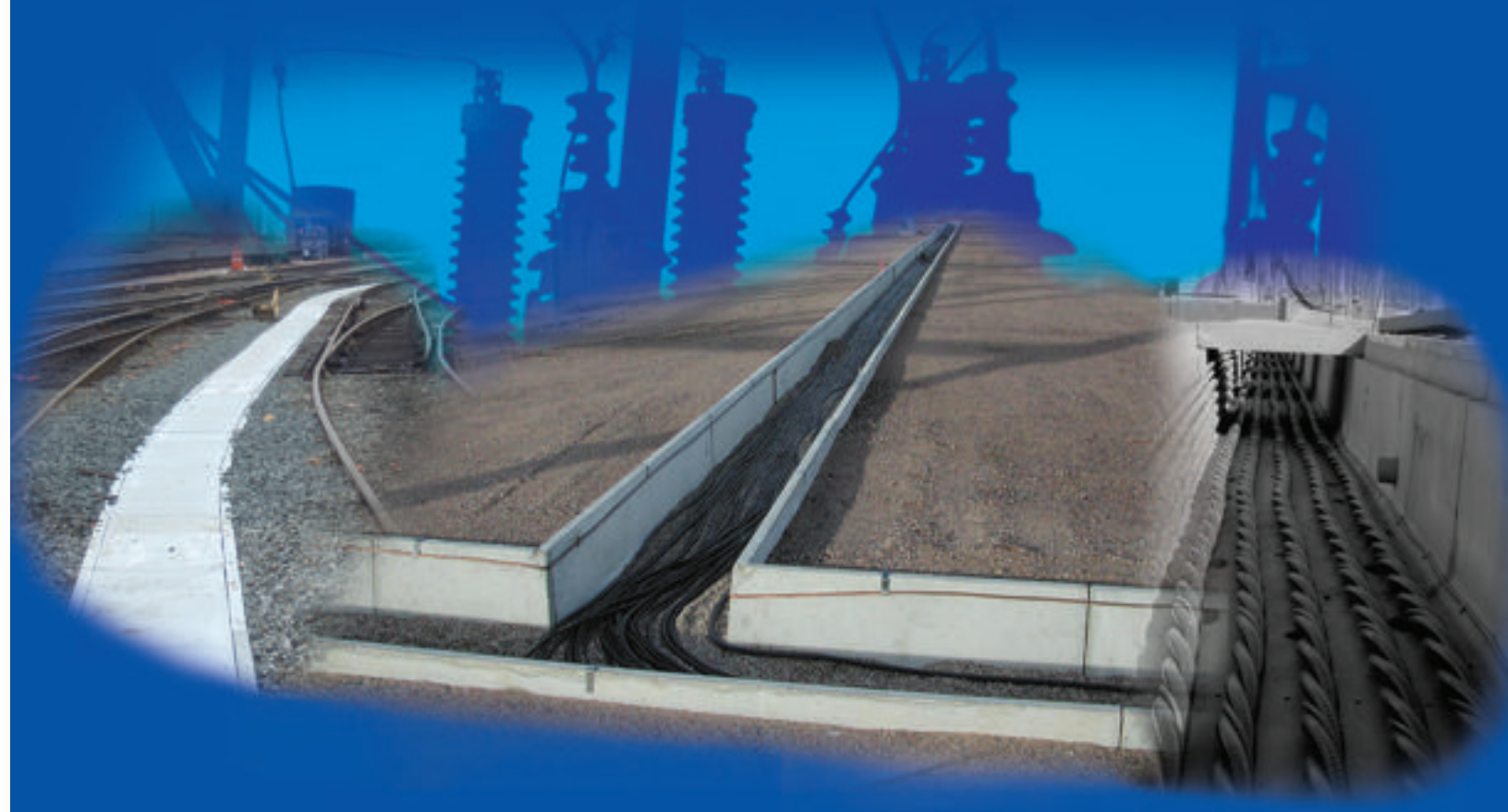
Trenwa.

PRECAST TRENCH SOLUTIONS

Trench Products Catalog

2025

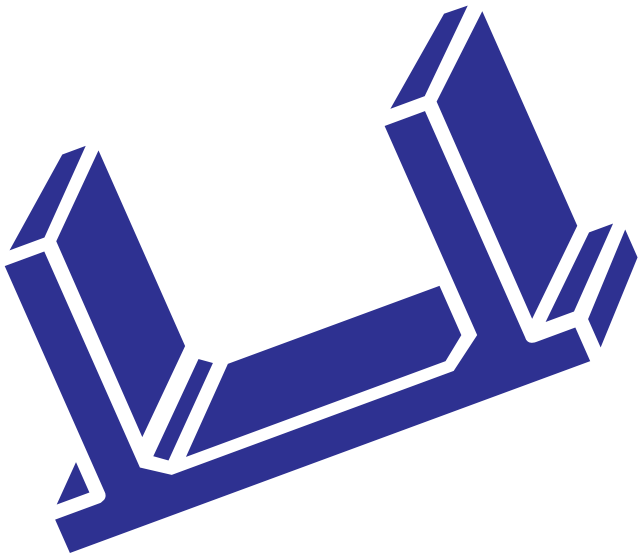


TOUGH ENOUGH
TO TRUST

Table Of Contents

• Introduction - 4
• One Piece Multi-Duty trench - 7
• Road Crossing H20 trench - 17
• Component Pedestrian trench - 31
•Accessories - 38
•Specs & Installation - 49

When viewed on-line this catalog is interactive. Click on blue text to jump to the section in catalog or to details on website.



Trenwa.

www.trenwa.com

1419 Alexandria Pike
Ft. Thomas, KY 41075

phone: 859-781-0831
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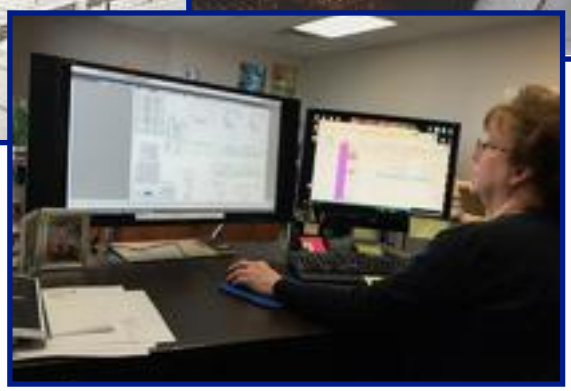
BACKGROUND

Trenwa manufactures a variety of precast concrete trench systems for the distribution of electrical control cables, power cables and mechanical piping. Sales and engineering support are provided from offices in Fort Thomas, Kentucky, a suburb of Cincinnati. With production plants across the United States, Trenwa can service the entire North American continent. In fact, Trenwa has shipped material to all 50 states and nine Canadian provinces.



Trenwa's original **Component** trench design was developed by Cincinnati Gas & Electric Company engineers in the mid 1950's to provide a means of locating and protecting control cables in substations, especially those stations where future growth was anticipated. The design was so innovative that it was granted a U.S. patent and its unique "U"-shaped bracket continues to be the company's logo today. Trenwa later introduced additional trench designs including the **One Piece** trench, **Road Crossing** trench, and **XL** trench.

BENEFITS OF USING TRENCH

ECONOMY - Trenwa trenches are often more economical than poured-in-place trench with its expensive forming costs or duct banks with their costly cable pulling.

ACCESSIBILITY - Unlike duct bank or direct buried systems, Trenwa trenches provide accessibility for future maintenance or expansion.

DURABILITY - Trenwa trench systems are proven trench systems which are more durable than lighter-weight alternatives.

FLEXIBILITY - With a wide range of sizes, Trenwa trenches can meet the capacity needs of almost any customer. In addition, a limitless number of layout configurations can be created using tees, crosses, horizontal and vertical angles, side by side trenches, and cross-unders.

LEAK CONTAINMENT - Trenwa solid bottom trenches with sealants and damp-proof coatings provide leak containment for piping.

OPTIONS & ACCESSORIES - • Design loads ranging from Pedestrian loading to HS40 (highway loading) or greater • Embedded Unistrut or Weld Plates • Cable Support Blocks • Ground Cable Clips • Cable Risers • Dividers • Steel Ventilator Lids • Guard Posts

WHICH TRENCH TO USE

The following factors should be considered when deciding which Trenwa trench to use.

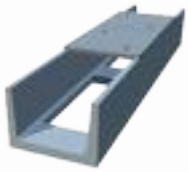
1. DESIGN LOAD

Trenwa offers trenches to meet many design loads:

- **Pedestrian-** suitable for pedestrian traffic.
- **Tier 5 -** 5,000 lbs occasional light vehicular drive over.
- **Tier 8 -** 8,000 lbs**.** occasional light vehicular drive over.
- **Tier 15 -** 15,000 lbs occasional Heavy Vehicular drive over, large utility trucks, heavy equipment.
- **HS20 - AASHTO Highway rated -** 32,000# axle load for typical road traffic.
- **H40,** - 64,000# axle load for extra heavy vehicles.

2. ONE PIECE VS COMPONENT:

There are unique advantages for both the **One Piece** and **Component** trenches. Their respective features include the following:



One Piece Trench

- 10’-0" Standard Lengths
- Depths from 12", 15/16" & 24"
- Faster Installation -- Fewer Pieces to Handle
- Requires Machine Installation
- Available Open or Solid Bottom
- Below or Above Grade Installation
- Design loads for pedestrian, Tier 5, Tier 8 , Tier 15, HS20 and HS40 traffic.

Component Trench

- 5’-0" Standard Lengths
- Depths of 12", 16" and 24"
- Manual Installation
- More Flexible for Complex Layouts
- Easy Field Modification
- Pedestrian rated only

3. LARGER SIZES

Any size not listed in our standard sizes will require either multiple trenches or one of Trenwa’s **XL** trenches.

4. PIPE APPLICATIONS

Component trench should not be used for piping. All of our other trenches are suitable for piping applications.

5. RECESSED COVERS

Trenwa’s **Road Crossing** trench and some **XL** trenches sizes have recesses in the trench walls to hold the covers. This feature, which is not available on our other trenches, permits the trench covers to be flush with the top of grade and helps prevent backfill material from entering the trench when lids are removed.

It's Easy to Work With Trenwa!

Although you can use this catalog to design and develop a bill of materials and place an order consisting of quantities and part numbers, in most cases it is better to let us design the project. Working with us from the quoting stage through the design and delivery of the project is a simple process and our Project Managers will guide and support you all the way.

Design Assistance-we will be glad to discuss your requirements and help you with design ideas and recommend the optimum trench for your project.

Budgetary pricing- if you have a simple project in mind and need budgetary pricing for engineering estimates give us a call or email us and we can get you a budget price rather quickly. All we need to know is the type of trench, linear footage involved, sizes and load rating of trenches, and the number of turns and tees.

Quotation- to get a firm price on a project out for bid we would prefer to get a bid package consisting of written specs and site plan drawings. These can be sent to us via email, with attachments, at sales@trenwa.com.

Or you can mail them to:

Trenwa, Inc.
1419 Alexandria Pike
Fort Thomas, KY 41075

File formats we support
- drawings; AutoCAD-dwg, dxf, pdf, tif
- documents; Word, rtf, txt, pdf.
- other; any MS Office format.

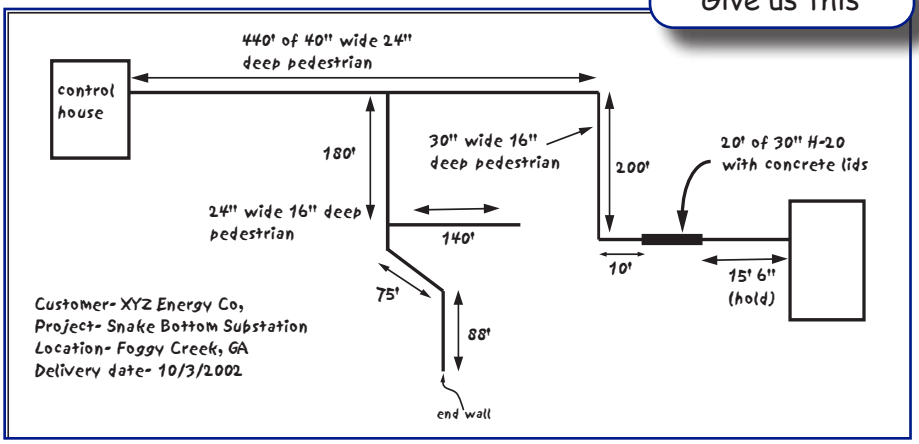
If you prefer you can fax the information to us at 859-781-1085.

If you don't have an official bid package then send us a site plan drawing that shows the basics of the project. A simple line drawing will suffice. Note the sizes and rating of the trench.

We also need to know job specific information like:

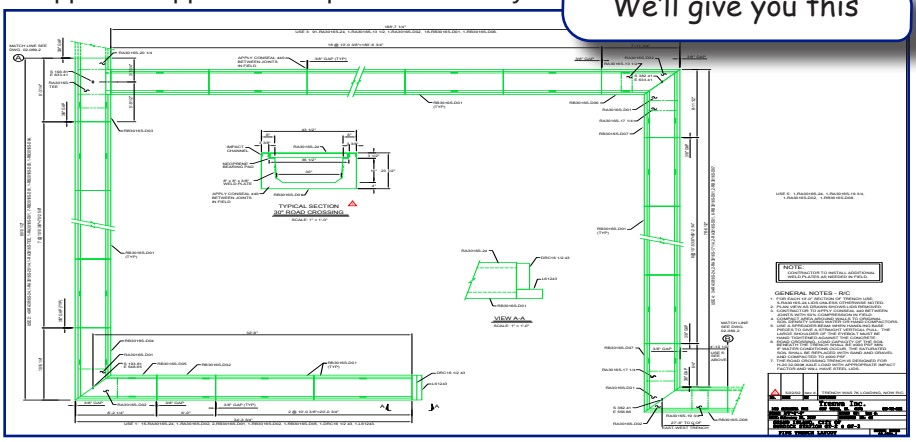
- ship to city
- project name
- end user/customer
- delivery schedule

Give us this



Order- upon receipt of an order we will design and draw the project in AutoCAD. The drawings will show all dimensions, bill of materials, weight of each piece, installation notes etc. The drawings will be sent to you for approval. Approval is required before any special pieces (miters, tees, short lengths, etc.) can be fabricated. A final set of drawings will be sent for field use and archival purposes.

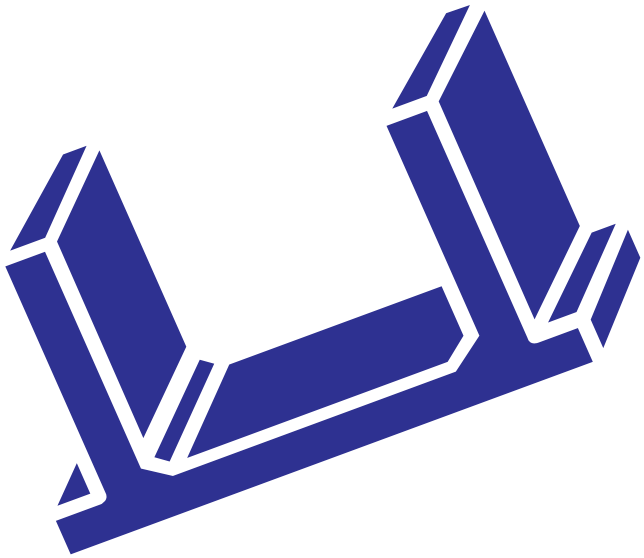
We'll give you this



Delivery- most orders will be delivered via flat bed truck. Small orders may be shipped LTL (less than truck load). The site contact will be called 24-48 hours prior to shipping so they can be prepared to off load the truck when it arrives.

One Piece Trench

Overview - 8
• Multi-Duty Base & Lids - 9
• HS20 Road Crossing Base & Lids -18
• Slopes & Crossunders - 26
• Ventilator Lids -28



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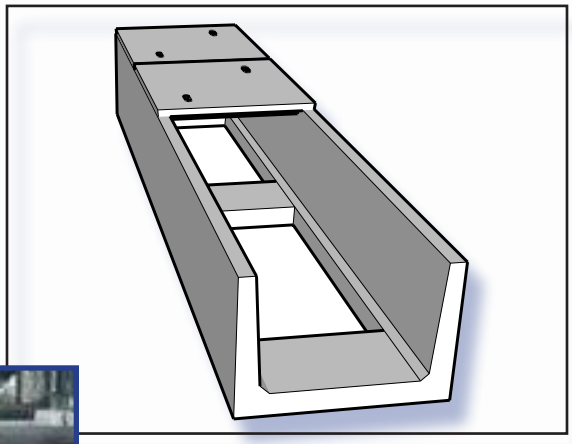
One Piece - Overview

OVERVIEW

Trenwa's One Piece Trench System is available in three designs that cover load bearing requirements from pedestrian through HS20 vehicle traffic. The Multi-Duty Base, when combined with the appropriate cover, can be used where occasional loads of up to 15,000 pounds might occur (TIER 15). For applications where regular traffic and heavier vehicles are expected HS20 trenches are available.



The base pieces in the **One Piece** system are available in standard lengths of 10 feet with openings in the bottom for cable exits.

The base can be cast in shorter lengths or with solid bottoms, if required. Since the base piece provides both the bottom and the side walls for the trench, the addition of the trench lids on top of the base completes the **One Piece** trench system.

ABOVE GRADE TRENCH

Because the **One Piece** base is *free-standing*, the **One Piece** trench can be easily used as an above grade trench system in situations where it is not possible or desirable to place a trench in the ground.

SYSTEM CAPABILITIES

The load ratings for each type of trench and lid combination is listed below;

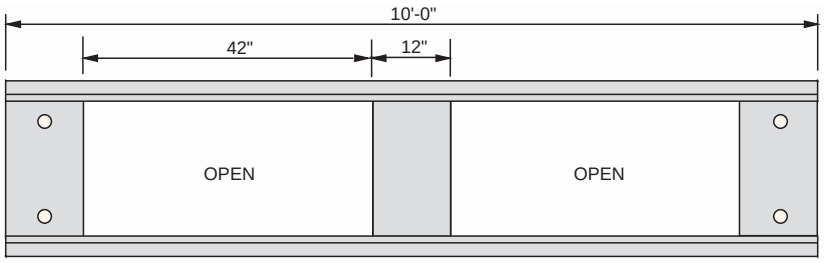
Application	Base Type	Lid Types	Design Load, lbs.	Specification
Pedestrian	BM	LP, LPP, LPF	3,000*	ANSI/SCTE 77: Light Duty
Pedestrian	BM	LPS,LPA,VPS,VPA	300 lbs/ft^2	ASTM C857-19 A-0.3
Occasional Light Vehicles	BM	LMS, LMA,VMS, VMA	5,000	ANSI/SCTE 77: TIER 5
Occasional Light Vehicles	BM	LM	8,000	ANSI/SCTE 77: TIER 8
Occasional Heavy Vehicle	BM	LMF	15,000	ANSI/SCTE 77: TIER 15
Heavy Traffic	BH	LHC, LHS, LHF	40,000	AASHTO, HS20
Extra Heavy Traffic	BX	LXC	80,000	Twice HS20 loading

* Test Load, Design Load not specified for Light Duty rating.

One Piece - Multi-Duty Base

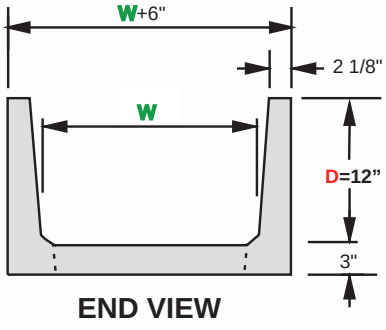
Our **Multi-Duty** trench base is designed for
Pedestrian, Tier 5, Tier 8, or Tier 15 loading depending on the lid applied.

Bases

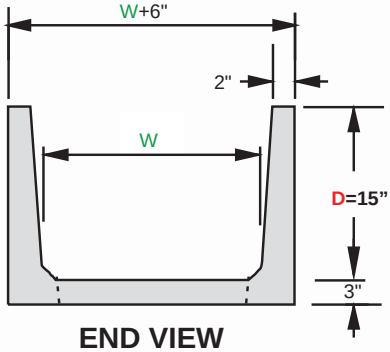


PLAN VIEW

Widths: 10", 20", 24", 30", 40" , 48"
Depths : 12", 15" , 24"



END VIEW



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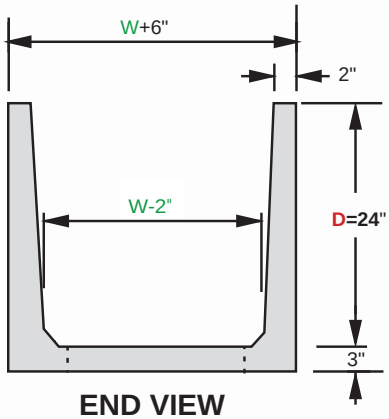


END VIEW

Substitute the depth (12/15/24) where the **D** appears in the part number.

BM30**12**-120
BM30**15**-120
BM30**24**-120

Specify length by last 3 digits in 1 inch increments.
Example: BM2015-069

	Open Bottom				Solid Bottom			
W*	Part Number	D=12"	D=15"	D=24"	Part Number	D=12"	D=15"	D=24"
10"	BM10D-120	1,008#	1,160#	1,919#	BMS10D-120	1,136#	1,288#	2,005#
20"	BM20D-120	1,099#	1,251#	2,010#	BMS20D-120	1,441#	1,593#	2,310#
24"	BM24D-120	1,135#	1,288#	2,047#	BMS24D-120	1,563#	1,715#	2,432#
30"	BM30D-120	1,190#	1,342#	2,102#	BMS30D-120	1,745#	1,898#	2,614#
40"	BM40D-120	1,281#	1,434#	2,193#	BMS40D-120	2,050#	2,203#	2,919#
48"	BM48D-120	1,354#	1,507#	2,266#	BMS48D-120	2,294#	2,447#	3,163#

D= Depth
W=Width

Options & Accessories

Ground Clips
Dividers
Cable Risers
Guard Posts
Unistrut
Tie Plates
Corner Guards
Power Blocks
Drain Holes
Cross Drains

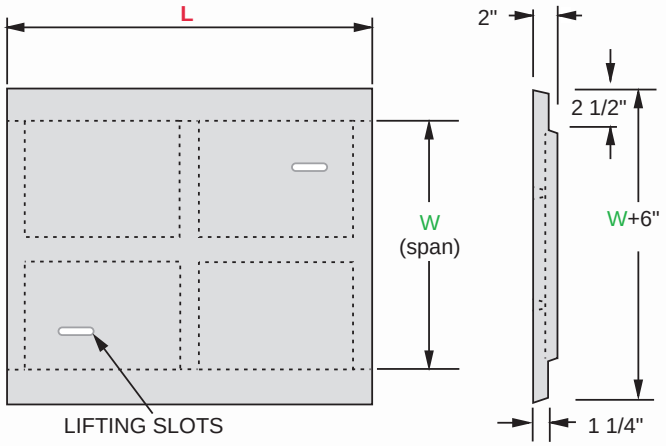
See Accessories Section

Concrete Pedestrian Lids

Our **Fiber Reinforced Concrete, FRC**, pedestrian lids, are made of steel, structural fiber, and 8,000 psi concrete. They are rated for pedestrian traffic and proof tested to 3,000 lbs uniform loading.

Part number LP.

PROOF LOAD TESTED TO 3,000 LBS.



Our **Polymer Modified Concrete, PMC,** lids are constructed like our FRC lids but with a Polymer Modifier added to the concrete. This increases the durability and reduces water and chloride penetration increasing the longevity of these lids.

Part number LPP.

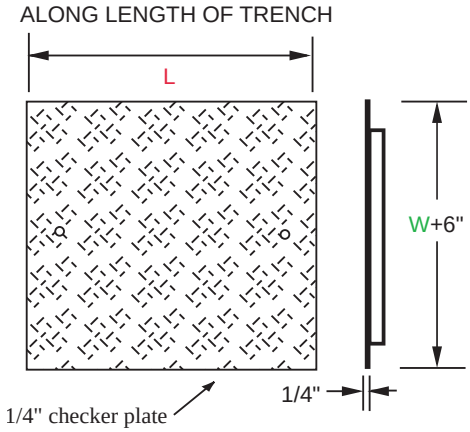
More details on our **website**.

Concrete Pedestrian Lids

W	FRC Part Number	PMC Part Number	L	Weight
10"	LP10-30	LPP10-30	30"	70#
20"	LP20-30	LPP20-30	30"	65#
24"	LP24-30	LPP24-30	30"	80#
30"	LP30-30	LPP30-30	30"	95#
40"	LP40-20	LPP40-20	20"	90#
48"	LP48-20	LPP48-20	20"	130#

Steel & Aluminum Pedestrian Lids

Trenwa offers both galvanized steel and aluminum lids in a pedestrian rating. The steel lids are made of 1/4" hot dip galvanized checker plate. The aluminum lids are made of 1/4" aluminum checker plate and are very light weight. They have stiffener and locator bars on the bottom surface. All lids have 1/2" holes for lifting with our LTSM tool.



Steel Lids

W	L	Part Number	Weight
10"	40"	LPS10-40	70#
20"	30"	LPS20-30	75#
24"	30"	LPS24-30	105#
30"	30"	LPS30-30	130#
40"	20"	LPS40-20	130#
48"	20"	LPS48-20	155#

Aluminum Lids

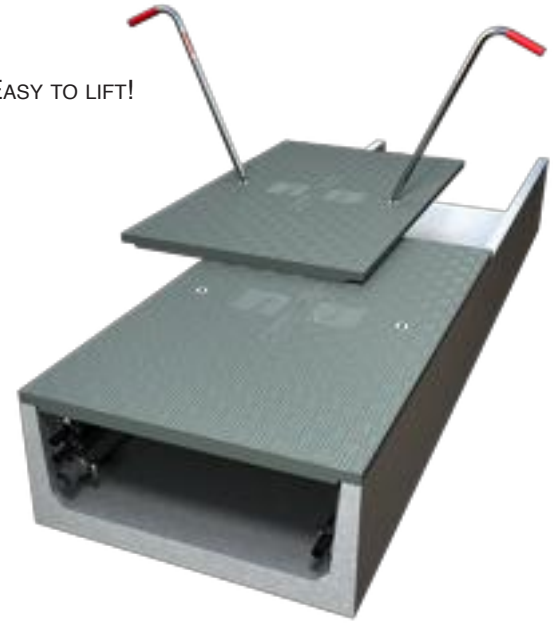
W	L	Part Number	Weight
10"	60"	LPA10-60	30#
20"	60"	LPA20-60	45#
24"	60"	LPA24-60	55#
30"	60"	LPA30-60	68#
40"	60"	LPA40-60	90#
48"	60"	LPA48-60	110#

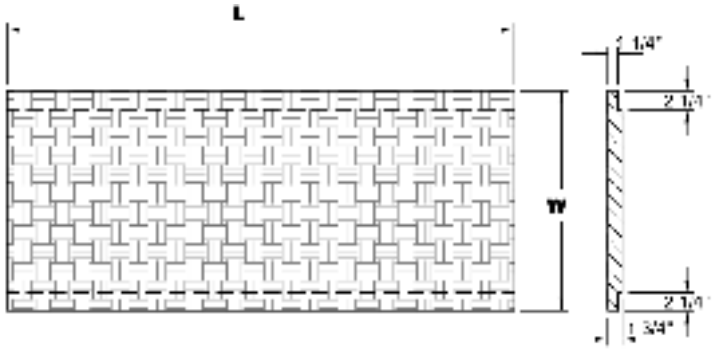
Fibrelite™ Pedestrian Lids

Our Fibrelite lids are light enough to be easily removed by 2 people in areas where access is needed. Constructed of advanced composite materials this lid is Pedestrian rated and has a 1 yr. warranty.

- Durable-chip & crack resistant
- Do not require annoying 'protection rods
- Non-conductive- no grounding required
- Freeze thaw impervious
- Resistant to most chemicals
- Anti-slip/static surface
- No scrap value
- UV stable

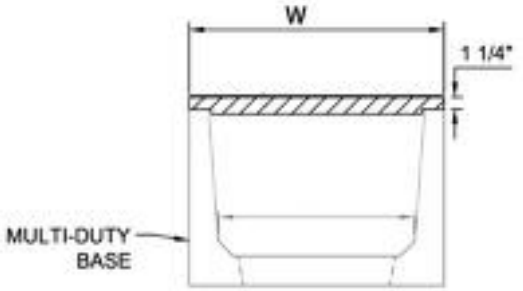
EASY TO LIFT!





W	L	Part Number	Weight	Fits Bases
16"	60"	LPF16-60	30#	BM10xx
26"	60"	LPF26-60	48#	BM20xx
30"	60"	LPF30-60	57#	BM24xx
36"	60"	LPF36-60	68#	BM30xx
46"	30"	LPF46-30	45#	BM40xx
46"	40"	LPF46-40	57#	BM40xx
54"	30"	LPF54-30	52#	BM48xx
54"	40"	LPF54-40	68#	BM48xx

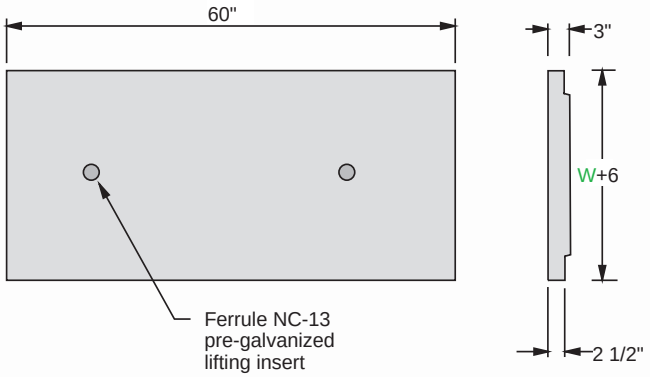
NOTE: LONGER LIDS ARE LESS EXPENSIVE



PEDESTRIAN FIBRELITE LID ON MULTI-DUTY BASE

Concrete Tier 8 Lids

For occasional drive over requirements our TIER 8 concrete lids provide the most economical solution. These are higher rated than our former 9,000 GVW rating.

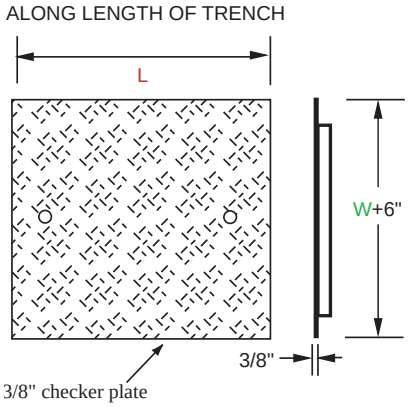


W	Part Number	Weight
10"	LM10-60	260#
20"	LM20-60	420#
24"	LM24-60	480#
30"	LM30-60	580#
40"	LM40-60	730#
48"	LM48-60	830#

The standard concrete lids are 5ft. long and come with NC-13 ferrule lifting inserts and protective caps.

Steel & Aluminum Tier 5 Lids

Trenwa offers both galvanized steel and aluminum lids in a Tier 5 rating. The steel lids are made of 3/8" hot dip galvanized checker plate. The aluminum lids are made of 3/8" aluminum checker plate and are very light weight. They have stiffener and locator bars on the bottom surface. All lids have 1/2" holes for lifting with our LTSM tool.



Steel Lids

W	L	Part Number	Weight
10"	40"	LMS10-40	90#
20"	30"	LMS20-30	110#
24"	30"	LMS24-30	135#
30"	30"	LMS30-30	170#
40"	20"	LMS40-20	170#

Aluminum Lids

W	L	Part Number	Weight
10"	60"	LMA10-60	48#
20"	60"	LMA20-60	85#
24"	60"	LMA24-60	95#
30"	40"	LMA30-40	75#
40"	40"	LMA40-40	105#

Fibrelite™ Tier 15 Lids

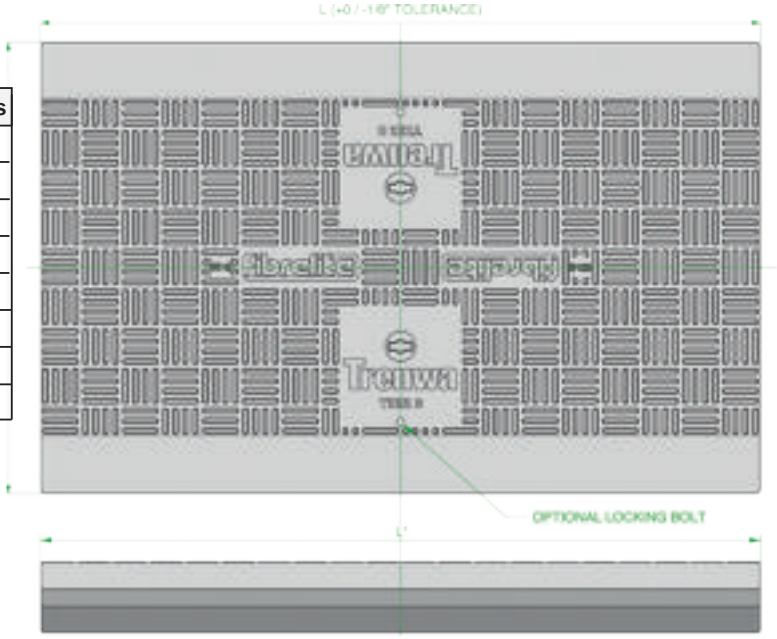
Our Fibrelite lids are light enough to be easily removed by 2 people in areas where access is needed. Constructed of advanced composite materials this lid is TIER 15 rated and has a 1 yr. warranty.

° Durable-chip & crack resistant
° Do not require annoying 'protection rods
° Non-conductive- no grounding required
° Freeze thaw impervious
° Resistant to most chemicals
° Anti-slip/static surface
° No scrap value
° UV stable

Note - this lid has a drive up lip that keeps traffic to a safe speed.

W	L	Part Number	Weight	Fits Bases
16"	60"	LMF16-60	50#	BM10xx
26"	60"	LMF26-60	72#	BM20xx
30"	60"	LMF30-60	85#	BM24xx
36"	60"	LMF36-60	105#	BM30xx
46"	30"	LMF46-30	88#	BM40xx
46"	40"	LMF46-40	105#	BM40xx
54"	30"	LMF54-30	120#	BM48xx
54"	40"	LMF54-40	135#	BM48xx

NOTE: LONGER LIDS ARE LESS EXPENSIVE



SLOPED SIDES ALLOW FOR EASY DRIVE OVER. ONLY RECOMMENDED FOR LOW SPEED PERPENDICULAR CROSSING.

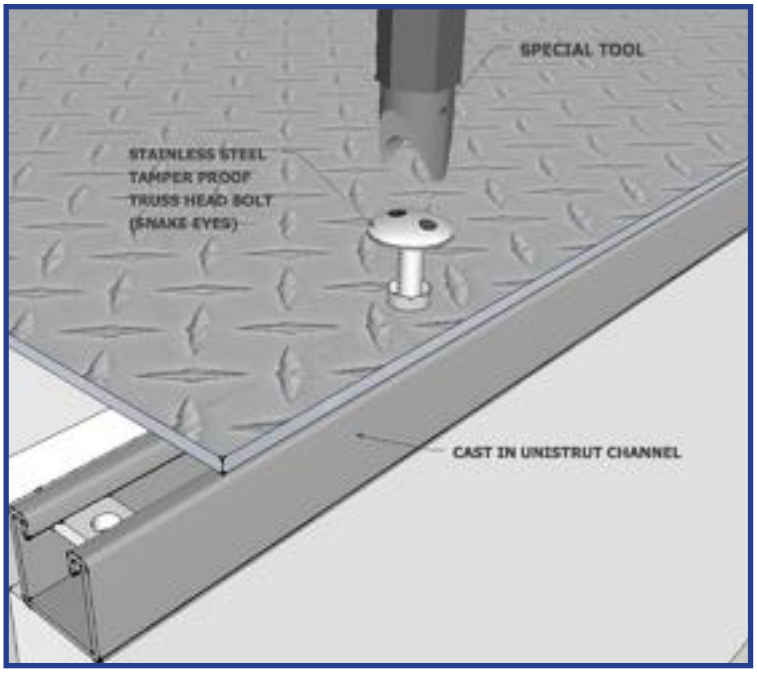
Tamper Resistant Lid Option

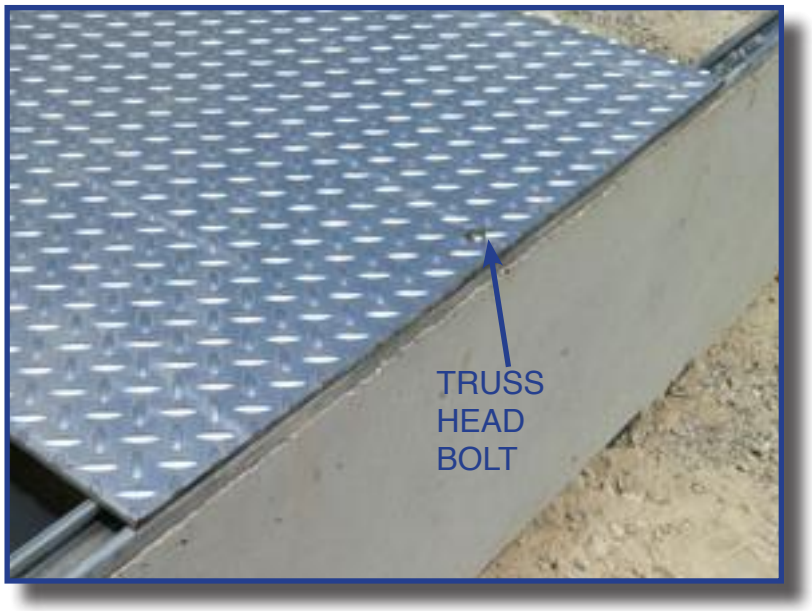
To deter theft of high value metal lids or cables and prevent unauthorized access we offer a Tamper Resistant Lid Option for our steel and aluminum lids.

Utilizing cast in Unistrut channels and special 'Snake Eye' Truss Head bolts the lids are almost impossible to remove without the special spanner drill bit (which we provide).

The lids can be configured with 1 or 2 bolts per side. The Truss Head Bolts do not present a tripping hazard and the overall height of the base is unchanged.

This option is available in both Pedestrian and TIER 5 rating.





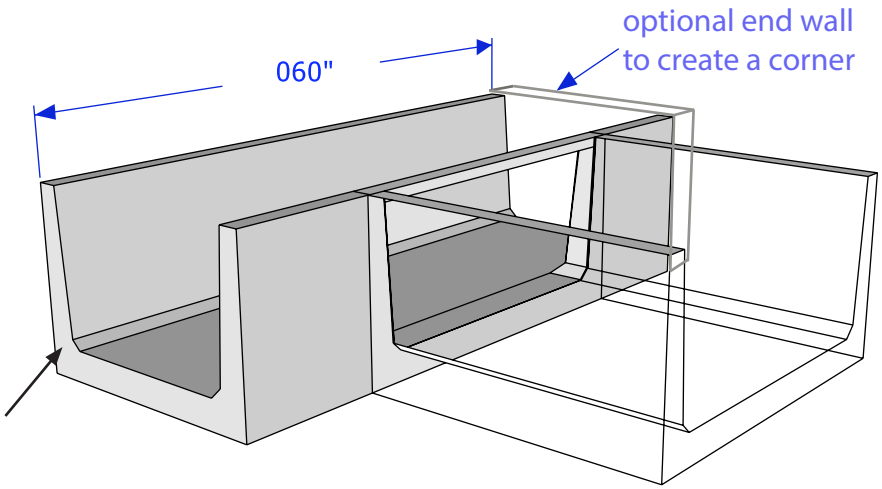
One Piece Miters, T's, Crosses & Ends

Layouts of almost any shape can be created from our standard Miters, T's, Crosses and Ends. These pieces can be specified in a wide range of lengths and configurations which makes it easy to create a complex layout.

Standard T section & 90° corner

Standard T sections can be used for 90° corners or to join two runs of the same or different size trench.

All T bases will be solid bottom except by special design.

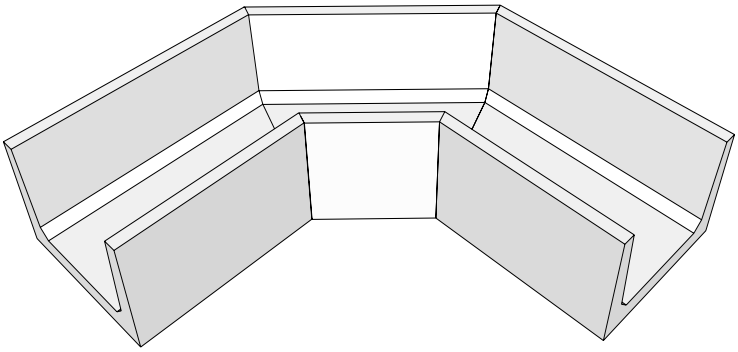


Example: BM2015T30-060

Standard Mitered Turn

Standard turns are accomplished with left and right 22.5° mitered bases with a double 22.5° mitered base in the center. This creates a sweep turn which minimizes the bending radius for large cables.

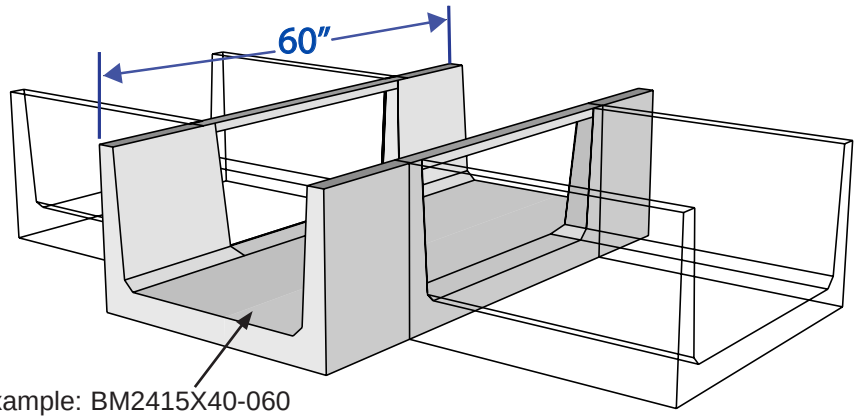
Lids are mitered and sized to fit.



Standard Cross sections

Standard Cross sections are used when two runs need to cross each other. They can be same or different widths.

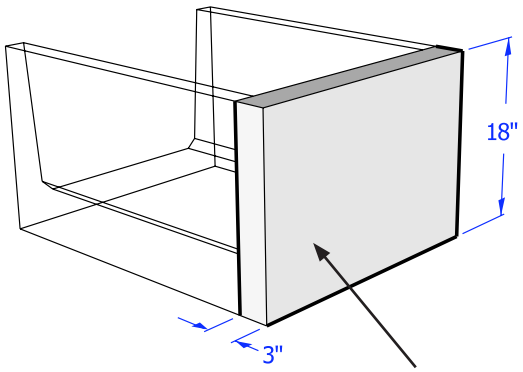
They are always solid bottom.



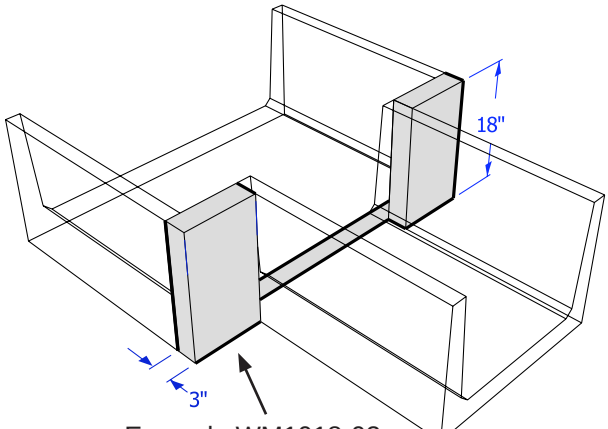
Example: BM2415X40-060

End Walls & Reducers

Standard End Walls are typically used to close off the end of a run. They can be held in place by backfill pressure or any elastomeric concrete adhesive.



Example: WM2618-03



Example:WM1018-03

Reducers are created by using 2 small end walls to block off the opening of the wider trench.

OVERVIEW

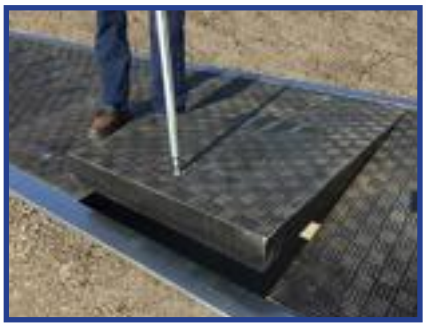
Trenwa offers a **Road Crossing** trench design that is available in 12", 16", & 24", depths. We also offer XL **Road Crossing** trenches in 36", 48", 60" & 72" depths. All are designed in accordance with ASHHTO requirements for HS20, 32,000# axle loading, with a 30% impact factor.

Four types of lids are available recessed within the walls of the base unit. The base units are manufactured in standard 10'-0" lengths with shorter lengths available to suit your layout. **The base units have galvanized impact angles embedded along the top edges for durability.** Road crossing trench may be combined with either the **Component** or **One Piece** pedestrian trench systems.

Composite Lids

Our premium **Fibrelite** HS20 composite lids provide the ultimate in durability, safety and ease of access. Lightweight and ergonomic, they are easily and safely removed by 2 people using our manual lifting tools.

Page 18.



Concrete Lids

Concrete lids are the least expensive lid option. They are 6-1/2" to 8" thick by 10'-0" long and must be machine set because of their heavy weight. The lids have a broom finish to prevent slipping when wet.

Page 19.

Steel Lids

Although steel lids are more expensive than concrete lids, they are only 3 1/2" thick, are lighter than concrete and can be handled manually. They range from 15" to 40" long. The steel lids are fabricated using structural steel components with checker plate cover and are hot dipped galvanized.

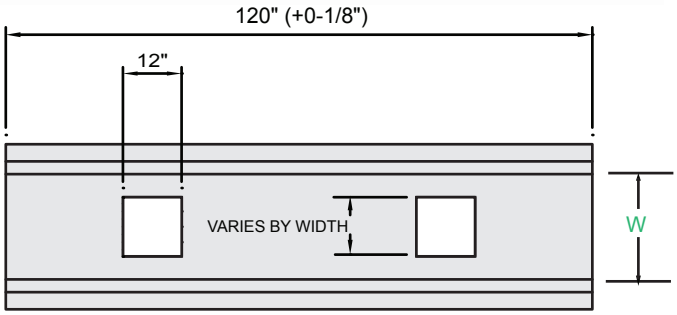
Page 21.

Bar Grating Vent Lids

Bar grating lids are typically used to allow air flow inside the trench for heat dissipation. They can be used on 100% of the trench or mixed with our other lids.

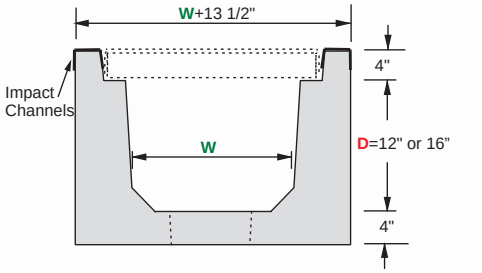
Page 27

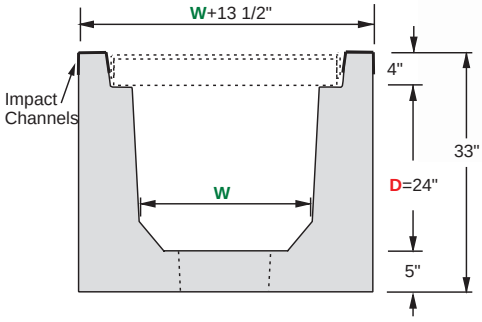
Standard Bases For Fibrelite Lids



W	Part Number	Weight D=12"	Weight D=16"	Weight D=24"
10"	BHF10D-120	2,885#	3,406#	4,678#
20"	BHF20D-120	3,226#	3,747#	5,105#
24"	BHF24D-120	3,389#	3,910#	5,308#
30"	BHF30D-120	3,633#	4,154#	5,613#
40"	BHF40D-120	3,942#	4,463#	5,999#
48"	BHF48D-120	4,267#	4,788#	6,406#

Substitute the depth (12/16/24) where the **D** appears in the part number.





BHF3012-120
BHF3016-120
BHF3024-120

Specify length by last 3 digits in 1 inch increments.
Example: BHF2016-098

Open bottom is standard.
Solid bottom is special order.

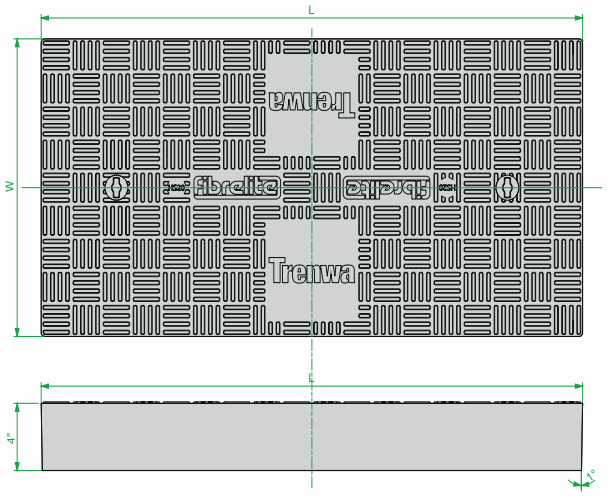
Notes: 10' standard lengths
5' minimum length

12" depth not a stock item.

Fibrelite™ Lids

Our Fibrelite composite lids are light enough to be easily removed by 2 people in areas where access is needed. Constructed of advanced composite materials the lids are H20 rated and have a 1 year warranty.

- Durable-chip & crack resistant
- Do not require annoying 'protection' rods
- Non-conductive- no grounding required
- Freeze thaw impervious
- Resistant to most chemicals
- Anti-slip/static surface
- No scrap value
- UV stable



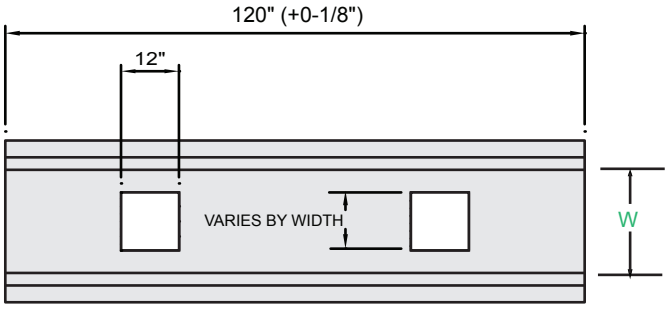
Fibrelite	W	L	Weight	Fits Bases
LHF16-60	16"	60"	55#	BHF10xx
LHF26-60	26"	60"	80#	BHF20xx
LHF30-60	30"	60"	95#	BHF24xx
LHF36-30	36"	30"	60#	BHF30xx
LHF36-60	36"	60"	118#	BHF30xx
LHF46-20	46"	20"	68#	BHF40xx
LHF46-30	46"	30"	98#	BHF40xx
LHF54-20	54"	20"	90#	BHF48xx
LHF54-30	54"	30"	138#	BHF48xx

Fibrelite cover - 16,000 lb. wheel load rated with 2.5x safety factor & tested to 40,000 lbs. Suitable for frequent perpendicular traffic. (LHF series - black color)

ONLY RECOMMENDED FOR LOW SPEED PERPENDICULAR CROSSINGS

LONGER LIDS ARE LESS EXPENSIVE PER LINEAR FOOT

Standard Bases For Concrete Lids

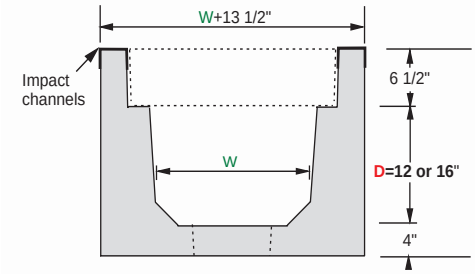


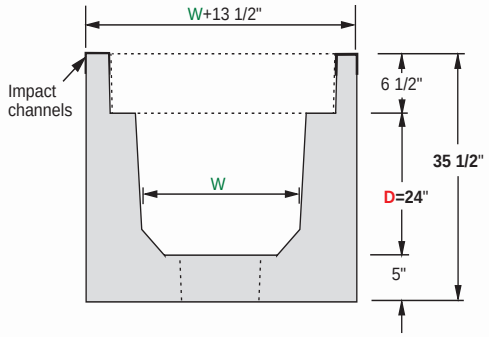
W	Part Number	Weight D=12"	Weight D=16"	Weight D=24"
10"	BHC10D-120	3,003#	3,531#	4,819#
20"	BHC20D-120	3,334#	3,873#	5,246#
24"	BHC24D-120	3,507#	4,036#	5,449#
30"	BHC30D-120	3,751#	4,279#	5,754#
40"	BHC40D-120	4,060#	4,588#	6,140#
48"	BHC48D-120	4,385#	4,913#	6,547#

Substitute the depth (12/16/24) where the **D** appears in the part number.

BHC30**12**-120
BHC30**16**-120
BHC30**24**-120

Specify length by last 3 digits in 1 inch increments.
Example: BHC2016-098





Open bottom is standard.
Solid bottom is special order.

Notes: 10' standard lengths
5' minimum length
12" depth not a stock item.

Options & Accessories

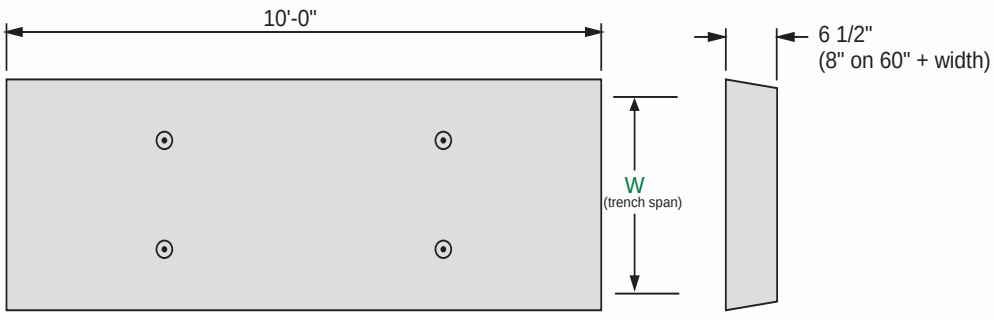
Ground Clips
Dividers
Cable Risers
Guard Posts
Unistrut
Tie Plates
Corner Guards
Weld Plates
Drain holes

See Accessories Section

Concrete Lids

Our HS20 Concrete lids are the least expensive option and are suitable where equipment is available to remove the lids and frequent access is not expected.

Constructed of 5,000 psi steel reinforced concrete.



W	Part Number	Weight
10"	LHC10-120	1,160#
20"	LHC20-120	1,840#
24"	LHC24-120	2,110#
30"	LHC30-120	2,520#
40"	LHC40-120	3,190#
48"	LHC48-120	3,730#

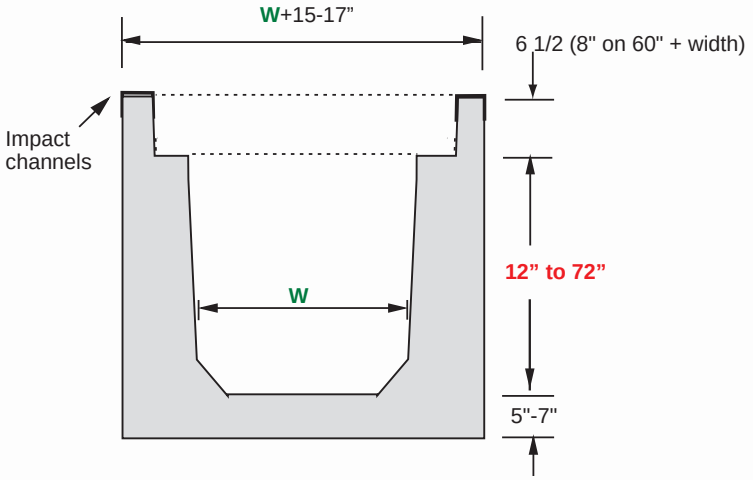
5'-0" MINIMUM LENGTH

XL Bases For Concrete Lids

Our HS20 rated **XL trenches** are ideal for electrical applications with large numbers of cables or where additional height is required to support multiple levels of cable tray.

They are also ideal for piping applications where the larger cross section allows for supports and brackets.

Weld plates can be embedded in the trench walls or bases to anchor pipe supports, tie plates can also be imbedded to provide a rigid connection between adjacent trench bases.



Custom sizes available on request.

		Weights					
W	Part Number	D=18”	D=24”	D=36”	D=48”	D=60”	D=72”
24"	BHCS24D-120		Pg. 19	7,600#	9,600#		
30"	BHCS30D-120		Pg. 19	7,900#	9,900#		
40"	BHCS40D-120		Pg. 19	8,400#	10,600#		
48"	BHCS48D-120		Pg. 19	8,800#	11,200#	12,700#	14,900#
60"	BHCS60D-120	7,000#	7,800#	10,200#	12,000#	13,500#	16,000#
72"	BHCS72D-120	7,600#	10,100#	10,900#	12,700#	14,600#	17,200#
84"	BHCS84D-120	9,200#	11,700#	11,700#	14,500#	16,000#	18,000#
96"	BHCS96D-096	8,800#	9,500#	11,000#	12,100#	14,700#	16,100#

Substitute "D" in the part number for the desired depth.

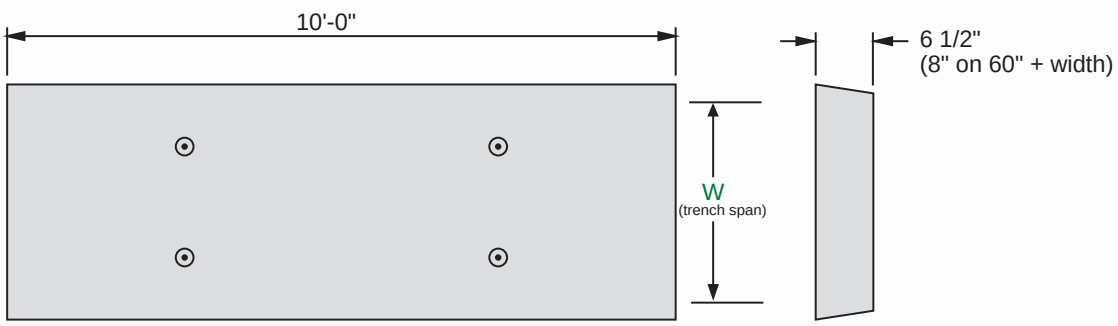
Solid bottom is standard, Change the S to a D to the 3 letter designation to specify a 4 inch drain hole in the bottom. Example: BHCD6048-120

See our website for detailed part drawings.

OPTIONS & ACCESSORIES

GROUND CLIPS
DIVIDERS
CABLE RISERS
GUARD POSTS
UNISTRUT
TIE PLATES
CORNER GUARDS
DRAIN HOLES

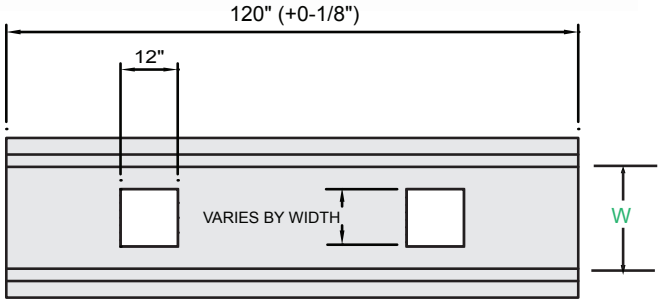
SEE ACCESSORIES SECTION



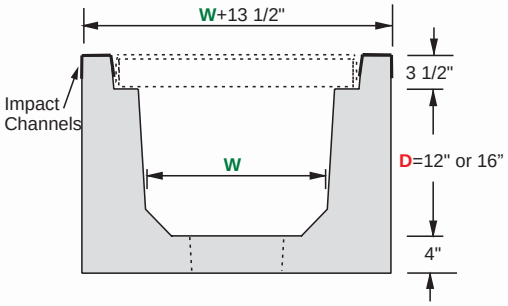
		Weight					
W	Part Number	D=18”	D=24”	D=36”	D=48”	D=60”	D=72”
24"	LHC24D-120		2,200#	2,200#	2,200#		
30"	LHC30D-120		2,550#	2,550#	2,550#		
40"	LHC40D-120		3,250#	3,250#	3,250#		
48"	LHC48D-120		3,770#	3,770#	3,770#	3,770#	3,770#
60"	LHC60D-120	5,600#	5,600#	5,600#	5,600#	5,600#	5,600#
72"	LHC72D-120	6,600#	6,600#	6,600#	6,600#	6,600#	6,600#
84"	LHC84D-120	7,500#	7,500#	7,500#	7,500#	7,500#	7,500#
96"	LHC96D-096	6,800#	6,800#	6,800#	6,800#	6,800#	6,800#

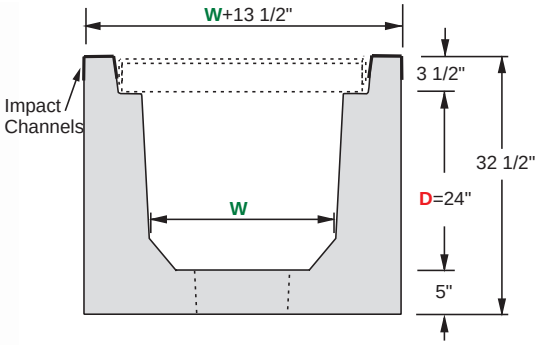
CONCRETE LIDS FOR XL BASES

Standard Bases For Steel Lids



W	Part Number	Weight D=12"	Weight D=16"	Weight D=24"
10"	BHS10D-120	2,920#	3,400#	4,620#
20"	BHS20D-120	3,330#	3,810#	5,130#
24"	BHS24D-120	3,500#	3,980#	5,340#
30"	BHS30D-120	3,750#	4,230#	5,680#
40"	BHS40D-120	4,160#	4,640#	6,200#
48"	BHS48D-120	4,490#	4,970#	6,620#





Substitute the depth (12/16/24) where the **D** appears in the part number.

BHS30**12**-120
BHS30**15**-120
BHS30**24**-120

Specify length by last 3 digits in 1 inch increments.
Example: BHS2016-098

Open bottom is standard.
Solid bottom is special order.

Notes: 10' standard lengths
5' minimum length
12" depth not a stock item.

Options & Accessories

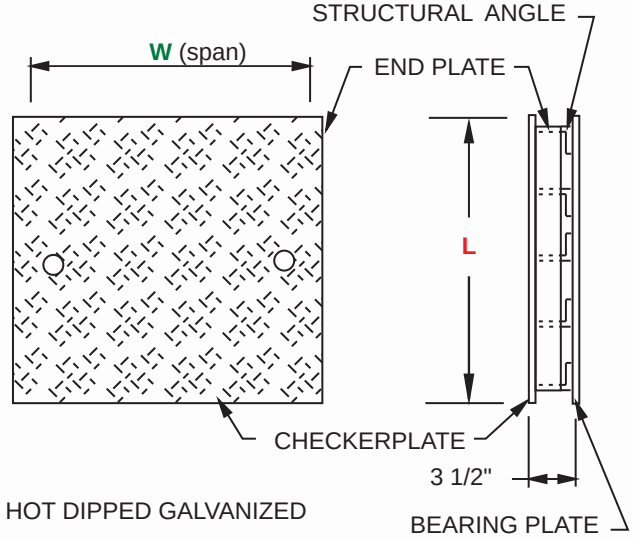
Ground Clips
Dividers
Cable Risers
Guard Posts
Unistrut
Tie Plates
Corner Guards
Drain Holes

See Accessories Section

Steel Lids

Our steel lids are light enough to be man removable for areas where easy access is needed. They are hot dip galvanized to resist corrosion.

All lids come with 1/2" holes for lifting with our LTSM and LTSE tools.



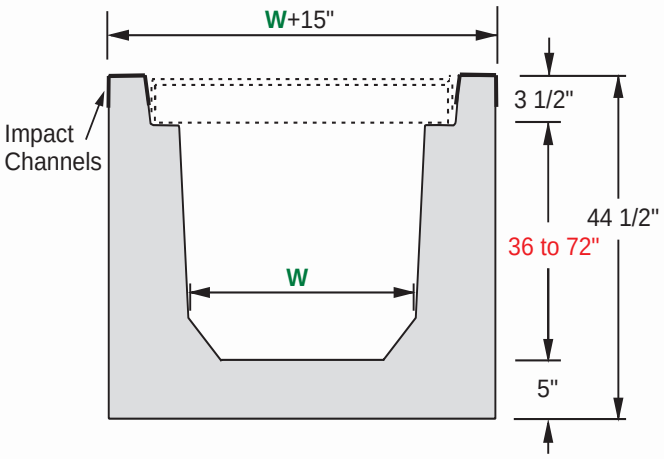
W	L	Part Number	Weight
10"	40"	LHS10-40	113#
20"	24"	LHS20-24	110#
24"	24"	LHS24-24	125#
30"	24"	LHS30-24	145#
40"	15"	LHS40-15	125#
48"	15"	LHS48-15	150#

XL Bases

Our larger XL road bases are also available with steel lids up to 48" widths.

Custom sizes are available by special design

Solid bottom is standard in the XL sizes.



		Weight			
W	Part Number	D=36"	D=48"	D=60"	D=72"
24"	BHSS24D-120	7,400#	9,400#		
30"	BHSS30D-120	7,700#	9,700#		
40"	BHSS40D-120	8,200#	10,400#		
48"	BHSS48D-120	8,600#	11,000#	12,500#	14,600#

Change the second S to a D to specify a 4 inch drain hole in the bottom. Example: BHSD4036-120

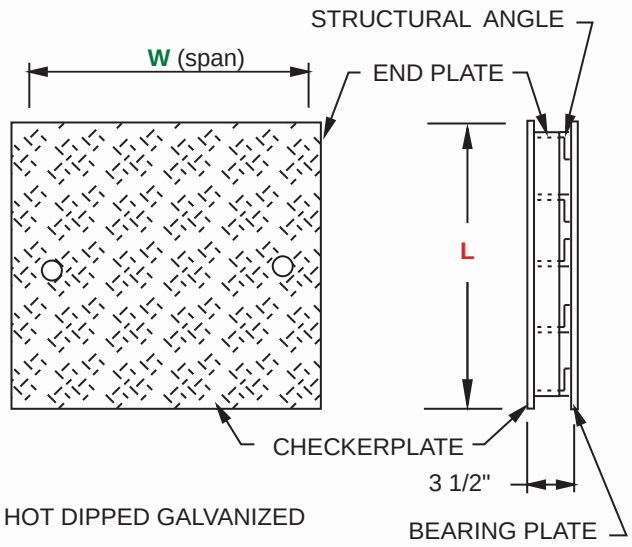
See our **website** for detailed part drawings.

OPTIONS & ACCESSORIES

GROUND CLIPS
DIVIDERS
CABLE RISERS
GUARD POSTS
UNISTRUT
TIE PLATES
CORNER GUARDS
DRAIN HOLES

SEE ACCESSORIES SECTION

Steel Lids For XL Bases

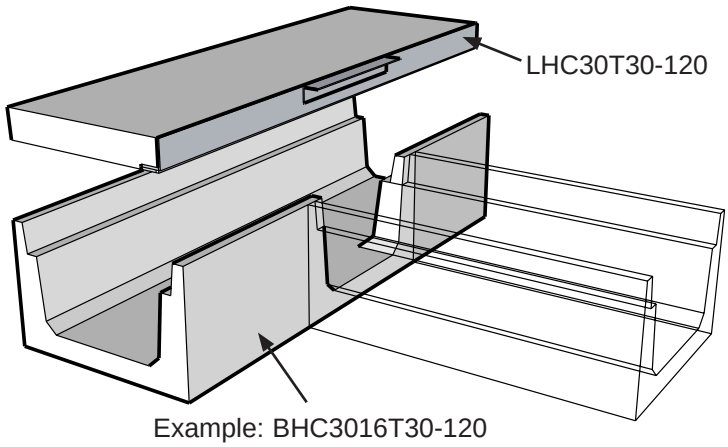


		36" Deep Base	48" Deep Base	60" Deep Base	72" Deep Base	
W	L	Part Number	Part Number	Part Number	Part Number	Weight
24"	24"	LHS2436-24	LHS2448-24			130#
30"	24"	LHS3036-24	LHS3048-24			155#
36"	20"	LHS3636-20	LHS3648-20			160#
40"	15"	LHS4036-15	LHS4048-15			135#
48"	15"	LHS4836-15	LHS4848-15	LHS4860-15	LHS4872-15	200#

Layouts of almost any shape can be created from our Standard HS20 Miters, T's, Crosses and Ends. These pieces can be specified in a wide range of lengths and configurations which makes it easy to configure a complex layout.

Standard HS20 T Section & Corner

Standard HS20 T sections can be used for 90° corners or to join two runs of the same or different size trench.

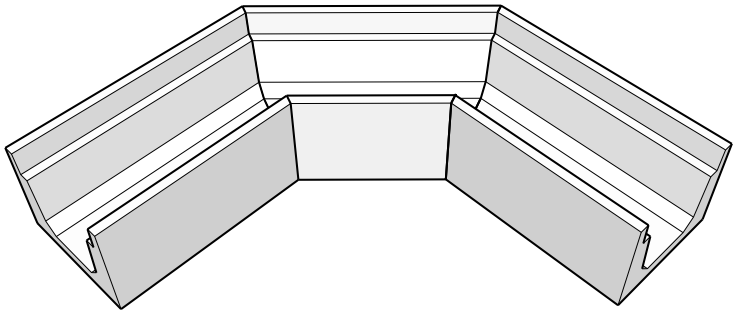


Example: BHC3016T30-120

Standard HS20 Mitered Turns

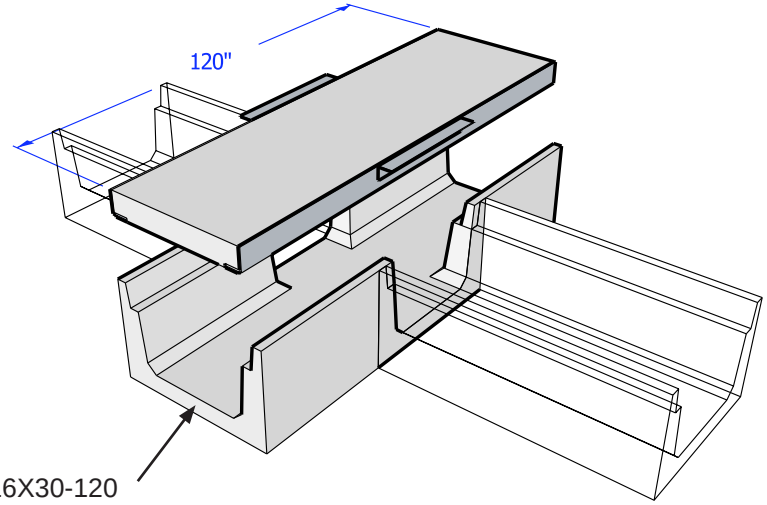
Standard road crossing turns are accomplished with left and right 22.5° mitered bases with a double 22.5° mitered base in the center. This creates a sweep turn which minimizes the bending radius for large cables.

Lids are mitered and sized to fit.



Standard HS20 Cross Sections

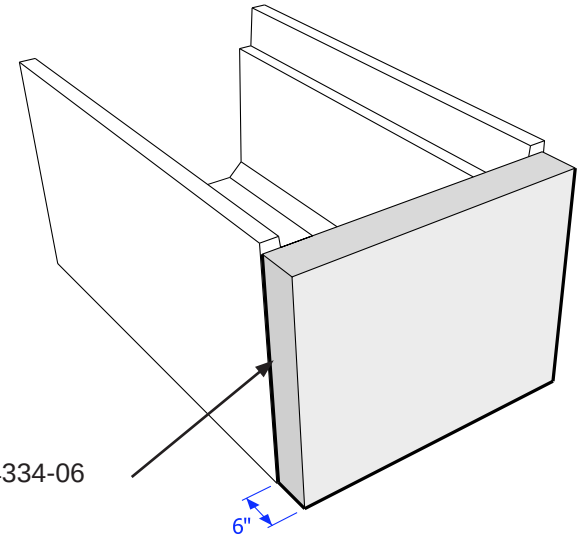
Standard Cross sections are used when two runs need to cross each other. They can be same or different widths.



Example: BHC3016X30-120

HS20 End Walls & Reducers

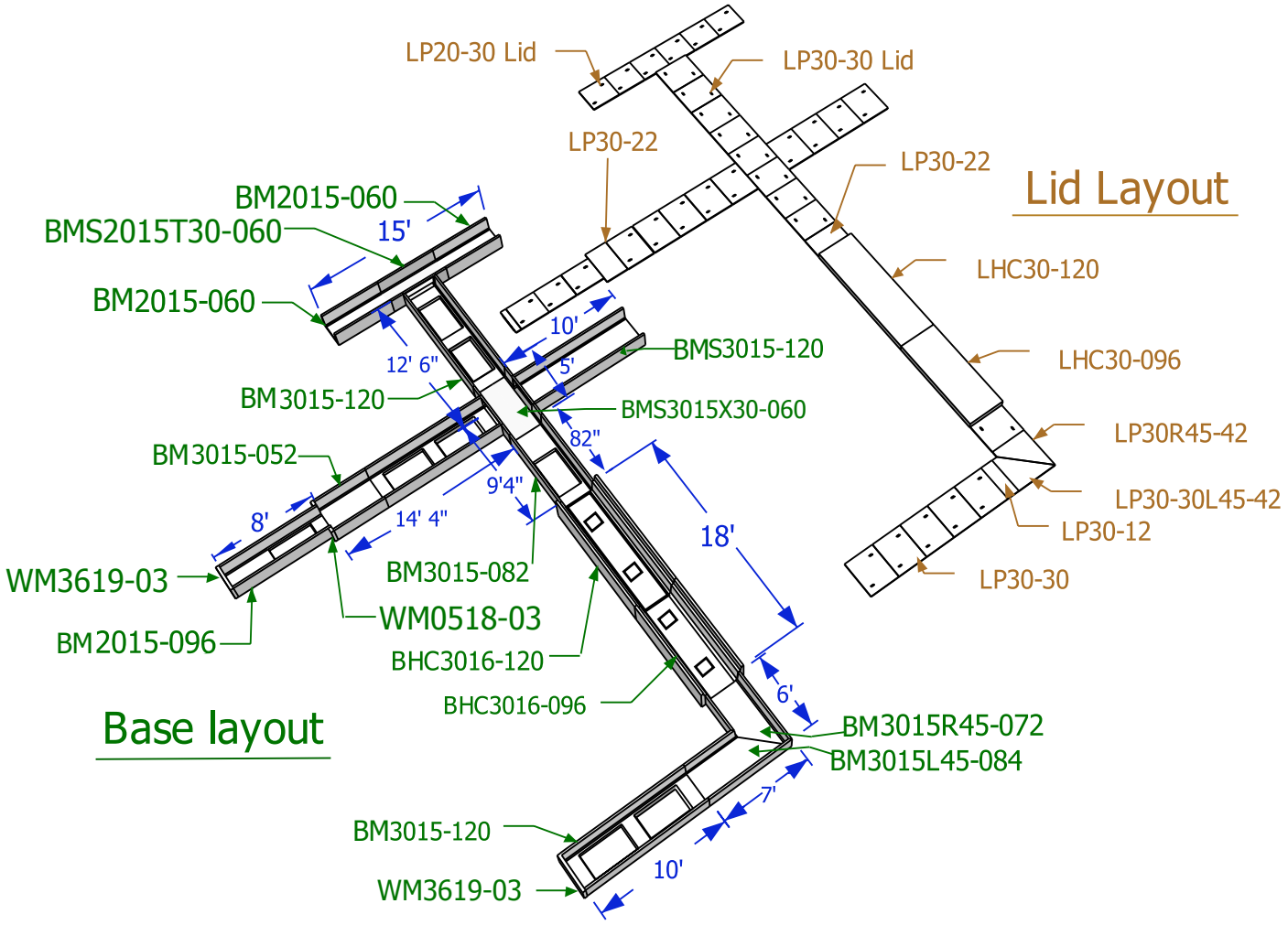
Standard End Walls are typically used to close off the end of a run. They can be held in place by backfill pressure or any elastomeric concrete adhesive.

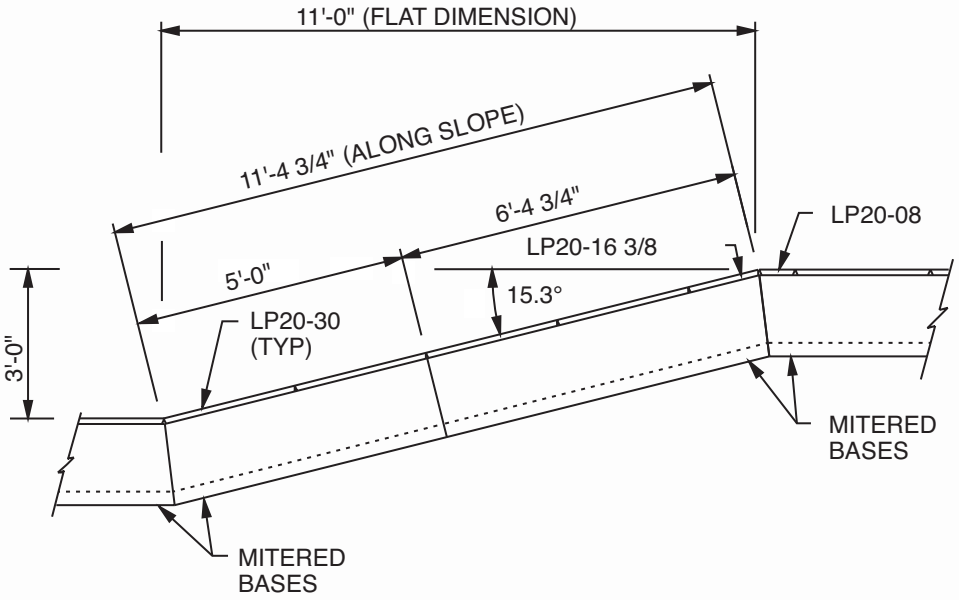


WH4334-06

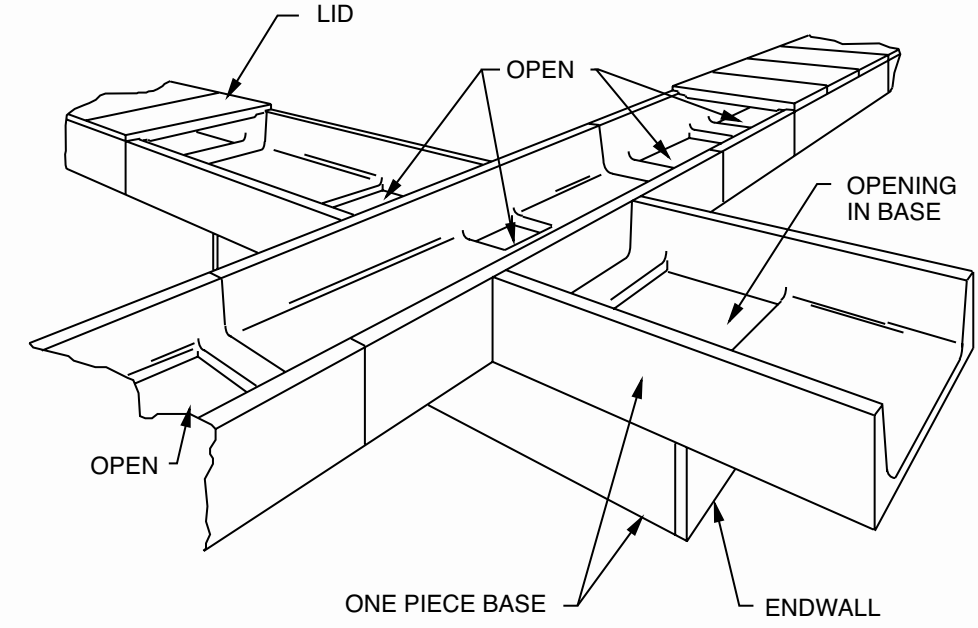
Layout Example Using Standards

This is one example of combining BM (Base Multi-Duty) trench and BHC (Base HS20 Concrete lids) with standard geometric pieces to create a complex layout. Many, many other combinations are possible.





Typical Slope



Typical Crossunder

TRENWA RECOMMENDS USING THE ONE PIECE TRENCH FOR ALL SLOPES AND CROSSUNDERS

OVERVIEW

Steel ventilation lids are available for our Multi-Duty Trench in Pedestrian, Tier 5 and Road Crossing rated designs. These ventilator lids allow heat to rise and dissipate from the trench. They are typically used when power cables are installed in the trench.

Standard sizes allow lids to be alternated with concrete lids or to be 100% vent lids. They can be used with over the top lid styles like our Pedestrian and Medium Vehicle trench or with recessed lids like our Road Crossing trench.

Vent lids for Multi-Duty Trench bases are over the top designs and have locator angles on the underside.

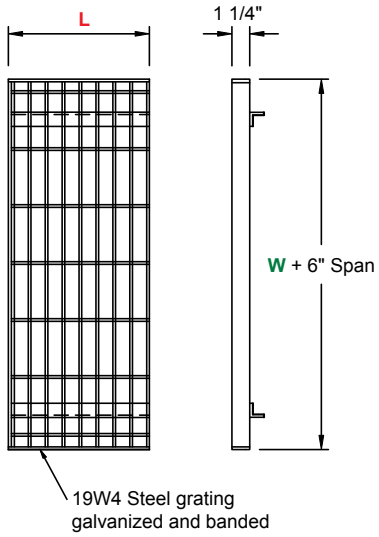
Road Crossing Vent lids sit in a recess and do not require locators. When alternated with concrete HS20 lids the vent lids have steel riser tubes to match the height of the concrete lids.

All lids are made with 19W4 bar grating and are hot dip galvanized for long, rust resistant usage.

Pedestrian Vent Lids

Pedestrian Vent lids are rated for 3,000 lbs and are available in 10", 24" and 30" nominal lengths. Contact us for custom sizes.

W	Part Number	L=10"	L=20"	L=24"	L=30"
10"	VP10-L	12#	NA	26#	32#
20"	VP20-L	18#	NA	40#	50#
24"	VP24-L	21#	NA	48#	58#
30"	VP30-L	25#	50#	55#	70#
40"	VP40-L	30#	60#	70#	90#
48"	VP48-L	NA	65#	NA	105#

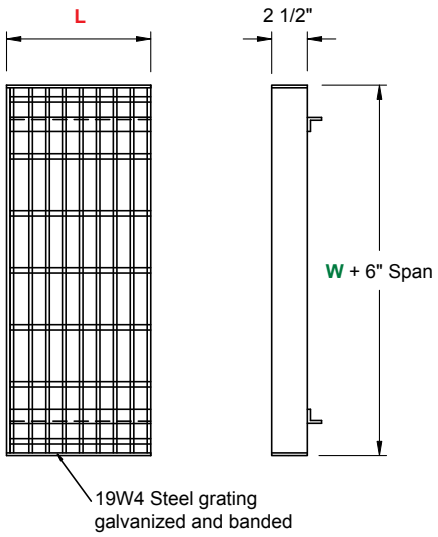


W is the inside nominal width of the trench the lid is designed to span. L is the length of the vent lid.

Tier 5 Vehicle Vent Lids

Tier 5 Vent lids are available in 10", 24" and 30" nominal lengths. These can be used on our BM Multi-Duty trenches wholly or mixed with concrete lids. Contact us for custom sizes.

W	Part Number	L=10"	L=24"	L=30"
10"	VM10-L	28#	65#	80#
20"	VM20-L	45#	100#	125#
24"	VM24-L	50#	120#	150#
30"	VM30-L	75#	NA	220#
40"	VM40-L	110#	NA	325#
48"	VM48-L	130#	NA	NA



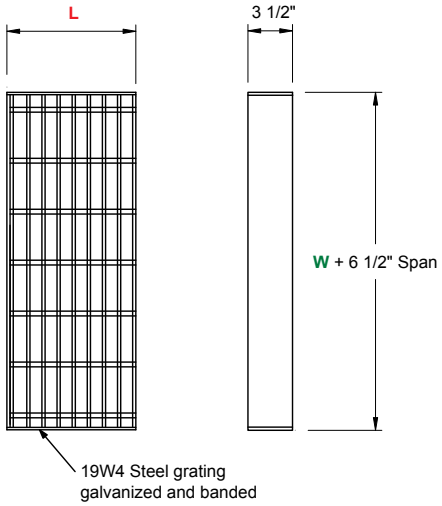
* VM48 IS ONLY RATED AT 4,000 LBS.

HS20 Road Crossing Vent Lids

HS20 Vent lids are rated at 32,000#/axle and are available in 10", 24" and 30" nominal lengths. These can be used on our BHS and BHC series trenches wholly or mixed with concrete lids. Contact us for custom sizes

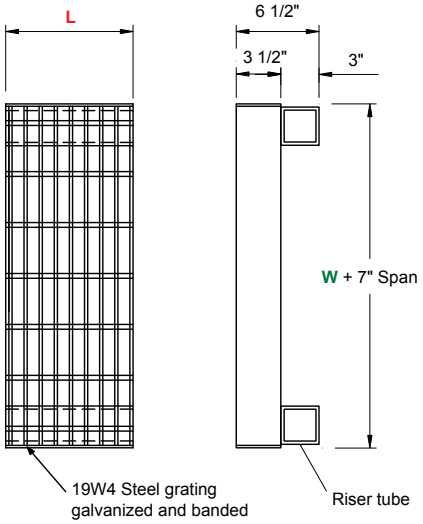
The following vent lid models are designed for a 3 1/2" recess and will fit our BHS series road bases. They should be used where 100% vent lid coverage is desired or mixed with steel lids.

W	Part Number	L=10"	L=24"	L=30"
10"	VHS10-L	40#	90#	113#
20"	VHS20-L	60#	145#	180#
24"	VHS24-L	70#	168#	208#
30"	VHS30-L	85#	200#	250#
40"	VHS40-L	105#	253#	315#
48"	VHS48-L	135#	300#	400#



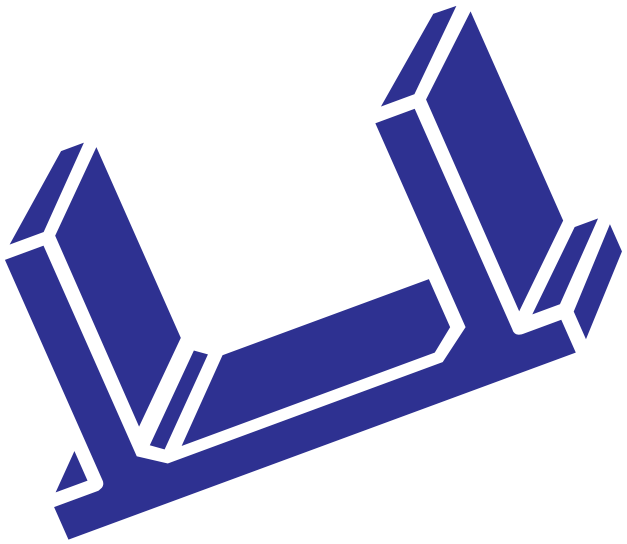
The following vent lid models are designed for a 6 1/2" recess and will fit our BHC series road bases. They should be used when mixed with concrete lids.

W	Part Number	L=10"	L=24"	L=30"
10"	VHC10-L	46#	100#	125#
20"	VHC20-L	70#	165#	208#
24"	VHC24-L	80#	185#	235#
30"	VHC30-L	92#	220#	275#
40"	VHC40-L	115#	275#	345#
48"	VHC48-L	125#	345#	375#



Component Trench

• Overview - 32
• Lids & Brackets - 33
• Side Walls & End Walls - 34
• Tees, Crosses, Reducers - 35
• 90° & Mitered Turns - 36



Trenwa.

www.trenwa.com

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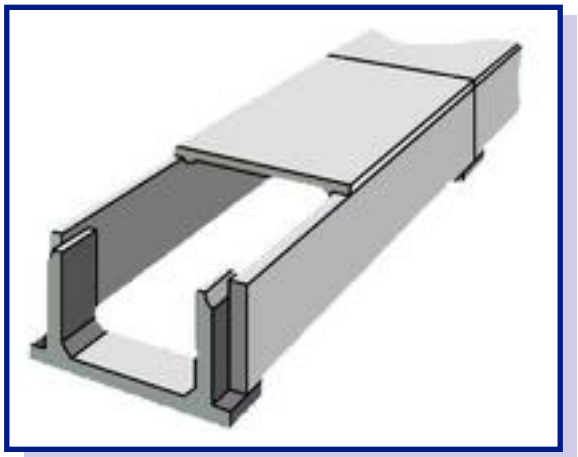
fax: 859-781-1085
e-mail: info@trenwa.com

OVERVIEW

Unlike the **One Piece** trench, Trenwa's **Component** trench is available only in **3,000 lbs pedestrian loading**. It is available in six standard sizes: 20", 30", and 40" inside widths by 16" or 24" inside depth.

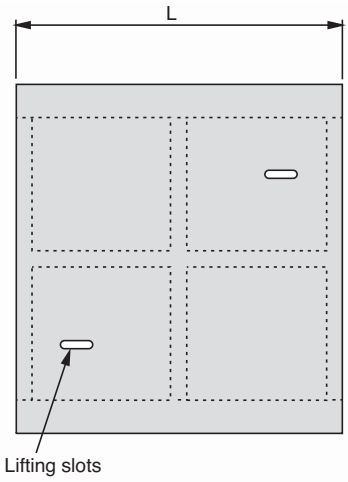
Trenwa's **Component** system is very simple. The key element is the **support bracket**, which supports the **sidewalls**, which in turn carry the **lids**. **Endwalls** terminate straight trench runs while **bulkheads** are used at ninety degree turns to close the run and provide a bearing for **lintels**, which in turn support lids over openings created by the turns; a **radius corner** is also required to support the far side of the lintel. Both right and left hand radius corners are used to support the lintel at a tee. **Dividers** segregate trenches into separate sections.

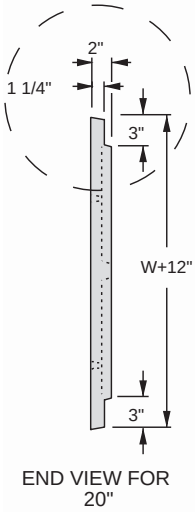


PART NUMBERING

Like the **One Piece** trench, most of the parts for the **Component** trench are identified by leading letters which identify the type of part (e.g. lid, base section, end wall, etc.) and trailing numbers which identify the size of the part.

Description	Part Number Format	Example	Dimensions for Example
Lid – Pedestrian	AAxxxx	AA3020	30" inside width x 20" long
Support Bracket	Cxx08xx	C400815	40" inside width x 15" tall leg
End Bracket	Cxx06xx	C300615	30" inside width x 15" tall leg
Sidewall	Bxxxx	B1632	3" thick x 16" tall x 32" long
Endwall	Dxxxx	D1536	3" thick x 15" tall x 36" long
Bulkhead	DxxxxR or L	D1529L	3" thick x 15" tall x 29" long (left hand turn)
Lintel	Lxxxx	L3340	3" x 3" x 40" long
Radius Corner	RCRxx or RCLxx	RCR16	Right Hand Radius x 16" tall





END VIEW FOR 20"

Pedestrian Lids

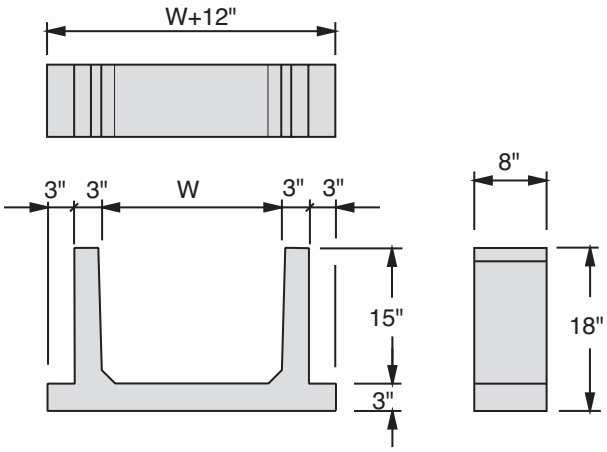
W	FRC Part Number	PMC Part Number	L	Weight
20"	AA2030	AAP2030	30"	80#
30"	AA3020	AAP3020	20"	80#
40"	AA4020	AAP4020	20"	95#

Our **Fiber Reinforced Concrete, FRC**, pedestrian lids, are made of steel, structural fiber, and 8,000 psi concrete. They are rated for pedestrian traffic and proof tested to 3,000 lbs uniform loading.

Part number AA

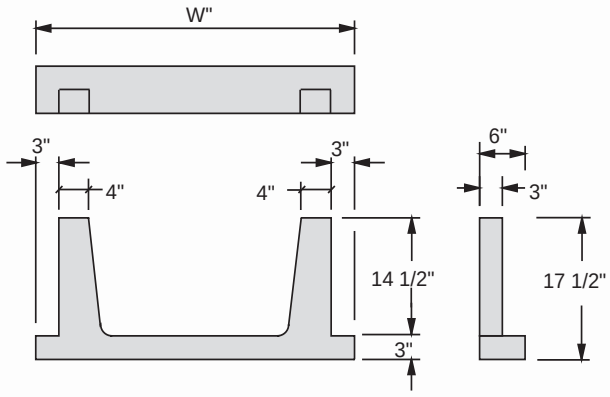
Our **Polymer Modified Concrete, PMC,** lids are constructed like our FRC lids but with a Polymer Modifier added to the concrete. This increases the durability and reduces water and chloride penetration increasing the longevity of these lids.

Part number AAP.



Support Bracket

W	Part Number	Weight
20"	C200815	120#
30"	C300815	140#
40"	C400815	160#

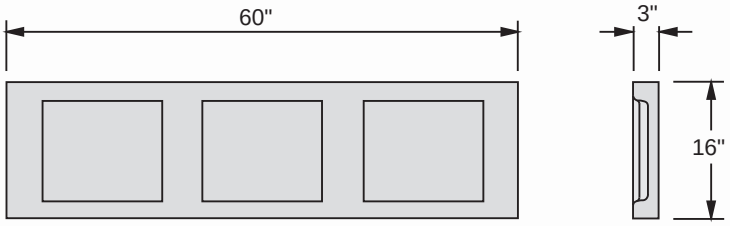


End Bracket

Part Number	W	Weight
C200615	32"	90#
C300615	42"	105#
C400615	52"	120#

Brackets

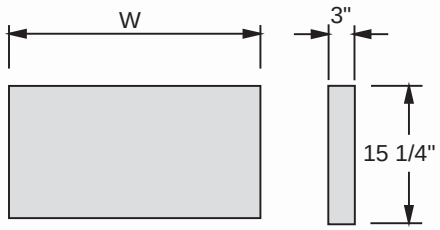
Sidewalls



Sidewall B1660
(Wt. = 150#)

NOTE: Sidewall is also available in a 24" (B2460) depth with End wall and Bulkhead to match

End Walls



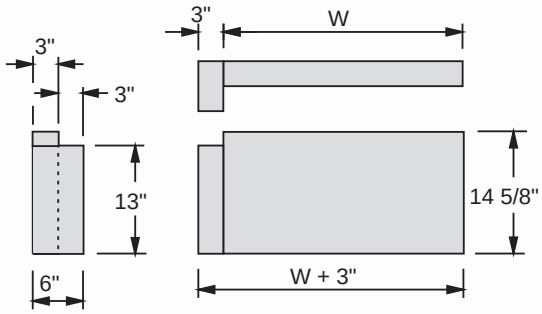
Endwall

Part Number	W	Weight
D1526	26"	95#
D1536	36"	130#
D1546	46"	165#

Options & Accessories

Ground Clips
Dividers
Cable Risers
Guard Posts

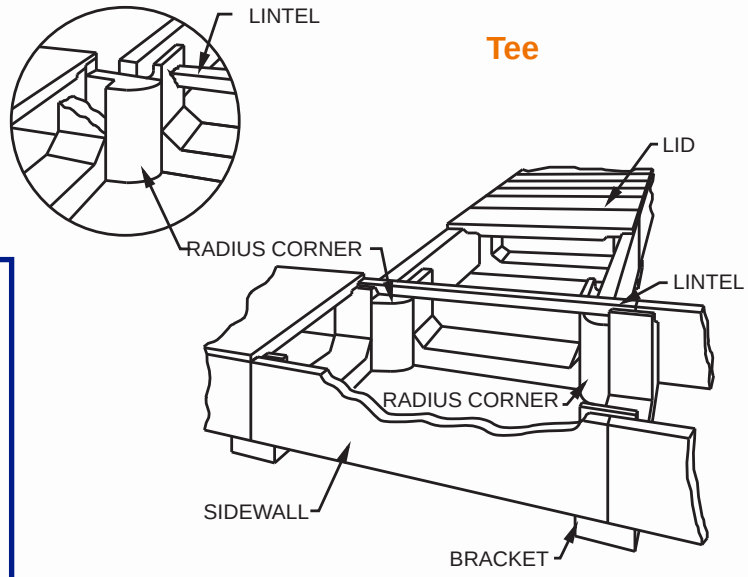
See Accessories Section

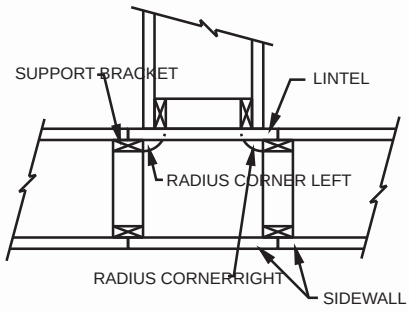


Bulkhead

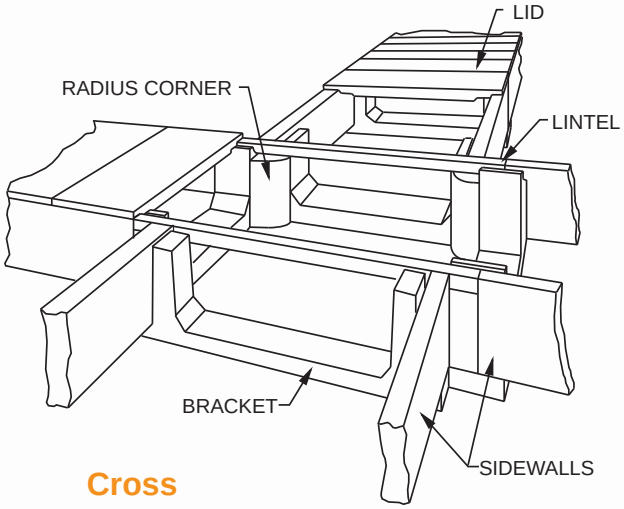
Part Number	W	Weight
D1529L or R	26"	110#
D1539L or R	36"	145#
D1549L or R	46"	180#

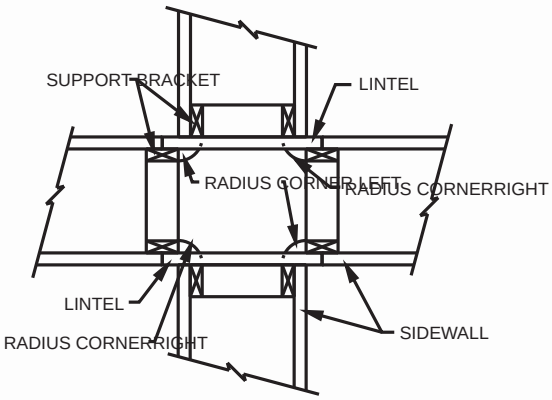
Tee



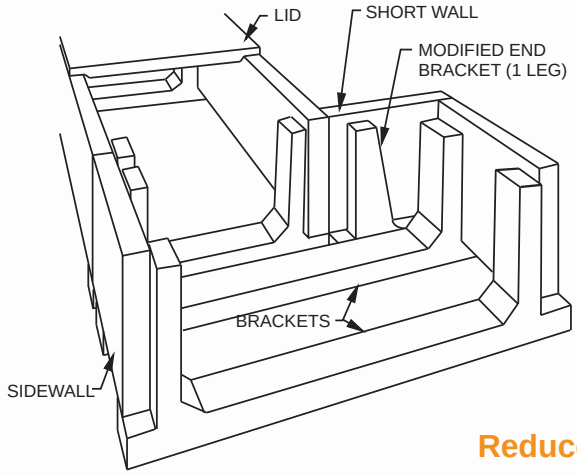


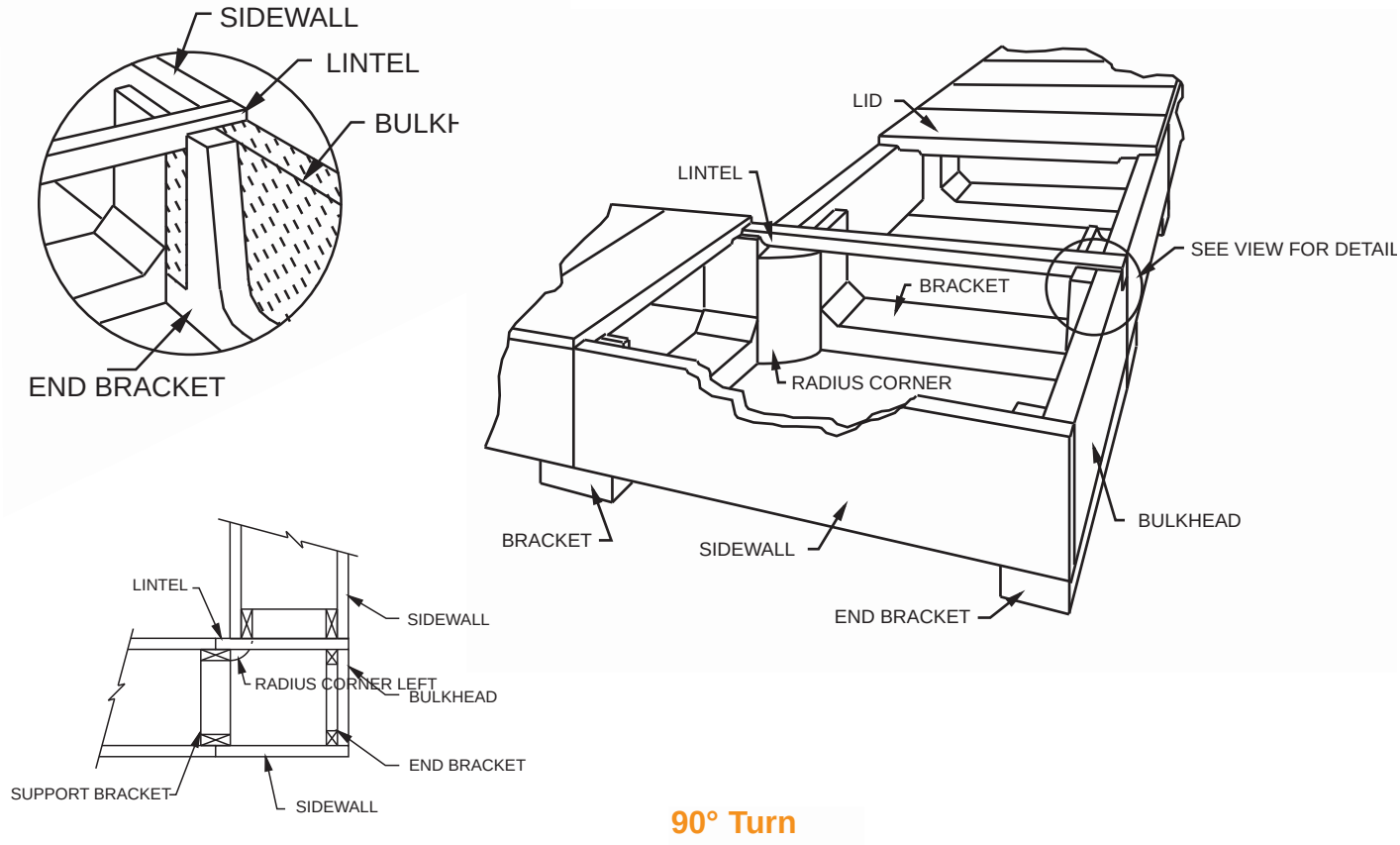
Cross



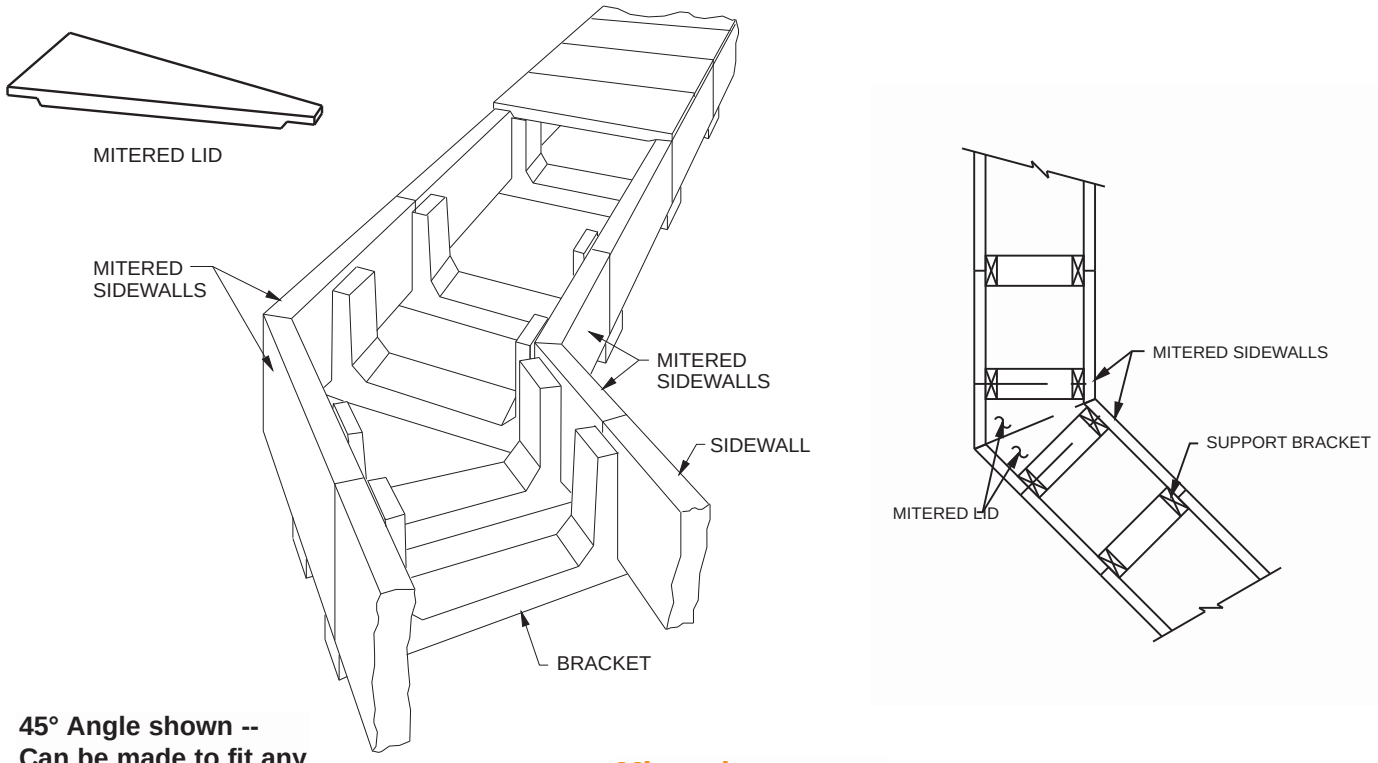


Reducer





90° Turn

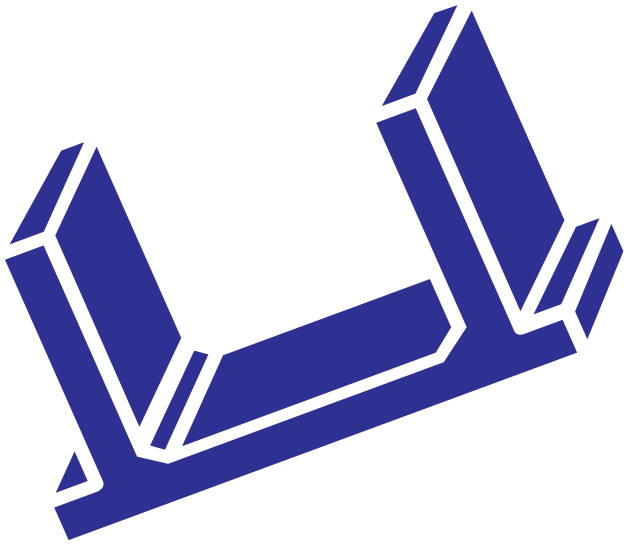


45° Angle shown -- Can be made to fit any angle

Mitered turn

ACCESSORIES

• Dividers, Unistrut, Weld Plates - 39
• Cable Clips, Innerduct, Guard Posts - 40
Cable Management- 41
• Power Accessories - 42
• Tie Plates - 43
• Sealant, Corner Guards, Drain Holes - 44
• Cable Risers - 45
• Cross Drains - 46
• Lifting Tools - 47



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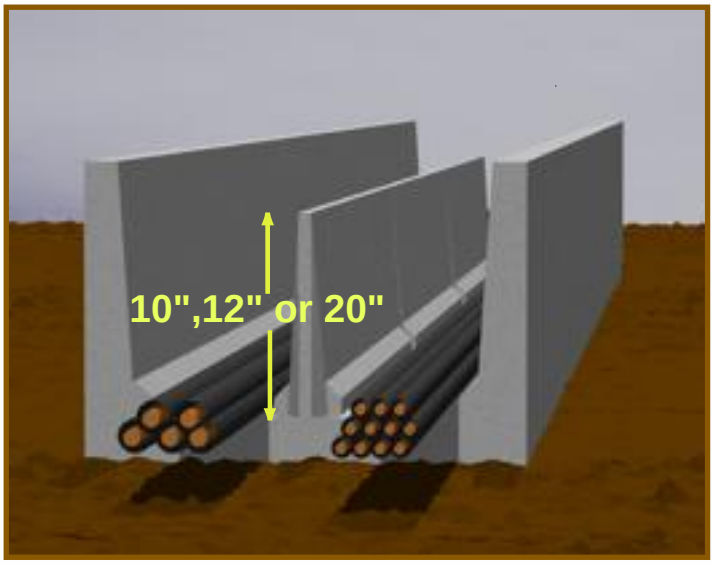
Dividers

Our improved free-standing divider can be used to separate a trench for cable isolation. This divider has an inverted tee-shaped cross-section and is made from 5,000 psi steel reinforced concrete. A full length 4" wide foot provides stability and permits the divider to stand up if field cutting is required to accomodate unforseen layout changes.

The standard divider is 5'-0" long and comes in three heights. The **D10-60** is 10" tall, the **D12-60** is 12" tall and the **D20-60** is 20" tall.

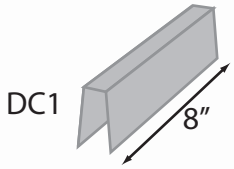


Shorter length dividers can be provided by changing 60 to the number of inches desired.

Examples: D12-42
D20-49

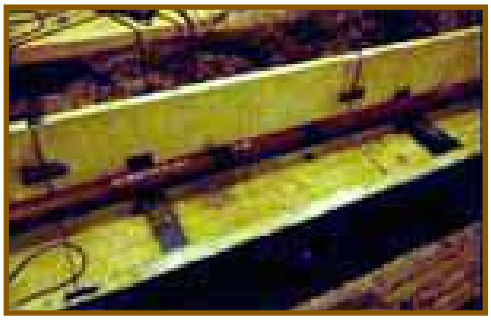
Pregalvanized steel clips are available to tie the D12 & D20 dividers together for improved stability.

Recommended for the D20 dividers.



Weld Plates

Weld plates can be cast into the trench walls or bases to attach supports for pipes or to connect the ends of trench bases.



Unistrut

Trenwa can embed unistrut channels in the walls or bases of its trenches so that cable trays or other supports can be mounted in the trench.

Cable Clips

Stainless steel clips can be provided to hold grounding cables at the top of the trench wall for any of our trench systems.

GC1's : Component trench bases

GC2's : BM series Multi-Duty trench bases

GC3's : BH series HS20 trench.

All cable clips are shipped separately and are field installed. Custom lengths and styles available.

GROUND CABLE SUPPORT CLIP

Innerduct Hangers

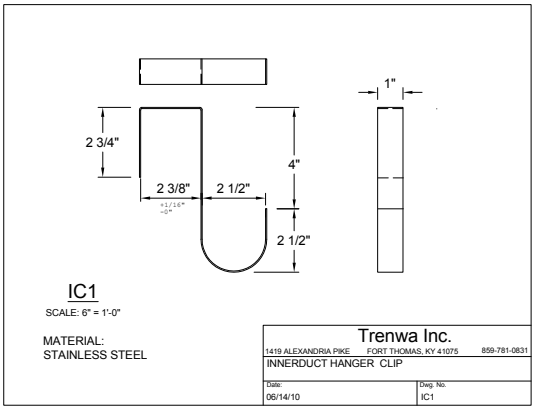
Stainless steel Innerduct Hanger clips can be provided to hold various size Innerduct and other cable or fiberoptics.

IC1's are 4" long

IC2's are 10" long

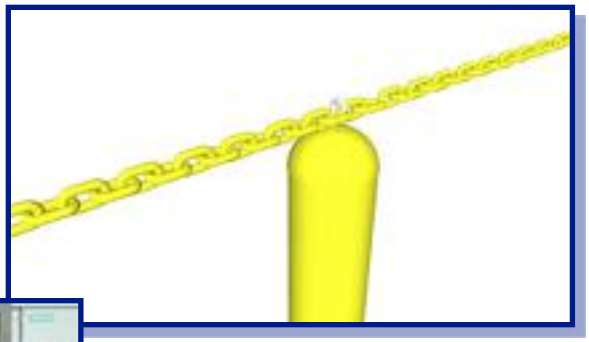
IC3's are 2 1/2" long

Check the CLIPS sections of our **website** for details.



Guard Posts & Chain

To ensure that traffic does not drive over pedestrian rated trench, we can provide guard posts and chain. The posts are 4" diameter yellow HDPE with a cap and J bolt for the chain; part number GPJ-78, 78" length standard. Other length posts are available by changing the last two numbers to the length desired. Chain is yellow and can be easily unhooked for passage; part number YC-125 (125 ft reel). For a guard post without J bolt to be used without chain as a stand alone barrier use part number GP-78.



Check the Guard Post section of our website for details.

Cable Management

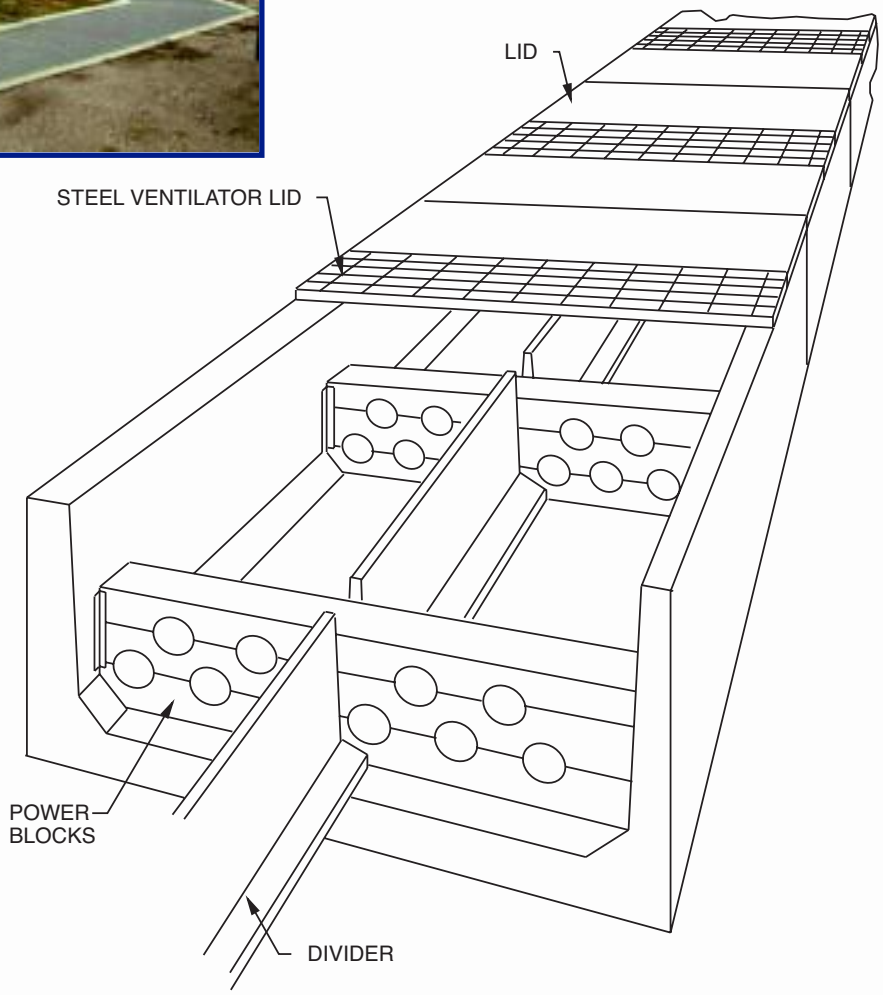
Underground Devices cable management systems is an elegant and flexible method for organizing cables and maximizing the space in your trench. The cable arms allow for separation of the cables and utilizes the space on the trench walls leaving the floor free for access or additional cables.

The cable arms come in a variety of styles and sizes and can be surface mounted with expansion anchors in the field or we can cast **Unistrut** into the side walls which allows you to quickly attach them with bolts saving considerable installation time. See our **website** for more information and product specific catalogs.

UNDERGROUND DEVICES, INC.
UD

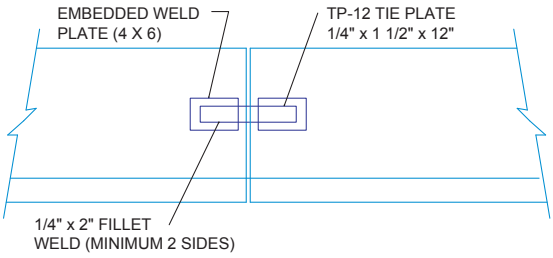
Power Accessories

Several accessories are available for use with power cables to aid in heat dissipation. **Unistrut** channels can be embedded in the trench walls or bases to support cable trays **or** light-weight high density polyethylene (HDPE) **cable support blocks** can be provided to match any cable arrangement. When used with galvanized steel **ventilator lids**, heat is dissipated more effectively from the cables, often allowing the use of smaller cables which can result in significant cost savings.

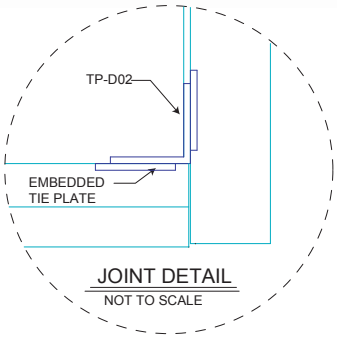


Tie Plates - Welded

In some applications it is desirable to lock the trench bases together to minimize shifting or differential settlement in poor soil conditions or when there is localized, repeated heavy loading. Trenwa can embed weld plates in the sidewall and/or floor of the trench. The trench bases are connected by welding tie plates between them. Expansion joints are recommended every 100 ft.



MECHANICAL CONNECTION

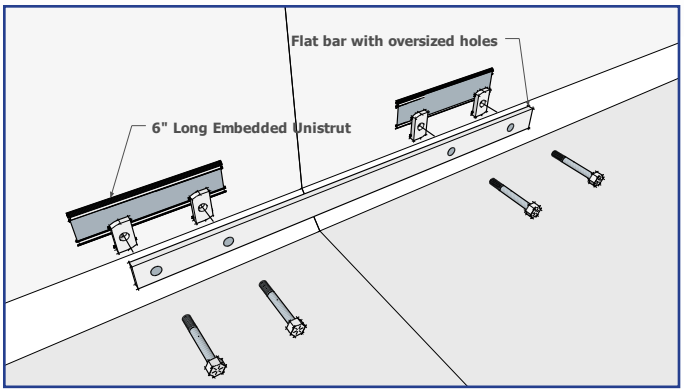


EXPANSION JOINT

Note: weld plates are not supplied on T sections, miters or transitions between sizes.

Tie Plates - Bolted

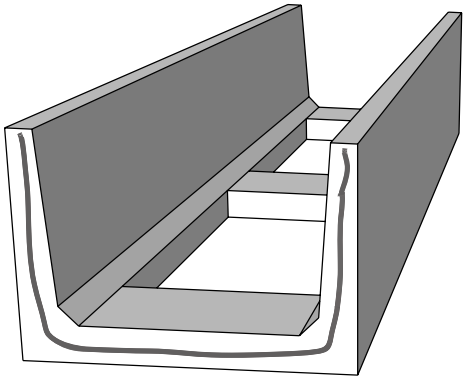
Another method of connecting bases together instead of welding is to use bolted tie plates. These bolted plates are mounted to 6" Unistrut embedded in the bases. The advantage to this method is that no welding in the field is required therefore saving time and money during installation. They will also give a little if thermal expansion and contraction occur which will prevent the bases from cracking.



Note: bolted tie plates are only supplied on straight sections not miters or T's

Sealant

Elastomeric concrete sealants can be applied to the trench bases at the joints to prevent soil infiltration, fill in gaps, and to connect and stabilize the bases. It can also be used to attach end walls.



Corner Guards

For cable applications we will supply our Corner Guards on T's, Crosses, and 90 degree turns to protect cables from abrasion. They typically come partially installed with drive nail anchors to complete the other side.

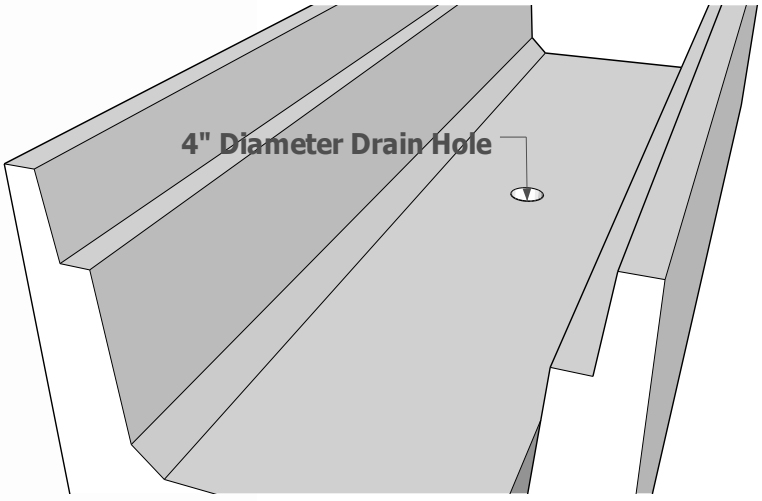
They are available in the following sizes:

CG-09 for trenches 10-12 inches deep
CG-12 for trenches 15-16 inches deep
CG-20 for trenches 24 inches deep

Drain Holes, Openings and Knockouts

For applications where water or foreign fluid removal is a concern 4" drain holes can be cast into the bottoms of solid bottom pedestrian, medium vehicle and road crossing trench bases.

For additional access knockouts and openings can be cast into the trench by design.

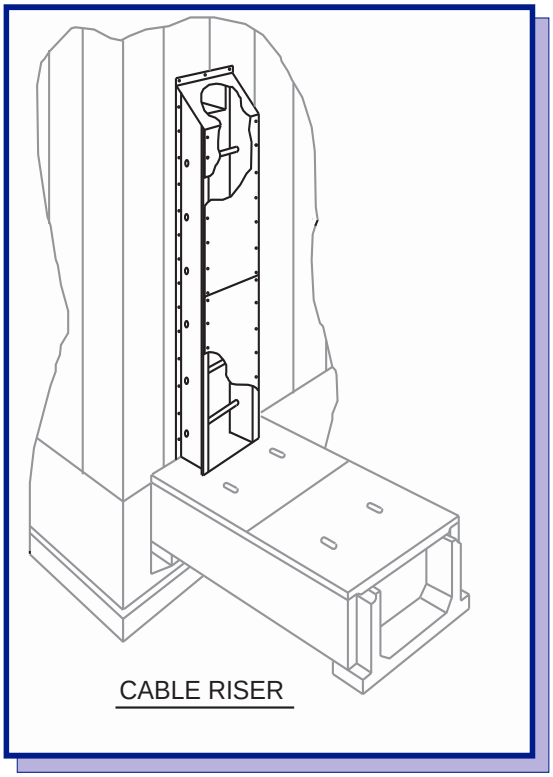


Cable Risers

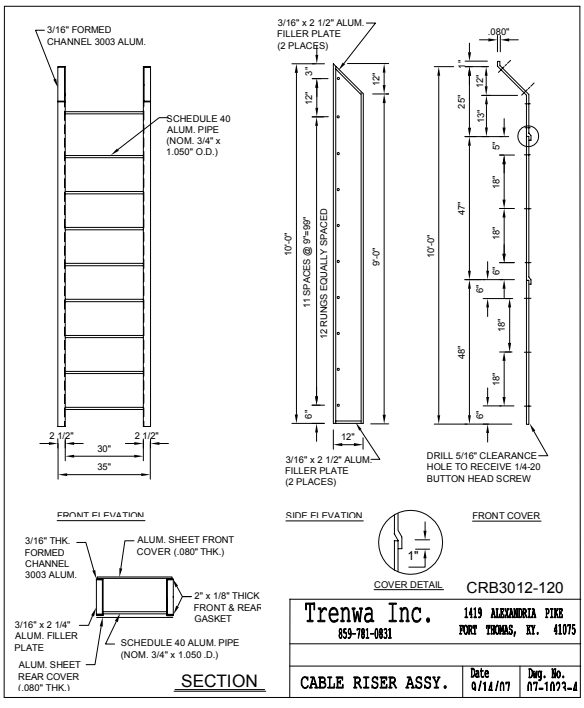
Aluminum cable risers are available in a variety of sizes to carry cables out of a Trenwa trench into a control building. Standard riser depths are 6", 8", 10", and 12" with widths ranging from 12" to 42", typically in 6" increments.

Lengths can also vary from a few feet to over 120". Use part number CRwwdd-ll where ww is width, dd is depth and ll is length. Example CR3208-096. Add a 'B' for back cover; CRB1606-080.

Check the Cable Risers section of our website for more information.



EXAMPLE DRAWING



Cross-Drains

When water flow needs to be directed across the trench to prevent pooling, Cross-Drains can be provided. These set into notches cast into the trench and can be easily removed for access.

They are 12" wide and 5" deep and constructed of 18 gauge stainless steel for long rust free service.

Lifting Tools

Our stainless steel lifting tools are designed to allow safe lifting of our lids without bending over. They are provided on every order with concrete, PMC, steel, or aluminum pedestrian lids and with Fibrelite road crossing lids.

LT Lifting tool - used on concrete pedestrian and PMC pedestrian lids with tool slots to lift them manually.

LTSM Lifting tool - used on all steel and aluminum lids with 1/2" lifting holes to lift them manually.

LTSE Lifting tool - used on all steel road crossing lids with 1/2" holes to lift them with a piece of equipment.

FL7 Lifting tool - used on all Fibrelite lids. Requires 2 people to lift.

Lifting Chains

For lifting and setting our trench bases and lids we can supply 4 leg lifting chain sets.

4LC9K

Standard 4- Leg Lifting Chain set

- up to 9,000 lbs
- BM and BH bases
- LM and LHC lids
- 12 ft length.
- Crosby 320N hook 1 1/2 TON
- Hook opening width 7/8”
- Certified

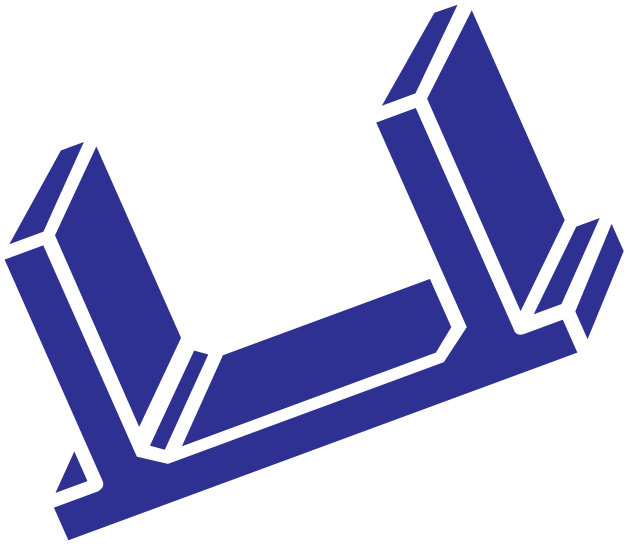
4LC31K

Heavy Duty 4- Leg Lifting Chain set

- up to 30,000 lbs
- BH XL bases
- LHC lids
- 12 ft length.
- Crosby 320N hook 5 TON
- Hook opening width 1 3/8”
- Certified

Installation & Specifications

• One Piece Multi-Duty, HS20, XL - 50
• Component trench- 54
• Specifications - 55



Trenwa.

www.trenwa.com

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Ft. Thomas, KY 41075

phone: 859-781-0831
fax: 859-781-1085
e-mail: info@trenwa.com

One Piece Multi-Duty, HS20 & XL

Unloading

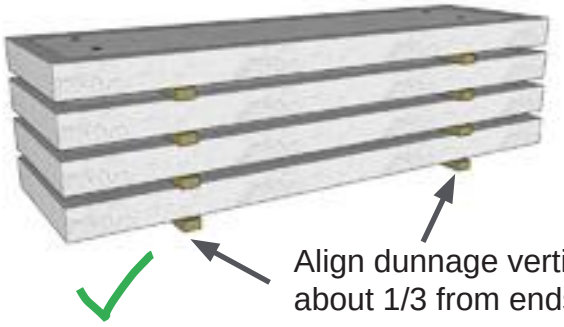
Except for LTL shipments our product will arrive on a flat bed semi-trailer. Off loading is best accomplished with a forklift of sufficient capacity and reach and equipped with 8 ft. forks.

Storage

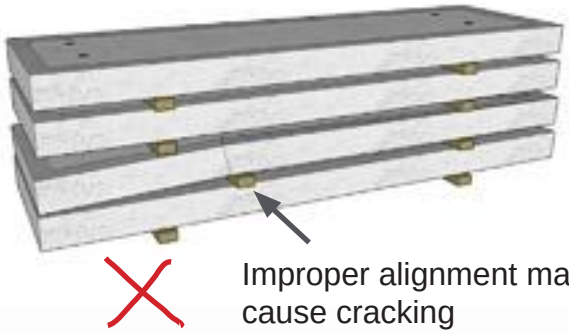
To reduce the risk of damage, care should be taken in storing trench material.

- All material should be stored on level, firm ground.
- Dunnage should be placed ***vertically in-line with underlying dunnage*** as additional pieces are stacked.
- Dunnage should be placed perpendicular under all bases and covers.
- Do not stack products higher than they were upon arrival.
- Do not store other materials on top of trench or lids.
- Do not store trench where it may be damaged by traffic or equipment.
- Ensure adequate clearance for forks to avoid chipping.

Perpendicular dunnage



Align dunnage vertically about 1/3 from ends



Improper alignment may cause cracking

Preparation & Excavation

1. The contractor should review the drawings and installation instructions before attempting to install the trench. For traffic rated trench verify that the soil is adequate to support the weight of the trench and any superimposed loads. Establish a starting location, typically at one end of the trench or at a fixed point such as a building or manhole.

2. Establish a survey of the trench layout and stake critical turning points, tee's etc.

3. Excavate trench to a the width of the trench + 12" and to a sub-grade elevation 4"-6" below the bottom of the trench (8"-12" if a drain tile will be placed under the trench). Cut walls as vertical as possible. Deep excavations may require shoring or protection from cave-ins.

4. Drain tiles are recommened to remove water and prevent washout of the sub base. If a drain tile is used, backfill with crushed stone around the drain tile to within 3" of the trench bottom. A compactible material such as Dense Graded Aggregate should then be placed, leveled and compacted with a vibratory plate compactor to the bottom of trench elevation Ensure that the stabilized base is 4-6" wider than the trench to prevent washout from rainwater. To provide a uniform bearing surface for the trench base, top off with 1/4-1/2" of sand and rake smooth.

Setting Trench Bases

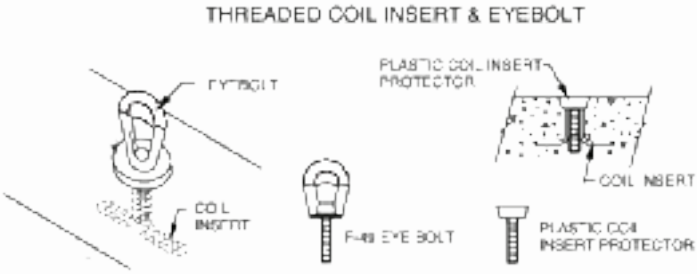
5. All trench bases and lids should be lifted with the coil , A anchors, or swift lift inserts cast into them. If coil inserts are provided, use a spreader beam lifting device (user provided) so that a vertical pull is applied to the coil eye-bolts. If recessed anchors or swift lift inserts are provided, use cable slings that are long enough to maintain a 30°-

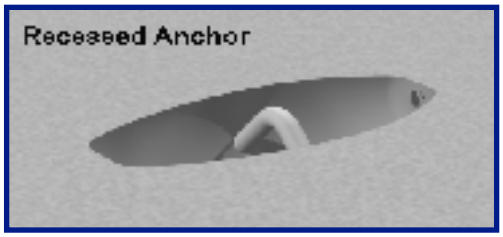
LIFTING DEVICES

Trenwa uses different lifting devices, depending on the project size and type of trench piece.

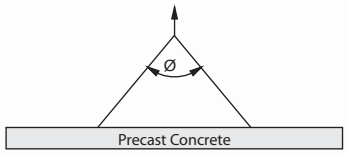
	Threaded inserts	Recessed anchors	Swift lifts
BM bases		x	
LM lids	x		
BH bases		x	o
LHC lids	x		o

Swift lifts are optional, cost extra and require a special lifting tool.





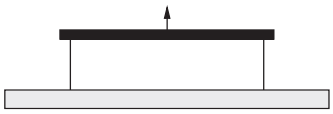
Recessed anchors or Swift Lifts



Use Cable Slings

Coil Inserts

Use Spreader Beam



Precast Concrete

USE A CROSBY 320N HOOK
RATED 1 1/2 TO 5T DEPENDING ON WEIGHT OF PRODUCT

60° angle between the cables at the hook point.

6. Begin the trench base installation at a fixed point such as a building, equipment foundation, manhole etc. then place subsequent base units in sequence per Trenwa's layout drawings. Set the elevation and alignment of the trench bases with an electronic level and a transit. An off set string line can be used to assist in keeping the trench aligned.

7. Trenwa's standard 10'-0" trench bases and lids are made 1/8" less than full length. This helps to minimize growth in overall length between fixed points in the trench layout. Place the trench bases as close together as possible to minimize gapping between trench bases. Note any bumps/burrs or flashing on the ends and remove if present. If necessary, a chain winch or come-a-long can be attached to lifting points of the trench base already set and the trench base being set to assist with pulling the trench bases together. This is done while the trench base being

set is still supported by the piece of equipment setting it.

8. We recommend a bead of standard elastomeric concrete adhesive (optional) be applied to the end of one trench base before setting the next and butt them together to provide a bond and silt seal. Alternatively, roofing paper/geofabric or similar material may be placed over vertical joints between trench bases to minimize silt infiltration.

9. After setting two to three bases it is important to "continually" check the distance between the last trench base set and the next turning point, tee, etc. If an adjustment needs to be made in the trench base spacing it can be done over several trench bases to minimize the severity of the adjustment.

10. If it is decided that field modification is necessary to match the trench layout, please contact Trenwa to discuss the best options. Sometimes it is better to have Trenwa make a new trench base (and lid if necessary).

Sealants and Mechanical Connections

11. We recommend the application of elastomeric concrete sealant (optional) on the ends of the trench bases applied before they are set and butted together (step 8 above). This helps prevent silt intrusion at the joints and helps stabilize the bases. If sealant is included as part of our design, follow the application instructions on the project drawings.

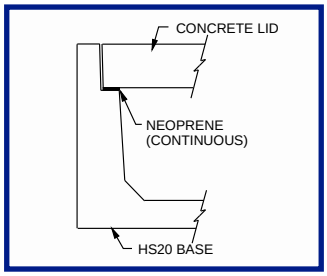
When installing a trench system that requires water-resistant joints, follow the manufacturers directions for applying the sealant. Some installations require a joint sealant material that is applied to the exterior of the base units overlapping the joint.

12. If a mechanical connection is specified to join the base units, weld the Trenwa supplied steel tie-plate to the weld plates which are embedded in the end of the walls of adjacent bases. Do this after the bases have been securely set and pulled together. Weld or bolt the tie-plates prior to removing the chain winch or come-a–long. All exposed weld plates should be treated with a rust inhibitor coating after welding is completed.

Backfilling

13. Backfilling should be done with sand or gravel and firmly compacted to the compaction specified in **Step 3.** The backfill can be topped off with excavated soils. A flowable grout may be used as an alternative to a granular backfill material so that it fills any voids between the bases and the backfill material.

Setting Lids



14. Trench lids can be installed after all cable, piping, insulation, testing, etc. has been completed. Inserts are cast in the LM and LHC road crossing lids so that lifting devices can be attached. Care must be exercised to maintain an even strain on each lifting insert during lifting and setting of the lids. [Review the instructions for handling the base units in **Step 5**].

15. The lids should match the trench base and not overlap the joints between the trench bases. Overlapping the joints can create an uneven bearing surface that could cause damage to the lids.

16. For LHC trenches with concrete lids, Trenwa provides a neoprene gasket for the lids to bear on to minimize movement and to take up any irregularities in the mating surfaces. See next section.

17. Chipping of LM, LHC Concrete lids can occur when stones and other hard debris are in the area, particularly during periods of construction. Tires can cause this debris to impact the lid and chip the edge or surface of the concrete lid. Care should be exercised to keep the area clean or protect the lids during these periods. Snowplows can also cause damage to the lids or impact channels. The area should be marked and snowplow operators should be made

aware and use caution when clearing the trench. The use of salts and other corrosive deicers is not recommended since they can cause the impact channels to rust prematurely and damage the surface of the concrete.

Road Crossing Concrete – LHC series lids

• Prior to setting the trench lids, clean off the lid bearing surface and place the rubber neoprene pad the full length of the lid bearing surface on each side of the trench base. The neoprene pad has adhesive on one side to keep it in place, so it is important that the bearing surface is clean and free of debris before placing the neoprene pad. Do not pull or push the trench lid into position. This will damage the neoprene pad. The neoprene pad is only used on road crossing trench with concrete lids.

• Each road crossing concrete lid has four (4) coil inserts cast into them. Remove the black CP1 coil protecotors using the CPT coil removal tool. If the CP1 is stuck spray WD-40 around the edge. We have provided EB ¾ coil eye bolts that screw into the inserts. The shoulder of the eye bolts should be flush with the top of the lid and the eye bolt should be parallel with the length of the lid. Use cable slings that are long enough to maintain a 60° angle between the cables at the hook point. After connecting to the EB ¾ eye bolts apply initial tension to the cables and anchors to check the security of the lift. Care must be exercised to maintain an even strain on each lifting insert during lifting and setting of the lids. After setting the lids replace the CP1's after coating the threads with standard automotive grease to make future removal easier.

TIER 8 Concrete - LM series lids

• Each LM concrete lid has four (4) NC-13 inserts cast into them. We have provided EB ½ NC-13 eye bolts that screw into the inserts. The shoulder of the eye bolt should be flush with the top of the lid and the eye bolt should be parallel with the length of the lid. Use cable slings that are long enough to maintain a 60° angle between the cables at the hook point. After connecting to the EB ½ eye bolts apply initial tension to the cables and anchors to check the security of the lift. Care must be exercised to maintain an even strain on each lifting insert during lifting and setting of the lids.

Steel & Aluminum lids – LHS, LPS, LPA, LMS, LMA series lids

• Steel and Aluminum lids are generally light enough to be installed by hand using the LTSM lifting tool or with light equipment using the LTSE lifting tool.

Pedestrian Concrete - LP, LPP series lids

• Pedestrian lids are generally light enough to be installed by hand using the LT lifting tool.

Fibrelite – LPF, LMF, LHF series lids

• Fibrelite lids are generally light enough to be installed by hand using the FL7 lifting tool.

Vent Lids – VHS, VHC, VM, VP series lids

• The galvanized steel bar grating vent lids are lifted by hand, strapping around the lid or by hooking onto the cross bars of the lid. If a strap is used wrap the strap around the length of the lid so the strap can be easily removed after the lid is in place.

Protection of Trenwa System After Installation

1. The trench lids (especially the concrete road crossing lids) should be protected from construction traffic to prevent damage to them. Gravel or other hard debris can get lodged in the joint between the ends of the lids and along the edge of the lids. If vehicles cross the trench and force the gravel or hard debris into the joint it can cause the concrete to chip or spall off. Care should be taken to keep the surface of the trench lids and the joints free of gravel or hard debris.

2. Tool carts, wheelbarrows, etc. should not be rolled over the pedestrian lids.They are designed for foot traffic only.

3. If pedestrian lids are removed from the trench they must not be dropped on hard surfaces and should be stored no more than 10 to a stack.

Component Trench

Unloading & Storage

To reduce the risk of damage, care should be taken in unloading and storing pallets of trench material. Pallets should be stored on level ground. Dunnage should be placed under road crossing bases and covers. In addition, the dunnage should be placed vertically in-line with underlying dunnage as additional pieces are placed on each stack of material.

Preparation & Excavation

1. The contractor should review the drawings and installation instructions before attempting to install the trench. Establish a starting location, typically at one end of the trench or at a fixed point such as a building or manhole.

2. Excavate trench to a minimum width for the specified size of trench and to a subgrade elevation 2"-3" below the bottom of the trench (8"-12" if a drain tile will be placed under the trench). Cut walls as vertical as possible. Deep excavations may require shoring or protection from cave-ins.

3. If a drain tile is used, backfill with crushed stone around the drain tile to within 3" of the trench bottom. A compactible material such as Dense Graded Aggregate should then be placed, leveled and compacted to the bottom of trench elevation. Top off with 1" of sand and rake smooth.

Setting Trench Brackets & Sidewalls

4. Support brackets should be set on maximum 5’-0" centers (or less, as required by the layout). After setting each bracket to the required spacing, the bracket should be checked for level and alignment. A transit or string line should be used to maintain horizontal alignment of the brackets. At entrances to hand holes or buildings set trench support brackets on footings provided in foundation construction.

5. After setting the support brackets, place sidewalls on both sides of the support brackets (with the smooth side of the sidewall facing outside) so that they span from the center of one bracket leg to the center of the next bracket leg. Backfill should be placed against the sidewalls as soon as is reasonably possible to hold the sidewalls in place.

6. A minimum 4" bedding of sand should then be placed in the trench to form a level bottom, just covering the support brackets. If required, trench dividers or cable support blocks should be placed in the trench at this time.

Backfilling

7. Backfilling should be done with sand in layers and firmly compacted. Be careful not to over-compact as this can damage the sidewalls The backfill can be topped off with excavated soils.

Setting Lids

8. Trench lids can be installed after all cable has been placed in trench. **Use care in handling and placing pedestrian covers. The impact from dropping a cover can damage it.**

9. The lid installation sequence should start at a fixed point (e.g. building, manhole, etc.). The lids should match the joint spacing of the sidewalls. Overlapping the joints can create an uneven bearing surface that could damage the lids.

GENERAL SPECIFICATIONS

1. SCOPE

1.1 Provide a precast concrete underground utility trench system (for electrical cabling or mechanical piping) as manufactured by Trenwa, Inc. (Patent #2862367); 1419 Alexandria Pike; Fort Thomas, KY 41075. The manufacturer must have experience in design and fabrication of similar products and with facilities for fabricating them with the quality specified herein and without delay to the specified schedule.

2. DESIGN

2.1 The precast components shall be designed to conform to requirements stated in ASTM C857-19 "Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures, ASTM C858-07 "Specifications for Underground Precast Concrete Utility Structures" and ACI-318 "Building Code Requirements for Structural Concrete and Commentary on Building Code Requirements in Structural Concrete".

3. MATERIALS

3.1 Cement shall conform to ASTM C150/C150M, "Specification for Portland Cement".
3.2 Fine and coarse aggregates shall conform to ASTM C33/C33M, "Specification for Concrete Aggregates".
3.3 Chemical Admixtures shall conform to ASTM C260/C260M "Air-Entraining Admixtures for Concrete and ASTM C494/C494M "Chemical Admixtures for Concrete".
3.4 Steel reinforcing bars shall conform to ASTM A615 "Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement".
3.5 Steel reinforcing wires shall conform to ASTM A496 "Specification for Steel Wire, Deformed, for Concrete Reinforcement".
3.6 Steel reinforcing welded wire mats shall conform to A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete".
3.7 Embedded steel shapes and plates shall conform to ASTM A36/C36M "Standard Specification for Carbon Structural Steel".

4. CONCRETE

4.1 Batching, mixing and placing of concrete shall conform to ACI A301 "Specifications for Structural Concrete" and ASTM C94/C94M "Specification for Ready-Mix Concrete" and ACI 304 "Guide for Measuring, Mixing, Transporting and Placing Concrete". All materials shall be pre-weighed prior to mixing.
4.2 Concrete shall obtain a minimum compressive strength of 5,000 psi at 28 days of age.
4.3 Concrete shall contain 6% entrained air by volume (plus or minus 1%).

5. REINFORCEMENT

5.1 Fabrication and placement shall conform to ACI-318 "Building Code Requirements for Structural Concrete".

6. SUBMITTALS

6.1 Engineering layout drawings will be provided for approval and to assist field installation. The drawings will include dimensions, identification and location of each trench part in the trench layout along with a bill of material.

ONE PIECE TRENCH SPECIFICATIONS

1. GENERAL

1.1 The trench system will consist of precast concrete U-shaped bases and removable covers, manufactured by Trenwa, and installed in earth trenches with covers extending above the surrounding crushed rock surface.

1.2 The trench system will be designed for Pedestrian traffic or (TIER 5)(TIER 8)(TIER 15) for pickup trucks and light duty utility vehicles.

1.3 The trench shall have an interior clear cross sectional area of (10")(20")(24")(30")(40")(48") wide x (12") (15")(24") deep.

1.4 The precast U-shaped bases for the trench will be furnished in standard 10 foot lengths, except that special lengths will be furnished where required by the layout on the drawings. The U-shaped bases will (have openings in the bottom) (be solid bottom). The trench shall not require cross braces to support the walls during backfilling.

1.5 The Pedestrian rated precast trench covers will be furnished in lightweight sections, sized to permit removal by a single person. The covers will have slots for lifting tools and will be made of (Fiber and Steel Reinforced Concrete) (Polymer Concrete) (Galvanize Checker Plate)(Aluminum Checker Plate)(FRP Monolithic Composite).

1.6 The precast trench system shall be designed and constructed so that neither the covers, nor temporary side-to-sides braces need to be installed to facilitate installation or subsequent machine backfilling and tamping.

ROAD CROSSING TRENCH SPECIFICATIONS

1. GENERAL

1.1 The trench system will consist of precast concrete U-shaped bases and removable covers, manufactured by Trenwa, and installed in earth trenches with covers extending above the surrounding crushed rock surface.

1.2 All sections of trench designated for road crossing use will be designed to carry HS20, 32,000 pound axle loading and will be furnished in standard 10 foot lengths, except that special lengths will be furnished where required by the layout on the drawings.

1.3 The lids for the road crossing trench will be made of (FRP Monolithic Composite)(Steel Reinforced Concrete) (Hot-dipped Galvanized Steel) designed to carry HS20, 32,000 pound axle loading.

1.4 The interior clear cross sectional area for the road crossing bases will be at least (10")(20")(24")(30")(36")(40")(48")(60") (72")(84")(96") wide x (12")(16")(24")(36")(48")(60")(72") deep.

1.5 The precast trench system shall be designed and constructed so that supplemental support such as protection rods or cross supports are not required.

COMPONENT SPECIFICATIONS

1. GENERAL

1.1 The trench system shall consist of precast concrete support brackets, sidewalls and removable covers as manufactured by Trenwa and assembled to form a completely enclosed trench, except with open earth bottom having a 4" bedding of sand.

1.2 The trench system will be designed to support at least 200 pounds per square foot live load for pedestrian traffic.

1.3 The trench shall have an interior clear cross sectional area of (20")(30")(40") wide by (16")(24") deep. The outside dimensions shall be approximately (32")(42")(52") wide x (20")(28") deep overall (including cover).

1.4 The precast sides of the trench system shall be furnished in standard 5 foot lengths, except that special lengths shall be furnished where required by the layout on the drawings. The trench design is such that the sidewalls are held in place by the pressure of the external earth backfill.

1.5 Provide U shaped support brackets at a maximum spacing of 5 feet center to center with rectangular sidewall panels spanning the brackets .

1.6 The precast trench covers will be furnished in lightweight sections, sized to permit removal by a single person. The covers will have slots for lifting tools and will be made of (fiber and steel reinforced concrete)(polymer concrete).

-END-