



BRICKING SOLUTIONS

A DIVISION OF **BROKK**[®]

Measurements & Data Needed To Quote & Build Kiln Access Ramps

August 8, 2007

Introduction:

Bricking Solutions has built and quoted over 100 kiln access ramps since 1996. We can safely say that not one has been a duplicate of another. In addition, every kiln, hood, and burn floor situation has been different. This makes it very difficult to give precise instructions on how to collect needed data and measurements to insure that the delivered ramp installs and is utilized to the satisfaction of the user and without major problems. Due to the experience we have gained over the years, we have had only ½ dozen ramps that have required only minor modifications either due to incorrect data, undocumented interferences, or changes made after the data was submitted. This document is intended to aid our agent's technical personnel and our customers to obtain the needed information to prevent any catastrophic mistakes. We will explain the reasoning behind our equipment data sheet, give examples of CAD and ramp drawings, as well as sample pictures of actual burn floors.

Suggestions and sample situations:

Always remember that every kiln access ramp is custom. It is desirable to get accurate plan, front and elevation views of the hood with the nose of the kiln and burn floor drawings. We can work with e-mailed CAD drawings or mailed / faxed hand or printed drawings. We can then ask for missing data or request more detailed information if needed. A completed Equipment Data Sheet with these drawings is desirable.

If accurate drawings are not available, then a completed Equipment Data Sheet is needed. Many times (particularly in older plants) the customer will ask our assistance in collecting the data and taking measurements. The following is to help you or your customer when collecting this data.

It is best to start with some idea of the length and width of the bridge section of the ramp. This will allow you to anticipate any problems in the installation of the ramp. Next an idea of the dimensions for the mobile equipment that will travel into the kiln is needed. Finally, knowledge of whether or not the demolition equipment used in the kiln will also be used while sitting on the ramp is needed.

With this basic information collected, you can now go to the burn floor with our Equipment Data Sheet in hand. The following is an explanation of each measurement:

- l) A1 – Ramp Clearance – This measurement is the clearance needed in front of the hood door to:
 - a. Have room to install the bridge section of the kiln.
 - b. Have room to drive onto and up the lead up portion of the ramp. (with the lead up portion to have an incline of no more than 12 degrees, preferably 10 degrees or less.)

- c. Pictures and drawings included with this document will illustrate interferences that you can run into when installing or positioning the ramp for installation and interferences to approaching the lead up with the vehicles that will be entering the kiln. You will see from the included drawings of ramps many different configurations we have had to come up with to avoid these interferences.
- II) A2 – Front of Sill to Kiln Lip – This measurement is the span needed to determine the length of the kiln bridge section. You should have already had an idea of this length to consider the challenges or problems you might encounter with the A1 measurement. NOTE: Anything over 22 ft long consideration is needed on how to get the bridge in the kiln.
 - III) A3 – Ramp extension into kiln – We are considering eliminating this dimension as it seems to cause confusion and is pretty much determined by the configuration of the nose of the kiln (tapered, castable or brick, etc.) it is distance the nose of the ramp will extend into the kiln. Check to be sure the customer does not have any special requirements or requests for this dimension.
 - IV) B1 - Sill height with refractory – This is a critical dimension as it affects the length and slope of the lead up ramp plus it will determine if we need to have a flat section to the bridge in order to prevent a vehicle from high centering when going over the sill. Though we ask if the ramp can sit on the refractory we typically like to leave a slight clearance.
 - V) B2 - Burn floor to center line of kiln – another critical dimension and probably one of the most difficult to obtain. This determines the slope of the bridge (flat, up or down). In other words is the nose of the kiln level with, above or below the burn floor elevation.
 - VI) C1 – Door opening height with refractory – This dimension determines the clearance for the vehicles that will be entering the kilns. A common or standard fork lift has a mast height for clearance of 2160mm (85inches).
 - VII) C2 – Door opening width with Refractory – This dimension determines the maximum width of the ramp including side clearance needed to install the ramp.
 - VIII) D1 – Inside diameter of the kiln shell – This helps determine what will be needed to bolster the kiln bridge “wrapper” should the ramp need to be installed on the bear shell.
 - IX) D2 – Inside diameter of Brick – This determines the diameter and configuration of the bridge wrapper and layout for the shape of the nose to fit the radius of the kiln with brick installed.
 - X) D3 – Inside Diameter of nose for kilns with taper and D4 length of taper – This determines how the bridge and nose will fit into the kiln (i.e. span the taper, sit on the taper, etc.). Note that sometimes there will be another non-tapered section of the kiln in front of the taper that needs to be taken into consideration.
 - XI) D5 – Kiln angle – The slope of the kiln affects all of the angles of the ramp into the kiln.
 - XII) D6 – Distance between the burn floor and underside of the burn tube – This is a new measurement we are adding as many times the burner pull back distance is less than the length of the bridge, but since we mount all of our bridge sections on wheels, many times if there is sufficient room under the burner we can roll the bridge section under the burner and then roll it forward to insert the front of the bridge far enough into the kiln to allow clearance for a fork lift to maneuver into position to install the ramp.
 - XIII) Do not forget that all measurements are with the kiln cool (Cold-face measurements to allow for shrinkage).

We also include a list of various other questions that assist in designing the ramp. It is highly advisable to address as many of those as you can.

Sample drawings, pictures:

Pictures

- 1) Excerpt of a Polysius CAD drawing with our ramp, a Brokk demolition machine and a skid steer included.

- 2) A sample CAD drawing of the Cooler Hood, kiln nose, and burn floor.
- 3) A front view of the kiln hood and door.
- 4) An aerial "plan" view of a burn floor not enclosed in a building.
- 5) A ramp section being installed by fork lift.
- 6) Illustration of open hood door, sill and cooler opening.
- 7) Illustration of an unforeseen obstruction to the installation of the ramp pedestal – field fixed.
- 8) Illustration of ramp installation clearance at the hood door.
- 9) Illustration of a ramp installed.
- 10) Illustration of burn floor with obstructions noted.
- 11) Illustration of same burn floor with different view.
- 12) Another burn floor sample illustration.
- 13) Another burn floor sample illustration.

Drawings

D070105 example of a special ramp
C070119 example of a downward sloping bridge
C070121 example of a flat or level bridge
C070120 example of a ramp with no sill to contend with
C070223 example of a ramp negotiating a high sill
D060104 example of a ramp for a kiln with a satellite cooler
D060116 example of a ramp with a long taper at the nose
D051224 example of a ramp with a platform due to limited A1 clearance
D060203 example of a with short span but long taper
D060406 example of a ramp with a side angle approach due to limit of A1
D060406B example of a ramp with angle approach due to limit of A1
D060425C another example of a ramp with angled approach due to limit of A1
D070520 example of a ramp with taper with a extension at front of taper

These samples are not all inclusive and in fact very limited to the variation you can run into, but they are a good generalization of the type of challenges you may face.

The best approach is when in doubt contact us at 800.621.7856.

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