizes available; call Pipe Sales for details


## Prebench Bases

| INSIDE BARREL DIAMETER (mm) | WEIGHT <br> (kg/ea.) | PRICE <br> (\$/ea.) |
| :---: | :---: | :---: |
| 1050mm x 0.6M max.200mm inlet/outlet diameter | 1645 | \$838.00 |
| $1050 \mathrm{~mm} \times 0.6 \mathrm{M}$ max.250mm inlet/outlet diameter | 1645 | \$838.00 |
| $1050 \mathrm{~mm} \times 0.6 \mathrm{M}$ max. 300 mm inlet/outlet diameter | 1645 | \$838.00 |
| $1050 \mathrm{~mm} \times 0.9 \mathrm{M}$ max. 375 mm inlet/outlet diameter | 2203 | \$969.00 |
| $1050 \mathrm{~mm} \times 0.9 \mathrm{M}$ max. 450 mm inlet/outlet diameter | 2244 | \$969.00 |
| $1200 \mathrm{~mm} \times 0.9 \mathrm{M}$ max. 525 mm inlet/outlet diameter | 2902 | \$1,596.00 |
| $1200 \mathrm{~mm} \times 1.2 \mathrm{M}$ max. 600 mm inlet/outlet diameter | 3328 | \$1,702.00 |
| $1350 \mathrm{~mm} \times 1.2 \mathrm{M}$ max. 675 mm inlet/outlet diameter | 4953 | \$2,050.00 |
| $1350 \mathrm{~mm} \times 1.5 \mathrm{M}$ max. 750 mm inlet/outlet diameter | 5512 | \$2,365.00 |
| $1350 \mathrm{~mm} \times 1.5 \mathrm{M}$ max. 900 mm inlet/outlet diameter | 6791 | \$3,157.00 |
| $1500 \mathrm{~mm} \times 1.8 \mathrm{M}$ max. 1050 mm inlet/outlet diameter | 7477 | \$3,749.00 |
| $1500 \mathrm{~mm} \times 1.8 \mathrm{M}$ max. 1200 mm inlet/outlet diameter | 7387 | \$4,168.00 |
| $1800 \mathrm{~mm} \times 1.8 \mathrm{M}$ max. 1200 mm inlet/outlet diameter | 9550 | \$5,204.00 |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Prices include extended base and up to a maximum of 4 connections
- For PVC: rubber gasketed jointed provided. For all other piping materials: construction joints provided
- PVC Bells extra, contact Sales Office for pricing
- Prebenched Bases are made to order and require approved drawings before manufacturing
- Prebenched bases are considered custom. Credit will not be given for returned custom items.
- Custom items manufactured for order and not taken will be invoiced to the customer.
- Prices subject to change based on job specifications


## Manhole Material Dimensional Data



| NOMINAL DIAMETER (mm) | ACTUAL DIAMETER (mm) | WEIGHT <br> (kg/m) | SPIGOT LENGTH (mm) | OUTSIDE <br> DIAMETER <br> (mm) | WALL THICKNESS $(\mathrm{mm})$ | LID <br> THICKNESS (mm) | BASE THICKNESS $(\mathrm{mm})$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 900 | 915 | 800 | 32 | 1118 | 102 | 152 | 152 |
| 1050 | 1067 | 1080 | 108 | 1295 | 114 | 152 | 152 |
| 1200 | 1220 | 1330 | 108 | 1473 | 127 | 203 | 152 |
| 1350 | 1372 | 1980 | 108 | 1689 | 159 | 216 | 203 |
| 1500 | 1524 | 2350 | 121 | 1867 | 171 | 216 | 203 |
| 1800 | 1829 | 3130 | 127 | 2223 | 197 | 254 | 203 |
| 2400 | 2438 | 4730 | 146 | 2896 | 228 | 254 | 203 |

## Catch Basin Material

| $\begin{aligned} & \text { INSIDE } \\ & \text { DIAMETER } \\ & (\mathrm{mm}) \end{aligned}$ | BARRELS |  | LIDS |  |  |  | BASES |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | MALE END |  | FEMALE END |  | FLAT INNER | EXTENDED |
|  | WEIGHT <br> (kg/ea.) | PRICE <br> (\$/ea.) | WEIGHT (kg/ea.) | $\begin{aligned} & \text { PRICE } \\ & \text { (\$/ea.) } \end{aligned}$ | WEIGHT (kg/ea.) | PRICE (\$/ea.) | PRICE <br> (\$/ea.) | PRICE <br> (\$/ea.) |
| 300 mm DIAMETER MATERIAL |  |  |  |  |  |  |  |  |
| $300 \times 0.15 \mathrm{~m}$ Barrel | 21 | \$33.00 | - | - | - | - | \$22.00 | - |
| $300 \times 0.45 \mathrm{~m}$ Barrel | 63 | \$58.00 |  |  |  |  | \$22.00 |  |
| 375 mm DIAMETER MATERIAL |  |  |  |  |  |  |  |  |
| $375 \times 0.15 \mathrm{~m}$ Barrel | 33 | \$41.00 | - | - | 15 | \$38.00 | \$28.00 | - |
| $375 \times 0.3 \mathrm{~m}$ Barrel | 60 | \$55.00 |  |  |  |  |  |  |
| $375 \times 0.6 \mathrm{~m}$ Barrel | 125 | \$102.00 |  |  |  |  |  |  |
| $375 \times 1.2 \mathrm{~m}$ Barrel | 230 | \$137.00 |  |  |  |  |  |  |
| 450 mm DIAMETER MATERIAL |  |  |  |  |  |  |  |  |
| $450 \times 0.15 \mathrm{~m}$ Barrel | 50 | \$61.00 | 69 | \$72.00 | 20 | \$46.00 | \$43.00 | \$101.00 |
| $450 \times 0.3 \mathrm{~m}$ Barrel | 90 | \$77.00 |  |  |  |  |  |  |
| $450 \times 0.6 \mathrm{~m}$ Barrel | 175 | \$106.00 |  |  |  |  |  |  |
| $450 \times 0.9 \mathrm{~m}$ Barrel | 230 | \$146.00 |  |  |  |  |  |  |
| $450 \times 1.2 \mathrm{~m}$ Barrel | 310 | \$176.00 |  |  |  |  |  |  |
| 600 mm DIAMETER MATERIAL |  |  |  |  |  |  |  |  |
| $600 \times 0.15 \mathrm{~m}$ Barrel | 70 | \$103.00 | 120 | \$91.00 | 40 | \$61.00 | \$48.00 | \$225.00 |
| $600 \times 0.3 \mathrm{~m}$ Barrel | 130 | \$118.00 |  |  |  |  |  |  |
| $600 \times 0.6 \mathrm{~m}$ Barrel | 255 | \$138.00 |  |  |  |  |  |  |
| $600 \times 0.9 \mathrm{~m}$ Barrel | 360 | \$176.00 |  |  |  |  |  |  |
| $600 \times 1.2 \mathrm{~m}$ Barrel | 470 | \$206.00 |  |  |  |  |  |  |
| 750 mm DIAMETER MATERIAL |  |  |  |  |  |  |  |  |
| $750 \times 0.15 \mathrm{~m}$ Barrel | 90 | \$129.00 | 210 | \$165.00 | 75 | \$105.00 | \$85.00 | \$201.00 |
| $750 \times 0.3 \mathrm{~m}$ Barrel | 180 | \$143.00 |  |  |  |  |  |  |
| $750 \times 0.6 \mathrm{~m}$ Barrel | 350 | \$159.00 |  |  |  |  |  |  |
| $750 \times 0.9 \mathrm{~m}$ Barrel | 530 | \$184.00 |  |  |  |  |  |  |
| $750 \times 1.2 \mathrm{~m}$ Barrel | 690 | \$257.00 |  |  |  |  |  |  |
| 900 mm DIAMETER MATERIAL |  |  |  |  |  |  |  |  |
| $900 \times 0.3 \mathrm{~m}$ Barrel | 240 | \$127.00 | 360 | \$223.00 | 140 | \$128.00 | \$183.00 | \$223.00 |
| $900 \times 0.6 \mathrm{~m}$ Barrel | 480 | \$254.00 |  |  |  |  |  |  |
| $900 \times 0.9 \mathrm{~m}$ Barrel | 720 | \$313.00 |  |  |  |  |  |  |
| $900 \times 1.2 \mathrm{~m}$ Barrel | 960 | \$378.00 |  |  |  |  |  |  |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Catch basins manufactured to ASTM C478 specification
- Extended Bases:
$450 \mathrm{~mm}-0.9 \times 0.9 \mathrm{~m}$ Square Base
$600 \mathrm{~mm}-1.2 \times 1.2 \mathrm{~m}$ Square Base
750 mm - 1240mm Diameter Round
900 mm - 1418mm Diameter Round
- Catch Basin screened inlets available
- Catch Basin Female End Lids are for pedestrian traffic only
- Trapping hood pins installed for $\$ 43.00 /$ set


## Catch Basin Material Dimensional Data



| NOMINAL DIAMETER (mm) | $\begin{aligned} & \text { ACTUAL } \\ & \text { DIAMETER } \\ & (\mathrm{mm}) \end{aligned}$ | BASE THICKNESS $(\mathrm{mm})$ | SPIGOT LENGTH (mm) | $\begin{aligned} & \text { OUTSIDE } \\ & \text { DIAMETER } \\ & (\mathrm{mm}) \end{aligned}$ | WALL THICKNESS $(\mathrm{mm})$ | LID THICKNESS $(\mathrm{mm})$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 300 | 305 | 102 | 32 | 407 | 51 | N/A |
| 375 | 381 | 102 | 38 | 495 | 57 | N/A |
| 450 | 457 | 102 | 38 | 584 | 64 | 127 |
| 600 | 610 | 102 | 38 | 762 | 76 | 178 |
| 750 | 762 | 127 | 46 | 940 | 89 | 184 |
| 900 | 915 | 127 | 46 | 1118 | 102 | 184 |

## Catch Basin Material Lids

H20 Rated Male End Lid CiW
$350 \mathrm{~mm} \times 430 \mathrm{~mm}$ Opening
Available For 600 mm to 900 mm
Calch Basins

H20 Rated Solid Male End Lid Available For 450 mm to 900 mm Catch Basins

H20 Rated Solid Male End Lid C/W
$300 \mathrm{~mm} \times 525 \mathrm{~mm}$ Opening
Available For 600 mm to 900 mm Gatch Basinis


| Catch Basin | 9 D | T |
| :---: | :---: | :---: |
| Size $(\mathrm{mmm})$ | $(\mathrm{mmm})$ | $(\mathrm{mm})$ |
| 600 | 762 | 178 |
| 750 | 940 | 184 |
| 900 | 1118 | 184 |
|  |  |  |

H20 Rated Male End Lid CM $375 \mathrm{~mm} \times 580 \mathrm{~mm}$ Opening Awailable For 750 mm to 900 ram Catch Basins


Concon

| Catch Basain | $O[$ | $T$ |
| :---: | :---: | :---: |
| Size (mm) | $(\mathrm{mm})$ | $(\mathrm{mm})$ |
| 900 | 1118 | 184 |
|  |  |  |

## Cast Iron

| DESCRIPTION | OPENING SIZE | WEIGHT <br> (kg/ea.) | PRICE <br> (\$/ea.) |
| :---: | :---: | :---: | :---: |
| TR14 Grate | 300 mm Catch Basin - FEU | 24 | \$60.00 |
| TR33R Grate | 375mm Catch Basin - FEU | 30 | \$110.00 |
| TR33R Cover | 375 mm Catch Basin - FEU | 30 | \$140.00 |
| TR26A Frame | 450mm Catch Basin - MEU | 27 | \$122.00 |
| TR26A Cover | 450mm Catch Basin - MEU | 25 | \$130.00 |
| TR26A Grate | 450mm Catch Basin - MEU | 25 | \$130.00 |
| TR26C Grate | 450 mm Catch Basin - FEU | 32 | \$147.00 |
| TR26B Frame | 600 mm Catch Basin - MEU | 34 | \$147.00 |
| TR26B Grate | 600 mm Catch Basin - MEU | 50 | \$147.00 |
| TR26E Cover | 600 mm Catch Basin - MEU | 51 | \$232.00 |
| TR26M Modified Grate | 600 mm Catch Basin - MEU | 57 | \$335.00 |
| TR22A Grate | 600 mm Catch Basin - FEU | 60 | \$216.00 |
| TR24D Frame | Curb Style - $300 \mathrm{mmx525mm}$ (12"x21") | 60 | \$156.00 |
| TR23 Grate | Curb Style - $300 \mathrm{mmx525mm}$ ( 12 "x21") | 44 | \$147.00 |
| TR25A Frame | Richmond Curb Style - 350mmx430mm (14"x17") | 26 | \$129.00 |
| TR25A Grate | Richmond Curb Style - $350 \mathrm{mmx430mm}$ (14"x17") | 30 | \$129.00 |
| TR18 Frame | Manhole Lid With 635mm Opening | 165 | \$221.00 |
| TR18 Grate | Manhole Lid With 635mm Opening | 65 | \$157.00 |
| TR18 Cover | Manhole Lid With 635mm Opening | 65 | \$157.00 |
| TR18A Frame (Low Profile) | Manhole Lid With 635mm Opening | 50 | \$237.00 |
| TR18D Frame (Low Profile) | Manhole Lid With 635mm Opening | 85 | \$221.00 |
| TR18B Watertight Frame | Manhole Lid With 635mm Opening | 165 | \$497.00 |
| TR18B Watertight Cover | Manhole Lid With 635mm Opening | 65 | \$224.00 |
| TR20 Frame (BBY) | Manhole Lid With 635mm Opening | 165 | \$399.00 |
| TR20 Cover (BBY) | Manhole Lid With 635mm Opening | 65 | \$157.00 |
| TR20 Watertight Frame (BBY) | Manhole Lid With 635mm Opening | 165 | \$497.00 |
| TR20 Watertight Cover (BBY) | Manhole Lid With 635mm Opening | 65 | \$224.00 |
| TR36 Frame | Manhole Lid with 900 mm Opening | 195 | \$418.00 |
| TR36 Cover | Manhole Lid with 900 mm Opening | 85 | \$825.00 |
| TR36 Grate | Manhole Lid with 900 mm Opening | 85 | \$764.00 |
| C-1 Triple Set | Manhole Lid with 900 mm Opening | 315 | \$1,600.00 |
| TR19A Frame (Single) | Dept. of Hwys STD. - 375 mmx 580 mm ( 15 "x23") | 67 | \$232.00 |
| TR19A Frame (Twin) | Dept. of Hwys STD. - 375 mmx 580 mm ( 15 "x23") | 150 | \$923.00 |
| TR19A Grate | Dept. of Hwys STD. - 375mmx580mm (15"x23") | 60 | \$205.00 |
| TR19B Catch Basin c/w Grate | - | 186 | \$821.00 |
| 150 mm Aluminum Surtrap | - | 2 | \$44.00 |
| 200 mm Aluminum Surtrap | - | 2 | \$46.00 |
| TR9 Trapping Hood | - | 15 | \$131.00 |
| TR10 Trapping Hood | - | 15 | \$94.00 |

[^0]
## Cast Iron

## MANHOLE FRAME \＆COVERS



TR20 Frame \＆Cover
（Grate Oplional），


TR18 Frame \＆Cover
（Grate Optional）


TR18日 Frame 8 Cower
（Water Tight Boll Down）

## CATCH BASIN FRAME \＆COVERS




TR2施 Frame 品Grate Or TR2bE Cover For Use With folomm CB Male End Up



TR22A Grate For Use whith 600mm CB Fermale End Up


TR24D Frame \＆TR23 Grate Use With A $300 \times 525$ Opening CB Lid


TR25A Frame \＆Grate For Use With A $350 \times 430$ Opening CE Lid


TR19A Frame \＆Grate For Use With A $375 \times 550$ Opening CE Lid

## Box Sections

| $\begin{gathered} \text { NOMINAL } \\ \text { SPAN x RISE } \\ (\mathrm{mm}) \end{gathered}$ | WEIGHT (kg/m) | CULVERT <br> (\$/m) | MANHOLE (\$/m) | BASES OR ENDWALLS |  | LIDS |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | WEIGHT (kg) | PRICE (\$/ea.) | WEIGHT (kg) | PRICE (\$/ea.) |
| $1800 \times 900$ | 3060 | \$1,414.00 | \$1,860.00 | 1500 | \$1,299.00 | 1450 | \$1,701.00 |
| $1800 \times 1200$ | 3200 | \$1,841.00 | \$2,484.00 | 1700 | \$2,054.00 | 1650 | \$2,215.00 |
| $2400 \times 1500$ | 4800 | \$2,356.00 | \$3,005.00 | 3500 | \$2,807.00 | 3350 | \$2,836.00 |
| $2400 \times 2400$ | 5650 | \$2,825.00 | \$3,562.00 | 5350 | \$3,402.00 | 5200 | \$3,712.00 |
| $3050 \times 1500$ | 7050 | \$3,129.00 | \$4,075.00 | 4350 | \$3,486.00 | 4200 | \$3,765.00 |
| $3050 \times 2400$ | 7780 | \$3,975.00 | \$4,854.00 | 6600 | \$4,197.00 | 6500 | \$4,784.00 |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes
- Boxes come in 2.5 m standard lengths. Custom lengths are available at additional cost
- Spans and rises listed are nominal - please refer to the table below for actual measurements
- Box Culverts are designed to ASTM 1433 for H20 truck loading for 0.9 to 3.1 m cover; other loading available by special order
- Lids are designed with a 635 mm opening for H20 truck loading; other configurations available by special order
- Manholes are suitable for depths to 5 m ; greater depths available by special order
- Customizations such as rough cut holes, fish baffles and rough ends are available by special order
- Products manufactured using Type GU cement; Type HS cement available upon request. Call sales office for pricing
- Box sections are considered custom. Credit will not be given for returned custom items.
- Custom items manufactured for order and not taken will be invoiced to the customer.


BOX SECTION DETALS


JOINT DETAIL


VERTICAL INSTALLATION


HAUNCH DETAIL

| NOMINALSPAN x RISE <br> $(\mathrm{mm})$ | $\qquad$ | WALL |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} \mathrm{T} \\ (\mathrm{~mm}) \end{gathered}$ | $\begin{gathered} A \\ (\mathrm{~mm}) \end{gathered}$ | $\begin{gathered} \mathrm{B} \\ (\mathrm{~mm}) \end{gathered}$ | $\begin{gathered} \mathrm{C} \\ (\mathrm{~mm}) \end{gathered}$ | $\begin{gathered} \mathrm{D} \\ (\mathrm{~mm}) \end{gathered}$ | $\begin{gathered} \mathrm{E} \\ (\mathrm{~mm}) \end{gathered}$ | $\begin{gathered} \mathrm{F} \\ (\mathrm{~mm}) \end{gathered}$ |
| $1800 \times 900$ | $1829 \times 915$ | 178 | 102 | 90 | 10 | 80 | 203 | 305 |
| $1800 \times 1200$ | $1829 \times 1220$ | 178 | 102 | 90 | 10 | 80 | 203 | 305 |
| $2400 \times 1500$ | $2439 \times 1524$ | 203 | 108 | 100 | 10 | 90 | 254 | 362 |
| $2400 \times 2400$ | $2439 \times 2439$ | 203 | 108 | 100 | 10 | 90 | 254 | 362 |
| $3050 \times 1500$ | $3049 \times 1524$ | 254 | 108 | 125 | 10 | 115 | 254 | 362 |
| $3050 \times 2400$ | $3049 \times 2439$ | 254 | 108 | 125 | 10 | 115 | 254 | 362 |

[^1]
## Headwalls

| TYPE | HEADWALL |  | DISSIPATOR |  | INLET GRILLAGE |  | OUTLET GRILLAGE |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | WEIGHT (kg) | PRICE (\$/ea.) | WEIGHT (kg) | PRICE (\$/ea.) | WEIGHT (kg) | PRICE (\$/ea.) | WEIGHT (kg) | PRICE (\$/ea.) |
| Type I Coquitlam Std | 1,010 | \$598.00 | - | - | 25 | \$172.00 | - |  |
| MOT Highway Std SP582-0401 | 2,100 | \$796.00 | - | - | 25 | \$224.00 | - | - |
| Type II max 450mm pipe diameter | 1,010 | \$824.00 | 150 | \$600.00 | 25 | \$470.00 | 15 | \$421.00 |
| 11-13 max 600 mm pipe diameter | 2,760 | \$1,795.00 | 390 | \$899.00 | 40 | \$889.00 | 25 | \$470.00 |
| 14-15 max 750 mm pipe diameter | 3,700 | \$2,691.00 | 680 | \$1,495.00 | 50 | \$1,262.00 | 30 | \$529.00 |
| 16-20 max 1200 mm pipe diameter | 6,500 | \$2,989.00 | 1,580 | \$1,943.00 | 75 | \$1,473.00 | 40 | \$632.00 |
| 26-28 max 1800 mm pipe diameter | 13,000 | \$6,325.00 | 2,520 | \$2,127.00 | 125 | \$2,958.00 | 105 | \$2,379.00 |
| 26-28 max 2400 mm pipe diameter | 15,200 | \$7,091.00 | 2,520 | \$2,127.00 | - | - | - | - |
| 26-28 max 1800 x 900 box culvert | 15,200 | \$7,091.00 | 2,520 | \$2,127.00 | - | - | - | - |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes


| TYPE | PIPE DIAMETER <br> $(\mathrm{mm})$ | A <br> $(\mathrm{mm})$ | $\mathbf{B}$ <br> $(\mathrm{mm})$ | C <br> $(\mathrm{mm})$ | D <br> $(\mathrm{mm})$ | E <br> $(\mathrm{mm})$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Type II | $150-450$ | 700 | 1280 | 1130 | 730 |  |
| $11-13$ | $525-600$ | 1310 | 2575 | 1350 | 697 | 203 |
| $14-15$ | $675-750$ | 1581 | 2854 | 1554 | 908 | 203 |
| $16-20$ | $900-1200$ | 1855 | 3166 | 2076 | 1466 | 406 |
| $26-28$ | $1500-1800$ | 2955 | 4186 | 2540 | 1421 | 406 |
| $26-28$ | $1950-2400$ | 2955 | 4186 | 3226 | 2107 | 406 |
| $26-28$ | $1800 \times 900$ | 2955 | 4186 | 3226 | 2107 | 406 |

## Miscellaneous Materials

| DESCRIPTION | WEICHT <br> (kg/ea.) | PRICE <br> (\$/ea.) |
| :---: | :---: | :---: |
| SPACER RINGS |  |  |
| 50mm Manhole Spacer Ring 635mm Opening | 35 | \$25.00 |
| 50 mm Manhole Spacer Ring 900 mm Opening | 30 | \$71.00 |
| 100 mm Manhole Spacer Ring 635mm Opening | 70 | \$37.00 |
| 50 mm Catch Basin Spacer Ring Full Circle: 600mm Opening | 40 | \$25.00 |
| 50 mm Catch Basin Spacer D Ring | 35 | \$25.00 |
| 50 mm Catch Basin Spacer Full Circle D Ring | 40 | \$26.00 |
| 50mm Catch Basin Spacer Ring MOT | 35 | \$30.00 |
| 50 mm Catch Basin Spacer Ring Side Inlet | 50 | \$50.00 |
|  |  |  |
| CONSEAL ${ }^{\text {TM }}$ BUTYL MASTIC JOINT |  |  |
| CS 202 Sealant ConSeal ${ }^{\text {TM }} 4.4 \mathrm{~m}$ per roll, 25.4 mm (1") wide | - | \$29.00 |
| CS 212 Sealant ConSeal ${ }^{\text {M }} 15.24 \mathrm{~m}$ per roll, 152.4 mm (6") wide | - | \$112.00 |
| CS 75 ConSeal ${ }^{\text {TM }}$ Primer Per Gallon (2Gallon/5roll) | 5 | \$148.00 |
|  |  |  |
| CEMENT AND GROUT MATERIALS |  |  |
| Basalite ${ }^{\text {TM }}$ Fast Patch | 25 | \$27.00 |
| Basalite ${ }^{\text {TM }}$ Concrete Ready Mix in Bag | 25 | \$8.00 |
| Portland Cement Type GU (10) | 40 | \$19.00 |
|  |  |  |
| LADDERS |  |  |
| Polypropylene Manhole Steps Lane International® P-12850 | - | \$22.00 |
| Galvanized Rungs $3 / 4$ " 8 " $\times 12$ " Rungs | - | \$29.00 |
|  |  |  |
| CLUTCHES |  |  |
| 4 Ton Lifting Clutch Starcon ${ }^{\text {TM }}$ Lifting Eye Standard Body Mark 3.0/5.0 T | - | \$300.00 |
| 8 Ton Lifting Clutch Starcon ${ }^{\text {TM }}$ Lifting Eye Standard Body Mark 6.0/10.0 T | - | \$550.00 |
|  |  |  |
| CATCH BASIN TRAPPING HOOD PINS |  |  |
| Trapping Hood Pin per each | - | \$11.00 |
|  |  |  |
| DRYWELLS |  |  |
| $1200 \mathrm{~mm} \times 0.9 \mathrm{~m}$ Riser w/ $100 \mathrm{~mm} \times 50 \mathrm{~mm}$ rectangular holes | 775 | \$677.00 |
| $1200 \mathrm{~mm} \times 0.9 \mathrm{~m}$ Riser w/ $100 \mathrm{~mm} \times 50 \mathrm{~mm}$ rectangular holes and ladder rungs | 775 | \$740.00 |
|  |  |  |
| OIL INTERCEPTORS |  |  |
| Type I Base with Baffles (800L Capacity) | 1,400 | \$1,187.00 |
| Type I x 0.3m Riser | 250 | \$526.00 |
| Type I Concrete Lid c/w 635 mm Opening | 450 | \$517.00 |
| Type II Base with Baffles (2000L Capacity) | 4,150 | \$2,437.00 |
| Type II Concrete Lid c/w 2-635mm Openings | 1,400 | \$629.00 |

- All prices FOB Ocean Pipe's Yard and subject to applicable taxes


## Swift Lift Procedures How to Guide



Note: Direction of extended lip should be in the direction of lift.

1. To install the P-50 Universal Lifting Eye, hold the unit upside down with the T-shaped slot of the body directly over the head of the swift lift anchor.
2. Lower the body of the lifting eye until the $T$-shaped slot engages the head of the anchor.
3. Rotate the body until the extended lip of the body touches the concrete surface.

| HOISTING GEAR LEG DIMENSIONS |  |  |  |
| :---: | :---: | :---: | :---: |
| A | B | C | D |
| 1440 mm | 400 mm | 1040 mm | 1940 mm |
| $(57 ")$ | $(16 ")$ | $(41 ")$ | $(76 ")$ |

- The measurements listed above are for pipe 1.5 m to 2.5 m in length.


## Notes:

1. Swift Lift anchors are available in pipe sizes 900 mm and larger.
2. Pipe 900 mm 0 to $1650 \mathrm{~mm} \emptyset$ use the 4 ton lifting eye; pipe 1800 mm and larger use the 8 ton lifting eye.
3. Manholes $1050 \mathrm{~mm} \emptyset$ to $1500 \mathrm{~mm} \emptyset$ use 4 ton lifting eye; manholes 1800 mm and larger use the 8 ton lifting eye.

## Swift Lift Procedures How to Guide

How to Maneuver Pipe Using Swift Lift


1. The pipe is first transported to the installation site with the symmetrical sling and lowered close to the already placed pipe.

Note: a) As with lifting any concrete element, special care should be taken by the driver of the placement vehicle to ensure the impact or dynamic loads are reduced to a minimum. Because these loads can greatly increase the weight of the element, and this safety note should not be overlooked.
b) Load must be applied simultaneously to all Swift Lift Anchors in order to safely lift product.


1. To pull the pipe into position, the long leg of the hoisting gear is coupled to the previously placed pipe.
2. Eye 2 is disconnected from the swift lift anchor and attached to master link.
3. Eye 3 is then connected to the pipe you will be homing to.
4. Crane or backhoe operator must ensure the lifting point is over the outer lifting anchor of the previously placed pipe so that the direction of pull is slightly inclined toward placed pipe.
5. Operator must then lift up on the hoisting gear until pipe is homed together.

## Superseal Gaskets Installation

1. Ensure Bell, Spigot and Gasket are free from loose debris or foreign material.

Stretch the gasket around the spigot, with the nose against the step, and the tube laying flat against the spigot. DO NOT LUBRICATE.

2. Align the spigot with the bell, and thrust the spigot home using suitable mechanical means. The homing process will cause the lubricated tube to "roll" over itself, above the compression section, allowing the pipe to slide forward.
2.

3. Once fully homed, the compression section seals the total annular space; the rolling tube comes to rest within the small annular space acting as a cushion against side loads, and the serrations act to resist pipe pull-out
3.



## MATERIALS

Tylox ${ }^{\circ}$ SuperSeal gaskets*
are available in the following materials:

- Isoprene

Optional Materials

- Nitrite (Oil Resistant)
- Isoprene / EPDM blend (Green Book \& C425)
- Neoprene (Oil and Ozone Resistant)

Other materials may be available as special order. Contact Inland Pipe for your specific requirements

## SPECIFICATIONS

Tylox SuperSeal gaskets* are manufactured to meet the material requirements of the following specifications:

- ASTM C361, C425, \& C443
- AASHTO M198.4
- CSA A257
- "Green Book"

Other specifications may be available as special order.
Contact Inland Pipe for your specific requirements
*Tylox SuperSeal Gaskets are patented under US Patent 4934716

# Standard Installations 

## RESEARCH PRODUCES NEW INSTALLATIONS


#### Abstract

This foldout presents new installation technology with respect to concrete pipe through four unique standard installations developed over 20 years of investigation and research into the behavior of concrete pipe in the buried condition. The Standard Installations provide both the designer and the installer with measurable and verifiable soil types and compaction levels for the material used in the installation. These new installations facilitate the design of a rational and cost-effective concrete pipe soil system by providing an optimum range of installation characteristics.


Versatile: There is one word to describe the new standard installations, and that word is VERSATLLITY. The range of installation types from 1 through 4 offer a concrete pipe designer the ability to tailor any individual project to suit specific site conditions and budgetary constraints.

In a Type 1 installation for example, the soil zone adjacent to the pipe and below the springline requires select materials with specified compaction limits. Through the use of this controlled soil envelope, a wide load distribution is achieved. In other words, a Type 1 installation uses this select material as an advantage in the design of the whole systema situation which translates to a lesser dependence on inherent pipe strength, and therefore lower pipe material costs when compared to the same site with a lower quality installation.

On the other end of the spectrum, in areas where native material is suitable, but perhaps not of the highest grade (silts and low plasticity clays), a Type 4 installation can be chosen by the designer. This installation type requires little or no inspection, almost no compaction requirements on the material, and the versatility to use almost any type of native soil as backfill in the trench. The trade-off here is reduced backfill material costs, and greatly reduced installation costs in terms of manpower required, but greater dependence on inherent pipe strength.

Figure 1 illustrates this versatility in a graphical manner. Looking at a Type 1 installation, it can be seen that the dependence on installation is significant in comparison to the dependency on the pipe section.


Conversely, in a Type 4 installation, a greater percentage of total dependency resides in the pipe section, while very little dependency is associated with material and installation. This graph is not meant to say that all four installation types are equivalent in terms of the total costs. By evaluating the ratio of pipe cost to backfill material cost, the four new standard installations can be used to optimize total expenditure by balancing the performance of the pipe-soil system.

Conservative: The design associated with the Standard Installations is founded in conservatism. The loads and pressures experienced by the pipe in the installed condition have been analyzed in depth and modeled through the use of the finite element analysis computer program, SPIDA (Soil-Pipe Interaction Design and Analysis). The SPIDA analyses are based on several key assumptions:

1. The worst case (embankment) loadings are used, and the same load factors used in the traditional AASHTO direct design procedure are still employed.
2. Voids are assumed to exist in the haunch zone of all four installation types. These voids are modeled into the SPIDA computer simulations used in the development of the design procedure.
3. In recognition of the variability of the loading characteristics, the new installations are based on the greatest predicted loads for design. Typical loads would likely be 10-20 percent less.
4. Through quantification of material and compaction requirements, a degree of uncertainty has been eliminated from the design assumptions - the new installations can, therefore, more accurately assess long-term performance of the system.

The new installations allow for better prediction of the loads and pressures which a pipe may experience during its life.

Quantifiable: One of the greatest benefits of the new installation types is that they are quantifiable, that is, they prescribe definite and measurable levels of acceptance. As is indicated in Figure 2, each of the new installations has specific materials requirements, and accompanying compaction levels, making them uniquely different, and prescribing clear and defined direction to the installer as to the requirements of a particular installation. These definitions provide direction to the engineer, owner, and contractor as to the installation factors impacting pipe performance.

## Standard Installations

## EMBANKMENT



|  | Standard Installation Soil Types and Minimum Compaction Requirements |  |  |
| :---: | :---: | :---: | :---: |
|  | Bedding Thickness | Haunch | Lower Side |
| $\stackrel{\Gamma}{\stackrel{\rightharpoonup}{\rightleftarrows}}$ | $D_{0} / 24$ minimum, not less than $75 \mathrm{~mm}(3 \mathrm{in})$. If rock foundation use $\mathrm{D}_{\mathrm{d}} / 12$ minimum, not less than 150 mm ( 6 in ). | 95\% SW, SP, GW, GP | $90 \%$ SW SP. GW, GP $95 \%$ GM, SM, ML, GC, SC* 100\% CL, MH, GC, SC |
| $\begin{aligned} & \text { ~ } \\ & \stackrel{\rightharpoonup}{¿} \end{aligned}$ | $D_{d} / 24$ minimum, not less than $75 \mathrm{~mm}(3 \mathrm{in})$. If rock foundation, use $D_{0} / 12$ minimum, not less than 150 mm ( 6 in ). | 90\% SW, SP, GW, GP $95 \%$ GM, SM, ML, GC, SC* | 85\% SW, SP, GW, GP $90 \%$ GM, SM, ML, GC, SC* 95\% CL, MH, GC, SC |
| $\begin{aligned} & \text { m } \\ & \stackrel{\rightharpoonup}{\vdots} \end{aligned}$ | $D_{\mathrm{d}} / 24$ minimum, not less than $75 \mathrm{~mm}(3 \mathrm{in})$. If rock foundation, use $D_{0} / 12$ minimum, not less than 150 mm ( 6 in ). | $85 \%$ SW, SP. GW, GP $90 \%$ GM, SM, ML, GC, SC* 95\% CL, MH, GC, SC | $\begin{gathered} 85 \% \text { SW, SP, GW, GP } \\ 90 \% \text { GM, SM, ML, GC, SC^ } \\ 95 \% \text { CL, MH, GC, SC } \end{gathered}$ |
| $\stackrel{\underset{\rightharpoonup}{山}}{\stackrel{\rightharpoonup}{2}}$ | No bedding required, except if rock foundation, use $D_{0} / 12$ minimum, not less than 150 mm ( 6 in ). | No compaction required, except when CL, MH, GC, or SC soil types are used to compact to $85 \%$ | No Compaction required, except when $\mathrm{CL}, \mathrm{MH}, \mathrm{GC}$, or SC soil types are used compact to $85 \%$ |

- The percentages listed above refer to standard proctor compaction levels
- The soil types above (ie. SW, GM) are taken from the Unified Soil Classification System (USCS)
- SC* indicates SC type soil with less than $20 \%$ passing the \#200 sieve


## Terms \& Conditions

## Prices listed in this publication are effective as of February 1, 2014

1. PAYMENT TERMS: Invoices are due and payable on the 15th day of the month following delivery of Products. Invoices which are not paid by such date are subject to a service charge of $2 \%$ per month ( $24 \%$ per year). If Buyer defaults or if Seller considers Buyer's financial responsibility impaired or unsatisfactory, Seller shall be entitled to suspend or terminate, in whole or in part, any order or agreement until all outstanding payments are made and/or acceptable assurances or security is provided by Buyer. In addition to all other rights and remedies available to Seller, Seller shall have the right to recover from Buyer all costs of collection and/or suit, including reasonable legal fees. Seller's failure to exercise such rights and remedies or variance from these terms and conditions shall not constitute a waiver or change hereof unless agreed to by Seller in writing.
2. INABILITY TO PERFORM: Seller shall not be liable to Buyer if permanently or temporarily rendered incapable of performing its obligations hereunder because of strikes, lockouts, differences with workmen, accidents, insurrection, wars, delay or failure in transportation (including road bans) or by any supplier, shortage of inventory, raw materials, facility, equipment, fuel or other material, acts of government, fire, acts of God, acts of any Government or any contingencies beyond Seller's control. For greater certainty, Seller shall not be required to cross picket lines established as result of a strike. During any period Seller is rendered incapable of fully performing because of any such contingency, Seller shall have the right to prorate among its various customers such Products as it may be able to manufacture and ship.
3. SPECIFICATIONS AND WARRANTIES: PRODUCTS SHIPPED HEREUNDER SHALL CONFORM TO THE PRESENT STANDARD SPECIFICATIONS (FOR THE RESPECTIVE PRODUCTS) OF CSA and/or ASTM, AND NO OTHER WARRANTY, REPRESENTATION OR CONDITION OF ANY KIND, EXPRESS OR IMPLIED (INCLUDING NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE) SHALL APPLY THERETO. SELLER HAVING NO CONTROL OVER THE USE OF THE PRODUCTS WILL NOT GUARANTEE FINISHED WORK, NOR SHALL SELLER BE RESPONSIBLE FOR THE CONDITION OF PRODUCTS AFTER DELIVERY TO BUYER. ANY CHARGES INCIDENTAL TO INSPECTION OR TESTS MADE BY OR ON BEHALF OF BUYER SHALL BE PAID BY BUYER. UNDER NO CIRCUMSTANCES SHALL SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL, EXEMPLARY OR CONSEQUENTIAL DAMAGES.
4. TITLE, RISK OF LOSS, CHARGES: Title and risk of loss shall pass to Buyer on customer pick-up at Seller's premises. Title and risk of loss to Products delivered shall pass to Buyer upon receipt at the destination specified.
5. CLAIMS: Claims for loss or damage in transit must be reported to Seller within 24 hours of delivery of Product to the destination specified and must be supported by customer's notation on truck delivery receipt and/or bill of lading.
6. TAXES: Prices are exclusive of all present and future taxes imposed by any federal, provincial, municipal, foreign or local authority.
7. UNLOADING: Buyer will be responsible for unloading Products at the destination specified. If Buyer has not unloaded the truck within one hour of the truck's arrival at the destination specified, Buyer shall pay an additional charge of $\$ 120.00$ per hour until the truck has been unloaded. All shipments shall be unloaded in their entirety at the destination specified or will be subject to additional charges.
8. DELIVERY CONDITIONS: Delivered prices are for delivery to the destination specified. The unloading point must be readily accessible and Buyer shall be responsible to provide suitable access roads to destination specified as well as equipment to unload the Products. In the event Seller requires access over curbs, sidewalks, driveways or other property, Seller shall not be responsible for any loss, cost or damage in connection therewith and Buyer shall indemnify and save the Seller harmless from any such loss, cost or damage.
9. QUOTATIONS: Quotations shall be in effect for a period of sixty (60) days from the date of the quote.
10. NOTICE: Buyer shall provide a minimum of twenty-four (24) hours notice of delivery.
11. BUILDER' S LIEN: For the purposes of the Builder's Lien Act Products not herein quoted but delivered or supplied to the same project shall be considered part of the same contract until last date of delivery or supply notwithstanding separate purchase orders.
12. PRODUCT RETURN: Buyer may return standard Product to Seller's premises provided the Product is in good condition and Buyer pays a restocking fee of $15 \%$ of the price of the Product. No credit will be issued for custom products and gaskets returned.
13. CUSTOM PRODUCT: Custom materials produced according to customer's specifications are not resalable or subject to cancellation
14. FREIGHT RATES: All prices listed in this publication are FOB Seller's Yard, freight charges are additional. Freight rates are based on full Super B loads and do not apply during periods of road restrictions. Delivery charges for smaller truck shall be billed accordingly.

CUSTOMER: $\qquad$

DCEAN
PH: 604-269-6700 FAX: 604-261-6751

PROJEC: $\qquad$
ORDER DATE: $\qquad$ CUSTOMER MANHOLE NO: $\qquad$ OCEAN ID No: DATE REQUIRED: $\qquad$

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| HEIDELBERGCEMENTGroup |  |  |  |
| CONSULTANT: |  | DRAWN BY: |  |
| DATE REQUESTED: |  | DATE: |  |

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## Look at it this way



## The world needs concrete solutions

The world is changing. Threats to our infrastructure are ever increasing. Protecting the environment and ensuring public safety are critical.
Providing a more resilient infrastructure...
That's our job.


ㅁEEAN Pipe
HEIDELBERGCEMENTGroup

## INLAND Pipe <br> HEIDELBERGCEMENTGroup

## British Columbia

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HEIDELBERGCEMENTGroup

PRODUCT CATALOGUE
British Columbia
www.oceanpipe.com

## OCEANPIPE

## Working together to build our communities ${ }^{\circledR}$

## British Columbia

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Vancouver, BC, V6P $4 B 8$
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Fax: 6042616751

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Fax: 2043347957


[^0]:    - All prices FOB Ocean Pipe's Yard and subject to applicable taxes
    - Other products available by special order

[^1]:    HEIDELBERGCEMENTGroup

