



PRO-BRACE HYDRAULIC FRAME INFORMATION PACKET



THE LEADING PRODUCER & DISTRIBUTOR OF TRENCH SHIELDING & SHORING EQUIPMENT SINCE 1995

Pro-Tec Equipment Pro-Brace Hydraulic Frame

What is the Pro-Brace Hydraulic Frame?

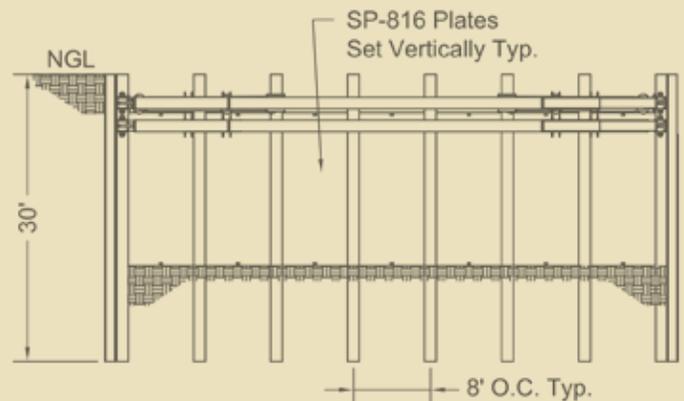
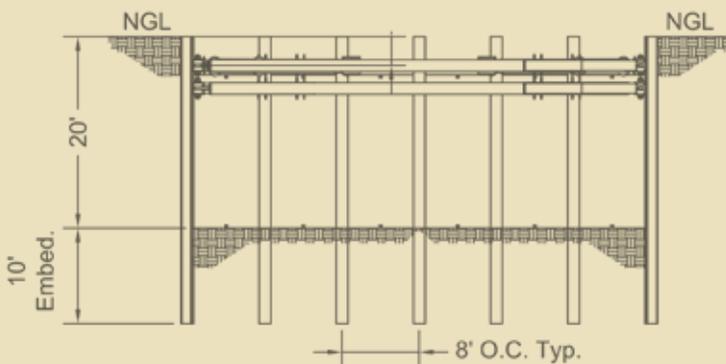
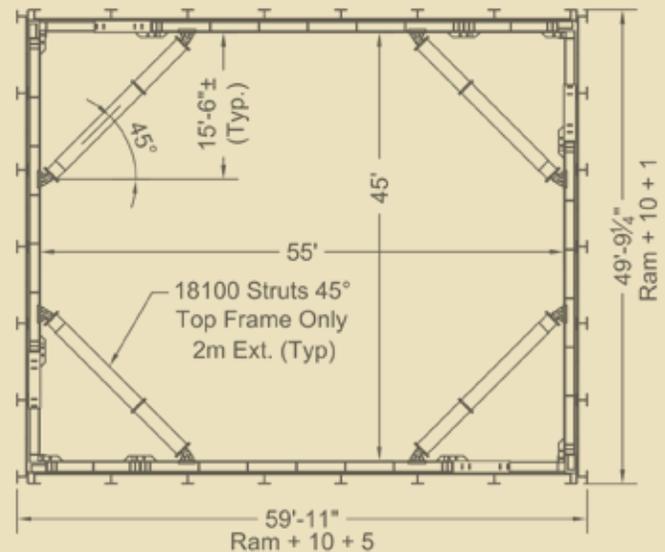
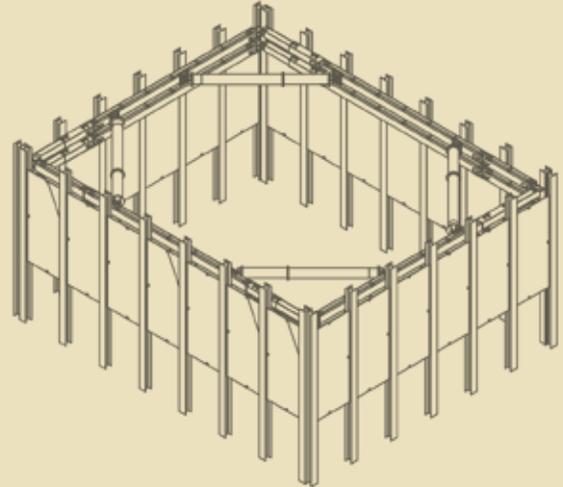
The Pro-Brace Hydraulic Frame is designed and engineered to enable users to save time and money during the installation and removal process, when compared to traditional cut and weld frame projects.

Consisting of an enclosed hydraulic ram and static extensions, the Pro-Brace Hydraulic Frame is able to provide safe working areas in excavations from 9'9" to 75'5" in length and width.* In many cases, due to jobsite conditions, the clearspan capabilities of the system are limited and require a center or corner strut. With the inclusion of hydraulic struts, the maximum width of the excavation will be determined by an engineer while the length of the system is virtually limitless.

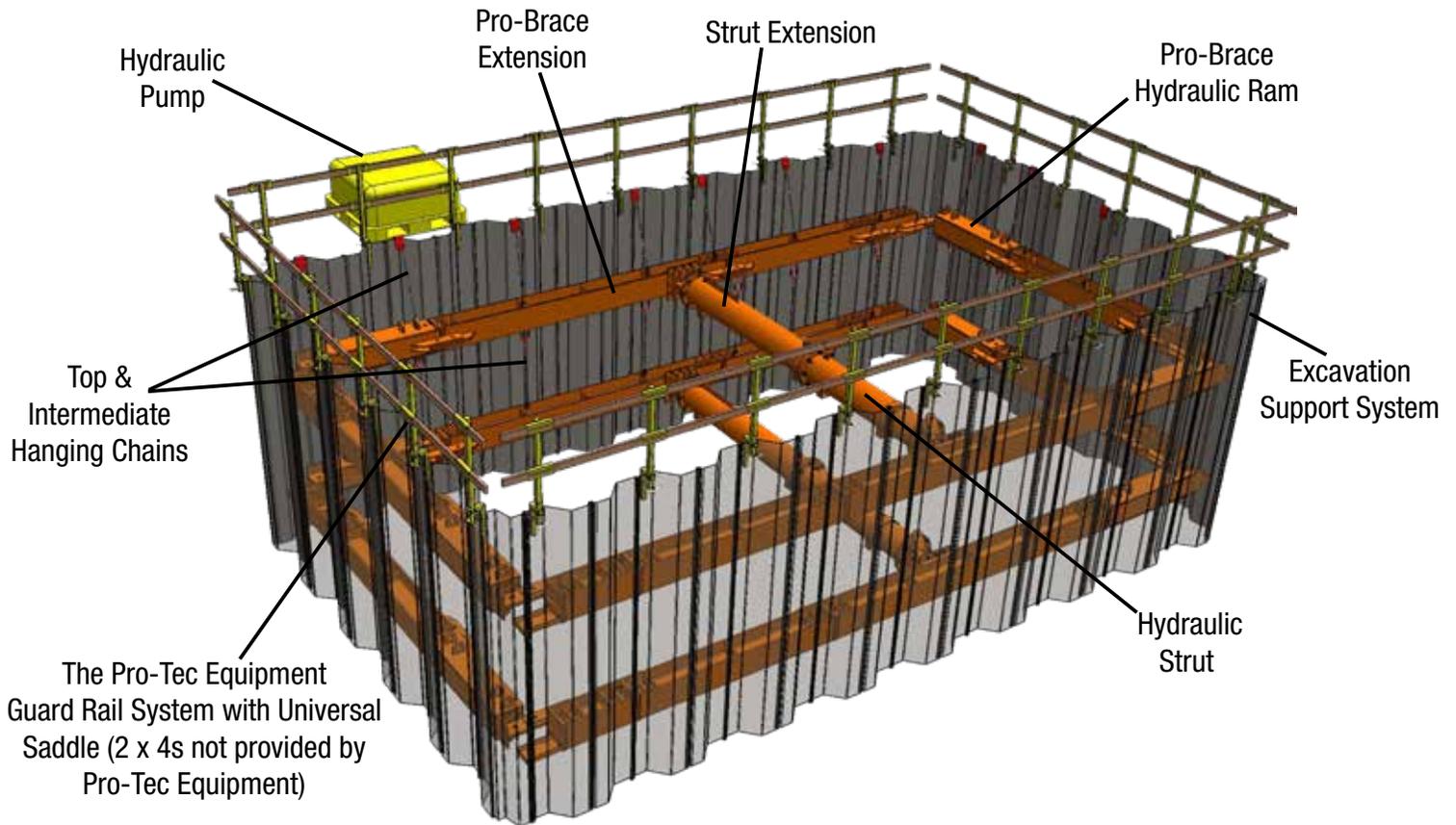
When to use the Pro-Brace?

Excellent for projects such as; bridge footings, tank installations, Cast-In-Place projects and a myriad of other large excavations projects, the Pro-Tec Equipment Pro-Brace Hydraulic Frame has an optimal working depth from 12' to 30'.

With the overall capacity of the system able to achieve depths greater than 30'!



*Site-specific engineering is required on all Pro-Brace projects. A Registered Professional Engineer will determine the number of braces, spacing and allowable system depth, based upon soil and jobsite conditions.



THE PRO-BRACE HYDRAULIC RAM

A 6" aluminum dual-acting cylinder encased in steel box tubing, the ram provides an operating range of 9'8" (2.9m) to 13' (3.9m). The adjustability of the Pro-Brace enables a variety of excavation shapes to be safely shored.

THE HYDRAULIC STRUT

The Hydraulic Strut (available in multiple capacities), allows the complete system to achieve larger standard and custom sized projects.

TOP & INTERMEDIATE HANGING CHAINS

The Hanging Chains act as a fail-safe if the system were to lose pressure and the Intermediate Chain are used for projects requiring multiple levels of rams.*

THE PRO-TEC EQUIPMENT GUARD RAIL SYSTEM

Serving as an extra precautionary measure, providing temporary railing around excavations and trenches.

THE PRO-BRACE EXTENSION

Paired with the Pro-Brace Hydraulic Ram, the extension is a static component that allows for an array of lengths. Available lengths include:

- 3'3" (1m)
- 4'11" (1.5m)
- 9'10" (3m)
- 16'4" (5m)
- 22'11" (7m)
- 32'9" (10m)

THE STRUT EXTENSION

Designed to be used in conjunction with the Hydraulic Strut, the Strut Extension provides extra length, when needed.

HYDRAULIC PUMP

A gas powered, dual-acting pump capable of producing 2,500 psi in both directions. The Hydraulic Pump includes 30' long hoses with quick disconnect sockets.

EXCAVATION SUPPORT SYSTEM

The Pro-Brace is designed to use variety of approved shoring components (sheet pile, beam and plate), increasing the overall usability.

GENERAL INSTALLATION INSTRUCTIONS

INSTALLATION

General Installation Steps

These steps are a guideline. Every project is going to differ from the last and may require a different way to install.



Dig initial pilot cut (2-3') and stage one leg of the Pro-Brace Hydraulic Rams. If using multiple levels of rams, they may be stacked upon each other to speed up installation time.*



Assemble initial ram and extensions. If using multiple levels of rams, assemble the rams and extensions and stack on top.*



With top level assembled, begin placement of excavation support systems.



With all supports installed, connect the top level of the Pro-Brace to the bracing supports with Hanging Chains and pressurize system.



If using multiple levels, excavate to next ram spacing and pressurize system.* Repeat until all rings are installed and pressurized.



With all rams in place, excavate down to project depth.*

HYDRAULIC PUMP SPECS



Unit Specs

- Fork lift pockets and top crane lifting lug
- Removable five sided expanded metal cage
- Double acting hydraulic control valve with two quick-disconnect ISO Series A plugs
- 2500 psi working pressure, both directions
- Pressure gage
- Hose and tool storage pocket
- Hydraulic hose assembly - 30' (9.1m) long with two hoses and four quick-disconnect ISO Series A sleeve-lock sockets
- Cylinder shut-off valve tool (T-handled ½" socket)
- Weight – 490 lbs

Engine

- Honda GX 270 - 270cc
- Net power approx. 8 HP (5.9KW)
- Electric and recoil start
- Fuel capacity – 1.4 US gal (5.3L)

Hydraulic Pump

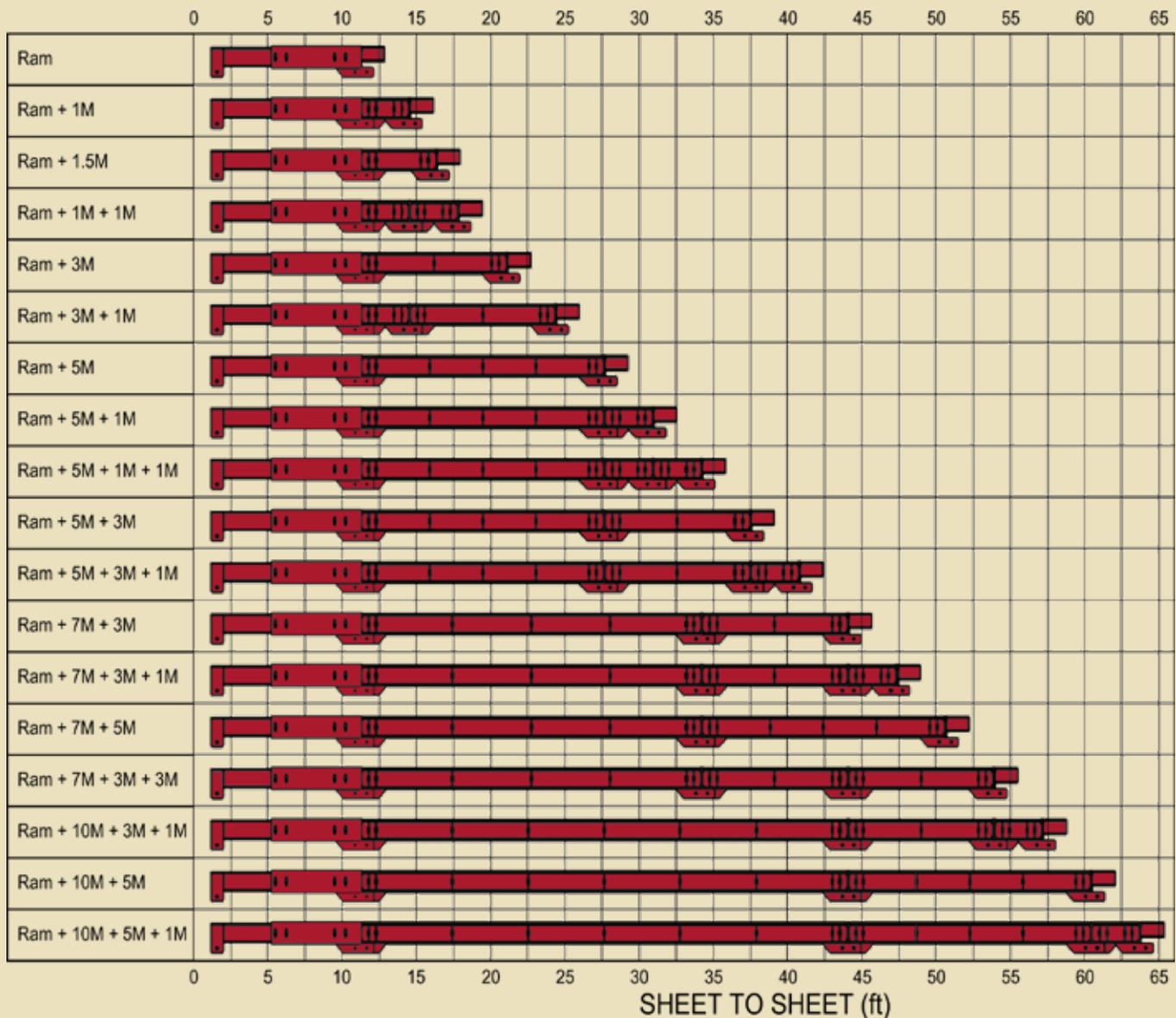
- Pressure – Pro Model 3SPX30G11
- 3,000 psi & 3.0 gpm (11.36 lpm)

Shoring Fluid Tank

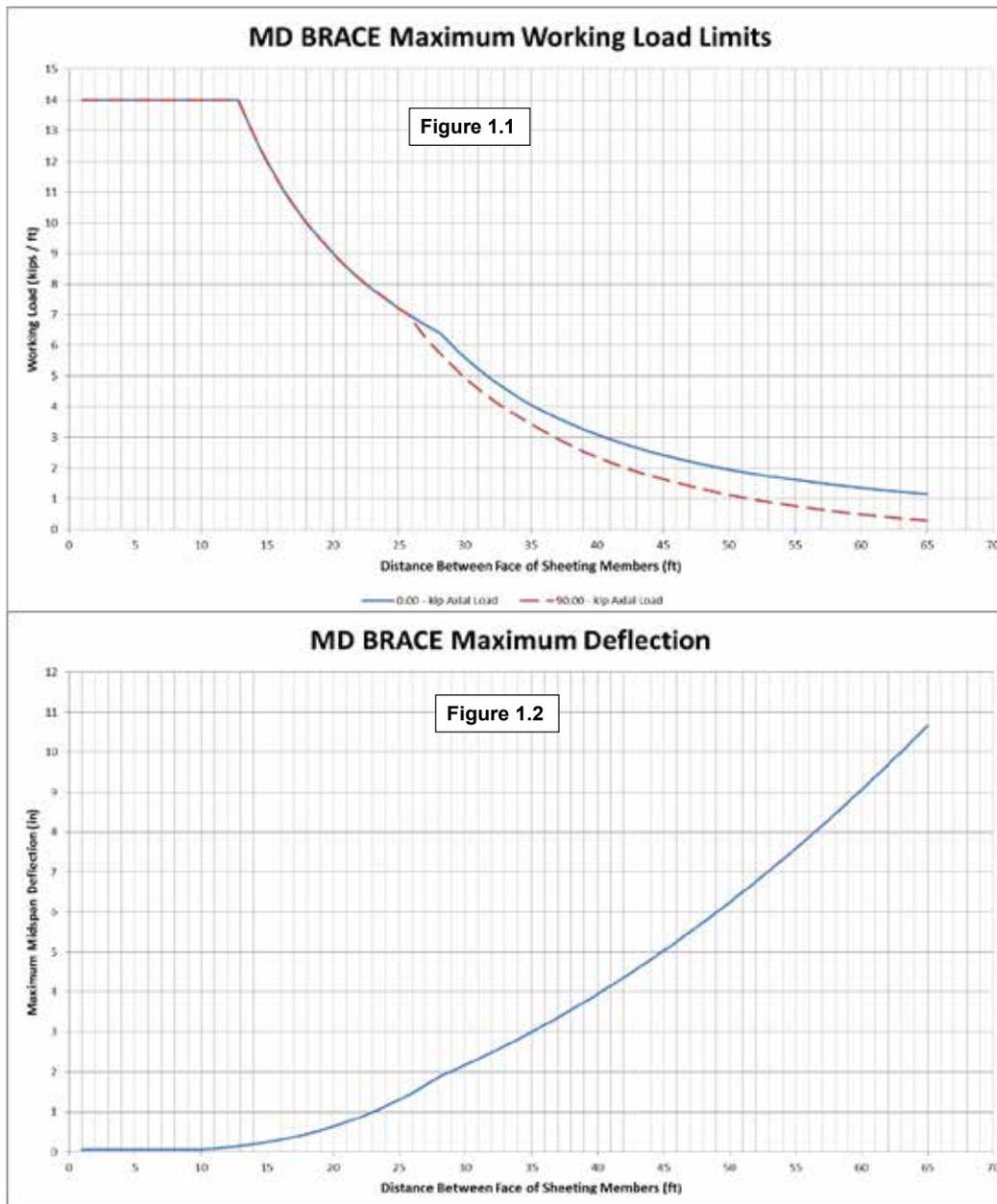
- Tank capacity – 16 gal (60.5L)
- Low shoring fluid engine shut-off switch
- In-tank filter
- Fluid sight gage
- Tank drain valve
- Over flow drain valve and hose
- Fill cap with filter screen
- Large removable clean out cap

PRO-BRACE CONFIGURATIONS

The Pro-Brace Ram, a dual acting 45-Ton capacity hydraulic system and the static extensions, enable connections that allow for a wide range of widths and lengths combinations. The chart below shows examples of ram and extension combinations and the lengths they achieve. Note, the chart shows just a sampling of the combinations, other combinations can be done to provide desired width.



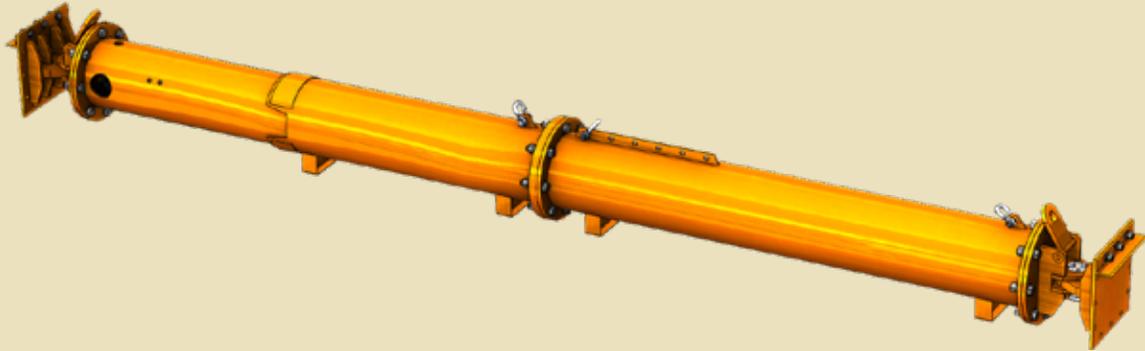
PRO-BRACE WORKING LOADS



1. The maximum working loads for the Pro-Brace are shown in Figure 1.1
2. The maximum shear force for the Pro-Brace shall not exceed 90 kips at any connection point.
3. All sheeting elements shall be driven the full excavation depth prior to the installation of the first Pro-Brace. Soil conditions may require that the sheeting elements are driven beyond the bottom of the excavation for base stability.
4. The maximum mid span deflection under working loads for the Pro-Brace are shown in Figure 1.2.
5. The limiting values are based on the AISC Manual of Steel Construction - 13th Edition (ASD). It is assumed that the compression flange of the extension beam is sufficiently braced to prevent lateral torsional buckling from occurring. Consult the Pro-Tec Equipment engineering department if special bracing is required to prevent rotation of the extension beams.
6. The dead load of the extension beam is ignored due to applied hydraulic pressure and hanging chains.
7. Maximum working loads are based on connections being located in areas of positive bending moments. If a negative bending moment is created by the placement of intermediate struts, the connection shall be analyzed as a pinned connections. Consult with the Pro-Tec Equipment engineering department for further information about analysis.

HYDRAULIC STRUT

center or corner brace on large projects



Available in 100T and 165T models, the Hydraulic Strut, when used in conjunction with the Pro-Brace System, enables large and custom sized projects to be completed with relative ease.

Both strut options contain dual acting hydraulic struts, providing exacting adjustments and swivel end attachments, enabling them to be used as either a center strut or a corner strut.

18-100T Strut & Extensions

18" 100T Capacity Hydraulic Strut

Model	Description	Length	Weight (lb.)
18-100T	100T Strut	9'3" (2.8m) - 13'1" (4m)	2885
18-1	1 Meter Extension	3'3" (1m)	400
18-1.5	1.5 Meter Extension	4'11" (1.5m)	515
18-2	2 Meter Extension	6'6" (2m)	635
18-3	3 Meter Extension	9'10" (3m)	865
18-6	6 Meter Extension	19'8" (6m)	1730

20-165T Strut & Extensions

20" 165T Capacity Hydraulic Strut

Model	Description	Length	Weight (lb.)
20-165T	165T Strut	11'8" (3.56m) - 15'7" (4.76m)	5955
20-.5	.5 Meter Extension	1'7" (.5m)	380
20-1	1 Meter Extension	3'3" (1m)	515
20-2	2 Meter Extension	6'6" (2m)	770
20-4	4 Meter Extension	13'1" (4m)	1315
20-8	8 Meter Extension	26'3" (8m)	2350

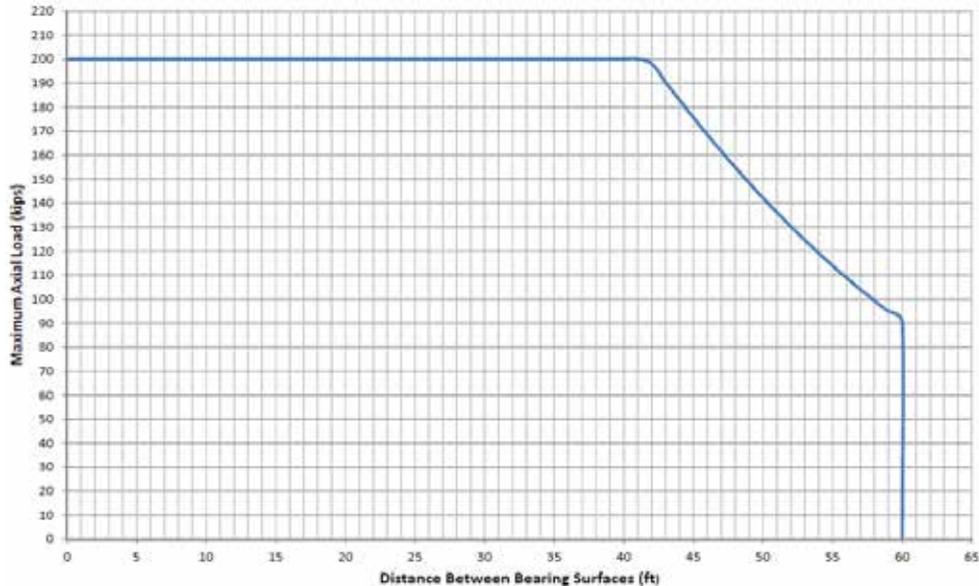
Strut weight includes Swivel attachment

HYDRAULIC STRUT

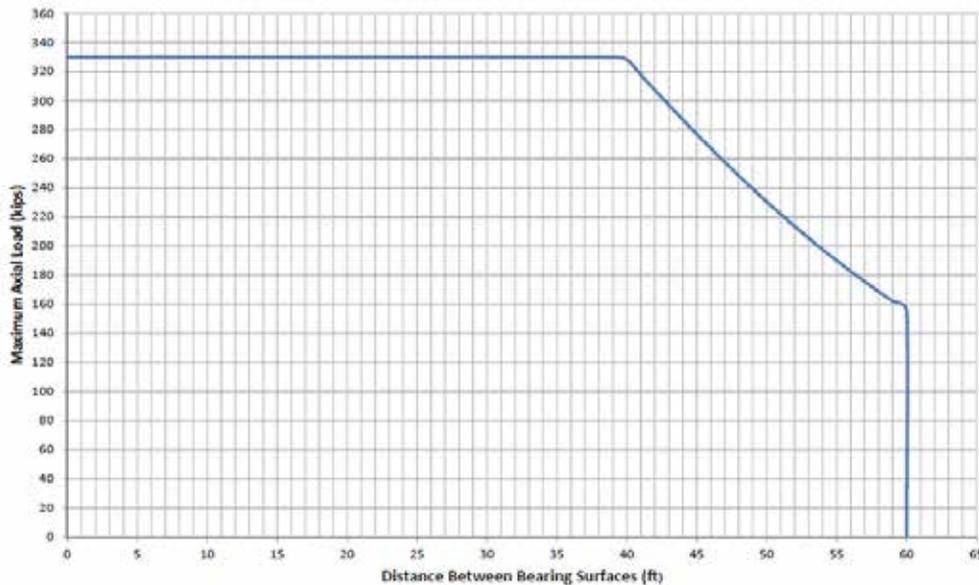


technical data

18-100 Strut Maximum Axial Load



20-165 Strut Maximum Axial Load



The Pro-Tec Equipment 18-100T & 20-165T Strut is intended to provide support for excavations provided that the following conditions and limitations are met:

- All components of the 18-100T & 20-165T Strut shall be install and extracted in accordance with the manufacturer's installation and removal instructions.
- This data is valid for the 18-100T & 20-165T Strut components in structurally sound condition. Any significant damage will void this data, and all manufacturers' warranty. The damaged component shall not be used.
- The 18-100T & 20-165T Strut shall be utilized in accordance with the Maximum Axial Load Chart. (Above)
- The Hydraulic Ram shall be pumped to a minimum of 1000 psi with 18-100T & 20-165T Struts are installed. If the initial pressure can't be maintained for the duration of the project due to soil conditions, another protective system will be required.
- The 18-100T & 20-165T Strut is designed for **axial loads only**. Consult with the Pro-Tec Equipment engineering department for further information about alternate loading configurations.

SHORING CHECKLIST

PRO-TEC EQUIPMENT SHORING CHECKLIST

Contact: _____

Company: _____

Contact Phone: _____

Contact E-Mail: _____

Contractor: _____

Contact: _____

Contact Phone: _____

Contact E-Mail: _____

Project Name: _____

Project City, State: _____

GENERAL INFORMATION

What is being constructed (Pipeline, lift station..) _____

What soils information is available (borelogs, Geotech report, other): _____

Will contractor dewater to base of cut behind shoring _____

If not, what are dewatering plans if any _____

Adjacent building structures _____

Description and distance from shoring _____

Adjacent railroad tracks/how many _____

Distance from centerline of tracks to closest edge of shoring _____

Any utilities crossing shoring _____

Depth, size, angle to shoring _____

Any overhead obstructions _____

Is deflection of shoring a concern (if so, explain) _____

Any special provisions in project specs regarding shoring _____

Customers equipment for installing shoring _____

LINEAR WALL QUESTIONS

Max cut depth _____

If benching/shoring - total cut depth _____

shored depth _____

What is being constructed _____

Length of wall or walls _____



TRENCH QUESTIONS

Max cut depth _____

If benching/shoring - total cut depth _____ shored depth _____

What is being constructed _____

Pipe diameter/structure dimensions _____

Pipe/structure joint lengths _____

Width of trench _____

Required vertical clearance from base of trench _____

Required horizontal clearance between struts _____

Pouring base slab or can sacrificial struts be used _____

PIT QUESTIONS

Max cut depth _____

If benching/shoring - total cut depth _____ shored depth _____

What is being constructed _____

Outside dimensions of structure _____

Outside dimensions of structure base slab _____

Min inside dim. of shoring (clear to shoring or wales) _____

Base slab being placed (if so, dimensions) _____

Lift heights of walls (if applicable for phasing) _____

Can bracing be phased and removed as soils is backfilled against wall _____

BORE PIT QUESTIONS

Max cut depth _____

If benching/shoring - total cut depth _____ shored depth _____

Requested pit size _____

Required clearance to strut (if applicable) _____

How much vertical clearance from base of cut _____

Is base slab or base rock being placed _____

EQUIPMENT QUESTIONS

What type or types of shoring systems are being considered

If sheet piles or soldier piles, any specific piles available/what lengths

Does any of the equipment need to be abandoned in place _____

PERFORMANCE REVIEW EXAMPLE

of Pro-Brace Rental Agreement

Contractor Responsibilities:

- One 100,000# Plus excavator with experienced operator.
- Excavator bucket must be heavy duty reinforced. Pro-Tec Equipment is not responsible for any damages or repairs to equipment.
- Vibratory hammer to install and remove the non-supplied sheeting.
- 2nd machine (Front End Loader to transfer equipment to install machine)
- Two Laborers.
- One extension ladder. Must extended 4' above the excavation.
- Mechanics truck with torches and welder (if needed.)
- Verification of actual soil conditions and surcharge loads prior to start of job. Submerged soil conditions must be dewatered. (Dewatering must be done on outside of system.)
- For contractor convenience PRO-TEC EQUIPMENT will have cables, chains, shackles, clevises and hooks available for handling and installation of the Pro-Brace System. This rigging will not be left on site without the site consultant being present. Any lost or damaged items will be invoiced to the contractor at PRO-TEC EQUIPMENT'S replacement cost.
- All Pro-Brace System components are to be returned in the same condition as delivered.
- Contractor is to erect the pit in accordance to manufactures instructions and in compliance with all applicable Local, State, and Federal Safety Laws. Designs for any additional shoring or sheeting will be the responsibility of others.
- All rentals of Pro-Brace equipment will start the date equipment is installed in the ground. All slide rail rentals will end on date Pro-Brace equipment is removed from the ground. All special agreements in regards to the start date of rent and stop date of rent shall be in writing prior to the shipping date of the Pro-Brace equipment from PRO-TEC EQUIPMENT Equipment's yard.
- If Pro-Brace equipment is used in contaminated soils it is the contractors' responsibility to have the equipment decontaminated before returning it to PRO-TEC EQUIPMENT. If returned contaminated the contractor will be invoiced for all charges incurred by PRO-TEC EQUIPMENT for decontamination of said equipment.
- Site specific engineering is required for all Pro-Brace projects.

PRO-TEC EQUIPMENT'S Responsibilities:

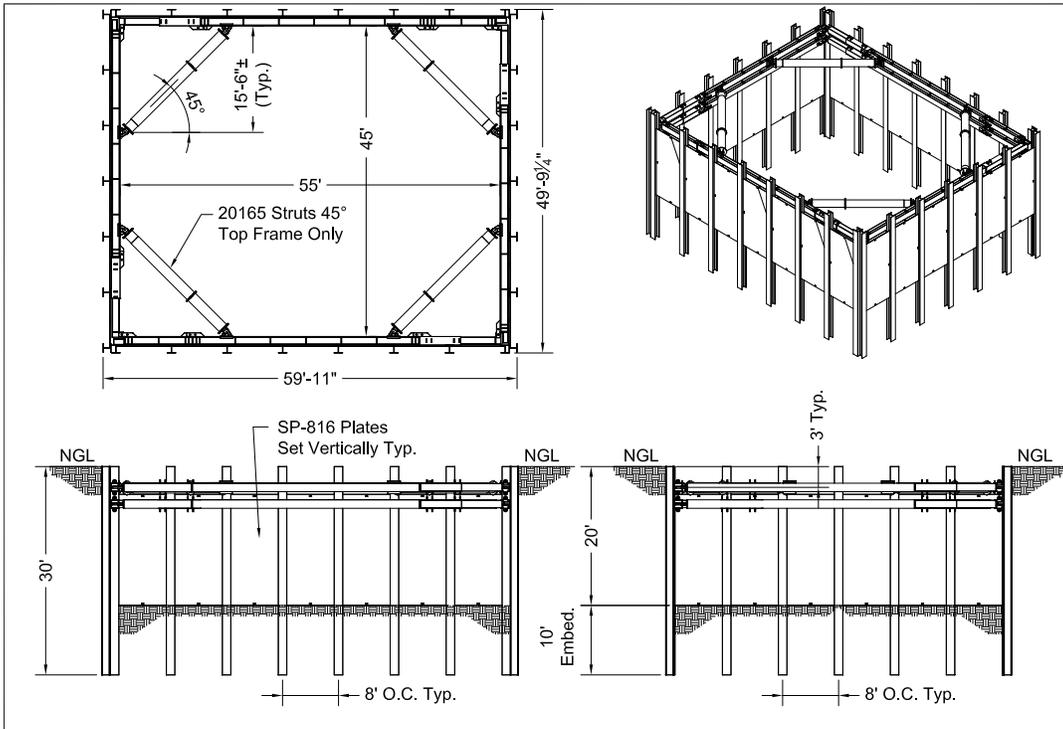
- PRO-TEC EQUIPMENT will provide an experienced person to advise during installation and removal of system. Approx. \$_____/day for site consultation. Approx. ____ days are estimated for installation. (Time allowance may vary with size and complexity of job.)
- PRO-TEC EQUIPMENT is on site to offer advice as it relates to the Pro-Brace equipment. It is the contractor's responsibility to provide all labor and supervision for installation and removal as well as loading and unloading the equipment from truck.

Submitted by: _____
Company: Pro-Tec Equipment
Date: _____

Accepted by: _____
Company: _____
Date: _____

SAMPLE DRAWINGS

all drawings are subject to engineering approval



Designed for tank installations:

Using 20-165T Struts as corner struts, this 55' x 45' system was quoted with using beam and plate in conjunction with the Pro-Brace System.

The 10' of embedment and 8' beam spacing was done at the request of an engineer.

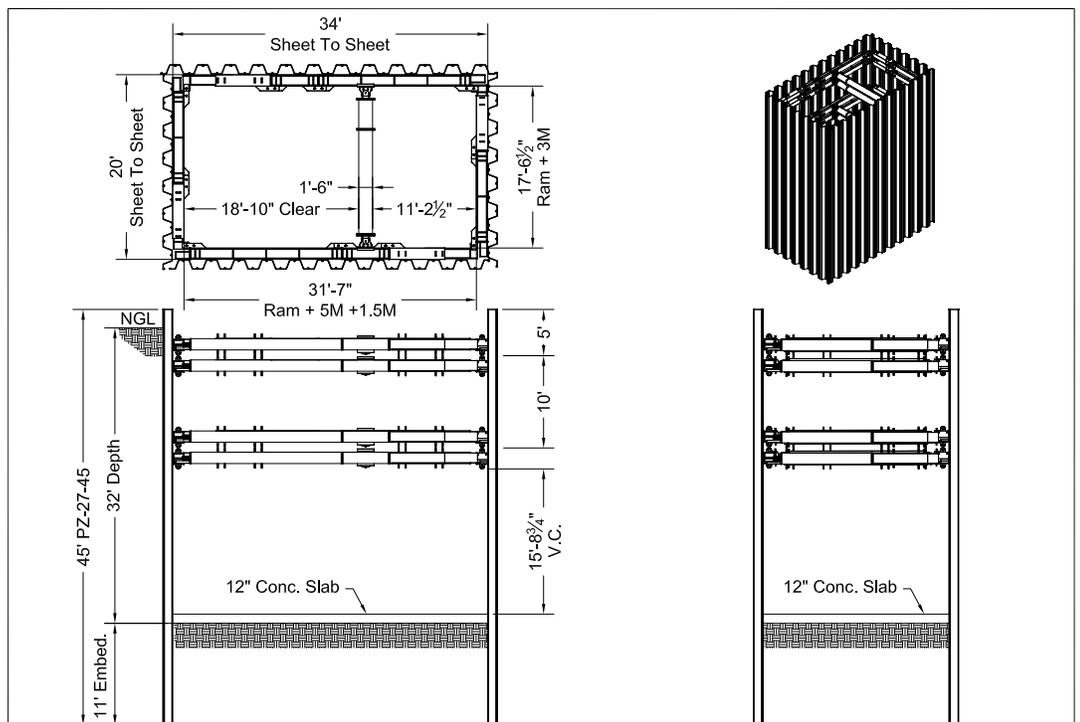
Subject To Engineering Approval.

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	Date: 14-Jan-2014	By: FM	

LAUNCH PIT: Multiple level system, using the 20-165T struts, this system was designed to allow bracing levels to be phased out. Once the 12" concrete slab, a lower level of rams (not shown) are able to be removed. This system uses 45' long PZ-27 sheets.

The 11' embedment, along with the ram spacing was determined by an engineer doing site-specific engineering.



Subject To Engineering Approval.

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