

INDEX

Page numbers followed by *e*, *f*, and *t* indicate equations, figures, and tables, respectively.

- agencies, 91–93
- allowable internal pressure: clay drain tile, 74; concrete pipe, 9–10; corrugated metal pipe, 85; corrugated polyethylene pipe, 67; ductile iron pipe, 26–27; fiberglass pipe, 79; HDPE pressure pipe, 48; polyethylene wall pipe, 55; polypropylene wall pipe, 17–18, 61; PVC pipe, 37–39, 43–44; PVC wall pipe, 61; vitrified clay pipe, 74
- allowable leakage rate: clay drain tile, 75; concrete pipe, 13; corrugated metal pipe, 88; corrugated polyethylene pipe, 69; ductile iron pipe, 32; fiberglass pipe, 81; HDPE pressure pipe, 50–51; polyethylene wall pipe, 57; polypropylene wall pipe, 63; PVC wall pipe, 63; vitrified clay pipe, 75; welded steel pipe, 22
- bedding angle, 14
- clay drain tile, 72–77; allowable internal pressure, 74; allowable leakage rate, 75; external load capabilities, 74; fittings, 75; hydraulic resistance factor, 75; installation, 75; joints, 74–75; protective linings and coatings, 74; repair methods, 75; sizes of, 73; specifications, 72–73; tapping methods, 75; useful life, 75; water quality tolerances, 75; wave speed, 75
- concrete pipe, 7–15; allowable internal pressure, 9–10; allowable leakage rate, 13; bedding angle, 14; concrete bar-wrapped, 8; external load capabilities, 10; fittings, 12; hydraulic resistance factor, 12–13; installation, 14; joints, 11–12; materials description, 11; monolithic cast-in-place, 7; precast unreinforced, 7; prestressed, 8; reinforced, 7–8; repair methods, 13–14; sizes of, 9; specifications, 8–9; tapping methods, 12; useful life, 14; water quality tolerances, 14; wave speed, 13
- corrugated metal pipe, 84–90; allowable internal pressure, 85; allowable leakage rate, 88; external load capabilities, 85; fittings, 87; hydraulic resistance factor, 87; installation, 89; joints, 86–87; materials description, 85–86; protective linings and coatings, 86; repair methods, 88; sizes of, 85; specifications, 84; tapping methods, 87; useful life, 89–90; water quality tolerances, 88–89; wave speed, 87
- corrugated polyethylene pipe, 66–71; allowable internal pressure, 67; allowable leakage rate, 69; external load capabilities, 67; fittings, 68; hydraulic resistance factor, 68–69; installation, 69; joints, 68; materials description, 67; protective linings and coatings, 68; repair methods, 69; sizes of, 67; specifications, 66;

- tapping methods, 68; useful life, 70–71; water quality tolerances, 69; wave speed, 69
- external load capabilities: clay drain tile, 74; concrete pipe, 10; corrugated metal pipe, 85; corrugated polyethylene pipe, 67; ductile iron pipe, 27–28; fiberglass pipe, 79; HDPE pressure pipe, 48; polyethylene wall pipe, 55; polypropylene wall pipe, 61; PVC pipe, 39; PVC wall pipe, 61; vitrified clay pipe, 74; welded steel pipe, 18
- fiberglass pipe, 78–83; allowable internal pressure, 79; allowable leakage rate, 81; external load capabilities, 79; fittings, 80; hydraulic loss factors, 80; installation, 82; joints, 80; materials description, 79; protective linings and coatings, 79–80; repair methods, 81–82; sizes of, 78–79; specifications, 78; tapping methods, 80; useful life, 83; water quality tolerances, 82; wave speed, 80–81
- fittings: clay drain tile, 75; concrete pipe, 12; corrugated metal pipe, 87; corrugated polyethylene pipe, 68; ductile iron pipe, 30; fiberglass pipe, 80; HDPE pressure pipe, 50; polyethylene wall pipe, 56; polypropylene wall pipe, 62; PVC pipe, 41–42; PVC wall pipe, 62; vitrified clay pipe, 75; welded steel pipe, 19–20
- HDPE pressure pipe, 47–52; allowable internal pressure, 48; allowable leakage rate, 50–51; external load capabilities, 48; fittings, 50; hydraulic resistance factor, 50; installation, 51; joints, 49; materials description, 49; protective linings and coatings, 49; repair methods, 51; sizes of, 47; specifications, 47; tapping methods, 50; useful life, 52; water quality tolerances, 51; wave speed, 50
- hydraulic loss factors: fiberglass pipe, 80; polyethylene wall pipe, 57; polypropylene wall pipe, 63; PVC wall pipe, 63
- hydraulic resistance factor: clay drain tile, 75; concrete pipe, 12–13; corrugated metal pipe, 87; corrugated polyethylene pipe, 68–69; ductile iron pipe, 31; HDPE pressure pipe, 50; PVC pipe, 42; vitrified clay pipe, 75; welded steel pipe, 20, 22
- installation: clay drain tile, 75; concrete pipe, 14; corrugated metal pipe, 89; corrugated polyethylene pipe, 69; ductile iron pipe, 33; fiberglass pipe, 82; HDPE pressure pipe, 51; polyethylene wall pipe, 58; polypropylene wall pipe, 63–64; PVC pipe, 44–45; PVC wall pipe, 63–64; vitrified clay pipe, 75; welded steel pipe, 22
- iron pipe, ductile: allowable internal pressure, 26–27; allowable leakage rate, 32; external load capabilities, 27–28; fittings, 30; hydraulic resistance factor, 31; installation, 33; joints, 29–30; materials description, 28–29; protective linings and coatings, 29; repair methods, 32; sizes of, 26; specifications, 25–26; tapping methods, 30; useful life, 33; water quality tolerances, 33; wave speed, 31–32
- joints: clay drain tile, 74–75; concrete pipe, 11–12; corrugated metal pipe, 86–87; corrugated polyethylene pipe, 68; ductile iron pipe, 29–30; fiberglass pipe, 80; HDPE pressure pipe, 49; polyethylene wall pipe, 56; polypropylene wall pipe, 62; PVC pipe, 40–41; PVC wall pipe, 62; vitrified clay pipe, 74–75; welded steel pipe, 18–19, 19f, 20f, 21f

- materials description: concrete pipe, 11; corrugated metal pipe, 85–86; corrugated polyethylene pipe, 67; ductile iron pipe, 28–29; fiberglass pipe, 79; HDPE pressure pipe, 49; polyethylene wall pipe, 56; polypropylene wall pipe, 62; PVC pipe, 39–40; PVC wall pipe, 62; welded steel pipe, 18
- organizations, 91–93
- pipe sizes: clay drain tile, 73; concrete pipe, 9; corrugated metal pipe, 85; corrugated polyethylene pipe, 67; ductile iron pipe, 26; fiberglass pipe, 78–79; HDPE pressure pipe, 47; polyethylene wall pipe, 55; polypropylene wall pipe, 61; PVC pipe, 36–37; PVC wall pipe, 61; vitrified clay pipe, 73; welded steel pipe, 17
- pipe types. *See* full name of type of pipe
- protective linings and coatings: clay drain tile, 74; corrugated metal pipe, 86; corrugated polyethylene pipe, 68; ductile iron pipe, 29; fiberglass pipe, 79–80; HDPE pressure pipe, 49; polyethylene wall pipe, 56; polypropylene wall pipe, 62; PVC pipe, 40; PVC wall pipe, 62; vitrified clay pipe, 74; welded steel pipe, 18
- publications, 93
- PVC pipe, 35–45; allowable internal pressure, 37–39, 43–44; external load capabilities, 39; fittings, 41–42; hydraulic resistance factor, 42; installation, 44–45; joints, 40–41; materials description, 39–40; protective linings and coatings, 40; repair methods, 44; sizes of, 36–37; specifications, 35–36, 37t; tapping methods, 42; useful life, 45; water quality tolerances, 44; wave speed, 42–43
- repair methods: clay drain tile, 75; concrete pipe, 13–14; corrugated metal pipe, 88; corrugated polyethylene pipe, 69; ductile iron pipe, 32; fiberglass pipe, 81–82; HDPE pressure pipe, 51; polyethylene wall pipe, 57–58; polypropylene wall pipe, 63; PVC pipe, 44; PVC wall pipe, 63; vitrified clay pipe, 75; welded steel pipe, 22
- resources, 91–93
- specifications: clay drain tile, 72–73; concrete pipe, 8–9; corrugated metal pipe, 84; corrugated polyethylene pipe, 66; ductile iron pipe, 25–26; fiberglass pipe, 78; HDPE pressure pipe, 47; polyethylene wall pipe, 54; polypropylene wall pipe, 60; PVC pipe, 35–36, 37t; PVC wall pipe, 60; vitrified clay pipe, 72–73; welded steel pipe, 16–17
- steel pipe, welded, 16–24; allowable internal pressure, 17–18; allowable leakage rate, 22; external load capabilities, 18; fittings, 19–20; hydraulic resistance factor, 20, 22; installation, 22; joints, 18–19, 19f, 20f, 21f; materials description, 18; protective linings and coatings, 18; repair methods, 22; sizes of, 17; specifications, 16–17; tapping methods, 20; useful life, 24; water quality tolerances, 22; wave speed, 22
- tapping methods: clay drain tile, 75; concrete pipe, 12; corrugated metal pipe, 87; corrugated polyethylene pipe, 68; ductile iron pipe, 30; fiberglass pipe, 80; HDPE pressure pipe, 50; polyethylene wall pipe, 57; polypropylene wall pipe, 62; PVC pipe, 42; PVC wall pipe, 62; vitrified clay pipe, 75; welded steel pipe, 20
- tile, clay drain. *See* clay drain tile

- useful life: clay drain tile, 75;
 corrugated metal pipe, 89–90;
 corrugated polyethylene pipe,
 70–71; ductile iron pipe, 33;
 fiberglass pipe, 83; HDPE pressure
 pipe, 52; polyethylene wall pipe, 59;
 polypropylene wall pipe, 64; PVC
 pipe, 45; PVC wall pipe, 64;
 vitrified clay pipe, 75; welded
 steel pipe, 24
- vitrified clay pipe, 72–77; allowable
 internal pressure, 74; allowable
 leakage rate, 75; external load
 capabilities, 74; fittings, 75;
 hydraulic resistance factor, 75;
 installation, 75; joints, 74–75;
 protective linings and coatings, 74;
 repair methods, 75; sizes of, 73;
 specifications, 72–73; tapping
 methods, 75; useful life, 75;
 water quality tolerances, 75;
 wave speed, 75
- wall pipe, polyethylene, 54–59;
 allowable internal pressure, 55;
 allowable leakage rate, 57; external
 load capabilities, 55; fittings, 56;
 hydraulic loss factors, 57;
 installation, 58; joints, 56; materials
 description, 56; protective linings
 and coatings, 56; repair methods,
 57–58; sizes of, 55; specifications, 54;
 tapping methods, 57; useful life, 59;
 water quality tolerances, 58; wave
 speed, 57
- wall pipe, polypropylene, 60–71;
 allowable internal pressure, 61;
 allowable leakage rate, 63; external
 load capabilities, 61; fittings, 62;
 hydraulic loss factors, 63;
 installation, 63–64; joints, 62;
 materials description, 62; protective
 linings and coatings, 62; repair
 methods, 63; sizes of, 61;
 specifications, 60; tapping methods,
 62; useful life, 64; water quality
 tolerances, 63; wave speed, 63
- wall pipe, PVC, 60–71; allowable
 internal pressure, 61; allowable
 leakage rate, 63; external load
 capabilities, 61; fittings, 62;
 hydraulic loss factors, 63;
 installation, 63–64; joints, 62;
 materials description, 62; protective
 linings and coatings, 62; repair
 methods, 63; sizes of, 61;
 specifications, 60; tapping methods,
 62; useful life, 64; water quality
 tolerances, 63; wave speed, 63
- water quality tolerances: clay drain
 tile, 75; concrete pipe, 14; corrugated
 metal pipe, 88–89; corrugated
 polyethylene pipe, 69; ductile iron
 pipe, 33; fiberglass pipe, 82; HDPE
 pressure pipe, 51; polyethylene wall
 pipe, 58; polypropylene wall pipe,
 63; PVC pipe, 44; PVC wall pipe, 63;
 vitrified clay pipe, 75; welded steel
 pipe, 22
- wave speed: clay drain tile, 75;
 concrete pipe, 13; corrugated metal
 pipe, 87; corrugated polyethylene
 pipe, 69; ductile iron pipe, 31–32;
 fiberglass pipe, 80–81; HDPE
 pressure pipe, 50; polyethylene wall
 pipe, 57; polypropylene wall pipe,
 63; PVC pipe, 42–43; PVC wall pipe,
 63; vitrified clay pipe, 75; welded
 steel pipe, 22