BASALITE®

Proto II™

Post-Tension Wall Systems

Construction Sequence for Proto II 'Dip Footing' & 'Tension Beam' Designs

a division of PACIFIC COAST building products

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Critical Construction Items

1. All torque wrenches should be set between 55 and 60 foot pounds to over-torque walls (42 foot pounds actually achieves 6000 lbs. vertical loading and could be used to meet engineering specifications. Check wrench calibration regularly. Prior to the full tensioning, concrete must be a minimum of 48 hours old and mortar 12 hours old.

2. Tension rods must be positively hooked against the horizontal steel in the footing. Use only Proto II supplied hardware. (A new tension rod hook design was introduced in 1997 to assure positive placement of rod to rebar and is working quite well.)

3. Mortar mixes and strengths are very important in post-tensioning. The mortar (and concrete) strength must be a minimum 2000 psi. Do not over sand or over water the mixes. Do not use "Rhyolite".

4. Rod, dip or pier spacing for all walls should be per the "dip footing" schedule or the "tension beam" schedules. Rods may be stabbed (in most jurisdictions) into fresh concrete during the wet set procedures and pulled up to positively engage and hook under the horizontal steel. This system is self policing in that an improperly set tension rod will pull out during the tensioning process - should this occur, refer to repair methodology.

5. Pier and dip spacing may vary ±12", rod spacing may vary ±8" up or down the length of wall: however, the specified number of rods and piers or dips must be maintained for the given length called out in the specification.

6. Cracks take place in masonry fences - control joints decrease that potential. Without control joints, any wall will crack. Proto II fences require control joints at a maximum spacing of 20' o/c for stuccoed walls, 36' maximum for smooth, split face or slump walls. The control joint must extend through the wall, cleanly through the CMU, mortar, wire and stucco to allow every opportunity for expansion/contraction to be taken up at the control joint. Rods must be within 12" of both sides to the control joint. Control joints preserve the aesthetic value of the wall!

7. To reduce potential for loosened cap units, normal masonry practices must be used on the cap unit. Including mortared head joints, even when the tongue and groove CMU is used. Mortared cap cells at the tension rods will not only secure and protect the rod/plate assembly and prevent corrosion, it provides a secondary mechanical tie for the cap coursing. Epoxies or construction adhesives can also be used to secure cap units.

8. When used in retaining wall capacities, pay particular attention to the grouting of the tension rods, bond beam, or solid grout, depending upon the engineering design and loading. Retaining wall and fence heights are limited by wall or unit thickness and must be adhered to.

9. Foundation soils must be compacted, weak soil conditions must be addressed by soils engineer. Wind loading, soil strengths and compaction, wall heights and unit widths must be considered and applied to the appropriate design/construction details for that particular wall.

10. Post-tension inspection by deputy inspector must take place prior to capping a wall so that the tensioning can be observed and signed off.

11. Only qualified masons can construct Proto II walls. The contractors we list are trained and retrained to help assure the long term integrity of the system. Basalite and Proto II have, and will continue to disqualify masons when deemed necessary.

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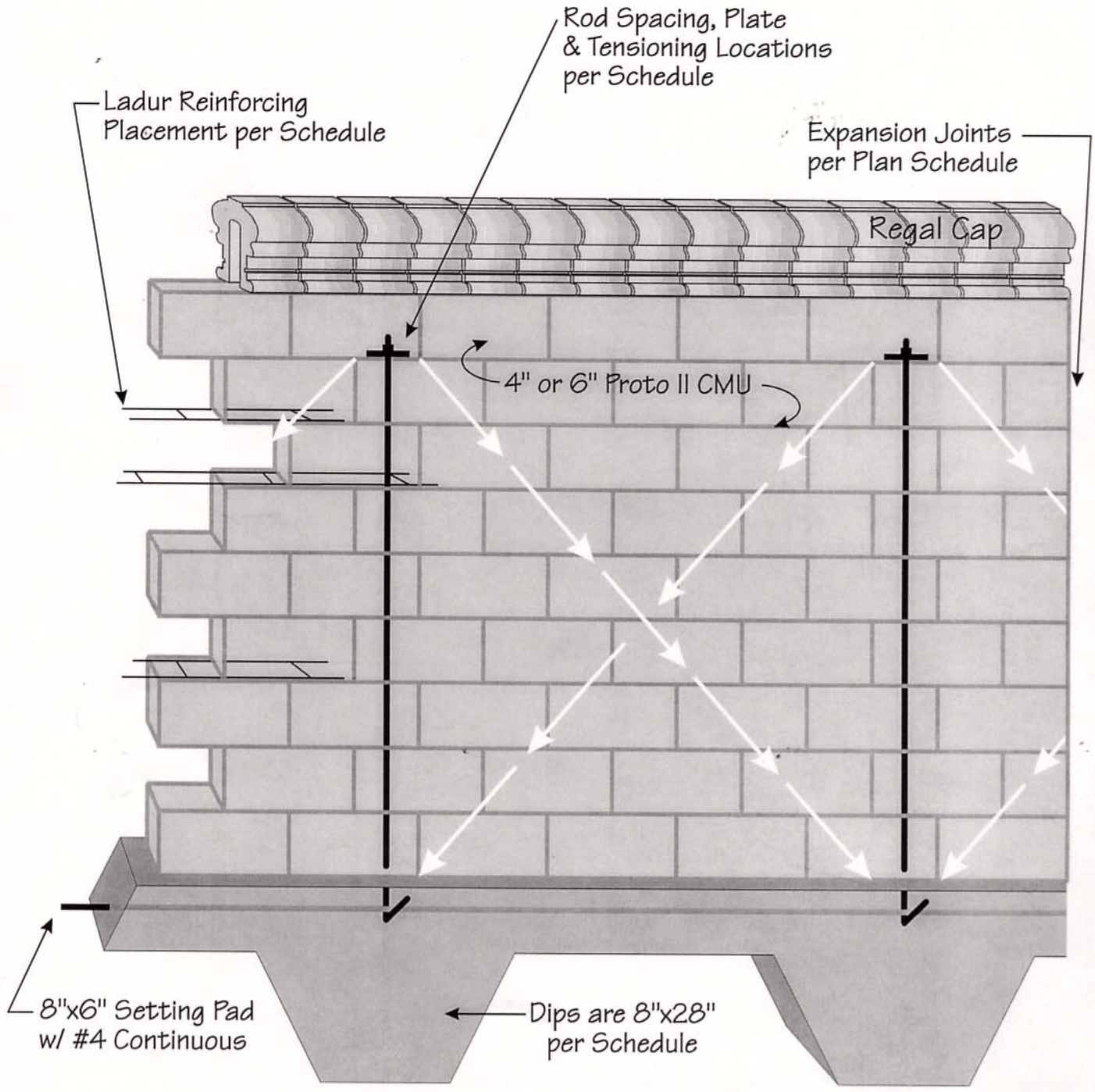
Masonry Fence Components



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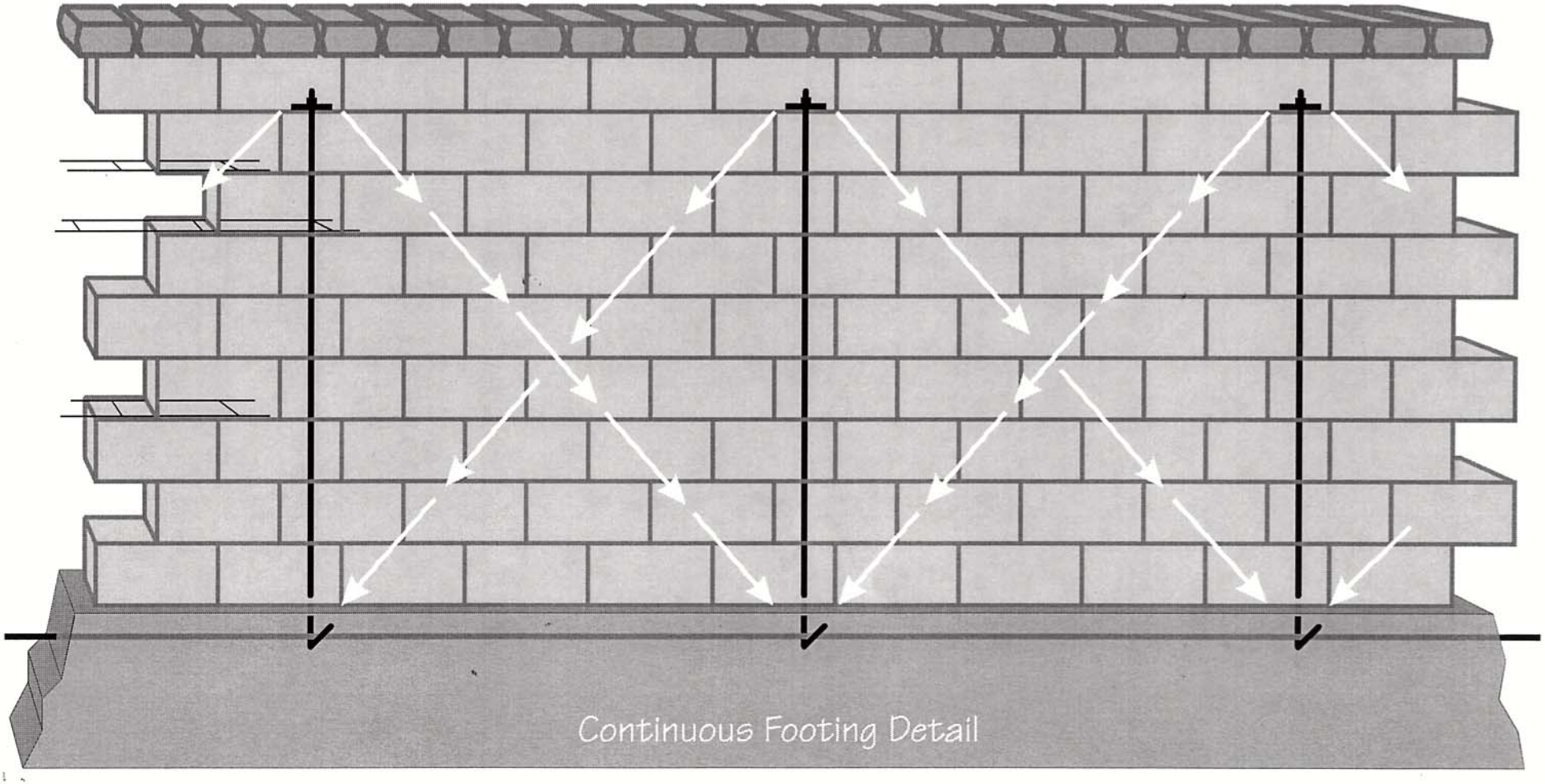
Masonry Excellence

- ☑ Unmatched Quality, Strengths, & Design Possibilities. Proto II offers unique opportunities to increase value.
- ☑ Minimal excavations reduce dirt displacement and haul-off; plant within 2" of wall face!
- ☑ No need to worry about efflorescence. Splitface, smooth, slump, brickblock, colors or grey, your fence will look great for years!
- ☑ Standard engineering supplied at no cost, on hand to suit most applications, with or without retaining walls.
- ☑ Cost effective and attractive, Proto II also meets Caltrans Specifications for sound transmission.

Over 1,000 Miles of Proto II fences have been constructed in 11 years!



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Versatility & Economy

Born of the beauty of masonry & combined with state-of-art technology, Proto II Fence Systems is the economical & attractive answer to all your fencing needs.

Proven in tests and field performance, Proto II is engineered to last a lifetime. Post-tensioning provides unique strength characteristics more cost effective than any other masonry system, and most non-masonry systems.

Select from smooth masonry, splitface, scored, slump and more - in standard & custom colors to meet your design needs. With or without pilasters and columns, Proto II will meet your demands, on schedule.

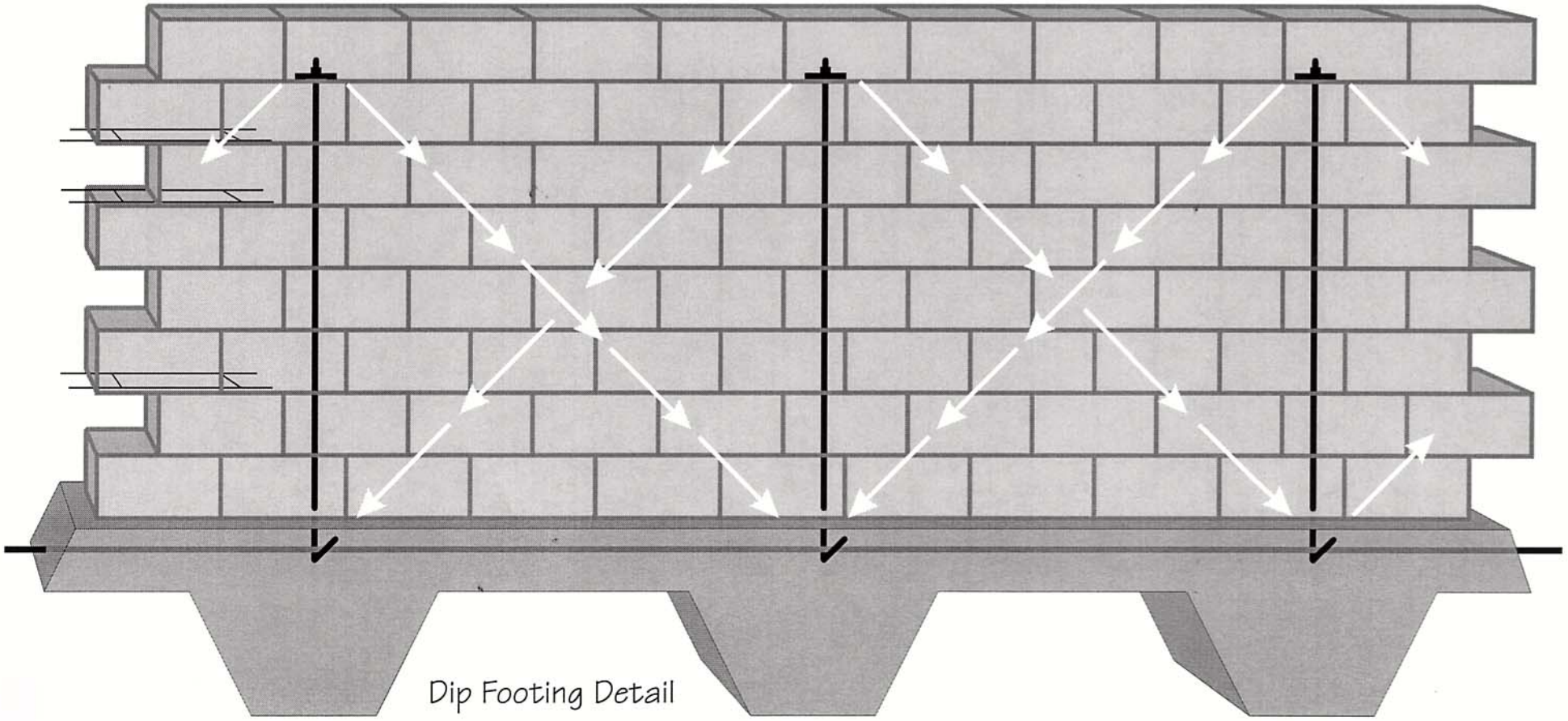
The Quality Process for Your Longlasting Proto II Fence;

Begins with locally produced ASTM compliant Masonry units.

Proceeds with installation - only by certified Proto II masonry contractors who undergo continuous training.

Completes with an independent Engineer's inspection to meet your high standards.

These, and other steps ensure you and your clients of only the very best in masonry fencing brought to you by Basalite and Proto II.



Dip Footing Detail

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Post-Tension Wall Systems
Construction Sequence

Dip Footing Design Construction
(Using Chain Trencher or Backhoe)

- Locate and identify all property pins before digging; obtain needed permits from local jurisdiction and identify required inspection process.
- Stringline the center of the wall and chalk for trencher or backhoe operator. Level, step and excavate as necessary; steps may occur at any point in the Dip Footing Design.
- Per the PDS schedule (i.e. proper exposure and wind speed) mark the location of the dips; set an offset line for the trencher to follow.
- Dig the setting pad 8" wide x 6" deep on center line of wall; create dips at designated points along trenching per the PDS; clean out dips and setting pad.
- Place the #4 horizontal rebar midway in setting pad and clip in place with plastic saddles (saddles are positioned in setting pad on rebar stakes); hook (tie or stab) the tension rod at respective proper locations under the horizontal rebar either prior (tie) to pouring or stab into fresh poured concrete.
- Set new lines for first course of Proto II masonry units.
- Using 3/4" or 3/8", 2000 psi concrete, pour the footing; wet set first course of blocks; check tension rods for proper height; once positioned, provide support for tension rod until concrete has hardened.
- Build remaining wall to plate height; plate, nut and tension to initial ±20ft/lbs to secure wall. Perform final tensioning per specifications (48 hours minimum concrete cure and 14 hours minimum mortar cure) by setting click-type torque wrench to 50 ft/lbs (which overachieves a 6000 LB vertical point load).
- Perform required inspections and cap the finished wall.

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Post-Tension Wall Systems
CONSTRUCTION SEQUENCE

MODIFIED DIP FOOTING DESIGN CONSTRUCTION
(Using Chain Trencher or Backhoe & Auger)

- Locate and identify all property pins before digging; obtain needed permits from local jurisdiction and identify required inspection process.
- Stringline the center of the wall and chalk for trencher or backhoe operator. Level, step and excavate as necessary; steps may occur at any point in the Dip Footing Design.
- Per the PDS schedule (i.e. proper exposure and wind speed) mark the location of the dips; set an offset line for the trencher to follow.
- Dig the setting pad 8" wide x 6" deep on center line of wall; auger pier holes at designated points along trenching per the PDS; clean out piers and setting pad.
- Place the #4 horizontal rebar midway in setting pad and clip in place with plastic saddles (saddles are positioned in setting pad on rebar stakes); hook (tie or stab) the tension rod at respective proper locations under the horizontal rebar either prior (tie) to pouring or stab into fresh poured concrete.
- Set new lines for first course of Proto II masonry units.
- Using 3/4" or 3/8", 2000 psi concrete, pour the footing; wet set first course of blocks; check tension rods for proper height; once positioned, provide support for tension rod until concrete has hardened.
- Build remaining wall to plate height; plate, nut and tension to initial ±20ft/lbs to secure wall. Perform final tensioning per specifications (48 hours minimum concrete cure and 14 hours minimum mortar cure) by setting click-type torque wrench to 50 ft/lbs (which overachieves a 6000 LB vertical point load).
- Perform required inspections and cap the finished wall.

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Post-Tension Wall Systems
Construction Sequence

Tension Beam Design Construction
(Using Auger)

- Locate and identify all property pins before digging; obtain needed permits from local jurisdiction and identify required inspection process.
- Stringline the center of the wall and chalk for trencher or backhoe operator. Level, step at piers and excavate as necessary; steps require placement at pier locations only or additional piers must be added.
- Per the PDS schedule (i.e. proper exposure and wind speed) mark the location of the piers and auger pier at designated points.
- Flange piers per the PDS schedule.
- Set new lines for first course of Proto II masonry units.
- Place bed sand or mortar to plumb and level first course of block.
- Prior to pour, bridge piers perpendicular to wall with wood stake or rebar to support the Proto II masonry units first course.
- Place the #5 horizontal rebar per PDS schedule; hook the tension rod at respective proper locations under the #5 horizontal rebar in the first course of bond beam masonry units per PDS; tie if desired.
- Place second course of bond beam masonry units per PDS (bond beam down to create larger cell for grout); pour both pier and beam and stab 'hairpins' down over #5 horizontal and into piers as per PDS requirements.
- A 3/4" or 3/8", 2000 psi concrete is acceptable; check tension rods for proper height; once positioned, provide support for tension rod until concrete has hardened. Mortar mix may be used in block tension beam but must achieve 2000 psi strengths.
- Build remaining wall to plate height; plate, nut and tension to initial ±20ft/lbs to secure wall. Perform final tensioning per specifications (48 hours minimum concrete cure and 14 hours minimum mortar cure) by setting click-type torque wrench to 50 ft/lbs (which overachieves a 6000 LB vertical point load).
- Perform required inspections and cap the finished wall.

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CONSTRUCTION SEQUENCE

PROTO II DIRT DISPLACEMENT COMPARISONS IN EXPOSURE S B & C
(INCLUDES A 20% OVERDIG FACTOR)

1. Each dip displaces approximately .090cy.
2. An 8"x6" setting pad displaces approximately 1.24cy per 100lf.
3. Unit examples based on per 100 lineal feet.

Exposure B @ 70mph, 6' Proto II Fence

Dips at 11' on center displace	.090 x 9 =.81 cy/100lf
8"x6" Setting pad dispalces	1.24cy/100lf
Overdig waste @ 20%	2.05 x .20 = .41

Per 100 lf dispalcement = **2.46cy** = .0246cy/lf

Exposure C @ 70 mph, 6' Proto II Fence

Dips at 6'6"' on center displace	.090 x 15.38 = 1.38 cy/100lf
8"x6" Setting pad dispalces	1.24cy/100lf
Overdig waste @ 20%	2.62 x .20 = .52

Per 100 lf dispalcement = **3.14cy** = .0314cy/lf

Further:

Since the Proto II Wall System meets 5' to daylight requirements at grade, the above displacement values apply to both flat and to top of 2:1 slope grade applications, ***with no additional masonry units, digging, or concrete.***

Tension Beam design displacement is approximately .14cy/pier and .87cy/100lf 'beam'.

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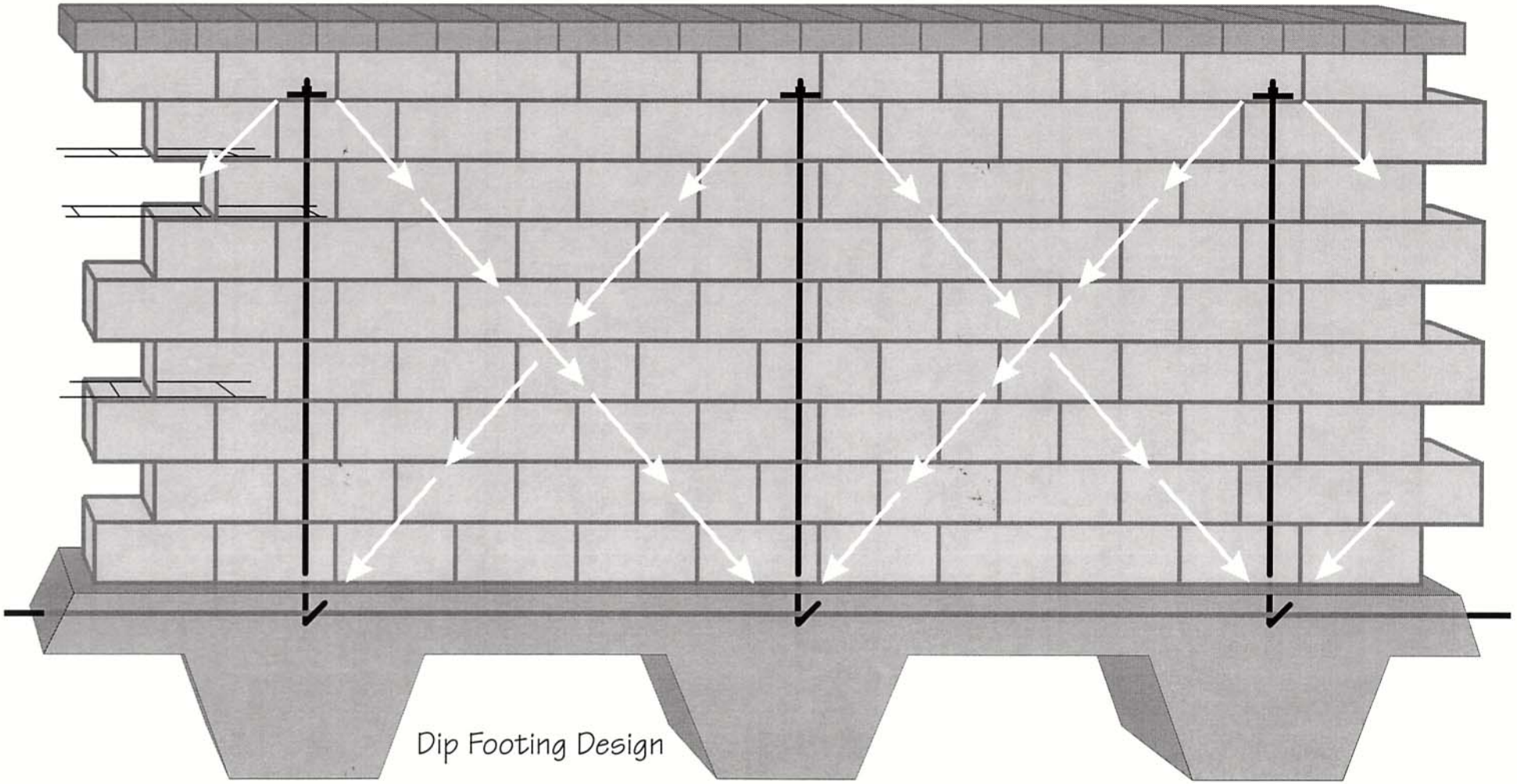
Beauty & Strength

A typical 6' fence (shown) utilizes post-tensioning to achieve the strength needed to resist wind and lateral forces. No mortar at the head joints and no grout! The tension rods are 'hooked' to the footing rebar, creating a field of strength shown by the white arrows. Cost effective ladur reinforcing is used in place of rebar to evenly distribute the 6000 lbs vertical loading from the tension rods. The cap is mortared in place only after the included special inspection to assure performance and reliability. Value, tested and proven, Proto II provides you with an attractive masonry fence at economical prices. Call us for any questions or bid assistance: 800.266-3670.



Dip Footing Design

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