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FACULTAD DE ARQUITECTURA E INGENIERIA CIVIL Y DEL AMBIENTE

PROGRAMA PROFESIONAL DE INGENIERIA CIVIL

"ANÁLISIS ESTADÍSTICO DEL COMPORTAMIENTO D ELOS AGREGADOS EN LAS CANTERAS DE AREQUIPA PARA DIFERENTES RESISTENCIAS DEL CONCRETO"

Tesis presentada por la Bachiller:
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1. CAPÍTULO I : GENERALIDADES

1.1 Introducción:

El campo de la Ingeniería Civil engloba un conjunto de conocimientos científicos orientados hacia la aplicación técnica y práctica, uno de ellos "La Tecnología del concreto"

No es de extrañarse que el concreto es el material de construcción de mayor uso, siendo conscientes que el resultado final dependerá de una buena evaluación previa de los agregados así como de la calidad y medidas con las que se elabore.

La Tecnología del Concreto, reconoce al cemento, agregados, agua y aditivos, adicionalmente las técnicas de producción, colocación, curado y mantenimiento, como aspectos particulares a estudiar y controlar de modo que puedan trabajar eficientemente de manera conjunta, como es el caso de la presente investigación.

1.2 Problemática:

- *Nuestra Ciudad está ubicada en un lugar estratégico dentro del marco geográfico Nacional, lo cual nos hace poseedores de una amplia variedad de material de canteras. El cual debe y merece ser analizado de manera tal que se pueda asegurar la calidad del material así como de la correcta dosificación asegurando así la resistencia del concreto.*
- *Resultados desfavorables que presentan los concretos elaborados con agregados naturales, como es el caso de las canteras de Cono Norte, calificándolo como de baja calidad y no cumplen con el f'c mínimo que indica el reglamento.*
- *Resultados encarecidos en el caso de Agregados seleccionados como es el caso de las canteras "La Poderosa" y "Socabaya"*

1.3 Justificación:

Se debe ser exacto a la hora de la dosificación de un Diseño de Mezcla, puesto que de ello depende la resistencia de una estructura, conocer adecuadamente el comportamiento, beneficios y deficiencias de los agregados, nos ayudará a determinar de una manera más exacta dosificaciones precisas y económicas.

1.4 Hipótesis:

Los diseños de Mezcla guardan una relación proporcional en cuanto a sus componentes, pudiendo elaborarse mediante una muestra considerable de ensayos, ábacos que nos permitan tener esas relaciones para los diferentes tipos de agregados (Poderosa, Socabaya y Cono Norte) con variaciones de Tamaño Máximo Nominal, en resistencias convencionales de 175 Kgf/cm2, 210 Kgf/cm2 y 280 Kgf/cm2.

1.5 Objetivos

- *GENERAL: Generar dosificaciones de concreto más precisas*
- *ESPECÍFICO: Poder Determinar ábacos para conocer tendencias del diseño de mezclas, en relación a la resistencia y tipos de agregados.*

1.6 Metodología:

La presente investigación siguió como metodología los siguientes pasos:

A) Se determinó a las canteras que se iban a tener como fuente de estudio (La Poderosa, Socabaya y Cono Norte).
B) Se recogieron muestras de Agregado de las mismas canteras, para poder conocer la problemática real y particular.
C) Seguidamente teniendo las propiedades de los agregados de cada zona de la cantera se procedió a elaborar diseños de mezclas para las resistencias convencionales de 175 Kgf/cm2, 210 kgf/cm2 y 280 Kgf/cm2, teniendo en cuenta las variaciones del tamaño máximo Nominal (T.M.N).
D) Se procedió a realizar sus respectivos ensayos, obtención de resultados y comparación del mismo, de un lote mayor a 1000 muestras.
E) Se realizó un análisis comparativo de cada uno de los resultados evaluando grado de confiabilidad y garantía de resultados, dando como resultado final las líneas de tendencia, principal objetivo de nuestra investigación.
F) Finalmente se dieron las conclusiones respectivas, que son de gran utilidad y demanda en nuestros días.

2. CAPÍTULO II: AGREGADOS UTILIZADOS EN LA ELABORACIÓN

2.1 Canteras a estudiar:

2.1.1 Cantera de Socabaya:

2.1.1.1.1 ***Ubicación:*** *Se ubica en el cauce del Río Socabaya, Distrito de Socabaya, provincia de Arequipa. La cantera se ubica aprox. en el Km 7.5 de la carretera Arequipa-Socabaya, teniendo por la derecha a la Zona de Lara y por la izquierda la zona denominada Pueblo.*

2.1.1.1.2 ***Origen Geológico:*** *Depósitos fluviales. Arrastra material granular en tiempos de precipitación desde el río Chiguata que luego toma el nombre de Sabandía, posteriormente Socabaya.*

2.1.1.1.3 ***Tipos de Rocas:*** *Rocas volcánicas (tufos volcánicos, láminas de biotita, andesitas, lavas y feldespatos), rocas ígneas intrusivas (batolíticas como tonalita, granodeorita y gabrodiorita), conglomerados poco consolidados.*

2.1.1.1.4 ***Explotación:*** *Comercial, volumen de explotación pequeño, la potencia depende del material arrastrado en épocas de precipitaciones. Piedra seleccionada natural de río, también se encuentra piedra chancada de quijada y piedra seleccionada chancada.*

2.1.2 Cantera de Cono Norte:

2.1.2.1.1 ***Ubicación:*** *Se ubica al Norte del centro de la ciudad, vía Arequipa-Yura, vía Cerro Colorado.*

2.1.2.1.2 ***Tipos de Rocas:*** *Rocas volcánicas (tufos volcánicos, láminas de biotita, andesitas, lavas y feldespatos), ígneas extrusivas.*

2.1.2.1.3 ***Explotación:*** *Comercial, existen pequeños depósitos aledaños, extrayéndose material principalmente para zonas vecinas que están en pleno Desarrollo. Selección natural, presentándose formas irregulares (cascajo)*

forma irregular y presenta cristales (que pueden ser de cuarzo) y cierta porosidad.

2.1.3 Cantera la Poderosa:

2.1.3.1.1 ***Ubicación:*** *Se ubica a la altura del km.15 de la carretera a la mina Cerro Verde, distrito de Uchumayo, provincia de Arequipa, departamento de Arequipa.*

2.1.3.1.2 ***Origen Geológico:*** *Conglomerado sedimentario, depósito fluvial*

2.1.3.1.3 ***Tipos de Rocas:*** *Conglomerados sedimentarios (batolíticas, granodioritas, graníticas, cuarcitas, etc.)*

2.1.3.1.4 ***Explotación:*** *Comercial, de extracción industrializada con gran volumen de rocas para explotación. Piedra chancada, selección de tamaños y secado al sol.*

2.2 Propiedades de los agregados a analizar:

Los Agregados son aquellos materiales de forma granular o fibrosa que con preparación especial o sin ella han de ser tratadas con cemento para formar el concreto.

Los materiales como grava y arena de río tienen una forma redondeada y son un poco peligrosas para el concreto para su naturaleza heterogénea, pues constituyen material redondeado de muy distintas fuentes.

El aspecto casi fundamental de los agregados es la granulometría y su módulo de fineza, para esto tenemos especificaciones que seguir tanto para material grueso como para material fino. Además es necesario conocer el peso o densidad de los materiales y porcentaje de absorción.

Según la Norma NTP 400.010, se establecen los previos muestreos del agregado.

2.2.1 Agregado Grueso

Se define como agregado grueso al material retenido en el tamiz 4.75mm (Nro. 4) proveniente de la desintegración natural o mecánica de las rocas y que cumple con los límites establecidos en las ASTM y la Norma técnica Peruana.

- *<u>Tamaño máximo del Agregado Grueso (TM):</u>*

Es el definido por el que corresponde al menor tamiz por el que pasa todas las muestras del Agregado Grueso.
Se considera cuando incrementa el tamaño máximo del agregado, se reduce los requerimientos del agua de mezcla, incrementándose la resistencia del concreto. En general este principio es válido con agregados hasta 1 1/2" .

- *Tamaño máximo Nominal del Agregado Grueso:*
  Es definido por el que corresponde al menor tamiz de la serie utilizada que produce el primer retenido. Por el cual el agregado grueso pasa del 95% al 100%.

- *Preparación de muestras:*

Tabla 1

Tamaño máximo nominal		Cantidad mínima de muestra
mm	(pulg)	Kg
Hasta 12,5	½	2
19,0	¾	3
25,0	1	4
37,5	1 ½	5
50,0	2	8
63,0	2 ½	12
75,0	3	18
90,0	3 ½	25

2.2.1.1 *Gravedad específica normal o nominal:*

Es la relación, a una temperatura estable, de la masa en el aire de un volumen unitario de un material permeable (incluyendo los poros permeables e impermeables, naturales del material) entre o a la masa en el aire (mismas condiciones), de un volumen de agua destilada libre de gas, volumen correspondiente a la parte sólida del material.

Donde:

A= Peso en el aire de la muestra seca en gramos
B=Peso en el aire de la muestra saturada con superficie seca, en gramos
C=Peso sumergido de la muestra

$$Ge\ nominal = \frac{A}{A - C}$$

Teniendo como resultados:

CANTERAS	T.M.N	Ge nominal
Socabaya	¾"	2.600
	1"	2.484
Cono Norte	¾"	2.596
	1"	2.608
Poderosa	½"	2.752
	1"	2.774

2.2.1.2 *Gravedad específica saturada:*

Es el mismo concepto de peso específico de masa, excepto que la masa incluye el agua en los poros permeables.

Donde:

A= Peso en el aire de la muestra seca en gramos

B=Peso en el aire de la muestra saturada con superficie seca, en gramos

C=Peso sumergido de la muestra

$$Ge\ sss = \frac{B}{B - C}$$

CANTERAS	T.M.N	Ge saturada
Socabaya	¾"	2.515
	1"	2.404
Cono Norte	¾"	2.496
	1"	2.505
Poderosa	½"	2.705
	1"	2.749

2.2.1.3 *Gravedad específica aparente o relativa:*

Es la relación, a una temperatura estable de la masa en el aire de volumen unitario de material, a la masa en el aire de igual densidad de un volumen igual de agua destilada.

Donde:

A= Peso en el aire de la muestra seca en gramos

B=Peso en el aire de la muestra saturada con superficie seca, en gramos

C=Peso sumergido de la muestra

$$Ge\ aparente = \frac{A}{B - C}$$

CANTERAS	T.M.N	Ge aparente
Socabaya	¾"	2.462
	1"	2.351
Cono Norte	¾"	2.434
	1"	2.536
Poderosa	½"	2.677
	1"	2.735

2.2.1.4 Porcentaje de Absorción:

Es la cantidad de agua absorbida por el agregado grueso en después de ser sumergido 24 horas en esta.

Donde:

A= Peso en el aire de la muestra seca en gramos

B=Peso en el aire de la muestra saturada con superficie seca, en gramos

C=Peso sumergido de la muestra

$$\%\ Absorción = \frac{B - A}{A} * 100$$

CANTERAS	T.M.N	% absorción
Socabaya	¾"	2.17%
	1"	2.30%
Cono Norte	¾"	2.60%
	1"	2.61%
Poderosa	½"	1.01%
	1"	0.50%

2.2.1.5 Peso unitario compactado:

Este método se utiliza siempre para determinar el valor del peso unitario utilizado por algunos métodos de diseño de mezclas de concreto.

Se determina de esta manera al peso que alcanza un determinado volumen unitario, previamente varillado en tres capas. Generalmente se expresa en kilos por metro cúbico, y se realiza el ensayo unas tres veces.

Tomando en cuenta las capacidades del envase, se tiene:

TABLA 1 - Capacidad de la medida

TAMAÑO MAXIMO NOMINAL DEL AGREGADO		CAPACIDAD DE LA MEDIDA[A]	
mm	**Pulgadas**	**L (m^3)**	**p^3**
12.5	½	2.8 (0.0028)	1/10
25.0	1	9.3 (0.0093)	1/3
37.5	1 ½	14.0 (0.014)	1/2
75.0	3	28.0 (0.028)	1
112.0	4 ½	70.0 (0.070)	2 1/2
150.0	6	100.0 (0.100)	3 1/2

Donde:
PUC= Peso unitario suelto del Agregado Grueso
Wmc=Peso de muestra compactada
V= Volumen interno del recipiente

$$PUC = \frac{Wmc}{V}$$

CANTERAS	*T.M.N*	*P.U.C. (kgf/m3)*
Socabaya	*¾"*	*1522.24*
	1"	*1305.41*
Cono Norte	*¾"*	*1553.14*
	1"	*1505.11*
Poderosa	*½"*	*1618.65*
	1"	*1599.58*

2.2.1.6 Peso unitario Suelto:

Se determina de esta manera al peso que alcanza un determinado volumen unitario, sin varillar, tratando de loras se formen la mayor cantidad de vacíos entre las muestras de agregado.

Donde:
PUS= Peso unitario suelto del Agregado Grueso
Wms=Peso de muestra suelta
V= Volumen interno del recipiente

$$PUS = \frac{Wms}{V}$$

CANTERAS	T.M.N	P.U.S.. (kgf/m3)
Socabaya	¾"	1369.15
	1"	1146.49
Cono Norte	¾"	1234.95
	1"	1312.65
Poderosa	½"	1516.59
	1"	1418.24

2.2.1.7 Impurezas orgánicas:

El objetivo principal es determinar el contenido o no del material orgánico en nuestra muestra de agregado fino o grueso, que afectará en nuestro diseño de mezcla, lo que servirá para rechazarlo o no.

CANTERAS	T.M.N	Contenido
Socabaya	¾"	No
	1"	No
Cono Norte	¾"	No
	1"	No
Poderosa	½"	No
	1"	No

2.2.1.8 Contenido de humedad

Las humedades se convierten en el factor modificador de la relación agua-cemento de las mezclas para excesos de fluidez y consistencias inmanejables en las mezclas frescas.

$$w\% = \frac{Wm - Ws}{Ws}$$

W% : Contenido de humedad
Wm: Peso del agregado en estado natural
Ws: Peso del agregado en estado seco

CANTERAS	T.M.N	W% cont.de humedad
Socabaya	¾"	1.01%
	1"	1.18%
Cono Norte	¾"	1.01%
	1"	1.01%
Poderosa	½"	0.70%
	1"	1.35%

2.2.1.9 *Ensayo de Abrasión:*

Ensayo para determinar el desgaste de los agregados por el medio de la máquina de los ángeles.

$$\%\ de\ desgaste = \frac{(P1 - P2)}{P1} \times 100$$

Donde:

P1= Peso de la muestra seca antes del ensayo

P2= peso de la muestra seca después del ensayo, previo tamizado por el tamiz 1.70mm (NO 12)

CANTERAS	*T.M.N*	*% de Desgaste*
Socabaya	*¾"*	*29%*
	1"	*32%*
Cono Norte	*¾"*	*68%*
	1"	*70%*
Poderosa	*½"*	*27%*
	1"	*20%*

2.2.1.10 *Granulometría:*

Según la ASTM C- 33, el agregado deberá tener ciertos límites establecidos en la Norma. La denominación en unidades Inglesas (tamices ASTM) se hace según el tamaño de la abertura en pulgadas para los tamaños grandes y los números de aberturas por pulgada lineal para tamices menores de 3/8".

Denominación del tamiz	***Abertura en pulgadas***	***Abertura en milímetros***
3"	*3.0000*	*75.0000*
1 ½"	*1.5000*	*37.5000*
¾"	*0.7500*	*19.0000*
3/8"	*0.3750*	*9.5000*
No 4	*0.1870*	*4.7500*
No 8	*0.0937*	*2.3600*
No 16	*0.0469*	*1.1800*
No 30	*0.0234*	*0.5900*

No 50	*0.0117*	*0.2950*
No 100	*0.0059*	*0.1475*
No 200	*0.0029*	*0.0737*

Nota: *Los agregados de las canteras que presentaremos a continuación cumplen parcialmente las granulometrías, no se ajustaron pues la finalidad de la tesis es sacar ábacos reales a partir de los agregados que las canteras nos brindan, siendo incluso material seleccionado.*

TAMAÑOS ESTÁNDARES DE AGREGADOS PROCESADOS

Tama-o	Tamaño Nominal (pulgadas)	Tama-o ñominal (mm)	4" (100mm)	3W" (90mm)	3" (75mm)	2W" (63mm)	2" (50mm)	1W" (37.5mm)	1" (25mm)	3/4" (19mm)	1/2" (12.5mm)	3/8" (9.5mm)	No. 4 (4.75mm)	No. 8 (2.36mm)	No. 16 (1.18mm)	No. 50 (30mm)	(150mm)
	(Aberturas Cuadradas)		Cantidades más pequeñas que cada malla (Aberturas Cuadradas), porcentaje de pesoñ														
1	3 1/2 a 1 1/2	90 a 37.5	100	90 a 100		25 a 60		0 a 15		0 a 5							
2	2 1/2 a 1 1/2	63 a 37.5			100	90 a 100	35 a 70	0 a 15		0 a 5							
24	2 1/2 a 5/4	63 a 19.0			100	90 a 100		25 a 60		0 a 10	0 a 5						
3	2 a 1	50 a 25.0				100	90 a 100	35 a 70	0 a 15		0 a 5						
357	2 a No. 4	50 a 4.75				100	95 a 100		35 a 70		10 a 30		0 a 5				
4	1 1/2 a 3/4	37.5 a 19.0					100	90 a 100	20 a 55	0 a 15		0 a 5					
467	1 1/2 a No. 4	37.5 a 4.75					100	95 a 100		35 a 70		10 a 30	0 a 5				
5	1 a 1/2	25.0 a 12.5						100	90 a 100	20 a 35	0 a 10	0 a 5					
56	1 a 3/8	25.0 a 9.5						100	90 a 100	40 a 85	10 a 40	0 a 15	0 a 5				
57	1 a No. 4	2 5.0 a 4.75						100	95 a 100		25 a 60		0 a 10	0 a 5			
6	3/4 a 3/8	19.0 a 9.5							100	90 a 100	20 a 55	0 a 15	0 a 5				
67	3/4 a No. 4	19.0 a 4.75							100	90 a 100		20 a 55	0 a 10	0 a 5			
68	3/4 a No. 8	19.0 a 2.36							100	90 a 100		30 a 65	5 a 25	0 a 10	0 a 5		
7	1/2 a No. 4	12.5 a 4.75								100	90 a 100	40 a 70	0 a 15	0 a 5			
78	1/2 a No. 8	12.5 a 2.36								100	90 a 100	40 a 75	5 a 25	0 a 10	0 a 5		
8	3/8 a No. 8	9.5 a 2.36									100	85 a 100	10 a 30	0 a 10	0 a 5		
89	3/8 a No. 16	9. 5 a 1.18									100	90 a 100	20 a 55	5 a 30	0 a 10	0 a 5	
9	No. 4 a No.16	4.75 a 1.18										100	85 a 100	10 a 40	0 a 10	0 a 5	
10	No. 4 a No.O A	4.75										100	85 a 100				10 a 30

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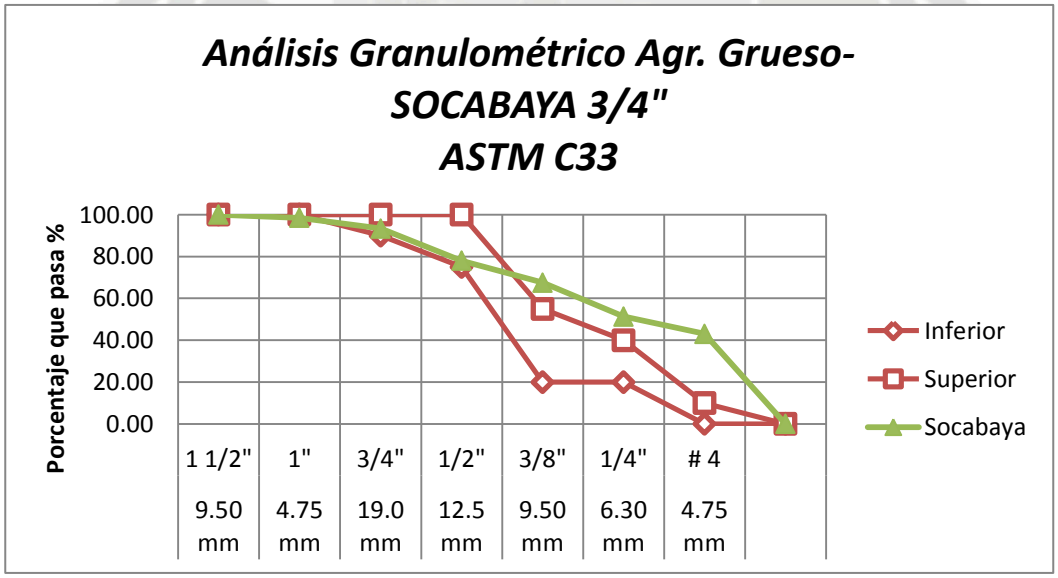
A) Socabaya:

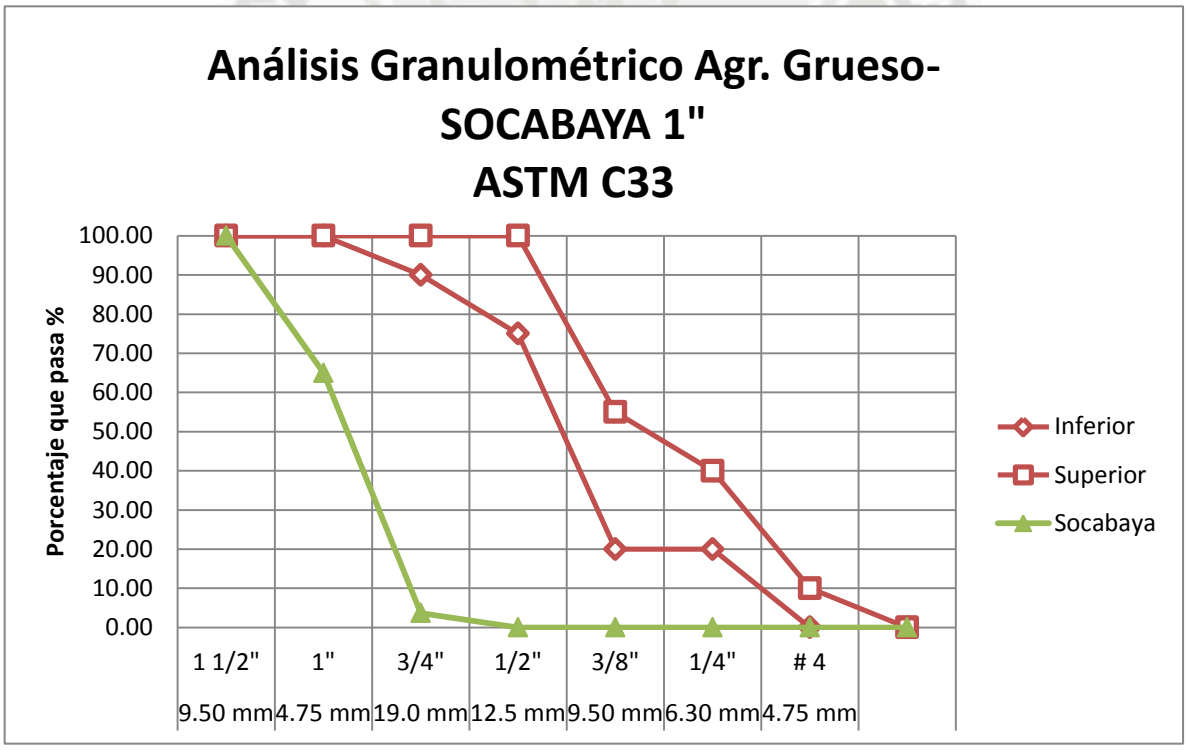
- *TMN ¾"*

GRANULOMETRÍA AGREGADO GRUESO				
Cantera: " SOCABAYA"		Peso inicial de la muestra: 4500.00 gr.		
Malla	Peso (gr)	% Retenido	% Acumulado	% Pasante
1 1/2"	0.00	0.00	0.00	100.00
1"	69.60	1.55	1.55	98.45
3/4"	229.00	5.09	6.64	93.36
1/2"	691	15.36	21.99	78.01
3/8"	472.1	10.49	32.48	67.52
1/4"	729.7	16.22	48.70	51.30
# 4	370.5	8.23	56.93	43.07
Fondo	1938.1	43.07	100.00	0.00
Total	4500			
Modulo de Fineza:			5.960	
Tamaño Nominal Máximo:			3/4"	



- *TMN 1”*

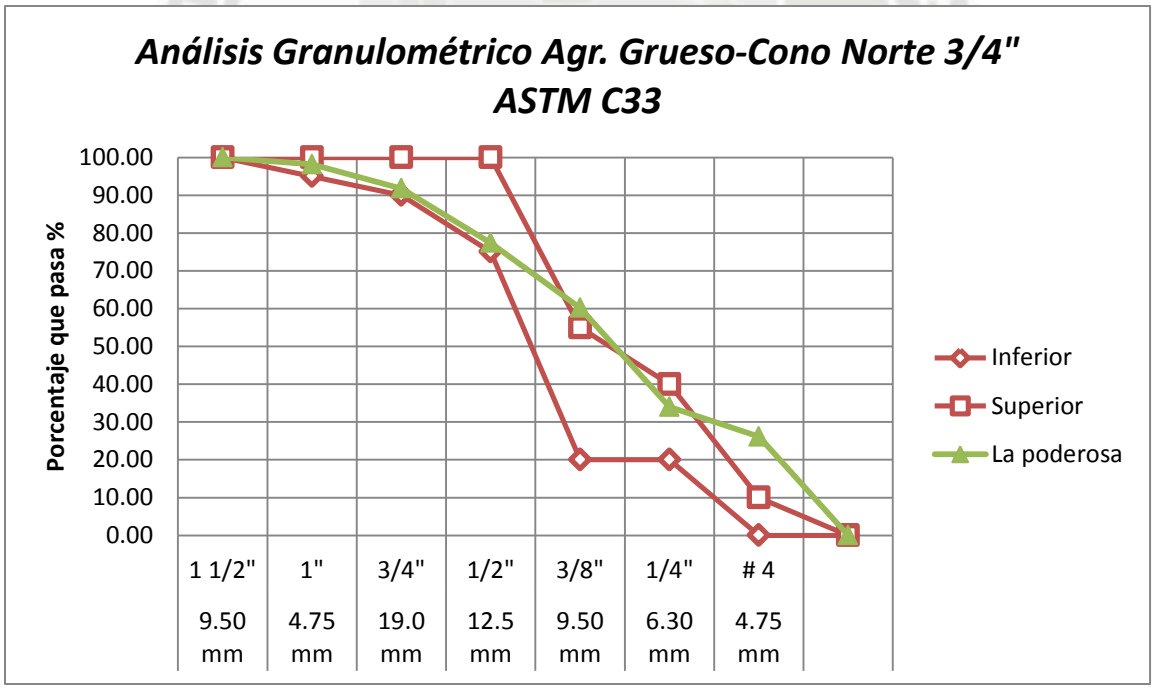
GRANULOMETRÍA AGREGADO GRUESO				
Cantera: " SOCABAYA"		Peso inicial de la muestra: 5000.00 gr.		
Malla	Peso (gr)	% Retenido	% Acumulado	% Pasante
1 1/2"	0.00	0.00	0.00	100.00
1"	1750.79	35.02	35.02	64.98
3/4"	3065.00	61.30	96.32	3.68
1/2"	184.16	3.68	100.00	0.00
3/8"	0.00	0.00	100.00	0.00
1/4"	0.00	0.00	100.00	0.00
# 4	0.05	0.00	100.00	0.00
Fondo	0.00	0.00	100.00	0.00
Total	4999.995			
Modulo de Fineza:			7.963	
Tamaño Nominal Máximo:			1"	



B) *CONO NORTE:*

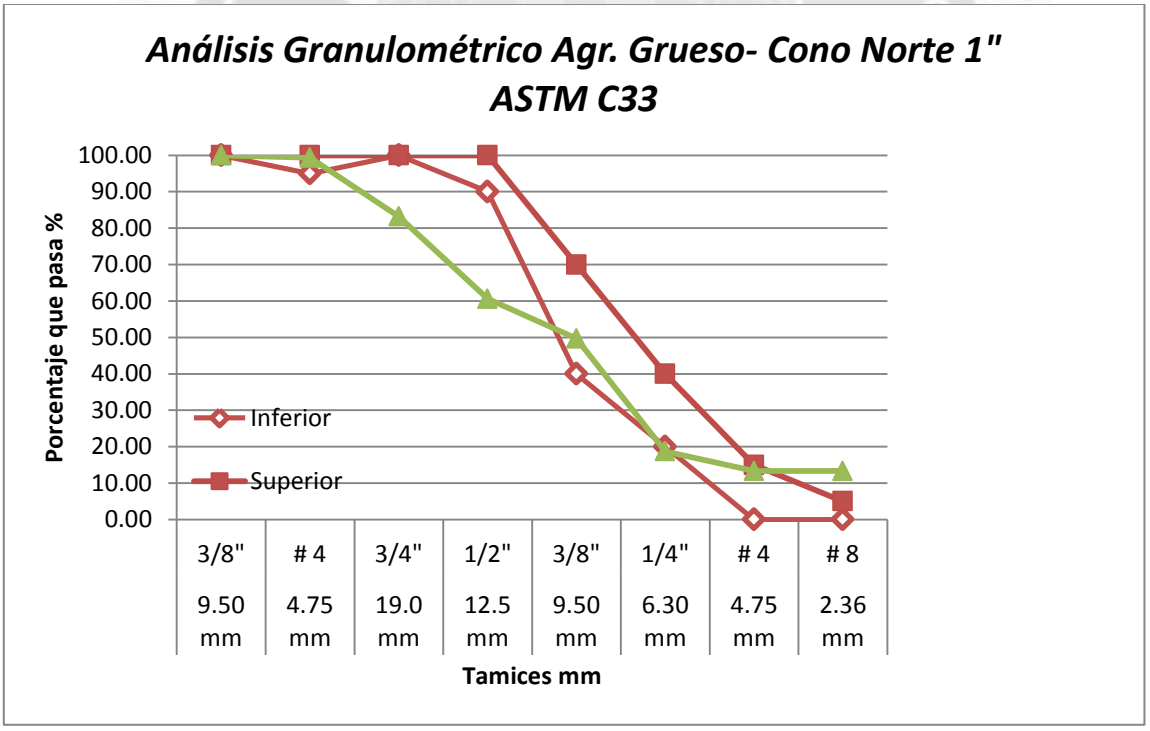
- *TMN ¾":*

GRANULOMETRÍA AGREGADO GRUESO				
Cantera: "CONO NORTE"		**Peso inicial de la muestra: 4500.00 gr.**		
Malla	**Peso (gr)**	**% Retenido**	**% Acumulado**	**% Pasante**
1 1/2"	0.00	0.00	0.00	100.00
1"	81.60	1.81	1.81	98.19
3/4"	288.70	6.42	8.23	91.77
1/2"	647.1	14.38	22.61	77.39
3/8"	774.5	17.21	39.82	60.18
1/4"	1179.1	26.20	66.02	33.98
# 4	353.2	7.85	73.87	26.13
Fondo	1175.8	26.13	100.00	0.00
Total	**4500**			
Módulo de Fineza:			**6.219**	
Tamaño Nominal Máximo:			**3/4"**	



- *TMN: 1”*

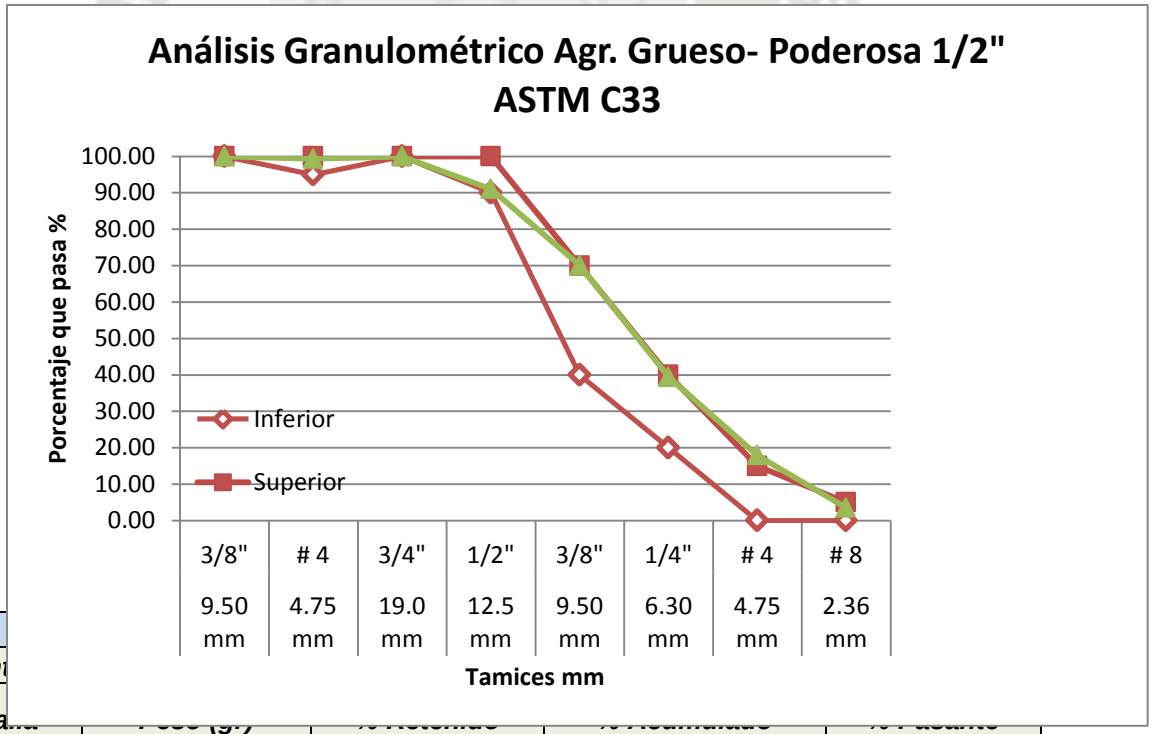
GRANULOMETRÍA AGREGADO GRUESO				
Cantera: "CONO NORTE"		**Peso inicial de la muestra: 4500.00 gr.**		
Malla	***Peso (gr)***	***% Retenido***	***% Acumulado***	***% Pasante***
1 1/2"	*0.00*	*0.00*	*0.00*	*100.00*
1"	*285.00*	*5.70*	*5.70*	*94.30*
3/4"	*555.00*	*11.10*	*16.80*	*83.20*
1/2"	*1130*	*22.60*	*39.40*	*60.60*
3/8"	*545*	*10.90*	*50.30*	*49.70*
1/4"	*1550*	*31.00*	*81.30*	*18.70*
# 4	*270*	*5.40*	*86.70*	*13.30*
# 8	*0.00*	*0.00*	*86.70*	*13.30*
Fondo	*170*	*3.40*	*90.10*	*9.90*
Total	***4505***			
Módulo de Fineza:		***6.538***		
Tamaño Nominal Máximo:		***1"***		



C) Poderosa:

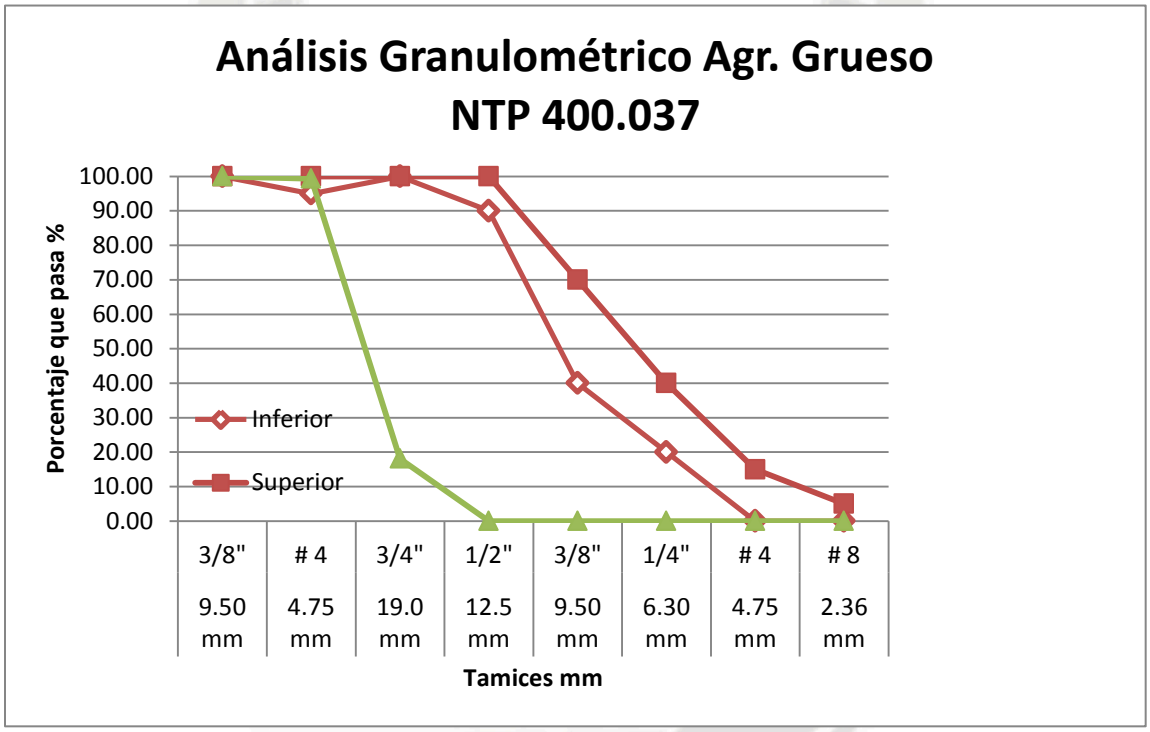
- *TMN ½"*

GRANULOMETRÍA AGREGADO GRUESO				
Cantera: "LA PODEROSA"		***Peso inicial de la muestra: 3000.00 gr.***		
Malla	***Peso (gr)***	***% Retenido***	***% Acumulado***	***% Pasante***
1 1/2"	*0.00*	*0.00*	*0.00*	*100.00*
1"	*0.00*	*0.00*	*0.00*	*100.00*
3/4"	*0.00*	*0.00*	*0.00*	*100.00*
1/2"	*269.49*	*8.98*	*8.98*	*91.02*
3/8"	*627.79*	*20.93*	*29.91*	*70.09*
1/4"	*920.49*	*30.68*	*60.59*	*39.41*
# 4	*644.94*	*21.50*	*82.09*	*17.91*
# 8	*432.30*	*14.41*	*96.50*	*3.50*
Fondo	*104.86*	*3.50*	*100.00*	*0.00*
Total	***2999.87***			
Modulo de Fineza:			***6.120***	
Tamaño Nominal Máximo:			***1/2"***	



1 1/2"	*0.00*	*0.00*	*0.00*	*100.00*
1"	*320.00*	*6.40*	*6.40*	*93.60*
3/4"	*3775.00*	*75.50*	*81.90*	*18.10*
1/2"	*905*	*18.10*	*100.00*	*0.00*
3/8"	*0*	*0.00*	*100.00*	*0.00*
1/4"	*0*	*0.00*	*100.00*	*0.00*

# 4	*0*	*0.00*	*100.00*	*0.00*
# 8	*0.00*	*0.00*	*100.00*	*0.00*
Fondo	*0*	*0.00*	*100.00*	*0.00*
Total	***5000***			
Módulo de Fineza:			***7.819***	
Tamaño Nominal Máximo:			***1"***	



2.2.2 Agregado Fino:

Se considera como agregado fino a la arena o piedra natural finamente triturada, de dimensiones reducidas y que pasan por el tamiz 9.5mm (3/8") y que cumple con algunos límites establecidos

2.2.2.1 Gravedad específica nominal:

Donde:

A= Peso de la muestra seca

B=Peso del Agregado Fino S.S.S
C=Peso del frasco limpio
D=Peso frasco + material + agua
V= capacidad frasco
W= Agua añadida D-(B+C)

$$GE\ nominal = \frac{A}{(V - W) - (B - A)}$$

CANTERAS	*Ge nominal*
Socabaya	*2.576*
Cono Norte	*2.358*
Poderosa	*2.521*

2.2.2.2 Gravedad específica saturada

Donde:
A= Peso de la muestra seca
B=Peso del Agregado Fino S.S.S
C=Peso del frasco limpio
D=Peso frasco + material + agua
V= capacidad frasco
W= Agua añadida D-(B+C)

$$GE\ sss = \frac{B}{(V - W)}$$

CANTERAS	*Ge saturada*
Socabaya	*2.491*
Cono Norte	*2.297*
Poderosa	*2.439*

2.2.2.3 Gravedad específica aparente

Donde:

A= Peso de la muestra seca
B=Peso del Agregado Fino S.S.S
C=Peso del frasco limpio
D=Peso frasco + material + agua
V= capacidad frasco
W= Agua añadida D-(B+C)

$$GE\ aparente = \frac{A}{(V - W)}$$

CANTERAS	Ge aparente
Socabaya	2.437
Cono Norte	2.252
Poderosa	2.385

2.2.2.4 Porcentaje de Absorción:

Consideraremos para una muestra de 500 gr. En condición SSS.

Donde:

A= Peso de la muestra seca

$$\%\ Absorción = \frac{500 - A}{A} * 100$$

CANTERAS	% Absorción
Socabaya	2.20%
Cono Norte	2.00%
Poderosa	2.25%

2.2.2.5 *Peso unitario compactado:*

Donde:
PUC= Peso unitario suelto del Agregado Fino
Wmc=Peso de muestra compactada
V= Volumen interno del recipiente

$$PUC = \frac{Wmc}{V}$$

CANTERAS	*PUC (Kgf/m3)*
Socabaya	*1570.914*
Cono Norte	*1680.860*
Poderosa	*1871.677*

2.2.2.6 *Peso unitario Suelto:*

Se determina de esta manera al peso que alcanza un determinado volumen unitario, sin varillar, tratando de loras se formen la mayor cantidad de vacíos entre las muestras de agregado.

Donde:
PUS= Peso unitario suelto del Agregado Fino
Wms=Peso de muestra suelta
V= Volumen interno del recipiente

$$PUS = \frac{Wms}{V}$$

CANTERAS	*PUS (Kgf/m3)*
Socabaya	*1288.985*
Cono Norte	*1493.222*
Poderosa	*1482.039*

2.2.2.7 *Impurezas orgánicas*

El objetivo principal es determinar el contenido o no del material orgánico en nuestra muestra de agregado fino o grueso, que afectará en nuestro diseño de mezcla, lo que servirá para rechazarlo o no.

CANTERAS	*Contenido de Impurezas orgánica*
Socabaya	*No*
Cono Norte	*No*
Poderosa	*No*

2.2.2.8 *Contenido de humedad*

Las humedades se convierten en el factor modificador de la relación agua-cemento de las mezclas para excesos de fluidez y consistencias inmanejables en las mezclas frescas.

$$w\% = \frac{Wm - Ws}{Ws}$$

W% : Contenido de humedad
Wm: Peso del agregado en estado natural
Ws: Peso del agregado en estado seco

CANTERAS	*% cont. Humedad*
Socabaya	*1.11%*
Cono Norte	*1.01%*
Poderosa	*1.01%*

2.2.2.9 *Granulometría* *Según la ASTM C- 33, el agregado deberá tener ciertos límites establecidos en la Norma. La denominación en unidades Inglesas (tamices ASTM) se hacen según el tamaño de la abertura en pulgadas para los tamaños grandes y los números de aberturas por pulgada lineal para tamices menores de 3/8".*

Denominación del tamiz	Abertura en pulgadas	Abertura en milímetros
3"	3.0000	75.0000
1 ½"	1.5000	37.5000
¾"	0.7500	19.0000
3/8"	0.3750	9.5000
No 4	0.1870	4.7500
No 8	0.0937	2.3600
No 16	0.0469	1.1800
No 30	0.0234	0.5900
No 50	0.0117	0.2950
No 100	0.0059	0.1475
No 200	0.0029	0.0737

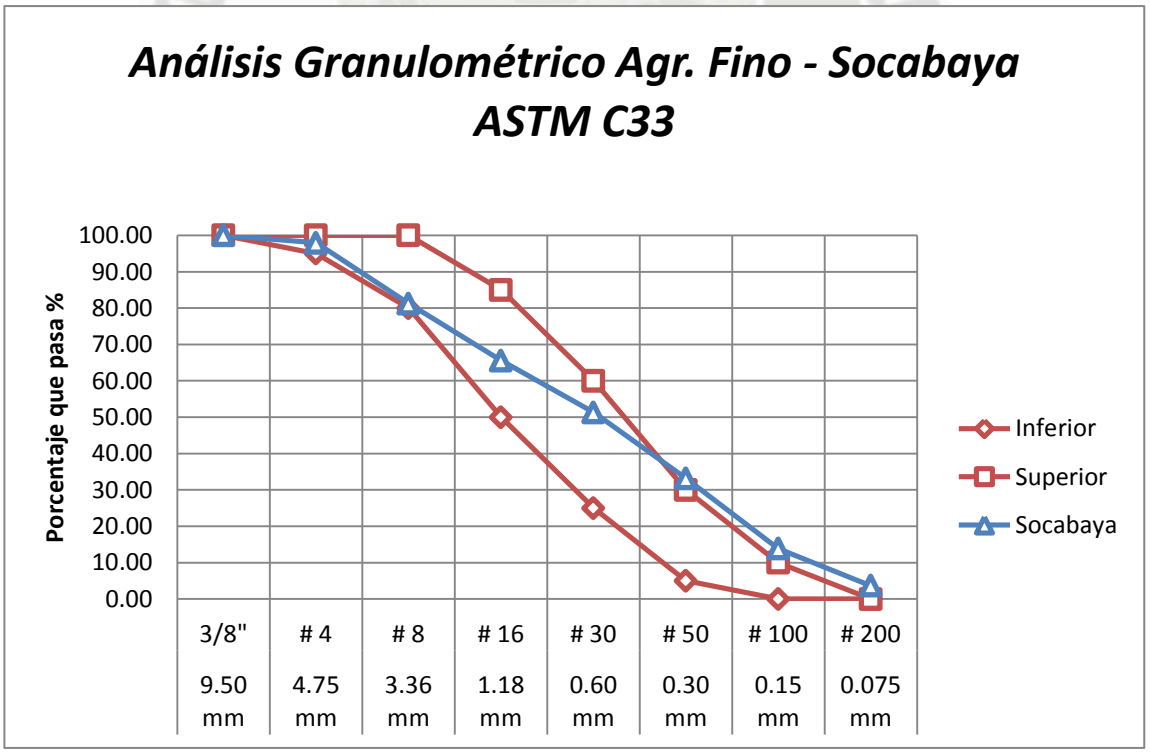
Los límites y/o usos en el caso del Agregado Fino se ven determinados en la ASTM C33.(Inciso 6.1, pag5)

Sieve (Specification E 11)	Percent Passing
9.5-mm (⅜-in.)	100
4.75-mm (No. 4)	95 to 100
2.36-mm (No. 8)	80 to 100
1.18-mm (No. 16)	50 to 85
600-µm (No. 30)	25 to 60
300-µm (No. 50)	5 to 30
150-µm (No. 100)	0 to 10

A) Socabaya:

- *Agregado Fino:*

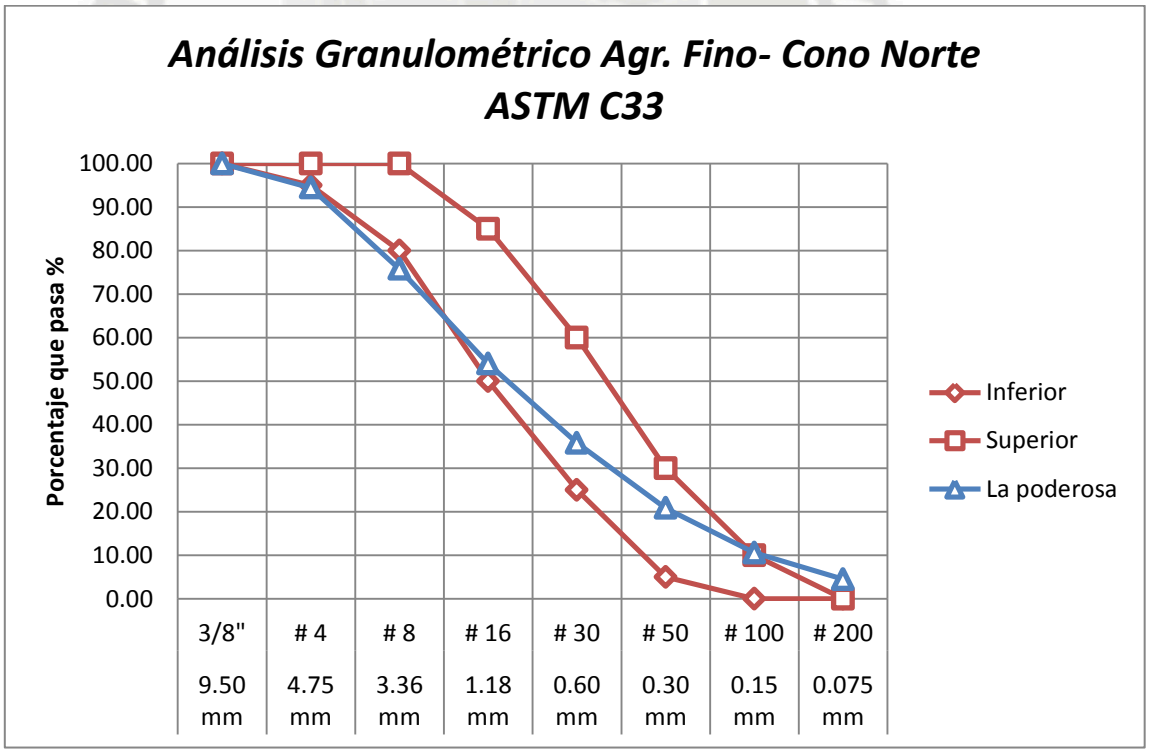
GRANULOMETRÍA AGREGADO FINO				
Cantera: "SOCABAYA"		Peso inicial de la muestra: 745.00 gr.		
Malla	**Peso (gr)**	**% Retenido**	**% Acumulado**	**% Pasante**
3/8"	0.00	0.00	0.00	**100.00**
# 4	15.30	2.05	2.05	97.95
# 8	124.80	16.73	18.78	81.22
# 16	116.70	15.64	34.42	65.58
# 30	106.40	14.26	48.69	51.31
# 50	135.40	18.15	66.84	33.16
# 100	143.90	19.29	86.13	13.87
# 200	76.20	10.21	96.34	3.66
Fondo	27.30	3.66	100.00	0.00
Total	**746.00**			
Módulo de Fineza:		**2.569**		



B) Cono Norte:

- *Agregado Fino:*

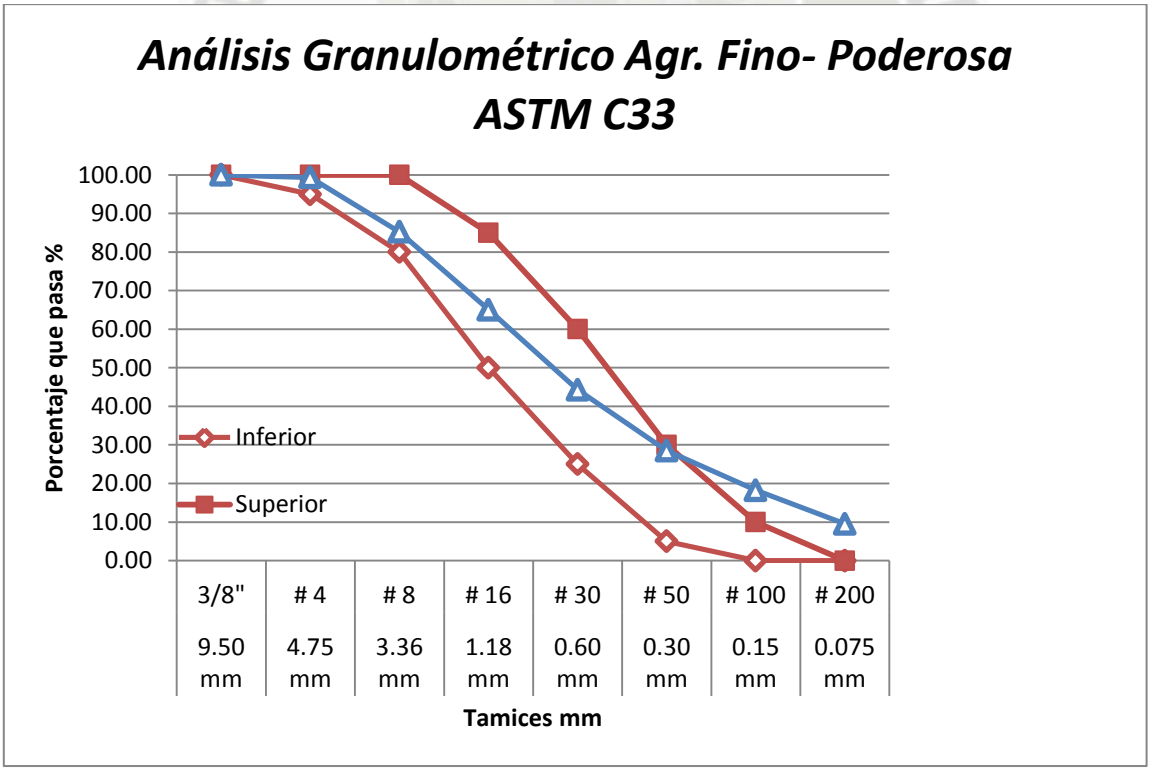
GRANULOMETRÍA AGREGADO FINO				
Cantera: "CONO NORTE"		Peso inicial de la muestra: 745.00 gr.		
Malla	**Peso (gr)**	**% Retenido**	**% Acumulado**	**% Pasante**
3/8"	0.00	0.00	0.00	**100.00**
# 4	41.45	5.56	5.56	94.44
# 8	139.05	18.66	24.23	75.77
# 16	162.15	21.77	45.99	54.01
# 30	135.75	18.22	64.21	35.79
# 50	111.45	14.96	79.17	20.83
# 100	76.35	10.25	89.42	10.58
# 200	45.45	6.10	95.52	4.48
Fondo	33.35	4.48	100.00	0.00
Total	**745.00**			
Módulo de Fineza:		**3.086**		



C) Poderosa:

- *Agregado Fino:*

GRANULOMETRÍA AGREGADO FINO				
Cantera: "LA PODEROSA"		Peso inicial de la muestra: 745.00 gr.		
Malla	**Peso (gr)**	**% Retenido**	**% Acumulado**	**% Pasante**
3/8"	0.00	0.00	0.00	**100.00**
# 4	4.86	0.65	0.65	99.35
# 8	105.30	14.11	14.77	85.23
# 16	150.67	20.20	34.96	65.04
# 30	154.90	20.76	55.73	44.27
# 50	117.50	15.75	71.48	28.52
# 100	76.67	10.28	81.76	18.24
# 200	65.09	8.72	90.48	9.52
Fondo	71.02	9.52	100.00	0.00
Total	**746.00**			
Módulo de Fineza:		**2.593**		



2.3 Resumen de datos:

AGREGADO	FINO	GRUESO		FINO	GRUESO		FINO	GRUESO	
Cantera	SOCABAYA			CONO NORTE			LA PODEROSA		
Característica		3/4"	1"		3/4"	1"		1/2"	1"
P.U. suelto seco (Kg/m3)	1288.99	1369.15	1146.49	1493.22	1234.95	1312.65	1482.04	1516.59	1418.24
P.U. compactado (Kg/m3)	1570.91	1522.24	1305.41	1680.86	1553.14	1505.11	1871.68	1618.65	1599.58
P.E. seco	2437	2462	2351	2252	2434	2536	2385	2677	2735
Módulo de fineza	2.57	5.96	7.963	3.09	6.219	6.538	2.59	6.120	7.819
TMN	-	¾"	1"	-	¾"	1"	-	½"	1"
% Absorción	2.20%	2.17%	2.30%	2.00 %	2.60%	2.61	2.25%	1.01%	0.50%
Contenido de Humedad	1.11%	1.01%	1.18%	1.01%	1.01%	1.01%	1.01%	0.70%	1.35%

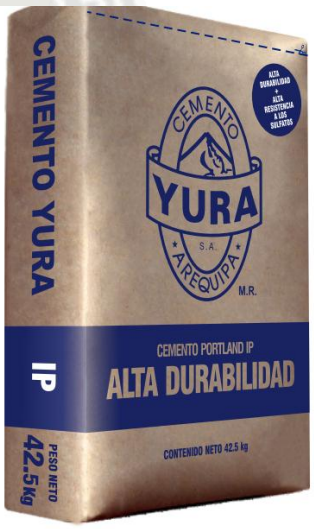
3. CAPÍTULO III: CEMENTO Y AGUA

3.1 Cemento Yura Portland tipo IP elegido para el proyecto:

El Cemento Portland Puzolánico Yura IP, ALTA DURABILIDAD, es un cemento elaborado bajo los más estrictos estándares de la industria cementera, colaborando con el medio ambiente, debido a que en su producción se reduce ostensiblemente la emisión de CO_2 , contribuyendo a la reducción de los gases con efecto invernadero.

Es un producto fabricado a base de Clinker de alta calidad, puzolana natural de origen volcánico de alta reactividad y yeso. Esta mezcla es molida industrialmente en molinos de última generación, logrando un alto grado de finura. La fabricación es controlada bajo un sistema de gestión de calidad certificado con ISO 9001 y de gestión ambiental ISO 14001, asegurando un alto estándar de calidad.

Sus componentes y la tecnología utilizada en su fabricación, hacen que el Cemento Portland Puzolánico YURA IP, tenga propiedades especiales que otorgan a los concretos y morteros cualidades únicas de ALTA DURABILIDAD, permitiendo que el concreto mejore su resistencia e impermeabilidad y también pueda resistir la acción del intemperismo, ataques químicos (aguas saladas, sulfatadas, ácidas, desechos industriales, reacciones químicas en los agregados, etc.), abrasión, u otros tipos de deterioro.



Puede ser utilizado en cualquier tipo de obras de infraestructura y construcción en general.

Especialmente para OBRAS DE ALTA EXIGENCIA DE DURABILIDAD.

3.1.1 Ventajas :

- *La resistencia a la compresión se incrementa notablemente a edades avanzadas, aumenta la resistencia a la fisuración.*
- *Reducción notable de la permeabilidad, lo que es muy conveniente para obras hidráulicas.*
- *Aumenta la resistencia al ataque de sulfatos que es muy importante para aguas de mar y resistencia a suelos alcalinos.*

- *Aumenta notablemente la trabajabilidad lo cual es importante para concretos pobres, mostrando una menor tendencia a la exudación y a la segregación.*
- *En el empleo de este tipo de cemento es su precio competitivo, en comparación con el cemento Portland y su bajo nivel de calor de hidratación.*

3.1.2 Inconvenientes mínimos:

- *La resistencia a la compresión es ligeramente menor a edades tempranas, siendo igual o mayor a edades avanzadas, pero desarrolla una resistencia adecuada a cualquier fin.*
- *Necesita una mayor cantidad de agua de mezcla para llegar a una consistencia deseada.*
- *Menor resistencia a la erosión e intemperismo.*

3.2 Agua

El agua es un elemento principal en la preparación del concreto, como también juega un papel importante en las reacciones del cemento durante el estado plástico, el proceso de fraguado y el estado endurecido de un concreto.
El agua está relacionada con la resistencia, trabajabilidad y propiedades del concreto.

Casi cualquier agua natural que sea potable y que no tenga sabor u olor pronunciado, se puede utilizar para producir concreto. Sin embargo, algunas aguas no potables pueden ser adecuadas para el concreto.
Se puede utilizar para fabricar concreto si los cubos de mortero (Norma ASTM C109) producidos con ella alcanzan resistencia a los siete días iguales a al menos el 90% de especímenes testigo fabricados con agua potable destilada.

El agua que contiene menos de 2000 partes de millón (ppm) de sólidos disueltos totales generalmente puede ser utilizada de manera satisfactoria para elaborar concreto. El agua que contenga más de 2000 ppm de sólidos disueltos deberá ser ensayada para investigar su efecto sobre la resistencia y el tiempo de fraguado.

Sustancias Disueltas	Valor Máximo Admisible
Cloruros	300 ppm
Sulfatos	300 ppm
Sales de Magnesio	150 ppm
Sales Solubles	1500 ppm
P.H	Mayor de 7
Sólidos en suspensión	1500 ppm
Materia orgánica	10 ppm

4. CAPÍTULO IV: DISEÑO DE MEZCLAS

4.1 Descripción de los método de diseño del concreto

4.1.1 Método ACI

El comité 211 del ACI ha desarrollado un procedimiento de diseño bastante simple el cual basándose en tablas preestablecidas, permite establecer valores de los diferentes materiales que integran la unidad cúbica del concreto.

Secuencia de diseño:

- *Selección de la resistencia promedio a partir de la resistencia especificada.*
- *Selección del T-M.N*
- *Selección del asentamiento*
- *Selección del volumen natural del agua(tabla)*
- *Selección del contenido de aire(tablas)*
- *Selección de la relación agua-cemento por resistencia y durabilidad (tablas)*
- *Determinación del factor cemento*
- *Determinación del contenido de agregado grueso (tabla)*
- *Determinación de la suma de los volúmenes absolutos de cemento, agua de diseño, aire y agregado grueso.*
- *Teniendo la dosificación es seco se pasa a hacer las correcciones por humedad y absorción.*
- *Finalmente se obtiene la relación en función al cemento.*

4.1.2 Método del módulo de Fineza

En el método de Diseño del Comité 211 del American Concrete Institute, se determina en primer Lugar los contenidos de cemento,

agua, aire y agregado grueso y, por diferencia de la suma de volúmenes absolutos en relación con la unidad, el volumen absoluto y peso seco del agregado fino

Secuencia de diseño:

- *Selección de la resistencia promedio a partir de la resistencia especificada.*
- *Selección del T-M.N*
- *Selección del asentamiento*
- *Selección del volumen natural del agua(tabla)*
- *Selección del contenido de aire(tablas)*
- *Selección de la relación agua-cemento por resistencia y durabilidad (tablas)*
- *Determinación del factor cemento*
- *Cálculo de los volúmenes absolutos de los elementos integrantes de la pasta*
- *Determinación del volumen absoluto de los agregados*
- *Cálculo del módulo de fineza de la combinación de agregados*
- *Cálculo del módulo de Fineza combinado*
- *Cálculo de Volúmenes absolutos del agregado*
- *Teniendo la dosificación es seco se pasa a hacer las correcciones por humedad y absorción.*
- *Finalmente se obtiene la relación en función al cemento.*

4.2 Dosificaciones y correcciones del concreto para los ensayos:

Se realizaron en promedio 401 diseños de mezcla de los cuales se obtuvieron entre 4 a 5 probetas.

A continuación se muestras las dosificaciones:

TABLAS 1

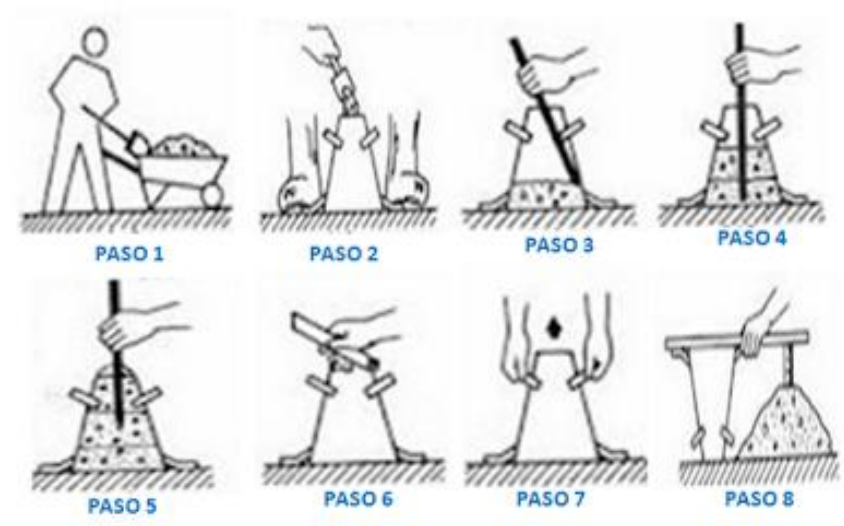
5. CAPÍTULO V: PROPIEDADES DEL CONCRETO A EVALUAR

5.1 CONCRETO FRESCO

5.1.1 Trabajabilidad

Es la facilidad que presenta el concreto fresco para ser mezclado, colocado, compactado y acabado sin segregación y exudación durante estas opciones. La trabajabilidad es apreciada generalmente en ensayos de consistencia

Esto es posible mediante la utilización del cono de Abram's, constituyendo a la vez un medio adecuado para controlar la uniformidad de las mezclas, en la presente investigación se elaboraron y tomaron las medidas de Slump de cada uno de los diseños, como se verá en cada una de las tablas, siguiendo los siguientes pasos:



- *Se humedece el molde y se coloca sobre una superficie horizontal rígida, plana, húmeda y no absorbente. Este se sujeta firme con los pies y se llena con la muestra de concreto en tres capas, cada una de ellas de un tercio del volumen del molde aproximadamente.*
- *Cada capa debe compactarse con 25 golpes de la varilla, distribuidos uniformemente sobre su sección transversal. Para la capa del fondo es necesario inclinar ligeramente la*

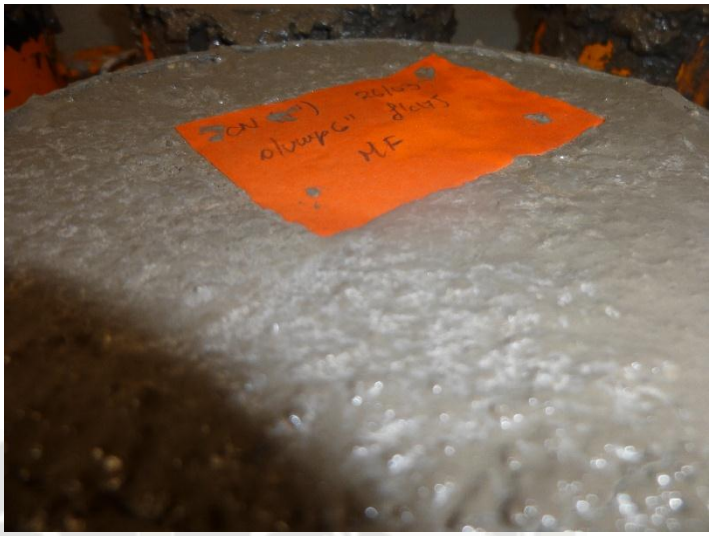
varilla dando aproximadamente la mitad de golpes cerca del perímetro y avanzando con golpes verticales en forma de espiral, hacia el centro. La capa del fondo debe compactarse a través de todo su espesor respectivo, de modo que la varilla penetre ligeramente en la capa inmediatamente inferior.

- *Se aparta el concreto que haya caído ligeramente alrededor del molde. Se levanta el molde verticalmente en 5 a 10 segundo, sin impactarle movimiento lateral o torsión. Se coloca el molde al lado del concreto ensayado y se mide la distancia entre la varilla colocada sobre el molde y la cara superior del concreto, a ¼" de pulgada*
- *Al ocurrir un derrumbamiento pronunciado o resquebrajamiento del concreto, hacia un lado, el ensayo debe repetirse desechando el concreto del ensayo anterior. La pastosidad o plasticidad del concreto influida también por los finos puede observarse golpeando el concreto de lado con la varilla.*
- *Un resquebrajamiento brusco indica que la falta de arena y un aplazamiento progresivo indica que tiene suficientes finos.*

5.1.2 *Segregación*

La segregación se define como la separación de los componentes de una mezcla heterogénea, de modo que su distribución ya no es uniforme. En el caso del concreto la causa principal de segregación es la diferencia en el tamaño de las partículas (y en ocasiones, en la gravedad específica de los componentes de la mezcla). Estas diferencias pueden controlarse con una gradación adecuada y con un manejo cuidadoso.

- *PRIMER TIPO: En la primera, las partículas más gruesas tienden a separarse, ya que en comparación con las partículas finas, se desplazan más en una pendiente o se asientan.*



Diseño CN1"- 175-Mf: En el cúal se aprecia un desplazamiento luego del enrase

- *SEGUNDO TIPO: Que se da principalmente en mezclas más húmedas, es la separación de la lechada (cemento más a*

a

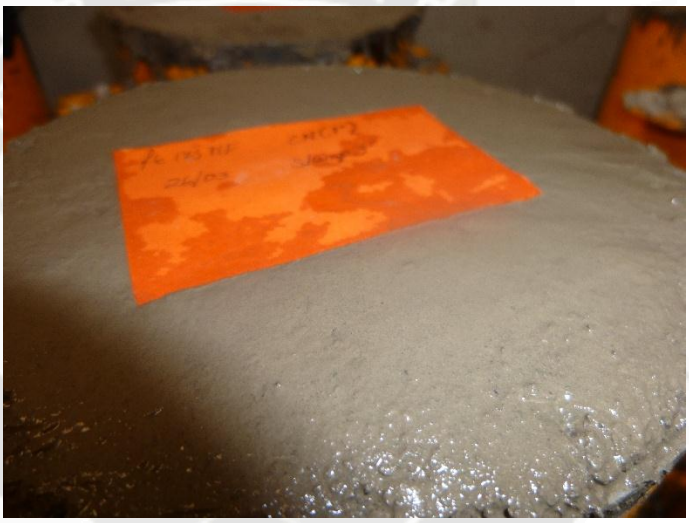
5.1.3 x

udación

Diseño CN1"- 210-Mf: En el cúal se aprecia la separación del líquido

Es determinado según la Norma técnica Peruana N.T.P 339.077 el cual consiste en determinar el agua acumulada en la parte superior del concreto fresco.

Se puede apreciar en nuestros diseños de Mezcla que a medida que se va mejorando las gradaciones de los agregados que intervienen en el concreto se presenta un decremento de volumen de exudación en el concreto fresco.
Por ejemplo los diseños hechos con agregados de ¾" presentan menos exudación aparente que los elaborados con piedra de 1" seleccionada.



Diseño CN1"- 175-Mf slump 3": En el cual comienza a notarse inicios de exhudación.

5.2 CONCRETO ENDURECIDO

5.2.1 Resistencia a la compresión

El ensayo se desarrolla de acuerdo al procedimiento establecido en la norma técnica peruana NTP 339.034 y la ASTM C 39/39M. Se elaboró 5 probetas por tanda, de las cuales se ensayaron las 4 con mejor apariencia superficial a 7 y a 28 días.

Equipo requerido:

- *Una máquina de ensayo para compresión normalizada.*
- *Vernier metálico de ±0.1 mm. de precisión.*

5.2.2 Análisis estadístico

Finalmente se obtiene la variabilidad de los datos a partir de un cuadro más completo, teniendo resultados a 7 y a 14 días para cada cantera

TABLA 2 Cantera Socabaya
TABLA 3 Cantera Cono Norte
TABLA 4 Cantera Poderosa

- *Tal como lo establece la ASTM, para concretos elaborados en Obra, fiel a su aplicación se elimina los que poseen una dispersión mayor al 9 % entre ambos resultados.*

- *Se procede a ordenar a la vez los datos según sus resistencias y agruparlos según los resultados obtenidos de las roturas.*

- *Ante un análisis más detallado se exponen las presentes tablas.*

6. CAPÍTULO VI : RECOPILACIÓN DE DATOS Y ANÁLISIS DE RESULTADOS

6.1 Análisis de Variabilidad:

Según el presente cuadro se evalúa la confiabilidad de los resultados:

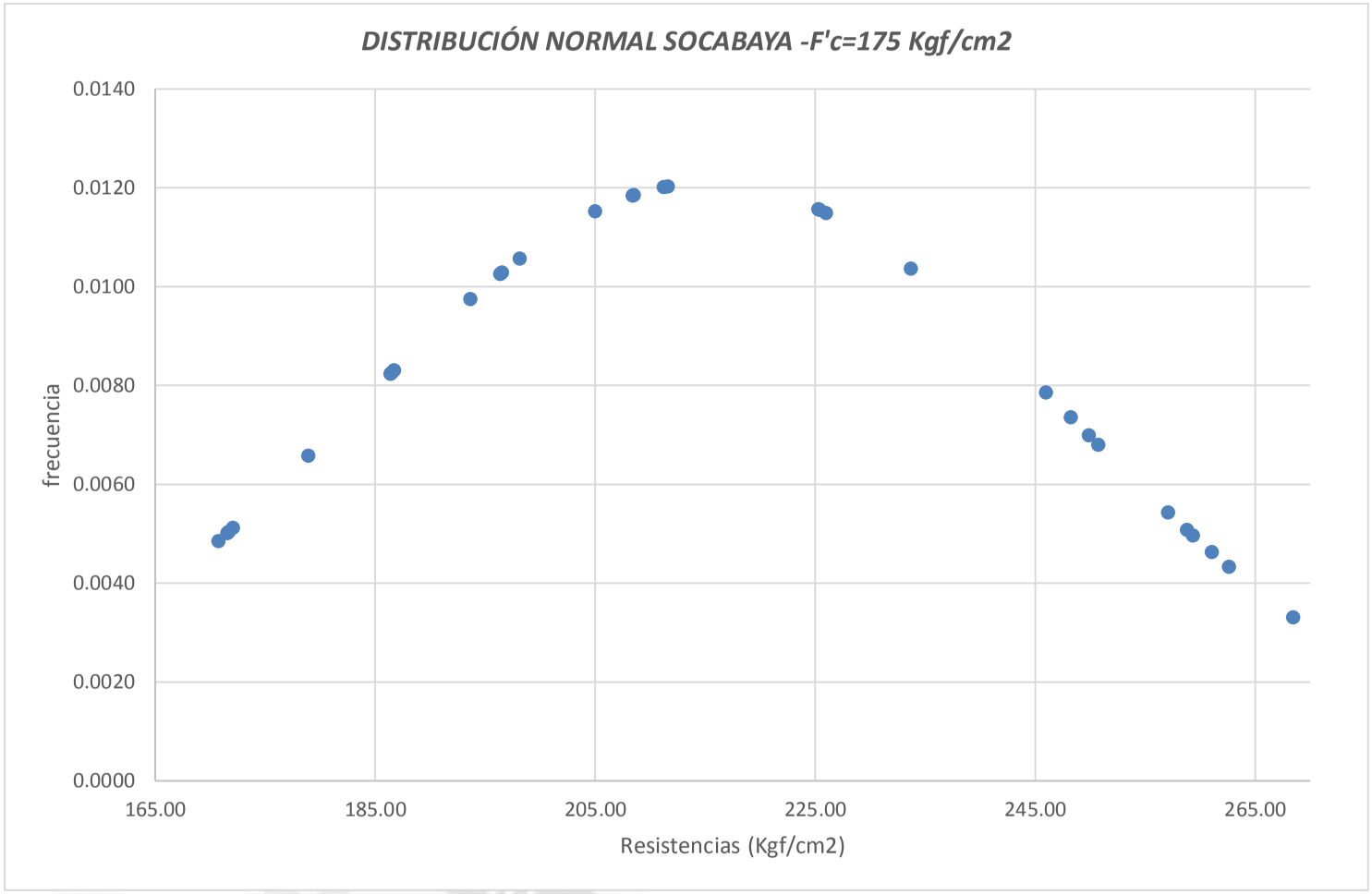
DISPERSIÓN TOTAL					
CLASES DE OPERACIÓN	DESVIACIÓN ESTÁNDAR PARA DIFERENTES GRADOS DE CONTROL (kg/cm2)				
	EXCELENTE	MUY BUENO	BUENO	SUFICIENTE	DEFICIENTE
Concreto en obra	< a 28.1	28.1 a 35.2	35.2 a 42.2	42.2 a 49.2	> a 49.2
Concreto en laboratorio	< a 14.1	14.1 a 17.6	17.6 a 21.1	21.1 a 24.6	> a 24.6

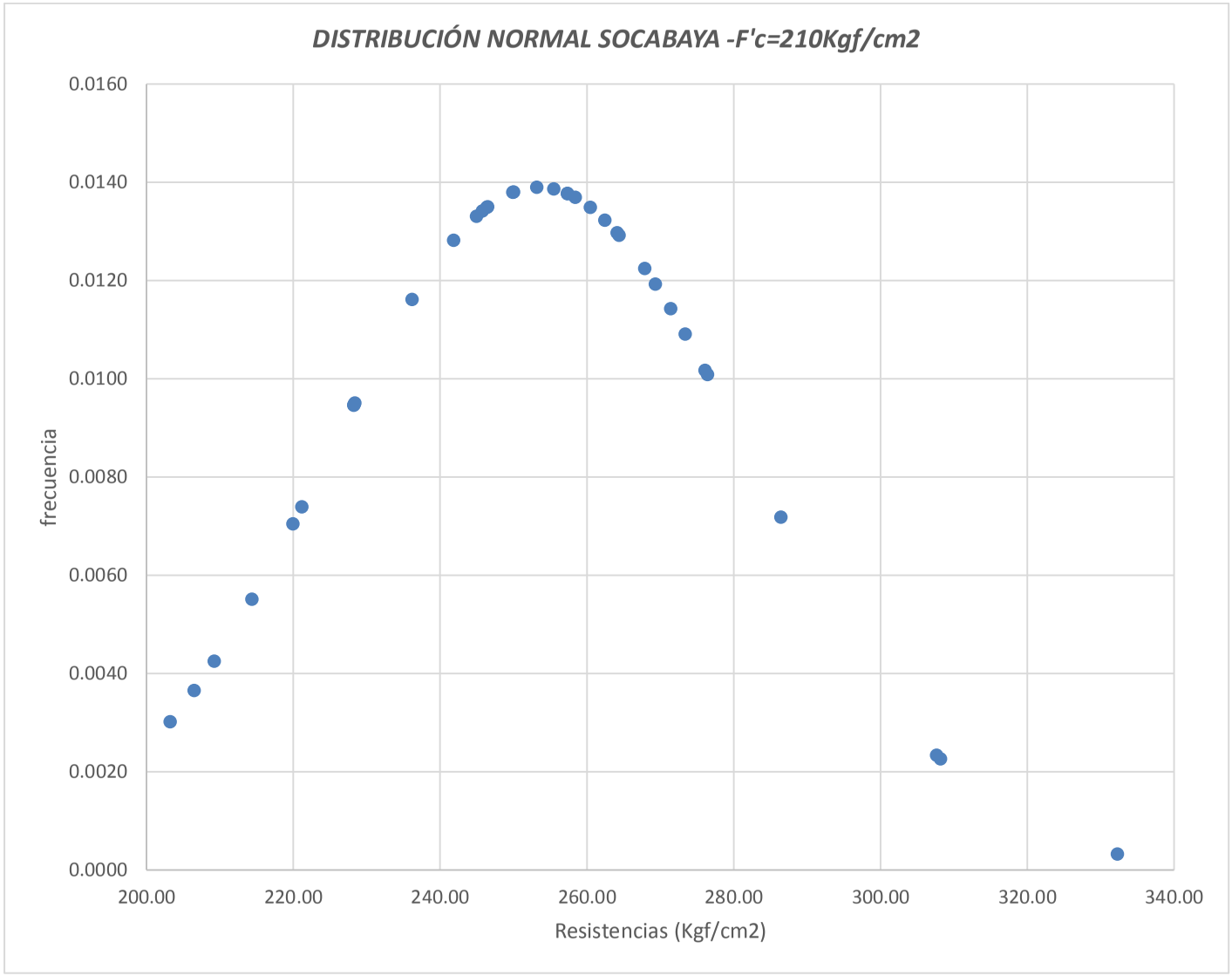
Teniéndose como resultados:

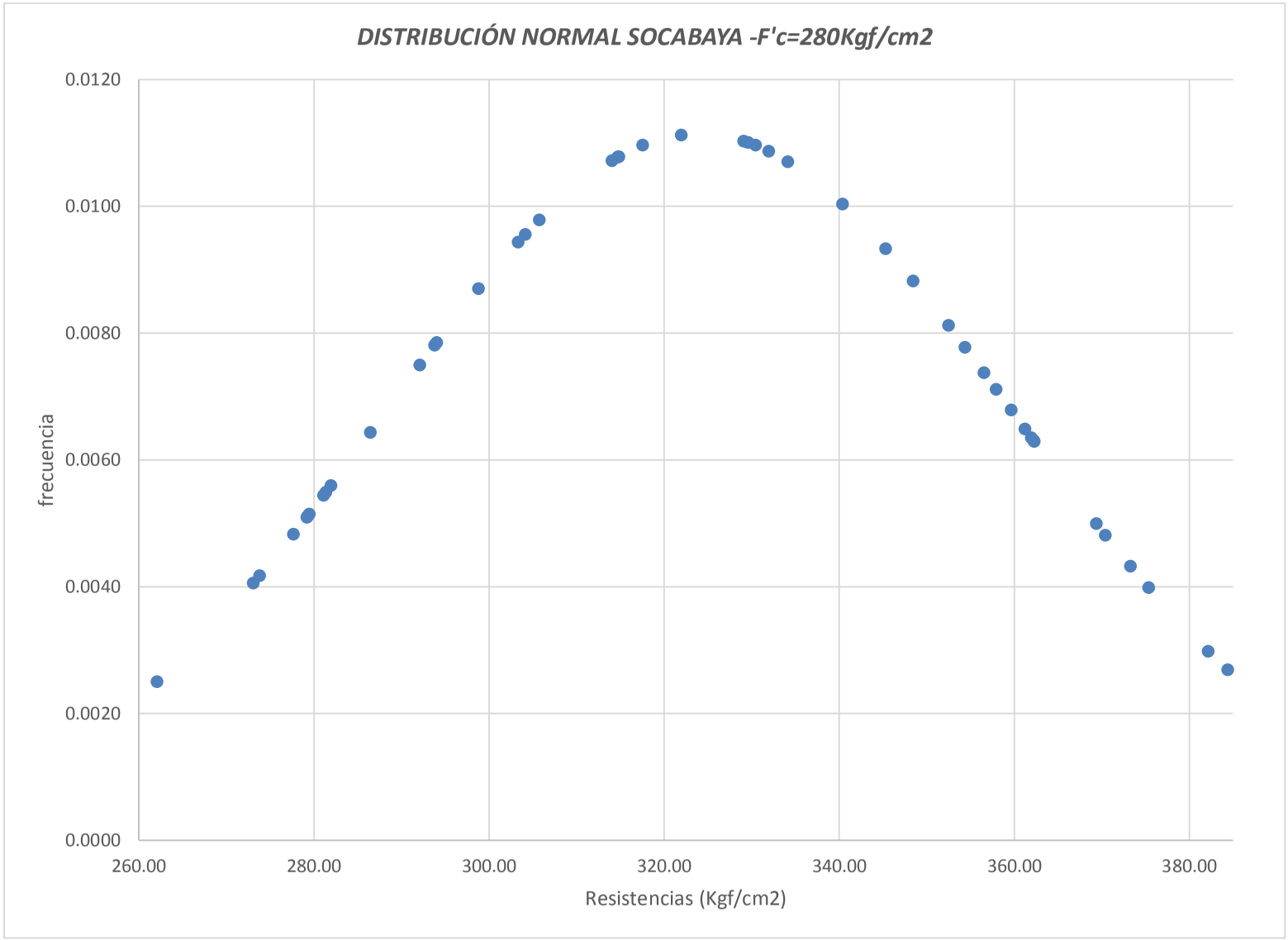
TABLA 5 Cantera Socabaya
TABLA 6 Cantera Cono Norte
TABLA 7 Cantera Poderosa

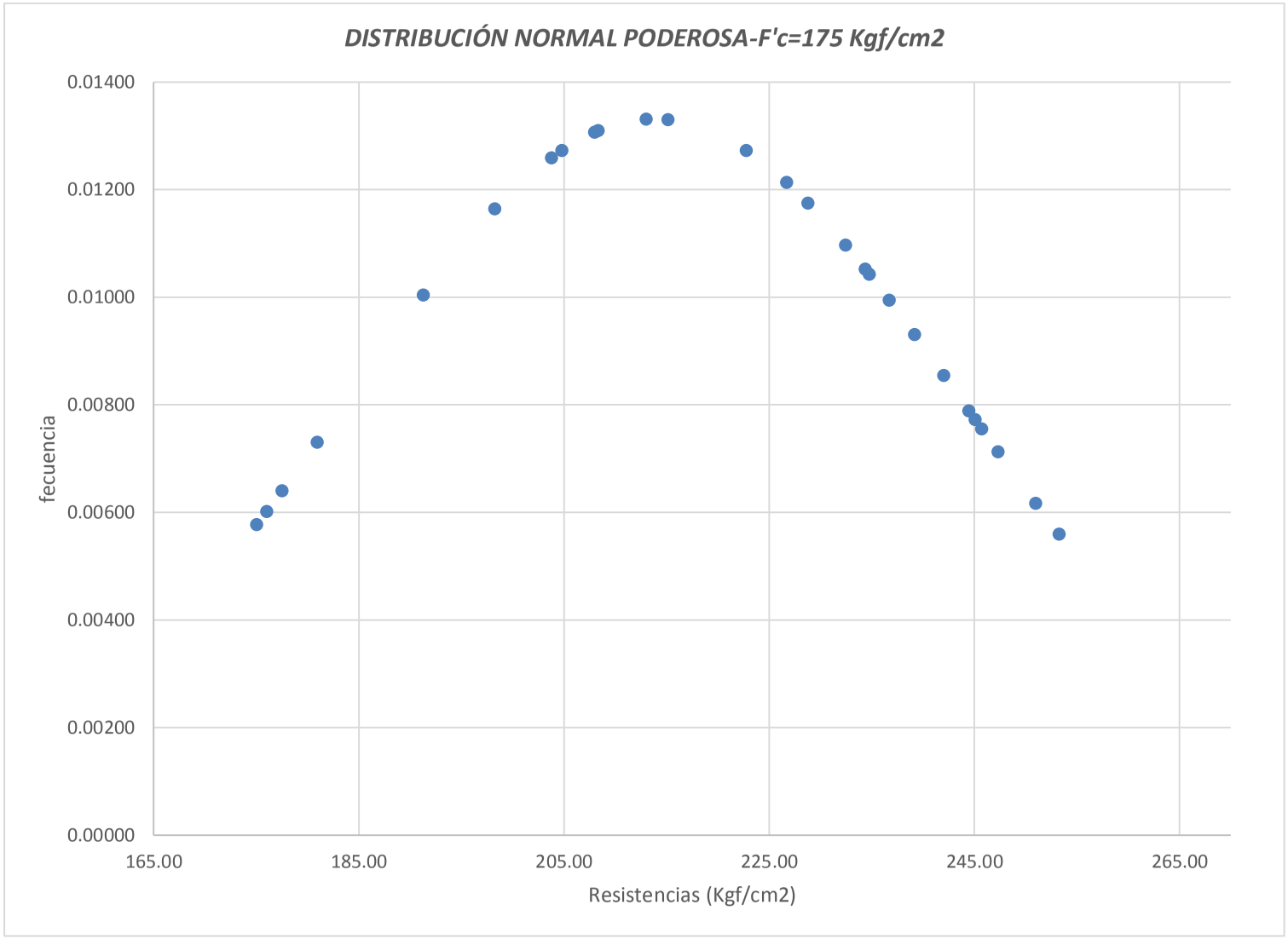
6.2 Datos de la resistencia a la compresión

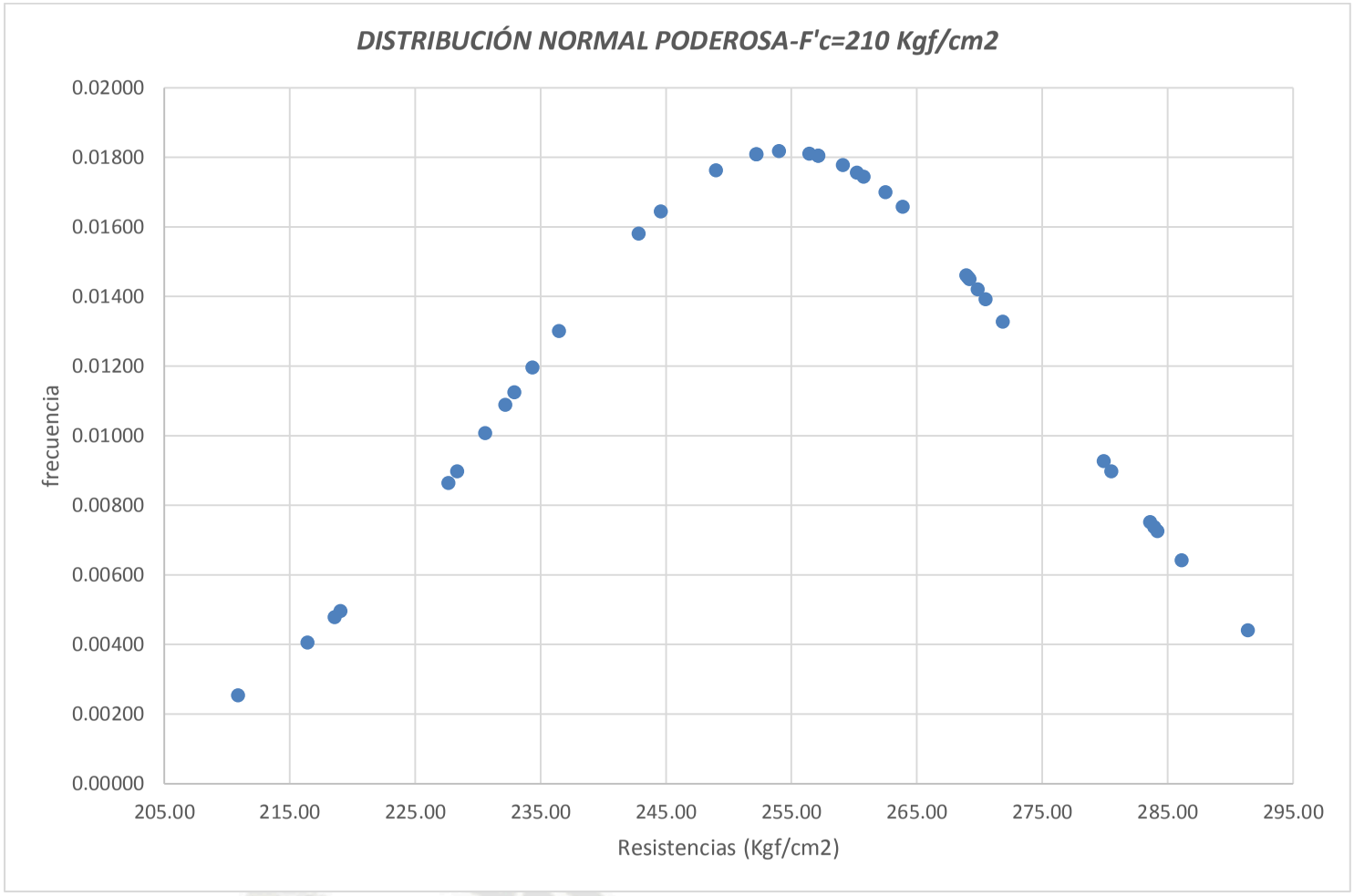
También se obtuvieron relaciones de las campanas de Gauss, para analizar cuan dispersos se encontraban los datos obteniéndose los siguientes:

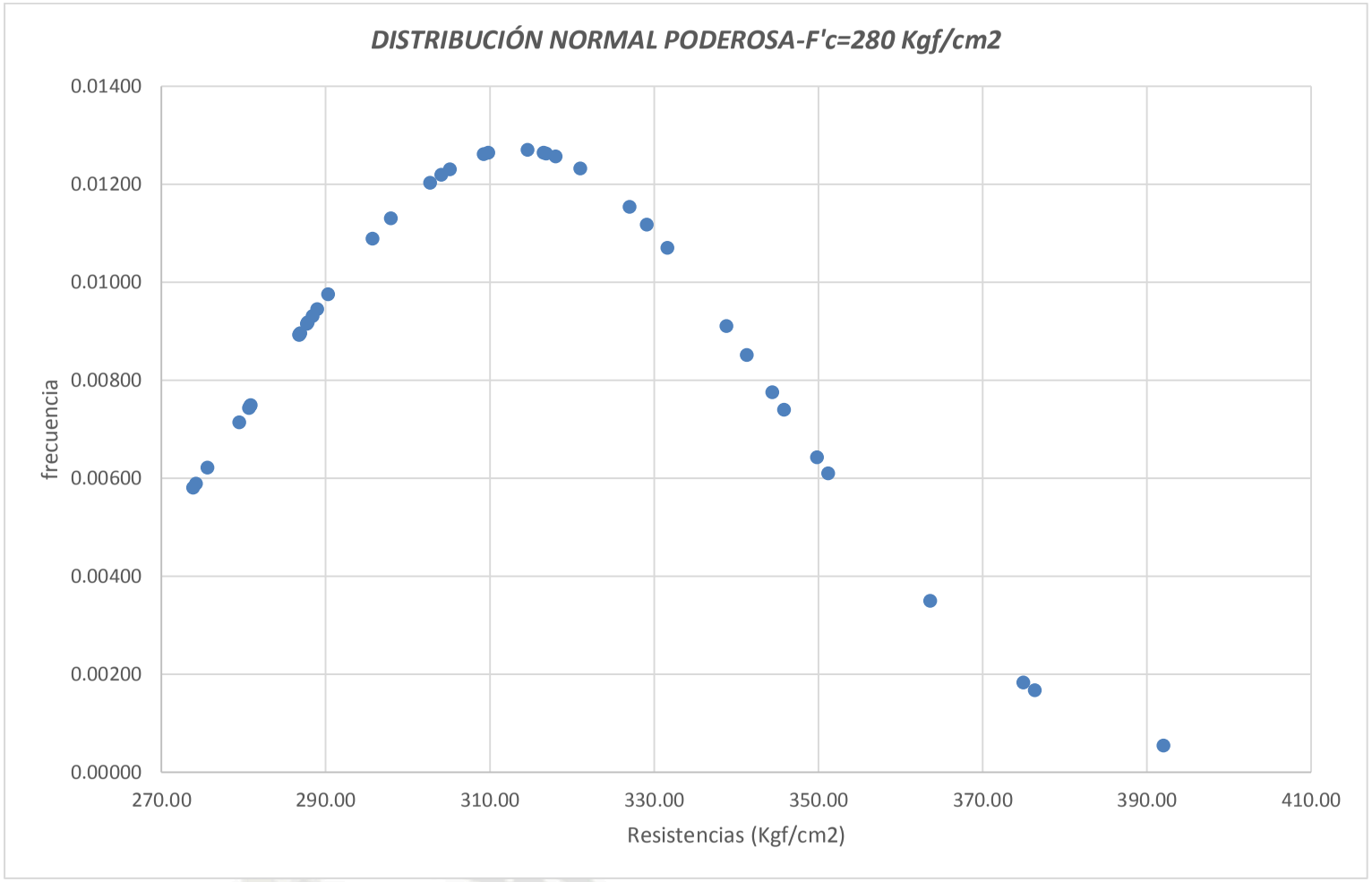

DISTRIBUCIÓN NORMAL SOCABAYA -F'c=175 Kgf/cm2
0.0140
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
frecuencia
165.00
185.00
205.00
225.00
245.00
265.00
Resistencias (Kgf/cm2)

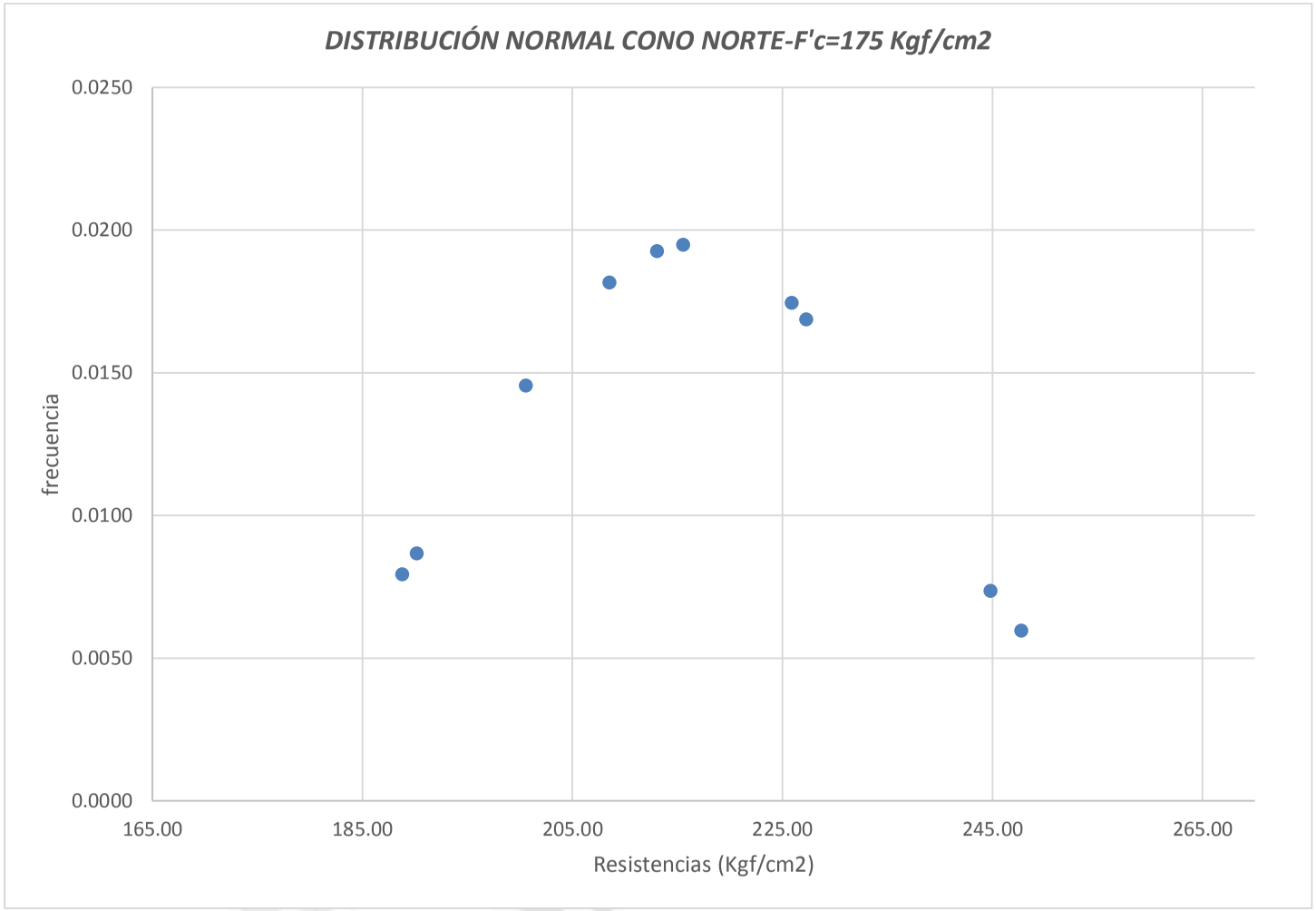

DISTRIBUCIÓN NORMAL SOCABAYA -F'c=210Kgf/cm2
0.0160
0.0140
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
frecuencia
200.00
220.00
240.00
260.00
280.00
300.00
320.00
340.00
Resistencias (Kgf/cm2)

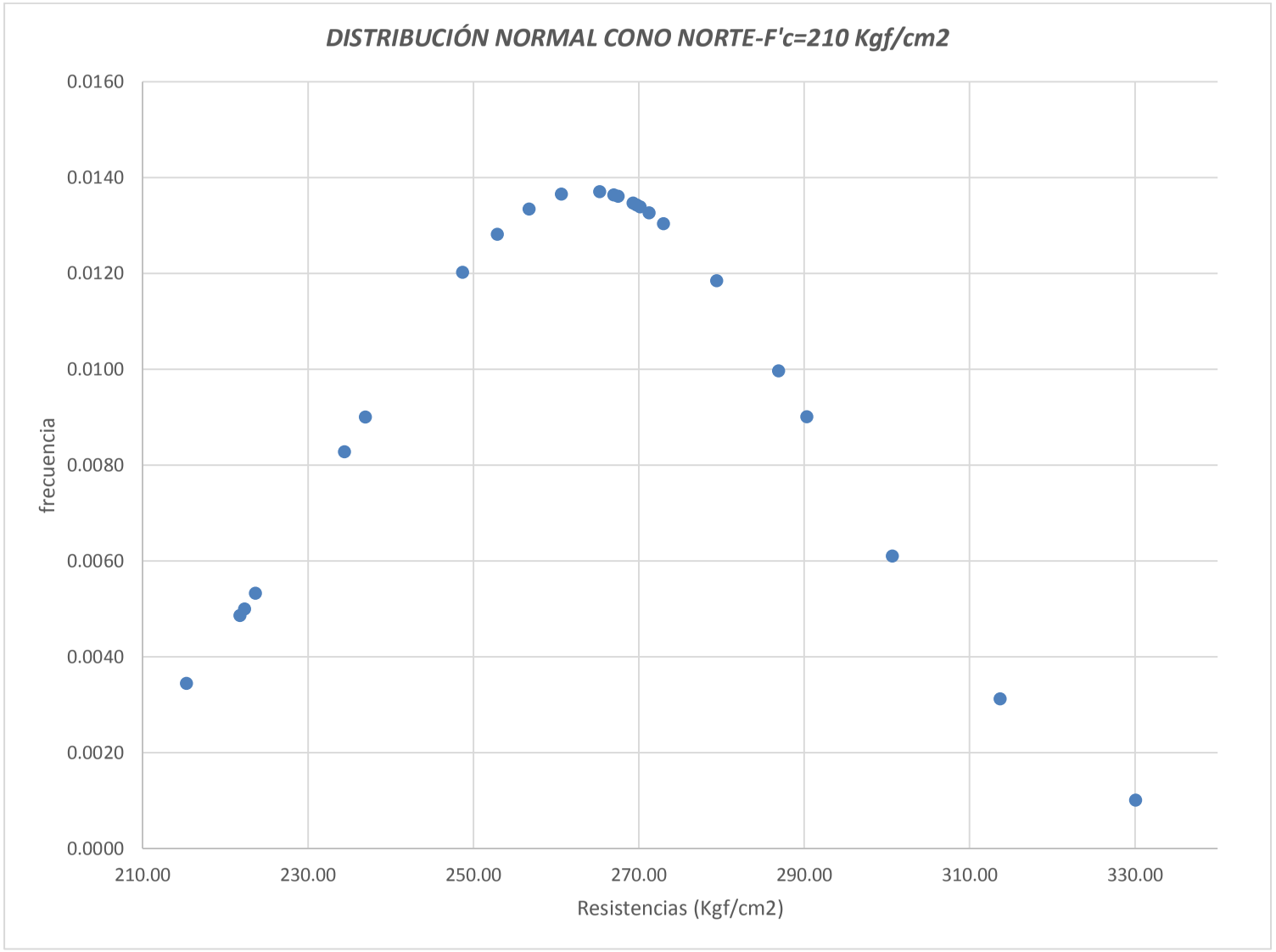

DISTRIBUCIÓN NORMAL SOCABAYA -F'c=280Kgf/cm2
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
frecuencia
260.00
280.00
300.00
320.00
340.00
360.00
380.00
Resistencias (Kgf/cm2)

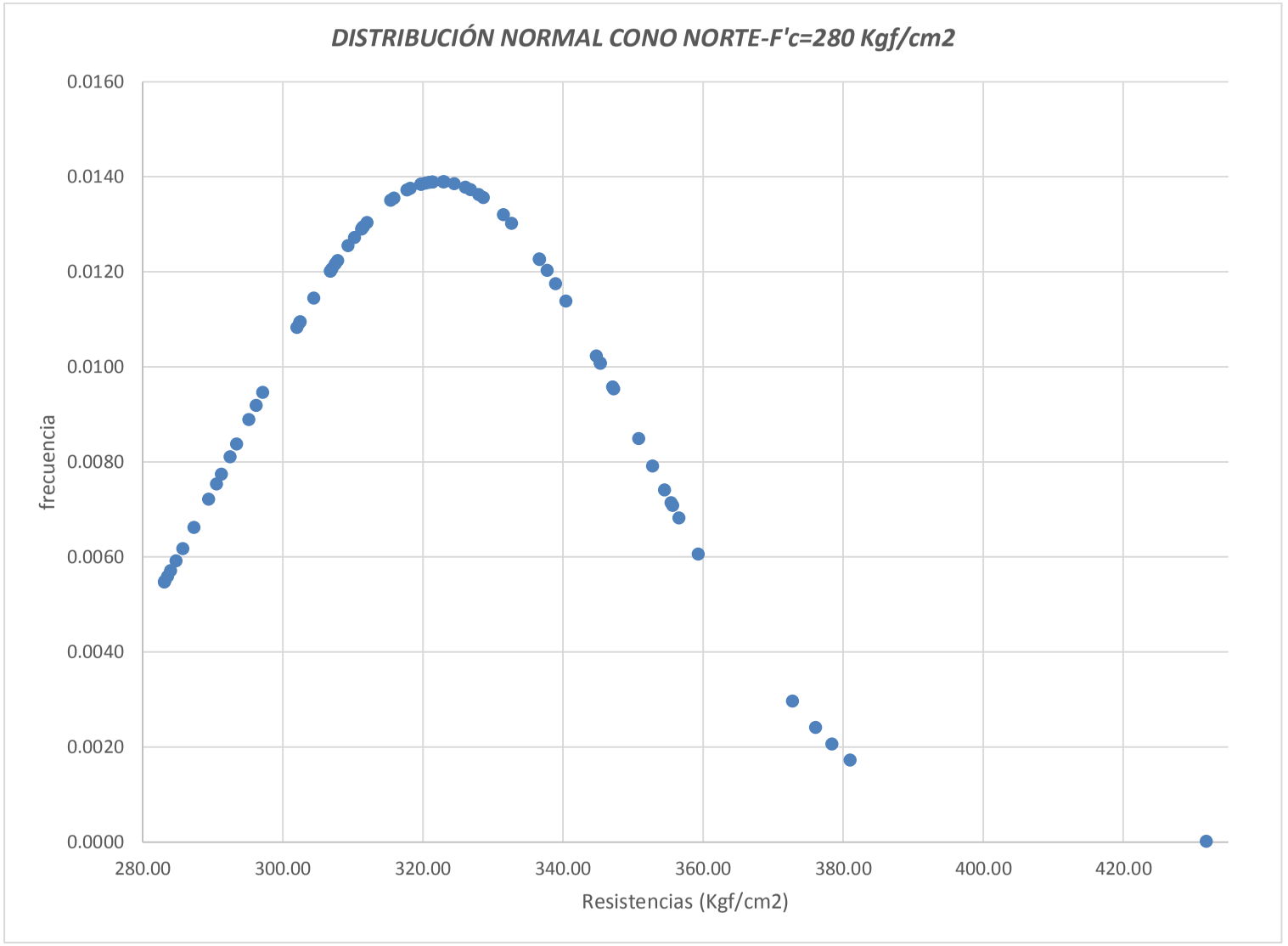

DISTRIBUCIÓN NORMAL PODEROSA-F'c=175 Kgf/cm2
0.01400
0.01200
0.01000
0.00800
0.00600
0.00400
0.00200
0.00000
fecuencia
165.00
185.00
205.00
225.00
245.00
265.00
Resistencias (Kgf/cm2)


DISTRIBUCIÓN NORMAL PODEROSA-F'c=210 Kgf/cm2
0.02000
0.01800
0.01600
0.01400
0.01200
0.01000
0.00800
0.00600
0.00400
0.00200
0.00000
frecuencia
205.00
215.00
225.00
235.00
245.00
255.00
265.00
275.00
285.00
295.00
Resistencias (Kgf/cm2)


DISTRIBUCIÓN NORMAL PODEROSA-F'c=280 Kgf/cm2
0.01400
0.01200
0.01000
0.00800
0.00600
0.00400
0.00200
0.00000
frecuencia
270.00
290.00
310.00
330.00
350.00
370.00
390.00
410.00
Resistencias (Kgf/cm2)

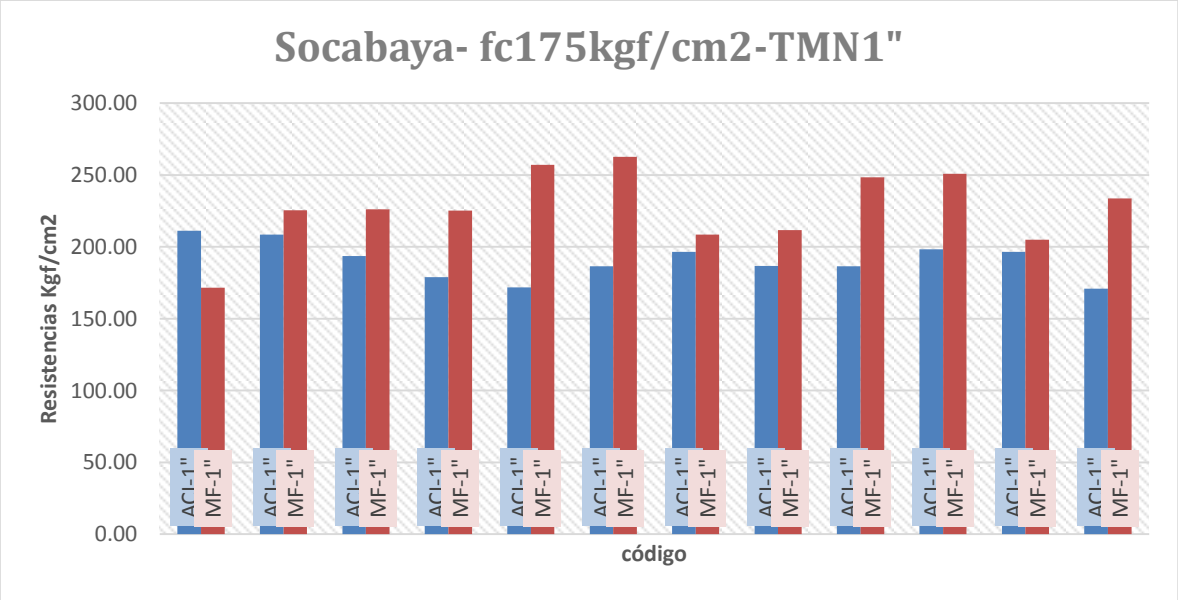

DISTRIBUCIÓN NORMAL CONO NORTE-F'c=175 Kgf/cm2
0.0250
0.0200
0.0150
0.0100
0.0050
0.0000
frecuencia
165.00
185.00
205.00
225.00
245.00
265.00
Resistencias (Kgf/cm2)

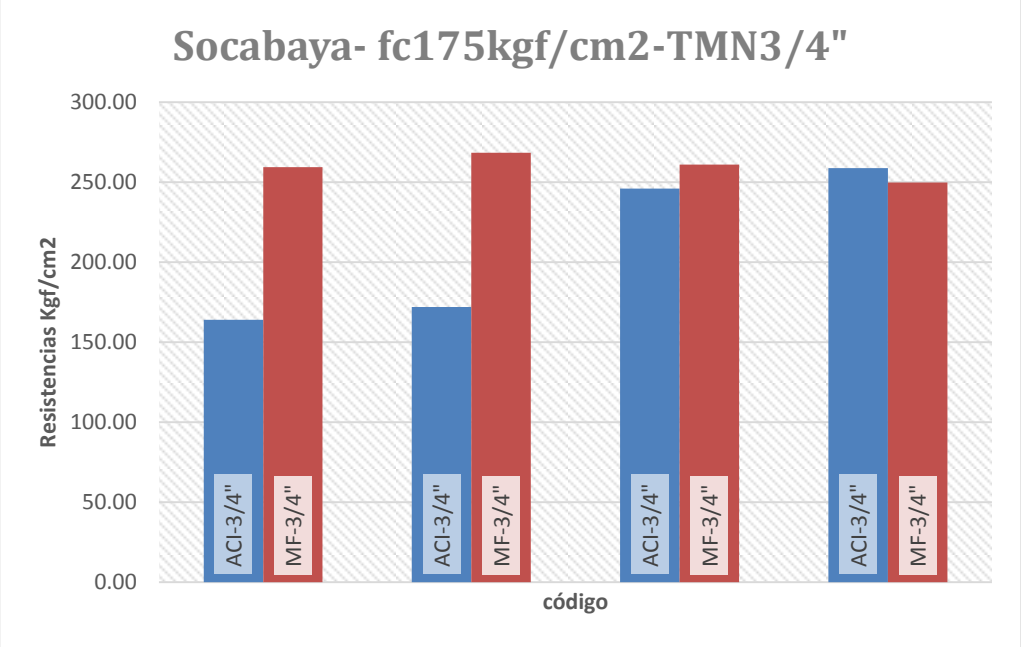

DISTRIBUCIÓN NORMAL CONO NORTE-F'c=210 Kgf/cm2
0.0160
0.0140
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
frecuencia
210.00
230.00
250.00
270.00
290.00
310.00
330.00
Resistencias (Kgf/cm2)

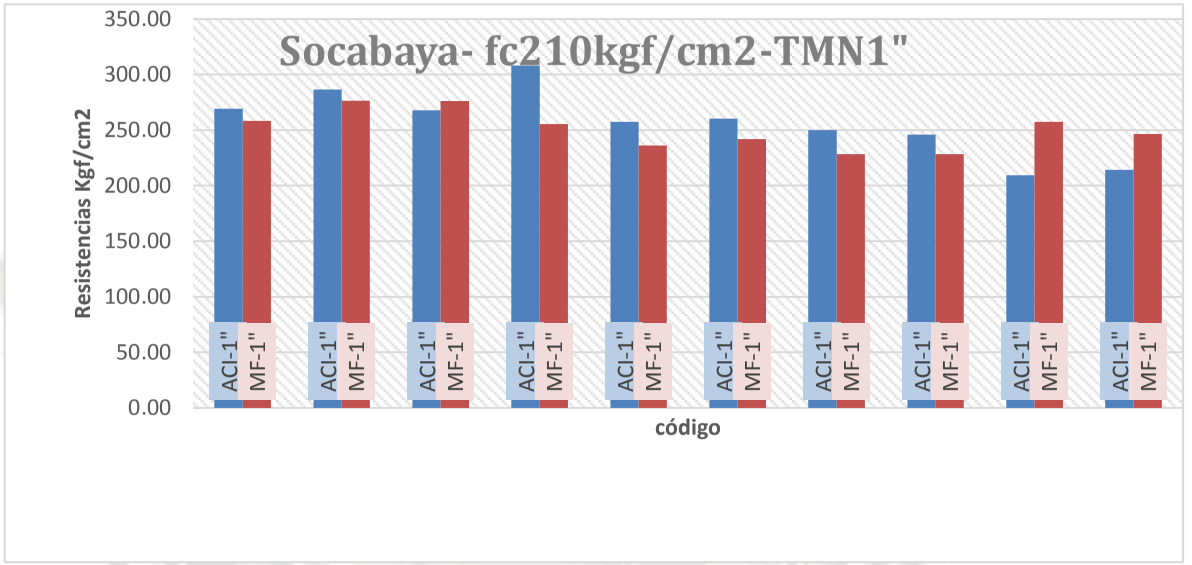

DISTRIBUCIÓN NORMAL CONO NORTE-F'c=280 Kgf/cm2
0.0160
0.0140
0.0120
0.0100
0.0080
0.0060
0.0040
0.0020
0.0000
frecuencia
280.00
300.00
320.00
340.00
360.00
380.00
400.00
420.00
Resistencias (Kgf/cm2)

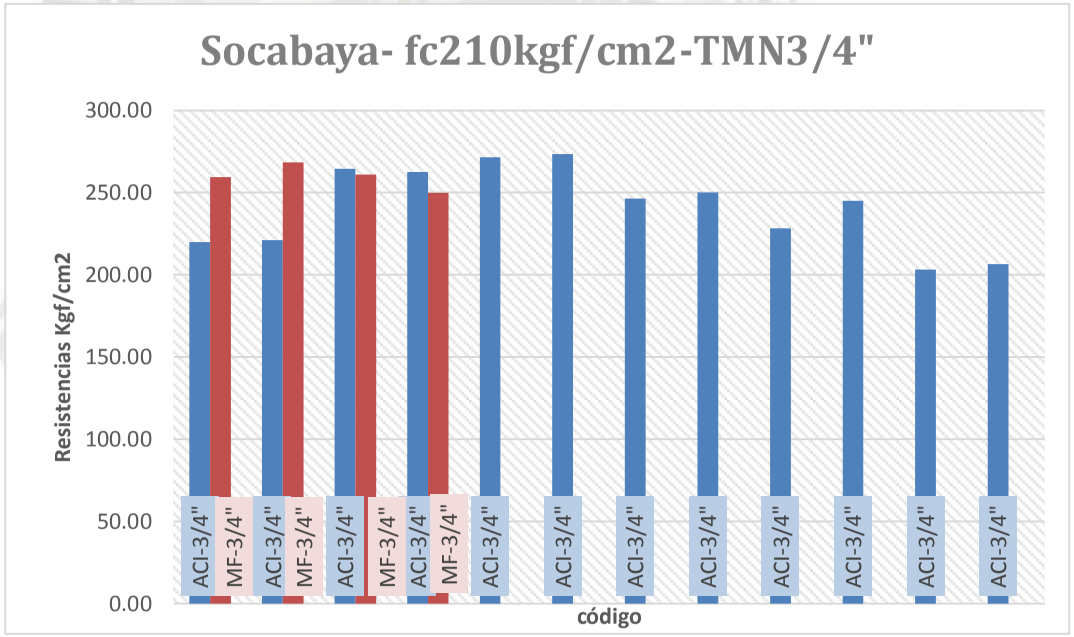
6.3 Comparación de los resultados:

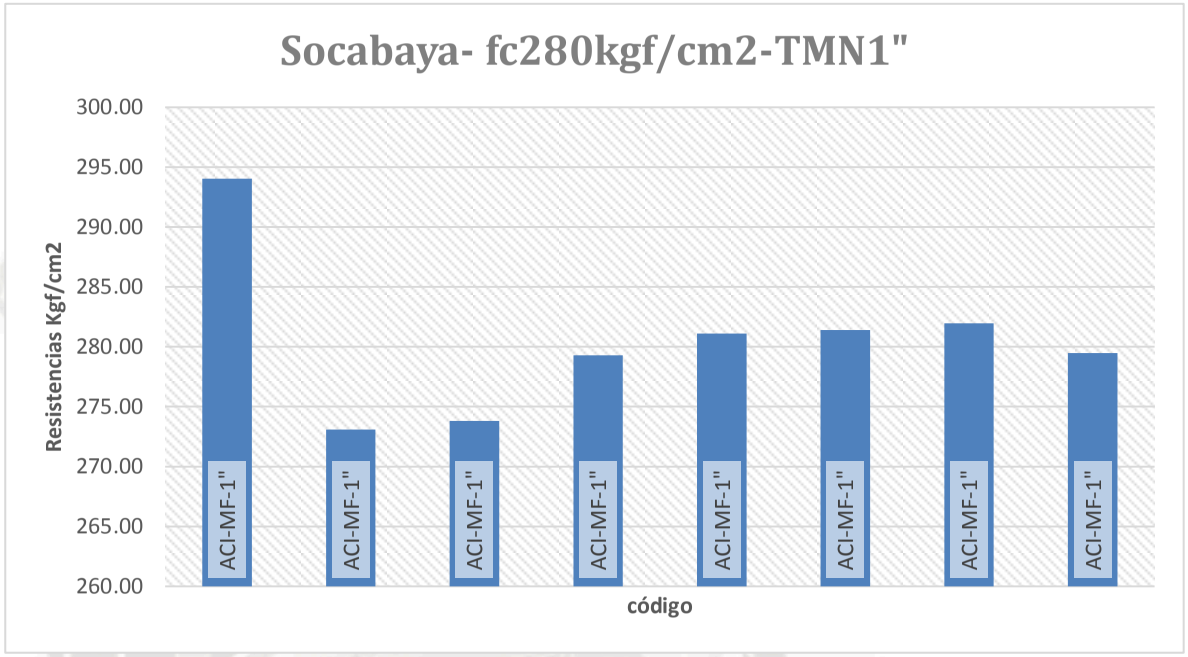
A partir de las tablas previamente mostradas se elaboraron los siguientes cuadros comparativos entre los diseños de ACI y MF

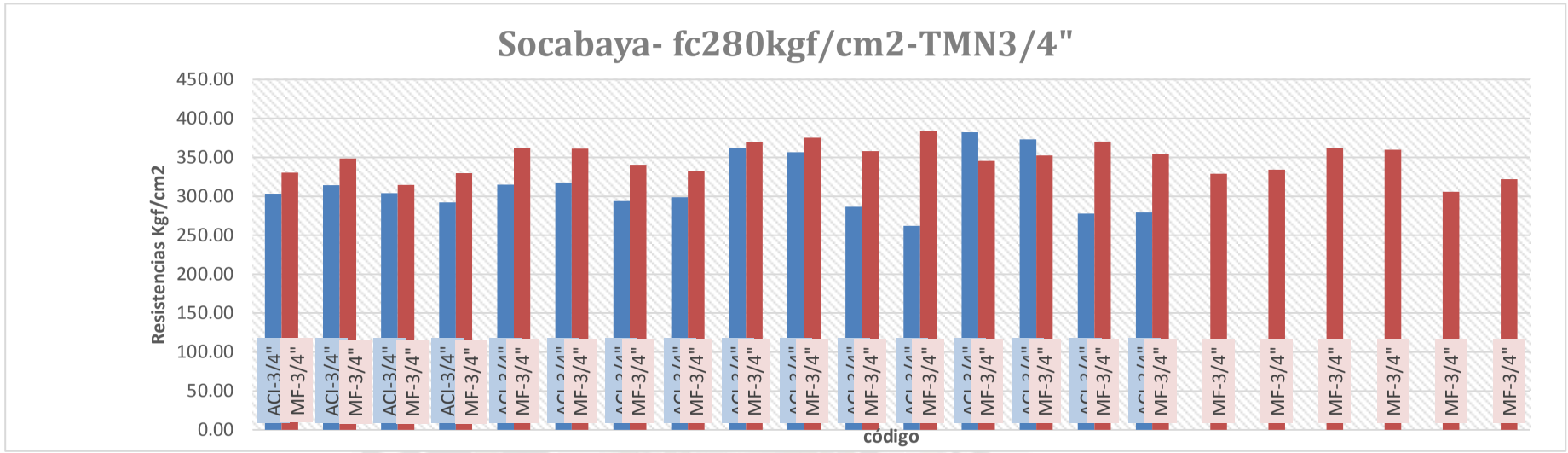


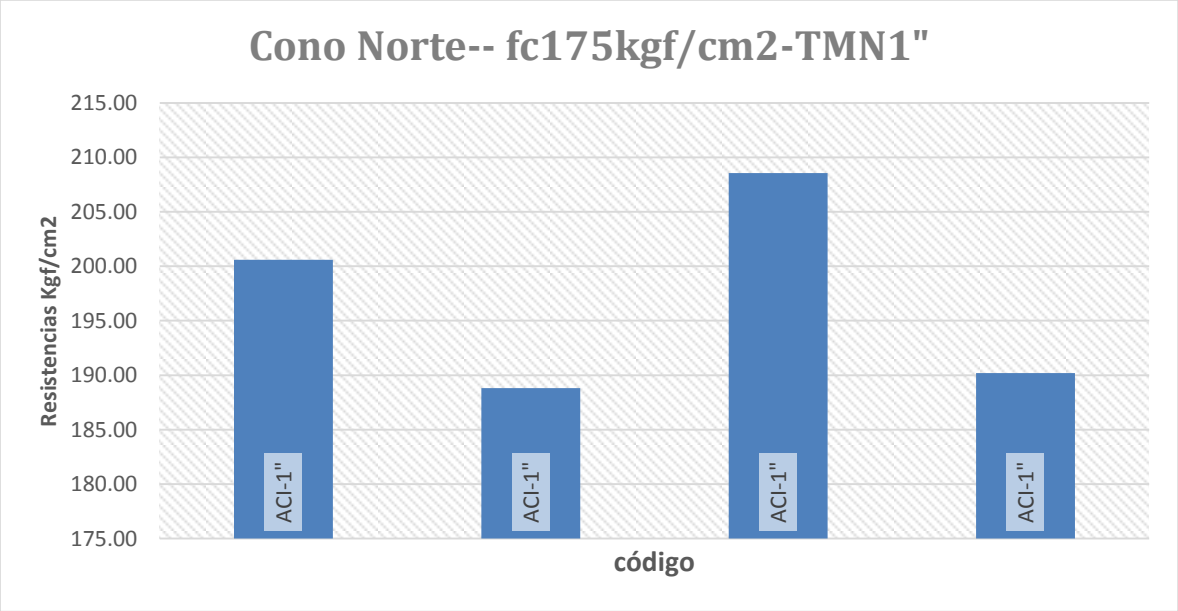


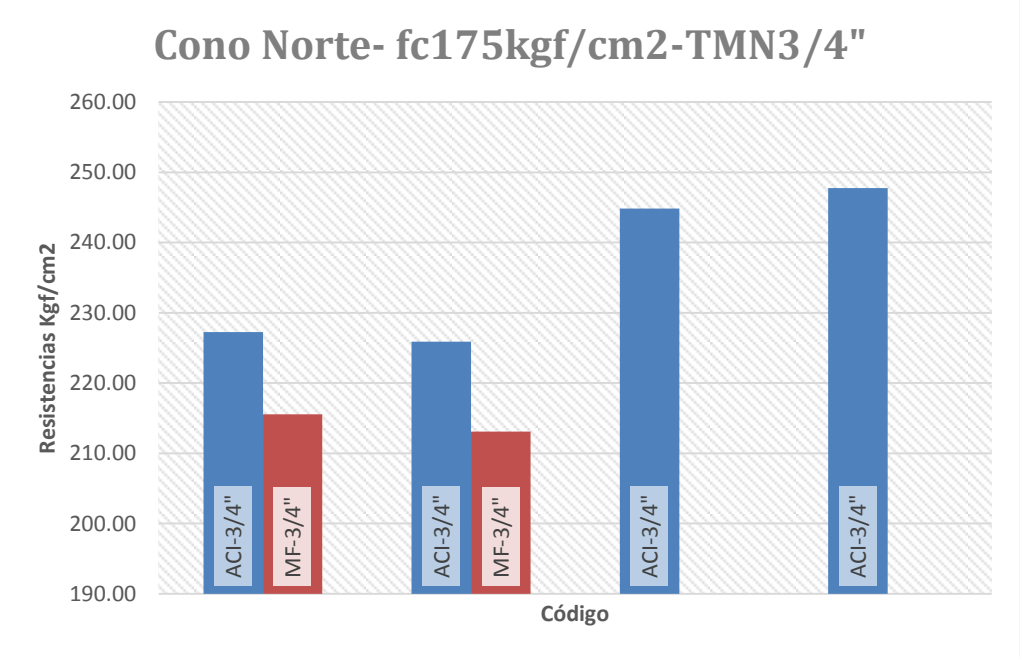

Socabaya- fc210kgf/cm2-TMN1"
Resistencias Kgf/cm2
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-1"
MF-1"
código

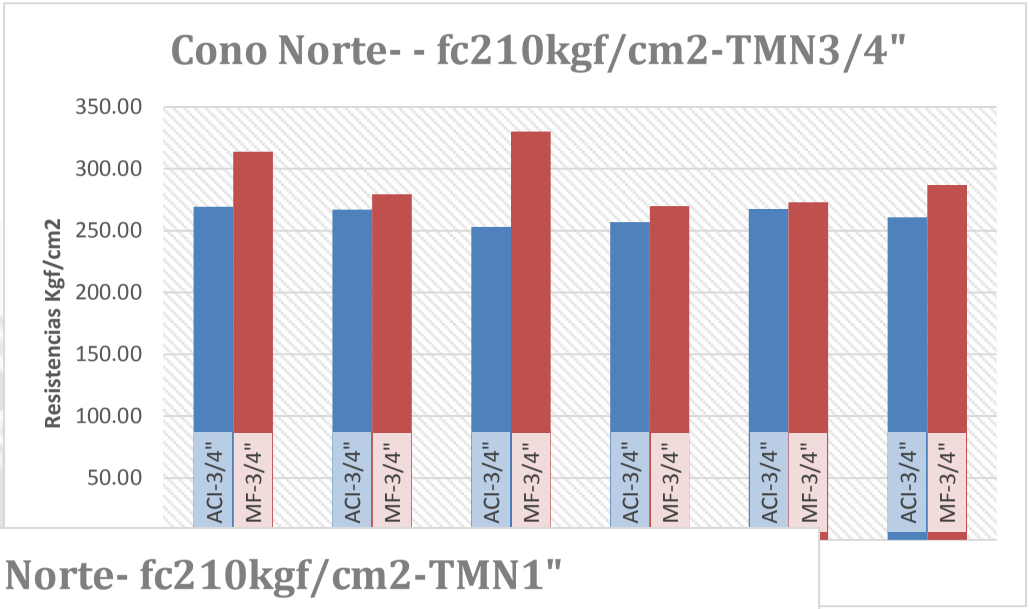

Socabaya- fc210kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-3/4"
MF-3/4"
código

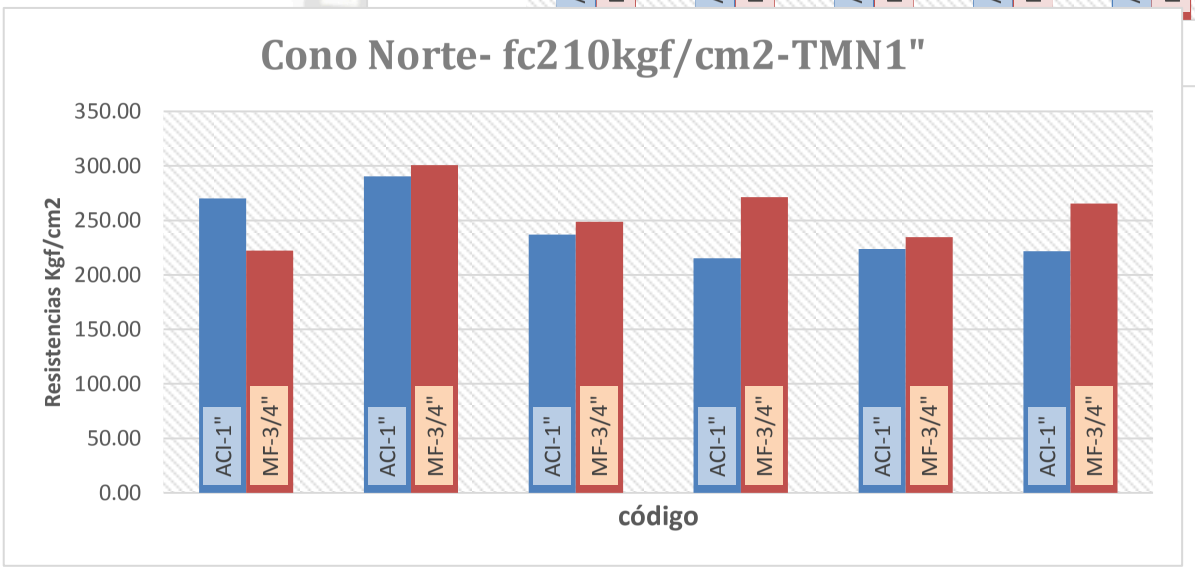

Socabaya- fc280kgf/cm2-TMN1"
Resistencias Kgf/cm2
300.00
295.00
290.00
285.00
280.00
275.00
270.00
265.00
260.00
ACI-MF-1"
ACI-MF-1"
ACI-MF-1"
ACI-MF-1"
ACI-MF-1"
ACI-MF-1"
ACI-MF-1"
ACI-MF-1"
código

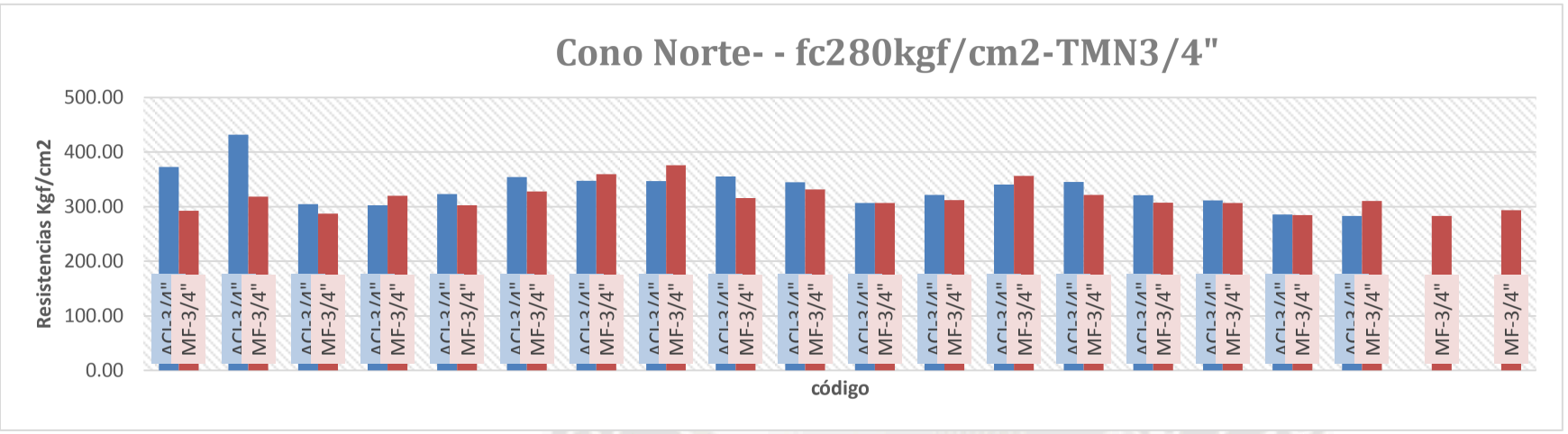

Socabaya- fc280kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
450.00
400.00
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-3/4"
MF-3/4"
código

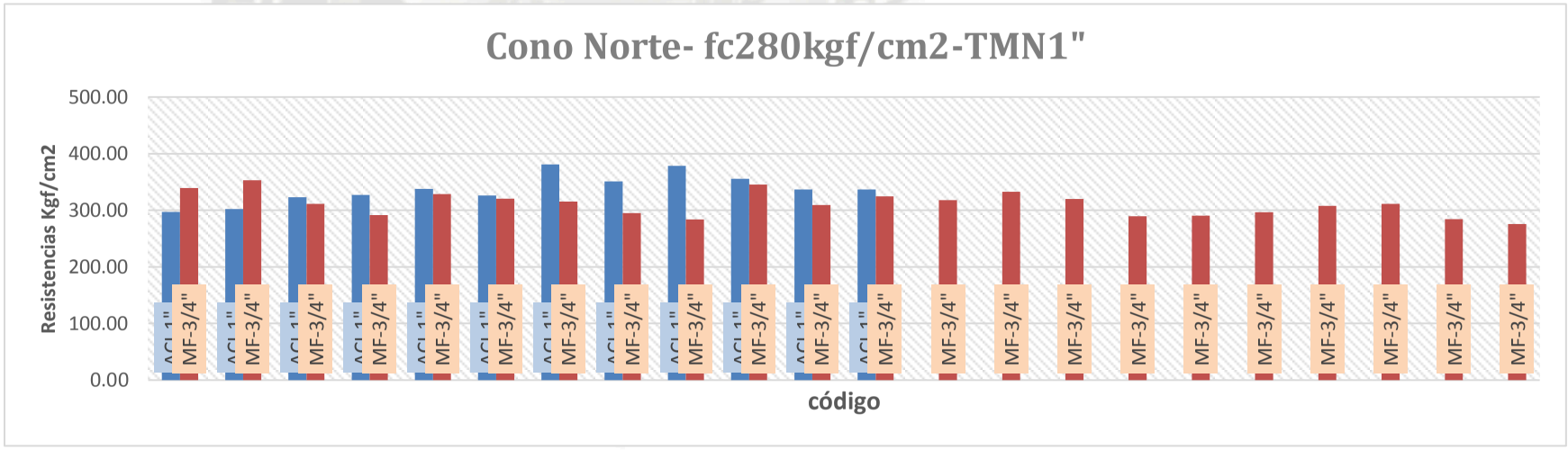

Cono Norte-- fc175kgf/cm2-TMN1"
Resistencias Kgf/cm2
215.00
210.00
205.00
200.00
195.00
190.00
185.00
180.00
175.00
ACI-1"
ACI-1"
ACI-1"
ACI-1"
código

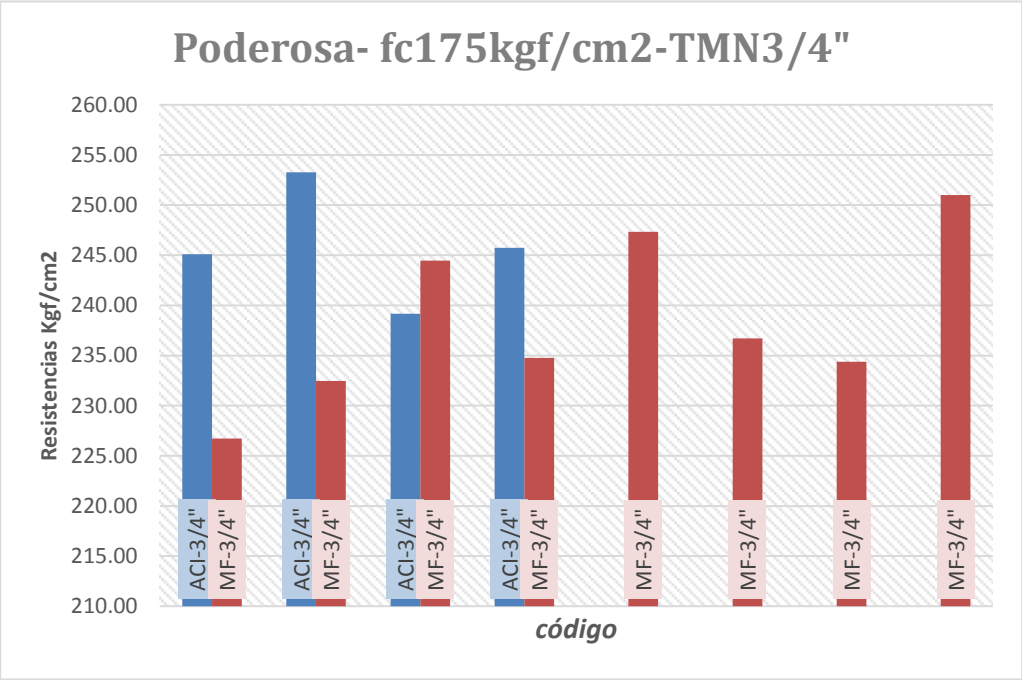

Cono Norte- fc175kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
260.00
250.00
240.00
230.00
220.00
210.00
200.00
190.00
ACI-3/4"
MF-3/4"
ACI-3/4"
MF-3/4"
ACI-3/4"
ACI-3/4"
Código

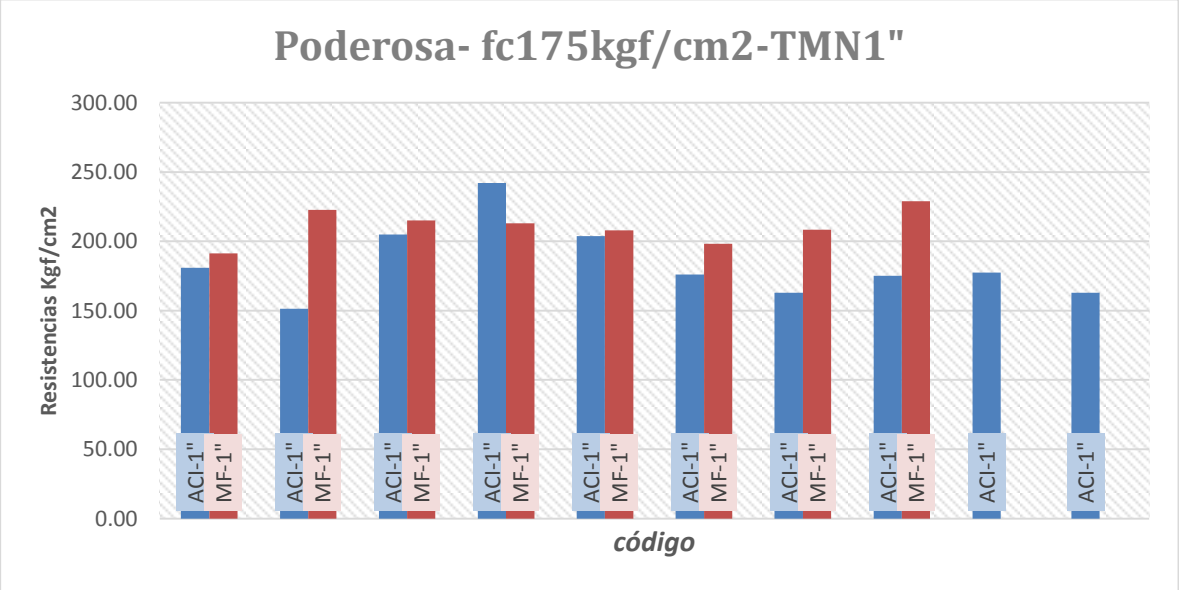

Cono Norte- - fc210kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
350.00
300.00
250.00
200.00
150.00
100.00
50.00
ACI-3/4"
MF-3/4"

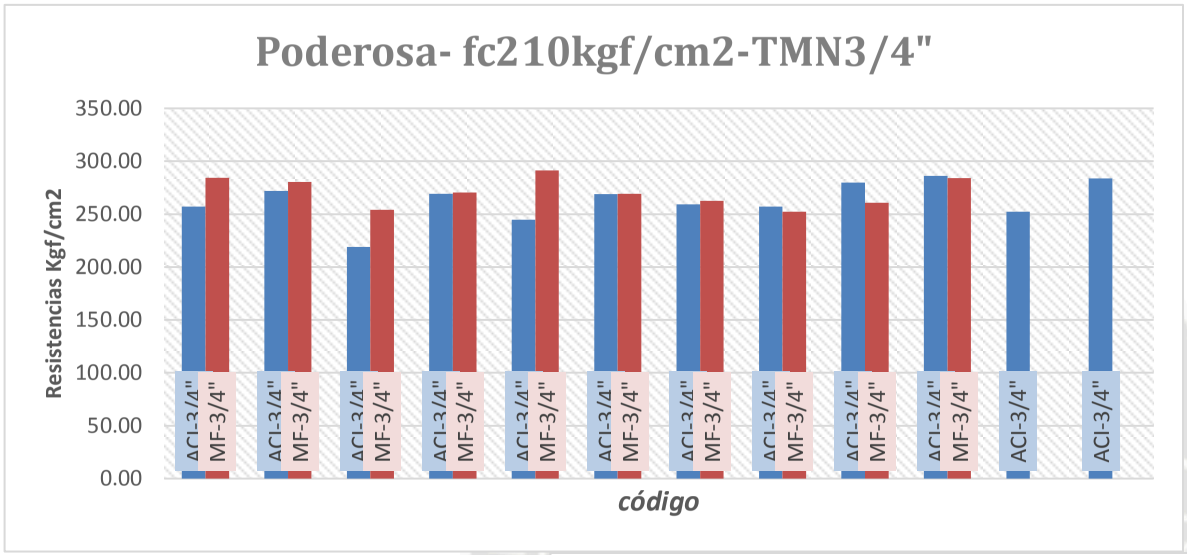

Cono Norte- fc210kgf/cm2-TMN1"
Resistencias Kgf/cm2
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-1"
MF-3/4"
código

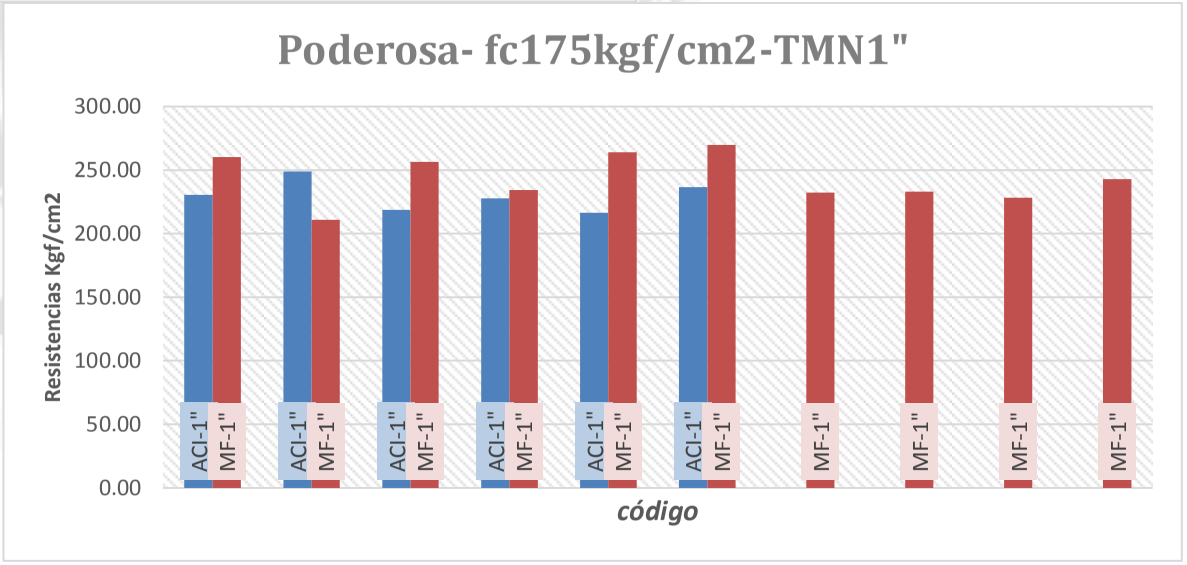

Cono Norte- - fc280kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
500.00
400.00
300.00
200.00
100.00
0.00
MF-3/4"
código

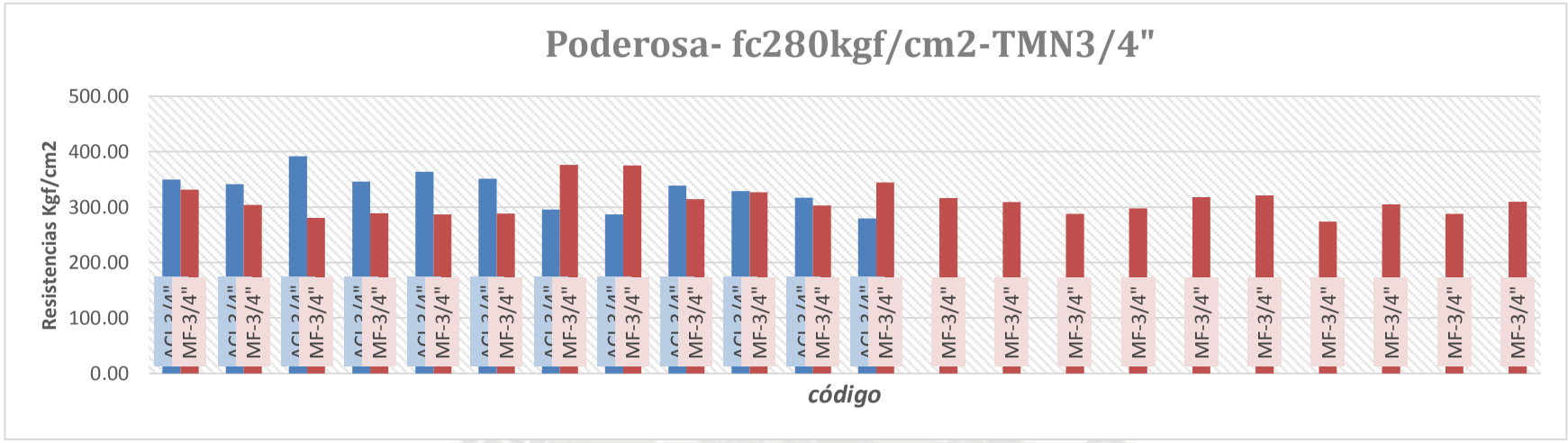

Cono Norte- fc280kgf/cm2-TMN1"
Resistencias Kgf/cm2
500.00
400.00
300.00
200.00
100.00
0.00
MF-3/4"
código

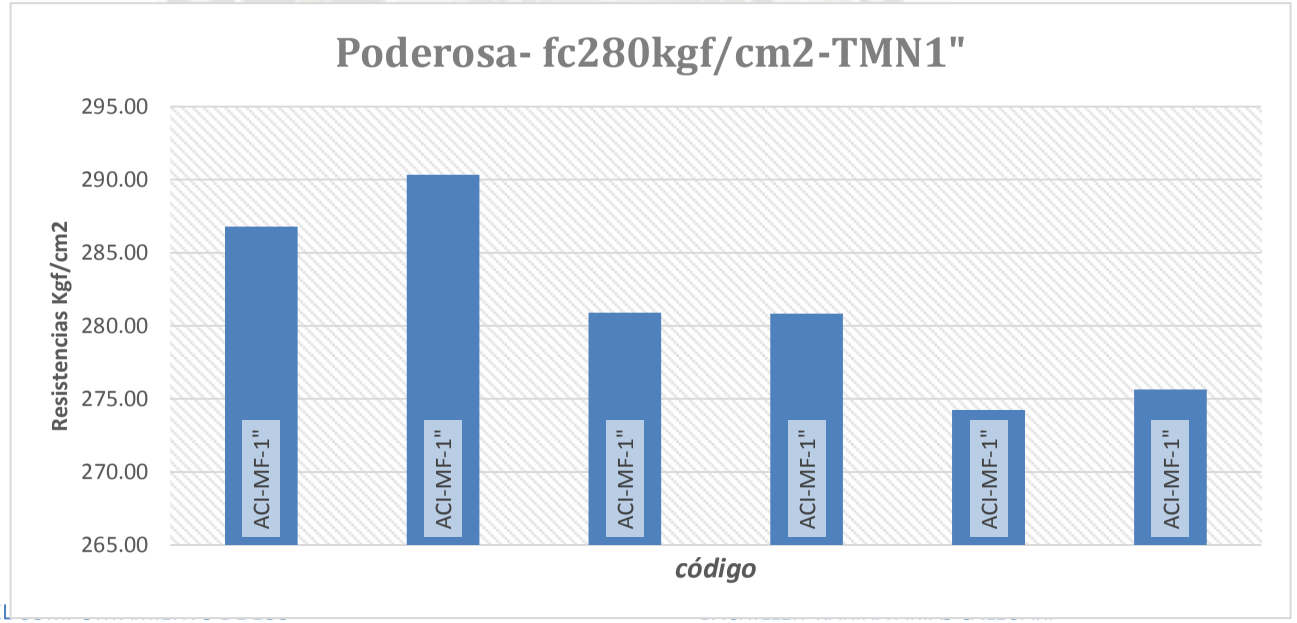

Poderosa- fc175kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
260.00
255.00
250.00
245.00
240.00
235.00
230.00
225.00
220.00
215.00
210.00
ACI-3/4"
MF-3/4"
código


Poderosa- fc175kgf/cm2-TMN1"
Resistencias Kgf/cm2
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-1"
MF-1"
código

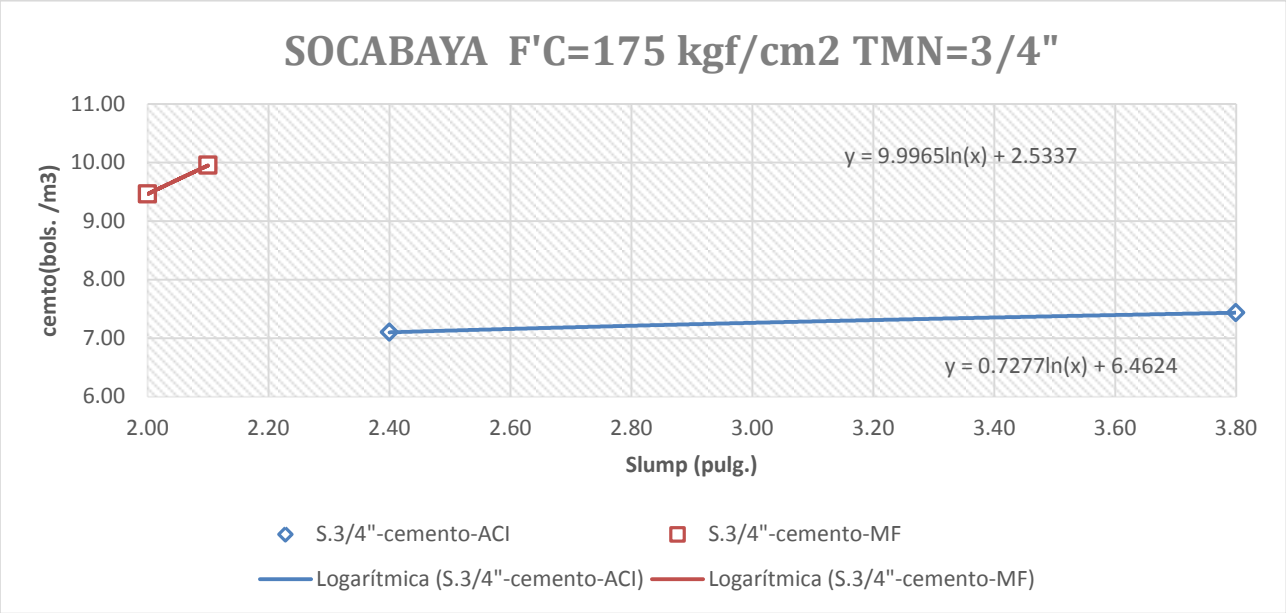

Poderosa- fc210kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-3/4"
MF-3/4"
código

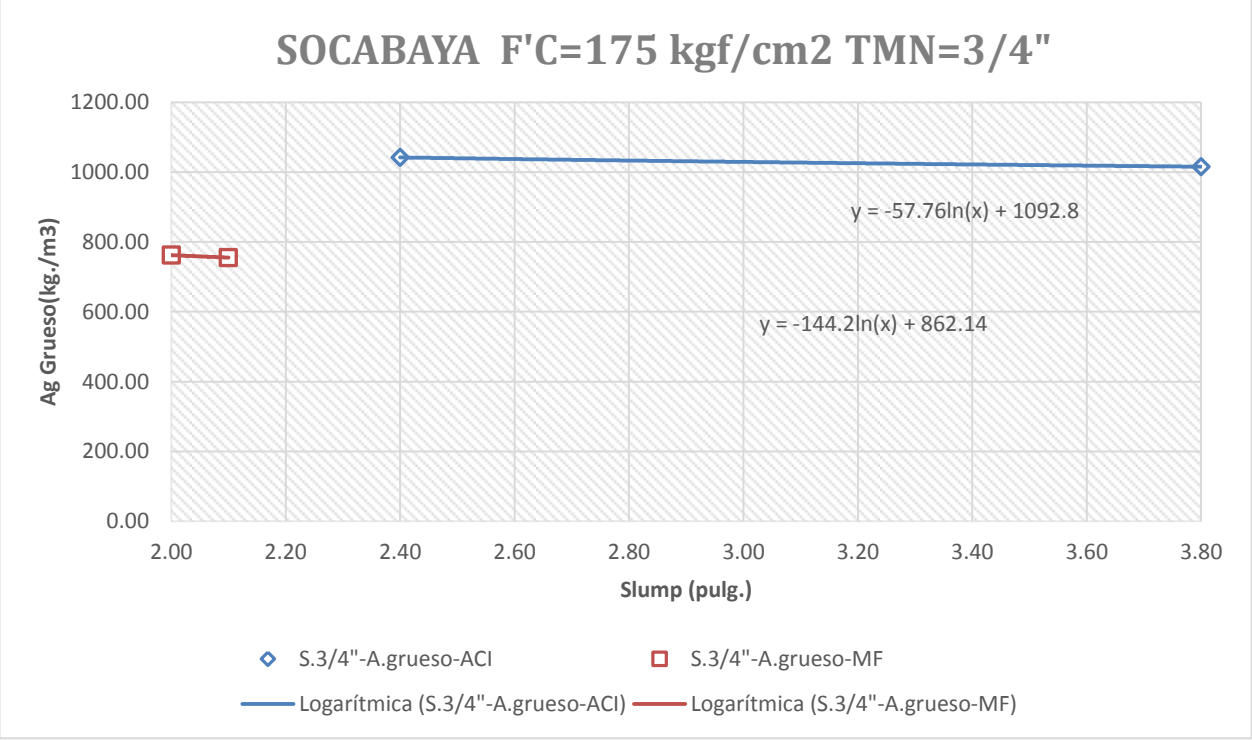

Poderosa- fc175kgf/cm2-TMN1"
Resistencias Kgf/cm2
300.00
250.00
200.00
150.00
100.00
50.00
0.00
ACI-1"
MF-1"
código

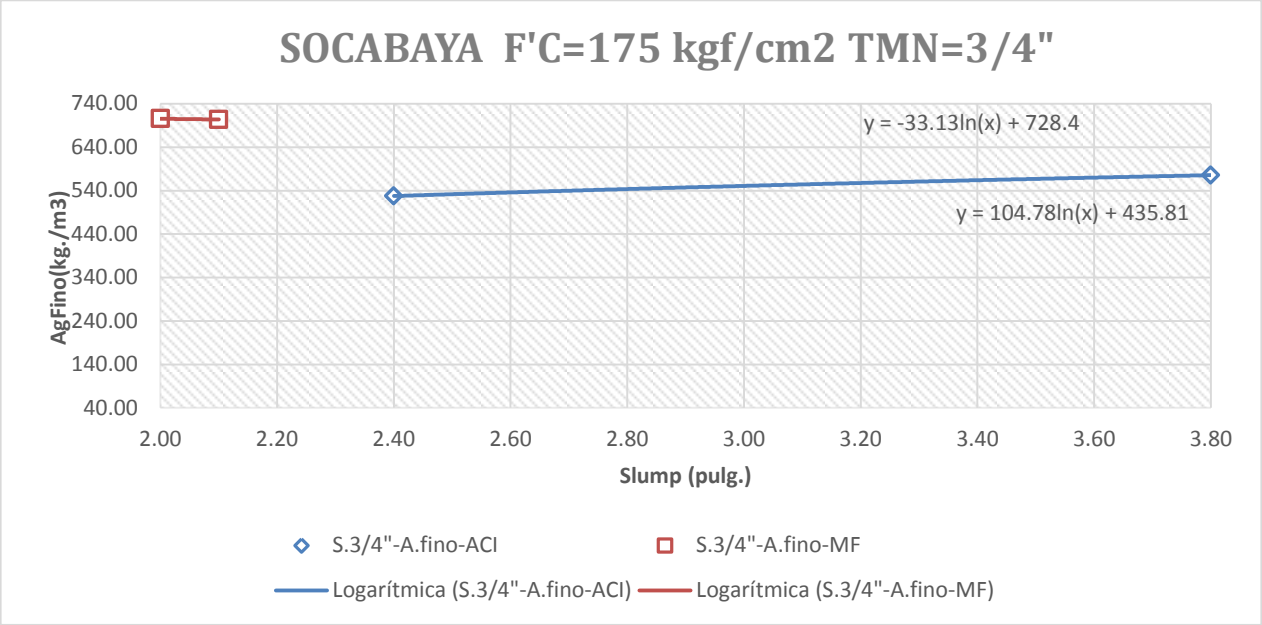

Poderosa- fc280kgf/cm2-TMN3/4"
Resistencias Kgf/cm2
500.00
400.00
300.00
200.00
100.00
0.00
ACI-3/4"
MF-3/4"
código

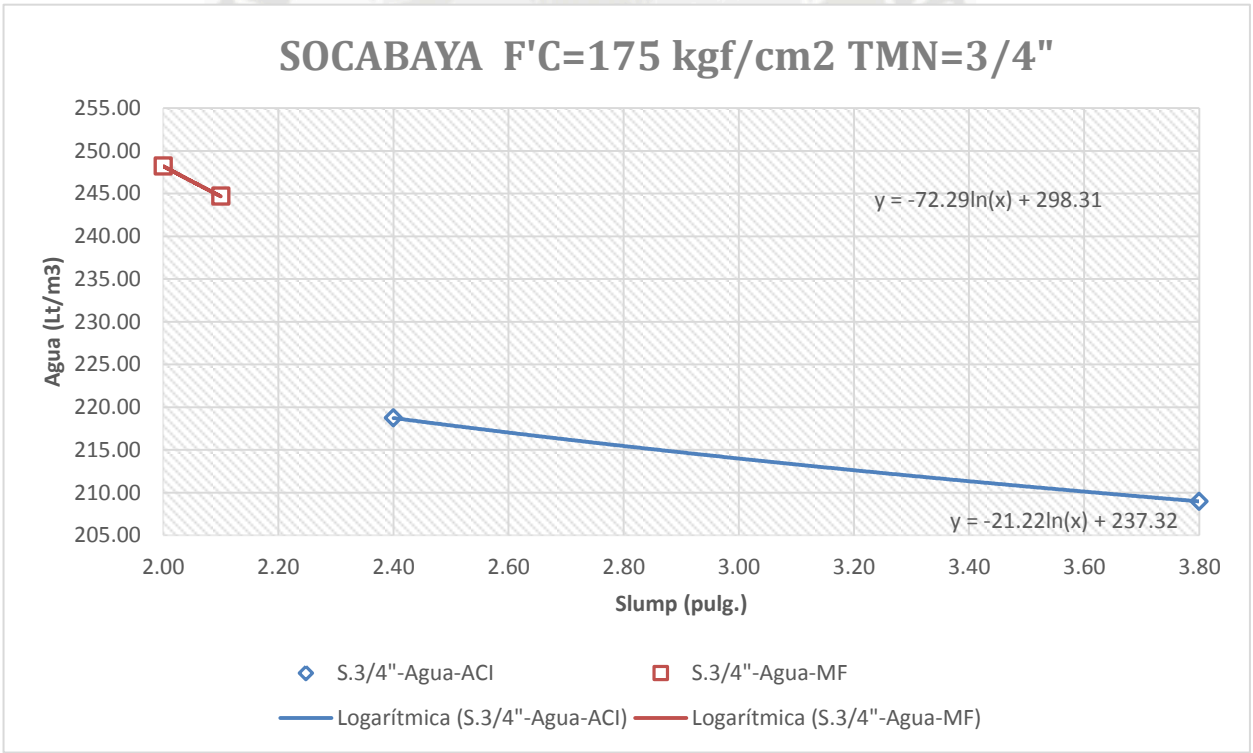

Poderosa- fc280kgf/cm2-TMN1"
Resistencias Kgf/cm2
295.00
290.00
285.00
280.00
275.00
270.00
265.00
ACI-MF-1"
código

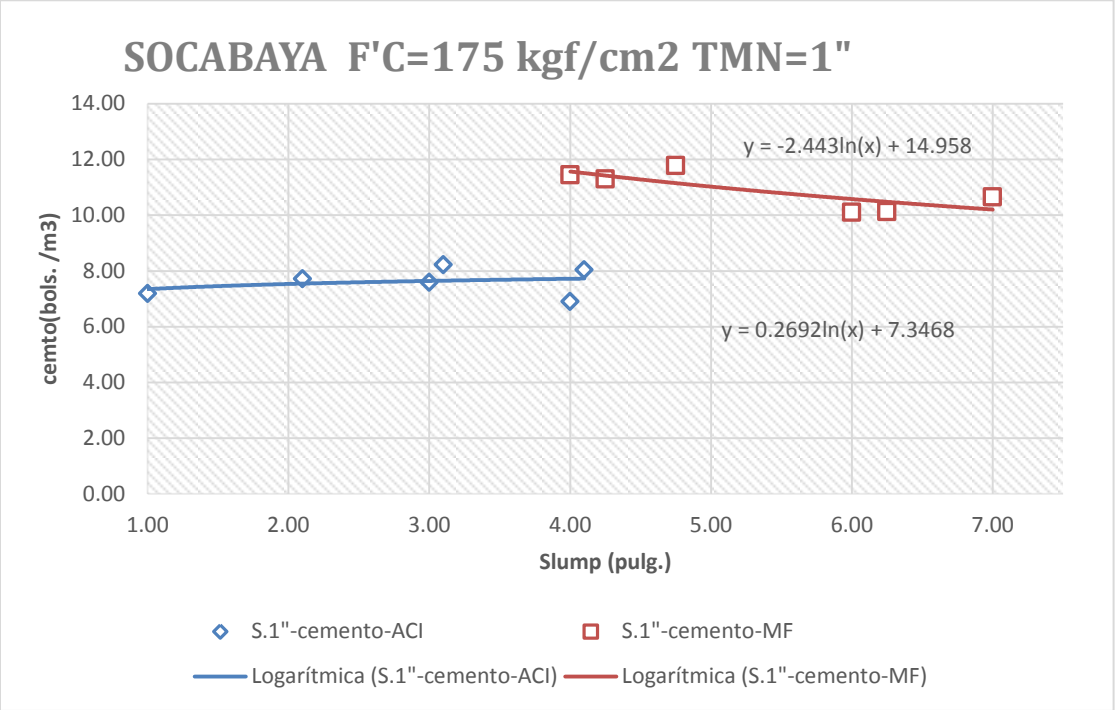
6.4 Formulación de ábacos que me permitan acceder a un diseño directo y simplificado según nuestros agregados

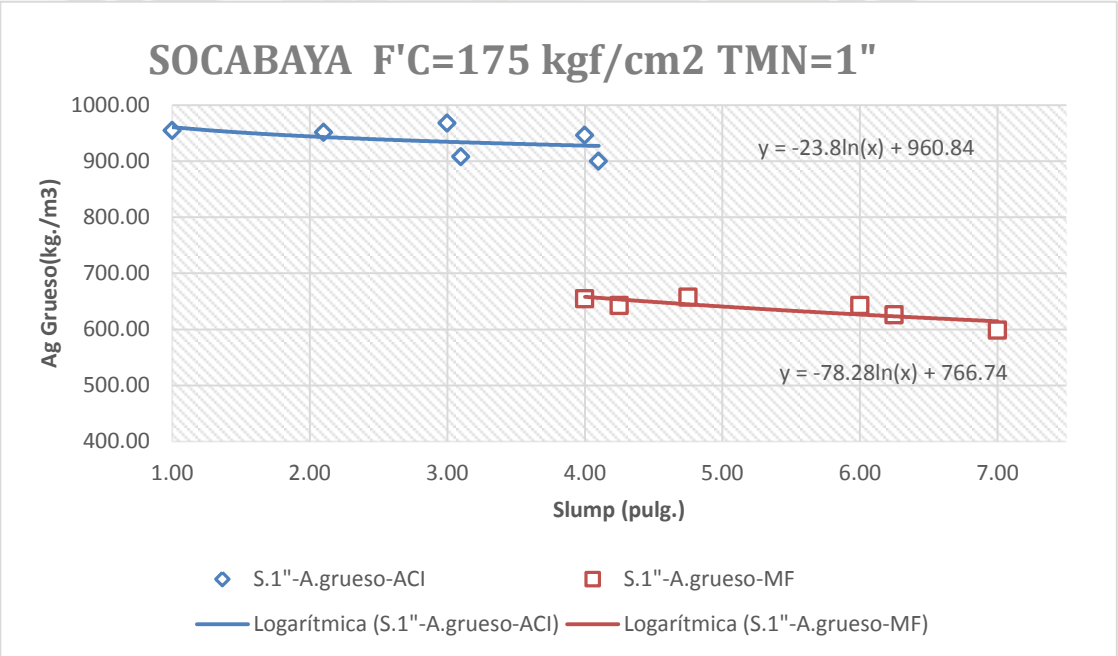


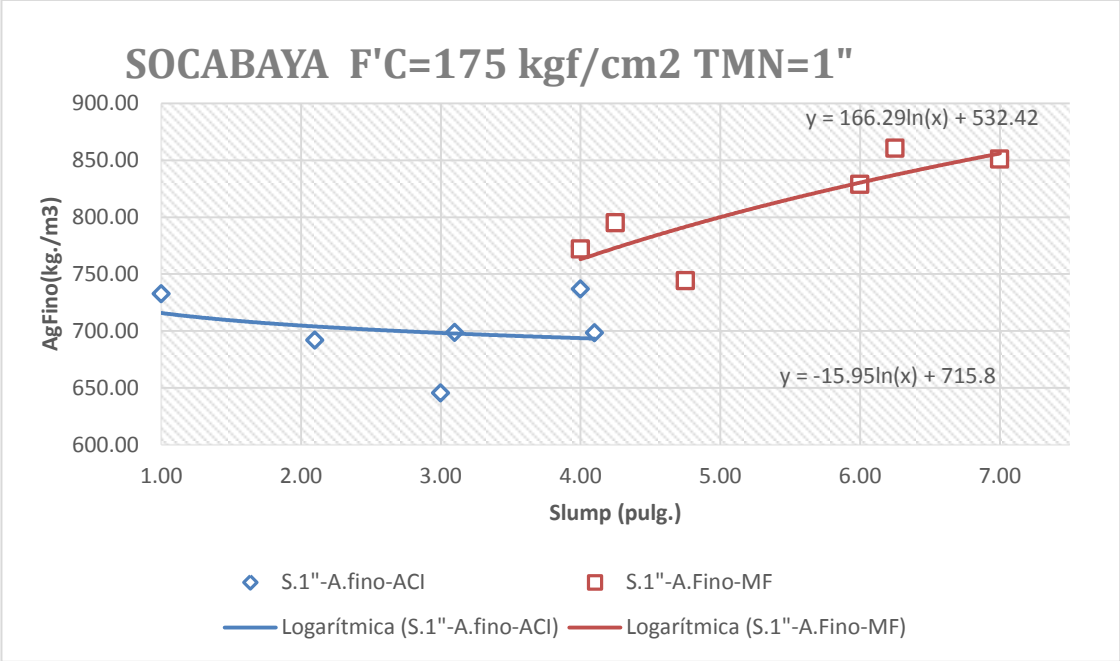


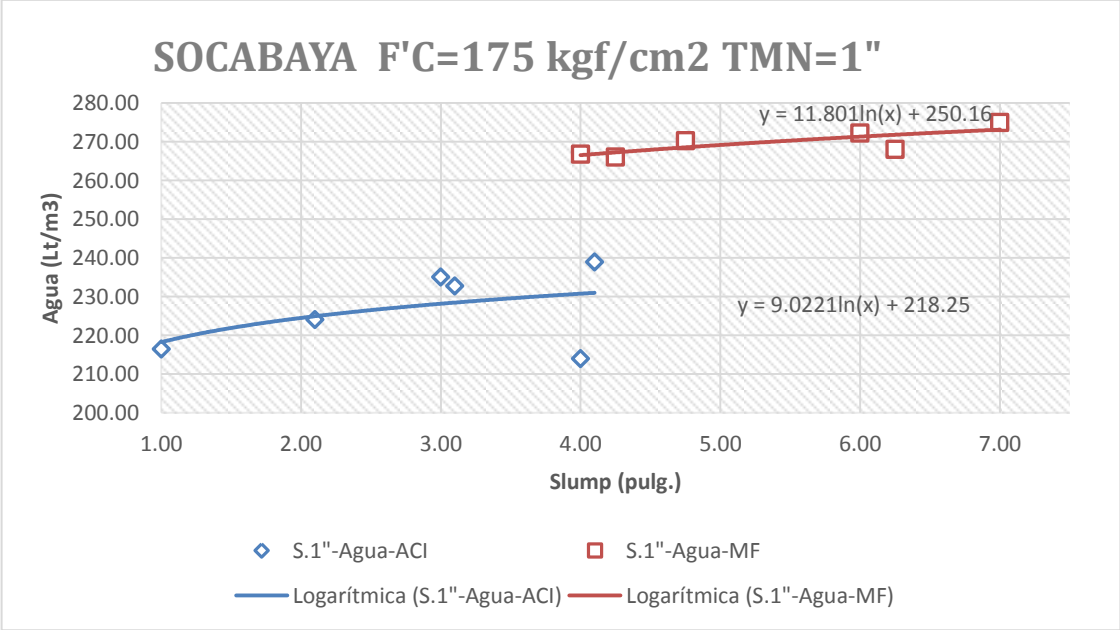

SOCABAYA F'C=175 kgf/cm2 TMN=3/4"
AgFino(kg./m3)
740.00
640.00
540.00
440.00
340.00
240.00
140.00
40.00
2.00
2.20
2.40
2.60
2.80
3.00
3.20
3.40
3.60
3.80
Slump (pulg.)
y = -33.13ln(x) + 728.4
y = 104.78ln(x) + 435.81
S.3/4"-A.fino-ACI
S.3/4"-A.fino-MF
Logarítmica (S.3/4"-A.fino-ACI)
Logarítmica (S.3/4"-A.fino-MF)

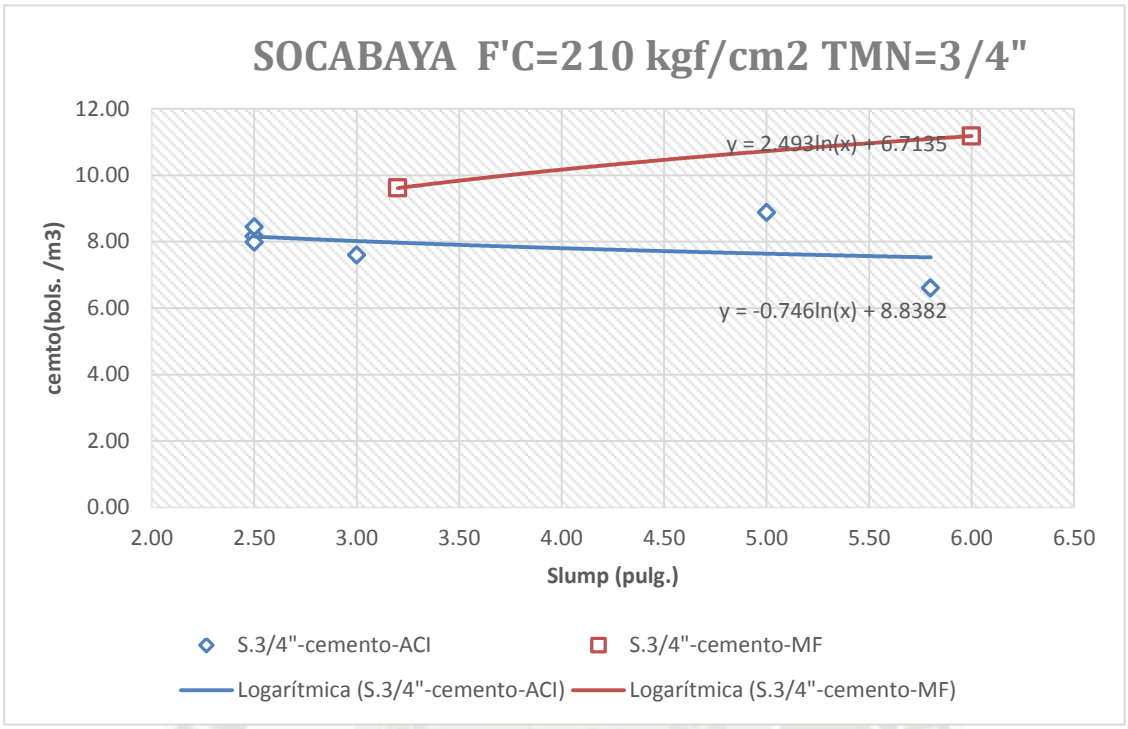

SOCABAYA F'C=175 kgf/cm2 TMN=3/4"
Agua (Lt/m3)
255.00
250.00
245.00
240.00
235.00
230.00
225.00
220.00
215.00
210.00
205.00
2.00
2.20
2.40
2.60
2.80
3.00
3.20
3.40
3.60
3.80
Slump (pulg.)
y = -72.29ln(x) + 298.31
y = -21.22ln(x) + 237.32
S.3/4"-Agua-ACI
S.3/4"-Agua-MF
Logarítmica (S.3/4"-Agua-ACI)
Logarítmica (S.3/4"-Agua-MF)

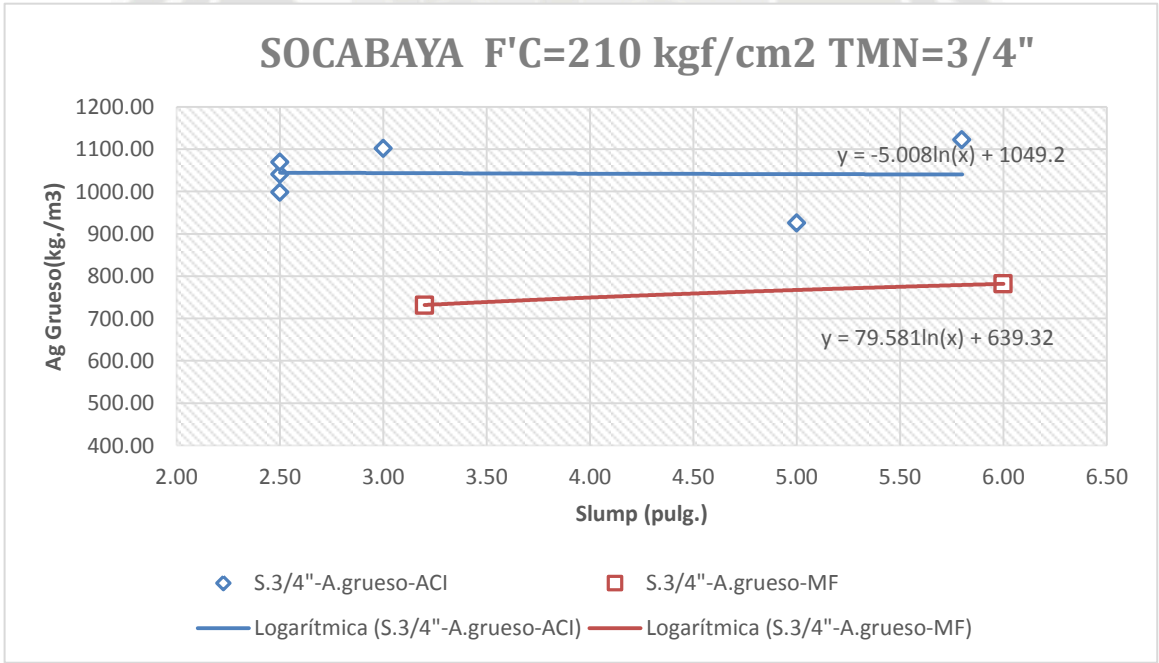

SOCABAYA F'C=175 kgf/cm2 TMN=1"
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
cemto(bols. /m3)
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulg.)
y = -2.443ln(x) + 14.958
y = 0.2692ln(x) + 7.3468
S.1"-cemento-ACI
S.1"-cemento-MF
Logarítmica (S.1"-cemento-ACI)
Logarítmica (S.1"-cemento-MF)

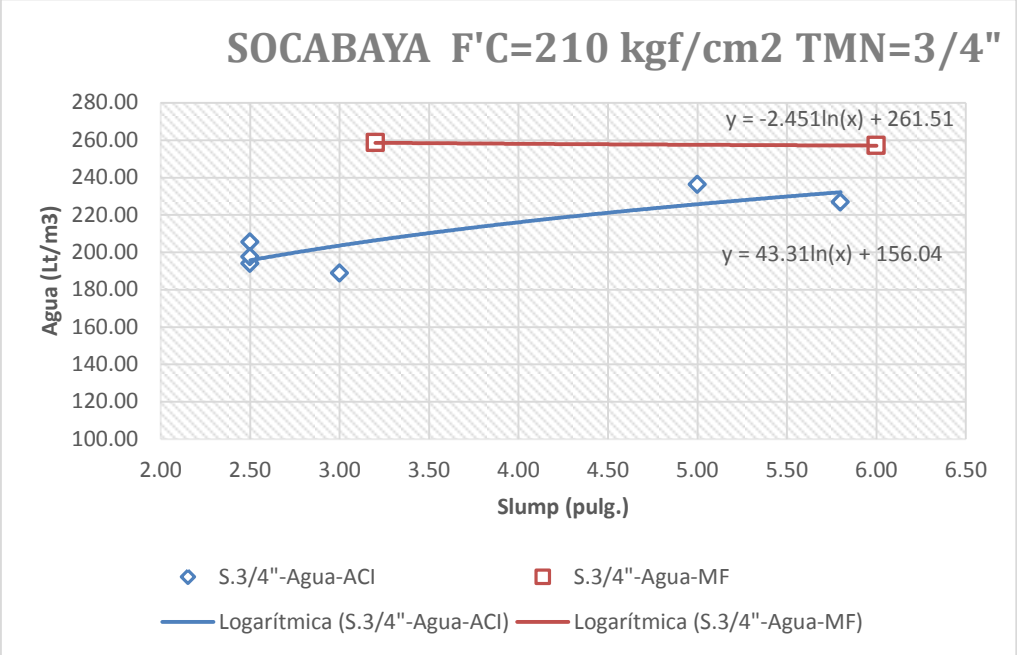

SOCABAYA F'C=175 kgf/cm2 TMN=1"
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
Ag Grueso(kg./m3)
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulg.)
y = -23.8ln(x) + 960.84
y = -78.28ln(x) + 766.74
S.1"-A.grueso-ACI
S.1"-A.grueso-MF
Logarítmica (S.1"-A.grueso-ACI)
Logarítmica (S.1"-A.grueso-MF)

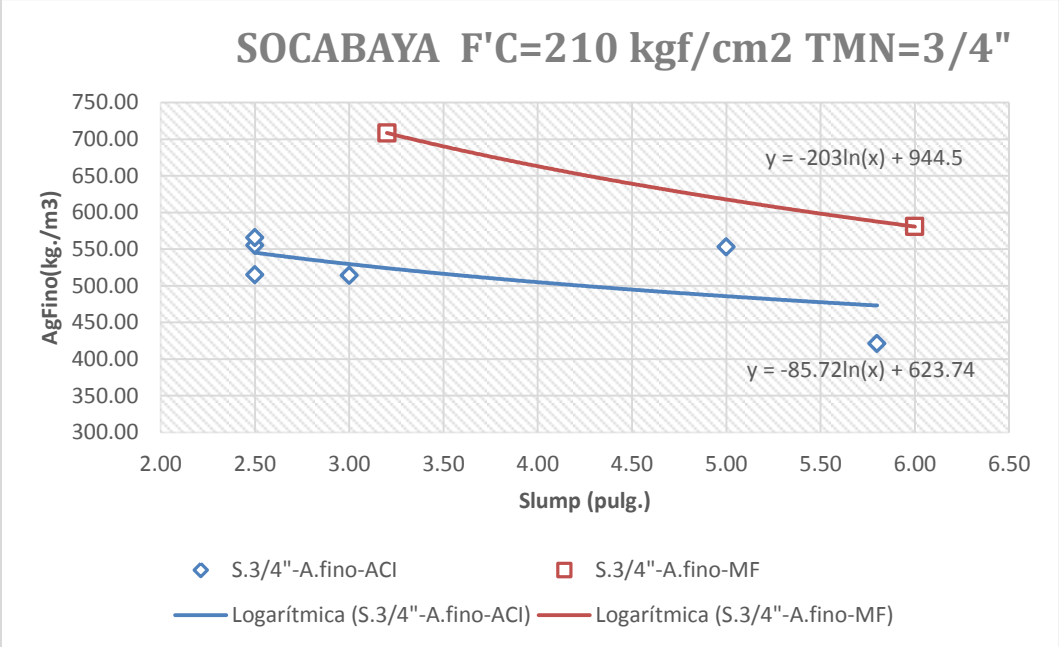

SOCABAYA F'C=175 kgf/cm2 TMN=1"
AgFino(kg./m3)
900.00
850.00
800.00
750.00
700.00
650.00
600.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulg.)
y = 166.29ln(x) + 532.42
y = -15.95ln(x) + 715.8
S.1"-A.fino-ACI
S.1"-A.Fino-MF
Logarítmica (S.1"-A.fino-ACI)
Logarítmica (S.1"-A.Fino-MF)

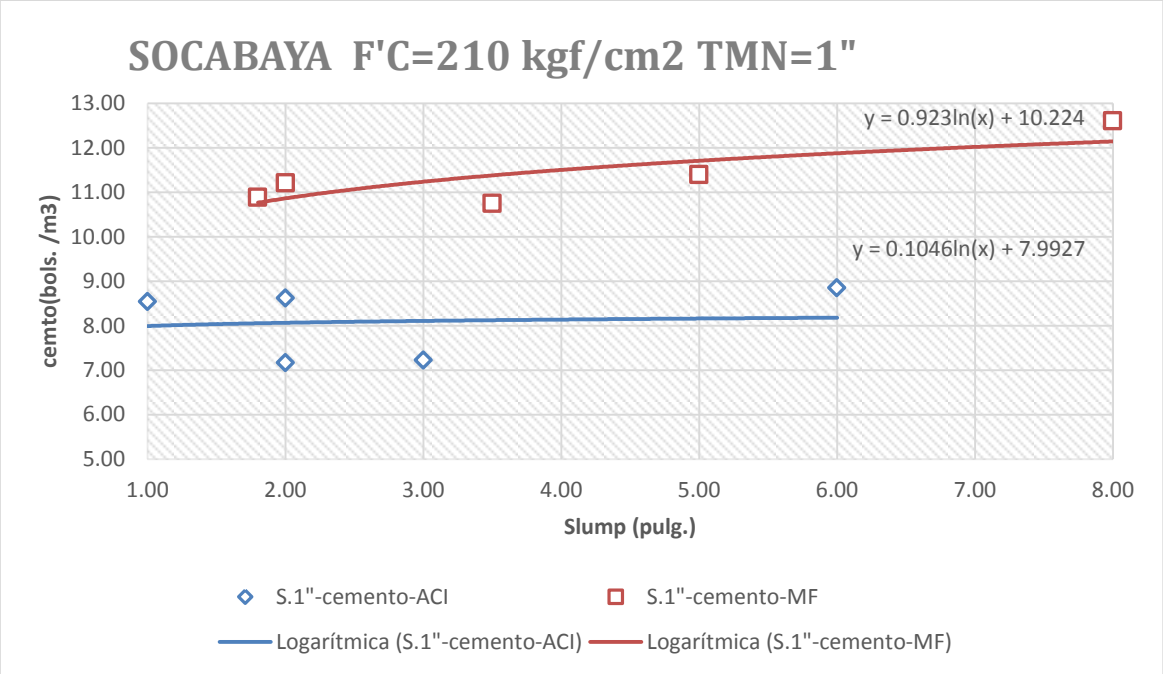

SOCABAYA F'C=175 kgf/cm2 TMN=1"
Agua (Lt/m3)
280.00
270.00
260.00
250.00
240.00
230.00
220.00
210.00
200.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulg.)
y = 11.801ln(x) + 250.16
y = 9.0221ln(x) + 218.25
S.1"-Agua-ACI
S.1"-Agua-MF
Logarítmica (S.1"-Agua-ACI)
Logarítmica (S.1"-Agua-MF)

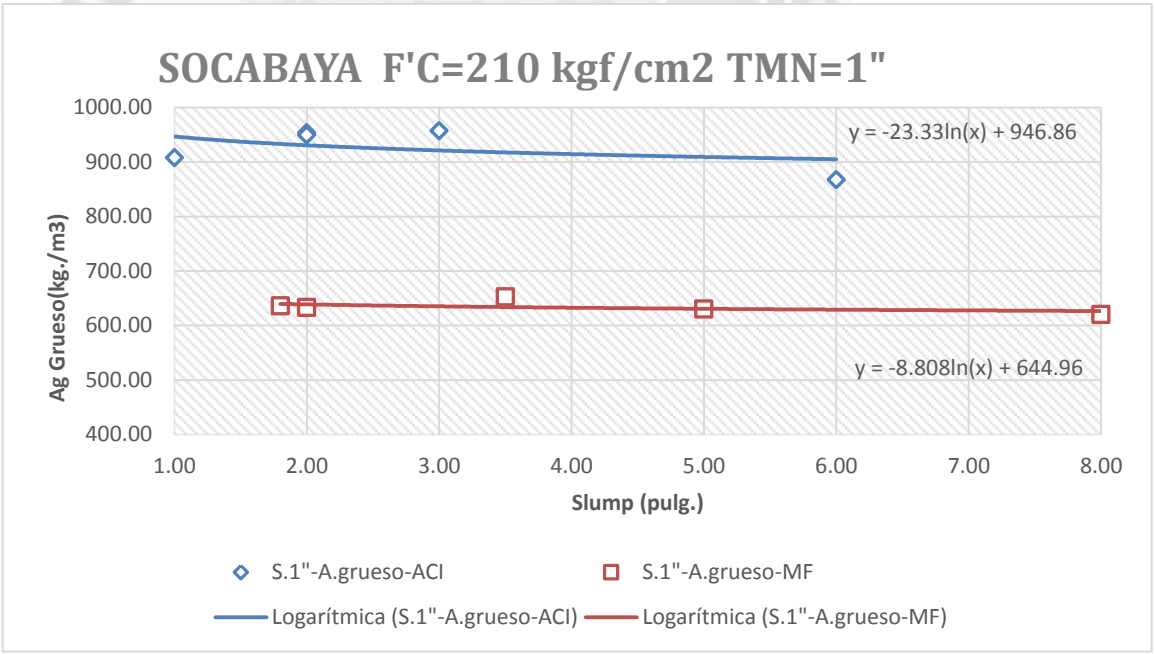

SOCABAYA F'C=210 kgf/cm2 TMN=3/4"
12.00
10.00
8.00
6.00
4.00
2.00
0.00
cemto(bols. /m3)
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
Slump (pulg.)
y = 2.493ln(x) + 6.7135
y = -0.746ln(x) + 8.8382
S.3/4"-cemento-ACI
S.3/4"-cemento-MF
Logarítmica (S.3/4"-cemento-ACI)
Logarítmica (S.3/4"-cemento-MF)

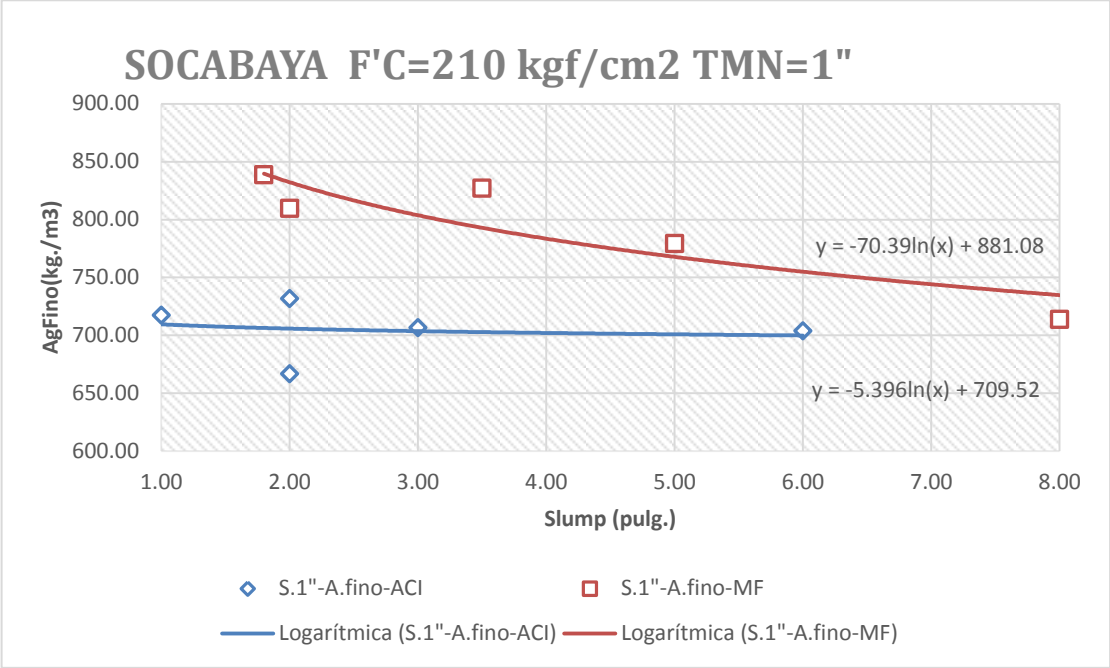

SOCABAYA F'C=210 kgf/cm2 TMN=3/4"
1200.00
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
Ag Grueso(kg./m3)
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
Slump (pulg.)
y = -5.008ln(x) + 1049.2
y = 79.581ln(x) + 639.32
S.3/4"-A.grueso-ACI
S.3/4"-A.grueso-MF
Logarítmica (S.3/4"-A.grueso-ACI)
Logarítmica (S.3/4"-A.grueso-MF)

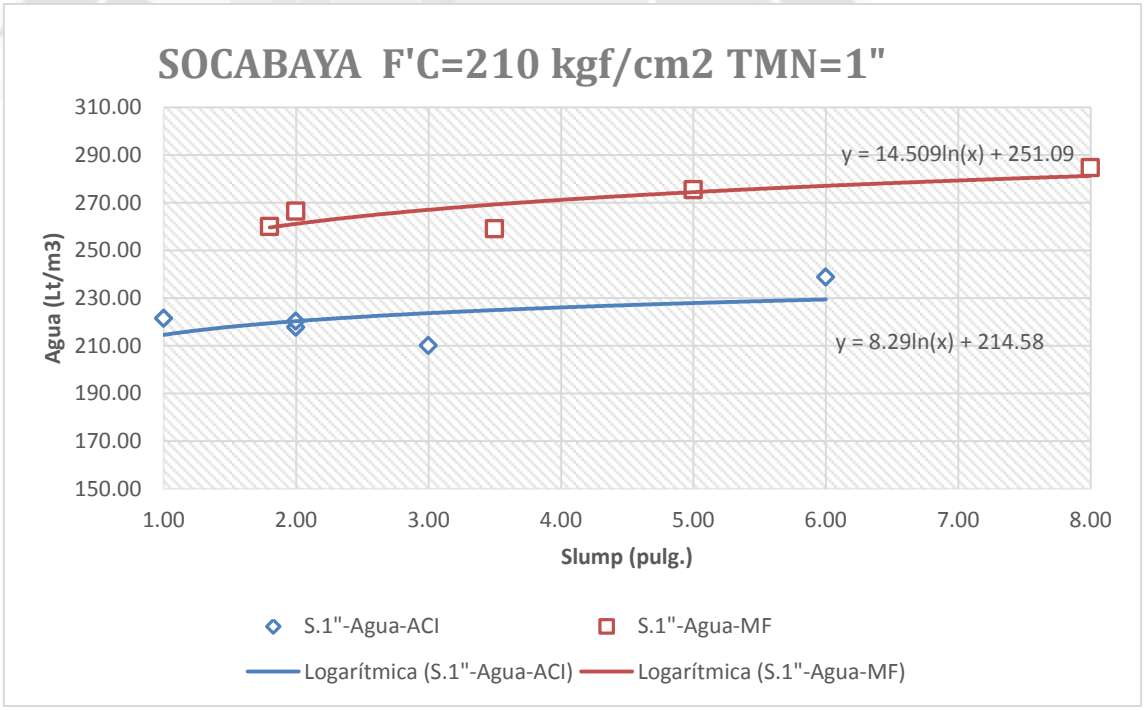

SOCABAYA F'C=210 kgf/cm2 TMN=3/4"
y = -2.451ln(x) + 261.51
y = 43.31ln(x) + 156.04
Agua (Lt/m3)
Slump (pulg.)
S.3/4"-Agua-ACI
S.3/4"-Agua-MF
Logarítmica (S.3/4"-Agua-ACI)
Logarítmica (S.3/4"-Agua-MF)

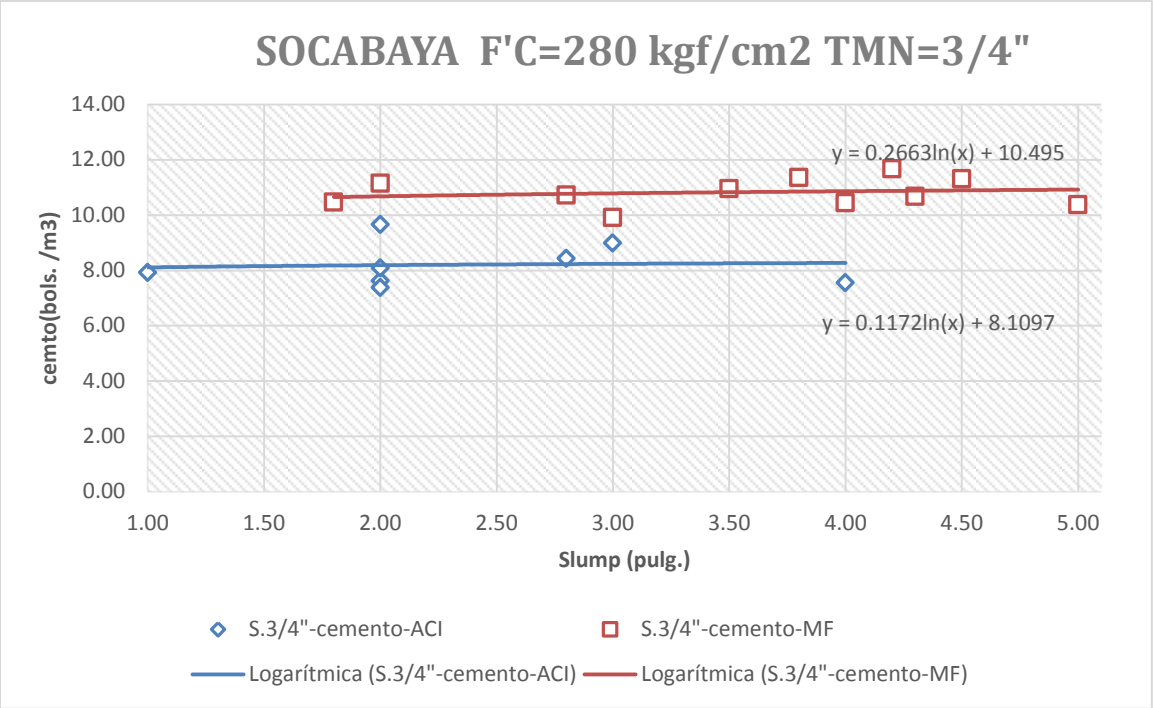

SOCABAYA F'C=210 kgf/cm2 TMN=3/4"
y = -203ln(x) + 944.5
y = -85.72ln(x) + 623.74
AgFino(kg./m3)
Slump (pulg.)
S.3/4"-A.fino-ACI
S.3/4"-A.fino-MF
Logarítmica (S.3/4"-A.fino-ACI)
Logarítmica (S.3/4"-A.fino-MF)

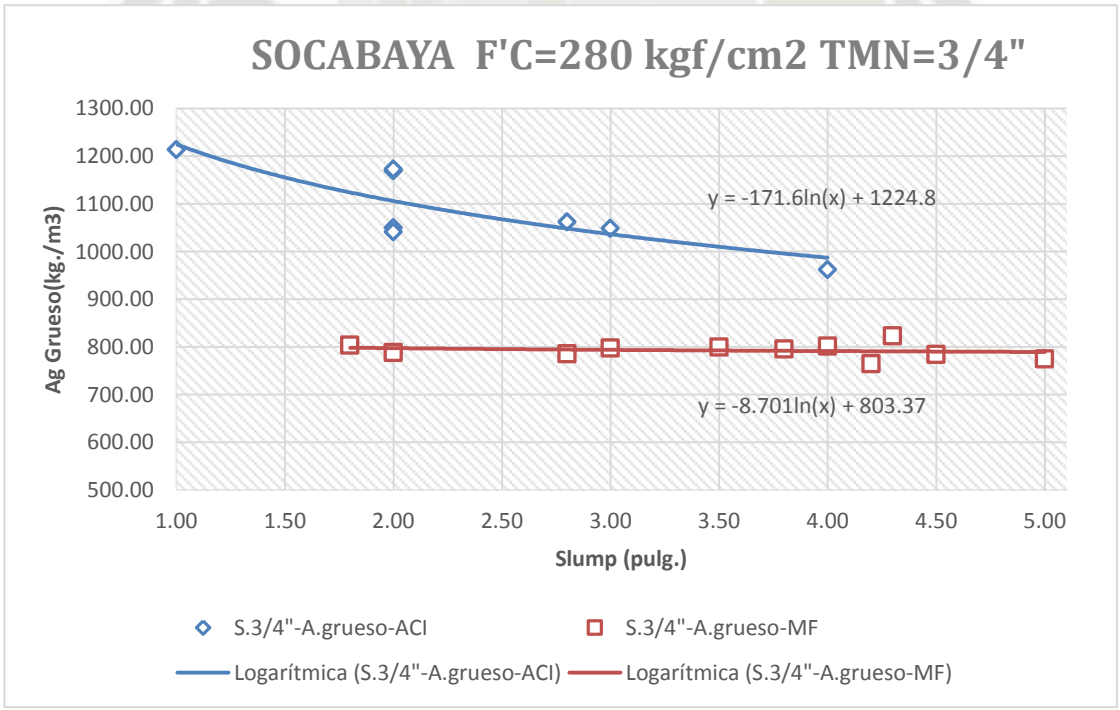

SOCABAYA F'C=210 kgf/cm2 TMN=1"
cemto(bols. /m3)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
y = 0.923ln(x) + 10.224
y = 0.1046ln(x) + 7.9927
S.1"-cemento-ACI
S.1"-cemento-MF
Logarítmica (S.1"-cemento-ACI)
Logarítmica (S.1"-cemento-MF)

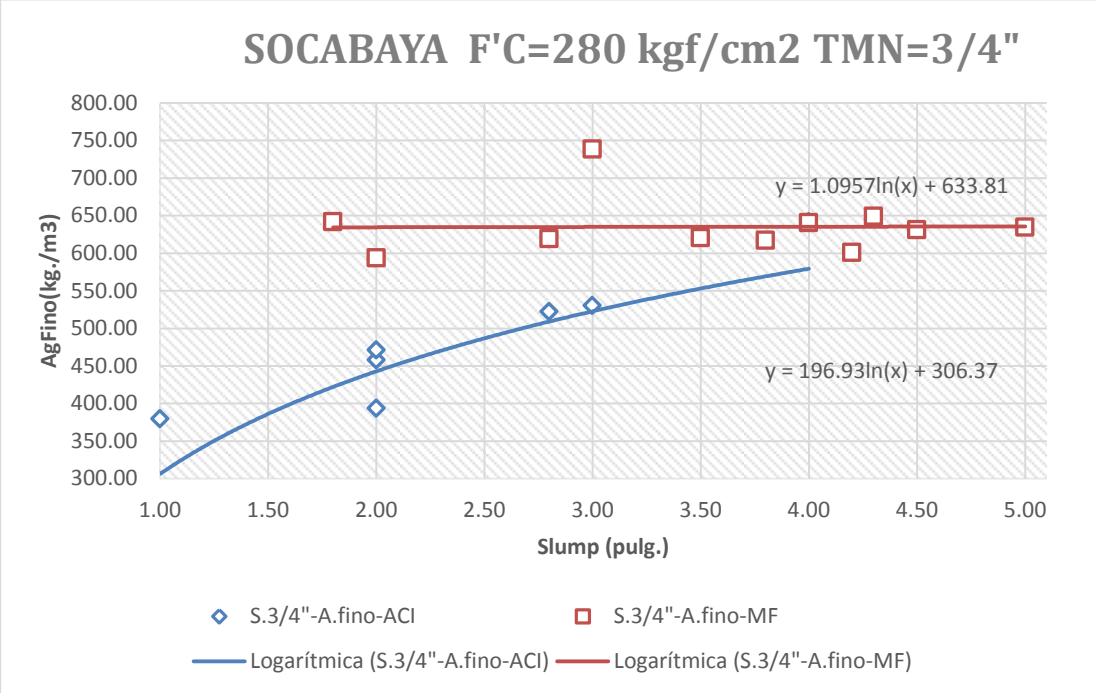

SOCABAYA F'C=210 kgf/cm2 TMN=1"
Ag Grueso(kg./m3)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
y = -23.33ln(x) + 946.86
y = -8.808ln(x) + 644.96
S.1"-A.grueso-ACI
S.1"-A.grueso-MF
Logarítmica (S.1"-A.grueso-ACI)
Logarítmica (S.1"-A.grueso-MF)

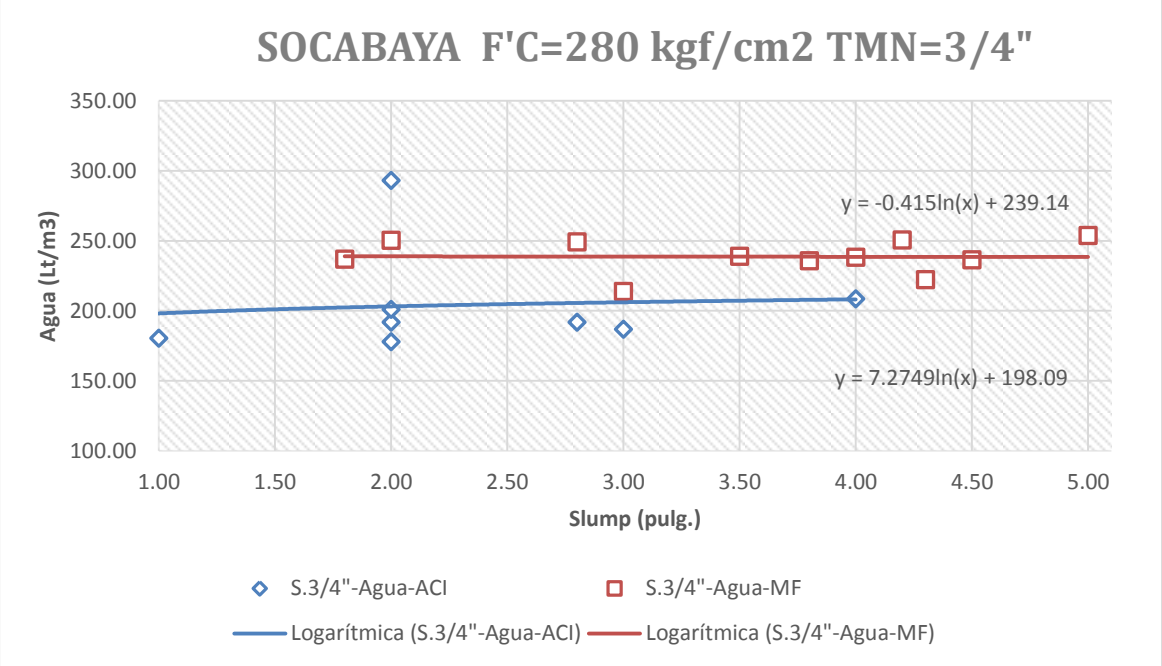

SOCABAYA F'C=210 kgf/cm2 TMN=1"
AgFino(kg./m3)
900.00
850.00
800.00
750.00
700.00
650.00
600.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
y = -70.39ln(x) + 881.08
y = -5.396ln(x) + 709.52
S.1"-A.fino-ACI
S.1"-A.fino-MF
Logarítmica (S.1"-A.fino-ACI)
Logarítmica (S.1"-A.fino-MF)

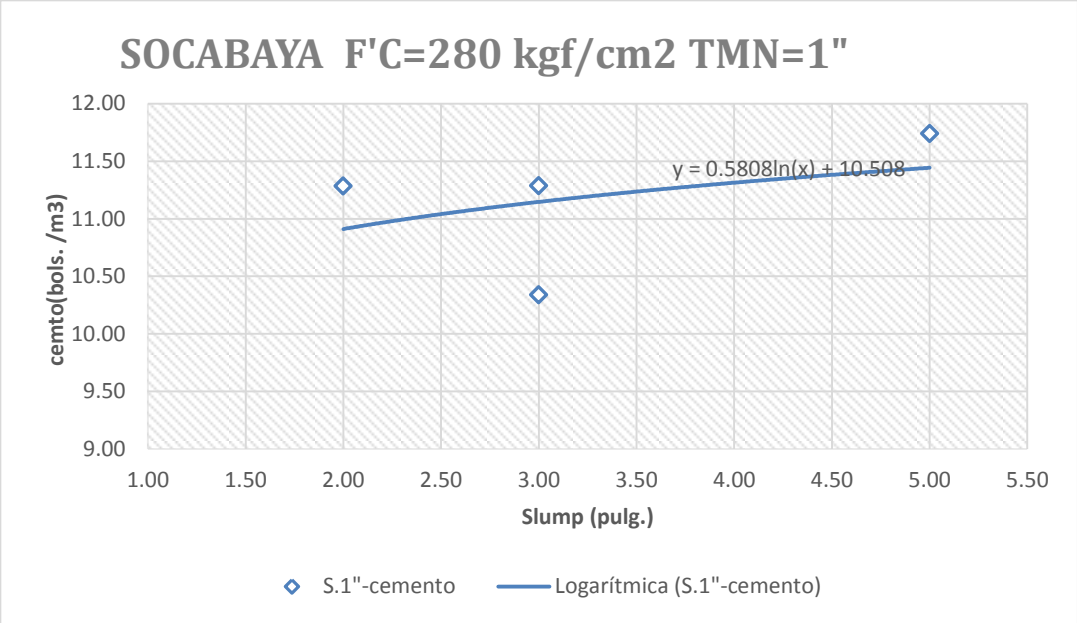

SOCABAYA F'C=210 kgf/cm2 TMN=1"
Agua (Lt/m3)
310.00
290.00
270.00
250.00
230.00
210.00
190.00
170.00
150.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
y = 14.509ln(x) + 251.09
y = 8.29ln(x) + 214.58
S.1"-Agua-ACI
S.1"-Agua-MF
Logarítmica (S.1"-Agua-ACI)
Logarítmica (S.1"-Agua-MF)

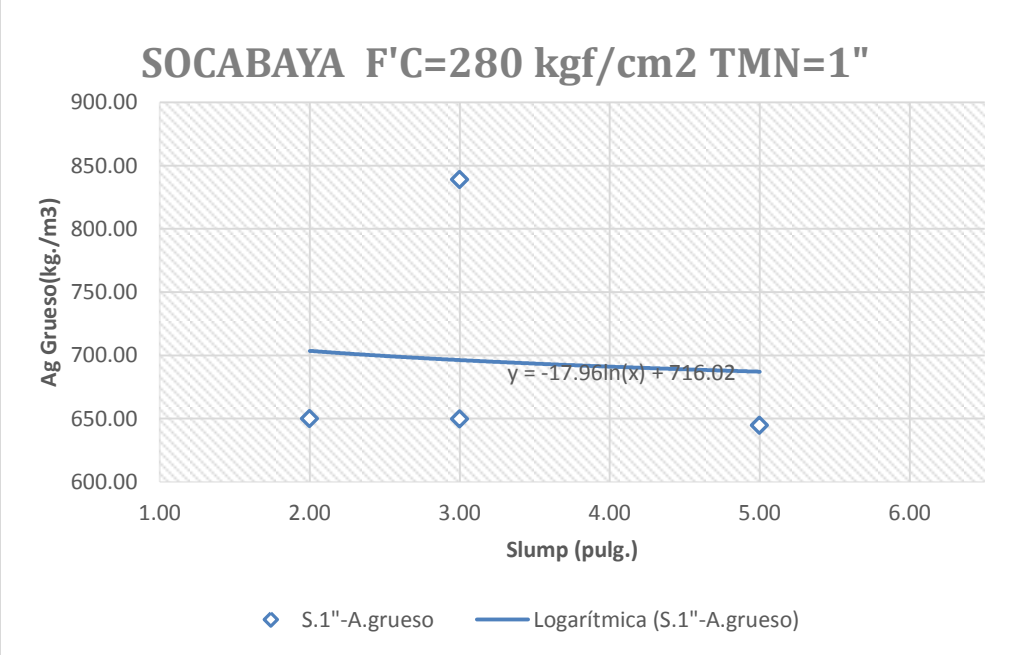

SOCABAYA F'C=280 kgf/cm2 TMN=3/4"
cemto(bols. /m3)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (pulg.)
y = 0.2663ln(x) + 10.495
y = 0.1172ln(x) + 8.1097
S.3/4"-cemento-ACI
S.3/4"-cemento-MF
Logarítmica (S.3/4"-cemento-ACI)
Logarítmica (S.3/4"-cemento-MF)

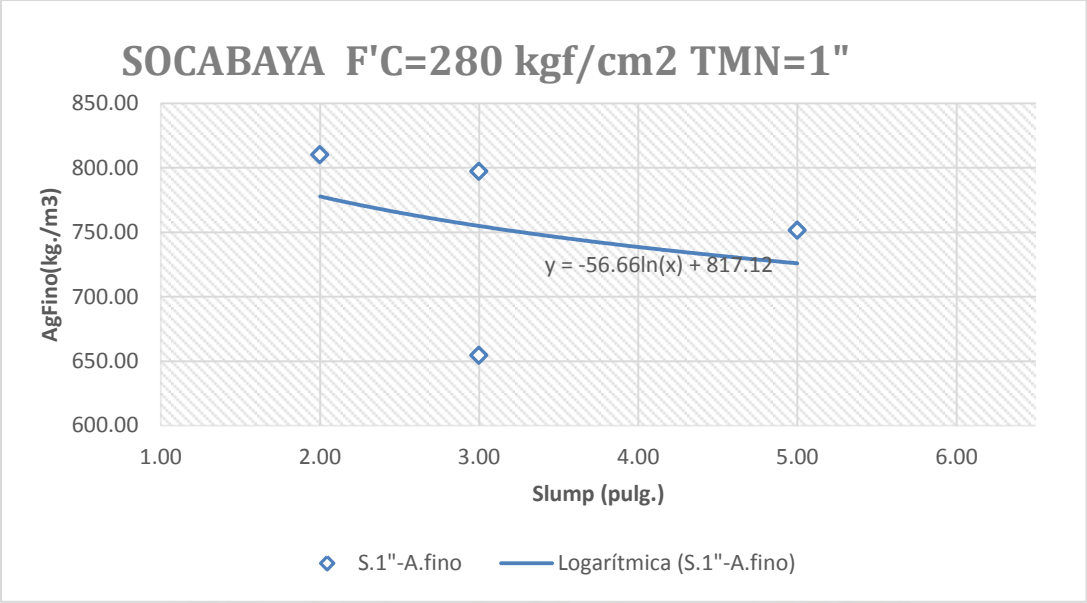

SOCABAYA F'C=280 kgf/cm2 TMN=3/4"
Ag Grueso(kg./m3)
1300.00
1200.00
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (pulg.)
y = -171.6ln(x) + 1224.8
y = -8.701ln(x) + 803.37
S.3/4"-A.grueso-ACI
S.3/4"-A.grueso-MF
Logarítmica (S.3/4"-A.grueso-ACI)
Logarítmica (S.3/4"-A.grueso-MF)

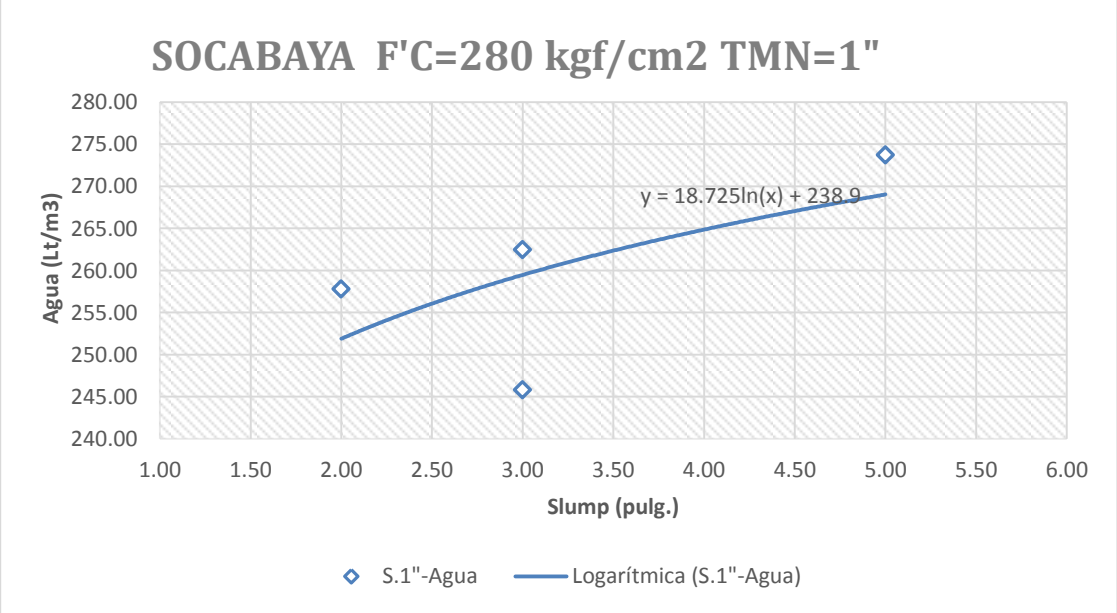

SOCABAYA F'C=280 kgf/cm2 TMN=3/4"
AgFino(kg./m3)
800.00
750.00
700.00
650.00
600.00
550.00
500.00
450.00
400.00
350.00
300.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (pulg.)
y = 1.0957ln(x) + 633.81
y = 196.93ln(x) + 306.37
S.3/4"-A.fino-ACI
S.3/4"-A.fino-MF
Logarítmica (S.3/4"-A.fino-ACI)
Logarítmica (S.3/4"-A.fino-MF)

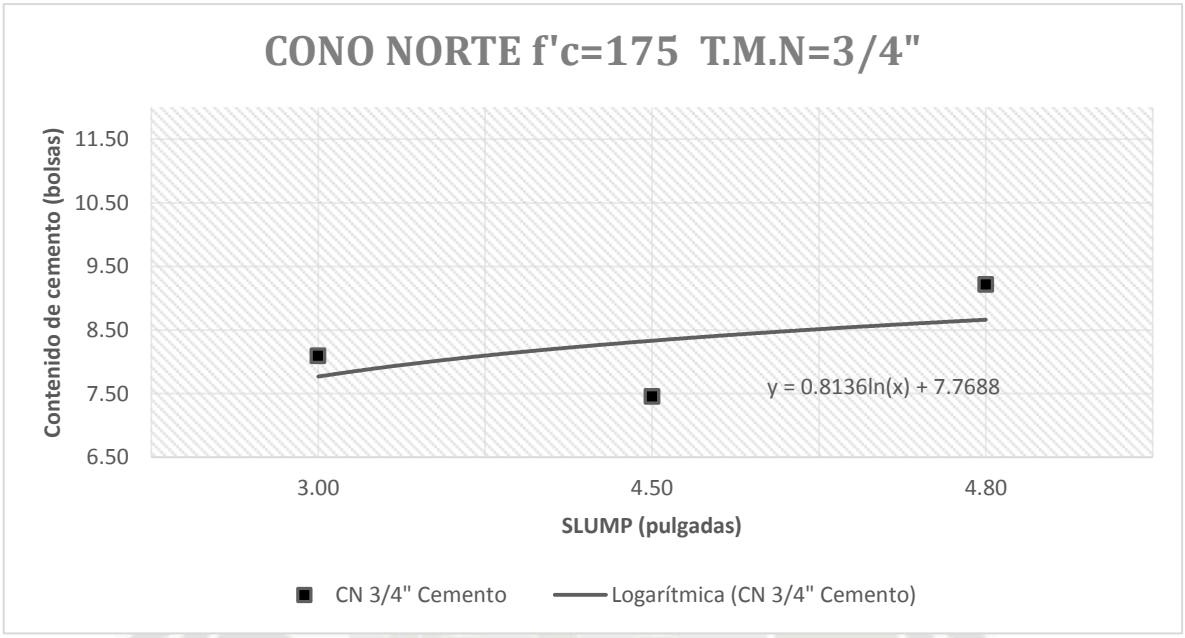

SOCABAYA F'C=280 kgf/cm2 TMN=3/4"
Agua (Lt/m3)
350.00
300.00
250.00
200.00
150.00
100.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (pulg.)
y = -0.415ln(x) + 239.14
y = 7.2749ln(x) + 198.09
S.3/4"-Agua-ACI
S.3/4"-Agua-MF
Logarítmica (S.3/4"-Agua-ACI)
Logarítmica (S.3/4"-Agua-MF)

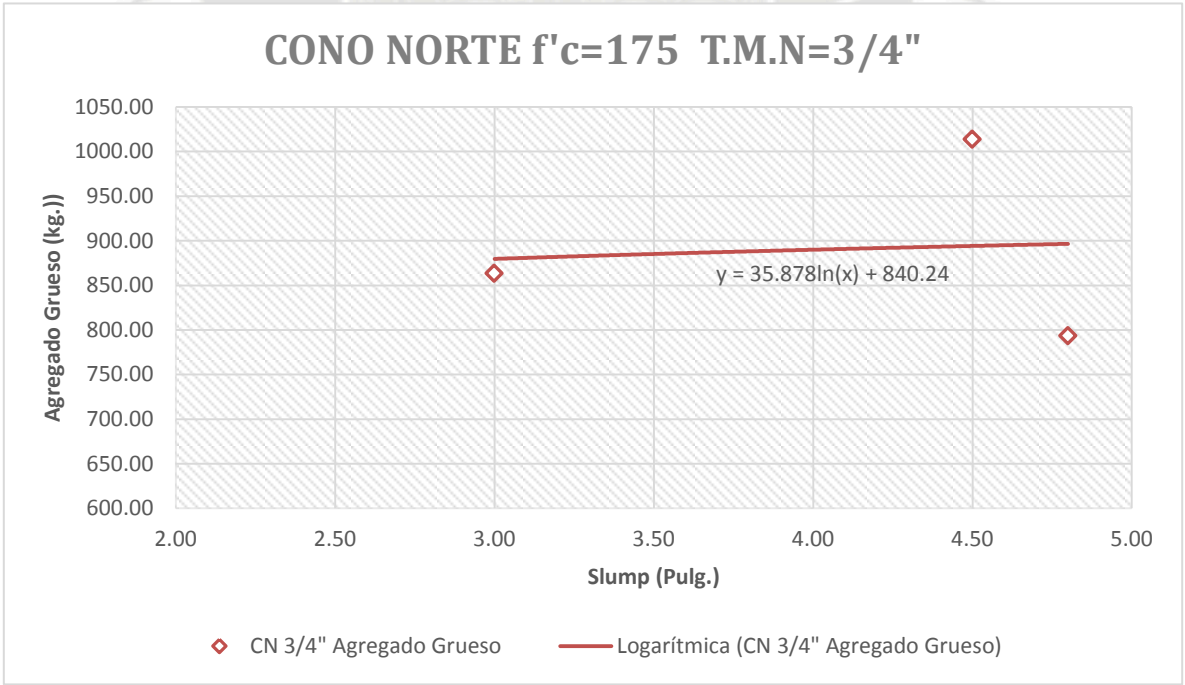

SOCABAYA F'C=280 kgf/cm2 TMN=1"
12.00
11.50
11.00
10.50
10.00
9.50
9.00
cemto(bols. /m3)
y = 0.5808ln(x) + 10.508
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
Slump (pulg.)
S.1"-cemento
Logarítmica (S.1"-cemento)

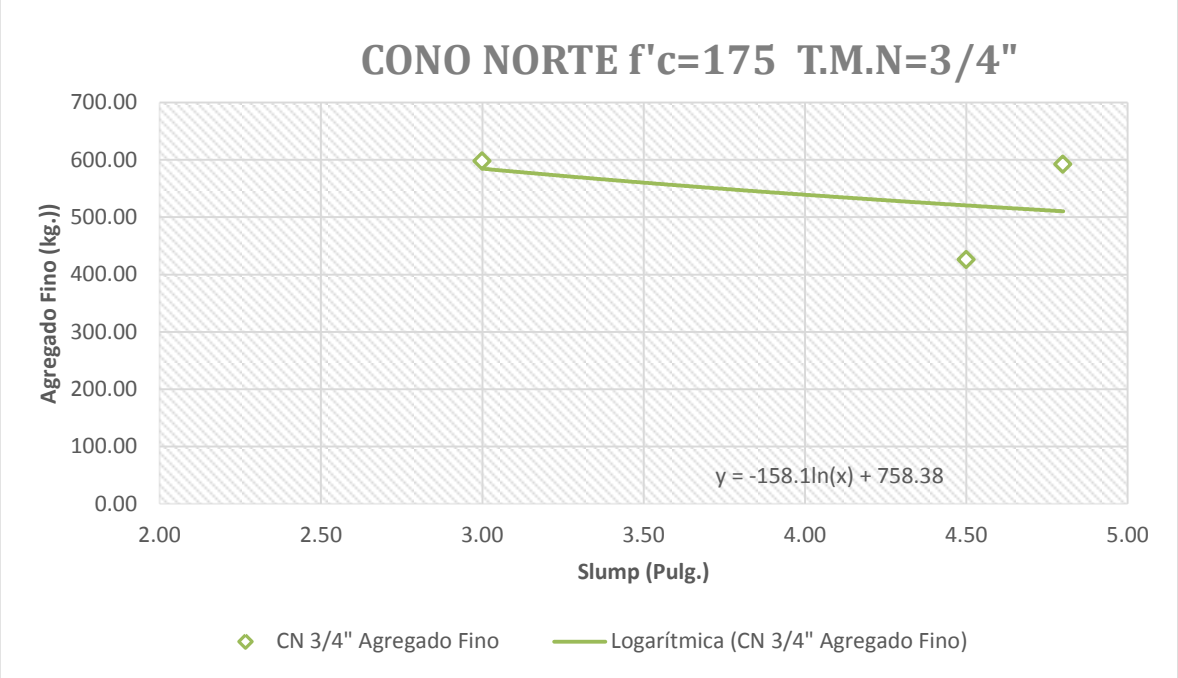

SOCABAYA F'C=280 kgf/cm2 TMN=1"
900.00
850.00
800.00
750.00
700.00
650.00
600.00
Ag Grueso(kg./m3)
y = -17.96ln(x) + 716.02
1.00
2.00
3.00
4.00
5.00
6.00
Slump (pulg.)
S.1"-A.grueso
Logarítmica (S.1"-A.grueso)

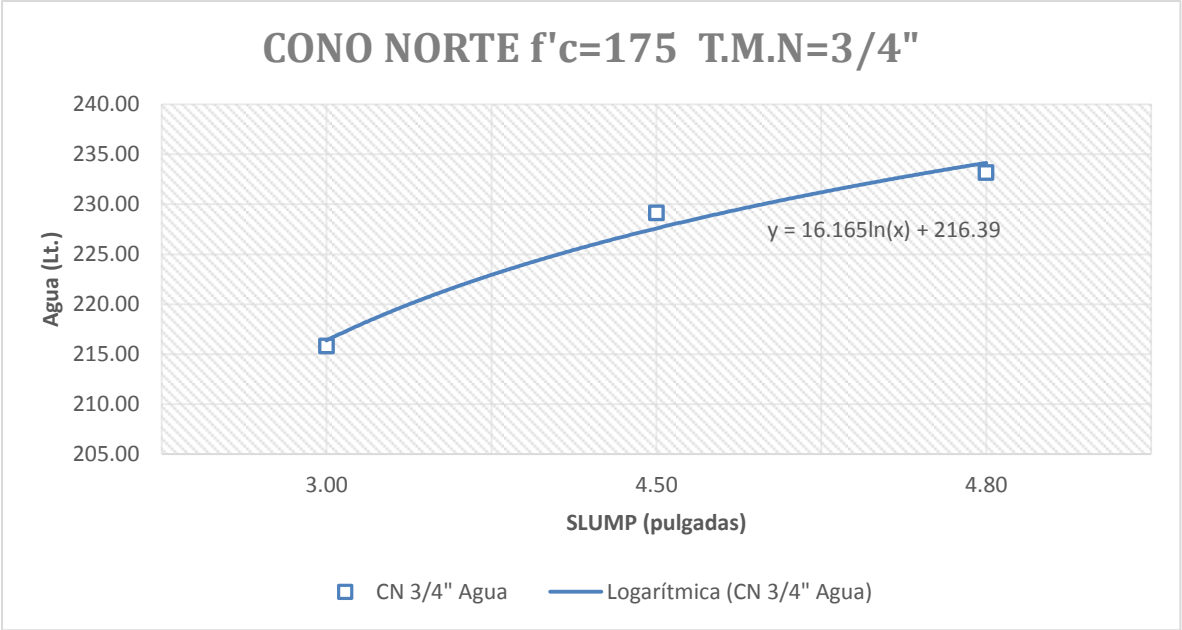

SOCABAYA F'C=280 kgf/cm2 TMN=1"
AgFino(kg./m3)
850.00
800.00
750.00
700.00
650.00
600.00
1.00
2.00
3.00
4.00
5.00
6.00
Slump (pulg.)
y = -56.66ln(x) + 817.12
S.1"-A.fino
Logarítmica (S.1"-A.fino)

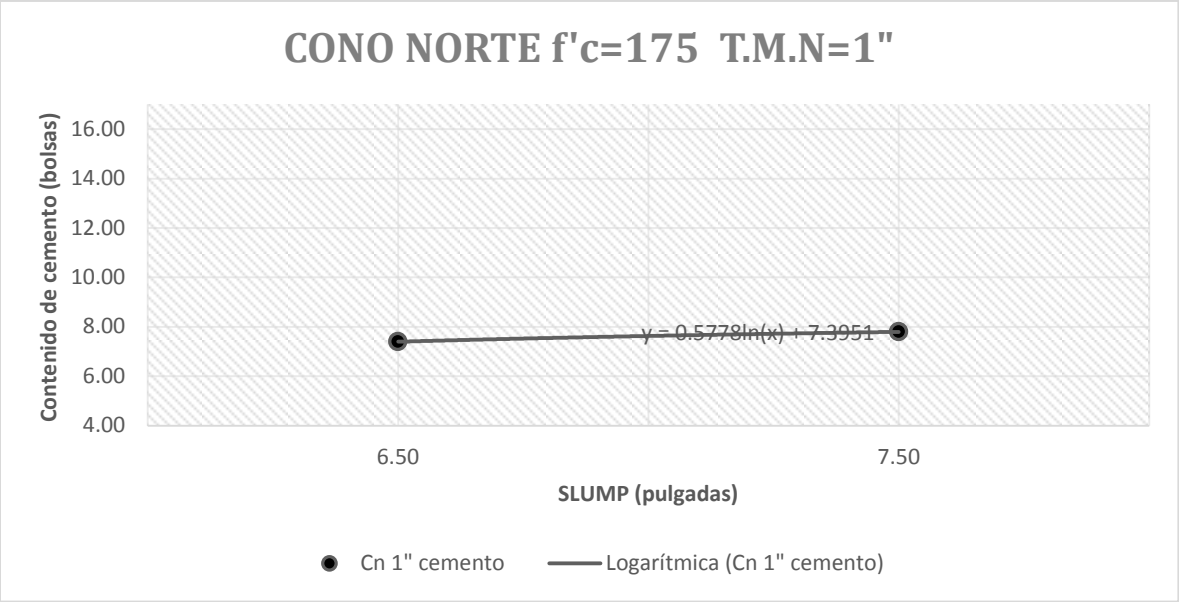

SOCABAYA F'C=280 kgf/cm2 TMN=1"
Agua (Lt/m3)
280.00
275.00
270.00
265.00
260.00
255.00
250.00
245.00
240.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
Slump (pulg.)
y = 18.725ln(x) + 238.9
S.1"-Agua
Logarítmica (S.1"-Agua)

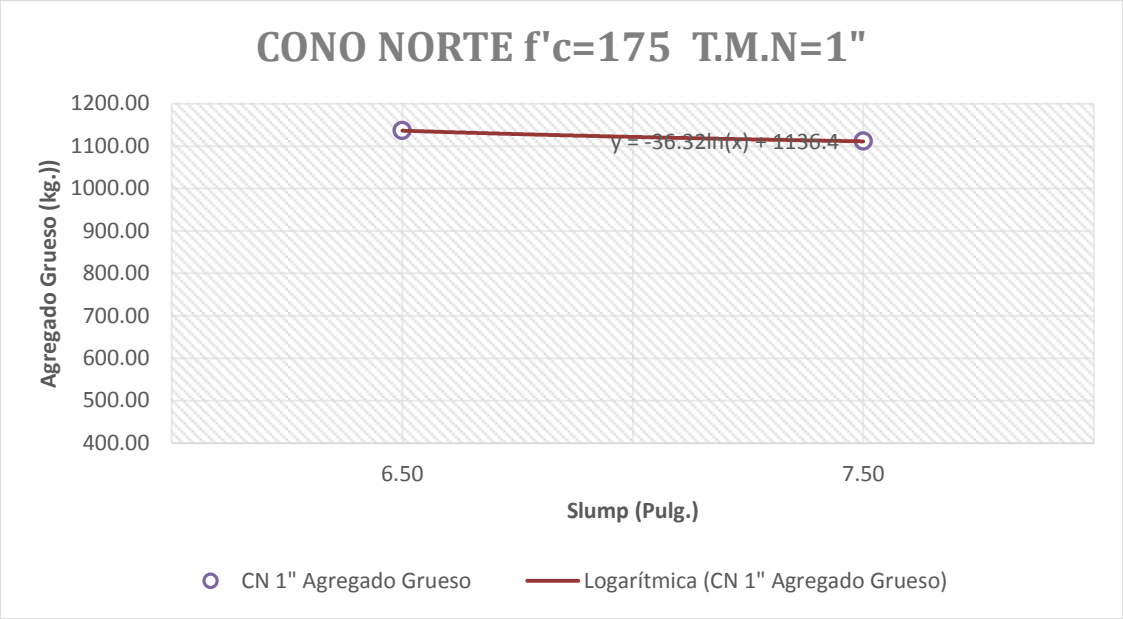

CONO NORTE f'c=175 T.M.N=3/4"
Contenido de cemento (bolsas)
11.50
10.50
9.50
8.50
7.50
6.50
y = 0.8136ln(x) + 7.7688
3.00
4.50
4.80
SLUMP (pulgadas)
CN 3/4" Cemento
Logarítmica (CN 3/4" Cemento)

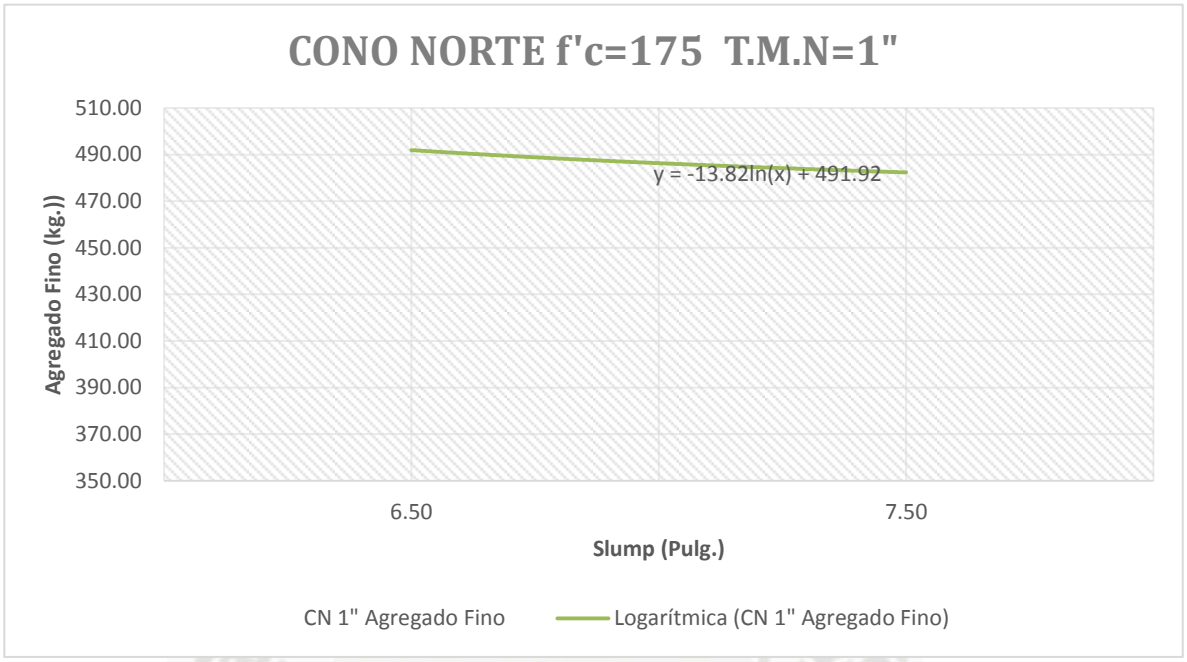

CONO NORTE f'c=175 T.M.N=3/4"
Agregado Grueso (kg.))
1050.00
1000.00
950.00
900.00
850.00
800.00
750.00
700.00
650.00
600.00
y = 35.878ln(x) + 840.24
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (Pulg.)
CN 3/4" Agregado Grueso
Logarítmica (CN 3/4" Agregado Grueso)

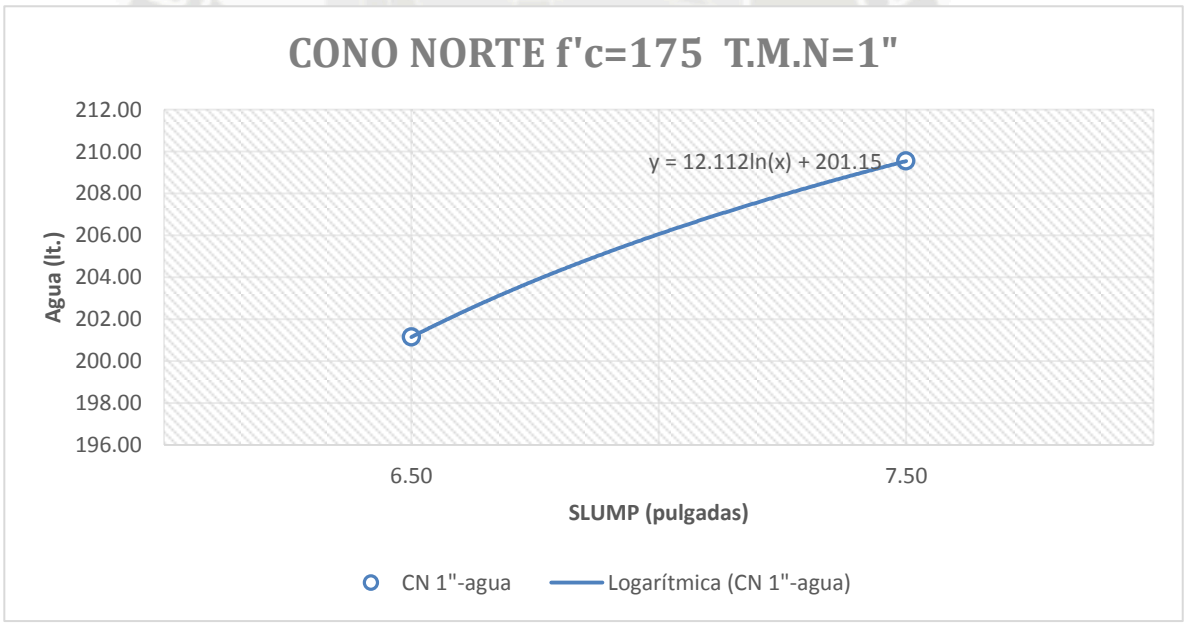

CONO NORTE f'c=175 T.M.N=3/4"
Agregado Fino (kg.))
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (Pulg.)
y = -158.1ln(x) + 758.38
CN 3/4" Agregado Fino
Logarítmica (CN 3/4" Agregado Fino)

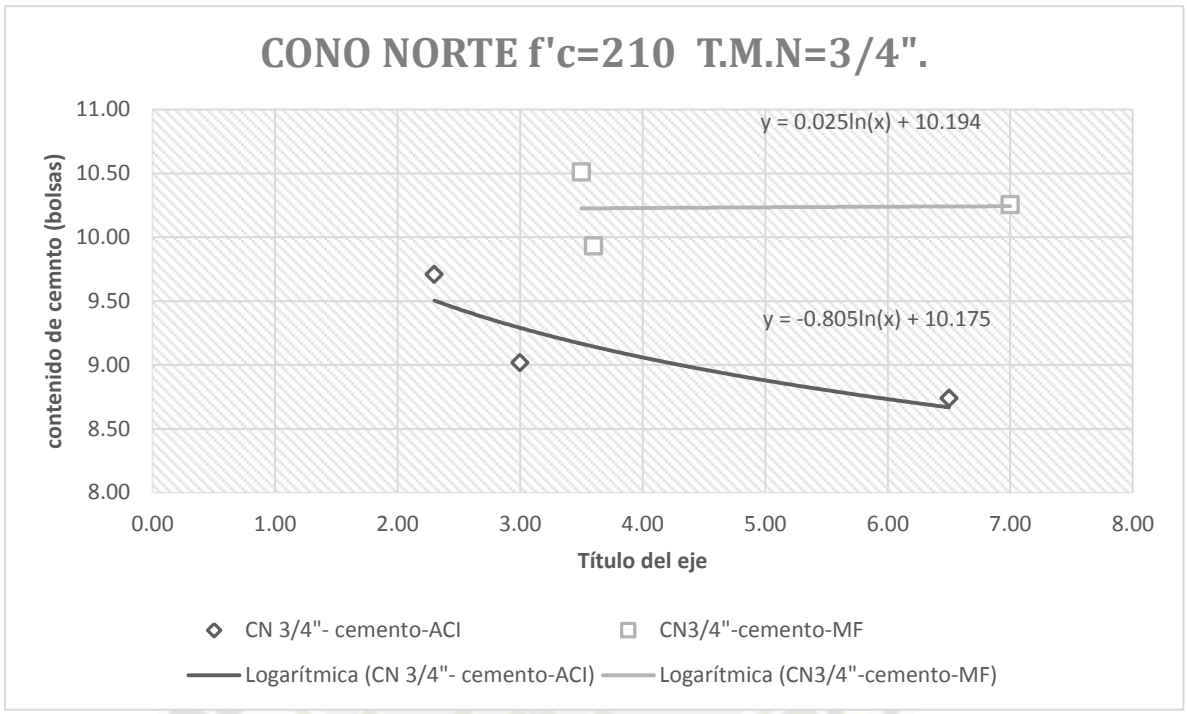

CONO NORTE f'c=175 T.M.N=3/4"
Agua (Lt.)
240.00
235.00
230.00
225.00
220.00
215.00
210.00
205.00
3.00
4.50
4.80
SLUMP (pulgadas)
y = 16.165ln(x) + 216.39
CN 3/4" Agua
Logarítmica (CN 3/4" Agua)

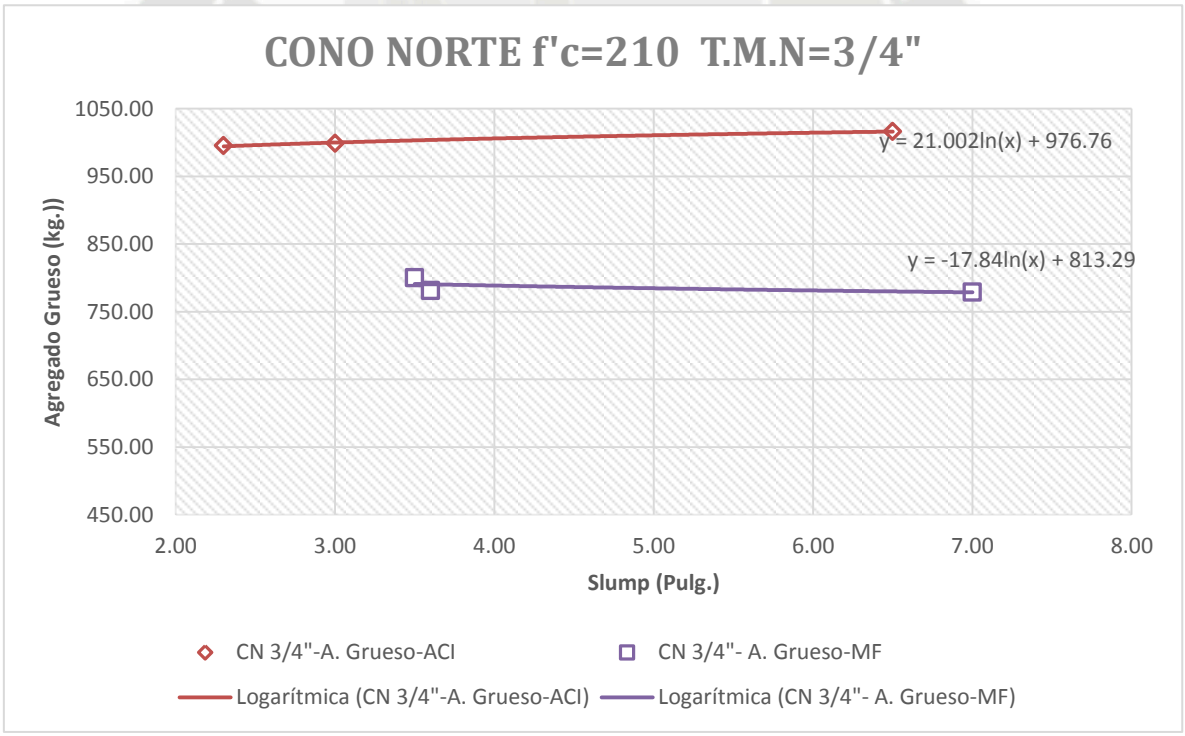

CONO NORTE f'c=175 T.M.N=1"
Contenido de cemento (bolsas)
16.00
14.00
12.00
10.00
8.00
6.00
4.00
y = 0.5778ln(x) + 7.3951
6.50
7.50
SLUMP (pulgadas)
Cn 1" cemento
Logarítmica (Cn 1" cemento)

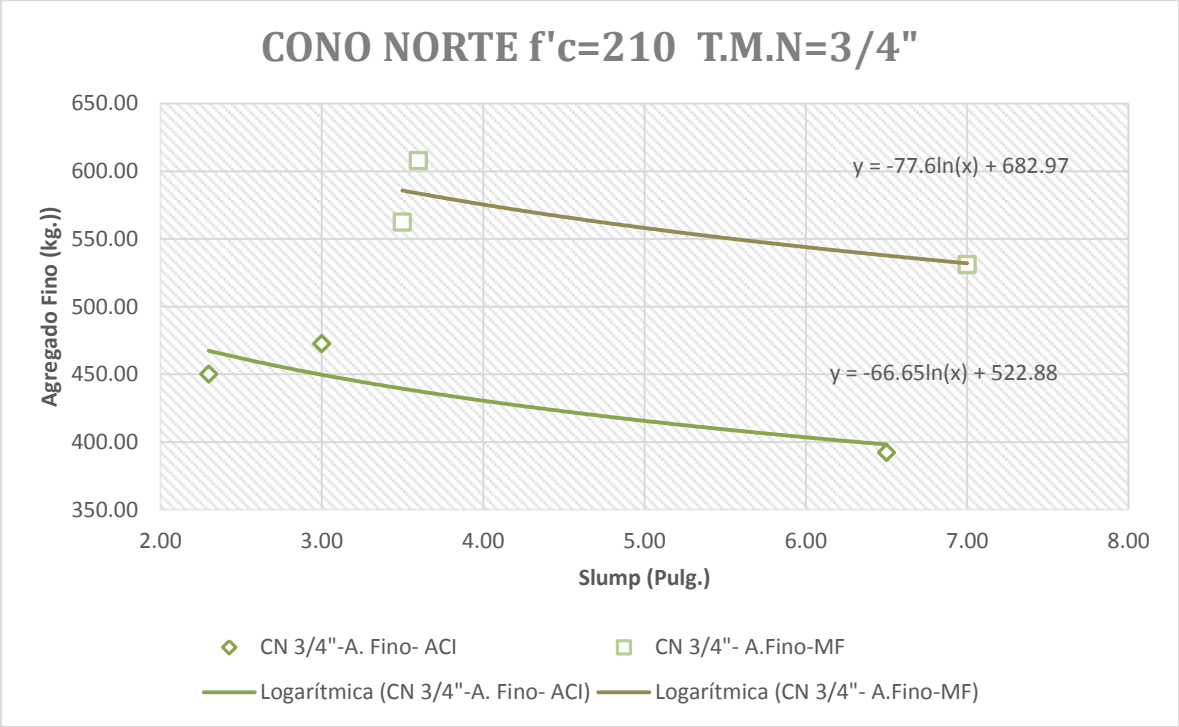

CONO NORTE f'c=175 T.M.N=1"
Agregado Grueso (kg.))
1200.00
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
y = -36.32ln(x) + 1136.4
6.50
7.50
Slump (Pulg.)
CN 1" Agregado Grueso
Logarítmica (CN 1" Agregado Grueso)

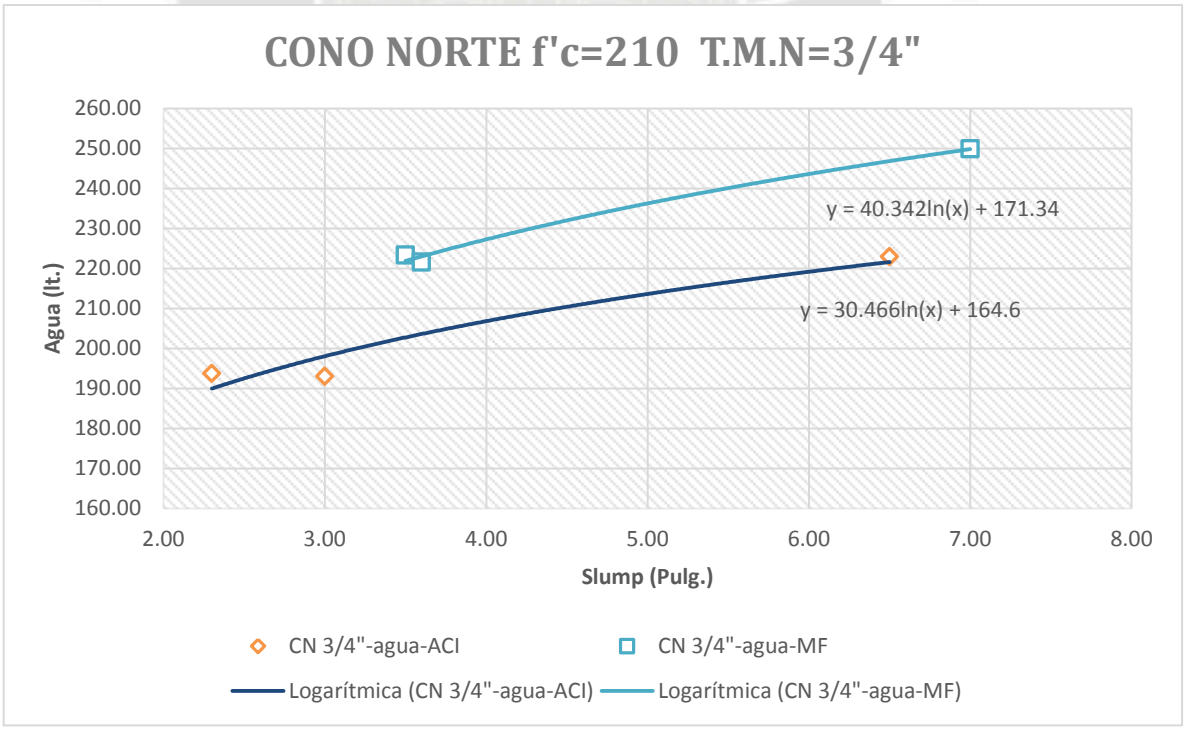

CONO NORTE f'c=175 T.M.N=1"
510.00
490.00
470.00
450.00
430.00
410.00
390.00
370.00
350.00
Agregado Fino (kg.))
y = -13.82ln(x) + 491.92
6.50
7.50
Slump (Pulg.)
CN 1" Agregado Fino
Logarítmica (CN 1" Agregado Fino)

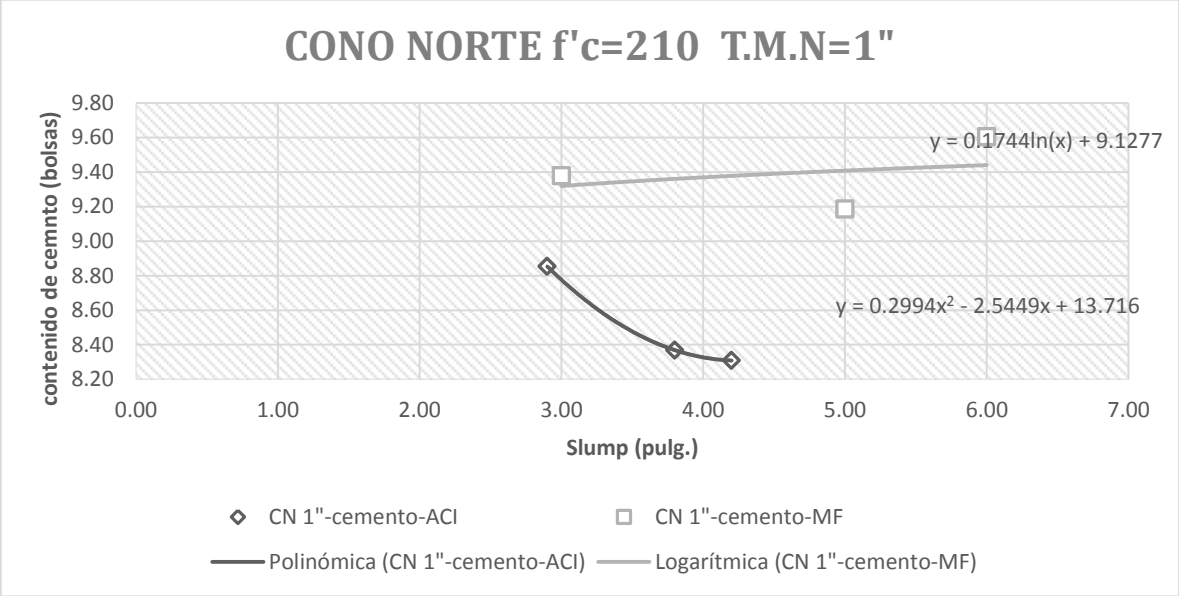

CONO NORTE f'c=175 T.M.N=1"
212.00
210.00
208.00
206.00
204.00
202.00
200.00
198.00
196.00
Agua (lt.)
y = 12.112ln(x) + 201.15
6.50
7.50
SLUMP (pulgadas)
CN 1"-agua
Logarítmica (CN 1"-agua)

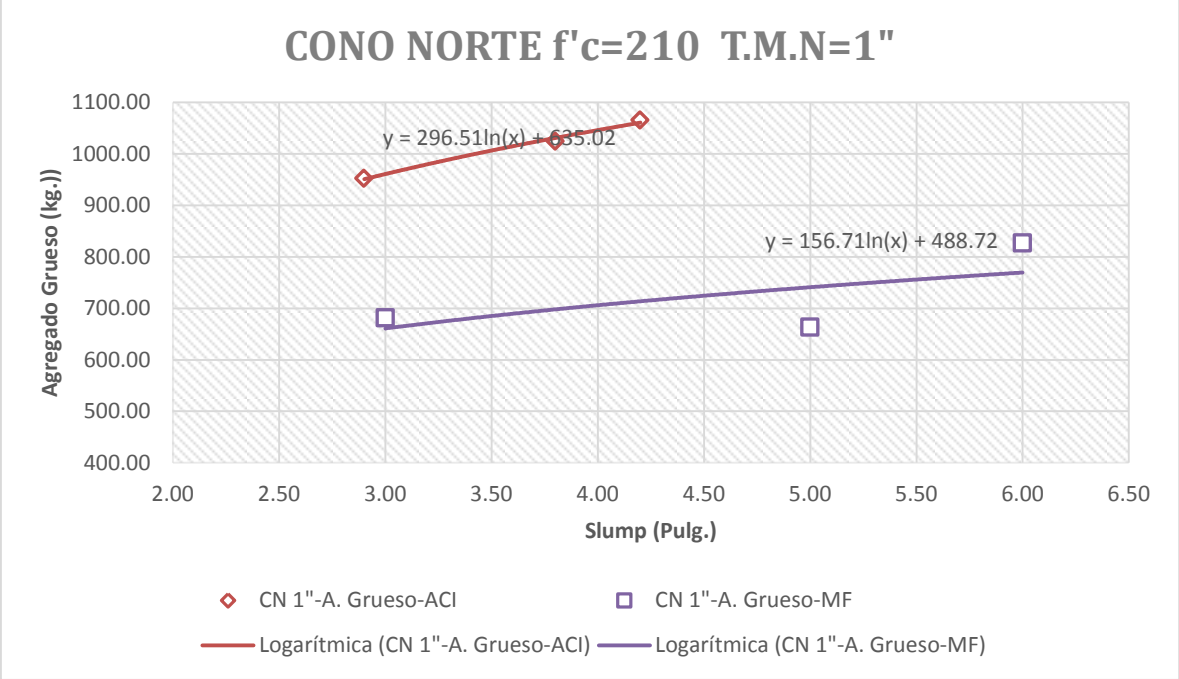

CONO NORTE f'c=210 T.M.N=3/4".
11.00
10.50
10.00
9.50
9.00
8.50
8.00
contenido de cemnto (bolsas)
y = 0.025ln(x) + 10.194
y = -0.805ln(x) + 10.175
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Título del eje
CN 3/4"- cemento-ACI
CN3/4"-cemento-MF
Logarítmica (CN 3/4"- cemento-ACI)
Logarítmica (CN3/4"-cemento-MF)

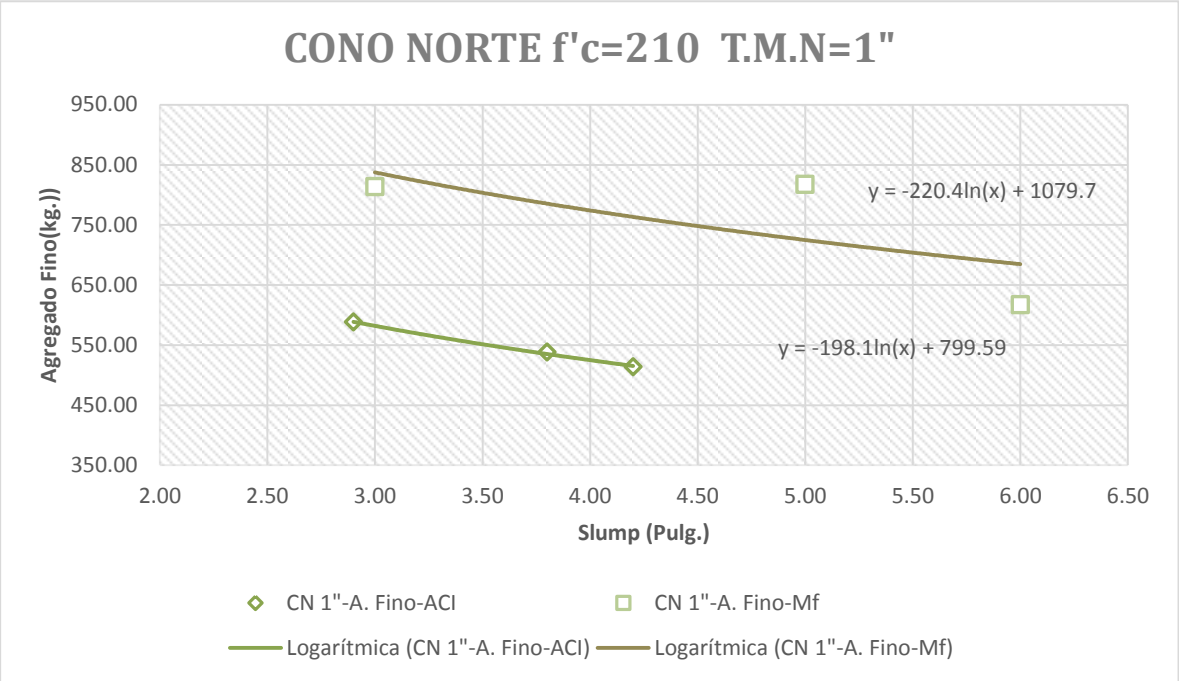

CONO NORTE f'c=210 T.M.N=3/4"
1050.00
950.00
850.00
750.00
650.00
550.00
450.00
Agregado Grueso (kg.))
y = 21.002ln(x) + 976.76
y = -17.84ln(x) + 813.29
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (Pulg.)
CN 3/4"-A. Grueso-ACI
CN 3/4"- A. Grueso-MF
Logarítmica (CN 3/4"-A. Grueso-ACI)
Logarítmica (CN 3/4"- A. Grueso-MF)

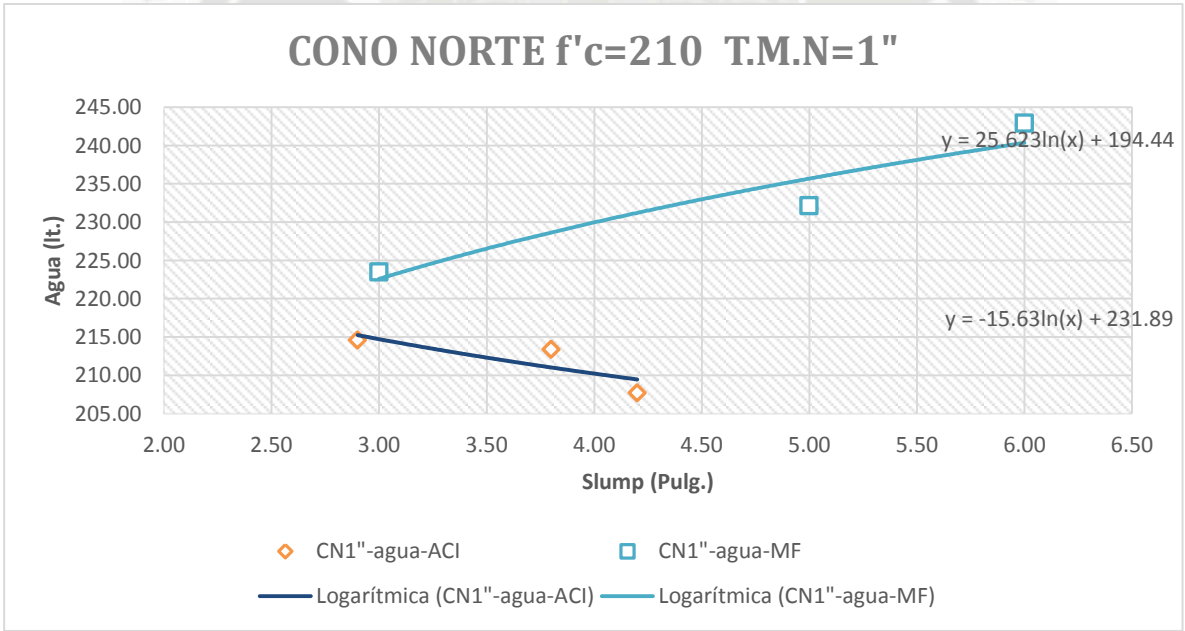

CONO NORTE f'c=210 T.M.N=3/4"
650.00
600.00
550.00
500.00
450.00
400.00
350.00
Agregado Fino (kg.))
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (Pulg.)
y = -77.6ln(x) + 682.97
y = -66.65ln(x) + 522.88
CN 3/4"-A. Fino- ACI
CN 3/4"- A.Fino-MF
Logarítmica (CN 3/4"-A. Fino- ACI)
Logarítmica (CN 3/4"- A.Fino-MF)

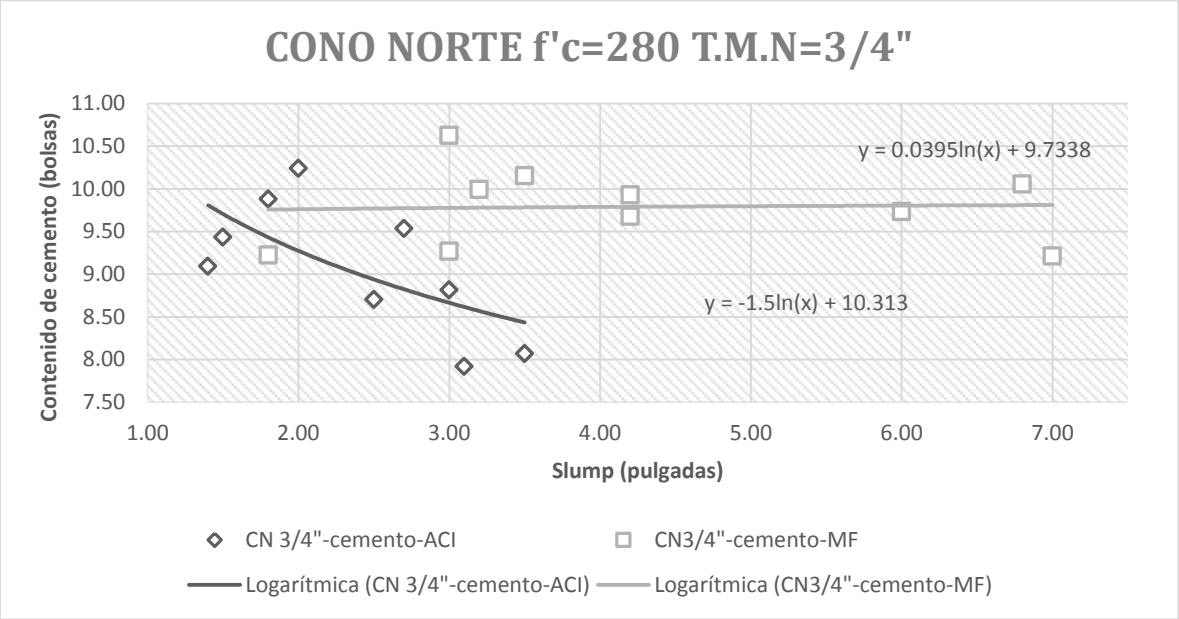

CONO NORTE f'c=210 T.M.N=3/4"
260.00
250.00
240.00
230.00
220.00
210.00
200.00
190.00
180.00
170.00
160.00
Agua (lt.)
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (Pulg.)
y = 40.342ln(x) + 171.34
y = 30.466ln(x) + 164.6
CN 3/4"-agua-ACI
CN 3/4"-agua-MF
Logarítmica (CN 3/4"-agua-ACI)
Logarítmica (CN 3/4"-agua-MF)

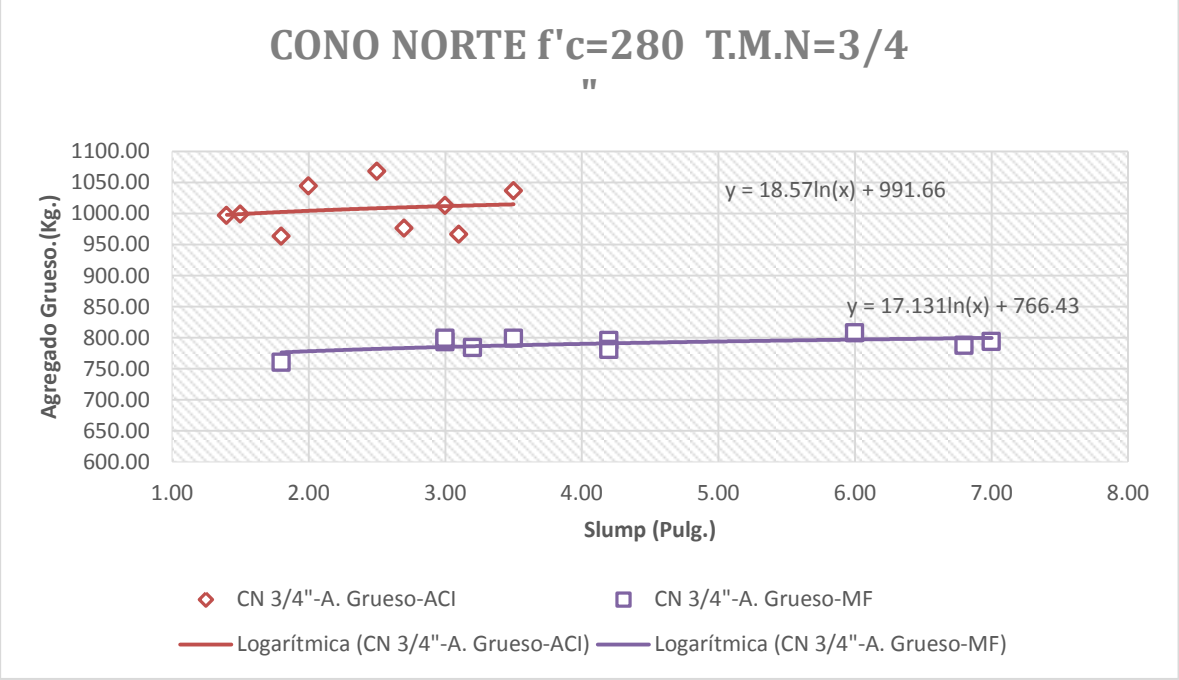

CONO NORTE f'c=210 T.M.N=1"
contenido de cemnto (bolsas)
9.80
9.60
9.40
9.20
9.00
8.80
8.60
8.40
8.20
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulg.)
y = 0.1744ln(x) + 9.1277
y = 0.2994x² - 2.5449x + 13.716
CN 1"-cemento-ACI
CN 1"-cemento-MF
Polinómica (CN 1"-cemento-ACI)
Logarítmica (CN 1"-cemento-MF)

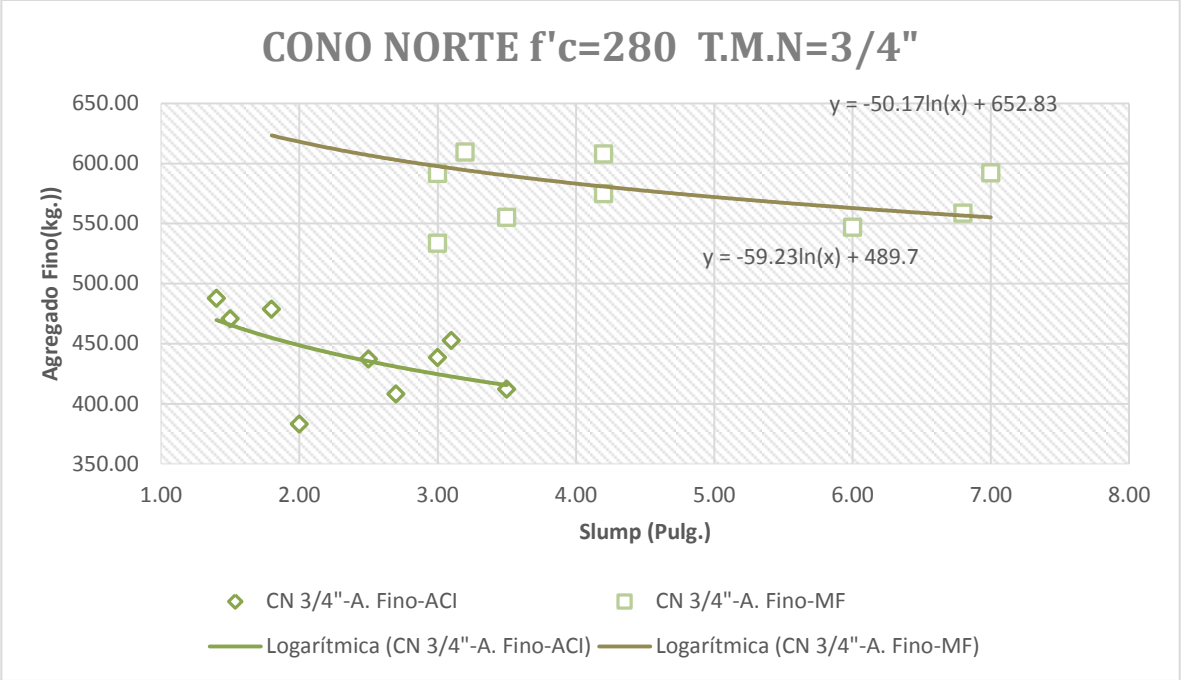

CONO NORTE f'c=210 T.M.N=1"
Agregado Grueso (kg.))
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
Slump (Pulg.)
y = 296.51ln(x) + 635.02
y = 156.71ln(x) + 488.72
CN 1"-A. Grueso-ACI
CN 1"-A. Grueso-MF
Logarítmica (CN 1"-A. Grueso-ACI)
Logarítmica (CN 1"-A. Grueso-MF)

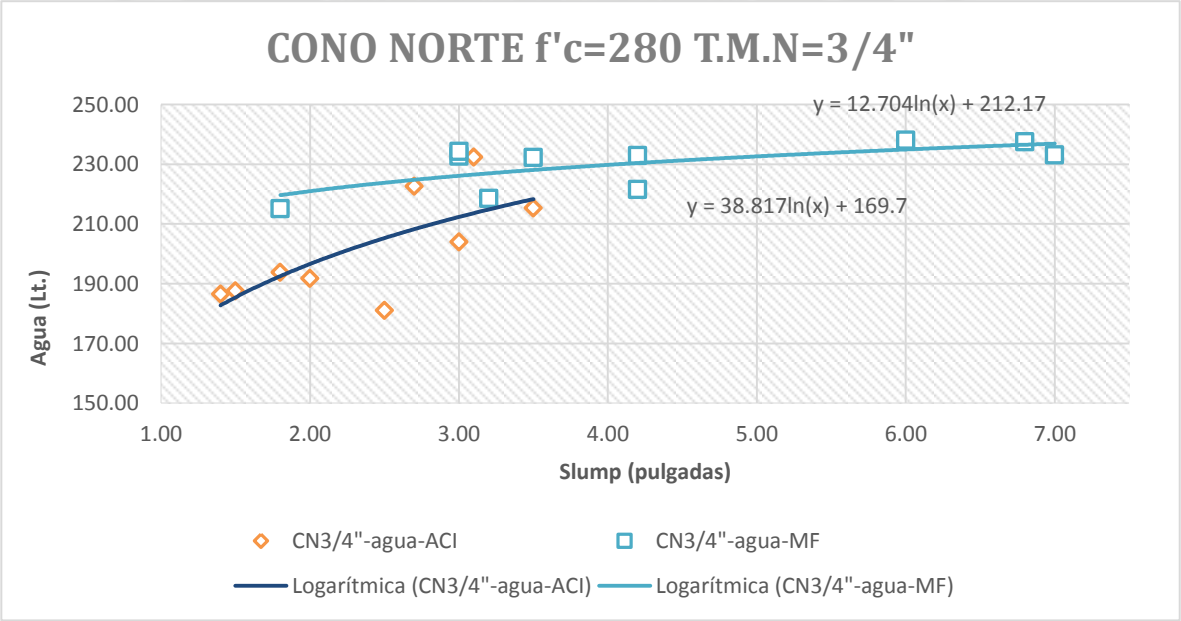

CONO NORTE f'c=210 T.M.N=1"
950.00
850.00
750.00
650.00
550.00
450.00
350.00
Agregado Fino(kg.))
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
Slump (Pulg.)
y = -220.4ln(x) + 1079.7
y = -198.1ln(x) + 799.59
CN 1"-A. Fino-ACI
CN 1"-A. Fino-Mf
Logarítmica (CN 1"-A. Fino-ACI)
Logarítmica (CN 1"-A. Fino-Mf)

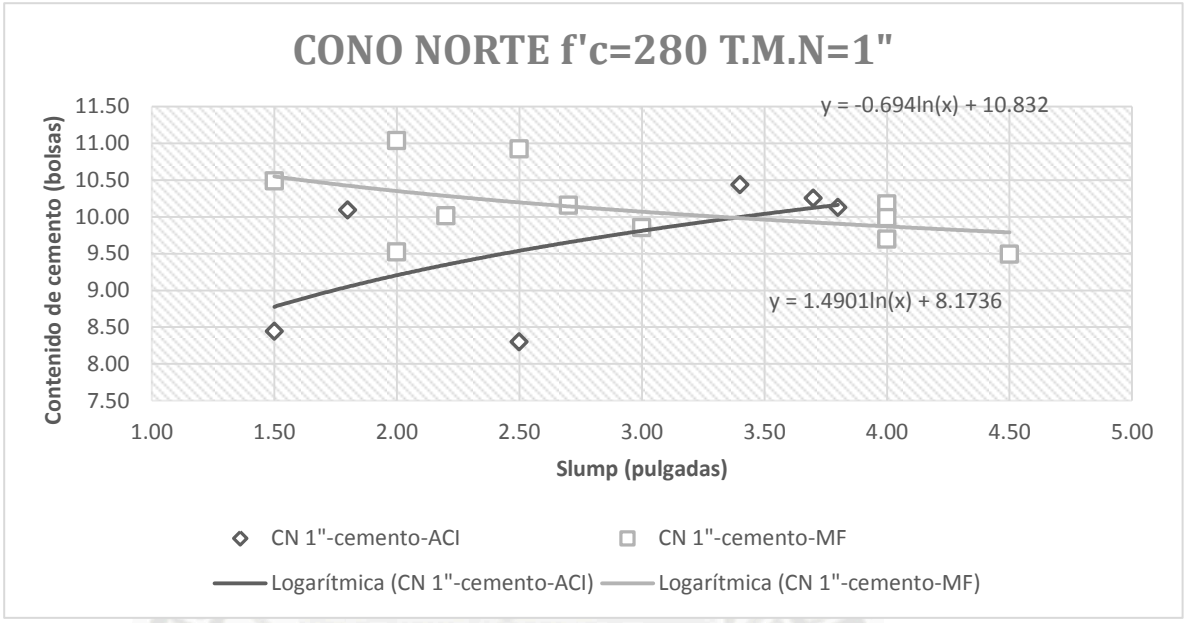

CONO NORTE f'c=210 T.M.N=1"
245.00
240.00
235.00
230.00
225.00
220.00
215.00
210.00
205.00
Agua (lt.)
2.00
2.50
3.00
3.50
4.00
4.50
5.00
5.50
6.00
6.50
Slump (Pulg.)
y = 25.623ln(x) + 194.44
y = -15.63ln(x) + 231.89
CN1"-agua-ACI
CN1"-agua-MF
Logarítmica (CN1"-agua-ACI)
Logarítmica (CN1"-agua-MF)

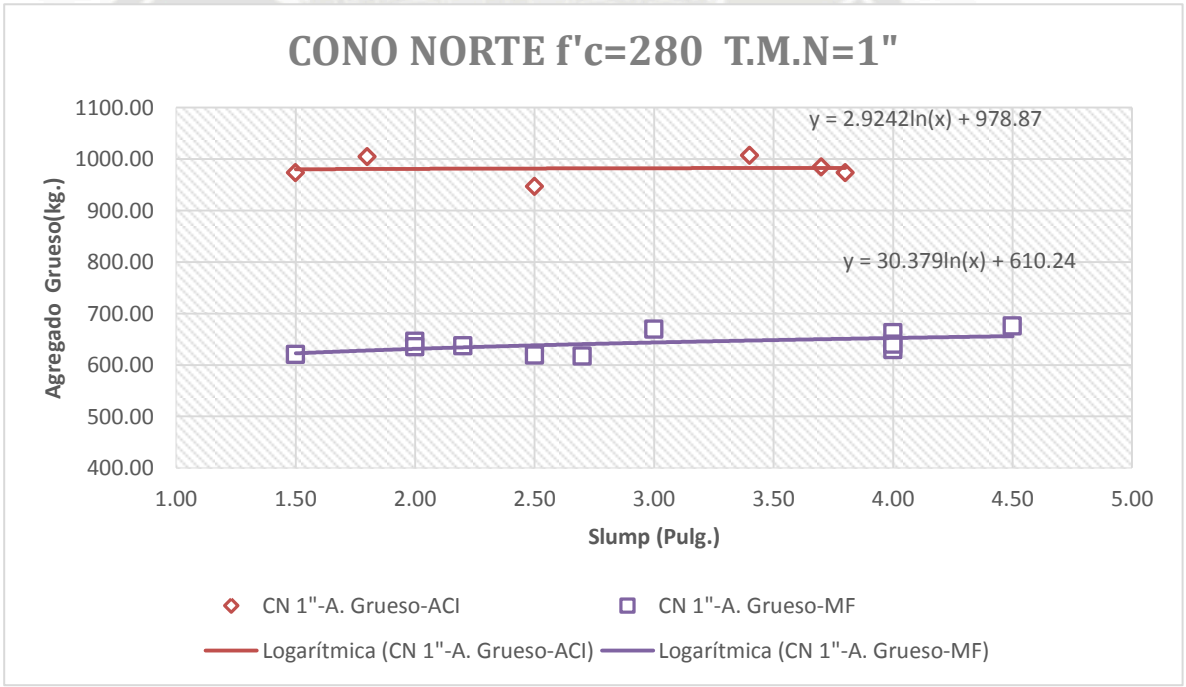

CONO NORTE f'c=280 T.M.N=3/4"
Contenido de cemento (bolsas)
11.00
10.50
10.00
9.50
9.00
8.50
8.00
7.50
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulgadas)
y = 0.0395ln(x) + 9.7338
y = -1.5ln(x) + 10.313
CN 3/4"-cemento-ACI
CN3/4"-cemento-MF
Logarítmica (CN 3/4"-cemento-ACI)
Logarítmica (CN3/4"-cemento-MF)

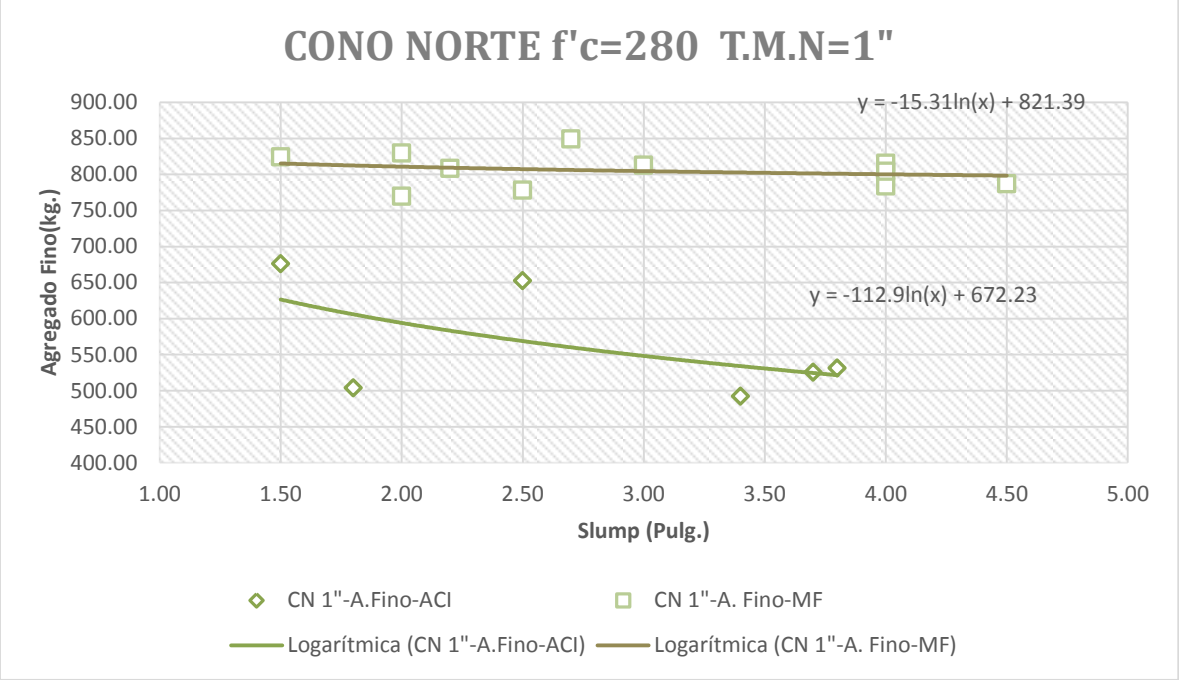

CONO NORTE f'c=280 T.M.N=3/4 "
Agregado Grueso.(Kg.)
1100.00
1050.00
1000.00
950.00
900.00
850.00
800.00
750.00
700.00
650.00
600.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (Pulg.)
y = 18.57ln(x) + 991.66
y = 17.131ln(x) + 766.43
CN 3/4"-A. Grueso-ACI
CN 3/4"-A. Grueso-MF
Logarítmica (CN 3/4"-A. Grueso-ACI)
Logarítmica (CN 3/4"-A. Grueso-MF)

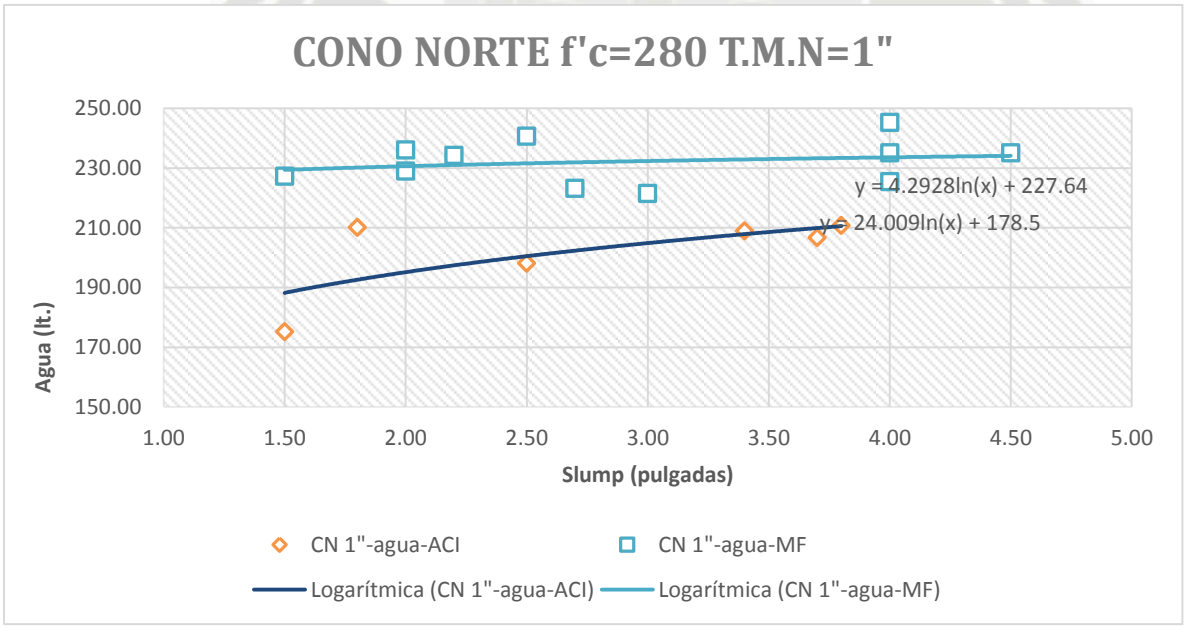

CONO NORTE f'c=280 T.M.N=3/4"
y = -50.17ln(x) + 652.83
y = -59.23ln(x) + 489.7
Agregado Fino(kg.))
650.00
600.00
550.00
500.00
450.00
400.00
350.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (Pulg.)
CN 3/4"-A. Fino-ACI
CN 3/4"-A. Fino-MF
Logarítmica (CN 3/4"-A. Fino-ACI)
Logarítmica (CN 3/4"-A. Fino-MF)

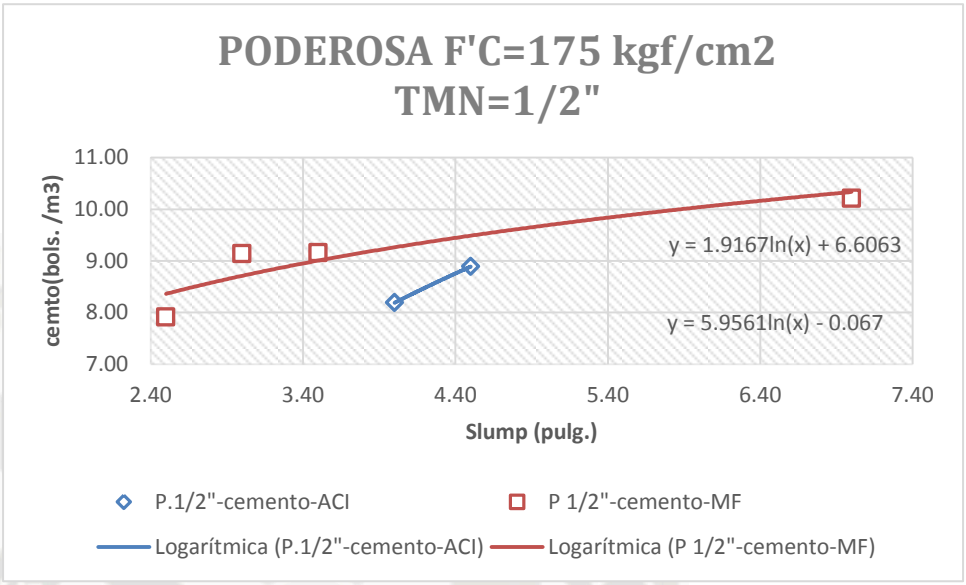

CONO NORTE f'c=280 T.M.N=3/4"
y = 12.704ln(x) + 212.17
y = 38.817ln(x) + 169.7
Agua (Lt.)
250.00
230.00
210.00
190.00
170.00
150.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
Slump (pulgadas)
CN3/4"-agua-ACI
CN3/4"-agua-MF
Logarítmica (CN3/4"-agua-ACI)
Logarítmica (CN3/4"-agua-MF)

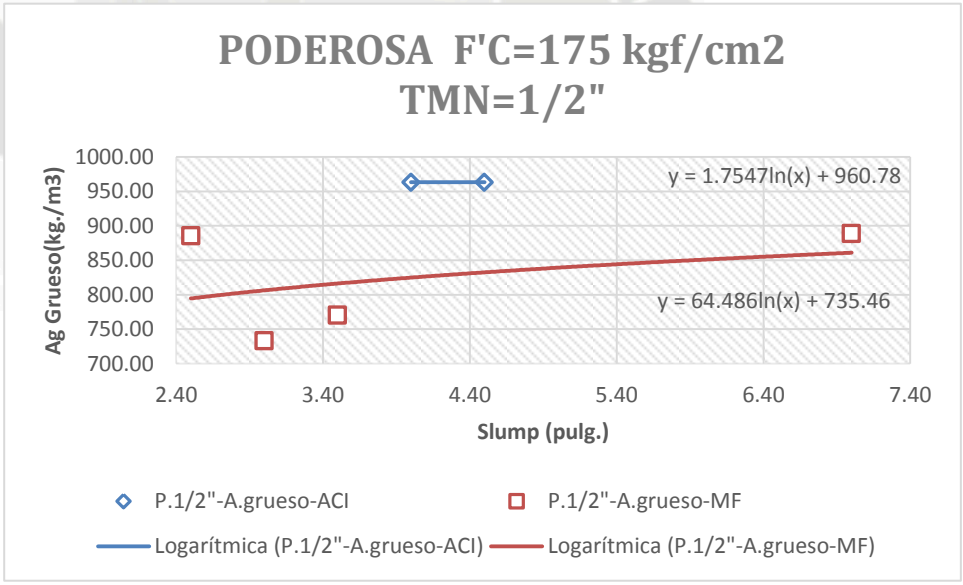

CONO NORTE f'c=280 T.M.N=1"
y = -0.694ln(x) + 10.832
y = 1.4901ln(x) + 8.1736
Contenido de cemento (bolsas)
11.50
11.00
10.50
10.00
9.50
9.00
8.50
8.00
7.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (pulgadas)
CN 1"-cemento-ACI
CN 1"-cemento-MF
Logarítmica (CN 1"-cemento-ACI)
Logarítmica (CN 1"-cemento-MF)

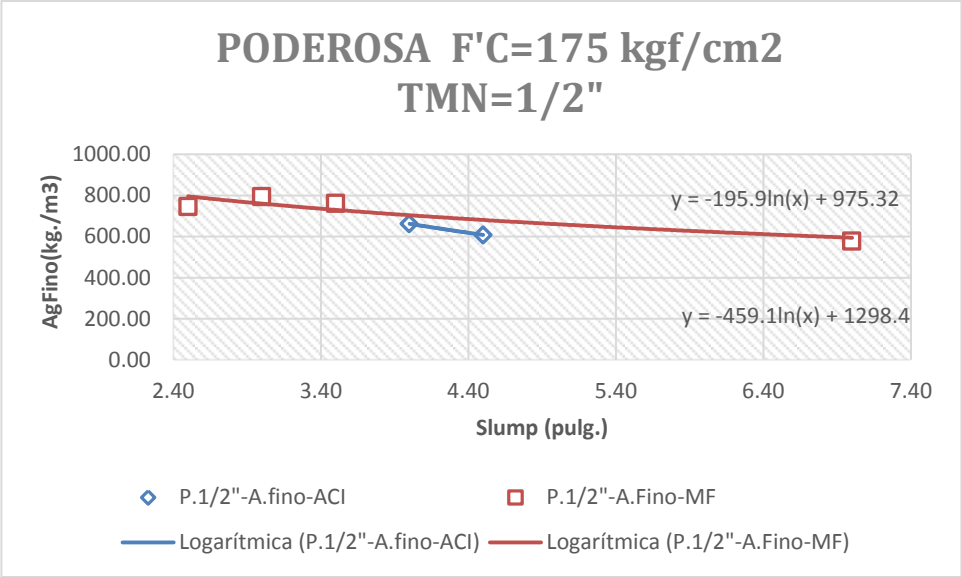

CONO NORTE f'c=280 T.M.N=1"
y = 2.9242ln(x) + 978.87
y = 30.379ln(x) + 610.24
Agregado Grueso(kg.)
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (Pulg.)
CN 1"-A. Grueso-ACI
CN 1"-A. Grueso-MF
Logarítmica (CN 1"-A. Grueso-ACI)
Logarítmica (CN 1"-A. Grueso-MF)

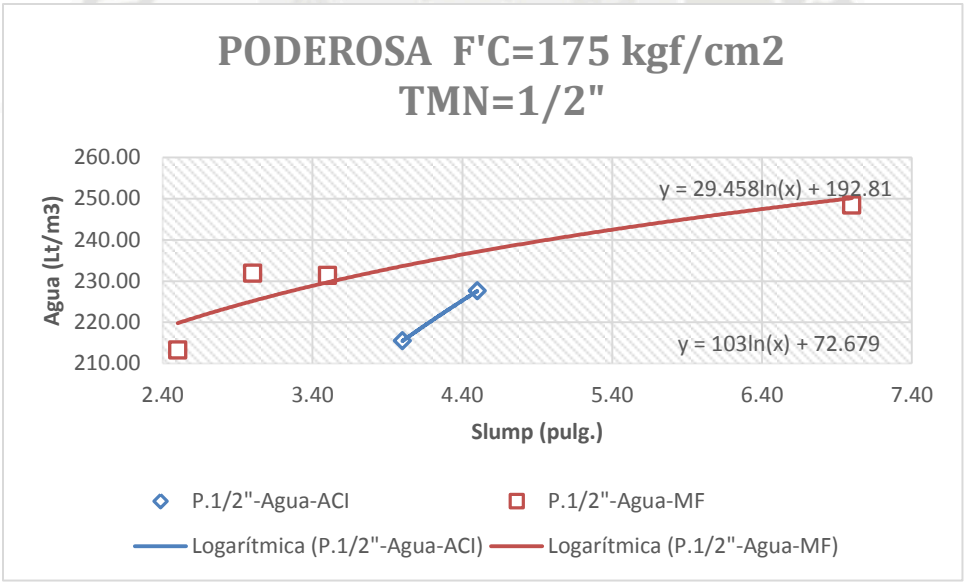

CONO NORTE f'c=280 T.M.N=1"
y = -15.31ln(x) + 821.39
y = -112.9ln(x) + 672.23
Agregado Fino(kg.)
900.00
850.00
800.00
750.00
700.00
650.00
600.00
550.00
500.00
450.00
400.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (Pulg.)
CN 1"-A.Fino-ACI
CN 1"-A. Fino-MF
Logarítmica (CN 1"-A.Fino-ACI)
Logarítmica (CN 1"-A. Fino-MF)

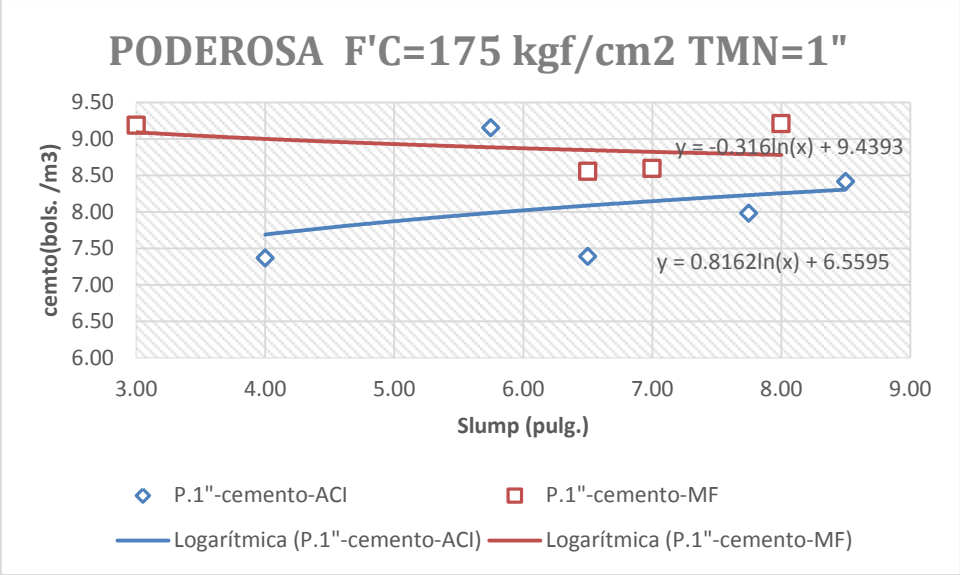

CONO NORTE f'c=280 T.M.N=1"
y = 4.2928ln(x) + 227.64
y = 24.009ln(x) + 178.5
Agua (lt.)
250.00
230.00
210.00
190.00
170.00
150.00
1.00
1.50
2.00
2.50
3.00
3.50
4.00
4.50
5.00
Slump (pulgadas)
CN 1"-agua-ACI
CN 1"-agua-MF
Logarítmica (CN 1"-agua-ACI)
Logarítmica (CN 1"-agua-MF)

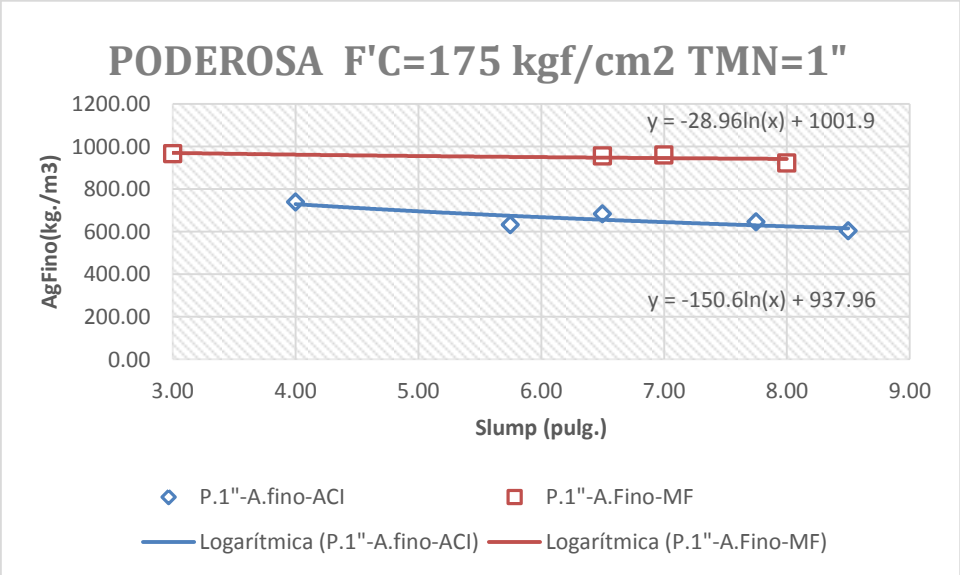

PODEROSA F'C=175 kgf/cm2
TMN=1/2"
cemto(bols. /m3)
11.00
10.00
9.00
8.00
7.00
2.40
3.40
4.40
5.40
6.40
7.40
Slump (pulg.)
y = 1.9167ln(x) + 6.6063
y = 5.9561ln(x) - 0.067
P.1/2"-cemento-ACI
P 1/2"-cemento-MF
Logarítmica (P.1/2"-cemento-ACI)
Logarítmica (P 1/2"-cemento-MF)

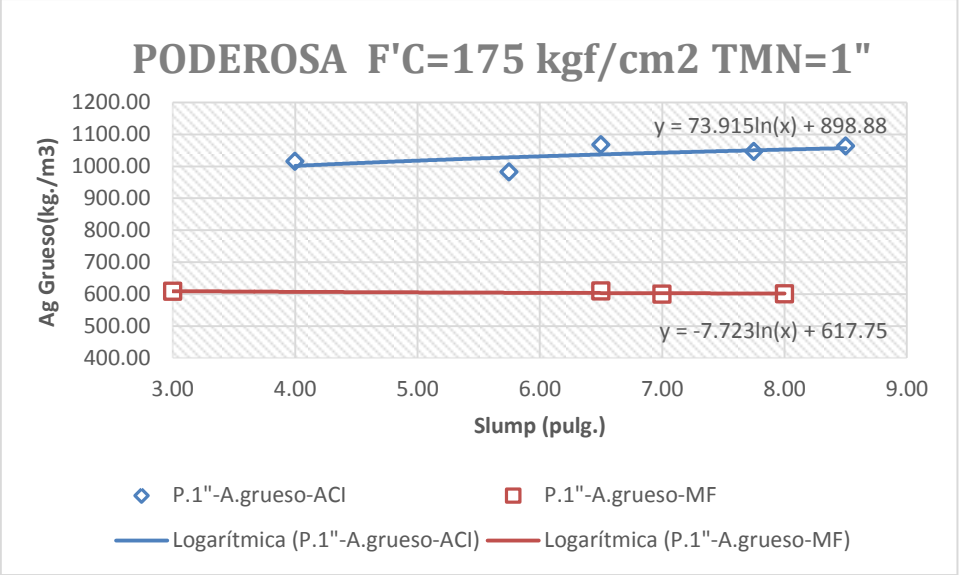

PODEROSA F'C=175 kgf/cm2
TMN=1/2"
Ag Grueso(kg./m3)
1000.00
950.00
900.00
850.00
800.00
750.00
700.00
2.40
3.40
4.40
5.40
6.40
7.40
Slump (pulg.)
y = 1.7547ln(x) + 960.78
y = 64.486ln(x) + 735.46
P.1/2"-A.grueso-ACI
P.1/2"-A.grueso-MF
Logarítmica (P.1/2"-A.grueso-ACI)
Logarítmica (P.1/2"-A.grueso-MF)

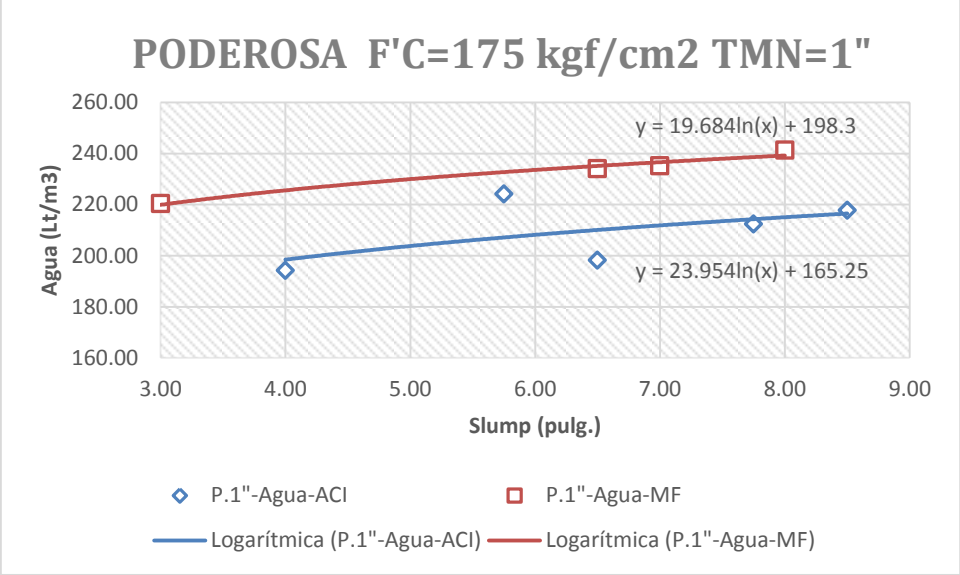

PODEROSA F'C=175 kgf/cm2
TMN=1/2"
AgFino(kg./m3)
1000.00
800.00
600.00
400.00
200.00
0.00
2.40
3.40
4.40
5.40
6.40
7.40
Slump (pulg.)
y = -195.9ln(x) + 975.32
y = -459.1ln(x) + 1298.4
P.1/2"-A.fino-ACI
P.1/2"-A.Fino-MF
Logarítmica (P.1/2"-A.fino-ACI)
Logarítmica (P.1/2"-A.Fino-MF)

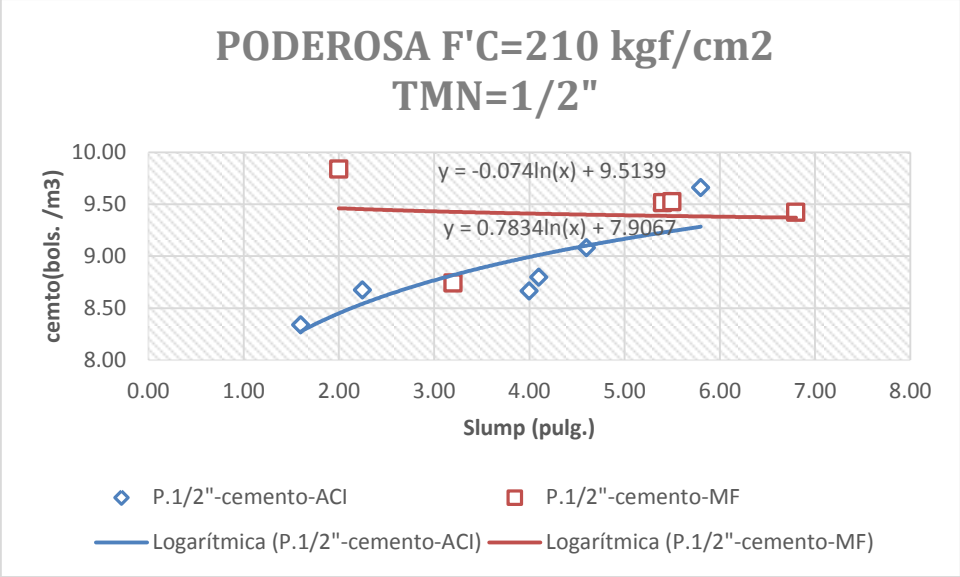

PODEROSA F'C=175 kgf/cm2
TMN=1/2"
Agua (Lt/m3)
260.00
250.00
240.00
230.00
220.00
210.00
2.40
3.40
4.40
5.40
6.40
7.40
Slump (pulg.)
y = 29.458ln(x) + 192.81
y = 103ln(x) + 72.679
P.1/2"-Agua-ACI
P.1/2"-Agua-MF
Logarítmica (P.1/2"-Agua-ACI)
Logarítmica (P.1/2"-Agua-MF)

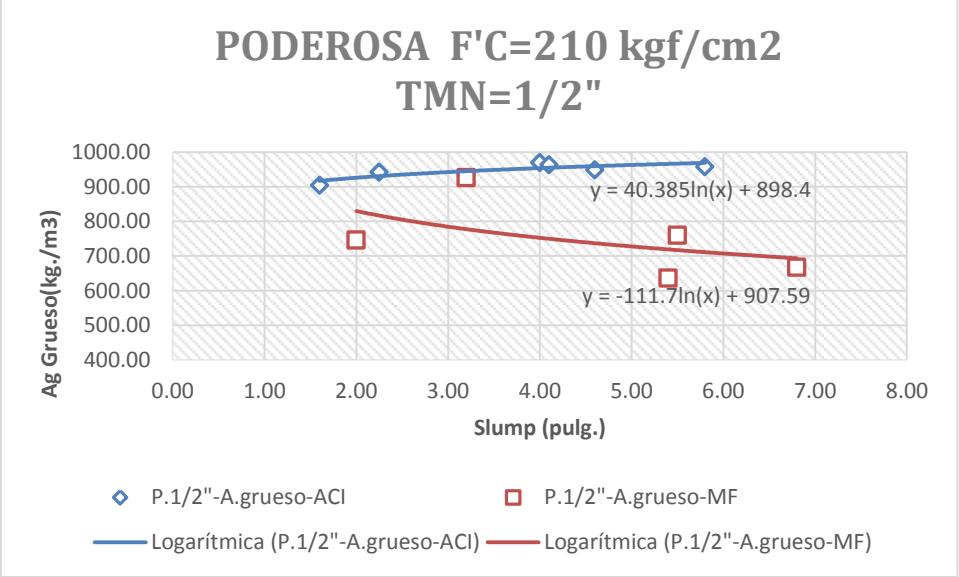

PODEROSA F'C=175 kgf/cm2 TMN=1"
cemto(bols. /m3)
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
y = -0.316ln(x) + 9.4393
y = 0.8162ln(x) + 6.5595
P.1"-cemento-ACI
P.1"-cemento-MF
Logarítmica (P.1"-cemento-ACI)
Logarítmica (P.1"-cemento-MF)

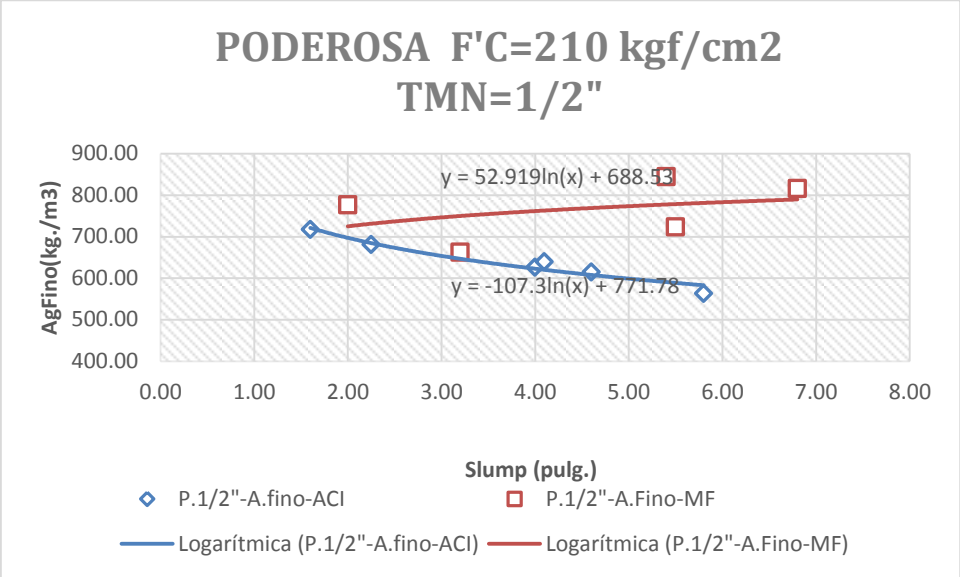

PODEROSA F'C=175 kgf/cm2 TMN=1"
AgFino(kg./m3)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
y = -28.96ln(x) + 1001.9
y = -150.6ln(x) + 937.96
P.1"-A.fino-ACI
P.1"-A.Fino-MF
Logarítmica (P.1"-A.fino-ACI)
Logarítmica (P.1"-A.Fino-MF)

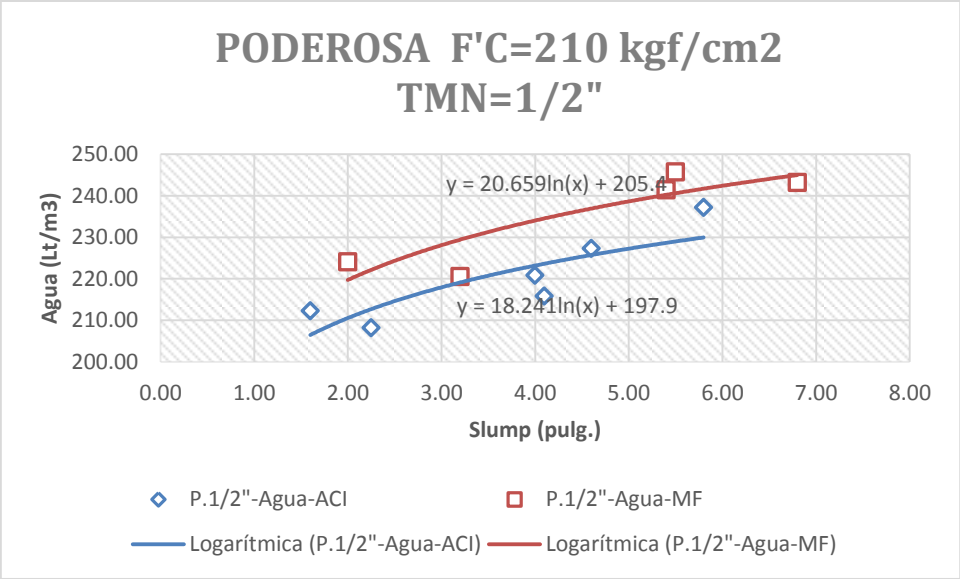

PODEROSA F'C=175 kgf/cm2 TMN=1"
Ag Grueso(kg./m3)
1200.00
1100.00
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
y = 73.915ln(x) + 898.88
y = -7.723ln(x) + 617.75
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
P.1"-A.grueso-ACI
P.1"-A.grueso-MF
Logarítmica (P.1"-A.grueso-ACI)
Logarítmica (P.1"-A.grueso-MF)

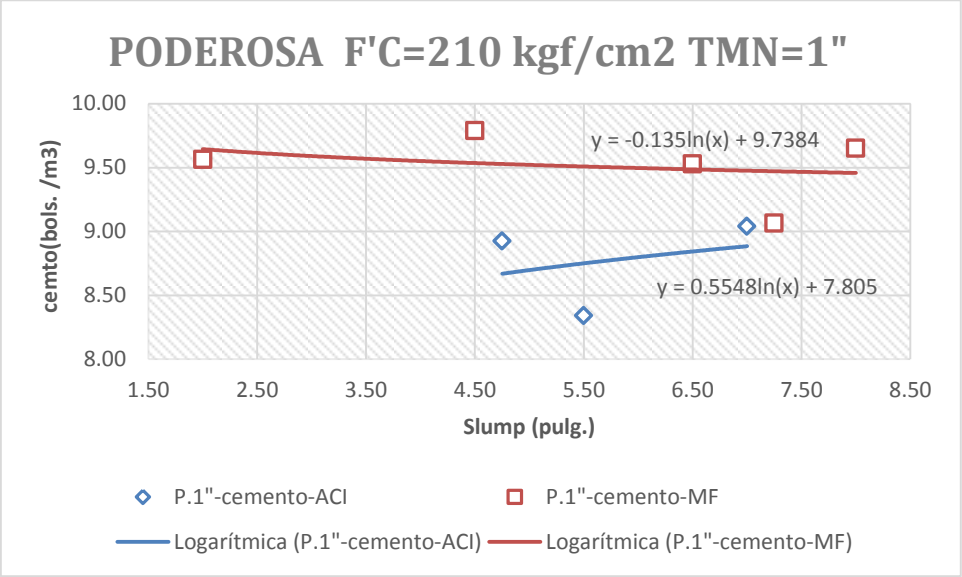

PODEROSA F'C=175 kgf/cm2 TMN=1"
Agua (Lt/m3)
260.00
240.00
220.00
200.00
180.00
160.00
y = 19.684ln(x) + 198.3
y = 23.954ln(x) + 165.25
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
P.1"-Agua-ACI
P.1"-Agua-MF
Logarítmica (P.1"-Agua-ACI)
Logarítmica (P.1"-Agua-MF)

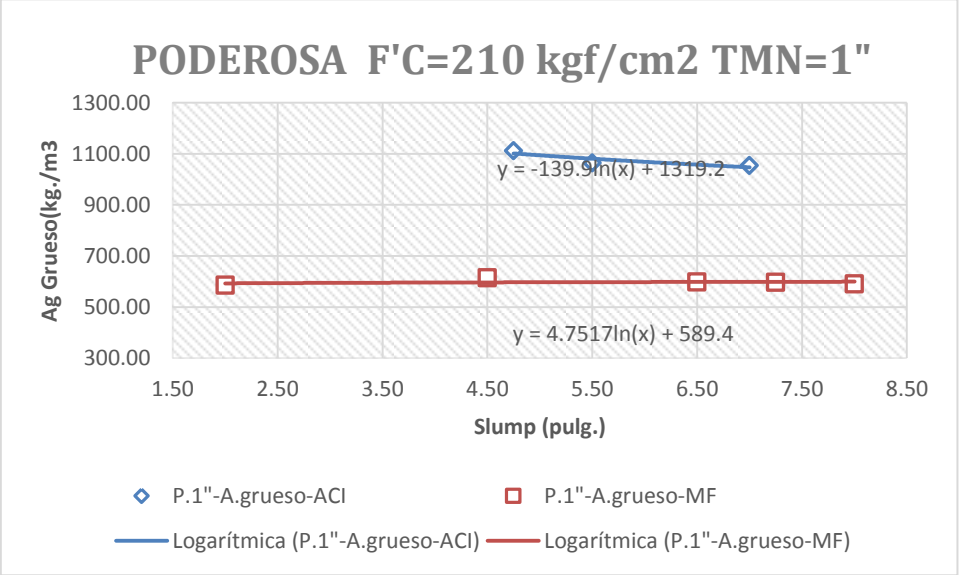

PODEROSA F'C=210 kgf/cm2
TMN=1/2"
cemto(bols. /m3)
10.00
9.50
9.00
8.50
8.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
y = -0.074ln(x) + 9.5139
y = 0.7834ln(x) + 7.9067
P.1/2"-cemento-ACI
P.1/2"-cemento-MF
Logarítmica (P.1/2"-cemento-ACI)
Logarítmica (P.1/2"-cemento-MF)

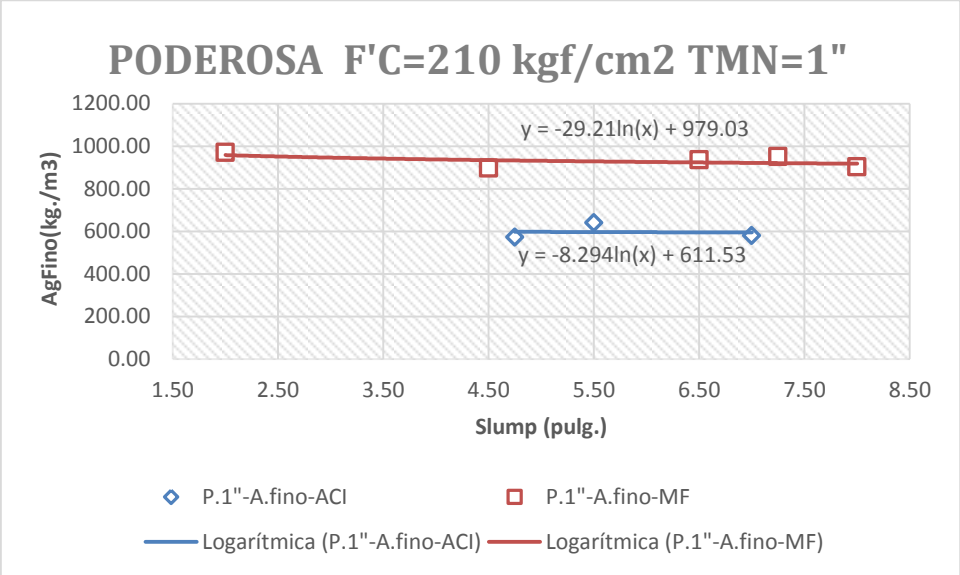

PODEROSA F'C=210 kgf/cm2
TMN=1/2"
Ag Grueso(kg./m3)
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
y = 40.385ln(x) + 898.4
y = -111.7ln(x) + 907.59
P.1/2"-A.grueso-ACI
P.1/2"-A.grueso-MF
Logarítmica (P.1/2"-A.grueso-ACI)
Logarítmica (P.1/2"-A.grueso-MF)

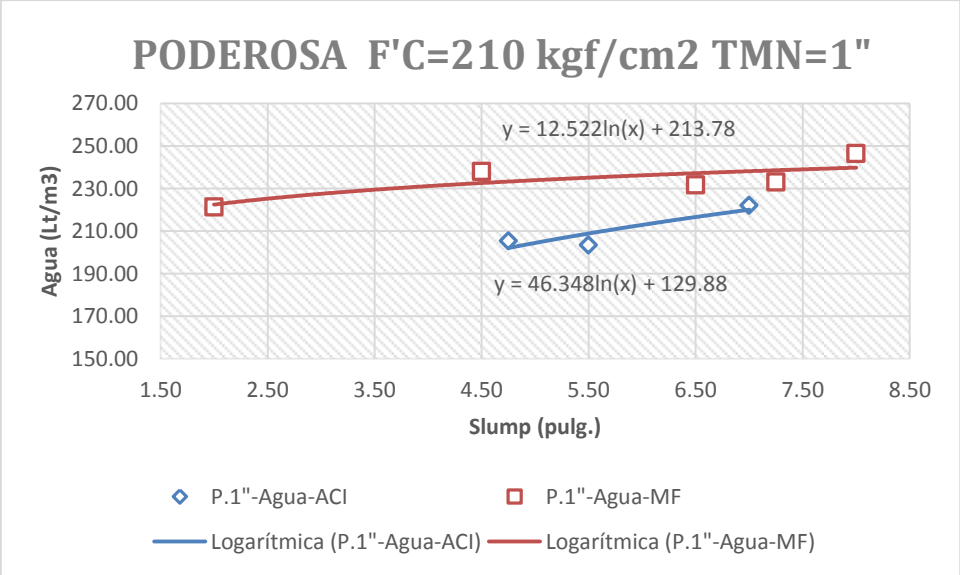

PODEROSA F'C=210 kgf/cm2
TMN=1/2"
AgFino(kg./m3)
900.00
800.00
700.00
600.00
500.00
400.00
y = 52.919ln(x) + 688.53
y = -107.3ln(x) + 771.78
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
P.1/2"-A.fino-ACI
P.1/2"-A.Fino-MF
Logarítmica (P.1/2"-A.fino-ACI)
Logarítmica (P.1/2"-A.Fino-MF)

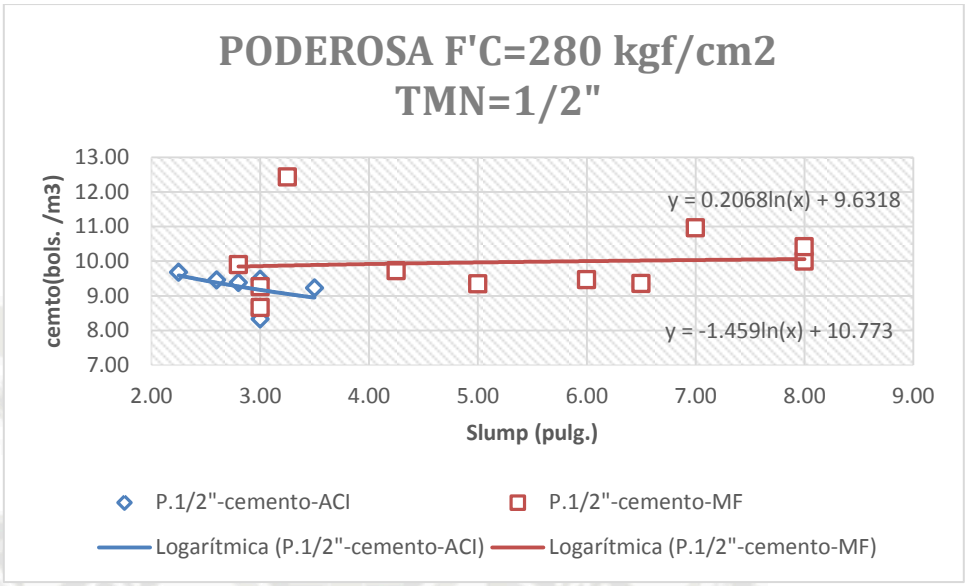

PODEROSA F'C=210 kgf/cm2
TMN=1/2"
Agua (Lt/m3)
250.00
240.00
230.00
220.00
210.00
200.00
y = 20.659ln(x) + 205.4
y = 18.241ln(x) + 197.9
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
Slump (pulg.)
P.1/2"-Agua-ACI
P.1/2"-Agua-MF
Logarítmica (P.1/2"-Agua-ACI)
Logarítmica (P.1/2"-Agua-MF)

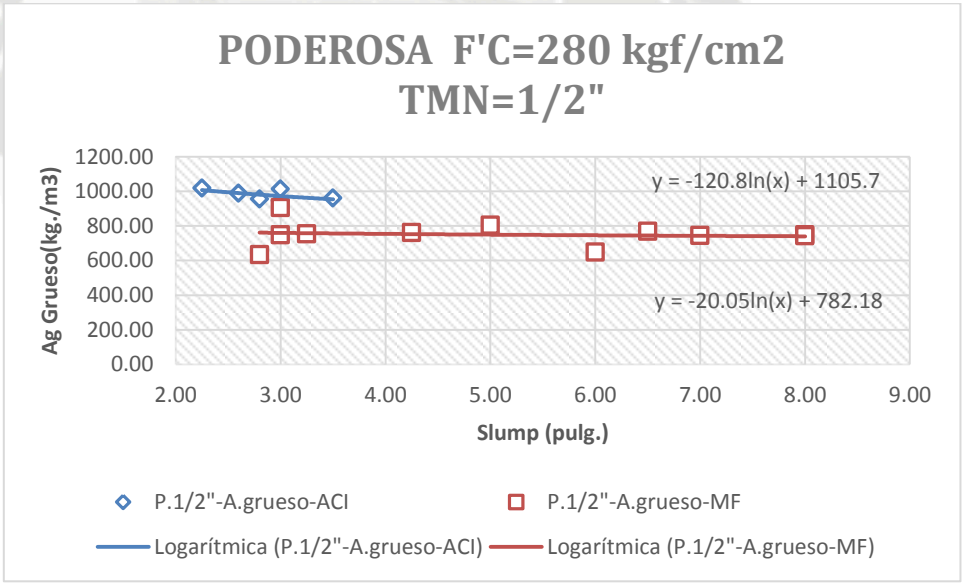

PODEROSA F'C=210 kgf/cm2 TMN=1"
cemto(bols. /m3)
10.00
9.50
9.00
8.50
8.00
y = -0.135ln(x) + 9.7384
y = 0.5548ln(x) + 7.805
1.50
2.50
3.50
4.50
5.50
6.50
7.50
8.50
Slump (pulg.)
P.1"-cemento-ACI
P.1"-cemento-MF
Logarítmica (P.1"-cemento-ACI)
Logarítmica (P.1"-cemento-MF)

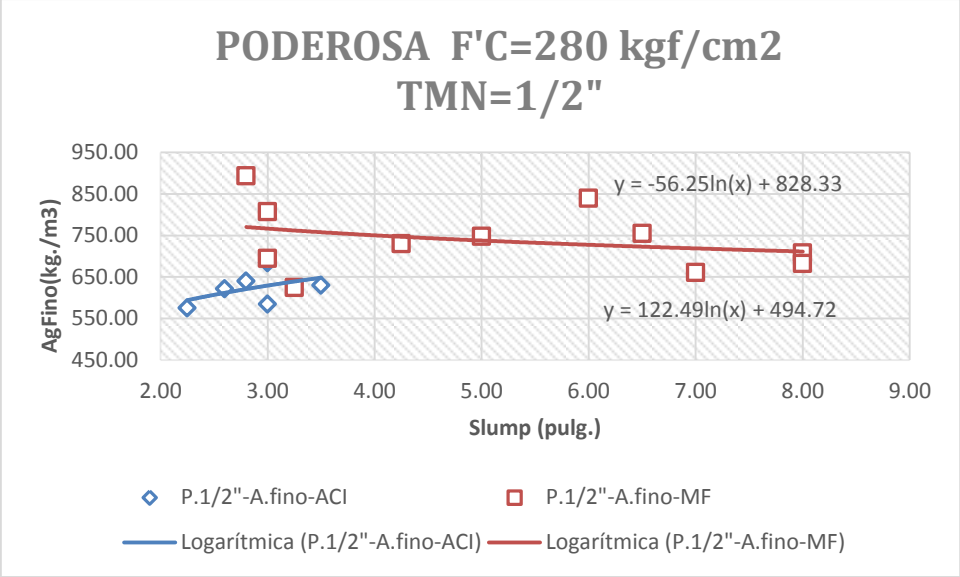

PODEROSA F'C=210 kgf/cm2 TMN=1"
Ag Grueso(kg./m3
1300.00
1100.00
900.00
700.00
500.00
300.00
y = -139.9ln(x) + 1319.2
y = 4.7517ln(x) + 589.4
1.50
2.50
3.50
4.50
5.50
6.50
7.50
8.50
Slump (pulg.)
P.1"-A.grueso-ACI
P.1"-A.grueso-MF
Logarítmica (P.1"-A.grueso-ACI)
Logarítmica (P.1"-A.grueso-MF)

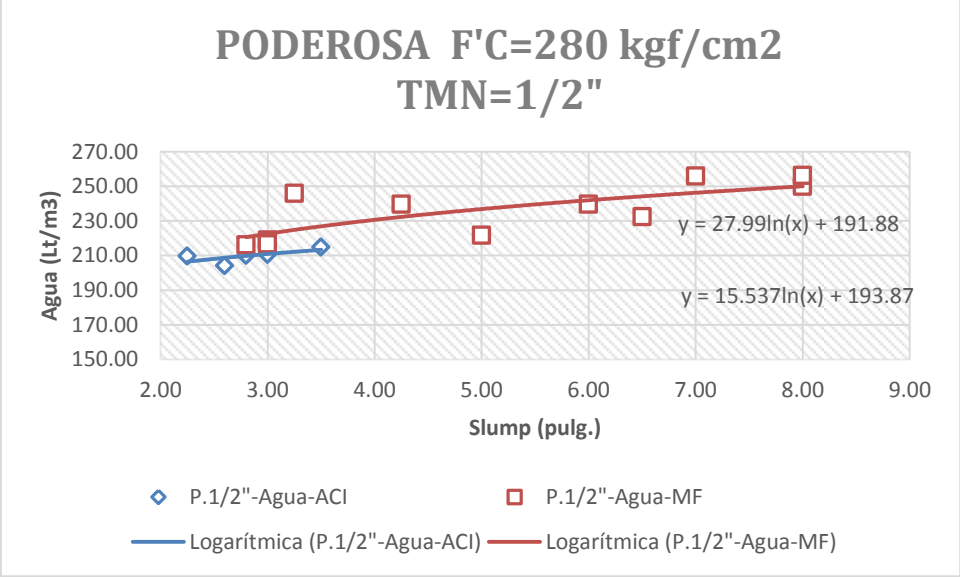

PODEROSA F'C=210 kgf/cm2 TMN=1"
AgFino(kg./m3)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
y = -29.21ln(x) + 979.03
y = -8.294ln(x) + 611.53
1.50
2.50
3.50
4.50
5.50
6.50
7.50
8.50
Slump (pulg.)
P.1"-A.fino-ACI
P.1"-A.fino-MF
Logarítmica (P.1"-A.fino-ACI)
Logarítmica (P.1"-A.fino-MF)

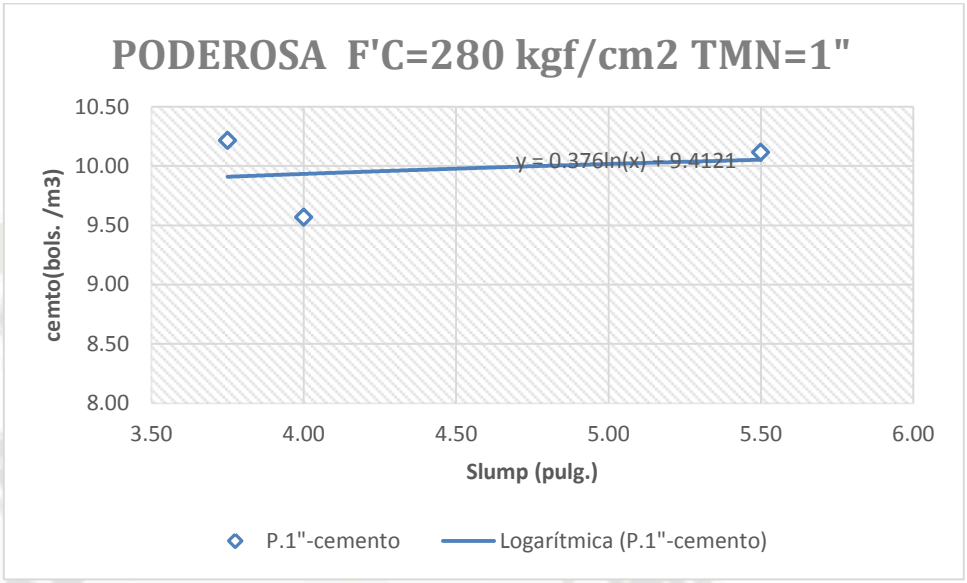

PODEROSA F'C=210 kgf/cm2 TMN=1"
Agua (Lt/m3)
270.00
250.00
230.00
210.00
190.00
170.00
150.00
y = 12.522ln(x) + 213.78
y = 46.348ln(x) + 129.88
1.50
2.50
3.50
4.50
5.50
6.50
7.50
8.50
Slump (pulg.)
P.1"-Agua-ACI
P.1"-Agua-MF
Logarítmica (P.1"-Agua-ACI)
Logarítmica (P.1"-Agua-MF)

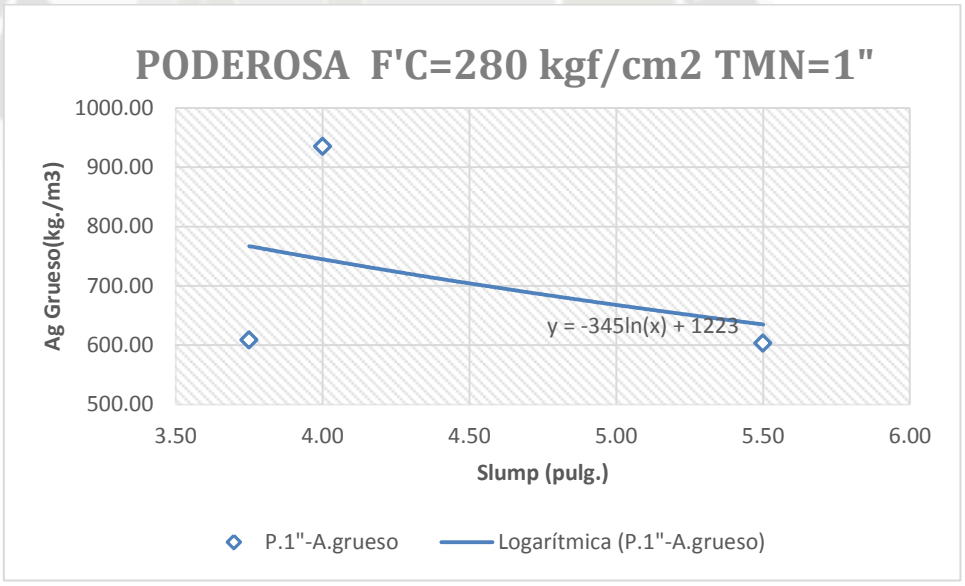

PODEROSA F'C=280 kgf/cm2
TMN=1/2"
cemto(bols. /m3)
13.00
12.00
11.00
10.00
9.00
8.00
7.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
y = 0.2068ln(x) + 9.6318
y = -1.459ln(x) + 10.773
P.1/2"-cemento-ACI
P.1/2"-cemento-MF
Logarítmica (P.1/2"-cemento-ACI)
Logarítmica (P.1/2"-cemento-MF)

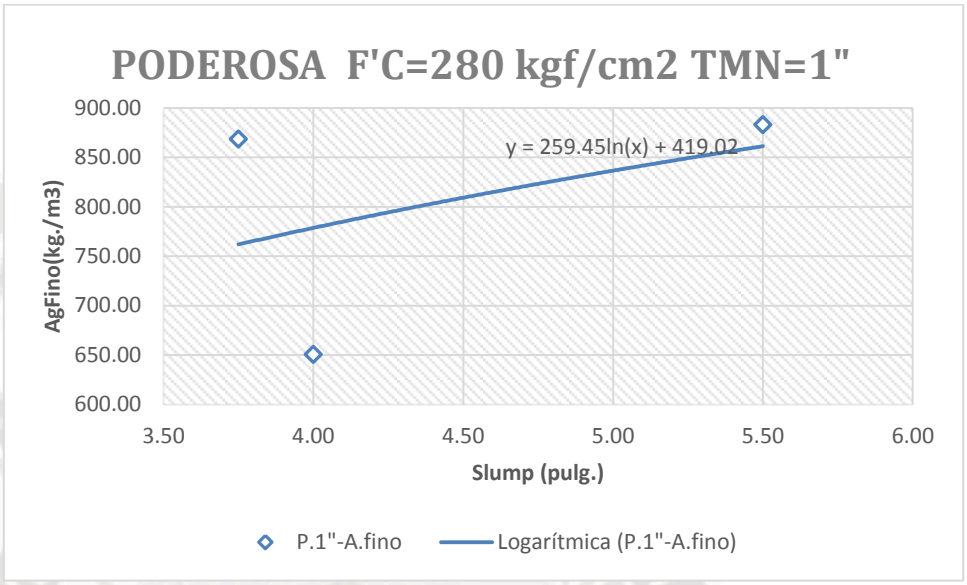

PODEROSA F'C=280 kgf/cm2
TMN=1/2"
Ag Grueso(kg./m3)
1200.00
1000.00
800.00
600.00
400.00
200.00
0.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
y = -120.8ln(x) + 1105.7
y = -20.05ln(x) + 782.18
P.1/2"-A.grueso-ACI
P.1/2"-A.grueso-MF
Logarítmica (P.1/2"-A.grueso-ACI)
Logarítmica (P.1/2"-A.grueso-MF)

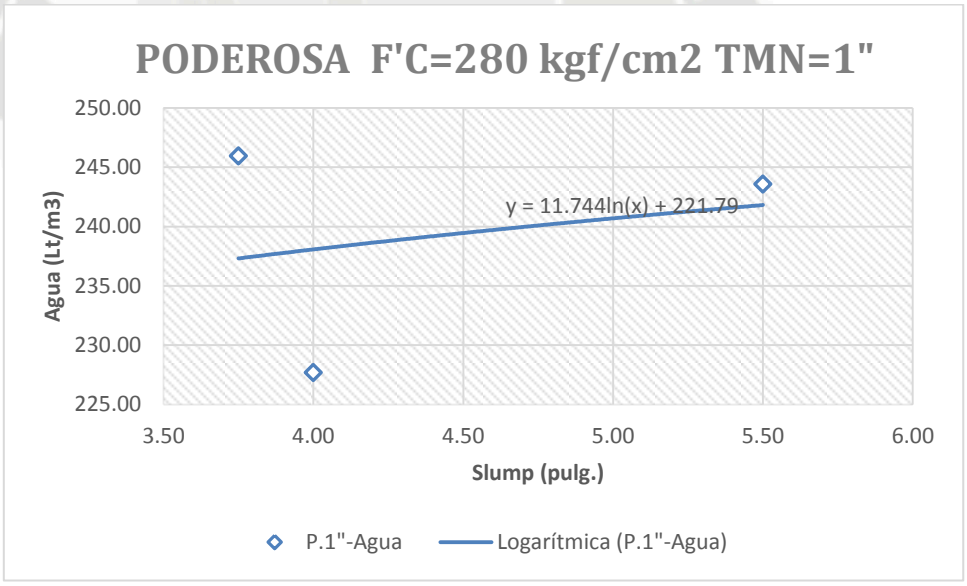

PODEROSA F'C=280 kgf/cm2
TMN=1/2"
950.00
850.00
750.00
650.00
550.00
450.00
AgFino(kg./m3)
y = -56.25ln(x) + 828.33
y = 122.49ln(x) + 494.72
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
P.1/2"-A.fino-ACI
P.1/2"-A.fino-MF
Logarítmica (P.1/2"-A.fino-ACI)
Logarítmica (P.1/2"-A.fino-MF)


PODEROSA F'C=280 kgf/cm2
TMN=1/2"
270.00
250.00
230.00
210.00
190.00
170.00
150.00
Agua (Lt/m3)
y = 27.99ln(x) + 191.88
y = 15.537ln(x) + 193.87
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
Slump (pulg.)
P.1/2"-Agua-ACI
P.1/2"-Agua-MF
Logarítmica (P.1/2"-Agua-ACI)
Logarítmica (P.1/2"-Agua-MF)


PODEROSA F'C=280 kgf/cm2 TMN=1"
10.50
10.00
9.50
9.00
8.50
8.00
cemto(bols. /m3)
y = 0.376ln(x) + 9.4121
3.50
4.00
4.50
5.00
5.50
6.00
Slump (pulg.)
P.1"-cemento
Logarítmica (P.1"-cemento)


PODEROSA F'C=280 kgf/cm2 TMN=1"
1000.00
900.00
800.00
700.00
600.00
500.00
Ag Grueso(kg./m3)
y = -345ln(x) + 1223
3.50
4.00
4.50
5.00
5.50
6.00
Slump (pulg.)
P.1"-A.grueso
Logarítmica (P.1"-A.grueso)


PODEROSA F'C=280 kgf/cm2 TMN=1"
AgFino(kg./m3)
900.00
850.00
800.00
750.00
700.00
650.00
600.00
y = 259.45ln(x) + 419.02
3.50
4.00
4.50
5.00
5.50
6.00
Slump (pulg.)
P.1"-A.fino
Logarítmica (P.1"-A.fino)


PODEROSA F'C=280 kgf/cm2 TMN=1"
Agua (Lt/m3)
250.00
245.00
240.00
235.00
230.00
225.00
y = 11.744ln(x) + 221.79
3.50
4.00
4.50
5.00
5.50
6.00
Slump (pulg.)
P.1"-Agua
Logarítmica (P.1"-Agua)

7. CAPÍTULO VII: CONCLUSIONES Y RECOMENDACIONES:

7.1 CONCLUSIONES:

7.1.1 *Se pudieron determinar las líneas de tendencia para cada uno de los diseños propuestos, por cada variación de tamaño Nominal (1/2", ¾" y 1") para las canteras de Socaba, Cono Norte y la Poderosa.*

7.1.2 *Se llegó a la conclusión que en el caso de La poderosa utilizar un factor de seguridad de 70 y 84 , resulta muy alto, con un factor aproximado de 45 resultan diseños óptimos y seguros, siempre y cuando el módulo de Fineza combinados tanto del Grueso con el del Fino sean similares a los ensayados con una tolerancia de .02*

7.1.3 *En el caso de los Agregados de Cono Norte, el cuidado debe ser mayor, puesto que al ser agregados con bajos pesos específicos se elaboran diseños con mayor requerimiento en cemento.*

7.1.4 *Los agregados de Socabaya, presentan una granulometría bastante disímil entre el chancado de 3/4" y 1", esto se debe a que uno es chancada de quijada y la otra chancada entera y seleccionada. En ambos casos se observan que continúan las tendencias de los gráficos previamente mostrados a la hora de la elaboración del Diseño.*

7.1.5 *La desviación estándar y campana de Gauss, demuestran la confiabilidad de nuestra muestra, de aproximadamente, 1400 muestras vaciadas se descartaron más de 300 y otras 100 no fueron necesario ser ensayadas puesto que la dispersión entre hermanas era menos del 9%.*

7.2 RECOMENDACIONES:

7.2.1 *La utilización de la cal es de vital importancia, pues ayuda a controlar el nivel de PH de cada una de las muestras, utilizando la dosificación de 3 gr/lt, siendo el resultado más real.*

7.2.2 *Tener en cuenta los patrones y normas, tanto ASTM (American Society Testing Materials), ACI (American Concrete Institute), Y la NTP.*

7.2.3 *Se recomienda para vaciados cuya duración sea mayor a 20 minutos, se recomienda el uso de un plastificante.*

7.2.4 *A la hora de evaluar y clasificar resultados, siempre se deberá guiar de datos estadísticos así como grados de evaluación que permitan estar completamente seguros de la seriedad de nuestra muestra.*

7.2.5 *Según la norma mínimo se deberán romper 2 muestras hermanos con una dispersión menor de 8% caso contrario se podrá romper una tercera permitiendo una variabilidad hasta de 9.5%.*

7.2.6 *Evaluar así mismo la tolerancia de rotura, puesto que para evaluarla se tiene que ser precisos.*

Edad de ensayo	Tolerancia Admisible
24 h	± 0.5 h o 2.1 %
3 dias	2 h o 2.8 %
7 dias	6 h o 3.6 %
28 dias	20 h o 3.0 %
90 dias	2 dias 2.2 %

8. CAPÍTULO VIII:BIBLIOGRAFÍA

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- *Normas ASTM*
- *Normas NTP*
- *Normas MTC*

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	Cantera	Método	f'c	TMN pulg.	código	FECHAS Vaciado	FECHAS Rotura	DOSIFICACIÓN cemento	DOSIFICACIÓN A grueso	DOSIFICACIÓN A.fino	DOSIFICACIÓN Agua (lt.)	Slump	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas	PESO kg.	ALTURA cm	Fecha Rotura 2	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas					PESO kg.	ALTURA cm
	Socabaya	ACI	175	3/4	S.175-A3/4-7.0"	26/02/2014	05/03/2014	1.00	4.00	2.31	0.90	7"	7.00	14.93	11340.00	175.07	64.774	37.01%			27/03/2014	29	15.15	15520	180.32	86.07	49.18%	5975	5956	5965.50	15.15		
	Socabaya	ACI	175	3/4	S.175-A3/4-7.0"	26/02/2014	05/03/2014						7.00	14.90	9630.00	174.37	55.229	31.56%			27/03/2014	29	15.18	16240	180.99	89.73	51.27%	5984	5969	5976.50	15.18		
	Socabaya	ACI	175	3/4	S.175-A3/4-5.8"	26/02/2014	05/03/2014	1.00	4.00	1.50	0.81	5.8"	7.00	14.91	13160.00	174.51	75.413	43.09%			27/03/2014	29	15.22	37000	182.05	203.24	116.14%	6002	5986	5994.00	15.22		
	Socabaya	ACI	175	3/4	S.175-A3/4-5.8"	26/02/2014	05/03/2014						7.00	14.95	14150.00	175.54	80.609	46.06%			27/03/2014	29	15.23	37600	182.08	206.50	118.00%	6000	5989	5994.50	15.23		
	Socabaya	ACI	175	3/4	S.175-A3/4-5.4"	26/02/2014	05/03/2014	1.00	3.86	1.35	0.76	5.4"	7.00	14.95	11730.00	175.59	66.805	38.17%			27/03/2014	29	15.16	15670	180.56	86.78	49.59%	5955	5984	5969.50	15.16		
	Socabaya	ACI	175	3/4	S.175-A3/4-5.4"	26/02/2014	05/03/2014						7.00	14.88	22480.00	173.78	129.358	73.92%			27/03/2014	29	15.16	17120	180.56	94.81	54.18%	5977	5962	5969.50	15.16		
	Socabaya	ACI	175	3/4	S.175-A3/4-2.0"	26/02/2014	05/03/2014	1.00	3.61	1.41	0.55	2"	7.00	14.92	36650.00	174.83	209.627	119.79%			27/03/2014	29	15.29	55870	183.69	304.15	173.80%	6025	6017	6021.00	15.29		
	Socabaya	ACI	175	3/4	S.175-A3/4-2.0"	26/02/2014	05/03/2014						7.00	14.89	29990.00	174.13	172.225	98.41%			27/03/2014	29	15.34	53970	184.76	292.10	166.92%	6032	6045	6038.50	15.34		
socabaya 210	Socabaya	ACI	210	3/4	S.210-A3/4-0.5"	27/02/2014	06/03/2014	1.00	3.61	1.13	0.49	1/2"	7.00	14.93	22180.00	174.95	126.778	60.37%			28/03/2014	29											
	Socabaya	ACI	210	3/4	S.210-A3/4-0.5"	27/02/2014	06/03/2014						7.00					0.00%			28/03/2014	29											
	Socabaya	ACI	210	3/4	S.210-A3/4-1.0"	27/02/2014	06/03/2014	1.00	3.61	1.13	0.54	1"	7.00	14.93	38830.00	174.95	221.947	105.69%			28/03/2014	29	15.33	56020	184.67	303.35	144.45%	6052	6022	6037.00	15.33		
	Socabaya	ACI	210	3/4	S.210-A3/4-1.0"	27/02/2014	06/03/2014						7.00	14.93	40720.00	174.95	232.750	110.83%			28/03/2014	29	15.32	57920	184.43	314.05	149.55%	6038	6028	6033.00	15.32		
	Socabaya	ACI	210	3/4	S.210-A3/4-2.0"	27/02/2014	06/03/2014	1.00	3.35	0.93	0.93	2"	7.00	14.95	33900.00	175.59	193.068	91.94%			28/03/2014	29	15.34	58180	184.79	314.84	149.92%	6036	6042	6039.00	15.34		
	Socabaya	ACI	210	3/4	S.210-A3/4-2.0"	27/02/2014	06/03/2014						7.00	15.10	36050.00	179.08	201.308	95.86%			28/03/2014	29	15.32	58520	184.27	317.57	151.22%	6026	6035	6030.50	15.32		
	Socabaya	ACI	210	3/4	S.210-A3/4-2.5"	27/02/2014	06/03/2014	1.00	3.00	1.60	0.56	2.5"	7.00	14.95	31780.00	175.54	181.043	86.21%			28/03/2014	29	15.36	40750	185.25	219.97	104.75%	6036	6057	6046.50	15.36		
	Socabaya	ACI	210	3/4	S.210-A3/4-2.5"	27/02/2014	06/03/2014						7.00	14.38	32920.00	162.41	202.699	96.52%			28/03/2014	29	15.34	40870	184.79	221.17	105.32%	6029	6049	6039.00	15.34		
	Socabaya	ACI	210	3/4	S.210-A3/4-1.0"	27/02/2014	06/03/2014	1.00	2.78	1.58	0.57	2.5"	7.00	14.93	26800.00	174.95	153.185	72.95%			28/03/2014	29	15.29	48570	183.69	264.41	125.91%	6017	6025	6021.00	15.29		
	Socabaya	ACI	210	3/4	S.210-A3/4-1.0"	27/02/2014	06/03/2014						7.00	14.95	28760.00	175.54	163.839	78.02%			28/03/2014	29	15.28	48120	183.33	262.48	124.99%	6021	6009	6015.00	15.28		
socabaya 280	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	28/02/2014	07/03/2014	1.00	3.42	1.15	0.56	2"	7.00	15.10	22040.00	179.08	123.074	43.96%			31/03/2014	31	15.31	54070	184.03	293.81	104.93%	6032	6021	6026.50	15.31		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	28/02/2014	07/03/2014						7.00	14.95	33880.00	175.54	193.006	68.93%			31/03/2014	31	15.33	55120	184.46	298.82	106.72%	6042	6025	6033.50	15.33		
	Socabaya	ACI	280	3/4		28/02/2014	07/03/2014						7.00	14.95	26960.00	175.54	153.585	54.85%			31/03/2014	31											
	Socabaya	ACI	280	3/4		28/02/2014	07/03/2014						7.00	14.37	37450.00	162.18	230.913	82.47%			31/03/2014	31											
	Socabaya	ACI	280	3/4	S.280-A3/4-3.0"	28/02/2014	07/03/2014	1.00	3.42	1.59	0.59	3"	7.00	14.95	31520.00	175.54	179.562	64.13%			31/03/2014	31	15.23	44880	182.14	246.40	88.00%	5989	6002	5995.50	15.23		
	Socabaya	ACI	280	3/4	S.280-A3/4-3.0"	28/02/2014	07/03/2014						7.00	14.90	28750.00	174.44	164.816	58.86%			31/03/2014	31	15.16	45150	180.56	250.05	89.30%	5975	5964	5969.50	15.16		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.5"	28/02/2014	07/03/2014	1.00	3.15	1.52	0.58	2.5"	7.00	14.98	27650.00	176.13	156.990	56.07%			31/03/2014	31	15.29	49810	183.51	271.43	96.94%	6021	6015	6018.00	15.29		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.5"	28/02/2014	07/03/2014						7.00	14.89	31200.00	174.13	179.174	63.99%			31/03/2014	31	15.31	50320	184.03	273.43	97.66%	6031	6022	6026.50	15.31		
	Socabaya	ACI	280	3/4	S.280-A3/4-5.0"	28/02/2014	07/03/2014	1.00	2.46	1.47	0.63	5"	7.00	14.91	25370.00	174.60	145.303	51.89%			31/03/2014	31	15.32	42090	184.37	228.30	81.53%	6023	6041	6032.00	15.32		
	Socabaya	ACI	280	3/4	S.280-A3/4-5.0"	28/02/2014	07/03/2014						7.00	14.93	26730.00	175.09	152.662	54.52%			31/03/2014	31	15.31	45120	184.18	244.97	87.49%	6021	6037	6029.00	15.31		
	Socabaya	ACI	280	3/4	S.280-A3/4-4.0"	28/02/2014	07/03/2014	1.00	3.00	2.00	0.65	4"	7.00	14.93	29910.00	175.07	170.847	61.02%			31/03/2014	31	15.30	51040	183.82	277.67	99.17%	6018	6028	6023.00	15.30		
	Socabaya	ACI	280	3/4	S.280-A3/4-4.0"	28/02/2014	07/03/2014						7.00	14.92	28570.00	174.83	163.412	58.36%			31/03/2014	31	15.28	51220	183.45	279.20	99.72%	6009	6025	6017.00	15.28		
CN (3/4")	Cono Norte	ACI	175	3/4	C.N175-A3/4-5.0"	28/02/2014	07/03/2014	1.00	2.70	1.54	0.68	5"	7.00	14.95	30660.00	175.56	174.639	99.79%			31/03/2014	31											
	Cono Norte	ACI	175	3/4	C.N175-A3/4-5.0"	28/02/2014	07/03/2014						7.00	15.13	29210.00	179.67	162.574	92.90%			31/03/2014	31											
	Cono Norte	ACI	175	3/4	C.N175-A3/4-3.0"	28/02/2014	07/03/2014	1.00	2.51	1.74	0.63	3"	7.00	15.01	31980.00	176.95	180.729	103.27%			31/03/2014	31	15.17	41050	180.63	227.27	129.87%	5986	5955	5970.50	15.17		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-3.0"	28/02/2014	07/03/2014						7.00	15.10	25430.00	179.08	142.005	81.15%			31/03/2014	31	15.16	40760	180.44	225.89	129.08%	5974	5961	5967.50	15.16		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-3.5"	03/03/2014	12/03/2014	1.00	3.02	1.20	0.63	3.5"	9.00	15.28	34460.00	183.39	187.907	107.38%			31/03/2014	28	15.27	52350	183.21	285.74	163.28%	6002	6024	6013.00	15.27		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-3.5"	03/03/2014	12/03/2014						9.00	15.26	33050.00	182.93	180.668	103.24%			31/03/2014	28	15.29	51970	183.57	283.10	161.77%	6012	6026	6019.00	15.29		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-4.5"	03/03/2014	12/03/2014	1.00	3.20	1.34	0.72	4.5"	9.00	15.29	33250.00	183.66	181.038	103.45%			31/03/2014	28	15.19	44370	181.23	244.83	139.90%	5975	5986	5980.50	15.19		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-4.5"	03/03/2014	12/03/2014						9.00	15.33	35730.00	184.55	193.607	110.63%			31/03/2014	28	15.12	44510	179.66	247.75	141.57%	5958	5951	5954.50	15.12		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-3.1"	03/03/2014	12/03/2014	1.00	2.87	1.34	0.69	3.1"	9.00	15.27	41720.00	183.15	227.798	130.17%			31/03/2014	28	15.29	58960	183.72	320.92	183.38%	6018	6025	6021.50	15.29		
	Cono Norte	ACI	175	3/4	C.N175-A3/4-3.1"	03/03/2014	12/03/2014						9.00	15.34	39530.00	184.85	213.843	122.20%			31/03/2014	28	15.34	57580	184.82	311.54	178.02%	6005	6074	6039.50	15.34		
CN (3/4")	Cono Norte	ACI	210	3/4	C.N210-A3/4-1.5"	03/03/2014	12/03/2014	1.00	2.49	1.17	0.47	1.5"	9.00	15.28	43760.00	183.27	238.777	113.70%			31/03/2014	28	15.31	56080	184.21	304.43	144.97%	6038	6021	6029.50	15.31		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-1.5"	03/03/2014	12/03/2014						9.00	15.25	43750.00	182.54	239.678	114.13%			31/03/2014	28	15.34	55910	184.82	302.50	144.05%	6054	6025	6039.50	15.34		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-3.0"	03/03/2014	12/03/2014	1.00	2.61	1.23	0.50	3"	9.00	15.35	47800.00	185.01	258.367	123.03%			31/03/2014	28	15.29	46410	183.51	252.90	120.43%	6031	6005	6018.00	15.29		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-3.0"	03/03/2014	12/03/2014						9.00	15.31	47230.00	184.21	256.388	122.09%			31/03/2014	28	15.23	46790	182.23	256.76	122.27%	5984	6010	5997.00	15.23		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-2.3"	03/03/2014	12/03/2014	1.00	2.41	1.09	0.47	2.3"	9.00	15.34	38850.00	184.73	210.304	100.14%			31/03/2014	28	15.31	49580	184.09	269.32	128.25%	6017	6038	6027.50	15.31		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-2.3"	03/03/2014	12/03/2014						9.00	15.34	37560.00	184.70	203.355	96.84%			31/03/2014	28	15.32	49210	184.30	267.00	127.14%	6041	6021	6031.00	15.32		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-2.0"	03/03/2014	12/03/2014	1.00	2.40	0.88	0.44	2"	9.00	15.48	61350.00	188.11	326.133	155.30%			31/03/2014	28	15.25	63460	182.75	347.25	165.36%	6016	5995	6005.50	15.25		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-2.0"	03/03/2014	12/03/2014						9.00	15.40	62820.00	186.17	337.427	160.68%			31/03/2014	28	15.27	63570	183.15	347.10	165.29%	6022	6002	6012.00	15.27		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-2.5"	03/03/2014	12/03/2014	1.00	2.89	1.18	0.49	2.5"	9.00	15.37	47960.00	185.50	258.547	123.12%			31/03/2014	28	15.34	65710	184.85	355.47	169.27%	6058	6022	6040.00	15.34		
	Cono Norte	ACI	210	3/4	C.N210-A3/4-2.5"	03/03/2014	12/03/2014						9.00	15.34	49520.00	184.79	267.974	127.61%			31/03/2014	28	15.32	63590	184.43	344.80	164.19%	6045	6021	6033.00	15.32		
CN (3/4")	Cono Norte	ACI	280	3/4	C.N280-A3/4-6.5"	04/03/2014	12/03/2014	1.00	2.74	1.06	0.60	6.5"	8.00	15.23	33630.00	182.26	184.514	65.90%			03/04/2014	30	15.06	47660	178.15	267.52	95.54%	5920	5939	5929.50	15.06		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-6.5"	04/03/2014	12/03/2014						8.00	15.19	30120.00	181.20	166.225	59.37%			03/04/2014	30	15.03	46250	177.43	260.66	93.09%	5970	5865	5917.50	15.03		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-2.7"	04/03/2014	12/03/2014	1.00	2.41	1.01	0.55	2.7"	8.00	15.24	37040.00	182.35	203.122	72.54%			03/04/2014	30	15.07	54740	178.39	306.85	109.59%	6017	5850	5933.50	15.07		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-2.7"	04/03/2014	12/03/2014						8.00	15.23	40760.00	182.29	223.596	79.86%			03/04/2014	30	15.01	56870	176.92	321.44	114.80%	5897	5921	5909.00	15.01		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-1.8"	04/03/2014	12/03/2014	1.00	2.29	1.14	0.46	1.8"	8.00	15.22	35780.00	182.05	196.539	70.19%			03/04/2014	30	15.04	57390	177.64	323.06	115.38%	5920	5922	5921.00	15.04		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-1.8"	04/03/2014	12/03/2014						8.00	15.25	48380.00	182.54	265.043	94.66%			03/04/2014	30	15.04	63010	177.73	354.52	126.61%	6020	5825	5922.50	15.04		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-3.0"	04/03/2014	12/03/2014	1.00	2.70	1.17	0.54	3"	8.00	15.23	41010.00	182.11	225.193	80.43%			03/04/2014	30	15.04	60510	177.73	340.45	121.59%	5944	5901	5922.50	15.04		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-3.0"	04/03/2014	12/03/2014						8.00	15.27	42770.00	183.11	233.570	83.42%			03/04/2014	30	14.95	60590	175.46	345.32	123.33%	5865	5904	5884.50	14.95		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-1.4"	04/03/2014	12/03/2014	1.00	2.58	1.26	0.48	1.4"	8.00	15.21	56920.00	181.63	313.393	111.93%			03/04/2014	30	14.99	65800	176.50	372.80	133.14%	5866	5938	5902.00	14.99		
	Cono Norte	ACI	280	3/4	C.N280-A3/4-1.4"	04/03/2014	12/03/2014						8.00	15.24	48080.00	182.48	263.487	94.10%			03/04/2014	30	14.93	75650	175.16	431.89	154.25%	5859	5900	5879.50	14.93		
Poderosa 175	Poderosa	ACI	175	1/2	P.175-A1/2-4.0"	05/03/2014	12/03/2014	1.00	2.77	1.90	0.62	4"	7.00	15.23	25810.00	182.14	141.703	80.97%			03/04/2014	29	15.01	43340	176.83	245.09	140.05%	5907	5908	5907.50	15.01		
	Poderosa	ACI	175	1/2	P.175-A1/2-4.0"	05/03/2014	12/03/2014						7.00	15.23	27780.00	182.08	152.570	87.18%			03/04/2014	29	15.06	45100	178.06	253.28	144.73%	5909	5947	5928.00	15.06		
	Poderosa	ACI	175	1/2	P.175-A1/2-3.0"	05/03/2014	12/03/2014	1.00	2.67	1.93	0.60	3"	7.00	15.24	32400.00	182.51	177.528	101.44%			03/04/2014	29	15.04	52540	177.67	295.71	168.98%	5903	5940	5921.50	15.04		
	Poderosa	ACI	175	1/2	P.175-A1/2-3.0"	05/03/2014	12/03/2014						7.00	15.23	33080.00	182.20	181.557	103.75%			03/04/2014	29	14.99	50670	176.59	286.93	163.96%	5852	5955	5903.50	14.99		
	Poderosa	ACI	175	1/2	P.175-A1/2-4.5"	05/03/2014	12/03/2014	1.00	2.55	1.61	0.60	4.5"	7.00	15.24	27530.00	182.38	150.945	86.25%			03/04/2014	29	14.98	42180	176.35	239.18	136.67%	5864	5935	5899.50	14.98		
	Poderosa	ACI	175	1/2	P.175-A1/2-4.5"	05/03/2014	12/03/2014						7.00	15.23	31390.00	182.29	172.195	98.40%			03/04/2014	29	15.01	43490	176.98	245.73	140.42%	5985	5835	5910.00	15.01		
	Poderosa	ACI	175	1/2	P.175-A1/2-4.6"	05/03/2014	12/03/2014	1.00	2.46	1.59	0.59	4.6"	7.00	15.22	31940.00	181.90	175.593	100.34%			03/04/2014	29	14.93	49000	175.04	279.93	159.96%	5807	5948	5877.50	14.93		
	Poderosa	ACI	175	1/2	P.175-A1/2-4.6"	05/03/2014	12/03/2014						7.00	15.23	36120.00	182.11	198.341	113.34%			03/04/2014	29	15.00	50580	176.77	286.13	163.50%	5940	5873	5906.50	15.00		
	Poderosa	ACI	175	1/2	P.175-A1/2-2.6"	05/03/2014	12/03/2014	1.00	2.46	1.55	0.51	2.6"	7.00	15.24	43660.00	182.38	239.385	136.79%			03/04/2014	29	15.02	69420	177.07	392.04	224.02%	5898	5925	5911.50	15.02		
	Poderosa	ACI	175	1/2	P.175-A1/2-2.6"	05/03/2014	12/03/2014						7.00	15.25	44700.00	182.63	244.760	139.86%			03/04/2014	29	15.38	64230	185.71	345.86	197.63%	6045	6063	6054.00	15.38		
Poderosa 210	Poderosa	ACI	210	1/2	P.210-A1/2-2.0"	05/03/2014	12/03/2014	1.00	2.50	1.83	0.55	2"	7.00	15.22	42490.00	181.99	233.475	111.18%			03/04/2014	29	15.58	51530	190.56	270.41	128.77%	6110	6155	6132.50	15.58		
	Poderosa	ACI	210	1/2	P.210-A1/2-2.0"	05/03/2014	12/03/2014						7.00	15.20	41770.00	181.38	230.287	109.66%			03/04/2014	29	15.01	63740	177.01	360.09	171.47%	5904	5917	5910.50	15.01		
	Poderosa	ACI	210	1/2	P.210-A1/2-2.25"	05/03/2014	12/03/2014	1.00	2.56	1.85	0.56	2.25"	7.00	15.24	30740.00	182.35	168.573	80.27%			03/04/2014	29	15.54	41540	189.63	219.06	104.31%	6120	6115	6117.50	15.54		
	Poderosa	ACI	210	1/2	P.210-A1/2-2.25"	05/03/2014	12/03/2014						7.00	15.20	24200.00	181.41	133.397	63.52%			03/04/2014	29	15.34	49750	184.79	269.22	128.20%	6043	6035	6039.00	15.34		
	Poderosa	ACI	210	1/2	P.210-A1/2-1.6"	05/03/2014	12/03/2014	1.00	2.55	2.02	0.60	1.6"	7.00	15.52	31220.00	189.26	164.960	78.55%			03/04/2014	29	15.37	47730	185.62	257.14	122.45%	6050	6055	6052.50	15.37		
	Poderosa	ACI	210	1/2	P.210-A1/2-1.6"	05/03/2014	12/03/2014						7.00	15.52	30860.00	189.13	163.165	77.70%			03/04/2014	29	15.07	48490	178.36	271.86	129.46%	5921	5945	5933.00	15.07		
	Poderosa	ACI	210	1/2	P.210-A1/2-4.0"	06/03/2014	14/03/2014	1.00	2.63	1.70	0.60	4"	8.00	15.24	30110.00	182.32	165.146	78.64%			04/04/2014	29	15.53	46310	189.32	244.61	116.48%	6120	6105	6112.50	15.53		
	Poderosa	ACI	210	1/2	P.210-A1/2-4.0"	06/03/2014	14/03/2014						8.00	15.21	30990.00	181.72	170.541	81.21%			04/04/2014	29	14.99	47450	176.41	268.97	128.08%	5851	5950	5900.50	14.99		
	Poderosa	ACI	210	1/2	P.210-A1/2-4.1"	06/03/2014	14/03/2014	1.00	2.58	1.71	0.58	4.1"	8.00	15.22	37370.00	182.05	205.273	97.75%			04/04/2014	29	15.09	46360	178.91	259.13	123.40%	5952	5932	5942.00	15.09		
	Poderosa	ACI	210	1/2	P.210-A1/2-4.1"	06/03/2014	14/03/2014						8.00	15.23	38050.00	182.20	208.834	99.44%			04/04/2014	29	14.96	45200	175.76	257.17	122.46%	5837	5942	5889.50	14.96		
Poderosa 280	Poderosa	ACI	280	1/2	P.280-A1/2-3.5"	06/03/2014	14/03/2014	1.00	2.45	1.61	0.55	3.5"	8.00	15.26	40030.00	182.90	218.861	78.16%			04/04/2014	29	14.97	55740	175.91	316.87	113.17%	5874	5910	5892.00	14.97		
	Poderosa	ACI	280	1/2	P.280-A1/2-3.5"	06/03/2014	14/03/2014						8.00	15.25	40180.00	182.54	220.121	78.61%			04/04/2014	29	15.04	49640	177.61	279.48	99.82%	5902	5939	5920.50	15.04		
	Poderosa	ACI	280	1/2	P.280-A1/2-2.8"	06/03/2014	14/03/2014	1.00	2.40	1.60	0.53	2.8"	8.00	15.30	40080.00	183.82	218.044	77.87%			04/04/2014	29	15.03	64530	177.46	363.63	129.87%	5976	5860	5918.00	15.03		
	Poderosa	ACI	280	1/2	P.280-A1/2-2.8"	06/03/2014	14/03/2014						8.00	15.21	43120.00	181.63	237.412	84.79%			04/04/2014	29	15.03	62330	177.46	351.23	125.44%	5886	5950	5918.00	15.03		
	Poderosa	ACI	280	1/2	P.280-A1/2-4.5"	06/03/2014	14/03/2014	1.00	2.26	1.35	0.55	4.5"	8.00	15.17	42380.00	180.69	234.551	83.77%			03/04/2014	28	12.58	59010	124.26	474.91	169.61%	4918	4986	4952.00	12.58		
	Poderosa	ACI	280	1/2	P.280-A1/2-4.5"	06/03/2014	14/03/2014						8.00	15.17	42790.00	180.78	236.701	84.54%			03/04/2014	28	15.26	56010	182.93	306.18	109.35%	6010	6007	6008.50	15.26		
	Poderosa	ACI	280	1/2	P.280-A1/2-5.8"	06/03/2014	14/03/2014	1.00	2.33	1.37	0.58	5.8"	8.00	15.28	38250.00	183.27	208.712	74.54%			03/04/2014	28	15.40	46980	186.27	252.22	90.08%	6064	6062	6063.00	15.40		
	Poderosa	ACI	280	1/2	P.280-A1/2-5.8"	06/03/2014	14/03/2014						8.00	15.28	40010.00	183.33	218.243	77.94%			03/04/2014	28	15.05	50470	177.94	283.63	101.30%	5950	5902	5926.00	15.05		
	Poderosa	ACI	280	1/2	P.280-A1/2-2.25"	06/03/2014	14/03/2014	1.00	2.47	1.40	0.51	2.25"	8.00	15.19	39870.00	181.29	219.922	78.54%			04/04/2014	29	14.96	61530	175.88	349.85	124.95%	5907	5876	5891.50	14.96		
	Poderosa	ACI	280	1/2	P.280-A1/2-2.25"	06/03/2014	14/03/2014						8.00	15.16	43590.00	180.41	241.611	86.29%			04/04/2014	29	15.10	61110	179.06	341.29	121.89%	5940	5949	5944.50	15.10		
	Poderosa	ACI	280	1/2	P.280-A1/2-3.0"	06/03/2014	14/03/2014	1.00	2.52	1.45	0.52	3"	8.00	15.23	46330.00	182.08	254.448	90.87%			03/04/2014	28	15.02	60070	177.28	338.84	121.01%	5876	5954	5915.00	15.02		
	Poderosa	ACI	280	1/2	P.280-A1/2-3.0"	06/03/2014	14/03/2014						8	15.24	49520.00	182.41	271.469	96.95%			03/04/2014	28	15.17	59470	180.69	329.13	117.55%	5974	5969	5971.50	15.17		
CONO NORTE (1")	Cono Norte	ACI	175	1	C.N175-A1-6.5"	07/03/2014	14/03/2014	1.00	3.62	1.57	0.68	6.5"	7.00	15.34	16530.00	184.89	89.407	51.09%			05/04/2014	29	14.99	25410	176.53	143.94	82.25%	5975	5830	5902.50	14.99		
	Cono Norte	ACI	175	1	C.N175-A1-6.5"	07/03/2014	14/03/2014						7.00	15.28	21120.00	183.48	115.108	65.78%			05/04/2014	29	15.02	23460	177.22	132.38	75.64%	5878	5950	5914.00	15.02		
	Cono Norte	ACI	175	1	C.N175-A1-7.5"	07/03/2014	14/03/2014	1.00	3.35	1.46	0.63	7.5"	7.00	15.20	28090.00	181.38	154.866	88.49%			05/04/2014	29	14.99	36810	176.50	208.55	119.17%	5927	5877	5902.00	14.99		
	Cono Norte	ACI	175	1	C.N175-A1-7.5"	07/03/2014	14/03/2014						7.00	15.29	31250.00	183.66	170.148	97.23%			05/04/2014	29	15.49	35860	188.55	190.19	108.68%	6050	6150	6100.00	15.49		
	Cono Norte	ACI	175	1		07/03/2014	14/03/2014	1.00	3.54	0.00	0.67	6.8"	7.00	15.20	28240.00	181.47	155.615	88.92%			05/04/2014	29	15.05	20440	177.82	114.95	65.68%	5900	5948	5924.00	15.05		
	Cono Norte	ACI	175	1		07/03/2014	14/03/2014						7.00	15.15	29510.00	180.29	163.678	93.53%			05/04/2014	29	15.06	21350	178.06	119.90	68.52%	5878	5978	5928.00	15.06		
	Cono Norte	ACI	175	1		10/03/2014	18/03/2014	1.00	3.49	2.89	0.79	1"	8.00					0.00%															
	Cono Norte	ACI	175	1		10/03/2014	18/03/2014						8.00					0.00%															
	Cono Norte	ACI	175	1		10/03/2014	18/03/2014						8.00					0.00%															
	Cono Norte	ACI	175	1		10/03/2014	18/03/2014						8					0.00%															
socabaya 175	Socabaya	ACI	175	3/4	S.175-A3/4-3.8"	10/03/2014	18/03/2014	1.00	3.21	1.82	0.66	3.8"	8.00	15.23	34680.00	182.08	190.465	108.84%			07/04/2014	28	14.99	43440	176.59	245.99	140.56%	5902	5905	5903.50	14.99		
	Socabaya	ACI	175	3/4	S.175-A3/4-3.8"	10/03/2014	18/03/2014						8.00	15.25	32900.00	182.69	180.088	102.91%			07/04/2014	28	14.93	45310	175.07	258.81	147.89%	5877	5879	5878.00	14.93		
	Socabaya	ACI	175	3/4	S.175-A3/4-4.8"	10/03/2014	18/03/2014	1.00	2.98	1.61	0.73	4.8"	8.00	15.20	25150.00	181.38	138.657	79.23%			07/04/2014	28	14.92	23280	174.89	133.11	76.06%	5850	5900	5875.00	14.92		
	Socabaya	ACI	175	3/4	S.175-A3/4-4.8"	10/03/2014	18/03/2014						8.00	15.19	22580.00	181.20	124.613	71.21%			07/04/2014	28	15.47	33620	188.08	178.75	102.14%	6109	6076	6092.50	15.47		
	Socabaya	ACI	175	3/4	S.175-A3/4-2.4"	10/03/2014	18/03/2014	1.00	3.45	1.75	0.72	2.4"	8.00	15.10	23050.00	179.15	128.666	73.52%			07/04/2014	28	15.07	29260	178.33	164.07	93.76%	5986	5879	5932.50	15.07		
	Socabaya	ACI	175	3/4	S.175-A3/4-2.4"	10/03/2014	18/03/2014						8.00	15.11	29360.00	179.33	163.723	93.56%			07/04/2014	28	15.18	31130	180.90	172.09	98.33%	6000	5950	5975.00	15.18		
	Socabaya	ACI	175	3/4	S.175-A3/4-5.8"	10/03/2014	18/03/2014	1.00	3.57	1.91	0.79	5.8"	8.00	15.14	19530.00	180.14	108.415	61.95%			07/04/2014	28	14.95	26050	175.46	148.47	84.84%	5907	5862	5884.50	14.95		
	Socabaya	ACI	175	3/4	S.175-A3/4-5.8"	10/03/2014	18/03/2014						8.00	15.15	19970.00	180.35	110.727	63.27%			07/04/2014	28	14.96	22050	175.79	125.44	71.68%	5850	5930	5890.00	14.96		
socabaya 280	Socabaya	ACI	280	3/4	S.280-A3/4-2.8"	11/03/2014	18/03/2014	1.00	2.96	1.46	0.53	2.8"	7.00	15.15	39030.00	180.17	216.627	77.37%			10/04/2014	30	15.02	50750	177.16	286.46	102.31%	5921	5905	5913.00	15.02		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.8"	11/03/2014	18/03/2014						7.00	15.17	40080.00	180.75	221.747	79.20%			10/04/2014	30	15.06	46660	178.03	262.09	93.60%	5935	5920	5927.50	15.06		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.5"	11/03/2014	18/03/2014	1.00	2.83	1.59	0.52	2.5"	7.00	15.11	46470.00	179.36	259.092	92.53%			10/04/2014	30	15.17	61640	180.84	340.86	121.74%	5979	5969	5974.00	15.17		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.5"	11/03/2014	18/03/2014						7.00	15.09	47920.00	178.91	267.852	95.66%			10/04/2014	30	15.02	35690	177.07	201.56	71.98%	5906	5917	5911.50	15.02		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.9"	11/03/2014	18/03/2014	1.00	2.30	1.38	0.48	2.9"	7.00	15.06	48050.00	178.06	269.848	96.37%			10/04/2014	30	15.09	66440	178.75	371.68	132.74%	5961	5918	5939.50	15.09		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.9"	11/03/2014	18/03/2014						7.00	15.10	49030.00	179.18	273.641	97.73%			10/04/2014	30	15.12	45790	179.54	255.04	91.09%	5925	5980	5952.50	15.12		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	11/03/2014	18/03/2014	1.00	2.54	1.15	0.49	2.0"	7.00	15.09	34280.00	178.84	191.675	68.46%			10/04/2014	30	15.03	64250	177.34	362.29	129.39%	5930	5902	5916.00	15.03		
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	11/03/2014	18/03/2014						7.00	15.12	37325.00	179.54	207.895	74.25%			10/04/2014	30	14.99	62920	176.47	356.54	127.34%	5879	5924	5901.50	14.99		

	Socabaya	ACI	280	3/4	S.280-A3/4-3.0"	12/03/2014	21/03/2014	*1.00*	*2.75*	*1.39*	*0.49*	*3"*	9.00	15.28	54730.00	183.30	298.586	106.64%	10/04/2014	29	15.06	68040	178.03	382.18	136.49%	6005	5850	5927.50	15.06		
	Socabaya	ACI	280	3/4	S.280-A3/4-3.0"	12/03/2014	21/03/2014						9.00	15.29	56880.00	183.57	309.851	110.66%	10/04/2014	29	15.02	66100	177.07	373.29	133.32%	5976	5847	5911.50	15.02		
CONO NORTE (1")	Cono Norte	ACI	210	1	C.N210-A1-2.5"	12/03/2014	21/03/2014	*1.00*	*2.68*	*1.85*	*0.56*	*2.5"*	9.00	15.30	49070.00	183.75	267.041	127.16%	10/04/2014	29	14.88	58760	173.97	337.76	160.84%	5819	5900	5859.50	14.88		
	Cono Norte	ACI	210	1	C.N210-A1-2.5"	12/03/2014	21/03/2014						9.00	15.28	48170.00	183.33	262.753	125.12%	10/04/2014	29	14.93	57100	175.10	326.10	155.28%	5807	5950	5878.50	14.93		
	Cono Norte	ACI	210	1	C.N210-A1-2.9"	12/03/2014	21/03/2014	*1.00*	*2.53*	*1.56*	*0.57*	*2.9"*	9.00	15.24	44070.00	182.35	241.673	115.08%	10/04/2014	29	15.09	48320	178.84	270.18	128.66%	5992	5890	5941.00	15.09		
	Cono Norte	ACI	210	1	C.N210-A1-2.9"	12/03/2014	21/03/2014						9.00	15.21	45120.00	181.69	248.341	118.26%	10/04/2014	29	15.05	51630	177.82	290.35	138.26%	5850	5998	5924.00	15.05		
	Cono Norte	ACI	210	1	C.N210-A1-3.8"	12/03/2014	21/03/2014	*1.00*	*2.88*	*1.51*	*0.60*	*3.8"*	9.00	15.28	35820.00	183.36	195.355	93.03%	10/04/2014	29	15.00	41860	176.65	236.96	112.84%	5879	5930	5904.50	15.00		
	Cono Norte	ACI	210	1	C.N210-A1-3.8"	12/03/2014	21/03/2014						9.00	15.30	35410.00	183.75	192.702	91.76%	10/04/2014	29	15.39	20070	186.08	107.86	51.36%	6065	6055	6060.00	15.39		
	Cono Norte	ACI	210	1	C.N210-A1-4.2"	12/03/2014	21/03/2014	*1.00*	*3.02*	*1.45*	*0.59*	*4.2"*	9.00	15.20	37380.00	181.53	205.912	98.05%	10/04/2014	29	15.40	41660	186.27	223.66	106.50%	6073	6053	6063.00	15.40		
	Cono Norte	ACI	210	1	C.N210-A1-4.2"	12/03/2014	21/03/2014						9.00	15.21	37540.00	181.69	206.620	98.39%	10/04/2014	29	15.46	41630	187.71	221.78	105.61%	6051	6122	6086.50	15.46		
	Cono Norte	ACI	210	1	C.N210-A1-1.5"	12/03/2014	21/03/2014	*1.00*	*2.71*	*1.88*	*0.49*	*1.5"*	9.00	15.25	48220.00	182.75	263.859	125.65%	10/04/2014	29	14.98	52360	176.21	297.15	141.50%	5876	5918	5897.00	14.98		
	Cono Norte	ACI	210	1	C.N210-A1-1.5"	12/03/2014	21/03/2014						9	15.28	48920.00	183.39	266.756	127.03%	10/04/2014	29	14.96	53120	175.88	302.03	143.82%	5878	5905	5891.50	14.96		
CONO NORTE (1")	Cono Norte	ACI	280	1	C.N280-A1-3.7"	13/03/2014	22/03/2014	*1.00*	*2.26*	*1.21*	*0.47*	*3.7"*	9.00	15.22	56080.00	181.99	308.150	110.05%	11/04/2014	29	15.05	67360	178.00	378.42	135.15%	5878	5976	5927.00	15.05		
	Cono Norte	ACI	280	1	C.N280-A1-3.7"	13/03/2014	22/03/2014						9.00	15.19	56200.00	181.29	309.998	110.71%	11/04/2014	29	15.02	62990	177.10	355.67	127.02%	5906	5918	5912.00	15.02		
	Cono Norte	ACI	280	1	C.N280-A1-2.3"	13/03/2014	22/03/2014	*1.00*	*2.29*	*1.21*	*0.45*	*2.3"*	9.00	15.31	70430.00	184.15	382.456	136.59%	11/04/2014	29	14.85	76090	173.11	439.54	156.98%	5788	5902	5845.00	14.85		
	Cono Norte	ACI	280	1	C.N280-A1-2.3"	13/03/2014	22/03/2014						9.00	15.30	55280.00	183.75	300.836	107.44%	11/04/2014	29	14.92	75640	174.74	432.86	154.59%	5876	5869	5872.50	14.92		
	Cono Norte	ACI	280	1	C.N280-A1-3.8"	13/03/2014	21/03/2014	*1.00*	*2.26*	*1.23*	*0.49*	*3.8"*	8.00	15.23	54790.00	182.26	300.610	107.36%	11/04/2014	29	14.99	59410	176.47	336.65	120.23%	5974	5829	5901.50	14.99		
	Cono Norte	ACI	280	1	C.N280-A1-3.8"	13/03/2014	21/03/2014						8.00	15.26	56170.00	182.87	307.156	109.70%	11/04/2014	29	15.01	59610	177.04	336.70	120.25%	5972	5850	5911.00	15.01		
	Cono Norte	ACI	280	1	C.N280-A1-1.8"	13/03/2014	21/03/2014	*1.00*	*2.34*	*1.17*	*0.49*	*1.8"*	8.00	15.30	35666.00	183.85	193.999	69.29%	11/04/2014	29	15.08	57690	178.66	322.90	115.32%	5910	5966	5938.00	15.08		
	Cono Norte	ACI	280	1	C.N280-A1-1.8"	13/03/2014	21/03/2014						8.00	15.28	37540.00	183.30	204.804	73.14%	11/04/2014	29	15.07	58320	178.45	326.81	116.72%	5894	5975	5934.50	15.07		
	Cono Norte	ACI	280	1	C.N280-A1-3.4"	13/03/2014	22/03/2014	*1.00*	*2.27*	*1.11*	*0.47*	*3.4"*	9.00	15.24	57190.00	182.38	313.569	111.99%	11/04/2014	29	15.05	67800	177.94	381.02	136.08%	5902	5950	5926.00	15.05		
	Cono Norte	ACI	280	1	C.N280-A1-3.4"	13/03/2014	22/03/2014						9	15.25	60240.00	182.69	329.742	117.76%	11/04/2014	29	15.36	64980	185.22	350.82	125.29%	6002	6090	6046.00	15.36		
socabaya 175	Socabaya	MF	175	3/4	S.175-MF3/4-1.5"	13/03/2014	21/03/2014	*1.00*	*1.89*	*1.55*	*0.46*	*1.5"*	8.00	15.29	55490.00	183.57	302.280	172.73%	11/04/2014	29	15.00	69530	176.80	393.26	224.72%	6002	5812	5907.00	15.00		
	Socabaya	MF	175	3/4	S.175-MF3/4-1.5"	13/03/2014	21/03/2014						8.00	15.30	56350.00	183.82	306.557	175.18%	11/04/2014	29	15.07	70540	178.48	395.22	225.84%	5940	5930	5935.00	15.07		
	Socabaya	MF	175	3/4	S.175-MF3/4-3.0"	14/03/2014	21/03/2014	*1.00*	*1.89*	*1.75*	*0.51*	*3"*	7.00	15.20	46220.00	181.53	254.608	145.49%	11/04/2014	29	14.99	60100	176.56	340.39	194.51%	5902	5904	5903.00	14.99		
	Socabaya	MF	175	3/4	S.175-MF3/4-3.0"	14/03/2014	21/03/2014						7.00	15.14	47150.00	179.99	261.958	149.69%	12/04/2014	29	15.05	59080	177.97	331.96	189.69%	5916	5937	5926.50	15.05		
	Socabaya	MF	175	3/4	S.175-MF3/4-4.3"	14/03/2014	21/03/2014	*1.00*	*1.82*	*1.43*	*0.49*	*4.3"*	7.00	15.16	48360.00	180.50	267.916	153.09%	12/04/2014	29	15.09	58860	178.84	329.11	188.06%	5915	5967	5941.00	15.09		
	Socabaya	MF	175	3/4	S.175-MF3/4-4.3"	14/03/2014	21/03/2014						7.00	15.14	48580.00	179.99	269.903	154.23%	12/04/2014	29	15.09	59780	178.91	334.14	190.94%	5947	5937	5942.00	15.09		
	Socabaya	MF	175	3/4	S.175-MF3/4-2.8"	14/03/2014	21/03/2014	*1.00*	*1.72*	*1.36*	*0.55*	*2.8"*	7.00	15.18	48270.00	181.05	266.613	152.35%	12/04/2014	29	15.14	65130	179.93	361.97	206.84%	5974	5944	5959.00	15.14		
	Socabaya	MF	175	3/4	S.175-MF3/4-2.8"	14/03/2014	21/03/2014						7.00	15.15	48320.00	180.32	267.964	153.12%	12/04/2014	29	15.09	64640	178.94	361.25	206.43%	5950	5935	5942.50	15.09		
	Socabaya	MF	175	3/4	S.175-MF3/4-5.0"	14/03/2014	21/03/2014	*1.00*	*1.76*	*1.44*	*0.58*	*5"*	7.00	15.11	39140.00	179.30	218.297	124.74%	12/04/2014	29	14.79	52560	171.90	305.76	174.72%	5826	5823	5824.50	14.79		
	Socabaya	MF	175	3/4	S.175-MF3/4-5.0"	14/03/2014	21/03/2014						7.00	15.12	40090.00	179.66	223.146	127.51%	12/04/2014	29	14.92	56290	174.83	321.96	183.98%	5898	5850	5874.00	14.92		
socabaya 210	Socabaya	MF	210	3/4	S.210-MF3/4-1.8"	14/03/2014	21/03/2014	*1.00*	*1.81*	*1.44*	*0.53*	*1.8"*	7.00	15.21	47160.00	181.63	259.656	123.65%	12/04/2014	29	15.39	61460	185.99	330.45	157.36%	6067	6050	6058.50	15.39		
	Socabaya	MF	210	3/4	S.210-MF3/4-1.8"	14/03/2014	21/03/2014						7.00	15.22	47470.00	181.87	261.014	124.29%	12/04/2014	29	15.46	65380	187.62	348.47	165.94%	6090	6080	6085.00	15.46		
	Socabaya	MF	210	3/4	S.210-MF3/4-4.0"	17/03/2014	26/03/2014	*1.00*	*1.81*	*1.44*	*0.54*	*4"*	9.00	15.23	52920.00	182.11	290.592	138.38%	16/04/2014	30	15.49	65110	188.55	345.33	164.44%	6102	6098	6100.00	15.49		
	Socabaya	MF	210	3/4	S.210-MF3/4-4.0"	17/03/2014	26/03/2014						9.00	15.19	52670.00	181.11	290.818	138.48%	16/04/2014	30	15.37	65430	185.62	352.49	167.85%	6075	6030	6052.50	15.37		
	Socabaya	MF	210	3/4	S.210-MF3/4-2.0"	17/03/2014	26/03/2014	*1.00*	*1.66*	*1.25*	*0.53*	*2"*	9.00	15.26	53250.00	182.93	291.092	138.62%	16/04/2014	30	15.11	56460	179.39	314.74	149.88%	5947	5953	5950.00	15.11		
	Socabaya	MF	210	3/4	S.210-MF3/4-2.0"	17/03/2014	26/03/2014						9.00	15.29	51780.00	183.63	281.976	134.27%	16/04/2014	30	15.10	59030	179.09	329.62	156.96%	5960	5930	5945.00	15.10		
	Socabaya	MF	210	3/4	S.210-MF3/4-6.0"	18/03/2014	26/03/2014	*1.00*	*1.65*	*1.22*	*0.54*	*6"*	8.00	15.18	44790.00	180.93	247.557	117.88%	16/04/2014	29	14.96	46400	175.67	264.13	125.78%	5916	5860	5888.00	14.96		
	Socabaya	MF	210	3/4	S.210-MF3/4-6.0"	18/03/2014	26/03/2014						8.00	15.15	44560.00	180.32	247.112	117.67%	16/04/2014	29	14.85	43820	173.08	253.17	120.56%	5879	5810	5844.50	14.85		
	Socabaya	MF	210	3/4	S.210-MF3/4-3.0"	18/03/2014	26/03/2014	*1.00*	*1.65*	*1.26*	*0.50*	*3"*	8.00	15.21	59200.00	181.72	325.783	155.13%	16/04/2014	29	15.01	50190	177.04	283.49	135.00%	5852	5970	5911.00	15.01		
	Socabaya	MF	210	3/4	S.210-MF3/4-3.0"	18/03/2014	26/03/2014						8.00	15.17	58970.00	180.78	326.204	155.34%	16/04/2014	29	15.00	72620	176.74	410.88	195.66%	5952	5860	5906.00	15.00		
socabaya 280	Socabaya	MF	280	3/4	S.280-MF3/4-3.5"	17/03/2014	26/03/2014	*1.00*	*1.72*	*1.33*	*0.51*	*3.5"*	9.00	15.17	54590.00	180.78	301.975	107.85%	16/04/2014	30	14.92	64580	174.83	369.38	131.92%	5918	5830	5874.00	14.92		
	Socabaya	MF	280	3/4	S.280-MF3/4-3.5"	17/03/2014	26/03/2014						9.00	15.15	53400.00	180.35	296.086	105.74%	16/04/2014	30	15.00	66320	176.68	375.36	134.06%	5815	5995	5905.00	15.00		
	Socabaya	MF	280	3/4	S.280-MF3/4-3.8"	17/03/2014	26/03/2014	*1.00*	*1.65*	*1.28*	*0.49*	*3.8"*	9.00	15.30	56220.00	183.91	305.697	109.18%	16/04/2014	30	15.00	63230	176.65	357.93	127.83%	5879	5930	5904.50	15.00		
	Socabaya	MF	280	3/4	S.280-MF3/4-3.8"	17/03/2014	26/03/2014						9.00	15.33	54430.00	184.67	294.740	105.26%	16/04/2014	30	15.07	68560	178.36	384.38	137.28%	5960	5906	5933.00	15.07		
	Socabaya	MF	280	3/4	S.280-MF3/4-4.3"	17/03/2014	26/03/2014	*1.00*	*1.57*	*1.16*	*0.51*	*4.3"*	9.00	15.31	51990.00	184.18	282.275	100.81%	16/04/2014	30	15.23	62450	182.14	342.87	122.45%	6020	5971	5995.50	15.23		
	Socabaya	MF	280	3/4	S.280-MF3/4-4.3"	17/03/2014	26/03/2014						9.00	15.30	54210.00	183.75	295.013	105.36%	16/04/2014	30	14.82	46520	172.52	269.65	96.30%	5840	5830	5835.00	14.82		
	Socabaya	MF	280	3/4	S.280-MF3/4-4.2"	17/03/2014	26/03/2014	*1.00*	*1.54*	*1.21*	*0.51*	*4.2"*	9.00	15.30	55970.00	183.79	304.540	108.76%	16/04/2014	30	15.02	65600	177.10	370.41	132.29%	5990	5834	5912.00	15.02		
	Socabaya	MF	280	3/4	S.280-MF3/4-4.2"	17/03/2014	26/03/2014						9.00	15.33	55450.00	184.55	300.462	107.31%	16/04/2014	30	15.22	64450	181.87	354.38	126.56%	6022	5960	5991.00	15.22		
	Socabaya	MF	280	3/4	S.280-MF3/4-4.5"	18/03/2014	26/03/2014	*1.00*	*1.63*	*1.31*	*0.49*	*4.5"*	8.00	15.34	53460.00	184.89	289.152	103.27%	19/04/2014	32	14.95	63600	175.58	362.23	129.37%	5848	5925	5886.50	14.95		
	Socabaya	MF	280	3/4	S.280-MF3/4-4.5"	18/03/2014	26/03/2014						8.00	15.33	55010.00	184.52	298.127	106.47%	19/04/2014	32	15.02	63730	177.19	359.66	128.45%	5977	5850	5913.50	15.02		
Poderosa 175	Poderosa	MF	175	1/2	P.175-MF1/2-6.5"	18/03/2014	26/03/2014	*1.00*	*1.93*	*1.90*	*0.58*	*6.5"*	8.00	15.21	38250.00	181.78	210.423	120.24%	16/04/2014	29	15.03	51040	177.31	287.85	164.49%	5901	5930	5915.50	15.03		
	Poderosa	MF	175	1/2	P.175-MF1/2-6.5"	18/03/2014	26/03/2014						8.00	15.24	37936.00	182.38	208.000	118.86%	16/04/2014	29	15.10	53360	179.09	297.96	170.26%	5940	5950	5945.00	15.10		
	Poderosa	MF	175	1/2	P.175-MF1/2-8.0"	18/03/2014	26/03/2014	*1.00*	*1.76*	*1.66*	*0.59*	*8"*	8.00	15.33	33950.00	184.46	184.053	105.17%	16/04/2014	29	14.93	47950	175.07	273.89	156.51%	5846.45669	5909.44882	5877.95	14.93		
	Poderosa	MF	175	1/2	P.175-MF1/2-8.0"	18/03/2014	26/03/2014						8.00	15.31	33810.00	184.09	183.660	104.95%	16/04/2014	29	14.67	51570	168.99	305.17	174.38%	5830	5720	5775.00	14.67		
	Poderosa	MF	175	1/2	P.175-MF1/2-6.0"	18/03/2014	26/03/2014	*1.00*	*1.61*	*2.09*	*0.60*	*6"*	8.00	15.27	36590.00	183.24	199.687	114.11%	19/04/2014	32	14.89	55100	174.06	316.56	180.89%	5860	5862	5861.00	14.89		
	Poderosa	MF	175	1/2	P.175-MF1/2-6.0"	18/03/2014	26/03/2014						8.00	15.27	36970.00	183.15	201.862	115.35%	19/04/2014	32	15.41	57680	186.51	309.26	176.72%	6027	6107	6067.00	15.41		
	Poderosa	MF	175	1/2	P.175-MF1/2-2.8"	18/03/2014	26/03/2014	*1.00*	*1.50*	*2.12*	*0.51*	*2.8"*	8.00	15.31	49690.00	184.15	269.832	154.19%	16/04/2014	29	15.09	59310	178.84	331.63	189.50%	5930	5952	5941.00	15.09		
	Poderosa	MF	175	1/2	P.175-MF1/2-2.8"	18/03/2014	26/03/2014						8.00	15.33	50020.00	184.64	270.904	154.80%	16/04/2014	29	15.04	54020	177.64	304.09	173.77%	5920	5922	5921.00	15.04		
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	18/03/2014	26/03/2014	*1.00*	*1.90*	*2.05*	*0.56*	*3"*	8.00	15.17	37250.00	180.75	206.090	117.77%	19/04/2014	32	15.47	52730	187.87	280.68	160.39%	6175	6003	6089.00	15.47		
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	18/03/2014	26/03/2014						8.00	15.15	36710.00	180.20	203.716	116.41%	19/04/2014	32	15.28	53000	183.39	289.00	165.14%	5982	6050	6016.00	15.28		
Poderosa 210	Poderosa	MF	210	1/2	P.210-MF1/2-4.25"	19/03/2014	26/03/2014	*1.00*	*1.84*	*1.77*	*0.58*	*4.25"*	7.00	15.18	40090.00	180.99	221.506	105.48%	19/04/2014	31	15.01	55700	177.04	314.61	149.82%	5902	5920	5911.00	15.01		
	Poderosa	MF	210	1/2	P.210-MF1/2-4.25"	19/03/2014	26/03/2014						7.00	15.19	39860.00	181.11	220.088	104.80%	19/04/2014	31	15.07	58350	178.42	327.03	155.73%	5899	5969	5934.00	15.07		
	Poderosa	MF	210	1/2	P.210-MF1/2-5.0"	19/03/2014	26/03/2014	*1.00*	*2.03*	*1.88*	*0.56*	*5"*	7.00	15.17	41670.00	180.84	230.428	109.73%	19/04/2014	31	14.98	53390	176.35	302.74	144.16%	5904	5895	5899.50	14.98		
	Poderosa	MF	210	1/2	P.210-MF1/2-5.0"	19/03/2014	26/03/2014						7.00	15.16	43736.00	180.53	242.258	115.36%	19/04/2014	31	14.85	59670	173.26	344.40	164.00%	5860	5835	5847.50	14.85		
	Poderosa	MF	210	1/2	P.210-MF1/2-5.8"	19/03/2014	26/03/2014	*1.00*	*1.48*	*1.41*	*0.53*	*5.8"*	7.00	15.16	45890.00	180.47	254.275	121.08%	19/04/2014	31	14.96	65080	175.67	370.47	176.41%	5916	5860	5888.00	14.96		
	Poderosa	MF	210	1/2	P.210-MF1/2-5.8"	19/03/2014	26/03/2014						7.00	15.18	45260.00	180.99	250.071	119.08%	19/04/2014	31	14.96	51480	175.76	292.90	139.48%	5961	5818	5889.50	14.96		
	Poderosa	MF	210	1/2	P.210-MF1/2-8.0"	19/03/2014	26/03/2014	*1.00*	*1.68*	*1.54*	*0.58*	*8"*	7.00	15.19	36220.00	181.23	199.856	95.17%	19/04/2014	31	15.05	51200	177.94	287.73	137.02%	5951	5901	5926.00	15.05		
	Poderosa	MF	210	1/2	P.210-MF1/2-8.0"	19/03/2014	26/03/2014						7.00	15.15	35890.00	180.32	199.032	94.78%	19/04/2014	31	14.99	54650	176.38	309.83	147.54%	5855	5945	5900.00	14.99		
	Poderosa	MF	210	1/2	P.210-MF1/2-3.8"	19/03/2014	26/03/2014	*1.00*	*1.68*	*1.74*	*0.54*	*3.8"*	7.00	15.31	41020.00	184.18	222.714	106.05%	19/04/2014	31	15.43	37450	187.10	200.16	95.32%	6130	6023	6076.50	15.43		
	Poderosa	MF	210	1/2	P.210-MF1/2-3.8"	19/03/2014	26/03/2014						7.00	15.29	40910.00	183.63	222.782	106.09%	19/04/2014	31	15.41	55100	186.54	295.38	140.66%	6025	6110	6067.50	15.41		
Poderosa 280	Poderosa	MF	280	1/2	P.280-MF1/2-4.25"	19/03/2014	26/03/2014	*1.00*	*1.76*	*1.63*	*0.55*	*5.25"*	7.00	15.16	42500.00	180.53	235.412	84.08%	19/04/2014	31	15.26	56110	182.81	306.93	109.62%	6001	6012	6006.50	15.26		
	Poderosa	MF	280	1/2	P.280-MF1/2-4.25"	19/03/2014	26/03/2014						7.00	15.16	42930.00	180.56	237.754	84.91%	19/04/2014	31	15.29	63330	183.63	344.87	123.17%	6025	6015	6020.00	15.29		
	Poderosa	MF	280	1/2	P.280-MF1/2-1.8"	19/03/2014	26/03/2014	*1.00*	*1.53*	*1.78*	*0.51*	*1.8"*	7.00	15.13	47330.00	179.81	263.223	94.01%	19/04/2014	31	15.02	68480	177.13	386.60	138.07%	5985	5840	5912.50	15.02		
	Poderosa	MF	280	1/2	P.280-MF1/2-1.8"	19/03/2014	26/03/2014						7.00	15.15	47950.00	180.17	266.135	95.05%	19/04/2014	31	14.96	63510	175.67	361.53	129.12%	5926	5850	5888.00	14.96		
	Poderosa	MF	280	1/2	P.280-MF1/2-7.0"	19/03/2014	26/03/2014	*1.00*	*1.60*	*1.42*	*0.55*	*7"*	7.00	15.15	45510.00	180.26	252.465	90.17%	19/04/2014	31	15.00	56170	176.62	318.02	113.58%	5907	5901	5904.00	15.00		
	Poderosa	MF	280	1/2	P.280-MF1/2-7.0"	19/03/2014	26/03/2014						7.00	15.13	44560.00	179.87	247.735	88.48%	19/04/2014	31	15.04	57040	177.67	321.04	114.66%	5908	5935	5921.50	15.04		
	Poderosa	MF	280	1/2	P.280-MF1/2-7.1"	20/03/2014	27/03/2014	*1.00*	*1.46*	*1.16*	*0.53*	*7.1"*	7.00	15.26	38900.00	182.81	212.789	76.00%	21/04/2014	32	14.95	53590	175.46	305.43	109.08%	5854	5915	5884.50	14.95	11.83	29.8
	Poderosa	MF	280	1/2	P.280-MF1/2-7.1"	20/03/2014	27/03/2014						7.00	15.23	39210.00	182.14	215.273	76.88%	21/04/2014	32	15.04	34380	177.73	193.44	69.08%	5906	5939	5922.50	15.04	11.72	29.4
	Poderosa	MF	280	1/2	P.280-MF1/2-3.25"	20/03/2014	27/03/2014	*1.00*	*1.43*	*1.18*	*0.47*	*3.25"*	7.00	15.29	52680.00	183.69	286.782	102.42%	21/04/2014	32	15.05	66920	177.79	376.39	134.43%	5895	5952	5923.50	15.05	12.9	29.7
	Poderosa	MF	280	1/2	P.280-MF1/2-3.25"	20/03/2014	27/03/2014						7.00	15.34	51920.00	184.79	280.962	100.34%	21/04/2014	32	15.02	66480	177.28	374.99	133.93%	5880	5950	5915.00	15.02	12.01	29.65
	Poderosa	MF	280	1/2	P.280-MF1/2-4.0"	20/03/2014	27/03/2014	*1.00*	*1.39*	*1.19*	*0.40*	*4"*	7.00	15.29	40790.00	183.66	222.091	79.32%	21/04/2014	32	15.00	68220	176.68	386.11	137.90%	5948	5862	5905.00	15.00	12.15	30
	Poderosa	MF	280	1/2	P.280-MF1/2-4.0"	20/03/2014	27/03/2014						7.00	15.25	39920.00	182.75	218.441	78.01%	21/04/2014	32	15.11	68080	179.39	379.51	135.54%	5940	5960	5950.00	15.11	11.92	29.5
CN (3/4")	Cono Norte	MF	175	3/4	C.N175-MF3/4-7.0"	21/03/2014	28/03/2014	*1.00*	*2.03*	*1.51*	*0.60*	*7"*	7.00	15.18	32740.00	180.87	181.017	103.44%	21/04/2014	31	15.09	50630	178.78	283.19	161.82%	5943	5937	5940.00	15.09	11.87	30.1
	Cono Norte	MF	175	3/4	C.N175-MF3/4-7.0"	21/03/2014	28/03/2014						7.00	15.16	31950.00	180.44	177.063	101.18%	21/04/2014	31	15.14	52830	180.05	293.42	167.67%	5977	5945	5961.00	15.14	12.05	29.9
	Cono Norte	MF	175	3/4	C.N175-MF3/4-3.0"	21/03/2014	28/03/2014	*1.00*	*2.01*	*1.50*	*0.59*	*3"*	7.00	15.21	42670.00	181.69	234.856	134.20%	21/04/2014	31	15.04	51020	177.55	287.35	164.20%	6022	5817	5919.50	15.04	11.88	29.2
	Cono Norte	MF	175	3/4	C.N175-MF3/4-3.0"	21/03/2014	28/03/2014						7.00	15.18	43010.00	181.05	237.560	135.75%	21/04/2014	31	15.02	56660	177.19	319.76	182.72%	5952	5875	5913.50	15.02	11.785	29.6
	Cono Norte	MF	175	3/4	C.N175-MF3/4-6.8"	21/03/2014	28/03/2014	*1.00*	*1.84*	*1.31*	*0.56*	*6.8"*	7.00	15.31	44730.00	184.15	242.898	138.80%	21/04/2014	31	15.10	51020	179.15	284.80	162.74%	5917	5975	5946.00	15.10	11.785	29.7
	Cono Norte	MF	175	3/4	C.N175-MF3/4-6.8"	21/03/2014	28/03/2014						7.00	15.28	44980.00	183.39	245.271	140.15%	21/04/2014	31	15.03	55070	177.49	310.27	177.29%	6005	5832	5918.50	15.03	11.845	29.2
	Cono Norte	MF	175	3/4	C.N175-MF3/4-1.8"	21/03/2014	28/03/2014	*1.00*	*1.94*	*1.71*	*0.55*	*1.8"*	7.00	15.15	44890.00	180.29	248.984	142.28%	21/04/2014	31	15.41	54520	186.39	292.51	167.15%	6050	6080	6065.00	15.41	13.025	30.5
	Cono Norte	MF	175	3/4	C.N175-MF3/4-1.8"	21/03/2014	28/03/2014						7.00	15.18	45220.00	181.02	249.808	142.75%	21/04/2014	31	14.93	55740	175.16	318.22	181.84%	5979	5780	5879.50	14.93	11.75	29.2
	Cono Norte+ Soc.	MF	175	3/4	C.N175-MF3/4-4.8"	24/03/2014	31/03/2014	*1.00*	*2.03*	*1.51*	*0.60*	*4.8"*	7.00	15.16	24310.00	180.56	134.633	76.93%	21/04/2014	28	15.00	38110	176.80	215.55	123.17%	5910	5904	5907.00	15.00	11.71	29.6
	Cono Norte	MF	175	3/4	C.N175-MF3/4-4.8"	24/03/2014	31/03/2014						7.00	15.17	24470.00	180.69	135.428	77.39%	21/04/2014	28	15.00	37670	176.80	213.06	121.75%	5955	5859	5907.00	15.00	11.715	29.65
CN (3/4")	Cono Norte	MF	210	3/4	C.N210-MF3/4-4.2"	24/03/2014	31/03/2014	*1.00*	*1.93*	*1.40*	*0.57*	*4.2"*	7.00	15.18	41540.00	180.93	229.594	109.33%	21/04/2014	28	14.85	53180	173.20	307.04	146.21%	5849	5844	5846.50	14.85	11.56	29.5
	Cono Norte	MF	210	3/4	C.N210-MF3/4-4.2"	24/03/2014	31/03/2014						7.00	15.17	42210.00	180.81	233.453	111.17%	21/04/2014	28	15.01	55200	176.89	312.05	148.60%	5909	5908	5908.50	15.01	11.74	29.5
	Cono Norte	MF	210	3/4	C.N210-MF3/4-7.0"	24/03/2014	31/03/2014	*1.00*	*1.79*	*1.22*	*0.57*	*7"*	7.00	15.21	38580.00	181.75	212.274	101.08%	21/04/2014	28	15.04	48530	177.76	273.00	130.00%	5974	5872	5923.00	15.04	11.46	29.7
	Cono Norte	MF	210	3/4	C.N210-MF3/4-7.0"	24/03/2014	31/03/2014						7.00	15.14	39410.00	179.96	218.993	104.28%	21/04/2014	28	14.94	50310	175.34	286.93	136.63%	5854	5911	5882.50	14.94	11.4	29.5
	Cono Norte	MF	210	3/4	C.N210-MF3/4-6.0"	24/03/2014	31/03/2014	*1.00*	*1.95*	*1.32*	*0.58*	*6"*	7.00	15.22	40510.00	181.99	222.595	106.00%	21/04/2014	28	15.01	54390	176.86	307.53	146.44%	5876	5940	5908.00	15.01	11.69	29.6
	Cono Norte	MF	210	3/4	C.N210-MF3/4-6.0"	24/03/2014	31/03/2014						7.00	15.36	40820.00	185.28	220.311	104.91%	21/04/2014	28	15.02	54340	177.10	306.83	146.11%	5884	5940	5912.00	15.02	11.72	30
	Cono Norte	MF	210	3/4	C.N210-MF3/4-2.0"	25/03/2014	02/04/2014	*1.00*	*1.80*	*1.28*	*0.50*	*2"*	8.00	14.99	51310.00	176.41	290.849	138.50%	22/04/2014	28	15.03	67850	177.43	382.40	182.09%	5860	5975	5917.50	15.03	11.8	30.1
	Cono Norte	MF	210	3/4	C.N210-MF3/4-2.0"	25/03/2014	02/04/2014						8.00	15.04	52510.00	177.67	295.543	140.73%	22/04/2014	28	14.88	63950	173.91	367.71	175.10%	5860	5857	5858.50	14.88	11.87	29.85
	Cono Norte	MF	210	3/4	C.N210-MF3/4-3.6"	25/03/2014	02/04/2014	*1.00*	*1.85*	*1.44*	*0.52*	*3.6"*	8.00	14.97	48420.00	176.09	274.979	130.94%	22/04/2014	28	15.32	60830	184.27	330.11	157.19%	6060	6001	6030.50	15.32	11.88	29.6
	Cono Norte	MF	210	3/4	C.N210-MF3/4-3.6"	25/03/2014	02/04/2014						8.00	15.03	50220.00	177.40	283.085	134.80%	22/04/2014	28	15.43	50420	186.91	269.75	128.45%	6074	6073	6073.50	15.43	12.905	30.6
CN (3/4")	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014	*1.00*	*1.85*	*1.29*	*0.54*	*3.5"*	8.00	15.25	47160.00	182.63	258.230	92.23%	22/04/2014	28	15.00	55830	176.74	315.88	112.81%	5920	5892	5906.00	15.00	11.785	30.05
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014						8.00	15.23	51240.00	182.29	281.086	100.39%	22/04/2014	28	15.05	58990	177.94	331.51	118.40%	5912	5940	5926.00	15.05	11.85	30.4
	Cono Norte	MF	280	3/4	C.N280-MF3/4-4.2"	25/03/2014	02/04/2014	*1.00*	*1.85*	*1.44*	*0.52*	*4.2"*	8.00	15.53	53520.00	189.35	282.651	100.95%	22/04/2014	28	15.39	66320	185.99	356.58	127.35%	6085	6032	6058.50	15.39	12.53	30.6
	Cono Norte	MF	280	3/4	C.N280-MF3/4-4.2"	25/03/2014	02/04/2014						8.00	15.38	58750.00	185.68	316.401	113.00%	22/04/2014	28	15.35	59430	184.95	321.34	114.76%	6045	6038	6041.50	15.35	12.84	30.6
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.2"	25/03/2014	02/04/2014	*1.00*	*1.85*	*1.44*	*0.51*	*3.2"*	8.00	15.12	50060.00	179.54	278.827	99.58%	22/04/2014	28	15.00	63530	176.80	359.33	128.33%	5860	5954	5907.00	15.00	11.945	30.4
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.2"	25/03/2014	02/04/2014						8.00	14.98	56200.00	176.21	318.946	113.91%	22/04/2014	28	15.00	66470	176.74	376.08	134.31%	5982	5830	5906.00	15.00	11.95	29.5
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014	*1.00*	*1.79*	*1.26*	*0.50*	*3.5"*	8.00	14.99	50080.00	176.50	283.732	101.33%	22/04/2014	28	15.64	60240	192.02	313.71	112.04%	6155	6157	6156.00	15.64	12.93	30.5
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014						8.00	15.15	50790.00	180.26	281.756	100.63%	22/04/2014	28	15.63	53600	191.81	279.45	99.80%	6123	6182	6152.50	15.63	12.73	30.3
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.0"	26/03/2014	02/04/2014	*1.00*	*1.77*	*1.18*	*0.52*	*3"*	7.00	14.97	40950.00	176.03	232.636	83.08%	23/04/2014	28	15.14	54480	180.14	302.43	108.01%	5955	5970	5962.50	15.14	11.665	29.5
	Cono Norte	MF	280	3/4	C.N280-MF3/4-3.0"	26/03/2014	02/04/2014						7.00	14.99	46250.00	176.41	262.166	93.63%	23/04/2014	28	14.95	57560	175.49	328.00	117.14%	5880	5890	5885.00	14.95	11.77	29.7
CN (1")	Cono Norte	MF	175	1	C.N175-MF1-6.0"	26/03/2014	02/04/2014	*1.00*	*2.03*	*1.51*	*0.60*	*6"*	7.00	15.04	29860.00	177.61	168.119	96.07%	23/04/2014	28	14.83	40480	172.67	234.44	133.97%	5865	5810	5837.50	14.83	11.445	29.7
	Cono Norte	MF	175	1	C.N175-MF1-6.0"	26/03/2014	02/04/2014						7.00	15.00	30750.00	176.68	174.040	99.45%	23/04/2014	28	14.85	45940	173.17	265.29	151.59%	5802	5890	5846.00	14.85	11.675	29.6
	Cono Norte	MF	175	1	C.N175-MF1-5.0"	26/03/2014	02/04/2014	*1.00*	*1.70*	*2.09*	*0.59*	*5"*	7.00	14.92	39340.00	174.80	225.052	128.60%	23/04/2014	28	15.02	44070	177.19	248.71	142.12%	5892	5935	5913.50	15.02	11.775	29.9
	Cono Norte	MF	175	1	C.N175-MF1-5.0"	26/03/2014	02/04/2014						7.00	15.14	37390.00	179.93	207.803	118.74%	23/04/2014	28	15.06	48320	178.12	271.27	155.01%	5951	5907	5929.00	15.06	11.815	30.1
	Cono Norte	MF	175	1	C.N175-MF1-3.0"	26/03/2014	02/04/2014	*1.00*	*1.60*	*1.94*	*0.53*	*3"*	7.00	15.08	42960.00	178.51	240.654	137.52%	23/04/2014	28	15.06	56570	178.03	317.75	181.57%	5990	5865	5927.50	15.06	11.78	29.6
	Cono Norte	MF	175	1	C.N175-MF1-3.0"	26/03/2014	02/04/2014						7.00	14.95	47320.00	175.43	269.738	154.14%	23/04/2014	28	15.10	59550	179.00	332.69	190.11%	5945	5942	5943.50	15.10	11.97	30.3
	Cono Norte	MF	175	1	C.N175-MF1-4.0"	26/03/2014	02/04/2014	*1.00*	*1.61*	*1.98*	*0.55*	*4"*	7.00	14.97	40940.00	176.06	232.539	132.88%	23/04/2014	28	14.97	56300	176.09	319.73	182.70%	5920	5870	5895.00	14.97	11.89	30.1

	Cono Norte	MF	175	1	C.N175-MF1-4.0"	26/03/2014	02/04/2014						7.00	15.00	44840.00	176.74	253.701	144.97%			23/04/2014	28	15.11	51870	179.21	289.44	165.40%	5959	5935	5947.00	15.11	12.02	30.2
	Cono Norte	MF	175	1	C.N175-MF1-4.5"	26/03/2014	02/04/2014	1.00	1.68	1.95	0.58	4.5"	7.00	15.35	40120.00	184.98	216.891	123.94%			23/04/2014	28	15.37	52720	185.62	284.02	162.30%	6060	6045	6052.50	15.37	12.66	30.6
	Cono Norte	MF	175	1	C.N175-MF1-4.5"	26/03/2014	02/04/2014						7.00	15.62	38480.00	191.71	200.718	114.70%			23/04/2014	28	15.45	51660	187.47	275.57	157.47%	6045	6120	6082.50	15.45	12.685	30.7
CN (1")	Cono Norte	MF	210	1	C.N210-MF1-2.0"	27/03/2014	03/04/2014	1.00	1.60	2.05	0.57	2"	7.00	14.99	38970.00	176.44	220.862	105.17%			24/04/2014	28	15.01	55040	176.83	311.25	148.22%	5895	5920	5907.50	15.01	11.71	29.6
	Cono Norte	MF	210	1	C.N210-MF1-2.0"	27/03/2014	03/04/2014						7.00	14.98	42490.00	176.30	241.016	114.77%			24/04/2014	28	14.86	50490	173.35	291.26	138.70%	5851	5847	5849.00	14.86	11.615	29.7
	Cono Norte	MF	210	1	C.N210-MF1-4.0"	27/03/2014	03/04/2014	1.00	1.46	1.81	0.57	4"	7.00	14.97	40520.00	176.00	230.232	109.63%			24/04/2014	28	15.04	51640	177.73	290.55	138.36%	5940	5905	5922.50	15.04	11.765	30.1
	Cono Norte	MF	210	1	C.N210-MF1-4.0"	27/03/2014	03/04/2014						7.00	15.04	38820.00	177.73	218.418	104.01%			24/04/2014	28	15.05	52690	177.88	296.21	141.05%	5880	5970	5925.00	15.05	11.82	29.8
	Cono Norte	MF	210	1	C.N210-MF1-3.0"	27/03/2014	03/04/2014	1.00	1.71	2.04	0.56	3"	7.00	15.33	37540.00	184.49	203.482	96.90%			24/04/2014	28	15.34	41100	184.85	222.34	105.87%	6010	6070	6040.00	15.34	12.705	30.8
	Cono Norte	MF	210	1	C.N210-MF1-3.0"	27/03/2014	03/04/2014						7.00	15.43	42780.00	186.94	228.841	108.97%			24/04/2014	28	15.45	56350	187.40	300.69	143.18%	6073	6090	6081.50	15.45	12.81	30.5
	Cono Norte	MF	210	1	C.N210-MF1-2.7"	27/03/2014	03/04/2014	1.00	1.43	1.97	0.52	2.7"	7.00	15.01	43970.00	176.83	248.652	118.41%			24/04/2014	28	15.12	55540	179.54	309.35	147.31%	5940	5965	5952.50	15.12	11.855	30.1
	Cono Norte	MF	210	1	C.N210-MF1-2.7"	27/03/2014	03/04/2014						7.00	15.02	47700.00	177.07	269.380	128.28%			24/04/2014	28	14.98	57190	176.24	324.51	154.53%	5835	5960	5897.50	14.98	11.825	29.9
	Cono Norte	MF	210	1	C.N210-MF1-1.5"	27/03/2014	03/04/2014	1.00	1.39	1.85	0.51	1.5"	7.00	14.85	48650.00	173.17	280.936	133.78%			24/04/2014	28	15.13	60960	179.84	338.97	161.41%	5965	5950	5957.50	15.13	11.795	29.4
	Cono Norte	MF	210	1	C.N210-MF1-1.5"	27/03/2014	03/04/2014						7.00	14.94	45320.00	175.28	258.557	123.12%			24/04/2014	28	15.10	63160	179.03	352.80	168.00%	5938	5950	5944.00	15.10	11.945	30.1
CN (1")	Cono Norte	MF	280	1	C.N280-MF1-2.0"	27/03/2014	03/04/2014	1.00	1.35	1.64	0.50	2"	7.00	15.00	44720.00	176.62	253.193	90.43%			24/04/2014	28	15.07	58650	178.45	328.66	117.38%	5879	5990	5934.50	15.07	11.655	29.6
	Cono Norte	MF	280	1	C.N280-MF1-2.0"	27/03/2014	03/04/2014						7.00	15.05	43330.00	177.85	243.628	87.01%			24/04/2014	28	15.16	57810	180.44	320.38	114.42%	6020	5915	5967.50	15.16	11.755	29.7
	Cono Norte	MF	280	1	C.N280-MF1-2.5"	27/03/2014	03/04/2014	1.00	1.33	1.68	0.52	2.5"	7.00	15.15	41420.00	180.35	229.660	82.02%			24/04/2014	28	15.56	53930	190.19	283.56	101.27%	6103	6150	6126.50	15.56	12.995	30.5
	Cono Norte	MF	280	1	C.N280-MF1-2.5"	27/03/2014	03/04/2014						7.00	13.05	41770.00	133.79	312.201	111.50%			24/04/2014	28	15.50	65180	188.73	345.36	123.34%	6108	6098	6103.00	15.50	12.58	30.6
	Cono Norte	MF	280	1	C.N280-MF1-2.8"	27/03/2014	03/04/2014	1.00	1.46	1.83	0.53	2.8"	7.00	14.99	44320.00	176.59	250.971	89.63%			24/04/2014	28	14.87	56040	173.73	322.56	115.20%	5876	5835	5855.50	14.87	11.72	29.6
	Cono Norte	MF	280	1	C.N280-MF1-2.8"	27/03/2014	03/04/2014						7.00	14.92	40390.00	174.89	230.941	82.48%			24/04/2014	28	15.13	29920	179.72	166.48	59.46%	5951	5960	5955.50	15.13	12.415	30.2
	Cono Norte	MF	280	1	C.N280-MF1-2.2"	28/03/2014	04/04/2014	1.00	1.50	1.90	0.55	2.2"	7.00	14.94	43480.00	175.19	248.186	88.64%			25/04/2014	28	15.03	55940	177.34	315.43	112.66%	5945	5887	5916.00	15.03	11.685	30
	Cono Norte	MF	280	1	C.N280-MF1-2.2"	28/03/2014	04/04/2014						7.00	14.90	37850.00	174.33	217.119	77.54%			25/04/2014	28	15.14	53130	179.99	295.18	105.42%	5952	5968	5960.00	15.14	11.7	29.2
	Cono Norte	MF	280	1	C.N280-MF1-3.2"	28/03/2014	04/04/2014	1.00	1.39	1.75	0.55	3.2"	7.00	15.02	44010.00	177.25	248.289	88.67%			25/04/2014	28	15.22	40740	182.02	223.82	79.94%	6042	5945	5993.50	15.22	11.95	30.1
	Cono Norte	MF	280	1	C.N280-MF1-3.2"	28/03/2014	04/04/2014						7.00	14.76	43710.00	171.02	255.591	91.28%			25/04/2014	28	15.55	36030	189.97	189.66	67.74%	6140	6106	6123.00	15.55	12.83	30.8
	Cono Norte	MF	280	1	C.N280-MF1-4.0"	28/03/2014	04/04/2014	1.00	1.51	1.90	0.55	4"	7.00	15.03	45740.00	177.40	257.831	92.08%			25/04/2014	28	15.02	54510	177.07	307.84	109.94%	5847	5976	5911.50	15.02	11.7	29.4
	Cono Norte	MF	280	1	C.N280-MF1-4.0"	28/03/2014	04/04/2014						7.00	15.02	41210.00	177.13	232.650	83.09%			25/04/2014	28	15.07	55550	178.39	311.39	111.21%	5943	5924	5933.50	15.07	11.62	29.6
socabaya 175	Socabaya	MF	175	3/4	S.175-MF3/4-2.0"	28/03/2014	04/04/2014	1.00	1.90	1.75	0.62	2"	7.00	15.01	36300.00	176.89	205.208	117.26%			25/04/2014	28	15.03	46020	177.43	259.37	148.21%	5890	5945	5917.50	15.03	11.72	30.1
	Socabaya	MF	175	3/4	S.175-MF3/4-2.0"	28/03/2014	04/04/2014						7.00	15.09	35720.00	178.75	199.827	114.19%			25/04/2014	28	15.09	48040	178.94	268.48	153.42%	5925	5960	5942.50	15.09	11.69	29.9
	Socabaya	MF	175	3/4	S.175-MF3/4-2.1"	28/03/2014	04/04/2014	1.00	1.79	1.66	0.58	2.1"	7.00	15.38	28920.00	185.80	155.647	88.94%			25/04/2014	28	15.32	48100	184.24	261.07	149.18%	6010	6050	6030.00	15.32	12.37	30.5
	Socabaya	MF	175	3/4	S.175-MF3/4-2.1"	28/03/2014	04/04/2014						7.00	15.37	28440.00	185.47	153.342	87.62%			25/04/2014	28	15.40	46540	186.23	249.90	142.80%	6055	6070	6062.50	15.40	12.8	30.7
	Socabaya	MF	175	3/4	S.175-MF3/4-3.2"	28/03/2014	04/04/2014	1.00	1.79	1.73	0.63	3.2"	7.00	15.50	35000.00	188.58	185.601	106.06%			25/04/2014	28	15.51	62770	188.89	332.32	189.90%	6110	6101	6105.50	15.51	13.27	30.4
	Socabaya	MF	175	3/4	S.175-MF3/4-3.2"	28/03/2014	04/04/2014						7.00	15.27	30220.00	183.21	164.951	94.26%			25/04/2014	28	15.04	54650	177.61	307.69	175.82%	5867	5974	5920.50	15.04	11.855	29.7
	Socabaya Poderosa	ACI	175	3/4	S.175-A3/4-8.0"	01/04/2014	09/04/2014	1.00	3.50	1.85	0.78	8"	8.00	15.34	17420.00	184.73	94.298	53.88%			29/04/2014	28	15.56	23420	190.16	123.16	70.38%	6150	6102	6126.00	15.56	12.86	30.4
	Socabaya Poderosa	ACI	175	3/4	S.175-A3/4-8.0"	01/04/2014	09/04/2014						8.00	15.21	18820.00	181.72	103.568	59.18%			29/04/2014	28	15.53	23120	189.51	122.00	69.72%	6104	6127	6115.50	15.53	12.86	30.35
Poderosa 175	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	31/03/2014	09/04/2014	1.00	1.89	2.04	0.60	3"	9.00	14.99	37930.00	176.38	215.041	122.88%			28/04/2014	28	14.95	42910	175.52	244.48	139.70%	5951	5820	5885.50	14.95	12.045	29.6
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	31/03/2014	09/04/2014						9.00	14.76	39140.00	171.04	228.829	130.76%			28/04/2014	28	14.99	41430	176.47	234.76	134.15%	5880	5923	5901.50	14.99	12.11	30.2
	Poderosa	MF	175	1/2	P.175-MF1/2-5.5"	31/03/2014	09/04/2014	1.00	1.88	1.79	0.61	5.5"	9.00	14.98	35140.00	176.24	199.392	113.94%			28/04/2014	28	15.05	46680	177.82	262.51	150.00%	5863	5985	5924.00	15.05	12.235	30.2
	Poderosa	MF	175	1/2	P.175-MF1/2-5.5"	31/03/2014	09/04/2014						9.00	15.07	38200.00	178.36	214.169	122.38%			28/04/2014	28	15.09	45120	178.87	252.24	144.14%	5963	5920	5941.50	15.09	12.04	30.05
	Poderosa	MF	175	1/2	P.175-MF1/2-6.8"	31/03/2014	07/04/2014	1.00	1.67	2.04	0.61	6.8"	7.00	15.08	34760.00	178.54	194.686	111.25%			28/04/2014	28	15.06	46480	178.24	260.77	149.01%	5894	5968	5931.00	15.06	12.09	30.25
	Poderosa	MF	175	1/2	P.175-MF1/2-6.8"	31/03/2014	07/04/2014						7.00	15.09	35540.00	178.87	198.686	113.54%			28/04/2014	28	15.02	50280	177.07	283.95	162.26%	5976	5847	5911.50	15.02	12.185	29.95
	Poderosa	MF	175	1/2	P.175-MF1/2-5.4"	31/03/2014	09/04/2014	1.00	1.57	2.09	0.60	5.4"	9.00	15.07	39610.00	178.27	222.187	126.96%			28/04/2014	28	15.01	51540	176.86	291.41	166.52%	5911	5905	5908.00	15.01	11.96	29.9
	Poderosa	MF	175	1/2	P.175-MF1/2-5.4"	31/03/2014	09/04/2014						9.00	15.09	41190.00	178.72	230.467	131.70%			28/04/2014	28	15.02	47700	177.25	269.11	153.78%	5921	5908	5914.50	15.02	12.005	30.2
Poderosa 210	Poderosa	MF	210	1/2	P.210-MF1/2-3.0"	31/03/2014	07/04/2014	1.00	2.46	1.89	0.59	3"	7.00	15.05	37270.00	177.94	209.449	99.74%			28/04/2014	28	14.93	50180	174.95	286.82	136.58%	5867	5885	5876.00	14.93	12.11	29.7
	Poderosa	MF	210	1/2	P.210-MF1/2-3.0"	31/03/2014	07/04/2014						7.00	15.09	31490.00	178.91	176.015	83.82%			28/04/2014	28	14.87	50100	173.70	288.42	137.34%	5830	5880	5855.00	14.87	12.108	29.7
	Poderosa	MF	210	1/2	P.210-MF1/2-3.2"	31/03/2014	07/04/2014	1.00	2.50	1.78	0.59	3.2"	7.00	15.64	37170.00	192.21	193.381	92.09%			28/04/2014	28	15.23	46290	182.23	254.02	120.96%	6045	5949	5997.00	15.23	12.87	30.4
	Poderosa	MF	210	1/2	P.210-MF1/2-3.2"	31/03/2014	07/04/2014						7.00	15.56	35200.00	190.19	185.080	88.13%			28/04/2014	28	15.20	49070	181.41	270.49	128.80%	5977	5990	5983.50	15.20	12.775	30.4
	Poderosa	MF	210	1/2	P.210-MF1/2-2.5"	31/03/2014	07/04/2014	1.00	2.63	2.22	0.63	2.5"	7.00	15.24	30760.00	182.32	168.711	80.34%			28/04/2014	28	15.37	42090	185.65	226.72	107.96%	6099	6007	6053.00	15.37	13.355	30.4
	Poderosa	MF	210	1/2	P.210-MF1/2-2.5"	31/03/2014	07/04/2014						7.00	15.37	30110.00	185.62	162.212	77.24%			28/04/2014	28	15.53	44030	189.41	232.46	110.69%	6120	6108	6114.00	15.53	13.33	30.5
Poderosa 175	Poderosa	ACI	175	1/2	P.175-A1/2-6.0"	01/04/2014	09/04/2014	1.00	3.50	1.85	0.78	6"	8.00	14.73	15110.00	170.52	88.614	50.64%			29/04/2014	28	15.08	24360.00	178.63	136.37	77.92%	5950	5925	5937.50	15.08	12.10	29.20
	Poderosa	ACI	175	1/2	P.175-A1/2-6.0"	01/04/2014	09/04/2014						8.00	14.84	14910.00	172.87	86.247	49.28%			29/04/2014	28	15.11	23780.00	179.39	132.56	75.75%	5980	5920	5950.00	15.11	12.14	29.40
	Poderosa	ACI	175	1/2	P.175-A1/2-7.5"	01/04/2014	09/04/2014	1.00	3.21	2.05	0.80	7.5"	8.00	15.04	16720.00	177.64	94.121	53.78%			29/04/2014	28	15.10	25370.00	178.97	141.76	81.01%	5915	5971	5943.00	15.10	11.98	29.60
	Poderosa	ACI	175	1/2	P.175-A1/2-7.5"	01/04/2014	09/04/2014						8.00	15.02	15750.00	177.22	88.871	50.78%			29/04/2014	28	15.02	21730.00	177.22	122.61	70.07%	5905	5923	5914.00	15.02	11.93	29.80
	Poderosa	MF	175	1/2	P.175-MF1/2-3.5"	01/04/2014	09/04/2014	1.00	1.98	1.96	0.59	3.5"	8.00	15.08	35790.00	178.57	200.421	114.53%			29/04/2014	28	15.08	44150.00	178.51	247.32	141.33%	5893	5978	5935.50	15.08	12.00	29.70
	Poderosa	MF	175	1/2	P.175-MF1/2-3.5"	01/04/2014	09/04/2014						8.00	15.02	33710.00	177.25	190.180	108.67%			29/04/2014	28	15.05	42120.00	177.94	236.71	135.26%	5917	5935	5926.00	15.05	12.05	29.80
	Poderosa	MF	175	1/2	P.175-MF1/2-7.0"	01/04/2014	09/04/2014	1.00	2.05	1.33	0.57	7"	8.00	14.82	32530.00	172.58	188.493	107.71%			29/04/2014	28	15.03	41600.00	177.49	234.38	133.93%	5895	5942	5918.50	15.03	11.90	29.60
	Poderosa	MF	175	1/2	P.175-MF1/2-7.0"	01/04/2014	09/04/2014						8.00	15.11	33710.00	179.30	188.012	107.44%			29/04/2014	28	14.84	43390.00	172.87	250.99	143.42%	5892	5790	5841.00	14.84	11.84	29.80
	Poderosa	MF	175	1/2	P.175-MF1/2-2.0"	01/04/2014	09/04/2014	1.00	1.78	1.86	0.54	2"	8.00	15.05	41390.00	178.00	232.524	132.87%			29/04/2014	28	15.12	51060.00	179.66	284.21	162.40%	5952	5957	5954.50	15.12	12.11	30.10
	Poderosa	MF	175	1/2	P.175-MF1/2-2.0"	01/04/2014	09/04/2014						8.00	15.05	37180.00	177.82	209.085	119.48%			29/04/2014	28	15.08	50080.00	178.51	280.54	160.31%	5978	5893	5935.50	15.08	12.25	30.20
socabaya 175 (1")	Socabaya	ACI	175	1	S.175-A1-2.0"	04/04/2014	12/04/2014	1.00	3.13	2.40	0.71	2"	8.00	14.98	35940.00	176.15	204.036	116.59%			02/05/2014	28	15.16	48340.00	180.44	267.89	153.08%	5965	5970	5967.50	15.16	11.84	29.30
	Socabaya	ACI	175	1	S.175-A1-2.0"	04/04/2014	12/04/2014						8.00	15.00	40680.00	176.68	230.242	131.57%			02/05/2014	28	14.96	54150.00	175.70	308.20	176.11%	5957	5820	5888.50	14.96	11.65	29.60
	Socabaya	ACI	175	1	S.175-A1-1.0"	04/04/2014	12/04/2014	1.00	3.13	2.40	0.71	1"	8.00	15.09	28290.00	178.78	158.235	90.42%			02/05/2014	28	15.06	37620.00	178.09	211.24	120.71%	5967	5890	5928.50	15.06	11.70	29.60
	Socabaya	ACI	175	1	S.175-A1-1.0"	04/04/2014	12/04/2014						8.00	15.04	27860.00	177.76	156.726	89.56%			02/05/2014	28	15.09	37280.00	178.87	208.41	119.09%	5939	5944	5941.50	15.09	11.98	30.10
	Socabaya	ACI	175	1	S.175-A1-2.1"	04/04/2014	12/04/2014	1.00	2.90	2.11	0.68	2.1"	8.00	14.99	23590.00	176.50	133.651	76.37%			02/05/2014	28	15.17	34990.00	180.69	193.65	110.66%	5992	5951	5971.50	15.17	11.74	29.70
	Socabaya	ACI	175	1	S.175-A1-2.1"	04/04/2014	12/04/2014						8.00	14.97	23020.00	176.09	130.732	74.70%			02/05/2014	28	14.97	31500.00	176.06	178.92	102.24%	5912	5877	5894.50	14.97	11.57	29.80
	Socabaya	ACI	175	1	S.175-A1-6.0"	04/04/2014	12/04/2014	1.00	2.98	1.78	0.76	6"	8.00	14.90	12790.00	174.42	73.330	41.90%			02/05/2014	28	15.01	16250.00	176.86	91.88	52.50%	5909	5907	5908.00	15.01	11.54	29.70
	Socabaya	ACI	175	1	S.175-A1-6.0"	04/04/2014	12/04/2014						8.00	14.98	15640.00	176.35	88.685	50.68%			02/05/2014	28	15.09	15980.00	178.91	89.32	51.04%	5994	5890	5942.00	15.09	11.55	29.80
	Socabaya	ACI	175	1	S.175-A1-3.0"	04/04/2014	12/04/2014	1.00	3.00	2.00	0.73	3"	8.00	15.26	24460.00	182.87	133.755	76.43%			02/05/2014	28	15.60	32820.00	191.18	171.67	98.10%	6134	6151	6142.50	15.60	12.45	29.50
	Socabaya	ACI	175	1	S.175-A1-3.0"	04/04/2014	12/04/2014						8.00	15.65	27710.00	192.27	144.118	82.35%			02/05/2014	28	15.18	33760.00	181.05	186.47	106.55%	5980	5975	5977.50	15.18	12.23	30.20
socabaya 210 (1")	Socabaya	ACI	210	1	S.210-A1-4.0"	04/04/2014	12/04/2014	1.08	3.23	2.51	0.73	4"	8.00	15.33	27310.00	184.55	147.982	70.47%			02/05/2014	28	15.14	33560.00	180.05	186.39	88.76%	6019	5903	5961.00	15.14	11.76	29.60
	Socabaya	ACI	210	1	S.210-A1-4.0"	04/04/2014	12/04/2014						8.00	15.03	26600.00	177.40	149.941	71.40%			02/05/2014	28	15.08	35380.00	178.54	198.16	94.36%	5894	5978	5936.00	15.08	11.82	29.80
	Socabaya	ACI	210	1	S.210-A1-3.0"	04/04/2014	12/04/2014	1.13	3.12	2.30	0.68	3"	8.00	15.42	35610.00	186.82	190.612	90.77%			02/05/2014	28	15.49	47110.00	188.48	249.94	119.02%	6100	6098	6099.00	15.49	12.85	30.20
	Socabaya	ACI	210	1	S.210-A1-3.0"	04/04/2014	12/04/2014						8.00	15.50	33770.00	188.67	178.990	85.23%			02/05/2014	28	15.54	46610.00	189.63	245.80	117.05%	6085	6150	6117.50	15.54	12.70	30.50
	Socabaya	ACI	210	1	S.210-A1-4.1"	08/04/2014	16/04/2014	1.00	2.64	2.05	0.70	4.1"	8.00	15.09	25600.00	178.84	143.141	68.16%			05/05/2014	27	15.06	34960.00	178.03	196.37	93.51%	5995	5860	5927.50	15.06	11.79	29.90
	Socabaya	ACI	210	1	S.210-A1-4.1"	08/04/2014	16/04/2014						8.00	14.93	26080.00	175.04	148.993	70.95%			05/05/2014	27	14.89	29740.00	174.18	170.74	81.31%	5861	5865	5863.00	14.89	11.52	29.80
	Socabaya	ACI	210	1	S.210-A1-1.0"	08/04/2014	16/04/2014	1.00	2.50	1.97	0.61	1"	8.00	15.03	34790.00	177.40	196.107	93.38%			05/05/2014	27	15.06	47960.00	178.06	269.34	128.26%	5978	5878	5928.00	15.06	11.77	29.80
	Socabaya	ACI	210	1	S.210-A1-1.0"	08/04/2014	16/04/2014						8.00	15.17	36710.00	180.66	203.204	96.76%			05/05/2014	27	14.78	49130.00	171.52	286.45	136.40%	5802	5834	5818.00	14.78	11.76	29.65
	Socabaya	ACI	210	1	S.210-A1-8.0"	08/04/2014	16/04/2014	1.00	2.41	1.53	0.65	8"	8.00	15.04	20530.00	177.76	115.491	55.00%			05/05/2014	27	14.91	24730.00	174.68	141.57	67.41%	5865	5878	5871.50	14.91	11.64	29.70
	Socabaya	ACI	210	1	S.210-A1-8.0"	08/04/2014	16/04/2014						8.00	15.01	20400.00	176.83	115.363	54.93%			05/05/2014	27	15.05	27150.00	177.85	152.65	72.69%	5950	5899	5924.50	15.05	11.58	29.80
socabaya 280 (1")	Socabaya	ACI	280	1	S.280-A1-2.0"	08/04/2014	16/04/2014	1.00	2.59	1.82	0.60	2"	8.00	14.97	33440.00	175.97	190.036	67.87%			05/05/2014	27	15.02	45630.00	177.28	257.39	91.92%	5880	5950	5915.00	15.02	11.72	29.40
	Socabaya	ACI	280	1	S.280-A1-2.0"	08/04/2014	16/04/2014						8.00	14.92	32210.00	174.83	184.232	65.80%			05/05/2014	27	15.09	46570.00	178.78	260.48	93.03%	5945	5935	5940.00	15.09	11.80	29.80
	Socabaya	ACI	280	1	S.280-A1-3.1"	08/04/2014	16/04/2014	1.00	2.60	2.00	0.67	3.1"	8.00	15.13	25340.00	179.84	140.903	50.32%			05/05/2014	27	14.95	34500.00	175.55	196.53	70.19%	5950	5822	5886.00	14.95	11.56	29.30
	Socabaya	ACI	280	1	S.280-A1-3.1"	08/04/2014	16/04/2014						8.00	14.94	27330.00	175.37	155.842	55.66%			05/05/2014	27	15.07	33300.00	178.33	186.73	66.69%	5990	5875	5932.50	15.07	11.68	29.60
	Socabaya	ACI	280	1	S.280-A1-6.0"	08/04/2014	16/04/2014	1.00	2.30	1.87	0.63	6"	8.00	15.49	28740.00	188.55	152.430	54.44%			05/05/2014	27	15.50	39490.00	188.73	209.24	74.73%	6118	6088	6103.00	15.50	12.35	29.70
	Socabaya	ACI	280	1	S.280-A1-6.0"	08/04/2014	16/04/2014						8.00	15.31	28640.00	184.03	155.627	55.58%			05/05/2014	27	15.41	39990.00	186.54	214.38	76.56%	6059	6076	6067.50	15.41	12.28	30.20
	Socabaya	ACI	280	1	S.280-A1-4.0"	08/04/2014	16/04/2014	1.04	2.17	1.77	0.62	2.5(4.75)"	8.00	15.12	30120.00	179.48	167.820	59.94%			05/05/2014	27	15.55	46760.00	189.97	246.14	87.91%	6106	6140	6123.00	15.55	12.30	29.40
	Socabaya	ACI	280	1	S.280-A1-4.0"	08/04/2014	16/04/2014						8.00	15.30	31760.00	183.88	172.724	61.69%			05/05/2014	27	15.25	35180.00	182.63	192.63	68.80%	5957	6050	6003.50	15.25	11.54	29.10
	Socabaya	ACI	280	1	S.280-A1-3.0"	09/04/2014	16/04/2014	1.00	1.91	1.49	0.56	3"	7.00	15.32	38920.00	184.30	211.172	75.42%			06/05/2014	27	15.08	48880.00	178.51	273.82	97.79%	5951	5920	5935.50	15.08	29.75	11.50
	Socabaya	ACI	280	1	S.280-A1-3.0"	09/04/2014	16/04/2014						7.00	14.94	39210.00	175.19	223.813	79.93%			06/05/2014	27	15.05	49690.00	177.91	279.29	99.75%	5866	5985	5925.50	15.05	30.10	11.58
socabaya 175 (1")	Socabaya	M.F	175	1	S.175-MF1-6.0"	09/04/2014	16/04/2014	1.00	1.50	1.93	0.63	6"	7.00	15.04	29900.00	177.61	168.344	96.20%			06/05/2014	27	15.06	37130.00	178.06	208.52	119.16%	5949	5907	5928.00	15.06	29.60	11.34
	Socabaya	M.F	175	1	S.175-MF1-6.0"	09/04/2014	16/04/2014						7.00	14.68	28750.00	169.28	169.834	97.05%			06/05/2014	27	15.13	38050.00	179.81	211.61	120.92%	5945	5969	5957.00	15.13	29.40	11.42
	Socabaya	M.F	175	1	S.175-MF1-6.25"	09/04/2014	16/04/2014	1.00	1.45	2.00	0.62	6.25"	7.00	14.95	29170.00	175.52	166.193	94.97%			06/05/2014	27	15.10	44430.00	178.97	248.26	141.86%	5946	5940	5943.00	15.10	30.10	11.69
	Socabaya	M.F	175	1	S.175-MF1-6.25"	09/04/2014	16/04/2014						7.00	15.05	30160.00	178.00	169.435	96.82%			06/05/2014	27	15.21	45590.00	181.81	250.76	143.29%	6010	5970	5990.00	15.21	29.80	11.60
	Socabaya	M.F	175	1	S.175-MF1-2.0"	09/04/2014	16/04/2014	1.00	1.33	1.70	0.56	2"	7.00	15.11	33970.00	179.42	189.335	108.19%			06/05/2014	27	14.95	48500.00	175.64	276.14	157.79%	5810	5965	5887.50	14.95	29.80	11.41
	Socabaya	M.F	175	1	S.175-MF1-2.0"	09/04/2014	16/04/2014						7.00	14.95	34560.00	175.49	196.935	112.53%			06/05/2014	27	15.06	45540.00	178.24	255.49	146.00%	5910	5952	5931.00	15.06	29.70	11.43
	Socabaya	M.F	175	1	S.175-MF1-7.0"	09/04/2014	16/04/2014	1.00	1.32	1.88	0.61	7"	7.00	15.15	24450.00	180.17	135.704	77.55%			06/05/2014	27	15.25	37440.00	182.63	205.01	117.15%	5998	6009	6003.50	15.25	29.70	11.31
	Socabaya	M.F	175	1	S.175-MF1-7.0"	09/04/2014	16/04/2014						7.00	14.97	29260.00	175.94	166.310	95.03%			06/05/2014	27	14.99	41250.00	176.50	233.71	133.55%	5952	5852	5902.00	14.99	29.80	11.14
	Socabaya	M.F	175	1	S.175-MF1-7.0"	10/04/2014	16/04/2014	1.00	1.37	1.81	0.56	1.8"	6.00	14.91	34860.00	174.54	199.729	114.13%			07/05/2014	27	15.11	46360.00	179.39	258.44	147.68%	5940	5960	5950.00	15.11	11.42	29.8
	Socabaya	M.F	175	1	S.175-MF1-7.0"	10/04/2014	16/04/2014						6.00	14.94	34620.00	175.40	197.378	112.79%			07/05/2014	27	15.08	49400.00	178.69	276.45	157.97%	5940	5937	5938.50	15.08	11.51	30.20
socabaya 210 (1")	Socabaya	M.F	210	1	S.210-MF1-3.5"	10/04/2014	16/04/2014	1.00	1.43	1.81	0.57	3.5"	6.00	15.27	26720.00	183.05	145.968	69.51%			07/05/2014	27	15.12	42410.00	179.54	236.22	112.48%	5941	5964	5952.50	15.12	11.45	29.60
	Socabaya	M.F	210	1	S.210-MF1-3.5"	10/04/2014	16/04/2014						6.00	15.10	34560.00	179.09	192.980	91.90%			07/05/2014	27	15.11	43360.00	179.27	241.87	115.18%	5972	5924	5948.00	15.11	11.60	29.80
	Socabaya	M.F	210	1	S.210-MF1-5.0"	10/04/2014	16/04/2014	1.00	1.30	1.61	0.57	5"	6.00	15.09	25830.00	178.75	144.500	68.81%			07/05/2014	27	15.17	41250.00	180.72	228.26	108.69%	5970	5974	5972.00	15.17	11.10	29.70
	Socabaya	M.F	210	1	S.210-MF1-5.0"	10/04/2014	16/04/2014						6.00	14.99	34040.00	176.53	192.824	91.82%			07/05/2014	27	15.05	40650.00	177.97	228.41	108.76%	5935	5918	5926.50	15.05	11.49	29.80
	Socabaya	M.F	210	1	S.210-MF1-4.0"	10/04/2014	16/04/2014	1.00	1.34	1.59	0.55	4"	6.00	15.03	33910.00	177.49	191.050	90.98%			07/05/2014	27	15.11	30750.00	179.24	171.56	81.70%	5990	5905	5947.50	15.11	11.70	29.70
	Socabaya	M.F	210	1	S.210-MF1-4.0"	10/04/2014	16/04/2014						6.00	14.99	33090.00	176.38	187.601	89.33%			07/05/2014	27	15.04	40060.00	177.73	225.39	107.33%	5955	5890	5922.50	15.04	11.41	29.85
	Socabaya	M.F	210	1	S.210-MF1-4.25"	10/04/2014	16/04/2014	1.00	1.34	1.66	0.55	4.25"	6.00	15.03	33140.00	177.43	186.775	88.94%			07/05/2014	27	14.98	52800.00	176.24	299.60	142.67%	5853	5942	5897.50	14.98	11.59	29.85
	Socabaya	M.F	210	1	S.210-MF1-4.25"	10/04/2014	16/04/2014						6.00	15.10	33560.00	179.09	187.396	89.24%			07/05/2014	27	14.90	39260.00	174.27	225.28	107.28%	5918	5811	5864.50	14.90	11.61	29.75
	Socabaya	M.F	210	1	S.210-MF1-4.75"	10/04/2014	16/04/2014	1.00	1.31	1.49	0.54	4.75"	6.00	15.29	38080.00	183.54	207.474	98.80%			07/05/2014	27	15.30	47260.00	183.82	257.11	122.43%	6040	6006	6023.00	15.30	12.08	30.60
	Socabaya	M.F	210	1	S.210-MF1-4.75"	10/04/2014	16/04/2014						6.00	15.48	37270.00	188.21	198.028	94.30%			07/05/2014	27	15.49	49470.00	188.36	262.63	125.06%	6112	6082	6097.00	15.49	12.53	30.50
socabaya 280 (1")	Socabaya	M.F	280	1	S.280-MF1-2.0"	11/04/2014	21/04/2014	1.00	1.36	1.69	0.54	2"	10.00	15.06	42540.00	178.03	238.945	85.34%	11.23	29.7	08/05/2014	27	15.01	52030.00	176.95	294.03	105.01%	5884	5935	5909.50	15.01	11.64	29.90
	Socabaya	M.F	280	1	S.280-MF1-2.0"	11/04/2014	21/04/2014						10.00	15.02	46140.00	177.07	260.570	93.06%	11.21	29.8	08/05/2014	27	14.86	47340.00	173.35	273.09	97.53%	5848	5850	5849.00	14.86	11.43	29.80
	Socabaya	M.F	280	1	S.280-MF1-3.0"	11/04/2014	21/04/2014	1.00	1.35	1.66	0.55	3"	10.00	14.92	40570.00	174.74	232.168	82.92%	11.42	29.8	08/05/2014	27	14.95	46350.00	175.55	264.03	94.30%	5857	5915	5886.00	14.95	11.49	30.10
	Socabaya	M.F	280	1	S.280-MF1-3.0"	11/04/2014	21/04/2014						10.00	15.13	43540.00	179.75	242.227	86.51%	11.09	29.1	08/05/2014	27	15.06	48130.00	178.15	270.16	96.49%	6012	5847	5929.50	15.06	11.62	29.90
	Socabaya	M.F	280	1	S.280-MF1-5.0"	11/04/2014	21/04/2014	1.00	1.29	1.51	0.55	5"	10.00	15.02	41380.00	177.07	233.689	83.46%	11.29	29.8	08/05/2014	27	15.07	50300.00	178.39	281.96	100.70%	5937	5930	5933.50	15.07	11.42	30.10
	Socabaya	M.F	280	1	S.280-MF1-5.0"	11/04/2014	21/04/2014						10.00	15.04	40120.00	177.67	225.808	80.65%	11.18	30.2	08/05/2014	27	15.10	46050.00	179.09	257.14	91.84%	5932	5958	5945.00	15.10	11.65	29.90
	Socabaya	M.F	280	1	S.280-MF1-8.0"	11/04/2014	21/04/2014	1.00	1.16	1.33	0.53	8"	10.00	14.96	43910.00	175.79	249.790	89.21%	11.12	29.5	08/05/2014	27	15.22	46830.00	181.96	257.37	91.92%	5990	5995	5992.50	15.22	11.42	29.70
	Socabaya	M.F	280	1	S.280-MF1-8.0"	11/04/2014	21/04/2014						10.00	15.16	43660.00	180.50	241.878	86.38%	11.24	29.7	08/05/2014	27	14.83	42600.00	172.82	246.51	88.04%	5780	5900	5840.00	14.83	11.26	29.90
Poderosa 175(1")	Poderosa	A.C.I	175	1	P.175-A1-8.5"	11/04/2014	21/04/2014	1.00	3.72	2.00	0.74	8.5"	10.00	15.04	11900.00	177.61	67.000	38.29%	12.075	29.6	08/05/2014	27	15.02	17450.00	177.10	98.53	56.30%	5954	5870	5912.00	15.02	12.58	29.90
	Poderosa	A.C.I	175	1	P.175-A1-8.5"	11/04/2014	21/04/2014						10.00	15.08	13330.00	178.51	74.672	42.67%	12.335	29.2	08/05/2014	27	15.04	13750.00	177.73	77.36	44.21%	5922	5923	5922.50	15.04	12.39	29.60
	Poderosa	A.C.I	175	1	P.175-A1-5.5"	11/04/2014	21/04/2014	1.00	3.00	1.81	0.57	5.5"	10.00	15.45	30890.00	187.47	164.777	94.16%	13.14	29.3	08/05/2014	27	15.37	40580.00	185.65	218.58	124.90%	6002	6104	6053.00	15.37	12.83	29.20
	Poderosa	A.C.I	175	1	P.175-A1-5.5"	11/04/2014	21/04/2014						10.00	15.45	31110.00	187.59	165.841	94.77%	13.6	30.4	08/05/2014	27	15.51	43010.00	188.92	227.67	130.09%	6090	6122	6106.00	15.51	13.14	29.30
	Poderosa	A.C.I	175	1	P.175-A1-5.75"	14/04/2014	21/04/2014	1.00	2.53	1.63	0.58	5.75"	7.00	15.06	27630.00	178.18	155.065	88.61%	12.31	29.4	12/05/2014	28	15.12	36750.00	179.45	204.80	117.03%	5951	5951	5951.00	15.12	12.05	28.50
	Poderosa	A.C.I	175	1	P.175-A1-5.75"	14/04/2014	21/04/2014						7.00	15.00	30310.00	176.77	171.462	97.98%	12.53	29.8	12/05/2014	28	15.40	45060.00	186.17	242.03	138.30%	6059	6064	6061.50	15.40	13.54	30.50

	Poderosa	A.C.I	175	1	P.175-A1-7.75"	14/04/2014	21/04/2014	***1.00***	***3.01***	***1.75***	***0.65***	**7.75"**	7.00	14.97	16010.00	176.12	90.906	51.95%	12.39	29.6	12/05/2014	28	15.04	19390.00	177.58	109.19	62.39%	5970	5870	5920.00	15.04	12.44	29.40
	Poderosa	A.C.I	175	1	P.175-A1-7.75"	14/04/2014	21/04/2014						7.00	15.09	15830.00	178.94	88.468	50.55%	12.42	29.6	12/05/2014	28	15.08	22730.00	178.51	127.33	72.76%	5910	5961	5935.50	15.08	12.71	29.60
Poderosa 210[1"]	Poderosa	A.C.I	210	1	P.210-A1-4.0"	14/04/2014	21/04/2014	***1.00***	***3.24***	***2.36***	***0.62***	**4"**	7.00	14.97	26750.00	176.09	151.914	72.34%	12.45	29.5	12/05/2014	28	15.00	31960.00	176.62	180.95	86.17%	5936	5872	5904.00	15.00	12.24	29.40
	Poderosa	A.C.I	210	1	P.210-A1-4.0"	14/04/2014	21/04/2014						7.00	15.17	25070.00	180.63	138.796	66.09%	12.53	29.5	12/05/2014	28	15.16	27330.00	180.53	151.38	72.09%	5913	6025	5969.00	15.16	12.52	29.60
	Poderosa	A.C.I	210	1	P.210-A1-6.5"	14/04/2014	21/04/2014	***1.00***	***3.40***	***2.17***	***0.63***	**6.5"**	7.00	15.11	22960.00	179.39	127.991	60.95%	12.54	29.6	12/05/2014	28	14.90	35550.00	174.45	203.79	97.04%	5835	5900	5867.50	14.90	12.65	29.60
	Poderosa	A.C.I	210	1	P.210-A1-6.5"	14/04/2014	21/04/2014						7.00	15.05	23150.00	177.88	130.142	61.97%	12.47	29.5	12/05/2014	28	15.17	31800.00	180.66	176.03	83.82%	6012	5930	5971.00	15.17	12.56	29.90
	Poderosa	A.C.I	210	1	P.210-A1-7.75"	14/04/2014	21/04/2014	***1.00***	***3.08***	***1.91***	***0.63***	**7.75"**	7.00	15.03	20750.00	177.43	116.946	55.69%	12.25	29.2	12/05/2014	28	15.06	29000.00	178.03	162.89	77.57%	5995	5860	5927.50	15.06	12.48	29.30
	Poderosa	A.C.I	210	1	P.210-A1-7.75"	14/04/2014	21/04/2014						7.00	15.00	23430.00	176.62	132.655	63.17%	12.35	29.4	12/05/2014	28	15.08	31260.00	178.57	175.05	83.36%	5930	5943	5936.50	15.08	12.72	29.60
	Poderosa	A.C.I	210	1	P.210-A1-3.75"	14/04/2014	21/04/2014	***1.00***	***2.86***	***2.14***	***0.56***	**3.75"**	7.00	15.43	27450.00	186.88	146.885	69.95%	13.31	29.8	12/05/2014	28	15.32	44630.00	184.43	241.99	115.23%	6065	6001	6033.00	15.32	13.19	30.50
	Poderosa	A.C.I	210	1	P.210-A1-3.75"	14/04/2014	21/04/2014						7.00	15.53	30640.00	189.54	161.658	76.98%	13.73	30	12/05/2014	28	15.37	20740.00	185.56	111.77	53.22%	6029	6074	6051.50	15.37	13.69	30.60
	Poderosa	A.C.I	280	1	P.280-A1-4.0"	14/04/2014	21/04/2014	***1.00***	***2.92***	***1.95***	***0.57***	**4"**	7.00	15.59	34390.00	190.78	180.262	64.38%	13.72	30.4	12/05/2014	28	15.40	49450.00	186.30	265.44	94.80%	6112	6015	6063.50	15.40	13.06	30.50
	Poderosa	A.C.I	280	1	P.280-A1-4.0"	14/04/2014	21/04/2014						7.00	14.96	30450.00	175.79	173.221	61.86%	12.77	29.7	12/05/2014	28	15.26	42180.00	182.87	230.65	82.38%	6055	5960	6007.50	15.26	13.02	30.20
Poderosa 280[1"]	Poderosa	A.C.I	280	1	P.280-A1-4.75"	14/04/2014	21/04/2014	***1.00***	***2.93***	***1.51***	***0.54***	**4.75"**	7.00	14.99	24920.00	176.53	141.162	50.42%	12.21	29.5	12/05/2014	28	15.01	40810.00	176.98	230.59	82.35%	5940	5880	5910.00	15.01	12.44	29.80
	Poderosa	A.C.I	280	1	P.280-A1-4.75"	14/04/2014	21/04/2014						7.00	14.97	30260.00	175.91	172.023	61.44%	12.6	30.2	12/05/2014	28	14.90	43400.00	174.30	249.00	88.93%	5840	5890	5865.00	14.90	12.60	29.90
	Poderosa	A.C.I	280	1	P.280-A1-8.5"	14/04/2014	21/04/2014	***1.00***	***2.97***	***1.69***	***0.61***	**8.5"**	7.00	15.63	19530.00	191.96	101.739	36.34%	13.74	30.4	12/05/2014	28	15.45	33290.00	187.53	177.52	63.40%	6117	6050	6083.50	15.45	13.34	30.50
	Poderosa	A.C.I	280	1	P.280-A1-8.5"	14/04/2014	21/04/2014						7.00	15.41	24360.00	186.48	130.630	46.65%	13.83	30.2	12/05/2014	28	15.40	30340.00	186.27	162.89	58.17%	6061	6065	6063.00	15.40	12.30	27.20
	Poderosa	A.C.I	280	1	P.280-A1-7.0"	14/04/2014	21/04/2014	***1.00***	***2.74***	***1.51***	***0.58***	**7"**	7.00	15.43	29040.00	187.10	155.215	55.43%	13.35	30.4	12/05/2014	28	15.50	40860.00	188.79	216.43	77.30%	6058	6150	6104.00	15.50	13.59	30.50
	Poderosa	A.C.I	280	1	P.280-A1-7.0"	14/04/2014	21/04/2014						7.00	15.42	24270.00	186.85	129.891	46.39%	13.34	30.3	12/05/2014	28	15.38	43940.00	185.80	236.48	84.46%	6060	6051	6055.50	15.38	13.47	30.40
	Poderosa	M.F	175	1	P.175-MF1-6.5"	15/04/2014	22/04/2014	***1.00***	***1.68***	***2.63***	***0.64***	**6.5"**	7.00	15.13	28250.00	179.84	157.084	89.76%	12.225	29.8	12/05/2014	27	15.04	38240.00	177.73	215.15	122.95%	5880	5965	5922.50	15.04	12.28	29.90
	Poderosa	M.F	175	1	P.175-MF1-6.5"	15/04/2014	22/04/2014						7.00	14.97	24290.00	176.00	138.014	78.87%	11.545	28.6	12/05/2014	27	14.89	37080.00	174.06	213.03	121.73%	5860	5862	5861.00	14.89	12.19	30.10
Poderosa 175[1"]	Poderosa	M.F	175	1	P.175-MF1-7.0"	15/04/2014	22/04/2014	***1.00***	***1.64***	***2.63***	***0.64***	**7"**	7.00	15.12	23650.00	179.60	131.683	75.25%	11.81	28.5	12/05/2014	27	15.18	37660.00	181.05	208.01	118.86%	5974	5981	5977.50	15.18	11.67	29.00
	Poderosa	M.F	175	1	P.175-MF1-7.0"	15/04/2014	22/04/2014						7.00	14.97	26220.00	176.00	148.980	85.13%	12.125	29.4	12/05/2014	27	14.94	34770.00	175.37	198.27	113.30%	5851	5915	5883.00	14.94	11.57	29.00
	Poderosa	M.F	175	1	P.175-MF1-8.0"	15/04/2014	22/04/2014	***1.00***	***1.53***	***2.36***	***0.62***	**8"**	7.00	14.98	28540.00	176.24	161.942	92.54%	12.05	29.4	12/05/2014	27	15.05	37050.00	177.82	208.35	119.06%	5924	5924	5924.00	15.05	12.02	29.50
	Poderosa	M.F	175	1	P.175-MF1-8.0"	15/04/2014	22/04/2014						7.00	14.88	26000.00	174.00	149.424	85.39%	11.665	29.35	12/05/2014	27	14.90	39880.00	174.30	228.80	130.74%	5915	5815	5865.00	14.90	12.13	29.60
	Poderosa	M.F	175	1	P.175-MF1-8.5"	15/04/2014	22/04/2014	***1.00***	***1.50***	***2.36***	***0.63***	**8.5"**	7.00	14.95	25670.00	175.58	146.202	83.54%	11.585	29.2	12/05/2014	27	15.01	25860.00	176.98	146.12	83.49%	5913	5907	5910.00	15.01	12.01	29.60
	Poderosa	M.F	175	1	P.175-MF1-8.5"	15/04/2014	22/04/2014						7.00	14.85	24940.00	173.11	144.069	82.33%	11.865	29.7	12/05/2014	27	15.22	24330.00	181.96	133.71	76.41%	5995	5990	5992.50	15.22	12.07	29.60
	Poderosa	M.F	210	1	P.210-MF1-3.0"	15/04/2014	22/04/2014	***1.00***	***1.56***	***2.48***	***0.56***	**3"**	7.00	15.10	34220.00	179.15	191.017	90.96%	12.22	29.6	12/05/2014	27	15.05	34010.00	177.79	191.29	91.09%	5955	5892	5923.50	15.05	12.07	29.30
	Poderosa	M.F	210	1	P.210-MF1-3.0"	15/04/2014	22/04/2014						7.00	15.01	32290.00	177.01	182.416	86.86%	12.01	29.7	12/05/2014	27	14.96	39150.00	175.73	222.79	106.09%	5878	5900	5889.00	14.96	12.28	29.80
Poderosa 210[1"]	Poderosa	M.F	210	1	P.210-MF1-7.25"	15/04/2014	22/04/2014	***1.00***	***1.55***	***2.47***	***0.60***	**7.25"**	7.00	15.34	30940.00	184.70	167.513	79.77%	12.65	30.1	12/05/2014	27	15.39	43210.00	186.08	232.21	110.58%	6052	6068	6060.00	15.39	13.30	30.60
	Poderosa	M.F	210	1	P.210-MF1-7.25"	15/04/2014	22/04/2014						7.00	15.37	25550.00	185.53	137.714	65.58%	12.98	30.3	12/05/2014	27	15.45	43660.00	187.43	232.93	110.92%	6135	6029	6082.00	15.45	12.85	30.10
	Poderosa	M.F	210	1	P.210-MF1-8.0"	15/04/2014	22/04/2014	***1.00***	***1.44***	***2.20***	***0.60***	**8"**	7.00	15.51	30280.00	189.01	160.203	76.29%	12.475	29.2	12/05/2014	27	15.39	42460.00	185.93	228.37	108.75%	6065	6050	6057.50	15.39	12.65	29.80
	Poderosa	M.F	210	1	P.210-MF1-8.0"	15/04/2014	22/04/2014						7.00	15.15	28440.00	180.38	157.664	75.08%	11.78	29.5	12/05/2014	27	14.97	42760.00	176.09	242.84	115.64%	5872	5918	5895.00	14.97	11.98	30.10
	Poderosa	M.F	210	1	P.210-MF1-2.0"	15/04/2014	22/04/2014	***1.00***	***1.44***	***2.39***	***0.54***	**2"**	7.00	15.20	32790.00	181.50	180.657	86.03%	12.515	30.1	12/05/2014	27	15.24	47470.00	182.41	260.23	123.92%	6003	5997	6000.00	15.24	12.13	28.80
	Poderosa	M.F	210	1	P.210-MF1-2.0"	15/04/2014	22/04/2014						7.00	15.08	36360.00	178.66	203.510	96.91%	12.31	30.2	12/05/2014	27	14.93	36900.00	174.98	210.88	100.42%	5845	5908	5876.50	14.93	11.87	29.50
	Poderosa	M.F	280	1	P.280-MF1-6.5"	15/04/2014	22/04/2014	***1.00***	***1.48***	***2.31***	***0.57***	**6.5"**	7.00	15.45	33350.00	187.59	177.782	63.49%	13.075	30.4	12/05/2014	27	10.50	22850	86.59	263.89	94.25%	4055	4213	4133.86	10.50	4.18	20.10
	Poderosa	M.F	280	1	P.280-MF1-6.5"	15/04/2014	22/04/2014						7.00	15.36	34000.00	185.22	183.563	65.56%	13.13	30.2	12/05/2014	27	10.65	24040	89.08	269.86	96.38%	4213	4173	4192.91	10.65	4.16	19.85
	Poderosa	M.F	280	1	P.280-MF1-4.5"	15/04/2014	22/04/2014	***1.00***	***1.48***	***2.16***	***0.57***	**4.5"**	7.00	15.46	35650.00	187.62	190.012	67.86%	13.49	30.7	12/05/2014	27	10.70	23060	89.92	256.45	91.59%	4173	4252	4212.60	10.70	4.32	20.20
	Poderosa	M.F	280	1	P.280-MF1-4.5"	15/04/2014	22/04/2014						7.00	15.43	36560.00	186.97	195.536	69.83%	13.31	13.31	12/05/2014	27	10.45	11730	85.77	136.77	48.84%	4094	4134	4114.17	10.45	4.32	20.50
Poderosa 280[1"]	Poderosa	M.F	280	1	P.280-MF1-3.75"	15/04/2014	22/04/2014	***1.00***	***1.40***	***2.00***	***0.57***	**3.75"**	7.00	15.38	36590.00	185.71	197.025	70.37%	13.215	30.5	12/05/2014	27	10.55	25070	87.42	286.79	102.42%	4173	4134	4153.54	10.55	4.24	20.20
	Poderosa	M.F	280	1	P.280-MF1-3.75"	15/04/2014	22/04/2014						7.00	15.35	26980.00	185.16	145.711	52.04%	13.155	30.4	12/05/2014	27	10.55	25380	87.42	290.33	103.69%	4173	4134	4153.54	10.55	4.16	19.90
	Poderosa	M.F	280	1	P.280-MF1-5.5"	15/04/2014	22/04/2014	***1.00***	***1.40***	***2.05***	***0.57***	**5.5"**	7.00	15.45	17170.00	187.40	91.620	32.72%	13.41	30.7	12/05/2014	27	15.33	50610	184.55	274.24	97.94%	6032	6038	6035.00	15.33	12.85	30.50
	Poderosa	M.F	280	1	P.280-MF1-5.5"	15/04/2014	22/04/2014						7.00	15.45	34260.00	187.37	182.844	65.30%	13.19	30.6	12/05/2014	27	15.41	51410	186.51	275.64	98.44%	6063	6071	6067.00	15.41	13.07	30.30

																																			1		3.21	1.82	0.66						
RELACIÓN DE RESISTENCIAS POR RESULTADOS	Cantera	Método	f'c	TMN pulg.	código	FECHAS Vaciado	FECHAS Rotura	DOSIFICACIÓN cemento	DOSIFICACIÓN A grueso	DOSIFICACIÓN A.fino	DOSIFICACIÓN Agua (lt.)	Slump	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas	PESO kg.	ALTURA cm	Fecha Rotura 2	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas					PESO kg.	ALTURA cm	% aire	DOSIFICACIÓN cemento (kg)	DOSIFICACIÓN Bolsas de cemento	DOSIFICACIÓN A grueso (kg)	DOSIFICACIÓN A.fino(kg)	DOSIFICACIÓN Agua (lt.)	% cemento	% agregados	% agregados % Grueso	% agregados % Fino	% agua	SLUMP
280	Socabaya	ACI	175	3/4	S.175-A3/4-2.0"	26/02/2014	05/03/2014	1.00	3.61	1.41	0.55	2"	7.00	14.92	36650.00	174.83	209.627	119.79%	0	0	27/03/2014	29	15.29	55870	183.69	304.15	173.80%	6025	6017	6021.00	15.29	0	0	2.00%	323.71	7.62	1169.57	457.85	177.67	14.90%	74.92%	71.87%	28.13%	8.18%	2.00
	Socabaya	ACI	175	3/4	S.175-A3/4-2.0"	26/02/2014	05/03/2014						7.00	14.89	29990.00	174.13	172.225	98.41%	0	0	27/03/2014	29	15.34	53970	184.76	292.10	166.92%	6032	6045	6038.50	15.34	0	0												
	Socabaya	ACI	210	3/4	S.210-A3/4-1.0"	27/02/2014	06/03/2014	1.00	3.61	1.13	0.54	1"	7.00	14.93	38830.00	174.95	221.95	105.69%	0	0	28/03/2014	29	15.33	56020.00	184.67	303.35	144.45%	6052	6022	6037.00	15.33	0.00	0.00	2.00%	336.53	7.92	1214.07	379.50	180.34	15.63%	74.00%	76.19%	23.81%	8.37%	1.00
	Socabaya	ACI	210	3/4	S.210-A3/4-1.0"	27/02/2014	06/03/2014						7.00	14.93	40720.00	174.95	232.75	110.83%	0	0	28/03/2014	29	15.32	57920.00	184.43	314.05	149.55%	6038	6028	6033.00	15.32	0.00	0.00												
	Socabaya	ACI	210	3/4	S.210-A3/4-2.0"	27/02/2014	06/03/2014	1.00	3.35	0.93	0.93	2"	7.00	14.95	33900.00	175.59	193.07	91.94%	0	0	28/03/2014	29	15.34	58180.00	184.79	314.84	149.92%	6036	6042	6039.00	15.34	0.00	0.00	2.00%	313.58	7.38	1049.70	292.93	292.93	15.77%	67.51%	78.18%	21.82%	14.73%	2.00
	Socabaya	ACI	210	3/4	S.210-A3/4-2.0"	27/02/2014	06/03/2014						7.00	15.10	36050.00	179.08	201.31	95.86%	0	0	28/03/2014	29	15.32	58520.00	184.27	317.57	151.22%	6026	6035	6030.50	15.32	0.00	0.00												
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	28/02/2014	07/03/2014	1.00	3.42	1.15	0.56	2"	7.00	15.10	22040.00	179.08	123.074	43.96%	0	0	31/03/2014	31	15.31	54070	184.03	293.81	104.93%	6032	6021	6026.50	15.31	0	0	2.00%	343.33	8.08	1172.66	393.65	191.76	16.01%	73.05%	74.87%	25.13%	8.94%	2.00
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	28/02/2014	07/03/2014						7.00	14.95	33880.00	175.54	193.006	68.93%	0	0	31/03/2014	31	15.33	55120	184.46	298.82	106.72%	6042	6025	6033.50	15.33	0	0												
	Socabaya	ACI	280	3/4	S.280-A3/4-4.0"	28/02/2014	07/03/2014	1.00	3.00	2.00	0.65	4"	7.00	14.93	29910.00	175.07	170.847	61.02%	0	0	31/03/2014	31	15.30	51040.00	183.82	277.67	99.17%	6018	6028	6023.00	15.30	0.00	0.00	2.00%	320.68	7.55	962.38	641.69	208.43	14.73%	73.69%	60.00%	40.00%	9.58%	4.00
	Socabaya	ACI	280	3/4	S.280-A3/4-4.0"	28/02/2014	07/03/2014						7.00	14.92	28570.00	174.83	163.412	58.36%	0	0	31/03/2014	31	15.28	51220.00	183.45	279.20	99.72%	6009	6025	6017.00	15.28	0.00	0.00												
	Socabaya	ACI	280	3/4	S.280-A3/4-2.8"	11/03/2014	18/03/2014	1.00	2.96	1.46	0.53	2.8"	7.00	15.15	39030.00	180.17	216.627	77.37%	0	0	10/04/2014	30	15.02	50750.00	177.16	286.46	102.31%	5921	5905	5913.00	15.02	0.00	0.00	2.00%	358.43	8.43	1061.94	522.36	191.72	16.46%	72.74%	67.03%	32.97%	8.80%	2.80
	Socabaya	ACI	280	3/4	S.280-A3/4-2.8"	11/03/2014	18/03/2014						7.00	15.17	40080.00	180.75	221.747	79.20%	0	0	10/04/2014	30	15.06	46660.00	178.03	262.09	93.60%	5935	5920	5927.50	15.06	0.00	0.00												
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	11/03/2014	18/03/2014	1.00	2.54	1.15	0.49	2.0"	7.00	15.09	34280.00	178.84	191.675	68.46%	0	0	10/04/2014	30	15.03	64250.00	177.34	362.29	129.39%	5930	5902	5916.00	15.03	0.00	0.00	2.00%	410.50	9.66	1041.13	470.89	200.79	18.95%	69.79%	68.86%	31.14%	9.27%	2.00
	Socabaya	ACI	280	3/4	S.280-A3/4-2.0"	11/03/2014	18/03/2014						7.00	15.12	37325.00	179.54	207.895	74.25%	0	0	10/04/2014	30	14.99	62920.00	176.47	356.54	127.34%	5879	5924	5901.50	14.99	0.00	0.00												
	Socabaya	ACI	280	3/4	S.280-A3/4-3.0"	12/03/2014	21/03/2014	1.00	2.75	1.39	0.49	3"	9.00	15.28	54730.00	183.30	298.586	106.64%	0	0	10/04/2014	29	15.06	68040	178.03	382.18	136.49%	6005	5850	5927.50	15.06	0.00	0.00	2.00%	381.85	8.98	1048.58	530.20	186.81	17.43%	72.05%	66.42%	33.58%	8.53%	3.00
	Socabaya	ACI	280	3/4	S.280-A3/4-3.0"	12/03/2014	21/03/2014						9.00	15.29	56880.00	183.57	309.851	110.66%	0	0	10/04/2014	29	15.02	66100	177.07	373.29	133.32%	5976	5847	5911.50	15.02	0.00	0.00												
	Socabaya	MF	175	3/4	S.175-MF3/4-3.0"	14/03/2014	21/03/2014	1.00	1.89	1.75	0.51	3"	7.00	15.20	46220.00	181.53	254.608	145.49%	0	0	12/04/2014	29	14.99	60100	176.56	340.39	194.51%	5902	5904	5903.00	14.99	0.00	0.00	2.00%	421.31	9.91	798.04	738.68	213.69	19.01%	69.35%	51.93%	48.07%	9.64%	3.00
	Socabaya	MF	175	3/4	S.175-MF3/4-3.0"	14/03/2014	21/03/2014						7.00	15.14	47150.00	179.99	261.958	149.69%	0	0	12/04/2014	29	15.05	59080	177.97	331.96	189.69%	5916	5937	5926.50	15.05	0.00	0.00												
	Socabaya	MF	175	3/4	S.175-MF3/4-4.3"	14/03/2014	21/03/2014	1.00	1.82	1.43	0.49	4.3"	7.00	15.16	48360.00	180.50	267.916	153.09%	0	0	12/04/2014	29	15.09	58860	178.84	329.11	188.06%	5915	5967	5941.00	15.09	0.00	0.00	2.00%	453.61	10.67	823.36	648.97	222.15	20.69%	67.17%	55.92%	44.08%	10.14%	4.30
	Socabaya	MF	175	3/4	S.175-MF3/4-4.3"	14/03/2014	21/03/2014						7.00	15.14	48580.00	179.99	269.903	154.23%	0	0	12/04/2014	29	15.09	59780	178.91	334.14	190.94%	5947	5937	5942.00	15.09	0.00	0.00												
	Socabaya	MF	175	3/4	S.175-MF3/4-2.8"	14/03/2014	21/03/2014	1.00	1.72	1.36	0.55	2.8"	7.00	15.18	48270.00	181.05	266.613	152.35%	0	0	12/04/2014	29	15.14	65130	179.93	361.97	206.84%	5974	5944	5959.00	15.14	0.00	0.00	2.00%	455.64	10.72	785.45	619.09	249.01	21.17%	65.26%	55.92%	44.08%	11.57%	2.80
	Socabaya	MF	175	3/4	S.175-MF3/4-2.8"	14/03/2014	21/03/2014						7.00	15.15	48320.00	180.32	267.964	153.12%	0	0	12/04/2014	29	15.09	64640	178.94	361.25	206.43%	5950	5935	5942.50	15.09	0.00	0.00												
	Socabaya	MF	175	3/4	S.175-MF3/4-5.0"	14/03/2014	21/03/2014	1.00	1.76	1.44	0.58	5"	7.00	15.11	39140.00	179.30	218.297	124.74%	0	0	12/04/2014	29	14.79	52560	171.90	305.76	174.72%	5826	5823	5824.50	14.79	0.00	0.00	2.00%	440.64	10.37	774.96	634.57	253.62	20.53%	65.66%	54.98%	45.02%	11.81%	5.00
	Socabaya	MF	175	3/4	S.175-MF3/4-5.0"	14/03/2014	21/03/2014						7.00	15.12	40090.00	179.66	223.146	127.51%	0	0	12/04/2014	29	14.92	56290	174.83	321.96	183.98%	5898	5850	5874.00	14.92	0.00	0.00												
	Socabaya	MF	210	3/4	S.210-MF3/4-1.8"	14/03/2014	21/03/2014	1.00	1.81	1.44	0.53	1.8"	7.00	15.21	47160.00	181.63	259.656	123.65%	0	0	12/04/2014	29	15.39	61460	185.99	330.45	157.36%	6067	6050	6058.50	15.39	0	0	2.00%	444.83	10.47	803.45	641.70	236.78	20.50%	66.59%	55.60%	44.40%	10.91%	1.80
	Socabaya	MF	210	3/4	S.210-MF3/4-1.8"	14/03/2014	21/03/2014						7.00	15.22	47470.00	181.87	261.014	124.29%	0	0	12/04/2014	29	15.46	65380	187.62	348.47	165.94%	6090	6080	6085.00	15.46	0	0												
	Socabaya	MF	210	3/4	S.210-MF3/4-4.0"	17/03/2014	26/03/2014	1.00	1.81	1.44	0.54	4"	9.00	15.23	52920.00	182.11	290.59	138.38%	0	0	16/04/2014	30	15.49	65110.00	188.55	345.33	164.44%	6102	6098	6100.00	15.49	0.00	0.00	2.00%	443.98	10.45	801.93	640.48	238.19	20.48%	66.53%	55.60%	44.40%	10.99%	4.00
	Socabaya	MF	210	3/4	S.210-MF3/4-4.0"	17/03/2014	26/03/2014						9.00	15.19	52670.00	181.11	290.82	138.48%	0	0	16/04/2014	30	15.37	65430.00	185.62	352.49	167.85%	6075	6030	6052.50	15.37	0.00	0.00												
	Socabaya	MF	210	3/4	S.210-MF3/4-2.0"	17/03/2014	26/03/2014	1.00	1.66	1.25	0.53	2"	9.00	15.26	53250.00	182.93	291.09	138.62%	0	0	16/04/2014	30	15.11	56460.00	179.39	314.74	149.88%	5947	5953	5950.00	15.11	0.00	0.00	2.00%	473.67	11.15	788.53	593.48	250.21	22.04%	64.31%	57.06%	42.94%	11.64%	2.00
	Socabaya	MF	210	3/4	S.210-MF3/4-2.0"	17/03/2014	26/03/2014						9.00	15.29	51780.00	183.63	281.98	134.27%	0	0	16/04/2014	30	15.10	59030.00	179.09	329.62	156.96%	5960	5930	5945.00	15.10	0.00	0.00												
	Socabaya	MF	280	3/4	S.280-MF3/4-3.5"	17/03/2014	26/03/2014	1.00	1.72	1.33	0.51	3.5"	9.00	15.17	54590.00	180.78	301.975	107.85%	0	0	16/04/2014	30	14.92	64580.00	174.83	369.38	131.92%	5918	5830	5874.00	14.92	0.00	0.00	2.00%	465.24	10.95	799.72	620.41	238.72	21.47%	65.52%	56.31%	43.69%	11.01%	3.50
	Socabaya	MF	280	3/4	S.280-MF3/4-3.5"	17/03/2014	26/03/2014						9.00	15.15	53400.00	180.35	296.086	105.74%	0	0	16/04/2014	30	15.00	66320.00	176.68	375.36	134.06%	5815	5995	5905.00	15.00	0.00	0.00												
	Socabaya	MF	280	3/4	S.280-MF3/4-3.8"	17/03/2014	26/03/2014	1.00	1.65	1.28	0.49	3.8"	9.00	15.30	56220.00	183.91	305.697	109.18%	0	0	16/04/2014	30	15.00	63230.00	176.65	357.93	127.83%	5879	5930	5904.50	15.00	0.00	0.00	2.00%	482.83	11.36	795.48	617.13	235.61	22.20%	64.96%	56.31%	43.69%	10.83%	3.80
	Socabaya	MF	280	3/4	S.280-MF3/4-3.8"	17/03/2014	26/03/2014						9.00	15.33	54430.00	184.67	294.740	105.26%	0	0	16/04/2014	30	15.07	68560.00	178.36	384.38	137.28%	5960	5906	5933.00	15.07	0.00	0.00												
	Socabaya	MF	280	3/4	S.280-MF3/4-4.2"	17/03/2014	26/03/2014	1.00	1.54	1.21	0.51	4.2"	9.00	15.30	55970.00	183.79	304.540	108.76%	0	0	16/04/2014	30	15.02	65600.00	177.10	370.41	132.29%	5990	5834	5912.00	15.02	0.00	0.00	2.00%	495.70	11.66	765.10	600.77	250.54	23.00%	63.38%	56.02%	43.98%	11.63%	4.20
	Socabaya	MF	280	3/4	S.280-MF3/4-4.2"	17/03/2014	26/03/2014						9.00	15.33	55450.00	184.55	300.462	107.31%	0	0	16/04/2014	30	15.22	64450.00	181.87	354.38	126.56%	6022	5960	5991.00	15.22	0.00	0.00												
	Socabaya	MF	280	3/4	S.280-MF3/4-4.5"	18/03/2014	26/03/2014	1.00	1.63	1.31	0.49	4.5"	8.00	15.34	53460.00	184.89	289.152	103.27%	0	0	19/04/2014	32	14.95	63600	175.58	362.23	129.37%	5848	5925	5886.50	14.95	0.00	0.00	2.00%	480.61	11.31	784.56	631.28	236.41	22.08%	65.05%	55.41%	44.59%	10.86%	4.50
	Socabaya	MF	280	3/4	S.280-MF3/4-4.5"	18/03/2014	26/03/2014						8.00	15.33	55010.00	184.52	298.127	106.47%	0	0	19/04/2014	32	15.02	63730	177.19	359.66	128.45%	5977	5850	5913.50	15.02	0.00	0.00												
	Socabaya	ACI	280	1	S.280-A1-3.0"	09/04/2014	16/04/2014	1.00	1.91	1.49	0.56	3"	7.00	15.32	38920.00	184.30	211.172	75.42%	0	0	06/05/2014	27	15.08	48880	178.51	273.82	97.79%	5951	5920	5935.50	15.08	29.75	11.50	1.50%	439.40	10.34	838.86	654.49	245.82	19.87%	67.52%	56.17%	43.83%	11.11%	3.00
	Socabaya	ACI	280	1	S.280-A1-3.0"	09/04/2014	16/04/2014						7.00	14.94	39210.00	175.19	223.81	79.93%	0	0.0	06/05/2014	27	15.05	49690	177.91	279.29	99.7%	5866	5985	5926	15.05	30.1	11.58												
	Socabaya	M.F	280	1	S.280-MF1-2.0"	11/04/2014	21/04/2014	1.00	1.36	1.69	0.54	2"	10.00	15.06	42540.00	178.03	238.945	85.34%	11.23	29.7	08/05/2014	27	15.01	52030	176.95	294.03	105.01%	5884	5935	5909.50	15.01	11.64	29.90	1.50%	479.54	11.28	650.10	810.17	257.81	21.49%	65.45%	44.52%	55.48%	11.56%	2.00
	Socabaya	M.F	280	1	S.280-MF1-2.0"	11/04/2014	21/04/2014						10.00	15.02	46140.00	177.07	260.570	93.06%	11.21	29.8	08/05/2014	27	14.86	47340	173.35	273.09	97.53%	5848	5850	5849.00	14.86	11.43	29.8												
	Socabaya	M.F	280	1	S.280-MF1-3.0"	11/04/2014	21/04/2014	1.00	1.35	1.66	0.55	3"	10.00	14.92	40570.00	174.74	232.168	82.92%	11.42	29.8	08/05/2014	27	14.95	49350	175.55	281.12	100.40%	5857	5915	5886.00	14.95	11.485	30.1	1.50%	479.67	11.29	649.62	797.26	262.47	21.58%	65.11%	44.90%	55.10%	11.81%	3.00
	Socabaya	M.F	280	1	S.280-MF1-3.0"	11/04/2014	21/04/2014						10.00	15.13	43540.00	179.75	242.23	86.51%	11.09	29.1	08/05/2014	27	15.06	50130.00	178.15	281.39	100.50%	6012	5847	5929.50	15.06	11.62	29.90												
	Socabaya	M.F	280	1	S.280-MF1-5.0"	11/04/2014	21/04/2014	1.00	1.29	1.51	0.55	5"	10.00	15.02	41380.00	177.07	233.69	83.46%	11.29	29.8	08/05/2014	27	15.07	50300.00	178.39	281.96	100.70%	5937	5930	5933.50	15.07	11.42	30.10	1.50%	498.89	11.74	644.68	751.58	273.74	22.66%	63.41%	46.17%	53.83%	12.43%	5.00
	Socabaya	M.F	280	1	S.280-MF1-5.0"	11/04/2014	21/04/2014						10.00	15.04	40120.00	177.67	225.81	80.65%	11.18	30.2	08/05/2014	27	15.10	50050.00	179.09	279.48	99.81%	5932	5958	5945.00	15.10	11.65	29.90												

RELACIÓN DE RESISTENCIAS POR RESULTADOS

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f'c	Cantera	Método	f'c	TMN pulg.	código	FECHAS Vaciado	FECHAS Rotura	DOSIFICACIÓN cemento	DOSIFICACIÓN A grueso	DOSIFICACIÓN A.fino	DOSIFICACIÓN Agua (lt.)	Slump	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas	PESO kg.	ALTURA cm	Fecha Rotura 2	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas					PESO kg.	ALTURA cm	DOSIFICACIÓN % aire	DOSIFICACIÓN cemento (kg)	DOSIFICACIÓN Bolsas de cemento	DOSIFICACIÓN A grueso (kg)	DOSIFICACIÓN A.fino(kg)	DOSIFICACIÓN Agua (lt.)	% cemento	% agregados	% agregados % Grueso	% agregados % Fino	% agua	SLUMP
175	Cono Norte	ACI	175	0.75	C.N175-A3/4-3.0"	28/02/2014	07/03/2014	1.00	2.51	1.74	0.63	3"	7	15.0	31980.0	177.0	180.7	103.27%	0	0	31/03/2014	31	15.165	41050.000	180.625	227.266	129.87%	5986	5955	5970.50	15.17	0.00	0.00	2.00%	343.97	8.09	863.25	597.64	215.81	16.68%	70.85%	59.09%	40.91%	10.47%	3.00
	Cono Norte	ACI	175	0.75	C.N175-A3/4-3.0"	28/02/2014	07/03/2014						7	15.1	25430.0	179.1	142.0	81.15%	0	0	31/03/2014	31	15.157	40760.000	180.444	225.887	129.08%	5974	5961	5967.50	15.16	0.00	0.00												
	Cono Norte	ACI	175	0.75	C.N175-A3/4-4.5"	03/03/2014	12/03/2014	1.00	3.20	1.34	0.72	4.5"	9	15.3	33250.0	183.7	181.0	103.45%	0	0	31/03/2014	28	15.190	44370.000	181.231	244.826	139.90%	5975	5986	5980.50	15.19	0.00	0.00	2.00%	316.76	7.45	1013.63	425.94	229.15	15.63%	71.05%	70.41%	29.59%	11.31%	4.50
	Cono Norte	ACI	175	0.75	C.N175-A3/4-4.5"	03/03/2014	12/03/2014						9	15.3	35730.0	184.5	193.6	110.63%	0	0	31/03/2014	28	15.124	44510.000	179.659	247.748	141.57%	5958	5951	5954.50	15.12	0.00	0.00												
	Cono Norte+ Soc.	MF	175	0.75	C.N175-MF3/4-4.8"	24/03/2014	31/03/2014	1.00	2.03	1.51	0.60	4.8"	7	15.2	24310.0	180.6	134.6	76.93%	0	0	21/04/2014	28	15.004	38110.000	176.804	215.550	123.17%	5910	5904	5907.00	15.00	11.71	29.60	2.00%	391.75	9.22	793.48	591.92	233.16	19.10%	67.54%	57.27%	42.73%	11.37%	4.80
	Cono Norte	MF	175	0.75	C.N175-MF3/4-4.8"	24/03/2014	31/03/2014						7	15.2	24470.0	180.7	135.4	77.39%	0	0	21/04/2014	28	15.004	37670.000	176.804	213.061	121.75%	5955	5859	5907.00	15.00	11.72	29.65												
	Cono Norte	ACI	175	1.00	C.N175-A1-6.5"	07/03/2014	14/03/2014	1.00	3.62	1.57	0.64	6.5"	7	15.3	16530.0	184.9	89.4	51.09%	0	0	05/04/2014	29	14.992	35410.000	176.534	200.584	114.62%	5975	5830	5902.50	14.99	0.00	0.00	1.50%	314.29	7.40	1136.40	491.92	201.15	14.44%	74.82%	69.79%	30.21%	9.24%	6.50
	Cono Norte	ACI	175	1.00	C.N175-A1-6.5"	07/03/2014	14/03/2014						7	15.3	21120.0	183.5	115.1	65.78%	0	0	05/04/2014	29	15.022	33460.000	177.223	188.802	107.89%	5878	5950	5914.00	15.02	0.00	0.00												
	Cono Norte	ACI	175	1.00	C.N175-A1-7.5"	07/03/2014	14/03/2014	1.00	3.35	1.46	0.63	7.5"	7	15.2	28090.0	181.4	154.9	88.49%	0	0	05/04/2014	29	14.991	36810.000	176.504	208.550	119.17%	5927	5877	5902.00	14.99	0.00	0.00	1.50%	331.31	7.80	1111.23	482.34	209.54	15.29%	73.54%	69.73%	30.27%	9.67%	7.50
	Cono Norte	ACI	175	1.00	C.N175-A1-7.5"	07/03/2014	14/03/2014						7	15.3	31250.0	183.7	170.1	97.23%	0	0	05/04/2014	29	15.494	35860.000	188.546	190.192	108.68%	6050	6150	6100.00	15.49	0.00	0.00												
210	Cono Norte	ACI	210	0.75	C.N210-A3/4-3.0"	03/03/2014	12/03/2014	1.00	2.61	1.23	0.50	3"	9	15.35	47800.00	185.01	258.37	123.03%	0	0	31/03/2014	28	15.29	46410.00	183.51	252.90	120.43%	6031	6005	6018.00	15.29	0.00	0.00	2.00%	383.22	9.02	998.60	472.73	193.01	18.34%	70.42%	67.87%	32.13%	9.24%	3.00
	Cono Norte	ACI	210	0.75	C.N210-A3/4-3.0"	03/03/2014	12/03/2014						9	15.31	47230.00	184.21	256.39	122.09%	0	0	31/03/2014	28	15.23	46790.00	182.23	256.76	122.27%	5984	6010	5997.00	15.23	0.00	0.00												
	Cono Norte	ACI	210	0.75	C.N210-A3/4-2.3"	03/03/2014	12/03/2014	1.00	2.41	1.09	0.47	2.3"	9	15.34	38850.00	184.73	210.30	100.14%	0	0	31/03/2014	28	15.31	49580.00	184.09	269.32	128.25%	6017	6038	6027.50	15.31	0.00	0.00	2.00%	412.56	9.71	995.17	450.19	193.74	19.71%	69.04%	68.85%	31.15%	9.25%	2.30
	Cono Norte	ACI	210	0.75	C.N210-A3/4-2.3"	03/03/2014	12/03/2014						9	15.34	37560.00	184.70	203.35	96.84%	0	0	31/03/2014	28	15.32	49210.00	184.30	267.00	127.14%	6041	6021	6031.00	15.32	0.00	0.00												
	Cono Norte	ACI	280	0.75	C.N280-A3/4-6.5"	04/03/2014	12/03/2014	1.00	2.74	1.06	0.60	6.5"	8	15.23	33630.00	182.26	184.51	65.90%	0	0	03/04/2014	30	15.06	47660.00	178.15	267.52	95.54%	5920	5939	5929.50	15.06	0.00	0.00	2.00%	371.34	8.74	1016.38	392.22	222.92	18.17%	68.92%	72.16%	27.84%	10.91%	6.50
	Cono Norte	ACI	280	0.75	C.N280-A3/4-6.5"	04/03/2014	12/03/2014						8	15.19	30120.00	181.20	166.22	59.37%	0	0	03/04/2014	30	15.03	46250.00	177.43	260.66	93.09%	5970	5865	5917.50	15.03	0.00	0.00												
	Cono Norte	MF	210	0.75	C.N210-MF3/4-7.0"	24/03/2014	31/03/2014	1.00	1.79	1.22	0.57	7"	7	15.21	38580.00	181.75	212.27	101.08%	0	0	21/04/2014	28	15.04	48530.00	177.76	273.00	130.00%	5974	5872	5923.00	15.04	11.46	29.70	2.00%	435.82	10.25	778.96	530.98	249.91	21.40%	64.33%	59.47%	40.53%	12.27%	7.00
	Cono Norte	MF	210	0.75	C.N210-MF3/4-7.0"	24/03/2014	31/03/2014						7	15.14	39410.00	179.96	218.99	104.28%	0	0	21/04/2014	28	14.94	50310.00	175.34	286.93	136.63%	5854	5911	5882.50	14.94	11.40	29.50												
	Cono Norte	MF	210	0.75	C.N210-MF3/4-3.6"	25/03/2014	02/04/2014	1.00	1.85	1.44	0.52	3.6"	8	14.97	48420.00	176.09	274.98	130.94%	0	0	22/04/2014	28	15.32	60830.00	184.27	330.11	157.19%	6060	6001	6030.50	15.32	11.88	29.60	2.00%	422.04	9.93	781.03	607.78	221.53	20.35%	66.97%	56.24%	43.76%	10.68%	3.60
	Cono Norte	MF	210	0.75	C.N210-MF3/4-3.6"	25/03/2014	02/04/2014						8	15.03	50220.00	177.40	283.08	134.80%	0	0	22/04/2014	28	15.43	50420.00	186.91	269.75	128.45%	6074	6073	6073.50	15.43	12.91	30.60												
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014	1.00	1.79	1.26	0.50	3.5"	8	14.99	50080.00	176.50	283.73	101.33%	0	0	22/04/2014	28	15.64	60240.00	192.02	313.71	112.04%	6155	6157	6156.00	15.64	12.93	30.50	2.00%	446.63	10.51	799.97	562.52	223.31	21.54%	65.70%	58.71%	41.29%	10.77%	3.50
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014						8	15.15	50790.00	180.26	281.76	100.63%	0	0	22/04/2014	28	15.63	53600.00	191.81	279.45	99.80%	6123	6182	6152.50	15.63	12.73	30.30												
	Cono Norte	MF	175	1.00	C.N175-MF1-6.0"	26/03/2014	02/04/2014	1.00	2.03	1.51	0.60	6"	7	15.04	29860.00	177.61	168.12	96.07%	0	0	23/04/2014	28	14.83	40480.00	172.67	234.44	133.97%	5865	5810	5837.50	14.83	11.45	29.70	1.50%	408.19	9.60	826.78	616.76	242.95	19.19%	67.88%	57.27%	42.73%	11.42%	6.00
	Cono Norte	MF	175	1.00	C.N175-MF1-6.0"	26/03/2014	02/04/2014						7	15.00	30750.00	176.68	174.04	99.45%	0	0	23/04/2014	28	14.85	45940.00	173.17	265.29	151.59%	5802	5890	5846.00	14.85	11.68	29.60												
	Cono Norte	MF	175	1.00	C.N175-MF1-5.0"	26/03/2014	02/04/2014	1.00	1.70	2.09	0.59	5"	7	14.92	39340.00	174.80	225.05	128.60%	0	0	23/04/2014	28	15.02	44070.00	177.19	248.71	142.12%	5892	5935	5913.50	15.02	11.78	29.90	1.50%	390.38	9.19	663.21	817.28	232.15	18.28%	69.34%	44.80%	55.20%	10.87%	5.00
	Cono Norte	MF	175	1.00	C.N175-MF1-5.0"	26/03/2014	02/04/2014						7	15.14	37390.00	179.93	207.80	118.74%	0	0	23/04/2014	28	15.06	48320.00	178.12	271.27	155.01%	5951	5907	5929.00	15.06	11.82	30.10												
	Cono Norte	MF	210	1.00	C.N210-MF1-3.0"	27/03/2014	03/04/2014	1.00	1.71	2.04	0.56	3"	7	15.33	37540.00	184.49	203.48	96.90%	0	0	24/04/2014	28	15.34	41100.00	184.85	222.34	105.87%	6010	6070	6040.00	15.34	12.71	30.80	1.50%	398.56	9.38	681.33	813.28	223.52	18.55%	69.55%	45.59%	54.41%	10.40%	3.00
	Cono Norte	MF	210	1.00	C.N210-MF1-3.0"	27/03/2014	03/04/2014						7	15.43	42780.00	186.94	228.84	108.97%	0	0	24/04/2014	28	15.45	56350.00	187.40	300.69	143.18%	6073	6090	6081.50	15.45	12.81	30.50												
	Cono Norte	ACI	210	1.00	C.N210-A1-2.9"	12/03/2014	21/03/2014	1.00	2.53	1.56	0.57	2.9"	9	15.24	44070.00	182.35	241.67	115.08%	0	0	10/04/2014	29	15.09	48320.00	178.84	270.18	128.66%	5992	5890	5941.00	15.09	0.00	0.00	1.50%	376.29	8.85	952.49	587.95	214.60	17.39%	71.19%	61.83%	38.17%	9.92%	2.90
	Cono Norte	ACI	210	1.00	C.N210-A1-2.9"	12/03/2014	21/03/2014						9	15.21	45120.00	181.69	248.34	118.26%	0	0	10/04/2014	29	15.05	51630.00	177.82	290.35	138.26%	5850	5998	5924.00	15.05	0.00	0.00												
	Cono Norte	ACI	210	1.00	C.N210-A1-3.8"	12/03/2014	21/03/2014	1.00	2.88	1.51	0.60	3.8"	9	15.28	35820.00	183.36	195.36	93.03%	0	0	10/04/2014	29	15.00	41860.00	176.65	236.96	112.84%	5879	5930	5904.50	15.00	0.00	0.00	1.50%	355.67	8.37	1024.33	537.78	213.40	16.44%	72.20%	65.57%	34.43%	9.86%	3.80
	Cono Norte	ACI	210	1.00	C.N210-A1-3.8"	12/03/2014	21/03/2014						9	15.30	35410.00	183.75	192.70	91.76%	0	0	10/04/2014	29	15.39	40070.00	186.08	215.34	102.54%	6065	6055	6060.00	15.39	0.00	0.00												
	Cono Norte	ACI	210	1.00	C.N210-A1-4.2"	12/03/2014	21/03/2014	1.00	3.02	1.45	0.59	4.2"	9	15.20	37380.00	181.53	205.91	98.05%	0	0	10/04/2014	29	15.40	41660.00	186.27	223.66	106.50%	6073	6053	6063.00	15.40	0.00	0.00	1.50%	353.12	8.31	1065.31	513.37	207.72	16.26%	72.68%	67.48%	32.52%	9.56%	4.20
	Cono Norte	ACI	210	1.00	C.N210-A1-4.2"	12/03/2014	21/03/2014						9	15.21	37540.00	181.69	206.62	98.39%	0	0	10/04/2014	29	15.46	41630.00	187.71	221.78	105.61%	6051	6122	6086.50	15.46	0.00	0.00												
280	Cono Norte	ACI	175	0.75	C.N175-A3/4-3.5"	03/03/2014	12/03/2014	1.00	3.02	1.20	0.63	3.5"	9	15.28	34460.00	183.39	187.91	107.38%	0	0	31/03/2014	28	15.27	52350	183.21	285.74	163.28%	6002	6024	6013.00	15.27	0.00	0.00	2.00%	343.01	8.07	1036.57	411.94	215.39	16.75%	70.73%	71.56%	28.44%	10.52%	3.50
	Cono Norte	ACI	175	0.75	C.N175-A3/4-3.5"	03/03/2014	12/03/2014						9	15.26	33050.00	182.93	180.67	103.24%	0	0	31/03/2014	28	15.29	51970	183.57	283.10	161.77%	6012	6026	6019.00	15.29	0.00	0.00												
	Cono Norte	ACI	175	0.75	C.N175-A3/4-3.1"	03/03/2014	12/03/2014	1.00	2.87	1.34	0.69	3.1"	9	15.27	41720.00	183.15	227.80	130.17%	0	0	31/03/2014	28	15.29	58960	183.72	320.92	183.38%	6018	6025	6021.50	15.29	0.00	0.00	2.00%	336.65	7.92	966.40	452.62	232.43	16.59%	69.95%	68.10%	31.90%	11.46%	3.10
	Cono Norte	ACI	175	0.75	C.N175-A3/4-3.1"	03/03/2014	12/03/2014						9	15.34	39530.00	184.85	213.84	122.20%	0	0	31/03/2014	28	15.34	57580	184.82	311.54	178.02%	6005	6074	6039.50	15.34	0.00	0.00												
	Cono Norte	ACI	210	0.75	C.N210-A3/4-1.5"	03/03/2014	12/03/2014	1.00	2.49	1.17	0.47	1.5"	9	15.28	43760.00	183.27	238.78	113.70%	0	0	31/03/2014	28	15.31	56080	184.21	304.43	144.97%	6038	6021	6029.50	15.31	0.00	0.00	2.00%	401.04	9.44	998.67	470.59	187.62	19.10%	69.97%	67.97%	32.03%	8.93%	1.50
	Cono Norte	ACI	210	0.75	C.N210-A3/4-1.5"	03/03/2014	12/03/2014						9	15.25	43750.00	182.54	239.68	114.13%	0	0	31/03/2014	28	15.34	55910	184.82	302.50	144.05%	6054	6025	6039.50	15.34	0.00	0.00												
	Cono Norte	ACI	210	0.75	C.N210-A3/4-2.0"	03/03/2014	12/03/2014	1.00	2.40	0.88	0.44	2"	9	15.48	61350.00	188.11	326.13	155.30%	0	0	31/03/2014	28	15.25	63460	182.75	347.25	165.36%	6016	5995	6005.50	15.25	0.00	0.00	2.00%	435.29	10.24	1044.18	382.95	191.74	20.77%	68.09%	73.17%	26.83%	9.15%	2.00
	Cono Norte	ACI	210	0.75	C.N210-A3/4-2.0"	03/03/2014	12/03/2014						9	15.40	62820.00	186.17	337.43	160.68%	0	0	31/03/2014	28	15.27	63570	183.15	347.10	165.29%	6022	6002	6012.00	15.27	0.00	0.00												
	Cono Norte	ACI	210	0.75	C.N210-A3/4-2.5"	03/03/2014	12/03/2014	1.00	2.89	1.18	0.49	2.5"	9	15.37	47960.00	185.50	258.55	123.12%	0	0	31/03/2014	28	15.34	65710	184.85	355.47	169.27%	6058	6022	6040.00	15.34	0.00	0.00	2.00%	369.85	8.70	1068.17	437.09	181.05	17.63%	71.74%	70.96%	29.04%	8.63%	2.50
	Cono Norte	ACI	210	0.75	C.N210-A3/4-2.5"	03/03/2014	12/03/2014						9	15.34	49520.00	184.79	267.97	127.61%	0	0	31/03/2014	28	15.32	63590	184.43	344.80	164.19%	6045	6021	6033.00	15.32	0.00	0.00												
	Cono Norte	ACI	280	0.75	C.N280-A3/4-2.7"	04/03/2014	12/03/2014	1.00	2.41	1.01	0.55	2.7"	8	15.24	37040.00	182.35	203.12	72.54%	0	0	03/04/2014	30	15.07	54740	178.39	306.85	109.59%	6017	5850	5933.50	15.07	0.00	0.00	2.00%	405.29	9.54	976.11	408.14	222.62	19.74%	67.42%	70.52%	29.48%	10.84%	2.70
	Cono Norte	ACI	280	0.75	C.N280-A3/4-2.7"	04/03/2014	12/03/2014						8	15.23	40760.00	182.29	223.60	79.86%	0	0	03/04/2014	30	15.01	56870	176.92	321.44	114.80%	5897	5921	5909.00	15.01	0.00	0.00												
	Cono Norte	ACI	280	0.75	C.N280-A3/4-1.8"	04/03/2014	12/03/2014	1.00	2.29	1.14	0.46	1.8"	8	15.22	35780.00	182.05	196.54	70.19%	0	0	03/04/2014	30	15.04	57390	177.64	323.06	115.38%	5920	5922	5921.00	15.04	0.00	0.00	2.00%	419.89	9.88	963.11	478.62	193.80	20.02%	68.74%	66.80%	33.20%	9.24%	1.80
	Cono Norte	ACI	280	0.75	C.N280-A3/4-1.8"	04/03/2014	12/03/2014						8	15.25	48380.00	182.54	265.04	94.66%	0	0	03/04/2014	30	15.04	63010	177.73	354.52	126.61%	6020	5825	5922.50	15.04	0.00	0.00												
	Cono Norte	ACI	280	0.75	C.N280-A3/4-3.0"	04/03/2014	12/03/2014	1.00	2.70	1.17	0.54	3"	8	15.23	41010.00	182.11	225.19	80.43%	0	0	03/04/2014	30	15.04	60510	177.73	340.45	121.59%	5944	5901	5922.50	15.04	0.00	0.00	2.00%	374.61	8.81	1012.84	438.44	203.96	18.09%	70.07%	69.79%	30.21%	9.85%	3.00
	Cono Norte	ACI	280	0.75	C.N280-A3/4-3.0"	04/03/2014	12/03/2014						8	15.27	42770.00	183.11	233.57	83.42%	0	0	03/04/2014	30	14.95	60590	175.46	345.32	123.33%	5865	5904	5884.50	14.95	0.00	0.00												
	Cono Norte	ACI	280	0.75	C.N280-A3/4-1.4"	04/03/2014	12/03/2014	1.00	2.58	1.26	0.48	1.4"	8	15.21	56920.00	181.63	313.39	111.93%	0	0	03/04/2014	30	14.99	65800	176.50	372.80	133.14%	5866	5938	5902.00	14.99	0.00	0.00	2.00%	386.38	9.09	996.61	487.64	186.53	18.41%	70.71%	67.15%	32.85%	8.89%	1.40
	Cono Norte	ACI	280	0.75	C.N280-A3/4-1.4"	04/03/2014	12/03/2014						8	15.24	48080.00	182.48	263.49	94.10%	0	0	03/04/2014	30	14.93	75650	175.16	431.89	154.25%	5859	5900	5879.50	14.93	0.00	0.00												
	Cono Norte	MF	175	0.75	C.N175-MF3/4-7.0"	21/03/2014	28/03/2014	1.00	2.03	1.51	0.60	7"	7	15.18	32740.00	180.87	181.02	103.44%	0	0	21/04/2014	31	15.09	50630	178.78	283.19	161.82%	5943	5937	5940.00	15.09	11.87	30.10	2.00%	391.55	9.21	793.55	592.02	233.16	19.09%	67.55%	57.27%	42.73%	11.37%	7.00
	Cono Norte	MF	175	0.75	C.N175-MF3/4-7.0"	21/03/2014	28/03/2014						7	15.16	31950.00	180.44	177.06	101.18%	0	0	21/04/2014	31	15.14	52830	180.05	293.42	167.67%	5977	5945	5961.00	15.14	12.05	29.90												
	Cono Norte	MF	175	0.75	C.N175-MF3/4-3.0"	21/03/2014	28/03/2014	1.00	2.01	1.50	0.59	3"	7	15.21	42670.00	181.69	234.86	134.20%	0	0	21/04/2014	31	15.04	51020	177.55	287.35	164.20%	6022	5817	5919.50	15.04	11.88	29.20	2.00%	394.00	9.27	793.00	591.56	232.75	19.20%	67.46%	57.27%	42.73%	11.34%	3.00
	Cono Norte	MF	175	0.75	C.N175-MF3/4-3.0"	21/03/2014	28/03/2014						7	15.18	43010.00	181.05	237.56	135.75%	0	0	21/04/2014	31	15.02	56660	177.15	319.76	182.72%	5952	5875	5913.50	15.02	11.79	29.60												
	Cono Norte	MF	175	0.75	C.N175-MF3/4-6.8"	21/03/2014	28/03/2014	1.00	1.84	1.31	0.56	6.8"	7	15.31	44730.00	184.15	242.90	138.80%	0	0	21/04/2014	31	15.10	51020	179.15	284.80	162.74%	5917	5975	5946.00	15.10	11.79	29.70	2.00%	427.46	10.06	787.32	558.50	237.48	20.83%	65.59%	58.50%	41.50%	11.57%	6.80
	Cono Norte	MF	175	0.75	C.N175-MF3/4-6.8"	21/03/2014	28/03/2014						7	15.28	44980.00	183.39	245.27	140.15%	0	0	21/04/2014	31	15.03	55070	177.49	310.27	177.29%	6005	5832	5918.50	15.03	11.85	29.20												
	Cono Norte	MF	175	0.75	C.N175-MF3/4-1.8"	21/03/2014	28/03/2014	1.00	1.94	1.71	0.55	1.8"	7	15.15	44890.00	180.29	248.98	142.28%	0	0	21/04/2014	31	15.41	54520	186.39	292.51	167.15%	6050	6080	6065.00	15.41	13.03	30.50	2.00%	392.01	9.22	760.27	670.51	215.15	18.85%	68.80%	53.14%	46.86%	10.35%	1.80
	Cono Norte	MF	175	0.75	C.N175-MF3/4-1.8"	21/03/2014	28/03/2014						7	15.18	45220.00	181.02	249.81	142.75%	0	0	21/04/2014	31	14.93	55740	175.16	318.22	181.84%	5979	5780	5879.50	14.93	11.75	29.20												
	Cono Norte	MF	210	0.75	C.N210-MF3/4-4.2"	24/03/2014	31/03/2014	1.00	1.93	1.40	0.57	4.2"	7	15.18	41540.00	180.93	229.59	109.33%	0	0	21/04/2014	28	14.85	53180	173.20	307.04	146.21%	5849	5844	5846.50	14.85	11.56	29.50	2.00%	411.27	9.68	795.02	574.66	232.87	20.01%	66.65%	58.04%	41.96%	11.33%	4.20
	Cono Norte	MF	210	0.75	C.N210-MF3/4-4.2"	24/03/2014	31/03/2014						7	15.17	42210.00	180.81	233.45	111.17%	0	0	21/04/2014	28	15.01	55200	176.89	312.05	148.60%	5909	5908	5908.50	15.01	11.74	29.50												
	Cono Norte	MF	210	0.75	C.N210-MF3/4-6.0"	24/03/2014	31/03/2014	1.00	1.95	1.32	0.58	6"	7	15.22	40510.00	181.99	222.60	106.00%	0	0	21/04/2014	28	15.01	54390	176.86	307.53	146.44%	5876	5940	5908.00	15.01	11.69	29.60	2.00%	413.69	9.73	807.54	546.86	238.01	20.21%	66.16%	59.62%	40.38%	11.63%	6.00
	Cono Norte	MF	210	0.75	C.N210-MF3/4-6.0"	24/03/2014	31/03/2014						7	15.36	40820.00	185.28	220.31	104.91%	0	0	21/04/2014	28	15.02	54340	177.10	306.83	146.11%	5884	5940	5912.00	15.02	11.72	30.00												
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014	1.00	1.85	1.29	0.54	3.5"	8	15.25	47160.00	182.63	258.23	92.23%	0	0	22/04/2014	28	15.00	55830	176.74	315.88	112.81%	5920	5892	5906.00	15.00	11.79	30.05	2.00%	431.61	10.16	798.90	554.97	232.24	20.96%	65.76%	59.01%	40.99%	11.28%	3.50
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.5"	25/03/2014	02/04/2014						8	15.23	51240.00	182.29	281.09	100.39%	0	0	22/04/2014	28	15.05	58990	177.94	331.51	118.40%	5912	5940	5926.00	15.05	11.85	30.40												
	Cono Norte	MF	280	0.75	C.N280-MF3/4-4.2"	25/03/2014	02/04/2014	1.00	1.85	1.44	0.52	4.2"	8	15.53	53520.00	189.35	282.65	100.95%	0	0	22/04/2014	28	15.39	66320	185.99	356.58	127.35%	6085	6032	6058.50	15.39	12.53	30.60	2.00%	422.04	9.93	781.03	607.78	221.53	20.35%	66.97%	56.24%	43.76%	10.68%	4.20
	Cono Norte	MF	280	0.75	C.N280-MF3/4-4.2"	25/03/2014	02/04/2014						8	15.38	58750.00	185.68	316.40	113.00%	0	0	22/04/2014	28	15.35	59430	184.95	321.34	114.76%	6045	6038	6041.50	15.35	12.84	30.60												
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.2"	25/03/2014	02/04/2014	1.00	1.85	1.44	0.51	3.2"	8	15.12	50060.00	179.54	278.83	99.58%	0	0	22/04/2014	28	15.00	63530	176.80	359.33	128.33%	5860	5954	5907.00	15.00	11.95	30.40	2.00%	424.65	9.99	783.98	609.37	218.61	20.43%	67.05%	56.27%	43.73%	10.52%	3.20
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.2"	25/03/2014	02/04/2014						8	14.98	56200.00	176.21	318.95	113.91%	0	0	22/04/2014	28	15.00	66470	176.74	376.08	134.31%	5982	5830	5906.00	15.00	11.95	29.50												
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.0"	26/03/2014	02/04/2014	1.00	1.77	1.18	0.52	3"	7	14.97	40950.00	176.03	232.64	83.08%	0	0	23/04/2014	28	15.14	54480	180.14	302.43	108.01%	5955	5970	5962.50	15.14	11.67	29.50	2.00%	451.63	10.63	798.82	533.49	234.28	21.93%	64.69%	59.96%	40.04%	11.38%	3.00
	Cono Norte	MF	280	0.75	C.N280-MF3/4-3.0"	26/03/2014	02/04/2014						7	14.99	46250.00	176.41	262.17	93.63%	0	0	23/04/2014	28	14.95	57560	175.49	328.00	117.14%	5880	5890	5885.00	14.95	11.77	29.70												
	Cono Norte	ACI	210	1	C.N210-A1-2.5"	12/03/2014	21/03/2014	1.00	2.68	1.85	0.56	2.5"	9	15.30	49070.00	183.75	267.04	127.16%	0	0	10/04/2014	29	14.88	58760	173.97	337.76	160.84%	5819	5900	5859.50	14.88	0.00	0.00	1.50%	352.77	8.30	946.74	652.52	198.09	16.16%	73.26%	59.20%	40.80%	9.07%	2.50
	Cono Norte	ACI	210	1	C.N210-A1-2.5"	12/03/2014	21/03/2014						9	15.28	48170.00	183.33	262.75	125.12%	0	0	10/04/2014	29	14.93	57100	175.10	326.10	155.28%	5807	5950	5878.50	14.93	0.00	0.00												
	Cono Norte	ACI	210	1	C.N210-A1-1.5"	12/03/2014	21/03/2014	1.00	2.71	1.88	0.49	1.5"	9	15.25	48220.00	182.75	263.86	125.65%	0	0	10/04/2014	29	14.98	52360	176.21	297.15	141.50%	5876	5918	5897.00	14.98	0.00	0.00	1.50%	358.78	8.44	973.43	675.84	175.22	16.19%	74.41%	59.02%	40.98%	7.91%	1.50
	Cono Norte	ACI	210	1	C.N210-A1-1.5"	12/03/2014	21/03/2014						9	15.28	48920.00	183.39	266.76	127.03%	0	0	10/04/2014	29	14.96	53120	175.88	302.03	143.82%	5878	5905	5891.50	14.96	0.00	0.00												
	Cono Norte	ACI	280	1	C.N280-A1-3.7"	13/03/2014	22/03/2014	1.00	2.26	1.21	0.47	3.7"	9	15.22	56080.00	181.99	308.15	110.05%	0	0	11/04/2014	29	15.05	67360	178.00	378.42	135.15%	5878	5976	5927.00	15.05	0.00	0.00	1.50%	435.79	10.25	984.64	525.75	206.65	19.94%	69.11%	65.19%	34.81%	9.46%	3.70
	Cono Norte	ACI	280	1	C.N280-A1-3.7"	13/03/2014	22/03/2014						9	15.19	56200.00	181.29	310.00	110.71%	0	0	11/04/2014	29	15.02	62990	177.10	355.67	127.02%	5906	5918	5912.00	15.02	0.00	0.00												
	Cono Norte	ACI	280	1	C.N280-A1-3.8"	13/03/2014	21/03/2014	1.00	2.26	1.23	0.49	3.8"	8	15.23	54790.00	182.26	300.61	107.36%	0	0	11/04/2014	29	14.99	59410	176.47	336.65	120.23%	5974	5829	5901.50	14.99	0.00	0.00	1.50%	430.40	10.13	973.59	531.32	210.75	19.75%	69.07%	64.69%	35.31%	9.67%	3.80
	Cono Norte	ACI	280	1	C.N280-A1-3.8"	13/03/2014	21/03/2014						8	15.26	56170.00	182.87	307.16	109.70%	0	0	11/04/2014	29	15.01	59610	177.04	336.70	120.25%	5972	5850	5911.00	15.01	0.00	0.00												
	Cono Norte	ACI	280	1	C.N280-A1-1.8"	13/03/2014	21/03/2014	1.00	2.34	1.17	0.49	1.8"	8	15.30	35666.00	183.85	194.00	69.29%	0	0	11/04/2014	29	15.08	57690	178.66	322.90	115.32%	5910	5966	5938.00	15.08	0.00	0.00	1.50%	428.89	10.09	1004.59	503.73	210.13	19.67%	69.19%	66.60%	33.40%	9.64%	1.80
	Cono Norte	ACI	280	1	C.N280-A1-1.8"	13/03/2014	21/03/2014						8	15.28	37540.00	183.30	204.80	73.14%	0	0	11/04/2014	29	15.07	58320	178.45	326.81	116.72%	5894	5975	5934.50	15.07	0.00	0.00												
	Cono Norte	ACI	280	1	C.N280-A1-3.4"	13/03/2014	22/03/2014	1.00	2.27	1.11	0.47	3.4"	9	15.24	57190.00	182.38	313.57	111.99%	0	0	11/04/2014	29	15.05	67800	177.94	381.02	136.08%	5902	5950	5926.00	15.05	0.00	0.00	1.50%	443.47	10.43	1007.11	492.11	208.86	20.30%	68.64%	67.18%	32.82%	9.56%	3.40
	Cono Norte	ACI	280	1	C.N280-A1-3.4"	13/03/2014	22/03/2014						9	15.25	60240.00	182.69	329.74	117.76%	0	0	11/04/2014	29	15.36	64980	185.22	350.82	125.29%	6002	6090	6046.00	15.36	0.00	0.00												
	Cono Norte	MF	175	1	C.N175-MF1-3.0"	26/03/2014	02/04/2014	1.00	1.60	1.94	0.53	3"	7	15.08	42960.00	178.51	240.65	137.52%	0	0	23/04/2014	28	15.06	56570	178.03	317.75	181.57%	5990	5865	5927.50	15.06	11.78	29.60	1.50%	418.68	9.85	669.65	812.85	221.44	19.43%	68.80%	45.17%	54.83%	10.28%	3.00
	Cono Norte	MF	175	1	C.N175-MF1-3.0"	26/03/2014	02/04/2014						7	14.95	47320.00	175.43	269.74	154.14%	0	0	23/04/2014	28	15.10	59550	179.00	332.69	190.11%	5945	5942	5943.50	15.10	11.97	30.30												
	Cono Norte	MF	175	1	C.N175-MF1-4.0"	26/03/2014	02/04/2014	1.00	1.61	1.98	0.55	4"	7	14.97	40940.00	176.06	232.54	132.88%	0	0	23/04/2014	28	14.97	56300	176.09	319.73	182.70%	5920	5870	5895.00	14.97	11.89	30.10	1.50%	412.12	9.70	662.86	815.60	225.37	19.18%	68.82%	44.83%	55.17%	10.49%	4.00
	Cono Norte	MF	175	1	C.N175-MF1-4.0"	26/03/2014	02/04/2014						7	15.00	44840.00	176.74	253.70	144.97%	0	0	23/04/2014	28	15.11	51870	179.21	289.44	165.40%	5959	5935	5947.00	15.11	12.02	30.20												
	Cono Norte	MF	175	1	C.N175-MF1-4.5"	26/03/2014	02/04/2014	1.00	1.68	1.95	0.58	4.5"	7	15.35	40120.00	184.98	216.89	123.94%	0	0	23/04/2014	28	15.37	52720	185.62	284.02	162.30%	6060	6045	6052.50	15.37	12.66	30.60	1.50%	403.32	9.49	675.91	787.18	235.04	18.90%	68.58%	46.20%	53.80%	11.02%	4.50
	Cono Norte	MF	175	1	C.N175-MF1-4.5"	26/03/2014	02/04/2014						7	15.62	38480.00	191.71	200.72	114.70%	0	0	23/04/2014	28	15.45	51660	187.47	275.57	157.47%	6045	6120	6082.50	15.45	12.69	30.70												
	Cono Norte	MF	210	1	C.N210-MF1-2.0"	27/03/2014	03/04/2014	1.00	1.60	2.05	0.57	2"	7	14.99	38970.00	176.44	220.86	105.17%	0	0	24/04/2014	28	15.01	55040	176.83	311.25	148.22%	5895	5920	5907.50	15.01	11.71	29.60	1.50%	404.71	9.52	645.91	829.79	228.98	18.90%	68.91%	43.77%	56.23%	10.69%	2.00
	Cono Norte	MF	210	1	C.N210-MF1-2.0"	27/03/2014	03/04/2014						7	14.98	42490.00	176.30	241.02	114.77%	0	0	24/04/2014	28	14.86	50490	173.35	291.26	138.70%	5851	5847	5849.00	14.86	11.62	29.70												
	Cono Norte	MF	210	1	C.N210-MF1-4.0"	27/03/2014	03/04/2014	1.00	1.46	1.81	0.57	4"	7	14.97	40520.00	176.00	230.23	109.63%	0	0	24/04/2014	28	15.04	51640	177.73	290.55	138.36%	5940	5905	5922.50	15.04	11.77	30.10	1.50%	432.38	10.17	629.97	783.71	245.18	20.37%	66.59%	44.56%	55.44%	11.55%	4.00
	Cono Norte	MF	210	1	C.N210-MF1-4.0"	27/03/2014	03/04/2014						7	15.04	38820.00	177.73	218.42	104.01%	0	0	24/04/2014	28	15.05	52690	177.88	296.21	141.05%	5880	5970	5925.00	15.05	11.82	29.80												
	Cono Norte	MF	210	1	C.N210-MF1-2.7"	27/03/2014	03/04/2014	1.00	1.43	1.97	0.52	2.7"	7	15.01	43970.00	176.83	248.65	118.41%	0	0	24/04/2014	28	15.12	55540	179.54	309.35	147.31%	5940	5965	5952.50	15.12	11.86	30.10	1.50%	431.79	10.16	617.25	849.09	223.14	20.05%	68.09%	42.09%	57.91%	10.36%	2.70
	Cono Norte	MF	210	1	C.N210-MF1-2.7"	27/03/2014	03/04/2014						7	15.02	47700.00	177.07	269.38	128.28%	0	0	24/04/2014	28	14.98	57190	176.24	324.51	154.53%	5835	5960	5897.50	14.98	11.83	29.90												
	Cono Norte	MF	210	1	C.N210-MF1-1.5"	27/03/2014	03/04/2014	1.00	1.39	1.85	0.51	1.5"	7	14.85	48650.00	173.17	280.94	133.78%	0	0	24/04/2014	28	15.13	60960	179.84	338.97	161.41%	5965	5950	5957.50	15.13	11.80	29.40	1.50%	445.74	10.49	620.54	824.47	227.24	20.73%	67.20%	42.94%	57.06%	10.57%	1.50
	Cono Norte	MF	210	1	C.N210-MF1-1.5"	27/03/2014	03/04/2014						7	14.94	45320.00	175.28	258.56	123.12%	0	0	24/04/2014	28	15.10	63160	179.03	352.80	168.00%	5938	5950	5944.00	15.10	11.95	30.10												
	Cono Norte	MF	280	1	C.N280-MF1-2.0"	27/03/2014	03/04/2014	1.00	1.35	1.64	0.50	2"	7	15.00	44720.00	176.62	253.19	90.43%	0	0	24/04/2014	28	15.07	58650	178.45	328.66	117.38%	5879	5990	5934.50	15.07	11.66	29.60	1.50%	469.04	11.04	635.41	769.63	235.99	21.90%	65.59%	45.22%	54.78%	11.02%	2.00
	Cono Norte	MF	280	1	C.N280-MF1-2.0"	27/03/2014	03/04/2014						7	15.05	43330.00	177.85	243.63	87.01%	0	0	24/04/2014	28	15.16	57810	180.44	320.38	114.42%	6020	5915	5967.50	15.16	11.76	29.70												
	Cono Norte	MF	280	1	C.N280-MF1-2.5"	27/03/2014	03/04/2014	1.00	1.33	1.68	0.52	2.5"	7	15.15	41420.00	180.35	229.66	82.02%	0	0	24/04/2014	28	15.56	53930	190.19	283.56	101.27%	6103	6150	6126.50	15.56	13.00	30.50	1.50%	464.33	10.93	619.48	778.04	240.66	21.75%	65.47%	44.33%	55.67%	11.27%	2.50
	Cono Norte	MF	280	1	C.N280-MF1-2.5"	27/03/2014	03/04/2014						7	13.05	41770.00	133.79	312.20	111.50%	0	0	24/04/2014	28	15.50	65180	188.73	345.36	123.34%	6108	6098	6103.00	15.50	12.58	30.60												
	Cono Norte	MF	280	1	C.N280-MF1-2.2"	28/03/2014	04/04/2014	1.00	1.50	1.90	0.55	2.2"	7	14.94	43480.00	175.19	248.19	88.64%	0	0	25/04/2014	28	15.03	55940	177.34	315.43	112.66%	5945	5887	5916.00	15.03	11.69	30.00	1.50%	425.64	10.02	637.04	808.44	234.25	19.91%	67.63%	44.07%	55.93%	10.96%	2.20
	Cono Norte	MF	280	1	C.N280-MF1-2.2"	28/03/2014	04/04/2014						7	14.90	37850.00	174.33	217.12	77.54%	0	0	25/04/2014	28	15.14	53130	179.99	295.18	105.42%	5952	5968	5960.00	15.14	11.70	29.20												
	Cono Norte	MF	280	1	C.N280-MF1-4.0"	28/03/2014	04/04/2014	1.00	1.51	1.90	0.55	4"	7	15.03	45740.00	177.40	257.83	92.08%	0	0	25/04/2014	28	15.02	54510	177.07	307.84	109.94%	5847	5976	5911.50	15.02	11.70	29.40	1.50%	424.40	9.99	640.41	804.31	235.03	19.87%	67.63%	44.33%	55.67%	11.00%	4.00
	Cono Norte	MF	280	1	C.N280-MF1-4.0"	28/03/2014	04/04/2014						7	15.02	41210.00	177.13	232.65	83.09%	0	0	25/04/2014	28	15.07	55550	178.39	311.39	111.21%	5943	5924	5933.50	15.07	11.62	29.60												

RELACIÓN DE RESISTENCIAS POR RESULTADOS

	Cantera	Método	f'c	TMN pulg.	código	FECHAS Vaciado	FECHAS Rotura	DOSIFICACIÓN cemento	DOSIFICACIÓN A grueso	DOSIFICACIÓN A.fino	DOSIFICACIÓN Agua (lt.)	Slump	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas	PESO kg.	ALTURA cm	Fecha Rotura 2	Edad	TOMA DE DATOS Diámetro (cm)	TOMA DE DATOS Fuerza	TOMA DE DATOS Área	TOMA DE DATOS Esfuerzo	% Roturas					PESO kg.	ALTURA cm	DOSIFICACIÓN % aire	DOSIFICACIÓN cemento (kg)	DOSIFICACIÓN lsas de cemen	DOSIFICACIÓN A grueso (kg)	DOSIFICACIÓN A.fino(kg)	DOSIFICACIÓN Agua (lt.)	% cemento	% agregados	% agregados % Grueso	% agregados % Fino	% agua	SLUMP
175	Poderosa	ACI	175	1/2	P.175-A1/2-4.0"	05/03/2014	12/03/2014	1.00	2.77	1.90	0.62	4"	7.00	15.23	25810.00	182.14	141.703	80.97%	0	0	03/04/2014	29	15.01	43340	176.83	245.09	140.05%	5907	5908	5907.50	15.01	0	0	2.50%	348.07	8.19	963.21	662.05	215.47	15.50%	72.40%	59.26%	40.74%	9.60%	4.00
	Poderosa	ACI	175	1/2	P.175-A1/2-4.0"	05/03/2014	12/03/2014						7.00	15.23	27780.00	182.08	152.570	87.18%	0	0	03/04/2014	29	15.06	45100	178.06	253.28	144.73%	5909	5947	5928.00	15.06	0	0												
	Poderosa	ACI	175	1/2	P.175-A1/2-4.5"	05/03/2014	12/03/2014	1.00	2.55	1.61	0.60	4.5"	7.00	15.24	27530.00	182.38	150.95	86.25%	0	0	03/04/2014	29	14.98	42180.00	176.35	239.18	136.67%	5864	5935	5899.50	14.98	0.00	0.00	2.50%	377.88	8.89	963.42	607.98	227.60	16.92%	70.38%	61.31%	38.69%	10.19%	4.50
	Poderosa	ACI	175	1/2	P.175-A1/2-4.5"	05/03/2014	12/03/2014						7.00	15.23	31390.00	182.29	172.20	98.40%	0	0	03/04/2014	29	15.01	43490.00	176.98	245.73	140.42%	5985	5835	5910.00	15.01	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	31/03/2014	09/04/2014	1.00	1.89	2.04	0.60	3"	9.00	14.99	37930.00	176.38	215.04	122.88%	0	0	28/04/2014	28	14.95	42910.00	175.52	244.48	139.70%	5951	5820	5885.50	14.95	12.05	29.60	2.50%	388.36	9.14	733.25	794.12	231.86	17.63%	69.34%	48.01%	51.99%	10.53%	3.00
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	31/03/2014	09/04/2014						9.00	14.76	39140.00	171.04	228.83	130.76%	0	0	28/04/2014	28	14.99	41430.00	176.47	234.76	134.15%	5880	5923	5901.50	14.99	12.11	30.20												
	Poderosa	MF	210	1/2	P.210-MF1/2-2.5"	31/03/2014	07/04/2014	1.00	2.63	2.22	0.63	2.5"	7.00	15.24	30760.00	182.32	168.711	80.34%	0	0	28/04/2014	28	15.37	42090	185.65	226.72	107.96%	6099	6007	6053.00	15.37	13.355	30.4	2.50%	336.25	7.91	885.73	746.31	213.23	15.03%	72.94%	54.27%	45.73%	9.53%	2.50
	Poderosa	MF	210	1/2	P.210-MF1/2-2.5"	31/03/2014	07/04/2014						7.00	15.37	30110.00	185.62	162.212	77.24%	0	0	28/04/2014	28	15.53	44030	189.41	232.46	110.69%	6120	6108	6114.00	15.53	13.33	30.5												
	Poderosa	MF	175	1/2	P.175-MF1/2-3.5"	01/04/2014	09/04/2014	1.00	1.98	1.96	0.59	3.5"	8.00	15.08	35790.00	178.57	200.421	114.53%	0	0	29/04/2014	28	15.08	44150.00	178.51	247.32	141.33%	5893	5978	5935.50	15.08	12.00	29.70	2.50%	389.14	9.16	770.11	761.95	231.31	17.63%	69.40%	50.27%	49.73%	10.48%	3.50
	Poderosa	MF	175	1/2	P.175-MF1/2-3.5"	01/04/2014	09/04/2014						8.00	15.02	33710.00	177.25	190.180	108.67%	0	0	29/04/2014	28	15.05	42120.00	177.94	236.71	135.26%	5917	5935	5926.00	15.05	12.05	29.80												
	Poderosa	MF	175	1/2	P.175-MF1/2-7.0"	01/04/2014	09/04/2014	1.00	2.05	1.33	0.57	7"	8.00	14.82	32530.00	172.58	188.493	107.71%	0	0	29/04/2014	28	15.03	41600.00	177.49	234.38	133.93%	5895	5942	5918.50	15.03	11.90	29.60	2.50%	434.01	10.21	888.96	577.68	248.43	19.69%	66.54%	60.61%	39.39%	11.27%	7.00
	Poderosa	MF	175	1/2	P.175-MF1/2-7.0"	01/04/2014	09/04/2014						8.00	15.11	33710.00	179.30	188.012	107.44%	0	0	29/04/2014	28	14.84	43390.00	172.87	250.99	143.42%	5892	5790	5841.00	14.84	11.84	29.80												
	Poderosa	A.C.I	175	1	P.175-A1-5.75"	14/04/2014	21/04/2014	1.00	2.53	1.63	0.58	5.75"	7.00	15.06	27630.00	178.18	155.065	88.61%	12.31	29.4	12/05/2014	28	15.12	36750.00	179.45	204.80	117.03%	5951	5951	5951.00	15.12	12.05	28.50	1.50%	388.91	9.15	982.15	632.79	224.11	17.19%	71.40%	60.82%	39.18%	9.91%	5.75
	Poderosa	A.C.I	175	1	P.175-A1-5.75"	14/04/2014	21/04/2014						7.00	15.00	30310.00	176.77	171.462	97.98%	12.53	29.8	12/05/2014	28	15.40	45060.00	186.17	242.03	138.30%	6059	6064	6061.50	15.40	13.54	30.50												
	Poderosa	A.C.I	210	1	P.210-A1-4.0"	14/04/2014	21/04/2014	1.00	3.24	2.36	0.62	4"	7.00	14.97	26750.00	176.09	151.914	72.34%	12.45	29.5	12/05/2014	28	15.00	31960	176.62	180.95	86.17%	5936	5872	5904.00	15.00	12.24	29.40	1.50%	313.08	7.37	1015.05	739.08	194.13	13.64%	76.41%	57.87%	42.13%	8.46%	4.00
	Poderosa	A.C.I	210	1	P.210-A1-4.0"	14/04/2014	21/04/2014						7.00	15.17	25070.00	180.63	138.796	66.09%	12.53	29.5	12/05/2014	28	15.16	27330	180.53	151.38	72.09%	5913	6025	5969.00	15.16	12.52	29.60												
	Poderosa	A.C.I	210	1	P.210-A1-6.5"	14/04/2014	21/04/2014	1.00	3.40	2.17	0.63	6.5"	7.00	15.11	22960.00	179.39	127.991	60.95%	12.54	29.6	12/05/2014	28	14.90	35550	174.45	203.79	97.04%	5835	5900	5867.50	14.90	12.65	29.60	1.50%	314.07	7.39	1067.23	683.03	198.20	13.67%	76.20%	60.98%	39.02%	8.63%	6.50
	Poderosa	A.C.I	210	1	P.210-A1-6.5"	14/04/2014	21/04/2014						7.00	15.05	23150.00	177.88	130.142	61.97%	12.47	29.5	12/05/2014	28	15.17	31800	180.66	176.03	83.82%	6012	5930	5971.00	15.17	12.56	29.90												
	Poderosa	A.C.I	210	1	P.210-A1-7.75"	14/04/2014	21/04/2014	1.00	3.08	1.91	0.63	7.75"	7.00	15.03	20750.00	177.43	116.946	55.69%	12.25	29.2	12/05/2014	28	15.06	29000	178.03	162.89	77.57%	5995	5860	5927.50	15.06	12.48	29.30	1.50%	339.18	7.98	1046.06	646.66	212.38	14.89%	74.29%	61.80%	38.20%	9.32%	7.75
	Poderosa	A.C.I	210	1	P.210-A1-7.75"	14/04/2014	21/04/2014						7.00	15.00	23430.00	176.62	132.655	63.17%	12.35	29.4	12/05/2014	28	15.08	31260	178.57	175.05	83.36%	5930	5943	5936.50	15.08	12.72	29.60												
	Poderosa	A.C.I	280	1	P.280-A1-8.5"	14/04/2014	21/04/2014	1.00	2.97	1.69	0.61	8.5"	7.00	15.63	19530.00	191.96	101.739	36.34%	13.74	30.4	12/05/2014	28	15.45	33290	187.53	177.52	63.40%	6117	6050	6083.50	15.45	13.34	30.50	1.50%	357.63	8.41	1063.56	603.31	217.69	15.71%	73.23%	63.81%	36.19%	9.56%	8.50
	Poderosa	A.C.I	280	1	P.280-A1-8.5"	14/04/2014	21/04/2014						7.00	15.41	24360.00	186.48	130.630	46.65%	13.83	30.2	12/05/2014	28	15.40	30340	186.27	162.89	58.17%	6061	6065	6063.00	15.40	12.30	27.20												
	Poderosa	M.F	175	1	P.175-MF1-6.5"	15/04/2014	22/04/2014	1.00	1.68	2.63	0.64	6.5"	7.00	15.13	28250.00	179.84	157.084	89.76%	12.225	29.8	12/05/2014	27	15.04	38240	177.73	215.15	122.95%	5880	5965	5922.50	15.04	12.275	29.9	1.50%	363.60	8.56	609.20	955.48	234.06	16.56%	71.28%	38.93%	61.07%	10.66%	6.50
	Poderosa	M.F	175	1	P.175-MF1-6.5"	15/04/2014	22/04/2014						7.00	14.97	24290.00	176.00	138.014	78.87%	11.545	28.6	12/05/2014	27	14.89	37080	174.06	213.03	121.73%	5860	5862	5861.00	14.89	12.19	30.1												
	Poderosa	M.F	175	1	P.175-MF1-7.0"	15/04/2014	22/04/2014	1.00	1.64	2.63	0.64	7"	7.00	15.12	23650.00	179.60	131.68	75.25%	11.81	28.5	12/05/2014	27	15.18	37660.00	181.05	208.01	118.86%	5974	5981	5977.50	15.18	11.67	29.00	1.50%	365.33	8.60	599.23	960.05	235.18	16.66%	71.11%	38.43%	61.57%	10.73%	7.00
	Poderosa	M.F	175	1	P.175-MF1-7.0"	15/04/2014	22/04/2014						7.00	14.97	26220.00	176.00	148.98	85.13%	12.125	29.4	12/05/2014	27	14.94	34770.00	175.37	198.27	113.30%	5851	5915	5883.00	14.94	11.57	29.00												
	Poderosa	M.F	175	1	P.175-MF1-8.0"	15/04/2014	22/04/2014	1.00	1.53	2.36	0.62	8"	7.00	14.98	28540.00	176.24	161.94	92.54%	12.05	29.4	12/05/2014	27	15.05	37050.00	177.82	208.35	119.06%	5924	5924	5924.00	15.05	12.02	29.50	1.50%	391.34	9.21	600.05	922.91	241.33	17.88%	69.59%	39.40%	60.60%	11.03%	8.00
	Poderosa	M.F	175	1	P.175-MF1-8.0"	15/04/2014	22/04/2014						7.00	14.88	26000.00	174.00	149.42	85.39%	11.665	29.35	12/05/2014	27	14.90	39880.00	174.30	228.80	130.74%	5915	5815	5865.00	14.90	12.13	29.60												
	Poderosa	M.F	210	1	P.210-MF1-3.0"	15/04/2014	22/04/2014	1.00	1.56	2.48	0.56	3"	7.00	15.10	34220.00	179.15	191.017	90.96%	12.22	29.6	12/05/2014	27	15.05	34010	177.79	191.29	91.09%	5955	5892	5923.50	15.05	12.07	29.30	1.50%	390.34	9.18	608.49	966.41	220.35	17.59%	70.98%	38.64%	61.36%	9.93%	3.00
	Poderosa	M.F	210	1	P.210-MF1-3.0"	15/04/2014	22/04/2014						7.00	15.01	32290.00	177.01	182.416	86.86%	12.01	29.7	12/05/2014	27	14.96	39150	175.73	222.79	106.09%	5878	5900	5889.00	14.96	12.28	29.80												
210	Poderosa	ACI	175	1/2	P.175-A1/2-4.6"	05/03/2014	12/03/2014	1.00	2.46	1.59	0.59	4.6"	7.00	15.22	31940.00	181.90	175.593	100.34%	0	0	03/04/2014	29	14.93	49000	175.04	279.93	159.96%	5807	5948	5877.50	14.93	0	0	2.50%	385.88	9.08	949.33	614.45	227.35	17.28%	70.04%	60.71%	39.29%	10.18%	4.60
	Poderosa	ACI	175	1/2	P.175-A1/2-4.6"	05/03/2014	12/03/2014						7.00	15.23	36120.00	182.11	198.341	113.34%	0	0	03/04/2014	29	15.00	50580	176.77	286.13	163.50%	5940	5873	5906.50	15.00	0	0												
	Poderosa	ACI	210	1/2	P.210-A1/2-2.25"	05/03/2014	12/03/2014	1.00	2.56	1.85	0.56	2.25"	7.00	15.24	30740.00	182.35	168.57	80.27%	0	0	03/04/2014	29	15.54	41540.00	189.63	219.06	104.31%	6120	6115	6117.50	15.54	0.00	0.00	2.50%	368.58	8.67	942.61	680.67	208.16	16.33%	71.94%	58.07%	41.93%	9.23%	2.25
	Poderosa	ACI	210	1/2	P.210-A1/2-2.25"	05/03/2014	12/03/2014						7.00	15.20	24200.00	181.41	133.40	63.52%	0	0	03/04/2014	29	15.34	49750.00	184.79	269.22	128.20%	6043	6035	6039.00	15.34	0.00	0.00												
	Poderosa	ACI	210	1/2	P.210-A1/2-1.6"	05/03/2014	12/03/2014	1.00	2.55	2.02	0.60	1.6"	7.00	15.52	31220.00	189.26	164.96	78.55%	0	0	03/04/2014	29	15.37	47730.00	185.62	257.14	122.45%	6050	6055	6052.50	15.37	0.00	0.00	2.50%	354.29	8.34	904.14	717.07	212.29	15.79%	72.25%	55.77%	44.23%	9.46%	1.60
	Poderosa	ACI	210	1/2	P.210-A1/2-1.6"	05/03/2014	12/03/2014						7.00	15.52	30860.00	189.13	163.17	77.70%	0	0	03/04/2014	29	15.07	48490.00	178.36	271.86	129.46%	5921	5945	5933.00	15.07	0.00	0.00												
	Poderosa	ACI	210	1/2	P.210-A1/2-4.0"	06/03/2014	14/03/2014	1.00	2.63	1.70	0.60	4"	8.00	15.24	30110.00	182.32	165.146	78.64%	0	0	04/04/2014	29	15.53	46310	189.32	244.61	116.48%	6120	6105	6112.50	15.53	0	0	2.50%	368.22	8.66	969.93	626.32	220.87	16.43%	71.22%	60.76%	39.24%	9.85%	4.00
	Poderosa	ACI	210	1/2	P.210-A1/2-4.0"	06/03/2014	14/03/2014						8.00	15.21	30990.00	181.72	170.541	81.21%	0	0	04/04/2014	29	14.99	47450	176.41	268.97	128.08%	5851	5950	5900.50	14.99	0	0												
	Poderosa	ACI	210	1/2	P.210-A1/2-4.1"	06/03/2014	14/03/2014	1.00	2.58	1.71	0.58	4.1"	8.00	15.22	37370.00	182.05	205.273	97.75%	0	0	04/04/2014	29	15.09	46360.00	178.91	259.13	123.40%	5952	5932	5942.00	15.09	0.00	0.00	2.50%	373.81	8.80	963.74	639.25	215.80	16.62%	71.28%	60.12%	39.88%	9.60%	4.10
	Poderosa	ACI	210	1/2	P.210-A1/2-4.1"	06/03/2014	14/03/2014						8.00	15.23	38050.00	182.20	208.834	99.44%	0	0	04/04/2014	29	14.96	45200.00	175.76	257.17	122.46%	5837	5942	5889.50	14.96	0.00	0.00												
	Poderosa	ACI	280	1/2	P.280-A1/2-5.8"	06/03/2014	14/03/2014	1.00	2.33	1.37	0.58	5.8"	8.00	15.28	38250.00	183.27	208.712	74.54%	0	0	03/04/2014	28	15.40	46980.00	186.27	252.22	90.08%	6064	6062	6063.00	15.40	0.00	0.00	2.50%	410.55	9.66	957.95	562.61	237.21	18.46%	68.37%	63.00%	37.00%	10.67%	5.80
	Poderosa	ACI	280	1/2	P.280-A1/2-5.8"	06/03/2014	14/03/2014						8.00	15.28	40010.00	183.33	218.243	77.94%	0	0	03/04/2014	28	15.05	50470.00	177.94	283.63	101.30%	5950	5902	5926.00	15.05	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-5.5"	31/03/2014	09/04/2014	1.00	1.88	1.79	0.61	5.5"	9.00	14.98	35140.00	176.24	199.392	113.94%	0	0	28/04/2014	28	15.05	46680.00	177.82	262.51	150.00%	5863	5985	5924.00	15.05	12.24	30.20	2.50%	404.82	9.53	760.48	722.89	245.78	18.50%	67.77%	51.27%	48.73%	11.23%	5.50
	Poderosa	MF	175	1/2	P.175-MF1/2-5.5"	31/03/2014	09/04/2014						9.00	15.07	38200.00	178.36	214.169	122.38%	0	0	28/04/2014	28	15.09	45120.00	178.87	252.24	144.14%	5963	5920	5941.50	15.09	12.04	30.05												
	Poderosa	MF	175	1/2	P.175-MF1/2-6.8"	31/03/2014	07/04/2014	1.00	1.67	2.04	0.61	6.8"	7.00	15.08	34760.00	178.54	194.686	111.25%	0	0	28/04/2014	28	15.06	46480	178.24	260.77	149.01%	5894	5968	5931.00	15.06	12.09	30.25	2.50%	400.41	9.42	667.36	815.66	243.21	18.36%	67.99%	45.00%	55.00%	11.15%	6.80
	Poderosa	MF	175	1/2	P.175-MF1/2-6.8"	31/03/2014	07/04/2014						7.00	15.09	35540.00	178.87	198.686	113.54%	0	0	28/04/2014	28	15.02	50280	177.07	283.95	162.26%	5976	5847	5911.50	15.02	12.19	29.95												
	Poderosa	MF	175	1/2	P.175-MF1/2-5.4"	31/03/2014	09/04/2014	1.00	1.57	2.09	0.60	5.4"	9.00	15.07	39610.00	178.27	222.187	126.96%	0	0	28/04/2014	28	15.01	51540	176.86	291.41	166.52%	5911	5905	5908.00	15.01	11.96	29.90	2.50%	404.35	9.51	636.25	844.37	241.42	18.54%	67.89%	42.97%	57.03%	11.07%	5.40
	Poderosa	MF	175	1/2	P.175-MF1/2-5.4"	31/03/2014	09/04/2014						9.00	15.09	41190.00	178.72	230.467	131.70%	0	0	28/04/2014	28	15.02	47700	177.25	269.11	153.78%	5921	5908	5914.50	15.02	12.01	30.20												
	Poderosa	MF	210	1/2	P.210-MF1/2-3.2"	31/03/2014	07/04/2014	1.00	2.50	1.78	0.59	3.2"	7.00	15.64	37170.00	192.21	193.381	92.09%	0	0	28/04/2014	28	15.23	46290	182.23	254.02	120.96%	6045	5949	5997.00	15.23	12.87	30.40	2.50%	371.45	8.74	927.13	662.66	220.49	16.60%	71.05%	58.32%	41.68%	9.85%	3.20
	Poderosa	MF	210	1/2	P.210-MF1/2-3.2"	31/03/2014	07/04/2014						7.00	15.56	35200.00	190.19	185.080	88.13%	0	0	28/04/2014	28	15.20	49070	181.41	270.49	128.80%	5977	5990	5983.50	15.20	12.78	30.40												
	Poderosa	MF	175	1/2	P.175-MF1/2-2.0"	01/04/2014	09/04/2014	1.00	1.78	1.86	0.54	2"	8.00	15.05	41390.00	178.00	232.524	132.87%	0	0	29/04/2014	28	15.12	51060	179.66	284.21	162.40%	5952	5957	5954.50	15.12	12.11	30.10	2.50%	418.16	9.84	746.13	776.19	224.11	18.84%	68.57%	49.01%	50.99%	10.09%	2.00
	Poderosa	MF	175	1/2	P.175-MF1/2-2.0"	01/04/2014	09/04/2014						8.00	15.05	37180.00	177.82	209.085	119.48%	0	0	29/04/2014	28	15.08	50080	178.51	280.54	160.31%	5978	5893	5935.50	15.08	12.25	30.20												
	Poderosa	A.C.I	175	1	P.175-A1-5.5"	11/04/2014	21/04/2014	1.00	3.00	1.81	0.57	5.5"	10.00	15.45	30890.00	187.47	164.777	94.16%	13.14	29.3	08/05/2014	27	15.37	40580	185.65	218.58	124.90%	6002	6104	6053.00	15.37	12.83	29.20	1.50%	354.46	8.34	1063.37	639.99	203.49	15.44%	74.20%	62.43%	37.57%	8.86%	5.50
	Poderosa	A.C.I	175	1	P.175-A1-5.5"	11/04/2014	21/04/2014						10.00	15.45	31110.00	187.59	165.841	94.77%	13.6	30.4	08/05/2014	27	15.51	43010	188.92	227.67	130.09%	6090	6122	6106.00	15.51	13.14	29.30												
	Poderosa	A.C.I	280	1	P.280-A1-4.75"	14/04/2014	21/04/2014	1.00	2.93	1.51	0.54	4.75"	7.00	14.99	24920.00	176.53	141.16	50.42%	12.21	29.5	12/05/2014	28	15.01	40810.00	176.98	230.59	82.35%	5940	5880	5910.00	15.01	12.44	29.80	1.50%	379.30	8.92	1111.99	572.11	205.46	16.47%	73.11%	66.03%	33.97%	8.92%	4.75
	Poderosa	A.C.I	280	1	P.280-A1-4.75"	14/04/2014	21/04/2014						7.00	14.97	30260.00	175.91	172.02	61.44%	12.6	30.2	12/05/2014	28	14.90	43400.00	174.30	249.00	88.93%	5840	5890	5865.00	14.90	12.60	29.90												
	Poderosa	A.C.I	280	1	P.280-A1-7.0"	14/04/2014	21/04/2014	1.00	2.74	1.51	0.58	7"	7.00	15.43	29040.00	187.10	155.21	55.43%	13.35	30.4	12/05/2014	28	15.50	40860.00	188.79	216.43	77.30%	6058	6150	6104.00	15.50	13.59	30.50	1.50%	384.19	9.04	1053.52	579.29	222.11	16.90%	71.83%	64.52%	35.48%	9.77%	7.00
	Poderosa	A.C.I	280	1	P.280-A1-7.0"	14/04/2014	21/04/2014						7.00	15.42	24270.00	186.85	129.89	46.39%	13.34	30.3	12/05/2014	28	15.38	43940.00	185.80	236.48	84.46%	6060	6051	6055.50	15.38	13.47	30.40												
	Poderosa	M.F	210	1	P.210-MF1-7.25"	15/04/2014	22/04/2014	1.00	1.55	2.47	0.60	7.25"	7.00	15.34	30940.00	184.70	167.513	79.77%	12.65	30.1	12/05/2014	27	15.39	43210.00	186.08	232.21	110.58%	6052	6068	6060.00	15.39	13.30	30.60	1.50%	385.29	9.07	596.57	950.78	233.04	17.52%	70.38%	38.55%	61.45%	10.60%	7.25
	Poderosa	M.F	210	1	P.210-MF1-7.25"	15/04/2014	22/04/2014						7.00	15.37	25550.00	185.53	137.714	65.58%	12.98	30.3	12/05/2014	27	15.45	43660.00	187.43	232.93	110.92%	6135	6029	6082.00	15.45	12.85	30.10												
	Poderosa	M.F	210	1	P.210-MF1-8.0"	15/04/2014	22/04/2014	1.00	1.44	2.20	0.60	8"	7.00	15.51	30280.00	189.01	160.203	76.29%	12.475	29.2	12/05/2014	27	15.39	42460.00	185.93	228.37	108.75%	6065	6050	6057.50	15.39	12.65	29.80	1.50%	410.19	9.65	590.80	903.04	246.42	18.79%	68.42%	39.55%	60.45%	11.29%	8.00
	Poderosa	M.F	210	1	P.210-MF1-8.0"	15/04/2014	22/04/2014						7.00	15.15	28440.00	180.38	157.664	75.08%	11.78	29.5	12/05/2014	27	14.97	42760.00	176.09	242.84	115.64%	5872	5918	5895.00	14.97	11.98	30.10												
	Poderosa	M.F	210	1	P.210-MF1-2.0"	15/04/2014	22/04/2014	1.00	1.44	2.39	0.54	2"	7.00	15.20	32790.00	181.50	180.657	86.03%	12.515	30.1	12/05/2014	27	15.24	47470.00	182.41	260.23	123.92%	6003	5997	6000.00	15.24	12.13	28.80	1.50%	406.43	9.56	585.38	970.57	221.41	18.33%	70.18%	37.62%	62.38%	9.99%	2.00
	Poderosa	M.F	210	1	P.210-MF1-2.0"	15/04/2014	22/04/2014						7.00	15.08	36360.00	178.66	203.510	96.91%	12.31	30.2	12/05/2014	27	14.93	36900.00	174.98	210.88	100.42%	5845	5908	5876.50	14.93	11.87	29.50												
	Poderosa	M.F	280	1	P.280-MF1-6.5"	15/04/2014	22/04/2014	1.00	1.48	2.31	0.57	6.5"	7.00	15.45	33350.00	187.59	177.782	63.49%	13.075	30.4	12/05/2014	27	10.50	22850	86.59	263.89	94.25%	4055	4213	4133.86	10.50	4.18	20.10	1.50%	404.98	9.53	598.34	935.77	231.77	18.38%	69.61%	39.00%	61.00%	10.52%	6.50
	Poderosa	M.F	280	1	P.280-MF1-6.5"	15/04/2014	22/04/2014						7.00	15.36	34000.00	185.22	183.563	65.56%	13.13	30.2	12/05/2014	27	10.65	24040	89.08	269.86	96.38%	4213	4173	4192.91	10.65	4.16	19.85												
	Poderosa	M.F	280	1	P.280-MF1-4.5"	15/04/2014	22/04/2014	1.00	1.48	2.16	0.57	4.5"	7.00	15.46	35650.00	187.62	190.012	67.86%	13.49	30.7	12/05/2014	27	10.70	23060	89.92	256.45	91.59%	4173	4252	4212.60	10.70	4.32	20.20	1.50%	415.96	9.79	614.55	897.47	238.05	18.92%	68.76%	40.64%	59.36%	10.83%	4.50
	Poderosa	M.F	280	1	P.280-MF1-4.5"	15/04/2014	22/04/2014						7.00	15.43	36560.00	186.97	195.54	69.83%	13.31	13.3	12/05/2014	27	10.45	20100	85.77	234.35	83.7%	4094	4134	4114	10.45	4.32	20.5												
280	Poderosa	ACI	175	1/2	P.175-A1/2-3.0"	05/03/2014	12/03/2014	1.00	2.67	1.93	0.60	3"	7.00	15.24	32400.00	182.51	177.528	101.44%	0	0	03/04/2014	29	15.04	52540	177.67	295.71	168.98%	5903	5940	5921.50	15.04	0	0	2.50%	353.61	8.32	944.60	683.92	211.31	15.72%	72.39%	58.00%	42.00%	9.39%	3.00
	Poderosa	ACI	175	1/2	P.175-A1/2-3.0"	05/03/2014	12/03/2014						7.00	15.23	33080.00	182.20	181.557	103.75%	0	0	03/04/2014	29	14.99	50670	176.59	286.93	163.96%	5852	5955	5903.50	14.99	0	0												
	Poderosa	ACI	175	1/2	P.175-A1/2-2.6"	05/03/2014	12/03/2014	1.00	2.46	1.55	0.51	2.6"	7.00	15.24	43660.00	182.38	239.38	136.79%	0	0	03/04/2014	29	15.02	69420.00	177.07	392.04	224.02%	5898	5925	5911.50	15.02	0.00	0.00	2.50%	401.80	9.45	988.81	621.54	204.04	17.68%	70.85%	61.40%	38.60%	8.98%	2.60
	Poderosa	ACI	175	1/2	P.175-A1/2-2.6"	05/03/2014	12/03/2014						7.00	15.25	44700.00	182.63	244.76	139.86%	0	0	03/04/2014	29	15.38	64230.00	185.71	345.86	197.63%	6045	6063	6054.00	15.38	0.00	0.00												
	Poderosa	ACI	280	1/2	P.280-A1/2-3.5"	06/03/2014	14/03/2014	1.00	2.45	1.61	0.55	3.5"	8.00	15.26	40030.00	182.90	218.86	78.16%	0	0	04/04/2014	29	14.97	55740.00	175.91	316.87	113.17%	5874	5910	5892.00	14.97	0.00	0.00	2.50%	392.06	9.23	960.14	629.54	214.81	17.40%	70.56%	60.40%	39.60%	9.54%	3.50
	Poderosa	ACI	280	1/2	P.280-A1/2-3.5"	06/03/2014	14/03/2014						8.00	15.25	40180.00	182.54	220.12	78.61%	0	0	04/04/2014	29	15.04	49640.00	177.61	279.48	99.82%	5902	5939	5920.50	15.04	0.00	0.00												
	Poderosa	ACI	280	1/2	P.280-A1/2-2.8"	06/03/2014	14/03/2014	1.00	2.40	1.60	0.53	2.8"	8.00	15.30	40080.00	183.82	218.044	77.87%	0	0	04/04/2014	29	15.03	64530	177.46	363.63	129.87%	5976	5860	5918.00	15.03	0	0	2.50%	398.53	9.38	955.55	639.51	210.08	17.63%	70.57%	59.91%	40.09%	9.29%	2.80
	Poderosa	ACI	280	1/2	P.280-A1/2-2.8"	06/03/2014	14/03/2014						8.00	15.21	43120.00	181.63	237.412	84.79%	0	0	04/04/2014	29	15.03	62330	177.46	351.23	125.44%	5886	5950	5918.00	15.03	0	0												
	Poderosa	ACI	280	1/2	P.280-A1/2-2.25"	06/03/2014	14/03/2014	1.00	2.47	1.40	0.51	2.25"	8.00	15.19	39870.00	181.29	219.922	78.54%	0	0	04/04/2014	29	14.96	61530.00	175.88	349.85	124.95%	5907	5876	5891.50	14.96	0.00	0.00	2.50%	411.29	9.68	1017.74	574.72	209.53	18.12%	70.15%	63.91%	36.09%	9.23%	2.25
	Poderosa	ACI	280	1/2	P.280-A1/2-2.25"	06/03/2014	14/03/2014						8.00	15.16	43590.00	180.41	241.611	86.29%	0	0	04/04/2014	29	15.10	61110.00	179.06	341.29	121.89%	5940	5949	5944.50	15.10	0.00	0.00												
	Poderosa	ACI	280	1/2	P.280-A1/2-3.0"	06/03/2014	14/03/2014	1.00	2.52	1.45	0.52	3"	8.00	15.23	46330.00	182.08	254.448	90.87%	0	0	03/04/2014	28	15.02	60070.00	177.28	338.84	121.01%	5876	5954	5915.00	15.02	0.00	0.00	2.50%	402.65	9.47	1012.74	584.15	210.48	17.76%	70.45%	63.42%	36.58%	9.29%	3.00
	Poderosa	ACI	280	1/2	P.280-A1/2-3.0"	06/03/2014	14/03/2014						8.00	15.24	49520.00	182.41	271.469	96.95%	0	0	03/04/2014	28	15.17	59470.00	180.69	329.13	117.55%	5974	5969	5971.50	15.17	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-6.5"	18/03/2014	26/03/2014	1.00	1.93	1.90	0.58	6.5"	8.00	15.21	38250.00	181.78	210.423	120.24%	0	0	16/04/2014	29	15.03	51040.00	177.31	287.85	164.49%	5901	5930	5915.50	15.03	0.00	0.00	2.50%	397.41	9.35	767.56	754.65	232.42	18.01%	68.97%	50.42%	49.58%	10.53%	6.50
	Poderosa	MF	175	1/2	P.175-MF1/2-6.5"	18/03/2014	26/03/2014						8.00	15.24	37936.00	182.38	208.000	118.86%	0	0	16/04/2014	29	15.10	53360.00	179.09	297.96	170.26%	5940	5950	5945.00	15.10	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-8.0"	18/03/2014	26/03/2014	1.00	1.76	1.66	0.59	8"	8.00	15.33	33950.00	184.46	184.053	105.17%	0	0	16/04/2014	29	14.93	47950	175.07	273.89	156.51%	5846	5909	5877.95	14.93	0.00	0.00	2.50%	425.17	10.00	747.53	707.49	249.93	19.46%	66.60%	51.38%	48.62%	11.44%	8.00
	Poderosa	MF	175	1/2	P.175-MF1/2-8.0"	18/03/2014	26/03/2014						8.00	15.31	33810.00	184.09	183.660	104.95%	0	0	16/04/2014	29	14.67	51570	168.99	305.17	174.38%	5830	5720	5775.00	14.67	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-6.0"	18/03/2014	26/03/2014	1.00	1.61	2.09	0.60	6"	8.00	15.27	36590.00	183.24	199.687	114.11%	0	0	19/04/2014	32	14.89	55100	174.06	316.56	180.89%	5860	5862	5861.00	14.89	0.00	0.00	2.50%	402.27	9.47	648.28	839.68	239.62	18.42%	68.12%	43.57%	56.43%	10.97%	6.00
	Poderosa	MF	175	1/2	P.175-MF1/2-6.0"	18/03/2014	26/03/2014						8.00	15.27	36970.00	183.15	201.862	115.35%	0	0	19/04/2014	32	15.41	57680	186.51	309.26	176.72%	6027	6107	6067.00	15.41	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-2.8"	18/03/2014	26/03/2014	1.00	1.50	2.12	0.51	2.8"	8.00	15.31	49690.00	184.15	269.832	154.19%	0	0	16/04/2014	29	15.09	59310	178.84	331.63	189.50%	5930	5952	5941.00	15.09	0.00	0.00	2.50%	420.83	9.90	633.31	893.74	216.04	18.96%	68.80%	41.47%	58.53%	9.73%	2.80
	Poderosa	MF	175	1/2	P.175-MF1/2-2.8"	18/03/2014	26/03/2014						8.00	15.33	50020.00	184.64	270.904	154.80%	0	0	16/04/2014	29	15.04	54020	177.64	304.09	173.77%	5920	5922	5921.00	15.04	0.00	0.00												
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	18/03/2014	26/03/2014	1.00	1.90	2.05	0.56	3"	8.00	15.17	37250.00	180.75	206.090	117.77%	0	0	19/04/2014	32	15.47	52730	187.87	280.68	160.39%	6175	6003	6089.00	15.47	0.00	0.00	2.50%	393.38	9.26	748.31	807.47	218.87	17.69%	69.97%	48.10%	51.90%	9.84%	3.00
	Poderosa	MF	175	1/2	P.175-MF1/2-3.0"	18/03/2014	26/03/2014						8.00	15.15	36710.00	180.20	203.716	116.41%	0	0	19/04/2014	32	15.28	53000	183.39	289.00	165.14%	5982	6050	6016.00	15.28	0.00	0.00												
	Poderosa	MF	210	1/2	P.210-MF1/2-4.25"	19/03/2014	26/03/2014	1.00	1.84	1.77	0.58	4.25"	7.00	15.18	40090.00	180.99	221.506	105.48%	0	0	19/04/2014	31	15.01	55700	177.04	314.61	149.82%	5902	5920	5911.00	15.01	0.00	0.00	2.50%	413.14	9.72	761.52	729.87	239.55	18.79%	67.82%	51.06%	48.94%	10.89%	4.25
	Poderosa	MF	210	1/2	P.210-MF1/2-4.25"	19/03/2014	26/03/2014						7.00	15.19	39860.00	181.11	220.088	104.80%	0	0	19/04/2014	31	15.07	58350	178.42	327.03	155.73%	5899	5969	5934.00	15.07	0.00	0.00												
	Poderosa	MF	210	1/2	P.210-MF1/2-5.0"	19/03/2014	26/03/2014	1.00	2.03	1.88	0.56	5"	7.00	15.17	41670.00	180.84	230.428	109.73%	0	0	19/04/2014	31	14.98	53390	176.35	302.74	144.16%	5904	5895	5899.50	14.98	0	0	2.50%	397.10	9.34	804.43	747.58	221.72	17.84%	69.71%	51.83%	48.17%	9.96%	5.00
	Poderosa	MF	210	1/2	P.210-MF1/2-5.0"	19/03/2014	26/03/2014						7.00	15.16	43736.00	180.53	242.258	115.36%	0	0	19/04/2014	31	14.85	59670	173.26	344.40	164.00%	5860	5835	5847.50	14.85	0	0												
	Poderosa	MF	210	1/2	P.210-MF1/2-8.0"	19/03/2014	26/03/2014	1.00	1.68	1.54	0.58	8"	7.00	15.19	36220.00	181.23	199.86	95.17%	0	0	19/04/2014	31	15.05	51200.00	177.94	287.73	137.02%	5951	5901	5926.00	15.05	0.00	0.00	2.50%	442.60	10.41	742.83	681.91	256.30	20.32%	65.41%	52.14%	47.86%	11.77%	8.00
	Poderosa	MF	210	1/2	P.210-MF1/2-8.0"	19/03/2014	26/03/2014						7.00	15.15	35890.00	180.32	199.03	94.78%	0	0	19/04/2014	31	14.99	54650.00	176.38	309.83	147.54%	5855	5945	5900.00	14.99	0.00	0.00												
	Poderosa	MF	280	1/2	P.280-MF1/2-7.0"	19/03/2014	26/03/2014	1.00	1.60	1.42	0.55	7"	7.00	15.15	45510.00	180.26	252.47	90.17%	0	0	19/04/2014	31	15.00	56170.00	176.62	318.02	113.58%	5907	5901	5904.00	15.00	0.00	0.00	2.50%	466.09	10.97	745.22	660.98	255.94	21.35%	64.42%	53.00%	47.00%	11.73%	7.00
	Poderosa	MF	280	1/2	P.280-MF1/2-7.0"	19/03/2014	26/03/2014						7.00	15.13	44560.00	179.87	247.73	88.48%	0	0	19/04/2014	31	15.04	57040.00	177.67	321.04	114.66%	5908	5935	5921.50	15.04	0.00	0.00												
	Poderosa	MF	280	1/2	P.280-MF1/2-3.25"	20/03/2014	27/03/2014	1.00	1.43	1.18	0.47	3.25"	7.00	15.29	52680.00	183.69	286.782	102.42%	0	0	21/04/2014	32	15.05	66920.00	177.79	376.39	134.43%	5895	5952	5923.50	15.05	12.90	29.70	2.50%	528.37	12.43	754.48	624.60	245.88	23.92%	62.44%	54.71%	45.29%	11.13%	3.25
	Poderosa	MF	280	1/2	P.280-MF1/2-3.25"	20/03/2014	27/03/2014						7.00	15.34	51920.00	184.79	280.962	100.34%	0	0	21/04/2014	32	15.02	66480.00	177.28	374.99	133.93%	5880	5950	5915.00	15.02	12.01	29.65												
	Poderosa	MF	210	1/2	P.210-MF1/2-3.0"	31/03/2014	07/04/2014	1.00	2.46	1.89	0.59	3"	7.00	15.05	37270.00	177.94	209.449	99.74%	0	0	28/04/2014	28	14.93	50180.00	174.95	286.82	136.58%	5867	5885	5876.00	14.93	12.11	29.70	2.50%	367.97	8.66	905.10	694.40	216.63	16.43%	71.40%	56.59%	43.41%	9.67%	3.00
	Poderosa	MF	210	1/2	P.210-MF1/2-3.0"	31/03/2014	07/04/2014						7.00	15.09	31490.00	178.91	176.015	83.82%	0	0	28/04/2014	28	14.87	50100.00	173.70	288.42	137.34%	5830	5880	5855.00	14.87	12.11	29.70												
	Poderosa	A.C.I	280	1	P.280-A1-4.0"	14/04/2014	21/04/2014	1.00	2.30	1.60	0.56	4"	7.00	15.59	34390.00	190.78	180.262	64.38%	13.72	30.4	12/05/2014	28	15.40	52330.00	186.30	280.90	100.32%	6112	6015	6063.50	15.40	13.06	30.50	1.50%	406.57	9.57	935.12	650.52	227.68	18.04%	70.36%	58.97%	41.03%	10.10%	4.00
	Poderosa	A.C.I	280	1	P.280-A1-4.0"	14/04/2014	21/04/2014						7.00	14.96	30450.00	175.79	173.221	61.86%	12.77	29.7	12/05/2014	28	15.26	51356.00	182.87	280.83	100.30%	6055	5960	6007.50	15.26	13.02	30.20												
	Poderosa	M.F	280	1	P.280-MF1-3.75"	15/04/2014	22/04/2014	1.00	1.40	2.00	0.57	3.75"	7.00	15.38	36590.00	185.71	197.025	70.37%	13.215	30.5	12/05/2014	27	10.55	25070	87.42	286.79	102.42%	4173	4134	4153.54	10.55	4.24	20.20	1.50%	434.11	10.21	608.73	868.52	245.95	19.82%	67.45%	41.21%	58.79%	11.23%	3.75
	Poderosa	M.F	280	1	P.280-MF1-3.75"	15/04/2014	22/04/2014						7.00	15.35	26980.00	185.16	145.711	52.04%	13.155	30.4	12/05/2014	27	10.55	25380	87.42	290.33	103.69%	4173	4134	4153.54	10.55	4.16	19.90												
	Poderosa	M.F	280	1	P.280-MF1-5.5"	15/04/2014	22/04/2014	1.00	1.40	2.05	0.57	5.5"	7.00	15.45	17170.00	187.40	91.620	32.72%	13.41	30.7	12/05/2014	27	15.33	50610	184.55	274.24	97.94%	6032	6038	6035.00	15.33	12.85	30.50	1.50%	429.89	10.11	602.82	882.91	243.56	19.61%	67.78%	40.57%	59.43%	11.11%	5.50
	Poderosa	M.F	280	1	P.280-MF1-5.5"	15/04/2014	22/04/2014						7.00	15.45	34260.00	187.37	182.84	65.30%	13.19	30.6	12/05/2014	27	15.41018	51410	186.51	275.64	98.4%	6063	6071	6067	15.41018	13.07	30.3												

RELACIÓN DE RESISTENCIAS POR RESULTADOS											DOSIFICACIÓN									
		TMN		PESO	ALTURA	Edad	Esfuerzo	(f'ci-f'co)^2	PESO	ALTURA	% aire	% cemento	% agregados	PROPORCIÓN DE AGREGADOS		% agua	SLUMP	Promedios	Desviación Estándar	Clasificación según desviación estándar
	Cantera	pulg.	código	kg.	cm				kg.	cm				GRUESO	FINO					
175	Socabaya	3/4	S.175-A3/4-2.4"	0.00	0.00	28.00	164.07	2131.16	0.00	0.00	2.00%	14.15%	73.60%	66.39%	33.61%	10.26%	2.40	210.24	49.07	Suficiente
	Socabaya	3/4	S.175-A3/4-2.4"	0.00	0.00	28.00	172.09	1455.65	0.00	0.00							2.40			
	Socabaya	3/4	S.175-A3/4-3.8"	0.00	0.00	28.00	245.99	1277.96	0.00	0.00	2.00%	14.63%	73.69%	63.82%	36.18%	9.68%	3.80			
	Socabaya	3/4	S.175-A3/4-3.8"	0.00	0.00	28.00	258.81	2358.93	0.00	0.00							3.80			
	Socabaya	3/4	S.175-MF3/4-2.0"	0.00	0.00	28.00	259.37	2413.43	11.72	30.10	2.00%	18.61%	67.91%	51.93%	48.07%	11.48%	2.00	259.70	57.62	Deficiente
	Socabaya	3/4	S.175-MF3/4-2.0"	0.00	0.00	28.00	268.48	3391.67	11.69	29.90							2.00			
	Socabaya	3/4	S.175-MF3/4-2.1"	0.00	0.00	28.00	261.07	2583.54	12.37	30.50	2.00%	19.49%	67.24%	51.76%	48.24%	11.28%	2.10			
	Socabaya	3/4	S.175-MF3/4-2.1"	0.00	0.00	28.00	249.90	1572.95	12.80	30.70							2.10			
	Socabaya	1	S.175-A1-1.0"	0.00	0.00	28.00	211.24	263.23	11.70	29.60	1.50%	13.61%	75.23%	56.58%	43.42%	9.66%	1.00	195.01	13.71	Excelente
	Socabaya	1	S.175-A1-1.0"	0.00	0.00	28.00	208.41	179.56	11.98	30.10							1.00			
	Socabaya	1	S.175-A1-2.1"	0.00	0.00	28.00	193.65	1.86	11.74	29.70	1.50%	14.71%	73.73%	57.90%	42.10%	10.06%	2.10			
	Socabaya	1	S.175-A1-2.1"	0.00	0.00	28.00	178.92	259.00	11.57	29.80							2.10			
	Socabaya	1	S.175-A1-3.0"	0.00	0.00	28.00	171.67	544.99	12.45	29.50	1.50%	14.63%	73.20%	60.00%	40.00%	10.67%	3.00			
	Socabaya	1	S.175-A1-3.0"	0.00	0.00	28.00	186.47	73.02	12.23	30.20							3.00			
	Socabaya	1	S.280-A1-3.1"	0.00	0.00	27.00	196.53	2.29	11.56	29.30	1.50%	15.72%	72.30%	56.52%	43.48%	10.48%	3.10			
	Socabaya	1	S.280-A1-3.1"	0.00	0.00	27.00	186.73	68.64	11.68	29.60							3.10			
	Socabaya	1	S.210-A1-4.0"	0.00	0.00	28.00	186.39	74.34	11.76	29.60	1.50%	13.19%	75.69%	56.23%	43.77%	9.63%	4.00			
	Socabaya	1	S.210-A1-4.0"	0.00	0.00	28.00	198.16	9.89	11.82	29.80							4.00			
	Socabaya	1	S.210-A1-4.1"	0.00	0.00	27.00	196.37	1.83	11.79	29.90	1.50%	15.43%	72.26%	56.31%	43.69%	10.80%	4.10			
	Socabaya	1	S.210-A1-4.1"	0.00	0.00	27.00	170.74	589.04	11.52	29.80							4.10			
	Socabaya	1	S.210-MF1-4.0"	0.00	0.00	27.00	171.56	3090.56	11.70	29.70	1.50%	21.99%	64.45%	45.88%	54.12%	12.06%	4.00	227.15	25.90	Excelente
	Socabaya	1	S.210-MF1-4.0"	0.00	0.00	27.00	225.39	3.10	11.41	29.85							4.00			
	Socabaya	1	S.210-MF1-4.25"	0.00	0.00	27.00	226.00	1.33	11.59	29.85	1.50%	21.66%	64.84%	44.70%	55.30%	12.00%	4.25			
	Socabaya	1	S.210-MF1-4.25"	0.00	0.00	27.00	225.28	3.50	11.61	29.75							4.25			
	Socabaya	1	S.210-MF1-4.75"	0.00	0.00	27.00	257.11	897.07	12.08	30.60	1.50%	22.70%	63.55%	46.90%	53.10%	12.26%	4.75			
	Socabaya	1	S.210-MF1-4.75"	0.00	0.00	27.00	262.63	1258.89	12.53	30.50							4.75			
	Socabaya	1	S.175-MF1-6.0"	0.00	0.00	27.00	208.52	347.16	29.60	11.34	1.50%	19.46%	66.69%	43.67%	56.33%	12.34%	6.00			
	Socabaya	1	S.175-MF1-6.0"	0.00	0.00	27.00	211.61	241.52	29.40	11.42							6.00			
	Socabaya	1	S.175-MF1-6.25"	0.00	0.00	27.00	248.26	445.48	30.10	11.69	1.50%	19.40%	67.01%	42.09%	57.91%	12.09%	6.25			
	Socabaya	1	S.175-MF1-6.25"	0.00	0.00	27.00	250.76	557.25	29.80	11.60							6.25			
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	205.01	490.47	29.70	11.31	1.50%	20.49%	65.57%	41.29%	58.71%	12.44%	7.00			
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	233.71	42.92	29.80	11.14							7.00			
210	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	219.97	443.52	0.00	0.00	2.00%	15.91%	73.19%	65.22%	34.78%	8.90%	2.50	241.03	24.73	Excelente
	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	221.17	394.57	0.00	0.00							2.50			
	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	264.41	546.54	0.00	0.00	2.00%	16.52%	72.02%	63.82%	36.18%	9.46%	2.50			
	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	262.48	460.16	0.00	0.00							2.50			
	Socabaya	3/4	S.280-A3/4-2.5"	0.00	0.00	31.00	271.43	924.10	0.00	0.00	2.00%	15.66%	73.21%	67.50%	32.50%	9.13%	2.50			
	Socabaya	3/4	S.280-A3/4-2.5"	0.00	0.00	31.00	273.43	1050.09	0.00	0.00							2.50			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	31.00	246.40	28.87	0.00	0.00	2.00%	14.86%	74.44%	68.19%	31.81%	8.70%	3.00			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	31.00	250.05	81.35	0.00	0.00							3.00			
	Socabaya	3/4	S.280-A3/4-5.0"	0.00	0.00	31.00	228.30	162.12	0.00	0.00	2.00%	17.66%	69.27%	62.60%	37.40%	11.06%	5.00			
	Socabaya	3/4	S.280-A3/4-5.0"	0.00	0.00	31.00	244.97	15.57	0.00	0.00							5.00			
	Socabaya	3/4	S.175-A3/4-5.8"	0.00	0.00	29.00	203.24	1427.96	0.00	0.00	2.00%	13.41%	73.75%	72.73%	27.27%	10.83%	5.80			
	Socabaya	3/4	S.175-A3/4-5.8"	0.00	0.00	29.00	206.50	1192.11	0.00	0.00							5.80			
	Socabaya	3/4	S.175-MF3/4-3.2"	0.00	0.00	28.00	332.32	1847.91	13.27	30.40	2.00%	19.00%	66.97%	50.82%	49.18%	12.03%	3.20	289.33	37.09	Bueno
	Socabaya	3/4	S.175-MF3/4-3.2"	0.00	0.00	28.00	307.69	337.18	11.86	29.70							3.20			
	Socabaya	3/4	S.210-MF3/4-6.0"	0.00	0.00	29.00	264.13	634.79	0.00	0.00	2.00%	22.23%	63.74%	57.38%	42.62%	12.03%	6.00			
	Socabaya	3/4	S.210-MF3/4-6.0"	0.00	0.00	29.00	253.17	1307.17	0.00	0.00							6.00			
	Socabaya	1	S.210-A1-1.0"	0.00	0.00	27.00	269.34	154.58	11.77	29.80	1.50%	16.19%	72.43%	55.87%	44.13%	9.88%	1.00	256.91	29.90	Muy Bueno
	Socabaya	1	S.210-A1-1.0"	0.00	0.00	27.00	286.45	872.34	11.76	29.65							1.00			
	Socabaya	1	S.175-A1-2.0"	0.00	0.00	28.00	267.89	120.67	11.84	29.30	1.50%	13.60%	75.19%	56.58%	43.42%	9.72%	2.00			
	Socabaya	1	S.175-A1-2.0"	0.00	0.00	28.00	308.20	2630.60	11.65	29.60							2.00			
	Socabaya	1	S.280-A1-2.0"	0.00	0.00	27.00	257.39	0.23	11.72	29.40	1.50%	16.39%	72.26%	58.76%	41.24%	9.85%	2.00			
	Socabaya	1	S.280-A1-2.0"	0.00	0.00	27.00	260.48	12.75	11.80	29.80							2.00			
	Socabaya	1	S.210-A1-3.0"	0.00	0.00	28.00	249.94	48.56	12.85	30.20	1.50%	13.87%	75.14%	57.54%	42.46%	9.49%	3.00			
	Socabaya	1	S.210-A1-3.0"	0.00	0.00	28.00	245.80	123.53	12.70	30.50							3.00			
	Socabaya	1	S.280-A1-6.0"	0.00	0.00	27.00	209.24	2272.51	12.35	29.70	1.50%	16.96%	70.78%	55.21%	44.79%	10.76%	6.00			
	Socabaya	1	S.280-A1-6.0"	0.00	0.00	27.00	214.38	1809.21	12.28	30.20							6.00			
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	258.44	62.75	11.42	29.80	1.50%	20.75%	66.09%	43.12%	56.88%	11.65%	1.80	250.51	17.46	Excelente
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	276.45	672.65	11.51	30.20							1.80			
	Socabaya	1	S.175-MF1-2.0"	0.00	0.00	27.00	276.14	656.46	29.80	11.41	1.50%	21.47%	65.02%	43.88%	56.12%	12.01%	2.00			
	Socabaya	1	S.175-MF1-2.0"	0.00	0.00	27.00	255.49	24.79	29.70	11.43							2.00			
	Socabaya	1	S.210-MF1-3.5"	0.00	0.00	27.00	236.22	204.39	11.45	29.60	1.50%	20.51%	66.36%	44.09%	55.91%	11.63%	3.50			
	Socabaya	1	S.210-MF1-3.5"	0.00	0.00	27.00	241.87	74.64	11.60	29.80							3.50			
	Socabaya	1	S.210-MF1-5.0"	0.00	0.00	27.00	228.26	495.31	11.10	29.70	1.50%	22.00%	63.99%	44.70%	55.30%	12.51%	5.00			
	Socabaya	1	S.210-MF1-5.0"	0.00	0.00	27.00	228.41	488.79	11.49	29.80							5.00			
	Socabaya	1	S.280-MF1-8.0"	11.12	29.50	27.00	257.37	46.94	11.42	29.70	1.50%	24.51%	60.97%	46.48%	53.52%	13.02%	8.00			
	Socabaya	1	S.280-MF1-8.0"	11.24	29.70	27.00	246.51	16.07	11.26	29.90							8.00			
280	Socabaya	3/4	S.210-A3/4-1.0"	0.00	0.00	29.00	303.35	106.12	0.00	0.00	2.00%	15.63%	74.00%	76.19%	23.81%	8.37%	1.00	313.65	36.17	Bueno
	Socabaya	3/4	S.210-A3/4-1.0"	0.00	0.00	29.00	314.05	0.16	0.00	0.00							1.00			
	Socabaya	3/4	S.175-A3/4-2.0"	0.00	0.00	29.00	304.15	90.32	0.00	0.00	2.00%	14.90%	74.92%	71.87%	28.13%	8.18%	2.00			
	Socabaya	3/4	S.175-A3/4-2.0"	0.00	0.00	29.00	292.10	464.29	0.00	0.00							2.00			
	Socabaya	3/4	S.210-A3/4-2.0"	0.00	0.00	29.00	314.84	1.41	0.00	0.00	2.00%	15.77%	67.51%	78.18%	21.82%	14.73%	2.00			
	Socabaya	3/4	S.210-A3/4-2.0"	0.00	0.00	29.00	317.57	15.36	0.00	0.00							2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	31.00	293.81	393.61	0.00	0.00	2.00%	16.01%	73.05%	74.87%	25.13%	8.94%	2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	31.00	298.82	219.88	0.00	0.00							2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	30.00	362.29	2366.01	0.00	0.00	2.00%	18.95%	69.79%	68.86%	31.14%	9.27%	2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	30.00	356.54	1839.35	0.00	0.00							2.00			
	Socabaya	3/4	S.280-A3/4-2.8"	0.00	0.00	30.00	286.46	739.39	0.00	0.00	2.00%	16.46%	72.74%	67.03%	32.97%	8.80%	2.80			
	Socabaya	3/4	S.280-A3/4-2.8"	0.00	0.00	30.00	262.09	2658.92	0.00	0.00							2.80			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	29.00	382.18	4695.73	0.00	0.00	2.00%	17.43%	72.05%	66.42%	33.58%	8.53%	3.00			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	29.00	373.29	3557.06	0.00	0.00							3.00			
	Socabaya	3/4	S.280-A3/4-4.0"	0.00	0.00	31.00	277.67	1294.69	0.00	0.00	2.00%	14.73%	73.69%	60.00%	40.00%	9.58%	4.00			
	Socabaya	3/4	S.280-A3/4-4.0"	0.00	0.00	31.00	279.20	1186.57	0.00	0.00							4.00			
	Socabaya	3/4	S.210-MF3/4-1.8"	0.00	0.00	29.00	330.45	285.13	0.00	0.00	2.00%	20.50%	66.59%	55.60%	44.40%	10.91%	1.80	347.34	20.67	Excelente
	Socabaya	3/4	S.210-MF3/4-1.8"	0.00	0.00	29.00	348.47	1.29	0.00	0.00							1.80			
	Socabaya	3/4	S.210-MF3/4-2.0"	0.00	0.00	30.00	314.74	1062.56	0.00	0.00	2.00%	22.04%	64.31%	57.06%	42.94%	11.64%	2.00			
	Socabaya	3/4	S.210-MF3/4-2.0"	0.00	0.00	30.00	329.62	313.88	0.00	0.00							2.00			
	Socabaya	3/4	S.175-MF3/4-2.8"	0.00	0.00	29.00	361.97	214.28	0.00	0.00	2.00%	21.17%	65.26%	55.92%	44.08%	11.57%	2.80			
	Socabaya	3/4	S.175-MF3/4-2.8"	0.00	0.00	29.00	361.25	193.57	0.00	0.00							2.80			
	Socabaya	3/4	S.175-MF3/4-3.0"	0.00	0.00	29.00	340.39	48.29	0.00	0.00	2.00%	19.01%	69.35%	51.93%	48.07%	9.64%	3.00			
	Socabaya	3/4	S.175-MF3/4-3.0"	0.00	0.00	29.00	331.96	236.38	0.00	0.00							3.00			
	Socabaya	3/4	S.280-MF3/4-3.5"	0.00	0.00	30.00	369.38	485.95	0.00	0.00	2.00%	21.47%	65.52%	56.31%	43.69%	11.01%	3.50			
	Socabaya	3/4	S.280-MF3/4-3.5"	0.00	0.00	30.00	375.36	785.35	0.00	0.00							3.50			
	Socabaya	3/4	S.280-MF3/4-3.8"	0.00	0.00	30.00	357.93	112.27	0.00	0.00	2.00%	22.20%	64.96%	56.31%	43.69%	10.83%	3.80			
	Socabaya	3/4	S.280-MF3/4-3.8"	0.00	0.00	30.00	384.38	1372.57	0.00	0.00							3.80			
	Socabaya	3/4	S.210-MF3/4-4.0"	0.00	0.00	30.00	345.33	4.03	0.00	0.00	2.00%	20.48%	66.53%	55.60%	44.40%	10.99%	4.00			
	Socabaya	3/4	S.210-MF3/4-4.0"	0.00	0.00	30.00	352.49	26.60	0.00	0.00							4.00			
	Socabaya	3/4	S.280-MF3/4-4.2"	0.00	0.00	30.00	370.41	532.24	0.00	0.00	2.00%	23.00%	63.38%	56.02%	43.98%	11.63%	4.20			
	Socabaya	3/4	S.280-MF3/4-4.2"	0.00	0.00	30.00	354.38	49.60	0.00	0.00							4.20			
	Socabaya	3/4	S.175-MF3/4-4.3"	0.00	0.00	29.00	329.11	332.09	0.00	0.00	2.00%	20.69%	67.17%	55.92%	44.08%	10.14%	4.30			
	Socabaya	3/4	S.175-MF3/4-4.3"	0.00	0.00	29.00	334.14	174.02	0.00	0.00							4.30			
	Socabaya	3/4	S.280-MF3/4-4.5"	0.00	0.00	32.00	362.23	221.88	0.00	0.00	2.00%	22.08%	65.05%	55.41%	44.59%	10.86%	4.50			
	Socabaya	3/4	S.280-MF3/4-4.5"	0.00	0.00	32.00	359.66	152.00	0.00	0.00							4.50			
	Socabaya	3/4	S.175-MF3/4-5.0"	0.00	0.00	29.00	305.76	1728.50	0.00	0.00	2.00%	20.53%	65.66%	54.98%	45.02%	11.81%	5.00			
	Socabaya	3/4	S.175-MF3/4-5.0"	0.00	0.00	29.00	321.96	643.75	0.00	0.00							5.00			
	Socabaya	1	S.280-MF1-2.0"	11.23	29.70	27.00	294.03	182.53	11.64	29.90	1.50%	21.49%	65.45%	44.52%	55.48%	11.56%	2.00	280.52	6.42	Excelente
	Socabaya	1	S.280-MF1-2.0"	11.21	29.80	27.00	273.09	55.22	11.43	29.80							2.00			
	Socabaya	1	S.280-A1-3.0"	0.00	0.00	27.00	273.82	44.97	29.75	11.50	1.50%	19.87%	67.52%	56.17%	43.83%	11.11%	3.00			
	Socabaya	1	S.280-A1-3.0"	0.00	0.00	27.00	279.29	1.51	30.10	11.58							3.00			
	Socabaya	1	S.280-MF1-3.0"	11.42	29.80	27.00	281.12	0.36	11.49	30.10	1.50%	21.58%	65.11%	44.90%	55.10%	11.81%	3.00			
	Socabaya	1	S.280-MF1-3.0"	11.09	29.10	27.00	281.39	0.75	11.62	29.90							3.00			
	Socabaya	1	S.280-MF1-5.0"	11.29	29.80	27.00	281.96	2.07	11.42	30.10	1.50%	22.66%	63.41%	46.17%	53.83%	12.43%	5.00			
	Socabaya	1	S.280-MF1-5.0"	11.18	30.20	27.00	279.48	1.10	11.65	29.90							5.00			

RELACIÓN DE RESISTENCIAS POR RESULTADOS

	Cantera	*TMN*	*código*	PESO	ALTURA	Edad	Esfuerzo	(f'ci-f'co)^2	PESO	ALTURA	% aire	% cemento	% agregados	PROPORCIÓN DE AGREGADOS		% agua	SLUMP	Promedios	Desviación Estándar	Clasificación según desviación estándar
		pulg.		kg.	cm				kg.	cm				GRUESO	FINO					
175	Cono Norte	*3/4*	***C.N175-A3/4-3.0"***	0.00	0.00	31.00	227.27	3.21	0.00	0.00	2.00%	16.68%	70.85%	59.09%	40.91%	10.47%	3.00	229.06	14.49	Excelente
	Cono Norte	*3/4*	***C.N175-A3/4-3.0"***	0.00	0.00	31.00	225.89	10.04	0.00	0.00							3.00			
	Cono Norte	*3/4*	***C.N175-A3/4-4.5"***	0.00	0.00	28.00	244.83	248.68	0.00	0.00	2.00%	15.63%	71.05%	70.41%	29.59%	11.31%	4.50			
	Cono Norte	*3/4*	***C.N175-A3/4-4.5"***	0.00	0.00	28.00	247.75	349.37	0.00	0.00							4.50			
	Cono Norte+ S	*3/4*	***C.N175-MF3/4-4.8"***	0.00	0.00	28.00	215.55	182.43	11.71	29.60	2.00%	19.10%	67.54%	57.27%	42.73%	11.37%	4.80			
	Cono Norte	*3/4*	***C.N175-MF3/4-4.8"***	0.00	0.00	28.00	213.06	255.84	11.72	29.65							4.80			
	Cono Norte	*1*	***C.N175-A1-6.5"***	0.00	0.00	29.00	200.58	1.62	0.00	0.00	1.50%	14.44%	74.82%	69.79%	30.21%	9.24%	6.50	199.31	9.67	Excelente
	Cono Norte	*1*	***C.N175-A1-6.5"***	0.00	0.00	29.00	188.80	110.46	0.00	0.00							6.50			
	Cono Norte	*1*	***C.N175-A1-7.5"***	0.00	0.00	29.00	208.55	85.34	0.00	0.00	1.50%	15.29%	73.54%	69.73%	30.27%	9.67%	7.50			
	Cono Norte	*1*	***C.N175-A1-7.5"***	0.00	0.00	29.00	190.19	83.16	0.00	0.00							7.50			
210	Cono Norte	*3/4*	***C.N210-A3/4-2.3"***	0.00	0.00	28.00	269.32	48.46	0.00	0.00	2.00%	19.71%	69.04%	68.85%	31.15%	9.25%	2.30	262.36	6.64	Excelente
	Cono Norte	*3/4*	***C.N210-A3/4-2.3"***	0.00	0.00	28.00	267.00	21.54	0.00	0.00							2.30			
	Cono Norte	*3/4*	***C.N210-A3/4-3.0"***	0.00	0.00	28.00	252.90	89.52	0.00	0.00	2.00%	18.34%	70.42%	67.87%	32.13%	9.24%	3.00			
	Cono Norte	*3/4*	***C.N210-A3/4-3.0"***	0.00	0.00	28.00	256.76	31.38	0.00	0.00							3.00			
	Cono Norte	*3/4*	***C.N280-A3/4-6.5"***	0.00	0.00	30.00	267.52	26.63	0.00	0.00	2.00%	18.17%	68.92%	72.16%	27.84%	10.91%	6.50			
	Cono Norte	*3/4*	***C.N280-A3/4-6.5"***	0.00	0.00	30.00	260.66	2.89	0.00	0.00							6.50			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.5"***	0.00	0.00	28.00	313.71	464.51	12.93	30.50	2.00%	21.54%	65.70%	58.71%	41.29%	10.77%	3.50	292.16	24.34	Excelente
	Cono Norte	*3/4*	***C.N280-MF3/4-3.5"***	0.00	0.00	28.00	279.45	161.52	12.73	30.30							3.50			
	Cono Norte	*3/4*	***C.N210-MF3/4-3.6"***	0.00	0.00	28.00	330.11	1440.00	11.88	29.60	2.00%	20.35%	66.97%	56.24%	43.76%	10.68%	3.60			
	Cono Norte	*3/4*	***C.N210-MF3/4-3.6"***	0.00	0.00	28.00	269.75	502.00	12.91	30.60							3.60			
	Cono Norte	*3/4*	***C.N210-MF3/4-7.0"***	0.00	0.00	28.00	273.00	366.90	11.46	29.70	2.00%	21.40%	64.33%	59.47%	40.53%	12.27%	7.00			
	Cono Norte	*3/4*	***C.N210-MF3/4-7.0"***	0.00	0.00	28.00	286.93	27.36	11.40	29.50							7.00			
	Cono Norte	*1*	***C.N210-A1-2.9"***	0.00	0.00	29.00	270.18	736.35	0.00	0.00	1.50%	17.39%	71.19%	61.83%	38.17%	9.92%	2.90	243.04	30.35	Muy Bueno
	Cono Norte	*1*	***C.N210-A1-2.9"***	0.00	0.00	29.00	290.35	2237.55	0.00	0.00							2.90			
	Cono Norte	*1*	***C.N210-A1-3.8"***	0.00	0.00	29.00	236.96	36.99	0.00	0.00	1.50%	16.44%	72.20%	65.57%	34.43%	9.86%	3.80			
	Cono Norte	*1*	***C.N210-A1-3.8"***	0.00	0.00	29.00	215.34	767.64	0.00	0.00							3.80			
	Cono Norte	*1*	***C.N210-A1-4.2"***	0.00	0.00	29.00	223.66	375.71	0.00	0.00	1.50%	16.26%	72.68%	67.48%	32.52%	9.56%	4.20			
	Cono Norte	*1*	***C.N210-A1-4.2"***	0.00	0.00	29.00	221.78	452.28	0.00	0.00							4.20			
	Cono Norte	*1*	***C.N210-MF1-3.0"***	0.00	0.00	28.00	222.34	1210.07	12.71	30.80	1.50%	18.55%	69.55%	45.59%	54.41%	10.40%	3.00	257.12	28.14	Muy Bueno
	Cono Norte	*1*	***C.N210-MF1-3.0"***	0.00	0.00	28.00	300.69	1897.90	12.81	30.50							3.00			
	Cono Norte	*1*	***C.N175-MF1-5.0"***	0.00	0.00	28.00	248.71	70.74	11.78	29.90	1.50%	18.28%	69.34%	44.80%	55.20%	10.87%	5.00			
	Cono Norte	*1*	***C.N175-MF1-5.0"***	0.00	0.00	28.00	271.27	200.24	11.82	30.10							5.00			
	Cono Norte	*1*	***C.N175-MF1-6.0"***	0.00	0.00	28.00	234.44	514.55	11.45	29.70	1.50%	19.19%	67.88%	57.27%	42.73%	11.42%	6.00			
	Cono Norte	*1*	***C.N175-MF1-6.0"***	0.00	0.00	28.00	265.29	66.66	11.68	29.60							6.00			
280	Cono Norte	*3/4*	***C.N280-A3/4-1.4"***	0.00	0.00	30.00	372.80	1560.78	0.00	0.00	2.00%	18.41%	70.71%	67.15%	32.85%	8.89%	1.40	333.29	35.20	Bueno
	Cono Norte	*3/4*	***C.N280-A3/4-1.4"***	0.00	0.00	30.00	431.89	9721.84	0.00	0.00							1.40			
	Cono Norte	*3/4*	***C.N210-A3/4-1.5"***	0.00	0.00	28.00	304.43	832.78	0.00	0.00	2.00%	19.10%	69.97%	67.97%	32.03%	8.93%	1.50			
	Cono Norte	*3/4*	***C.N210-A3/4-1.5"***	0.00	0.00	28.00	302.50	947.71	0.00	0.00							1.50			
	Cono Norte	*3/4*	***C.N280-A3/4-1.8"***	0.00	0.00	30.00	323.06	104.53	0.00	0.00	2.00%	20.02%	68.74%	66.80%	33.20%	9.24%	1.80			
	Cono Norte	*3/4*	***C.N280-A3/4-1.8"***	0.00	0.00	30.00	354.52	450.83	0.00	0.00							1.80			
	Cono Norte	*3/4*	***C.N210-A3/4-2.0"***	0.00	0.00	28.00	347.25	194.98	0.00	0.00	2.00%	20.77%	68.09%	73.17%	26.83%	9.15%	2.00			
	Cono Norte	*3/4*	***C.N210-A3/4-2.0"***	0.00	0.00	28.00	347.10	190.81	0.00	0.00							2.00			
	Cono Norte	*3/4*	***C.N210-A3/4-2.5"***	0.00	0.00	28.00	355.47	491.93	0.00	0.00	2.00%	17.63%	71.74%	70.96%	29.04%	8.63%	2.50			
	Cono Norte	*3/4*	***C.N210-A3/4-2.5"***	0.00	0.00	28.00	344.80	132.48	0.00	0.00							2.50			
	Cono Norte	*3/4*	***C.N280-A3/4-2.7"***	0.00	0.00	30.00	306.85	699.00	0.00	0.00	2.00%	19.74%	67.42%	70.52%	29.48%	10.84%	2.70			
	Cono Norte	*3/4*	***C.N280-A3/4-2.7"***	0.00	0.00	30.00	321.44	140.42	0.00	0.00							2.70			
	Cono Norte	*3/4*	***C.N280-A3/4-3.0"***	0.00	0.00	30.00	340.45	51.36	0.00	0.00	2.00%	18.09%	70.07%	69.79%	30.21%	9.85%	3.00			
	Cono Norte	*3/4*	***C.N280-A3/4-3.0"***	0.00	0.00	30.00	345.32	144.81	0.00	0.00							3.00			
	Cono Norte	*3/4*	***C.N175-A3/4-3.1"***	0.00	0.00	28.00	320.92	153.08	0.00	0.00	2.00%	16.59%	69.95%	68.10%	31.90%	11.46%	3.10			
	Cono Norte	*3/4*	***C.N175-A3/4-3.1"***	0.00	0.00	28.00	311.54	473.03	0.00	0.00							3.10			
	Cono Norte	*3/4*	***C.N175-A3/4-3.5"***	0.00	0.00	28.00	285.74	2260.47	0.00	0.00	2.00%	16.75%	70.73%	71.56%	28.44%	10.52%	3.50			
	Cono Norte	*3/4*	***C.N175-A3/4-3.5"***	0.00	0.00	28.00	283.10	2518.42	0.00	0.00							3.50			
	Cono Norte	*3/4*	***C.N175-MF3/4-1.8"***	0.00	0.00	31.00	292.51	538.13	13.03	30.50	2.00%	18.85%	68.80%	53.14%	46.86%	10.35%	1.80	315.70	25.10	Excelente
	Cono Norte	*3/4*	***C.N175-MF3/4-1.8"***	0.00	0.00	31.00	318.22	6.33	11.75	29.20							1.80			
	Cono Norte	*3/4*	***C.N175-MF3/4-3.0"***	0.00	0.00	31.00	287.35	803.93	11.88	29.20	2.00%	19.20%	67.46%	57.27%	42.73%	11.34%	3.00			
	Cono Norte	*3/4*	***C.N175-MF3/4-3.0"***	0.00	0.00	31.00	319.76	16.48	11.79	29.60							3.00			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.0"***	0.00	0.00	28.00	302.43	176.26	11.67	29.50	2.00%	21.93%	64.69%	59.96%	40.04%	11.38%	3.00			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.0"***	0.00	0.00	28.00	328.00	151.11	11.77	29.70							3.00			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.2"***	0.00	0.00	28.00	359.33	1902.72	11.95	30.40	2.00%	20.43%	67.05%	56.27%	43.73%	10.52%	3.20			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.2"***	0.00	0.00	28.00	376.08	3645.27	11.95	29.50							3.20			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.5"***	0.00	0.00	28.00	315.88	0.03	11.79	30.05	2.00%	20.96%	65.76%	59.01%	40.99%	11.28%	3.50			
	Cono Norte	*3/4*	***C.N280-MF3/4-3.5"***	0.00	0.00	28.00	331.51	249.83	11.85	30.40							3.50			
	Cono Norte	*3/4*	***C.N210-MF3/4-4.2"***	0.00	0.00	28.00	307.04	75.03	11.56	29.50	2.00%	20.01%	66.65%	58.04%	41.96%	11.33%	4.20			
	Cono Norte	*3/4*	***C.N210-MF3/4-4.2"***	0.00	0.00	28.00	312.05	13.34	11.74	29.50							4.20			
	Cono Norte	*3/4*	***C.N280-MF3/4-4.2"***	0.00	0.00	28.00	356.58	1670.77	12.53	30.60	2.00%	20.35%	66.97%	56.24%	43.76%	10.68%	4.20			
	Cono Norte	*3/4*	***C.N280-MF3/4-4.2"***	0.00	0.00	28.00	321.34	31.70	12.84	30.60							4.20			
	Cono Norte	*3/4*	***C.N210-MF3/4-6.0"***	0.00	0.00	28.00	307.53	66.91	11.69	29.60	2.00%	20.21%	66.16%	59.62%	40.38%	11.63%	6.00			
	Cono Norte	*3/4*	***C.N210-MF3/4-6.0"***	0.00	0.00	28.00	306.83	78.82	11.72	30.00							6.00			
	Cono Norte	*3/4*	***C.N175-MF3/4-6.8"***	0.00	0.00	31.00	284.80	955.39	11.79	29.70	2.00%	20.83%	65.59%	58.50%	41.50%	11.57%	6.80			
	Cono Norte	*3/4*	***C.N175-MF3/4-6.8"***	0.00	0.00	31.00	310.27	29.58	11.85	29.20							6.80			
	Cono Norte	*3/4*	***C.N175-MF3/4-7.0"***	0.00	0.00	31.00	283.19	1057.23	11.87	30.10	2.00%	19.09%	67.55%	57.27%	42.73%	11.37%	7.00			
	Cono Norte	*3/4*	***C.N175-MF3/4-7.0"***	0.00	0.00	31.00	293.42	496.76	12.05	29.90							7.00			
	Cono Norte	*1*	***C.N210-A1-1.5"***	0.00	0.00	29.00	297.15	1641.47	0.00	0.00	1.50%	16.19%	74.41%	59.02%	40.98%	7.91%	1.50	337.67	25.97	Excelente
	Cono Norte	*1*	***C.N210-A1-1.5"***	0.00	0.00	29.00	302.03	1270.12	0.00	0.00							1.50			
	Cono Norte	*1*	***C.N280-A1-1.8"***	0.00	0.00	29.00	322.90	218.21	0.00	0.00	1.50%	19.67%	69.19%	66.60%	33.40%	9.64%	1.80			
	Cono Norte	*1*	***C.N280-A1-1.8"***	0.00	0.00	29.00	326.81	117.95	0.00	0.00							1.80			
	Cono Norte	*1*	***C.N210-A1-2.5"***	0.00	0.00	29.00	337.76	0.01	0.00	0.00	1.50%	16.16%	73.26%	59.20%	40.80%	9.07%	2.50			
	Cono Norte	*1*	***C.N210-A1-2.5"***	0.00	0.00	29.00	326.10	133.91	0.00	0.00							2.50			
	Cono Norte	*1*	***C.N280-A1-3.4"***	0.00	0.00	29.00	381.02	1879.49	0.00	0.00	1.50%	20.30%	68.64%	67.18%	32.82%	9.56%	3.40			
	Cono Norte	*1*	***C.N280-A1-3.4"***	0.00	0.00	29.00	350.82	173.01	0.00	0.00							3.40			
	Cono Norte	*1*	***C.N280-A1-3.7"***	0.00	0.00	29.00	378.42	1660.78	0.00	0.00	1.50%	19.94%	69.11%	65.19%	34.81%	9.46%	3.70			
	Cono Norte	*1*	***C.N280-A1-3.7"***	0.00	0.00	29.00	355.67	324.02	0.00	0.00							3.70			
	Cono Norte	*1*	***C.N280-A1-3.8"***	0.00	0.00	29.00	336.65	1.04	0.00	0.00	1.50%	19.75%	69.07%	64.69%	35.31%	9.67%	3.80			
	Cono Norte	*1*	***C.N280-A1-3.8"***	0.00	0.00	29.00	336.70	0.94	0.00	0.00							3.80			
	Cono Norte	*1*	***C.N210-MF1-1.5"***	0.00	0.00	28.00	338.97	782.50	11.80	29.40	1.50%	20.73%	67.20%	42.94%	57.06%	10.57%	1.50	311.00	21.15	Excelente
	Cono Norte	*1*	***C.N210-MF1-1.5"***	0.00	0.00	28.00	352.80	1747.53	11.95	30.10							1.50			
	Cono Norte	*1*	***C.N210-MF1-2.0"***	0.00	0.00	28.00	311.25	0.07	11.71	29.60	1.50%	18.90%	68.91%	43.77%	56.23%	10.69%	2.00			
	Cono Norte	*1*	***C.N210-MF1-2.0"***	0.00	0.00	28.00	291.26	389.38	11.62	29.70							2.00			
	Cono Norte	*1*	***C.N280-MF1-2.0"***	0.00	0.00	28.00	328.66	311.92	11.66	29.60	1.50%	21.90%	65.59%	45.22%	54.78%	11.02%	2.00			
	Cono Norte	*1*	***C.N280-MF1-2.0"***	0.00	0.00	28.00	320.38	88.01	11.76	29.70							2.00			
	Cono Norte	*1*	***C.N280-MF1-2.2"***	0.00	0.00	28.00	315.43	19.70	11.69	30.00	1.50%	19.91%	67.63%	44.07%	55.93%	10.96%	2.20			
	Cono Norte	*1*	***C.N280-MF1-2.2"***	0.00	0.00	28.00	295.18	250.06	11.70	29.20							2.20			
	Cono Norte	*1*	***C.N280-MF1-2.5"***	0.00	0.00	28.00	283.56	752.59	13.00	30.50	1.50%	21.75%	65.47%	44.33%	55.67%	11.27%	2.50			
	Cono Norte	*1*	***C.N280-MF1-2.5"***	0.00	0.00	28.00	345.36	1180.83	12.58	30.60							2.50			
	Cono Norte	*1*	***C.N210-MF1-2.7"***	0.00	0.00	28.00	309.35	2.71	11.86	30.10	1.50%	20.05%	68.09%	42.09%	57.91%	10.36%	2.70			
	Cono Norte	*1*	***C.N210-MF1-2.7"***	0.00	0.00	28.00	324.51	182.62	11.83	29.90							2.70			
	Cono Norte	*1*	***C.N175-MF1-3.0"***	0.00	0.00	28.00	317.75	45.63	11.78	29.60	1.50%	19.43%	68.80%	45.17%	54.83%	10.28%	3.00			
	Cono Norte	*1*	***C.N175-MF1-3.0"***	0.00	0.00	28.00	332.69	470.66	11.97	30.30							3.00			
	Cono Norte	*1*	***C.N175-MF1-4.0"***	0.00	0.00	28.00	319.73	76.29	11.89	30.10	1.50%	19.18%	68.82%	44.83%	55.17%	10.49%	4.00			
	Cono Norte	*1*	***C.N175-MF1-4.0"***	0.00	0.00	28.00	289.44	464.51	12.02	30.20							4.00			
	Cono Norte	*1*	***C.N210-MF1-4.0"***	0.00	0.00	28.00	290.55	418.07	11.77	30.10	1.50%	20.37%	66.59%	44.56%	55.44%	11.55%	4.00			
	Cono Norte	*1*	***C.N210-MF1-4.0"***	0.00	0.00	28.00	296.21	218.72	11.82	29.80							4.00			
	Cono Norte	*1*	***C.N280-MF1-4.0"***	0.00	0.00	28.00	307.84	9.96	11.70	29.40	1.50%	19.87%	67.63%	44.33%	55.67%	11.00%	4.00			
	Cono Norte	*1*	***C.N280-MF1-4.0"***	0.00	0.00	28.00	311.39	0.16	11.62	29.60							4.00			
	Cono Norte	*1*	***C.N175-MF1-4.5"***	0.00	0.00	28.00	284.02	727.69	12.66	30.60	1.50%	18.90%	68.58%	46.20%	53.80%	11.02%	4.50			
	Cono Norte	*1*	***C.N175-MF1-4.5"***	0.00	0.00	28.00	275.57	1254.92	12.69	30.70							4.50			

RELACIÓN DE RESISTENCIAS POR RESULTADOS											DOSIFICACIÓN									
		TMN		PESO	ALTURA	Edad	Esfuerzo	(f'ci-f'co)^2	PESO	ALTURA	% aire	% cemento	% agregados	PROPORCIÓN DE AGREGADOS		% agua	SLUMP	Promedios	Desviación Estándar	Clasificación según desviación estándar
	Cantera	pulg.	código	kg.	cm				kg.	cm				GRUESO	FINO					
175	Socabaya	3/4	S.175-A3/4-2.4"	0.00	0.00	28.00	164.07	2131.16	0.00	0.00	2.00%	14.15%	73.60%	66.39%	33.61%	10.26%	2.40	210.24	49.07	Suficiente
	Socabaya	3/4	S.175-A3/4-2.4"	0.00	0.00	28.00	172.09	1455.65	0.00	0.00							2.40			
	Socabaya	3/4	S.175-A3/4-3.8"	0.00	0.00	28.00	245.99	1277.96	0.00	0.00	2.00%	14.63%	73.69%	63.82%	36.18%	9.68%	3.80			
	Socabaya	3/4	S.175-A3/4-3.8"	0.00	0.00	28.00	258.81	2358.93	0.00	0.00							3.80			
	Socabaya	3/4	S.175-MF3/4-2.0"	0.00	0.00	28.00	259.37	2413.43	11.72	30.10	2.00%	18.61%	67.91%	51.93%	48.07%	11.48%	2.00	259.70	57.62	Deficiente
	Socabaya	3/4	S.175-MF3/4-2.0"	0.00	0.00	28.00	268.48	3391.67	11.69	29.90							2.00			
	Socabaya	3/4	S.175-MF3/4-2.1"	0.00	0.00	28.00	261.07	2583.54	12.37	30.50	2.00%	19.49%	67.24%	51.76%	48.24%	11.28%	2.10			
	Socabaya	3/4	S.175-MF3/4-2.1"	0.00	0.00	28.00	249.90	1572.95	12.80	30.70							2.10			
	Socabaya	1	S.175-A1-1.0"	0.00	0.00	28.00	211.24	263.23	11.70	29.60	1.50%	13.61%	75.23%	56.58%	43.42%	9.66%	1.00	195.01	13.71	Excelente
	Socabaya	1	S.175-A1-1.0"	0.00	0.00	28.00	208.41	179.56	11.98	30.10							1.00			
	Socabaya	1	S.175-A1-2.1"	0.00	0.00	28.00	193.65	1.86	11.74	29.70	1.50%	14.71%	73.73%	57.90%	42.10%	10.06%	2.10			
	Socabaya	1	S.175-A1-2.1"	0.00	0.00	28.00	178.92	259.00	11.57	29.80							2.10			
	Socabaya	1	S.175-A1-3.0"	0.00	0.00	28.00	171.67	544.99	12.45	29.50	1.50%	14.63%	73.20%	60.00%	40.00%	10.67%	3.00			
	Socabaya	1	S.175-A1-3.0"	0.00	0.00	28.00	186.47	73.02	12.23	30.20							3.00			
	Socabaya	1	S.280-A1-3.1"	0.00	0.00	27.00	196.53	2.29	11.56	29.30	1.50%	15.72%	72.30%	56.52%	43.48%	10.48%	3.10			
	Socabaya	1	S.280-A1-3.1"	0.00	0.00	27.00	186.73	68.64	11.68	29.60							3.10			
	Socabaya	1	S.210-A1-4.0"	0.00	0.00	28.00	186.39	74.34	11.76	29.60	1.50%	13.19%	75.69%	56.23%	43.77%	9.63%	4.00			
	Socabaya	1	S.210-A1-4.0"	0.00	0.00	28.00	198.16	9.89	11.82	29.80							4.00			
	Socabaya	1	S.210-A1-4.1"	0.00	0.00	27.00	196.37	1.83	11.79	29.90	1.50%	15.43%	72.26%	56.31%	43.69%	10.80%	4.10			
	Socabaya	1	S.210-A1-4.1"	0.00	0.00	27.00	170.74	589.04	11.52	29.80							4.10			
	Socabaya	1	S.210-MF1-4.0"	0.00	0.00	27.00	171.56	3090.56	11.70	29.70	1.50%	21.99%	64.45%	45.88%	54.12%	12.06%	4.00	227.15	25.90	Excelente
	Socabaya	1	S.210-MF1-4.0"	0.00	0.00	27.00	225.39	3.10	11.41	29.85							4.00			
	Socabaya	1	S.210-MF1-4.25"	0.00	0.00	27.00	226.00	1.33	11.59	29.85	1.50%	21.66%	64.84%	44.70%	55.30%	12.00%	4.25			
	Socabaya	1	S.210-MF1-4.25"	0.00	0.00	27.00	225.28	3.50	11.61	29.75							4.25			
	Socabaya	1	S.210-MF1-4.75"	0.00	0.00	27.00	257.11	897.07	12.08	30.60	1.50%	22.70%	63.55%	46.90%	53.10%	12.26%	4.75			
	Socabaya	1	S.210-MF1-4.75"	0.00	0.00	27.00	262.63	1258.89	12.53	30.50							4.75			
	Socabaya	1	S.175-MF1-6.0"	0.00	0.00	27.00	208.52	347.16	29.60	11.34	1.50%	19.46%	66.69%	43.67%	56.33%	12.34%	6.00			
	Socabaya	1	S.175-MF1-6.0"	0.00	0.00	27.00	211.61	241.52	29.40	11.42							6.00			
	Socabaya	1	S.175-MF1-6.25"	0.00	0.00	27.00	248.26	445.48	30.10	11.69	1.50%	19.40%	67.01%	42.09%	57.91%	12.09%	6.25			
	Socabaya	1	S.175-MF1-6.25"	0.00	0.00	27.00	250.76	557.25	29.80	11.60							6.25			
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	205.01	490.47	29.70	11.31	1.50%	20.49%	65.57%	41.29%	58.71%	12.44%	7.00			
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	233.71	42.92	29.80	11.14							7.00			
210	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	219.97	443.52	0.00	0.00	2.00%	15.91%	73.19%	65.22%	34.78%	8.90%	2.50	241.03	24.73	Excelente
	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	221.17	394.57	0.00	0.00							2.50			
	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	264.41	546.54	0.00	0.00	2.00%	16.52%	72.02%	63.82%	36.18%	9.46%	2.50			
	Socabaya	3/4	S.210-A3/4-2.5"	0.00	0.00	29.00	262.48	460.16	0.00	0.00							2.50			
	Socabaya	3/4	S.280-A3/4-2.5"	0.00	0.00	31.00	271.43	924.10	0.00	0.00	2.00%	15.66%	73.21%	67.50%	32.50%	9.13%	2.50			
	Socabaya	3/4	S.280-A3/4-2.5"	0.00	0.00	31.00	273.43	1050.09	0.00	0.00							2.50			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	31.00	246.40	28.87	0.00	0.00	2.00%	14.86%	74.44%	68.19%	31.81%	8.70%	3.00			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	31.00	250.05	81.35	0.00	0.00							3.00			
	Socabaya	3/4	S.280-A3/4-5.0"	0.00	0.00	31.00	228.30	162.12	0.00	0.00	2.00%	17.66%	69.27%	62.60%	37.40%	11.06%	5.00			
	Socabaya	3/4	S.280-A3/4-5.0"	0.00	0.00	31.00	244.97	15.57	0.00	0.00							5.00			
	Socabaya	3/4	S.175-A3/4-5.8"	0.00	0.00	29.00	203.24	1427.96	0.00	0.00	2.00%	13.41%	73.75%	72.73%	27.27%	10.83%	5.80			
	Socabaya	3/4	S.175-A3/4-5.8"	0.00	0.00	29.00	206.50	1192.11	0.00	0.00							5.80			
	Socabaya	3/4	S.175-MF3/4-3.2"	0.00	0.00	28.00	332.32	1847.91	13.27	30.40	2.00%	19.00%	66.97%	50.82%	49.18%	12.03%	3.20	289.33	37.09	Bueno
	Socabaya	3/4	S.175-MF3/4-3.2"	0.00	0.00	28.00	307.69	337.18	11.86	29.70							3.20			
	Socabaya	3/4	S.210-MF3/4-6.0"	0.00	0.00	29.00	264.13	634.79	0.00	0.00	2.00%	22.23%	63.74%	57.38%	42.62%	12.03%	6.00			
	Socabaya	3/4	S.210-MF3/4-6.0"	0.00	0.00	29.00	253.17	1307.17	0.00	0.00							6.00			
	Socabaya	1	S.210-A1-1.0"	0.00	0.00	27.00	269.34	154.58	11.77	29.80	1.50%	16.19%	72.43%	55.87%	44.13%	9.88%	1.00	256.91	29.90	Muy Bueno
	Socabaya	1	S.210-A1-1.0"	0.00	0.00	27.00	286.45	872.34	11.76	29.65							1.00			
	Socabaya	1	S.175-A1-2.0"	0.00	0.00	28.00	267.89	120.67	11.84	29.30	1.50%	13.60%	75.19%	56.58%	43.42%	9.72%	2.00			
	Socabaya	1	S.175-A1-2.0"	0.00	0.00	28.00	308.20	2630.60	11.65	29.60							2.00			
	Socabaya	1	S.280-A1-2.0"	0.00	0.00	27.00	257.39	0.23	11.72	29.40	1.50%	16.39%	72.26%	58.76%	41.24%	9.85%	2.00			
	Socabaya	1	S.280-A1-2.0"	0.00	0.00	27.00	260.48	12.75	11.80	29.80							2.00			
	Socabaya	1	S.210-A1-3.0"	0.00	0.00	28.00	249.94	48.56	12.85	30.20	1.50%	13.87%	75.14%	57.54%	42.46%	9.49%	3.00			
	Socabaya	1	S.210-A1-3.0"	0.00	0.00	28.00	245.80	123.53	12.70	30.50							3.00			
	Socabaya	1	S.280-A1-6.0"	0.00	0.00	27.00	209.24	2272.51	12.35	29.70	1.50%	16.96%	70.78%	55.21%	44.79%	10.76%	6.00			
	Socabaya	1	S.280-A1-6.0"	0.00	0.00	27.00	214.38	1809.21	12.28	30.20							6.00			
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	258.44	62.75	11.42	29.80	1.50%	20.75%	66.09%	43.12%	56.88%	11.65%	1.80	250.51	17.46	Excelente
	Socabaya	1	S.175-MF1-7.0"	0.00	0.00	27.00	276.45	672.65	11.51	30.20							1.80			
	Socabaya	1	S.175-MF1-2.0"	0.00	0.00	27.00	276.14	656.46	29.80	11.41	1.50%	21.47%	65.02%	43.88%	56.12%	12.01%	2.00			
	Socabaya	1	S.175-MF1-2.0"	0.00	0.00	27.00	255.49	24.79	29.70	11.43							2.00			
	Socabaya	1	S.210-MF1-3.5"	0.00	0.00	27.00	236.22	204.39	11.45	29.60	1.50%	20.51%	66.36%	44.09%	55.91%	11.63%	3.50			
	Socabaya	1	S.210-MF1-3.5"	0.00	0.00	27.00	241.87	74.64	11.60	29.80							3.50			
	Socabaya	1	S.210-MF1-5.0"	0.00	0.00	27.00	228.26	495.31	11.10	29.70	1.50%	22.00%	63.99%	44.70%	55.30%	12.51%	5.00			
	Socabaya	1	S.210-MF1-5.0"	0.00	0.00	27.00	228.41	488.79	11.49	29.80							5.00			
	Socabaya	1	S.280-MF1-8.0"	11.12	29.50	27.00	257.37	46.94	11.42	29.70	1.50%	24.51%	60.97%	46.48%	53.52%	13.02%	8.00			
	Socabaya	1	S.280-MF1-8.0"	11.24	29.70	27.00	246.51	16.07	11.26	29.90							8.00			
280	Socabaya	3/4	S.210-A3/4-1.0"	0.00	0.00	29.00	303.35	106.12	0.00	0.00	2.00%	15.63%	74.00%	76.19%	23.81%	8.37%	1.00	313.65	36.17	Bueno
	Socabaya	3/4	S.210-A3/4-1.0"	0.00	0.00	29.00	314.05	0.16	0.00	0.00							1.00			
	Socabaya	3/4	S.175-A3/4-2.0"	0.00	0.00	29.00	304.15	90.32	0.00	0.00	2.00%	14.90%	74.92%	71.87%	28.13%	8.18%	2.00			
	Socabaya	3/4	S.175-A3/4-2.0"	0.00	0.00	29.00	292.10	464.29	0.00	0.00							2.00			
	Socabaya	3/4	S.210-A3/4-2.0"	0.00	0.00	29.00	314.84	1.41	0.00	0.00	2.00%	15.77%	67.51%	78.18%	21.82%	14.73%	2.00			
	Socabaya	3/4	S.210-A3/4-2.0"	0.00	0.00	29.00	317.57	15.36	0.00	0.00							2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	31.00	293.81	393.61	0.00	0.00	2.00%	16.01%	73.05%	74.87%	25.13%	8.94%	2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	31.00	298.82	219.88	0.00	0.00							2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	30.00	362.29	2366.01	0.00	0.00	2.00%	18.95%	69.79%	68.86%	31.14%	9.27%	2.00			
	Socabaya	3/4	S.280-A3/4-2.0"	0.00	0.00	30.00	356.54	1839.35	0.00	0.00							2.00			
	Socabaya	3/4	S.280-A3/4-2.8"	0.00	0.00	30.00	286.46	739.39	0.00	0.00	2.00%	16.46%	72.74%	67.03%	32.97%	8.80%	2.80			
	Socabaya	3/4	S.280-A3/4-2.8"	0.00	0.00	30.00	262.09	2658.92	0.00	0.00							2.80			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	29.00	382.18	4695.73	0.00	0.00	2.00%	17.43%	72.05%	66.42%	33.58%	8.53%	3.00			
	Socabaya	3/4	S.280-A3/4-3.0"	0.00	0.00	29.00	373.29	3557.06	0.00	0.00							3.00			
	Socabaya	3/4	S.280-A3/4-4.0"	0.00	0.00	31.00	277.67	1294.69	0.00	0.00	2.00%	14.73%	73.69%	60.00%	40.00%	9.58%	4.00			
	Socabaya	3/4	S.280-A3/4-4.0"	0.00	0.00	31.00	279.20	1186.57	0.00	0.00							4.00			
	Socabaya	3/4	S.210-MF3/4-1.8"	0.00	0.00	29.00	330.45	285.13	0.00	0.00	2.00%	20.50%	66.59%	55.60%	44.40%	10.91%	1.80	347.34	20.67	Excelente
	Socabaya	3/4	S.210-MF3/4-1.8"	0.00	0.00	29.00	348.47	1.29	0.00	0.00							1.80			
	Socabaya	3/4	S.210-MF3/4-2.0"	0.00	0.00	30.00	314.74	1062.56	0.00	0.00	2.00%	22.04%	64.31%	57.06%	42.94%	11.64%	2.00			
	Socabaya	3/4	S.210-MF3/4-2.0"	0.00	0.00	30.00	329.62	313.88	0.00	0.00							2.00			
	Socabaya	3/4	S.175-MF3/4-2.8"	0.00	0.00	29.00	361.97	214.28	0.00	0.00	2.00%	21.17%	65.26%	55.92%	44.08%	11.57%	2.80			
	Socabaya	3/4	S.175-MF3/4-2.8"	0.00	0.00	29.00	361.25	193.57	0.00	0.00							2.80			
	Socabaya	3/4	S.175-MF3/4-3.0"	0.00	0.00	29.00	340.39	48.29	0.00	0.00	2.00%	19.01%	69.35%	51.93%	48.07%	9.64%	3.00			
	Socabaya	3/4	S.175-MF3/4-3.0"	0.00	0.00	29.00	331.96	236.38	0.00	0.00							3.00			
	Socabaya	3/4	S.280-MF3/4-3.5"	0.00	0.00	30.00	369.38	485.95	0.00	0.00	2.00%	21.47%	65.52%	56.31%	43.69%	11.01%	3.50			
	Socabaya	3/4	S.280-MF3/4-3.5"	0.00	0.00	30.00	375.36	785.35	0.00	0.00							3.50			
	Socabaya	3/4	S.280-MF3/4-3.8"	0.00	0.00	30.00	357.93	112.27	0.00	0.00	2.00%	22.20%	64.96%	56.31%	43.69%	10.83%	3.80			
	Socabaya	3/4	S.280-MF3/4-3.8"	0.00	0.00	30.00	384.38	1372.57	0.00	0.00							3.80			
	Socabaya	3/4	S.210-MF3/4-4.0"	0.00	0.00	30.00	345.33	4.03	0.00	0.00	2.00%	20.48%	66.53%	55.60%	44.40%	10.99%	4.00			
	Socabaya	3/4	S.210-MF3/4-4.0"	0.00	0.00	30.00	352.49	26.60	0.00	0.00							4.00			
	Socabaya	3/4	S.280-MF3/4-4.2"	0.00	0.00	30.00	370.41	532.24	0.00	0.00	2.00%	23.00%	63.38%	56.02%	43.98%	11.63%	4.20			
	Socabaya	3/4	S.280-MF3/4-4.2"	0.00	0.00	30.00	354.38	49.60	0.00	0.00							4.20			
	Socabaya	3/4	S.175-MF3/4-4.3"	0.00	0.00	29.00	329.11	332.09	0.00	0.00	2.00%	20.69%	67.17%	55.92%	44.08%	10.14%	4.30			
	Socabaya	3/4	S.175-MF3/4-4.3"	0.00	0.00	29.00	334.14	174.02	0.00	0.00							4.30			
	Socabaya	3/4	S.280-MF3/4-4.5"	0.00	0.00	32.00	362.23	221.88	0.00	0.00	2.00%	22.08%	65.05%	55.41%	44.59%	10.86%	4.50			
	Socabaya	3/4	S.280-MF3/4-4.5"	0.00	0.00	32.00	359.66	152.00	0.00	0.00							4.50			
	Socabaya	3/4	S.175-MF3/4-5.0"	0.00	0.00	29.00	305.76	1728.50	0.00	0.00	2.00%	20.53%	65.66%	54.98%	45.02%	11.81%	5.00			
	Socabaya	3/4	S.175-MF3/4-5.0"	0.00	0.00	29.00	321.96	643.75	0.00	0.00							5.00			
	Socabaya	1	S.280-MF1-2.0"	11.23	29.70	27.00	294.03	182.53	11.64	29.90	1.50%	21.49%	65.45%	44.52%	55.48%	11.56%	2.00	280.52	6.42	Excelente
	Socabaya	1	S.280-MF1-2.0"	11.21	29.80	27.00	273.09	55.22	11.43	29.80							2.00			
	Socabaya	1	S.280-A1-3.0"	0.00	0.00	27.00	273.82	44.97	29.75	11.50	1.50%	19.87%	67.52%	56.17%	43.83%	11.11%	3.00			
	Socabaya	1	S.280-A1-3.0"	0.00	0.00	27.00	279.29	1.51	30.10	11.58							3.00			
	Socabaya	1	S.280-MF1-3.0"	11.42	29.80	27.00	281.12	0.36	11.49	30.10	1.50%	21.58%	65.11%	44.90%	55.10%	11.81%	3.00			
	Socabaya	1	S.280-MF1-3.0"	11.09	29.10	27.00	281.39	0.75	11.62	29.90							3.00			
	Socabaya	1	S.280-MF1-5.0"	11.29	29.80	27.00	281.96	2.07	11.42	30.10	1.50%	22.66%	63.41%	46.17%	53.83%	12.43%	5.00			
	Socabaya	1	S.280-MF1-5.0"	11.18	30.20	27.00	279.48	1.10	11.65	29.90							5.00			

RELACIÓN DE RESISTENCIAS POR RESULTADOS

		DOSIFICACIÓN EN PESO						RELACIÓN EN PESO (kg)				RELACIÓN EN VOLUMEN (pie3)				SLUMP
	código	% aire	emento (kg	as de ceme	grueso (kg	A.fino(kg)	Agua (lt.)	Cemento	A grueso	A fino	Agua	Cemento	A grueso	A fino	Agua (lt/pie3)	
175	S.175-A3/4-2.4"	2.00%	301.73	7.10	1042.21	527.54	218.73	1.00	3.45	1.75	0.72	1.00	3.75	2.02	30.81	2.40
	S.175-A3/4-3.8"	2.00%	315.94	7.43	1015.66	575.69	208.98	1.00	3.21	1.82	0.66	1.00	3.49	2.10	28.11	3.80
	S.175-MF3/4-2.0"	2.00%	402.17	9.46	762.21	705.44	248.20	1.00	1.90	1.75	0.62	1.00	2.06	2.02	26.23	2.00
	S.175-MF3/4-2.1"	2.00%	422.90	9.95	755.17	703.82	244.68	1.00	1.79	1.66	0.58	1.00	1.94	1.92	24.59	2.10
	S.175-A1-1.0"	1.50%	305.20	7.18	954.48	732.48	216.53	1.00	3.13	2.40	0.71	1.00	4.06	2.77	30.15	1.00
	S.175-A1-2.1"	1.50%	327.89	7.72	951.33	691.64	224.14	1.00	2.90	2.11	0.68	1.00	3.76	2.43	29.05	2.10
	S.175-A1-3.0"	1.50%	322.52	7.59	967.88	645.36	235.11	1.00	3.00	2.00	0.73	1.00	3.89	2.31	30.98	3.00
	S.280-A1-3.1"	1.50%	349.19	8.22	907.90	698.39	232.80	1.00	2.60	2.00	0.67	1.00	3.37	2.31	28.33	3.10
	S.210-A1-4.0"	1.50%	293.26	6.90	946.22	736.66	214.03	1.00	3.23	2.51	0.73	1.00	4.19	2.90	31.02	4.00
	S.210-A1-4.1"	1.50%	341.37	8.03	899.97	698.26	238.96	1.00	2.64	2.05	0.70	1.00	3.42	2.36	29.75	4.10
	S.210-MF1-4.0"	1.50%	486.63	11.45	654.44	771.90	266.81	1.00	1.34	1.59	0.55	1.00	1.74	1.83	23.30	4.00
	S.210-MF1-4.25"	1.50%	480.25	11.30	642.50	795.01	266.08	1.00	1.34	1.66	0.55	1.00	1.74	1.91	23.55	4.25
	S.210-MF1-4.75"	1.50%	500.57	11.78	657.42	744.19	270.31	1.00	1.31	1.49	0.54	1.00	1.70	1.72	22.95	4.75
	S.175-MF1-6.0"	1.50%	429.32	10.10	642.37	828.71	272.27	1.00	1.50	1.93	0.63	1.00	1.94	2.23	26.95	6.00
	S.175-MF1-6.25"	1.50%	430.23	10.12	625.49	860.46	268.07	1.00	1.45	2.00	0.62	1.00	1.89	2.31	26.48	6.25
	S.175-MF1-7.0"	1.50%	452.90	10.66	598.47	850.80	274.97	1.00	1.32	1.88	0.61	1.00	1.71	2.17	25.80	7.00
210	S.210-A3/4-2.5"	2.00%	346.92	8.16	1040.75	555.00	193.97	1.00	3.00	1.60	0.56	1.00	3.26	1.85	23.76	2.50
	S.210-A3/4-2.5"	2.00%	358.75	8.44	998.11	565.73	205.37	1.00	2.78	1.58	0.57	1.00	3.02	1.82	24.33	2.50
	S.280-A3/4-2.5"	2.00%	339.08	7.98	1069.64	515.06	197.56	1.00	3.15	1.52	0.58	1.00	3.43	1.75	24.76	2.50
	S.280-A3/4-3.0"	2.00%	322.66	7.59	1102.07	514.13	188.87	1.00	3.42	1.59	0.59	1.00	3.71	1.84	24.88	3.00
	S.280-A3/4-5.0"	2.00%	377.00	8.87	925.67	553.03	236.17	1.00	2.46	1.47	0.63	1.00	2.67	1.69	26.62	5.00
	S.175-A3/4-5.8"	2.00%	280.72	6.61	1122.87	420.99	226.79	1.00	4.00	1.50	0.81	1.00	4.35	1.73	34.34	5.80
	S.175-MF3/4-3.2"	2.00%	408.56	9.61	731.88	708.37	258.66	1.00	1.79	1.73	0.63	1.00	1.95	2.00	26.91	3.20
	S.210-MF3/4-6.0"	2.00%	475.16	11.18	781.91	580.76	257.12	1.00	1.65	1.22	0.54	1.00	1.79	1.41	23.00	6.00
	S.210-A1-1.0"	1.50%	363.08	8.54	907.71	716.93	221.54	1.00	2.50	1.97	0.61	1.00	3.24	2.28	25.93	1.00
	S.175-A1-2.0"	1.50%	304.64	7.17	953.08	731.41	217.70	1.00	3.13	2.40	0.71	1.00	4.06	2.77	30.37	2.00
	S.280-A1-2.0"	1.50%	366.47	8.62	949.49	666.31	220.21	1.00	2.59	1.82	0.60	1.00	3.36	2.10	25.54	2.00
	S.210-A1-3.0"	1.50%	306.98	7.22	957.13	706.38	210.04	1.00	3.12	2.30	0.68	1.00	4.05	2.66	29.08	3.00
	S.280-A1-6.0"	1.50%	376.29	8.85	867.11	703.50	238.86	1.00	2.30	1.87	0.63	1.00	2.99	2.16	26.98	6.00
	S.175-MF1-7.0"	1.50%	462.87	10.89	635.61	838.53	259.95	1.00	1.37	1.81	0.56	1.00	1.78	2.09	23.87	1.80
	S.175-MF1-2.0"	1.50%	476.35	11.21	632.91	809.46	266.49	1.00	1.33	1.70	0.56	1.00	1.72	1.96	23.78	2.00
	S.210-MF1-3.5"	1.50%	457.00	10.75	651.92	826.86	259.13	1.00	1.43	1.81	0.57	1.00	1.85	2.09	24.10	3.50
	S.210-MF1-5.0"	1.50%	484.57	11.40	629.90	779.12	275.46	1.00	1.30	1.61	0.57	1.00	1.69	1.86	24.16	5.00
	S.280-MF1-8.0"	1.50%	535.91	12.61	619.64	713.43	284.70	1.00	1.16	1.33	0.53	1.00	1.50	1.54	22.58	8.00
280	S.210-A3/4-1.0"	2.00%	336.53	7.92	1214.07	379.50	180.34	1.00	3.61	1.13	0.54	1.00	3.92	1.30	22.77	1.00
	S.175-A3/4-2.0"	2.00%	323.71	7.62	1169.57	457.85	177.67	1.00	3.61	1.41	0.55	1.00	3.93	1.63	23.33	2.00
	S.210-A3/4-2.0"	2.00%	313.58	7.38	1049.70	292.93	292.93	1.00	3.35	0.93	0.93	1.00	3.64	1.08	39.70	2.00
	S.280-A3/4-2.0"	2.00%	343.33	8.08	1172.66	393.65	191.76	1.00	3.42	1.15	0.56	1.00	3.71	1.32	23.74	2.00
	S.280-A3/4-2.0"	2.00%	410.50	9.66	1041.13	470.89	200.79	1.00	2.54	1.15	0.49	1.00	2.76	1.32	20.79	2.00
	S.280-A3/4-2.8"	2.00%	358.43	8.43	1061.94	522.36	191.72	1.00	2.96	1.46	0.53	1.00	3.22	1.68	22.73	2.80
	S.280-A3/4-3.0"	2.00%	381.85	8.98	1048.58	530.20	186.81	1.00	2.75	1.39	0.49	1.00	2.98	1.60	20.79	3.00
	S.280-A3/4-4.0"	2.00%	320.68	7.55	962.38	641.69	208.43	1.00	3.00	2.00	0.65	1.00	3.26	2.31	27.62	4.00
	S.210-MF3/4-1.8"	2.00%	444.83	10.47	803.45	641.70	236.78	1.00	1.81	1.44	0.53	1.00	1.96	1.66	22.62	1.80
	S.210-MF3/4-2.0"	2.00%	473.67	11.15	788.53	593.48	250.21	1.00	1.66	1.25	0.53	1.00	1.81	1.45	22.45	2.00
	S.175-MF3/4-2.8"	2.00%	455.64	10.72	785.45	619.09	249.01	1.00	1.72	1.36	0.55	1.00	1.87	1.57	23.23	2.80
	S.175-MF3/4-3.0"	2.00%	421.31	9.91	798.04	738.68	213.69	1.00	1.89	1.75	0.51	1.00	2.06	2.02	21.56	3.00
	S.280-MF3/4-3.5"	2.00%	465.24	10.95	799.72	620.41	238.72	1.00	1.72	1.33	0.51	1.00	1.87	1.54	21.81	3.50
	S.280-MF3/4-3.8"	2.00%	482.83	11.36	795.48	617.13	235.61	1.00	1.65	1.28	0.49	1.00	1.79	1.47	20.74	3.80
	S.210-MF3/4-4.0"	2.00%	443.98	10.45	801.93	640.48	238.19	1.00	1.81	1.44	0.54	1.00	1.96	1.66	22.80	4.00
	S.280-MF3/4-4.2"	2.00%	495.70	11.66	765.10	600.77	250.54	1.00	1.54	1.21	0.51	1.00	1.68	1.40	21.48	4.20
	S.175-MF3/4-4.3"	2.00%	453.61	10.67	823.36	648.97	222.15	1.00	1.82	1.43	0.49	1.00	1.97	1.65	20.81	4.30
	S.280-MF3/4-4.5"	2.00%	480.61	11.31	784.56	631.28	236.41	1.00	1.63	1.31	0.49	1.00	1.77	1.52	20.91	4.50
	S.175-MF3/4-5.0"	2.00%	440.64	10.37	774.96	634.57	253.62	1.00	1.76	1.44	0.58	1.00	1.91	1.66	24.46	5.00
	S.280-MF1-2.0"	1.50%	479.54	11.28	650.10	810.17	257.81	1.00	1.36	1.69	0.54	1.00	1.76	1.95	22.85	2.00
	S.280-A1-3.0"	1.50%	439.40	10.34	838.86	654.49	245.82	1.00	1.91	1.49	0.56	1.00	2.48	1.72	23.78	3.00
	S.280-MF1-3.0"	1.50%	479.67	11.29	649.62	797.26	262.47	1.00	1.35	1.66	0.55	1.00	1.76	1.92	23.26	3.00
	S.280-MF1-5.0"	1.50%	498.89	11.74	644.68	751.58	273.74	1.00	1.29	1.51	0.55	1.00	1.68	1.74	23.32	5.00

RELACIÓN DE RESISTENCIAS POR RESULTADOS

	Código	*DOSIFICACIÓN EN PESO*						RELACIÓN EN PESO				RELACIÓN EN VOLUMEN (pie3)				*SLUMP*
		% aire	*cemento (kg)*	*Bolsas de cemento*	*A grueso (kg)*	*A.fino(kg)*	*Agua (lt.)*	Cemento	A grueso	A fino	Agua	Cemento	A grueso	A fino	Agua (lt/pie3)	
175	***C.N175-A3/4-3.0"***	2.00%	343.97	8.09	863.25	597.64	215.81	1.00	2.51	1.74	0.63	1.00	3.02	1.73	26.67	3.00
	C.N175-A3/4-4.5"	2.00%	316.76	7.45	1013.63	425.94	229.15	1.00	3.20	1.34	0.72	1.00	3.85	1.34	30.74	4.50
	C.N175-MF3/4-4.8"	2.00%	391.75	9.22	793.48	591.92	233.16	1.00	2.03	1.51	0.60	1.00	2.44	1.51	25.30	4.80
	C.N175-A1-6.5"	1.50%	314.29	7.40	1136.40	491.92	201.15	1.00	3.62	1.57	0.64	1.00	4.10	1.56	27.20	6.50
	C.N175-A1-7.5"	1.50%	331.31	7.80	1111.23	482.34	209.54	1.00	3.35	1.46	0.63	1.00	3.80	1.45	26.88	7.50
210	C.N210-A3/4-2.3"	2.00%	412.56	9.71	995.17	450.19	193.74	1.00	2.41	1.09	0.47	1.00	2.91	1.09	19.96	2.30
	C.N210-A3/4-3.0"	2.00%	383.22	9.02	998.60	472.73	193.01	1.00	2.61	1.23	0.50	1.00	3.14	1.23	21.41	3.00
	C.N280-A3/4-6.5"	2.00%	371.34	8.74	1016.38	392.22	222.92	1.00	2.74	1.06	0.60	1.00	3.30	1.05	25.51	6.50
	C.N280-MF3/4-3.5"	2.00%	446.63	10.51	799.97	562.52	223.31	1.00	1.79	1.26	0.50	1.00	2.16	1.25	21.25	3.50
	C.N210-MF3/4-3.6"	2.00%	422.04	9.93	781.03	607.78	221.53	1.00	1.85	1.44	0.52	1.00	2.23	1.43	22.31	3.60
	C.N210-MF3/4-7.0"	2.00%	435.82	10.25	778.96	530.98	249.91	1.00	1.79	1.22	0.57	1.00	2.15	1.21	24.37	7.00
	C.N210-A1-2.9"	1.50%	376.29	8.85	952.49	587.95	214.60	1.00	2.53	1.56	0.57	1.00	2.87	1.56	24.24	2.90
	C.N210-A1-3.8"	1.50%	355.67	8.37	1024.33	537.78	213.40	1.00	2.88	1.51	0.60	1.00	3.26	1.51	25.50	3.80
	C.N210-A1-4.2"	1.50%	353.12	8.31	1065.31	513.37	207.72	1.00	3.02	1.45	0.59	1.00	3.42	1.45	25.00	4.20
	C.N210-MF1-3.0"	1.50%	398.56	9.38	681.33	813.28	223.52	1.00	1.71	2.04	0.56	1.00	1.94	2.03	23.83	3.00
	C.N175-MF1-5.0"	1.50%	390.38	9.19	663.21	817.28	232.15	1.00	1.70	2.09	0.59	1.00	1.93	2.09	25.27	5.00
	C.N175-MF1-6.0"	1.50%	408.19	9.60	826.78	616.76	242.95	1.00	2.03	1.51	0.60	1.00	2.30	1.51	25.30	6.00
280	C.N280-A3/4-1.4"	2.00%	386.38	9.09	996.61	487.64	186.53	1.00	2.58	1.26	0.48	1.00	3.11	1.26	20.52	1.40
	C.N210-A3/4-1.5"	2.00%	401.04	9.44	998.67	470.59	187.62	1.00	2.49	1.17	0.47	1.00	3.00	1.17	19.88	1.50
	C.N280-A3/4-1.8"	2.00%	419.89	9.88	963.11	478.62	193.80	1.00	2.29	1.14	0.46	1.00	2.76	1.14	19.62	1.80
	C.N210-A3/4-2.0"	2.00%	435.29	10.24	1044.18	382.95	191.74	1.00	2.40	0.88	0.44	1.00	2.89	0.88	18.72	2.00
	C.N210-A3/4-2.5"	2.00%	369.85	8.70	1068.17	437.09	181.05	1.00	2.89	1.18	0.49	1.00	3.48	1.18	20.80	2.50
	C.N280-A3/4-2.7"	2.00%	405.29	9.54	976.11	408.14	222.62	1.00	2.41	1.01	0.55	1.00	2.90	1.00	23.35	2.70
	C.N280-A3/4-3.0"	2.00%	374.61	8.81	1012.84	438.44	203.96	1.00	2.70	1.17	0.54	1.00	3.26	1.17	23.14	3.00
	C.N175-A3/4-3.1"	2.00%	336.65	7.92	966.40	452.62	232.43	1.00	2.87	1.34	0.69	1.00	3.46	1.34	29.34	3.10
	C.N175-A3/4-3.5"	2.00%	343.01	8.07	1036.57	411.94	215.39	1.00	3.02	1.20	0.63	1.00	3.64	1.20	26.69	3.50
	C.N175-MF3/4-1.8"	2.00%	392.01	9.22	760.27	670.51	215.15	1.00	1.94	1.71	0.55	1.00	2.34	1.70	23.32	1.80
	C.N175-MF3/4-3.0"	2.00%	394.00	9.27	793.00	591.56	232.75	1.00	2.01	1.50	0.59	1.00	2.42	1.50	25.11	3.00
	C.N280-MF3/4-3.0"	2.00%	451.63	10.63	798.82	533.49	234.28	1.00	1.77	1.18	0.52	1.00	2.13	1.18	22.05	3.00
	C.N280-MF3/4-3.2"	2.00%	424.65	9.99	783.98	609.37	218.61	1.00	1.85	1.44	0.51	1.00	2.22	1.43	21.88	3.20
	C.N280-MF3/4-3.5"	2.00%	431.61	10.16	798.90	554.97	232.24	1.00	1.85	1.29	0.54	1.00	2.23	1.28	22.87	3.50
	C.N210-MF3/4-4.2"	2.00%	411.27	9.68	795.02	574.66	232.87	1.00	1.93	1.40	0.57	1.00	2.33	1.39	24.06	4.20
	C.N280-MF3/4-4.2"	2.00%	422.04	9.93	781.03	607.78	221.53	1.00	1.85	1.44	0.52	1.00	2.23	1.43	22.31	4.20
	C.N210-MF3/4-6.0"	2.00%	413.69	9.73	807.54	546.86	238.01	1.00	1.95	1.32	0.58	1.00	2.35	1.32	24.45	6.00
	C.N175-MF3/4-6.8"	2.00%	427.46	10.06	787.32	558.50	237.48	1.00	1.84	1.31	0.56	1.00	2.22	1.30	23.61	6.80
	C.N175-MF3/4-7.0"	2.00%	391.55	9.21	793.55	592.02	233.16	1.00	2.03	1.51	0.60	1.00	2.44	1.51	25.31	7.00
	C.N210-A1-1.5"	1.50%	358.78	8.44	973.43	675.84	175.22	1.00	2.71	1.88	0.49	1.00	3.07	1.88	20.76	1.50
	C.N280-A1-1.8"	1.50%	428.89	10.09	1004.59	503.73	210.13	1.00	2.34	1.17	0.49	1.00	2.65	1.17	20.82	1.80
	C.N210-A1-2.5"	1.50%	352.77	8.30	946.74	652.52	198.09	1.00	2.68	1.85	0.56	1.00	3.04	1.84	23.86	2.50
	C.N280-A1-3.4"	1.50%	443.47	10.43	1007.11	492.11	208.86	1.00	2.27	1.11	0.47	1.00	2.57	1.11	20.02	3.40
	C.N280-A1-3.7"	1.50%	435.79	10.25	984.64	525.75	206.65	1.00	2.26	1.21	0.47	1.00	2.56	1.20	20.15	3.70
	C.N280-A1-3.8"	1.50%	430.40	10.13	973.59	531.32	210.75	1.00	2.26	1.23	0.49	1.00	2.56	1.23	20.81	3.80
	C.N210-MF1-1.5"	1.50%	445.74	10.49	620.54	824.47	227.24	1.00	1.39	1.85	0.51	1.00	1.58	1.84	21.67	1.50
	C.N210-MF1-2.0"	1.50%	404.71	9.52	645.91	829.79	228.98	1.00	1.60	2.05	0.57	1.00	1.81	2.04	24.05	2.00
	C.N280-MF1-2.0"	1.50%	469.04	11.04	635.41	769.63	235.99	1.00	1.35	1.64	0.50	1.00	1.54	1.63	21.38	2.00
	C.N280-MF1-2.2"	1.50%	425.64	10.02	637.04	808.44	234.25	1.00	1.50	1.90	0.55	1.00	1.70	1.89	23.39	2.20
	C.N280-MF1-2.5"	1.50%	464.33	10.93	619.48	778.04	240.66	1.00	1.33	1.68	0.52	1.00	1.51	1.67	22.03	2.50
	C.N210-MF1-2.7"	1.50%	431.79	10.16	617.25	849.09	223.14	1.00	1.43	1.97	0.52	1.00	1.62	1.96	21.96	2.70
	C.N175-MF1-3.0"	1.50%	418.68	9.85	669.65	812.85	221.44	1.00	1.60	1.94	0.53	1.00	1.81	1.93	22.48	3.00
	C.N175-MF1-4.0"	1.50%	412.12	9.70	662.86	815.60	225.37	1.00	1.61	1.98	0.55	1.00	1.82	1.97	23.24	4.00
	C.N210-MF1-4.0"	1.50%	432.38	10.17	629.97	783.71	245.18	1.00	1.46	1.81	0.57	1.00	1.65	1.81	24.10	4.00
	C.N280-MF1-4.0"	1.50%	424.40	9.99	640.41	804.31	235.03	1.00	1.51	1.90	0.55	1.00	1.71	1.89	23.54	4.00
	C.N175-MF1-4.5"	1.50%	403.32	9.49	675.91	787.18	235.04	1.00	1.68	1.95	0.58	1.00	1.90	1.94	24.77	4.50

RELACIÓN DE RESISTENCIAS POR RESULTADOS

		DOSIFICACIÓN EN PESO						RELACIÓN EN PESO				RELACIÓN EN VOLUMEN (pie3)				SLUMP
	código	% aire	cemento (kg)	Bolsas de cemento	A grueso (kg)	A.fino(kg)	Agua (lt.)	Cemento	A grueso	A fino	Agua	Cemento	A grueso	A fino	Agua (lt/pie3)	
175	***P.175-A1/2-4.0"***	2.50%	348.07	8.19	963.21	662.05	215.47	1.00	2.77	1.90	0.62	1.00	2.71	1.91	26.31	4.00
	P.175-A1/2-4.5"	2.50%	377.88	8.89	963.42	607.98	227.60	1.00	2.55	1.61	0.60	1.00	2.50	1.61	25.60	4.50
	P.210-MF1/2-2.5"	2.50%	336.25	7.91	885.73	746.31	213.23	1.00	2.63	2.22	0.63	1.00	2.58	2.23	26.95	2.50
	P.175-MF1/2-3.0"	2.50%	388.36	9.14	733.25	794.12	231.86	1.00	1.89	2.04	0.60	1.00	1.85	2.05	25.37	3.00
	P.175-MF1/2-3.5"	2.50%	389.14	9.16	770.11	761.95	231.31	1.00	1.98	1.96	0.59	1.00	1.94	1.97	25.26	3.50
	P.175-MF1/2-7.0"	2.50%	434.01	10.21	888.96	577.68	248.43	1.00	2.05	1.33	0.57	1.00	2.01	1.34	24.33	7.00
	P.210-A1-4.0"	1.50%	313.08	7.37	1015.05	739.08	194.13	1.00	3.24	2.36	0.62	1.00	3.40	2.37	26.35	4.00
	P.175-A1-5.75"	1.50%	388.91	9.15	982.15	632.79	224.11	1.00	2.53	1.63	0.58	1.00	2.65	1.63	24.49	5.75
	P.210-A1-6.5"	1.50%	314.07	7.39	1067.23	683.03	198.20	1.00	3.40	2.17	0.63	1.00	3.56	2.18	26.82	6.50
	P.210-A1-7.75"	1.50%	339.18	7.98	1046.06	646.66	212.38	1.00	3.08	1.91	0.63	1.00	3.23	1.91	26.61	7.75
	P.280-A1-8.5"	1.50%	357.63	8.41	1063.56	603.31	217.69	1.00	2.97	1.69	0.61	1.00	3.12	1.69	25.87	8.50
	P.210-MF1-3.0"	1.50%	390.34	9.18	608.49	966.41	220.35	1.00	1.56	2.48	0.56	1.00	1.63	2.48	23.99	3.00
	P.175-MF1-6.5"	1.50%	363.60	8.56	609.20	955.48	234.06	1.00	1.68	2.63	0.64	1.00	1.76	2.64	27.36	6.50
	P.175-MF1-7.0"	1.50%	365.33	8.60	599.23	960.05	235.18	1.00	1.64	2.63	0.64	1.00	1.72	2.64	27.36	7.00
	P.175-MF1-8.0"	1.50%	391.34	9.21	600.05	922.91	241.33	1.00	1.53	2.36	0.62	1.00	1.61	2.37	26.21	8.00
210	***P.210-A1/2-1.6"***	2.50%	354.29	8.34	904.14	717.07	212.29	1.00	2.55	2.02	0.60	1.00	2.50	2.03	25.47	1.60
	P.210-A1/2-2.25"	2.50%	368.58	8.67	942.61	680.67	208.16	1.00	2.56	1.85	0.56	1.00	2.51	1.85	24.00	2.25
	P.210-A1/2-4.0"	2.50%	368.22	8.66	969.93	626.32	220.87	1.00	2.63	1.70	0.60	1.00	2.58	1.71	25.49	4.00
	P.210-A1/2-4.1"	2.50%	373.81	8.80	963.74	639.25	215.80	1.00	2.58	1.71	0.58	1.00	2.53	1.72	24.54	4.10
	P.175-A1/2-4.6"	2.50%	385.88	9.08	949.33	614.45	227.35	1.00	2.46	1.59	0.59	1.00	2.41	1.60	25.04	4.60
	P.280-A1/2-5.8"	2.50%	410.55	9.66	957.95	562.61	237.21	1.00	2.33	1.37	0.58	1.00	2.29	1.38	24.56	5.80
	P.175-MF1/2-2.0"	2.50%	418.16	9.84	746.13	776.19	224.11	1.00	1.78	1.86	0.54	1.00	1.75	1.86	22.78	2.00
	P.210-MF1/2-3.2"	2.50%	371.45	8.74	927.13	662.66	220.49	1.00	2.50	1.78	0.59	1.00	2.45	1.79	25.23	3.20
	P.175-MF1/2-5.4"	2.50%	404.35	9.51	636.25	844.37	241.42	1.00	1.57	2.09	0.60	1.00	1.54	2.10	25.38	5.40
	P.175-MF1/2-5.5"	2.50%	404.82	9.53	760.48	722.89	245.78	1.00	1.88	1.79	0.61	1.00	1.84	1.79	25.80	5.50
	P.175-MF1/2-6.8"	2.50%	400.41	9.42	667.36	815.66	243.21	1.00	1.67	2.04	0.61	1.00	1.63	2.04	25.81	6.80
	P.280-A1-4.75"	1.50%	379.30	8.92	1111.99	572.11	205.46	1.00	2.93	1.51	0.54	1.00	3.07	1.51	23.02	4.75
	P.175-A1-5.5"	1.50%	354.46	8.34	1063.37	639.99	203.49	1.00	3.00	1.81	0.57	1.00	3.15	1.81	24.40	5.50
	P.280-A1-7.0"	1.50%	384.19	9.04	1053.52	579.29	222.11	1.00	2.74	1.51	0.58	1.00	2.88	1.51	24.57	7.00
	P.210-MF1-2.0"	1.50%	406.43	9.56	585.38	970.57	221.41	1.00	1.44	2.39	0.54	1.00	1.51	2.40	23.15	2.00
	P.280-MF1-4.5"	1.50%	415.96	9.79	614.55	897.47	238.05	1.00	1.48	2.16	0.57	1.00	1.55	2.17	24.32	4.50
	P.280-MF1-6.5"	1.50%	404.98	9.53	598.34	935.77	231.77	1.00	1.48	2.31	0.57	1.00	1.55	2.32	24.32	6.50
	P.210-MF1-7.25"	1.50%	385.29	9.07	596.57	950.78	233.04	1.00	1.55	2.47	0.60	1.00	1.62	2.48	25.71	7.25
	P.210-MF1-8.0"	1.50%	410.19	9.65	590.80	903.04	246.42	1.00	1.44	2.20	0.60	1.00	1.51	2.21	25.53	8.00
280	***P.280-A1/2-2.25"***	2.50%	411.29	9.68	1017.74	574.72	209.53	1.00	2.47	1.40	0.51	1.00	2.43	1.40	21.65	2.25
	P.175-A1/2-2.6"	2.50%	401.80	9.45	988.81	621.54	204.04	1.00	2.46	1.55	0.51	1.00	2.41	1.55	21.58	2.60
	P.280-A1/2-2.8"	2.50%	398.53	9.38	955.55	639.51	210.08	1.00	2.40	1.60	0.53	1.00	2.35	1.61	22.40	2.80
	P.175-A1/2-3.0"	2.50%	353.61	8.32	944.60	683.92	211.31	1.00	2.67	1.93	0.60	1.00	2.62	1.94	25.40	3.00
	P.280-A1/2-3.0"	2.50%	402.65	9.47	1012.74	584.15	210.48	1.00	2.52	1.45	0.52	1.00	2.47	1.46	22.22	3.00
	P.280-A1/2-3.5"	2.50%	392.06	9.23	960.14	629.54	214.81	1.00	2.45	1.61	0.55	1.00	2.40	1.61	23.29	3.50
	P.175-MF1/2-2.8"	2.50%	420.83	9.90	633.31	893.74	216.04	1.00	1.50	2.12	0.51	1.00	1.48	2.13	21.82	2.80
	P.175-MF1/2-3.0"	2.50%	393.38	9.26	748.31	807.47	218.87	1.00	1.90	2.05	0.56	1.00	1.87	2.06	23.65	3.00
	P.210-MF1/2-3.0"	2.50%	367.97	8.66	905.10	694.40	216.63	1.00	2.46	1.89	0.59	1.00	2.41	1.89	25.02	3.00
	P.280-MF1/2-3.25"	2.50%	528.37	12.43	754.48	624.60	245.88	1.00	1.43	1.18	0.47	1.00	1.40	1.19	19.78	3.25
	P.210-MF1/2-4.25"	2.50%	413.14	9.72	761.52	729.87	239.55	1.00	1.84	1.77	0.58	1.00	1.81	1.77	24.64	4.25
	P.210-MF1/2-5.0"	2.50%	397.10	9.34	804.43	747.58	221.72	1.00	2.03	1.88	0.56	1.00	1.99	1.89	23.73	5.00
	P.175-MF1/2-6.0"	2.50%	402.27	9.47	648.28	839.68	239.62	1.00	1.61	2.09	0.60	1.00	1.58	2.10	25.32	6.00
	P.175-MF1/2-6.5"	2.50%	397.41	9.35	767.56	754.65	232.42	1.00	1.93	1.90	0.58	1.00	1.89	1.91	24.86	6.50
	P.280-MF1/2-7.0"	2.50%	466.09	10.97	745.22	660.98	255.94	1.00	1.60	1.42	0.55	1.00	1.57	1.42	23.34	7.00
	P.175-MF1/2-8.0"	2.50%	425.17	10.00	747.53	707.49	249.93	1.00	1.76	1.66	0.59	1.00	1.72	1.67	24.98	8.00
	P.210-MF1/2-8.0"	2.50%	442.60	10.41	742.83	681.91	256.30	1.00	1.68	1.54	0.58	1.00	1.65	1.55	24.61	8.00
	P.280-MF1-3.75"	1.50%	434.11	10.21	608.73	868.52	245.95	1.00	1.40	2.00	0.57	1.00	1.47	2.01	24.08	3.75
	P.280-A1-4.0"	1.50%	406.57	9.57	935.12	650.52	227.68	1.00	2.30	1.60	0.56	1.00	2.41	1.61	23.80	4.00
	P.280-MF1-5.5"	1.50%	429.89	10.11	602.82	882.91	243.56	1.00	1.40	2.05	0.57	1.00	1.47	2.06	24.08	5.50

RELACIÓN DE RESISTENCIAS POR RESULTADOS

F'c	Cantera	TMN	código	a/c	Módulo de Fineza		DOSIFICACIÓN						SLUMP	SLUMP DE DISEÑO	Δ SLUMP	TOLERANCIA CON RESTRICCIÓN	TOLERANCIA SIN RESTRICCIÓN	Módulo de Fineza óptimo	PROMEDIOS DE MF	SLUMP
		pulg.			Agregado Grueso	Agregado Fino	% aire	% cemento	% agregados	Proporción de Agregados Grueso	Proporción de Agregados Fino	% agua								
175	Socabaya	1	S.175-A1-1.0"	0.71	7.96	2.57	1.50%	13.61%	75.23%	56.58%	43.42%	9.66%	1	2	1	VERDADERO	FALSO	5.62	5.45	1
210	Socabaya	1	S.210-A1-1.0"	0.61	7.96	2.57	1.50%	16.19%	72.43%	55.87%	44.13%	9.88%	1	2	1	VERDADERO	FALSO	5.58		
280	Socabaya	3/4	S.210-A3/4-1.0"	0.54	5.96	2.57	2.00%	15.63%	74.00%	76.19%	23.81%	8.37%	1	2	1	VERDADERO	FALSO	5.15		
280	Cono Norte	3/4	C.N280-A3/4-1.4"	0.48	6.22	3.09	2.00%	18.41%	70.71%	67.15%	32.85%	8.89%	1 1/2	2	1/2	VERDADERO	FALSO	5.19	4.93	1 1/2
280	Cono Norte	3/4	C.N210-A3/4-1.5"	0.47	6.22	3.09	2.00%	19.10%	69.97%	67.97%	32.03%	8.93%	1 1/2	2	1/2	VERDADERO	VERDADERO	5.22		
280	Cono Norte	1	C.N210-A1-1.5"	0.49	6.54	3.09	1.50%	16.19%	74.41%	59.02%	40.98%	7.91%	1 1/2	2	1/2	VERDADERO	VERDADERO	5.13		
280	Cono Norte	1	C.N210-MF1-1.5"	0.51	6.54	3.09	1.50%	20.73%	67.20%	42.94%	57.06%	10.57%	1 1/2	2	1/2	VERDADERO	VERDADERO	4.57		
210	Poderosa	1/2	P.210-A1/2-1.6"	0.60	6.12	2.59	2.50%	15.79%	72.25%	55.77%	44.23%	9.46%	1 1/2	2	1/2	VERDADERO	VERDADERO	4.56		
210	Socabaya	1	S.175-MF1-7.0"	0.56	7.96	2.57	1.50%	20.75%	66.09%	43.12%	56.88%	11.65%	1 3/4	2	1/4	VERDADERO	VERDADERO	4.89	4.93	1 3/4
280	Socabaya	3/4	S.210-MF3/4-1.8"	0.53	5.96	2.57	2.00%	20.50%	66.59%	55.60%	44.40%	10.91%	1 3/4	2	1/4	VERDADERO	VERDADERO	4.45		
280	Cono Norte	3/4	C.N280-A3/4-1.8"	0.46	6.22	3.09	2.00%	20.02%	68.74%	66.80%	33.20%	9.24%	1 3/4	2	1/4	VERDADERO	VERDADERO	5.18		
280	Cono Norte	3/4	C.N175-MF3/4-1.8"	0.55	6.22	3.09	2.00%	18.85%	68.80%	53.14%	46.86%	10.35%	1 3/4	2	1/4	VERDADERO	VERDADERO	4.75		
280	Cono Norte	1	C.N280-A1-1.8"	0.49	6.54	3.09	1.50%	19.67%	69.19%	66.60%	33.40%	9.64%	1 3/4	2	1/4	VERDADERO	VERDADERO	5.39		
175	Socabaya	3/4	S.175-MF3/4-2.0"	0.62	5.96	2.57	2.00%	18.61%	67.91%	51.93%	48.07%	11.48%	2	2	0	VERDADERO	VERDADERO	4.33	4.92	2
210	Socabaya	1	S.175-A1-2.0"	0.71	7.96	2.57	1.50%	13.60%	75.19%	56.58%	43.42%	9.72%	2	2	0	VERDADERO	VERDADERO	5.62		
210	Socabaya	1	S.280-A1-2.0"	0.60	7.96	2.57	1.50%	16.39%	72.26%	58.76%	41.24%	9.85%	2	2	0	VERDADERO	VERDADERO	5.74		
210	Socabaya	1	S.175-MF1-2.0"	0.56	7.96	2.57	1.50%	21.47%	65.02%	43.88%	56.12%	12.01%	2	2	0	VERDADERO	VERDADERO	4.94		
280	Socabaya	3/4	S.175-A3/4-2.0"	0.55	5.96	2.57	2.00%	14.90%	74.92%	71.87%	28.13%	8.18%	2	2	0	VERDADERO	VERDADERO	5.01		
280	Socabaya	3/4	S.210-A3/4-2.0"	0.93	5.96	2.57	2.00%	15.77%	67.51%	78.18%	21.82%	14.73%	2	2	0	VERDADERO	VERDADERO	5.22		
280	Socabaya	3/4	S.280-A3/4-2.0"	0.56	5.96	2.57	2.00%	16.01%	73.05%	74.87%	25.13%	8.94%	2	2	0	VERDADERO	VERDADERO	5.11		
280	Socabaya	3/4	S.280-A3/4-2.0"	0.49	5.96	2.57	2.00%	18.95%	69.79%	68.86%	31.14%	9.27%	2	2	0	VERDADERO	VERDADERO	4.90		
280	Socabaya	3/4	S.210-MF3/4-2.0"	0.53	5.96	2.57	2.00%	22.04%	64.31%	57.06%	42.94%	11.64%	2	2	0	VERDADERO	VERDADERO	4.50		
280	Socabaya	1	S.280-MF1-2.0"	0.54	7.96	2.57	1.50%	21.49%	65.45%	44.52%	55.48%	11.56%	2	2	0	VERDADERO	VERDADERO	4.97		
210	Poderosa	1/2	P.175-MF1/2-2.0"	0.54	6.12	2.59	2.50%	18.84%	68.57%	49.01%	50.99%	10.09%	2	2	0	VERDADERO	VERDADERO	4.32		
210	Poderosa	1	P.210-MF1-2.0"	0.54	7.82	2.59	1.50%	18.33%	70.18%	37.62%	62.38%	9.99%	2	2	0	VERDADERO	VERDADERO	4.56		
280	Cono Norte	3/4	C.N210-A3/4-2.0"	0.44	6.22	3.09	2.00%	20.77%	68.09%	73.17%	26.83%	9.15%	2	2	0	VERDADERO	VERDADERO	5.38		
280	Cono Norte	1	C.N210-MF1-2.0"	0.57	6.54	3.09	1.50%	18.90%	68.91%	43.77%	56.23%	10.69%	2	2	0	VERDADERO	VERDADERO	4.60		
280	Cono Norte	1	C.N280-MF1-2.0"	0.50	6.54	3.09	1.50%	21.90%	65.59%	45.22%	54.78%	11.02%	2	2	0	VERDADERO	VERDADERO	4.65		
175	Socabaya	3/4	S.175-MF3/4-2.1"	0.58	5.96	2.57	2.00%	19.49%	67.24%	51.76%	48.24%	11.28%	2	2	-0	FALSO	VERDADERO	4.32		
175	Socabaya	1	S.175-A1-2.1"	0.68	7.96	2.57	1.50%	14.71%	73.73%	57.90%	42.10%	10.06%	2	2	-0	FALSO	VERDADERO	5.69		
280	Cono Norte	1	C.N280-MF1-2.2"	0.55	6.54	3.09	1.50%	19.91%	67.63%	44.07%	55.93%	10.96%	2 1/4	2	- 1/4	FALSO	VERDADERO	4.61	4.84	2 1/4
210	Poderosa	1/2	P.210-A1/2-2.25"	0.56	6.12	2.59	2.50%	16.33%	71.94%	58.07%	41.93%	9.23%	2 1/4	2	- 1/4	FALSO	VERDADERO	4.64		
280	Poderosa	1/2	P.280-A1/2-2.25"	0.51	6.12	2.59	2.50%	18.12%	70.15%	63.91%	36.09%	9.23%	2 1/4	2	- 1/4	FALSO	VERDADERO	4.85		
210	Cono Norte	3/4	C.N210-A3/4-2.3"	0.47	6.22	3.09	2.00%	19.71%	69.04%	68.85%	31.15%	9.25%	2 1/4	2	- 1/4	FALSO	VERDADERO	5.25		
175	Socabaya	3/4	S.175-A3/4-2.4"	0.72	5.96	2.57	2.00%	14.15%	73.60%	66.39%	33.61%	10.26%	2 1/2	2	- 1/2	FALSO	VERDADERO	4.82	4.85	2 1/2
210	Socabaya	3/4	S.210-A3/4-2.5"	0.56	5.96	2.57	2.00%	15.91%	73.19%	65.22%	34.78%	8.90%	2 1/2	2	- 1/2	FALSO	VERDADERO	4.78		
210	Socabaya	3/4	S.210-A3/4-2.5"	0.57	5.96	2.57	2.00%	16.52%	72.02%	63.82%	36.18%	9.46%	2 1/2	2	- 1/2	FALSO	VERDADERO	4.73		
210	Socabaya	3/4	S.280-A3/4-2.5"	0.58	5.96	2.57	2.00%	15.66%	73.21%	67.50%	32.50%	9.13%	2 1/2	2	- 1/2	FALSO	VERDADERO	4.86		
175	Poderosa	1/2	P.210-MF1/2-2.5"	0.63	6.12	2.59	2.50%	15.03%	72.94%	54.27%	45.73%	9.53%	2 1/2	2	- 1/2	FALSO	VERDADERO	4.51		
280	Cono Norte	3/4	C.N210-A3/4-2.5"	0.49	6.22	3.09	2.00%	17.63%	71.74%	70.96%	29.04%	8.63%	2 1/2	2	- 1/2	FALSO	VERDADERO	5.31		
280	Cono Norte	1	C.N210-A1-2.5"	0.56	6.54	3.09	1.50%	16.16%	73.26%	59.20%	40.80%	9.07%	2 1/2	2	- 1/2	FALSO	VERDADERO	5.13		
280	Cono Norte	1	C.N280-MF1-2.5"	0.52	6.54	3.09	1.50%	21.75%	65.47%	44.33%	55.67%	11.27%	2 1/2	2	- 1/2	FALSO	VERDADERO	4.62		
280	Poderosa	1/2	P.175-A1/2-2.6"	0.51	6.12	2.59	2.50%	17.68%	70.85%	61.40%	38.60%	8.98%	2 1/2	2	- 1/2	FALSO	FALSO	4.76		
280	Cono Norte	3/4	C.N280-A3/4-2.7"	0.55	6.22	3.09	2.00%	19.74%	67.42%	70.52%	29.48%	10.84%	2 3/4	2	- 3/4	FALSO	FALSO	5.30	*No confiable*	*2 3/4*
280	Cono Norte	1	C.N210-MF1-2.7"	0.52	6.54	3.09	1.50%	20.05%	68.09%	42.09%	57.91%	10.36%	2 3/4	2	- 3/4	FALSO	FALSO	4.54		
280	Socabaya	3/4	S.280-A3/4-2.8"	0.53	5.96	2.57	2.00%	16.46%	72.74%	67.03%	32.97%	8.80%	2 3/4	2	- 3/4	FALSO	FALSO	4.84		
280	Socabaya	3/4	S.175-MF3/4-2.8"	0.55	5.96	2.57	2.00%	21.17%	65.26%	55.92%	44.08%	11.57%	2 3/4	2	- 3/4	FALSO	FALSO	4.47		
280	Poderosa	1/2	P.280-A1/2-2.8"	0.53	6.12	2.59	2.50%	17.63%	70.57%	59.91%	40.09%	9.29%	2 3/4	2	- 3/4	FALSO	FALSO	4.70		
280	Poderosa	1/2	P.175-MF1/2-2.8"	0.51	6.12	2.59	2.50%	18.96%	68.80%	41.47%	58.53%	9.73%	2 3/4	2	- 3/4	FALSO	FALSO	4.05		
210	Cono Norte	1	C.N210-A1-2.9"	0.57	6.54	3.09	1.50%	17.39%	71.19%	61.83%	38.17%	9.92%	3	2	-1	FALSO	FALSO	5.22	4.84	3
175	Socabaya	1	S.175-A1-3.0"	0.73	7.96	2.57	1.50%	14.63%	73.20%	60.00%	40.00%	10.67%	3	2	-1	FALSO	FALSO	5.80		
210	Socabaya	3/4	S.280-A3/4-3.0"	0.59	5.96	2.57	2.00%	14.86%	74.44%	68.19%	31.81%	8.70%	3	2	-1	FALSO	FALSO	4.88		
210	Socabaya	1	S.210-A1-3.0"	0.68	7.96	2.57	1.50%	13.87%	75.14%	57.54%	42.46%	9.49%	3	2	-1	FALSO	FALSO	5.67		
280	Socabaya	3/4	S.280-A3/4-3.0"	0.49	5.96	2.57	2.00%	17.43%	72.05%	66.42%	33.58%	8.53%	3	2	-1	FALSO	FALSO	4.82		
280	Socabaya	3/4	S.175-MF3/4-3.0"	0.51	5.96	2.57	2.00%	19.01%	69.35%	51.93%	48.07%	9.64%	3	2	-1	FALSO	FALSO	4.33		
280	Socabaya	1	S.280-A1-3.0"	0.56	7.96	2.57	1.50%	19.87%	67.52%	56.17%	43.83%	11.11%	3	2	-1	FALSO	FALSO	5.60		
280	Socabaya	1	S.280-MF1-3.0"	0.55	7.96	2.57	1.50%	21.58%	65.11%	44.90%	55.10%	11.81%	3	2	-1	FALSO	FALSO	4.99		
175	Poderosa	1/2	P.175-MF1/2-3.0"	0.60	6.12	2.59	2.50%	17.63%	69.34%	48.01%	51.99%	10.53%	3	4	1	VERDADERO	VERDADERO	4.28		
175	Poderosa	1	P.210-MF1-3.0"	0.56	7.82	2.59	1.50%	17.59%	70.98%	38.64%	61.36%	9.93%	3	4	1	VERDADERO	VERDADERO	4.61		
280	Poderosa	1/2	P.175-A1/2-3.0"	0.60	6.12	2.59	2.50%	15.72%	72.39%	58.00%	42.00%	9.39%	3	4	1	VERDADERO	VERDADERO	4.64		
280	Poderosa	1/2	P.280-A1/2-3.0"	0.52	6.12	2.59	2.50%	17.76%	70.45%	63.42%	36.58%	9.29%	3	4	1	VERDADERO	VERDADERO	4.83		
280	Poderosa	1/2	P.175-MF1/2-3.0"	0.56	6.12	2.59	2.50%	17.69%	69.97%	48.10%	51.90%	9.84%	3	4	1	VERDADERO	VERDADERO	4.29		
280	Poderosa	1/2	P.210-MF1/2-3.0"	0.59	6.12	2.59	2.50%	16.43%	71.40%	56.59%	43.41%	9.67%	3	4	1	VERDADERO	VERDADERO	4.59		
175	Cono Norte	3/4	C.N175-A3/4-3.0"	0.63	6.22	3.09	2.00%	16.68%	70.85%	59.09%	40.91%	10.47%	3	4	1	VERDADERO	VERDADERO	4.94		
210	Cono Norte	3/4	C.N210-A3/4-3.0"	0.50	6.22	3.09	2.00%	18.34%	70.42%	67.87%	32.13%	9.24%	3	4	1	VERDADERO	VERDADERO	5.21		
210	Cono Norte	1	C.N210-MF1-3.0"	0.56	6.54	3.09	1.50%	18.55%	69.55%	45.59%	54.41%	10.40%	3	4	1	VERDADERO	VERDADERO	4.66		
280	Cono Norte	3/4	C.N280-A3/4-3.0"	0.54	6.22	3.09	2.00%	18.09%	70.07%	69.79%	30.21%	9.85%	3	4	1	VERDADERO	VERDADERO	5.27		
280	Cono Norte	3/4	C.N175-MF3/4-3.0"	0.59	6.22	3.09	2.00%	19.20%	67.46%	57.27%	42.73%	11.34%	3	4	1	VERDADERO	VERDADERO	4.88		
280	Cono Norte	3/4	C.N280-MF3/4-3.0"	0.52	6.22	3.09	2.00%	21.93%	64.69%	59.96%	40.04%	11.38%	3	4	1	VERDADERO	VERDADERO	4.97		
280	Cono Norte	1	C.N175-MF1-3.0"	0.53	6.54	3.09	1.50%	19.43%	68.80%	45.17%	54.83%	10.28%	3	4	1	VERDADERO	VERDADERO	4.65		
175	Socabaya	1	S.280-A1-3.1"	0.67	7.96	2.57	1.50%	15.72%	72.30%	56.52%	43.48%	10.48%	3	4	1	VERDADERO	VERDADERO	5.62		
280	Cono Norte	3/4	C.N175-A3/4-3.1"	0.69	6.22	3.09	2.00%	16.59%	69.95%	68.10%	31.90%	11.46%	3	4	1	VERDADERO	VERDADERO	5.22		
210	Socabaya	3/4	S.175-MF3/4-3.2"	0.63	5.96	2.57	2.00%	19.00%	66.97%	50.82%	49.18%	12.03%	3 1/4	4	3/4	VERDADERO	VERDADERO	4.29	4.58	3 1/4
210	Poderosa	1/2	P.210-MF1/2-3.2"	0.59	6.12	2.59	2.50%	16.60%	71.05%	58.32%	41.68%	9.85%	3 1/4	4	3/4	VERDADERO	VERDADERO	4.65		
280	Cono Norte	3/4	C.N280-MF3/4-3.2"	0.51	6.22	3.09	2.00%	20.43%	67.05%	56.27%	43.73%	10.52%	3 1/4	4	3/4	VERDADERO	VERDADERO	4.85		
280	Poderosa	1/2	P.280-MF1/2-3.25"	0.47	6.12	2.59	2.50%	23.92%	62.44%	54.71%	45.29%	11.13%	3 1/4	4	3/4	VERDADERO	VERDADERO	4.52		
280	Cono Norte	1	C.N280-A1-3.4"	0.47	6.54	3.09	1.50%	20.30%	68.64%	67.18%	32.82%	9.56%	3 1/2	4	1/2	VERDADERO	VERDADERO	5.41	4.88	3 1/2
210	Socabaya	1	S.210-MF1-3.5"	0.57	7.96	2.57	1.50%	20.51%	66.36%	44.09%	55.91%	11.63%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.95		
280	Socabaya	3/4	S.280-MF3/4-3.5"	0.51	5.96	2.57	2.00%	21.47%	65.52%	56.31%	43.69%	11.01%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.48		
175	Poderosa	1/2	P.175-MF1/2-3.5"	0.59	6.12	2.59	2.50%	17.63%	69.40%	50.27%	49.73%	10.48%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.36		
280	Poderosa	1/2	P.280-A1/2-3.5"	0.55	6.12	2.59	2.50%	17.40%	70.56%	60.40%	39.60%	9.54%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.72		
210	Cono Norte	3/4	C.N280-MF3/4-3.5"	0.50	6.22	3.09	2.00%	21.54%	65.70%	58.71%	41.29%	10.77%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.93		
280	Cono Norte	3/4	C.N175-A3/4-3.5"	0.63	6.22	3.09	2.00%	16.75%	70.73%	71.56%	28.44%	10.52%	3 1/2	4	1/2	VERDADERO	VERDADERO	5.33		
280	Cono Norte	3/4	C.N280-MF3/4-3.5"	0.54	6.22	3.09	2.00%	20.96%	65.76%	59.01%	40.99%	11.28%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.94		
210	Cono Norte	3/4	C.N210-MF3/4-3.6"	0.52	6.22	3.09	2.00%	20.35%	66.97%	56.24%	43.76%	10.68%	3 1/2	4	1/2	VERDADERO	VERDADERO	4.85		
280	Cono Norte	1	C.N280-A1-3.7"	0.47	6.54	3.09	1.50%	19.94%	69.11%	65.19%	34.81%	9.46%	3 3/4	4	1/4	VERDADERO	VERDADERO	5.34	5.00	3 3/4
280	Poderosa	1	P.280-MF1-3.75"	0.57	7.82	2.59	1.50%	19.82%	67.45%	41.21%	58.79%	11.23%	3 3/4	4	1/4	VERDADERO	VERDADERO	4.75		
175	Socabaya	3/4	S.175-A3/4-3.8"	0.66	5.96	2.57	2.00%	14.63%	73.69%	63.82%	36.18%	9.68%	3 3/4	4	1/4	VERDADERO	VERDADERO	4.73		
280	Socabaya	3/4	S.280-MF3/4-3.8"	0.49	5.96	2.57	2.00%	22.20%	64.96%	56.31%	43.69%	10.83%	3 3/4	4	1/4	VERDADERO	VERDADERO	4.48		
210	Cono Norte	1	C.N210-A1-3.8"	0.60	6.54	3.09	1.50%	16.44%	72.20%	65.57%	34.43%	9.86%	3 3/4	4	1/4	VERDADERO	VERDADERO	5.35		
280	Cono Norte	1	C.N280-A1-3.8"	0.49	6.54	3.09	1.50%	19.75%	69.07%	64.69%	35.31%	9.67%	3 3/4	4	1/4	VERDADERO	VERDADERO	5.32		
175	Socabaya	1	S.210-A1-4.0"	0.73	7.96	2.57	1.50%	13.19%	75.69%	56.23%	43.77%	9.63%	4	4	0	VERDADERO	VERDADERO	5.60	4.94	4
175	Socabaya	1	S.210-MF1-4.0"	0.55	7.96	2.57	1.50%	21.99%	64.45%	45.88%	54.12%	12.06%	4	4	0	VERDADERO	VERDADERO	5.04		
280	Socabaya	3/4	S.280-A3/4-4.0"	0.65	5.96	2.57	2.00%	14.73%	73.69%	60.00%	40.00%	9.58%	4	4	0	VERDADERO	VERDADERO	4.60		
280	Socabaya	3/4	S.210-MF3/4-4.0"	0.54	5.96	2.57	2.00%	20.48%	66.53%	55.60%	44.40%	10.99%	4	4	0	VERDADERO	VERDADERO	4.45		
175	Poderosa	1/2	P.175-A1/2-4.0"	0.62	6.12	2.59	2.50%	15.50%	72.40%	59.26%	40.74%	9.60%	4	4	0	VERDADERO	VERDADERO	4.68		
175	Poderosa	1	P.210-A1-4.0"	0.62	7.82	2.59	1.50%	13.64%	76.41%	57.87%	42.13%	8.46%	4	4	0	VERDADERO	VERDADERO	5.62		
210	Poderosa	1/2	P.210-A1/2-4.0"	0.60	6.12	2.59	2.50%	16.43%	71.22%	60.76%	39.24%	9.85%	4	4	0	VERDADERO	VERDADERO	4.73		
280	Poderosa	1	P.280-A1-4.0"	0.56	7.82	2.59	1.50%	18.04%	70.36%	58.97%	41.03%	10.10%	4	4	0	VERDADERO	VERDADERO	5.67		
280	Cono Norte	1	C.N175-MF1-4.0"	0.55	6.54	3.09	1.50%	19.18%	68.82%	44.83%	55.17%	10.49%	4	4	0	VERDADERO	VERDADERO	4.64		
280	Cono Norte	1	C.N210-MF1-4.0"	0.57	6.54	3.09	1.50%	20.37%	66.59%	44.56%	55.44%	11.55%	4	4	0	VERDADERO	VERDADERO	4.63		
280	Cono Norte	1	C.N280-MF1-4.0"	0.55	6.54	3.09	1.50%	19.87%	67.63%	44.33%	55.67%	11.00%	4	4	0	VERDADERO	VERDADERO	4.62		
175	Socabaya	1	S.210-A1-4.1"	0.70	7.96	2.57	1.50%	15.43%	72.26%	56.31%	43.69%	10.80%	4	4	-0	FALSO	VERDADERO	5.61		
210	Poderosa	1/2	P.210-A1/2-4.1"	0.58	6.12	2.59	2.50%	16.62%	71.28%	60.12%	39.88%	9.60%	4	4	-0	FALSO	VERDADERO	4.71		
280	Socabaya	3/4	S.280-MF3/4-4.2"	0.51	5.96	2.57	2.00%	23.00%	63.38%	56.02%	43.98%	11.63%	4 1/4	4	- 1/4	FALSO	VERDADERO	4.47	4.78	4 1/4
210	Cono Norte	1	C.N210-A1-4.2"	0.59	6.54	3.09	1.50%	16.26%	72.68%	67.48%	32.52%	9.56%	4 1/4	4	- 1/4	FALSO	VERDADERO	5.42		
280	Cono Norte	3/4	C.N210-MF3/4-4.2"	0.57	6.22	3.09	2.00%	20.01%	66.65%	58.04%	41.96%	11.33%	4 1/4	4	- 1/4	FALSO	VERDADERO	4.91		
280	Cono Norte	3/4	C.N280-MF3/4-4.2"	0.52	6.22	3.09	2.00%	20.35%	66.97%	56.24%	43.76%	10.68%	4 1/4	4	- 1/4	FALSO	VERDADERO	4.85		
175	Socabaya	1	S.210-MF1-4.25"	0.55	7.96	2.57	1.50%	21.66%	64.84%	44.70%	55.30%	12.00%	4 1/4	4	- 1/4	FALSO	VERDADERO	4.98		
280	Poderosa	1/2	P.210-MF1/2-4.25"	0.58	6.12	2.59	2.50%	18.79%	67.82%	51.06%	48.94%	10.89%	4 1/4	4	- 1/4	FALSO	VERDADERO	4.39		
280	Socabaya	3/4	S.175-MF3/4-4.3"	0.49	5.96	2.57	2.00%	20.69%	67.17%	55.92%	44.08%	10.14%	4 1/4	4	- 1/4	FALSO	VERDADERO	4.47		
280	Socabaya	3/4	S.280-MF3/4-4.5"	0.49	5.96	2.57	2.00%	22.08%	65.05%	55.41%	44.59%	10.86%	4 1/2	4	- 1/2	FALSO	VERDADERO	4.45	4.77	4 1/2
175	Poderosa	1/2	P.175-A1/2-4.5"	0.60	6.12	2.59	2.50%	16.92%	70.38%	61.31%	38.69%	10.19%	4 1/2	4	- 1/2	FALSO	VERDADERO	4.75		
210	Poderosa	1	P.280-MF1-4.5"	0.57	7.82	2.59	1.50%	18.92%	68.76%	40.64%	59.36%	10.83%	4 1/2	4	- 1/2	FALSO	VERDADERO	4.72		
175	Cono Norte	3/4	C.N175-A3/4-4.5"	0.72	6.22	3.09	2.00%	15.63%	71.05%	70.41%	29.59%	11.31%	4 1/2	4	- 1/2	FALSO	VERDADERO	5.29		
280	Cono Norte	1	C.N175-MF1-4.5"	0.58	6.54	3.09	1.50%	18.90%	68.58%	46.20%	53.80%	11.02%	4 1/2	4	- 1/2	FALSO	VERDADERO	4.68		
210	Poderosa	1/2	P.175-A1/2-4.6"	0.59	6.12	2.59	2.50%	17.28%	70.04%	60.71%	39.29%	10.18%	4 1/2	4	- 1/2	FALSO	VERDADERO	4.73		
175	Socabaya	1	S.210-MF1-4.75"	0.54	7.96	2.57	1.50%	22.70%	63.55%	46.90%	53.10%	12.26%	4 3/4	4	- 3/4	FALSO	VERDADERO	5.10	4.99	4 3/4
210	Poderosa	1	P.280-A1-4.75"	0.54	7.82	2.59	1.50%	16.47%	73.11%	66.03%	33.97%	8.92%	4 3/4	4	- 3/4	FALSO	VERDADERO	6.04		
175	Cono Norte+ S	3/4	C.N175-MF3/4-4.8"	0.60	6.22	3.09	2.00%	19.10%	67.54%	57.27%	42.73%	11.37%	4 3/4	4	- 3/4	FALSO	VERDADERO	4.88		
210	Socabaya	3/4	S.280-A3/4-5.0"	0.63	5.96	2.57	2.00%	17.66%	69.27%	62.60%	37.40%	11.06%	5	4	-1	FALSO	VERDADERO	4.69	4.70	5
210	Socabaya	1	S.210-MF1-5.0"	0.57	7.96	2.57	1.50%	22.00%	63.99%	44.70%	55.30%	12.51%	5	4	-1	FALSO	VERDADERO	4.98		
280	Socabaya	3/4	S.175-MF3/4-5.0"	0.58	5.96	2.57	2.00%	20.53%	65.66%	54.98%	45.02%	11.81%	5	4	-1	FALSO	VERDADERO	4.43		
280	Socabaya	1	S.280-MF1-5.0"	0.55	7.96	2.57	1.50%	22.66%	63.41%	46.17%	53.83%	12.43%	5	4	-1	FALSO	VERDADERO	5.06		
280	Poderosa	1/2	P.210-MF1/2-5.0"	0.56	6.12	2.59	2.50%	17.84%	69.71%	51.83%	48.17%	9.96%	5	4	-1	FALSO	VERDADERO	4.42		
210	Cono Norte	1	C.N175-MF1-5.0"	0.59	6.54	3.09	1.50%	18.28%	69.34%	44.80%	55.20%	10.87%	5	4	-1	FALSO	VERDADERO	4.64		
210	Poderosa	1/2	P.175-MF1/2-5.4"	0.60	6.12	2.59	2.50%	18.54%	67.89%	42.97%	57.03%	11.07%	5 1/2	6	1/2	VERDADERO	VERDADERO	4.11	4.77	5 1/2
210	Poderosa	1/2	P.175-MF1/2-5.5"	0.61	6.12	2.59	2.50%	18.50%	67.77%	51.27%	48.73%	11.23%	5 1/2	6	1/2	VERDADERO	VERDADERO	4.40		
210	Poderosa	1	P.175-A1-5.5"	0.57	7.82	2.59	1.50%	15.44%	74.20%	62.43%	37.57%	8.86%	5 1/2	6	1/2	VERDADERO	VERDADERO	5.85		
280	Poderosa	1	P.280-MF1-5.5"	0.57	7.82	2.59	1.50%	19.61%	67.78%	40.57%	59.43%	11.11%	5 1/2	6	1/2	VERDADERO	VERDADERO	4.71		
175	Poderosa	1	P.175-A1-5.75"	0.58	7.82	2.59	1.50%	17.19%	71.40%	60.82%	39.18%	9.91%	5 3/4	6	1/4	VERDADERO	VERDADERO	5.77	5.21	5 3/4
210	Socabaya	3/4	S.175-A3/4-5.8"	0.81	5.96	2.57	2.00%	13.41%	73.75%	72.73%	27.27%	10.83%	5 3/4	6	1/4	VERDADERO	VERDADERO	5.04		
210	Poderosa	1/2	P.280-A1/2-5.8"	0.58	6.12	2.59	2.50%	18.46%	68.37%	63.00%	37.00%	10.67%	5 3/4	6	1/4	VERDADERO	VERDADERO	4.81		
175	Socabaya	1	S.175-MF1-6.0"	0.63	7.96	2.57	1.50%	19.46%	66.69%	43.67%	56.33%	12.34%	6	6	0	VERDADERO	VERDADERO	4.92	4.86	6
210	Socabaya	3/4	S.210-MF3/4-6.0"	0.54	5.96	2.57	2.00%	22.23%	63.74%	57.38%	42.62%	12.03%	6	6	0	VERDADERO	VERDADERO	4.52		
210	Socabaya	1	S.280-A1-6.0"	0.63	7.96	2.57	1.50%	16.96%	70.78%	55.21%	44.79%	10.76%	6	6	0	VERDADERO	VERDADERO	5.55		
280	Poderosa	1/2	P.175-MF1/2-6.0"	0.60	6.12	2.59	2.50%	18.42%	68.12%	43.57%	56.43%	10.97%	6	6	0	VERDADERO	VERDADERO	4.13		
210	Cono Norte	1	C.N175-MF1-6.0"	0.60	6.54	3.09	1.50%	19.19%	67.88%	57.27%	42.73%	11.42%	6	6	0	VERDADERO	VERDADERO	5.07		
280	Cono Norte	3/4	C.N210-MF3/4-6.0"	0.58	6.22	3.09	2.00%	20.21%	66.16%	59.62%	40.38%	11.63%	6	6	0	VERDADERO	VERDADERO	4.96		
175	Socabaya	1	S.175-MF1-6.25"	0.62	7.96	2.57	1.50%	19.40%	67.01%	42.09%	57.91%	12.09%	6 1/4	6	- 1/4	FALSO	VERDADERO	4.84		
175	Poderosa	1	P.210-A1-6.5"	0.63	7.82	2.59	1.50%	13.67%	76.20%	60.98%	39.02%	8.63%	6 1/2	6	- 1/2	FALSO	VERDADERO	5.78	4.92	6 1/2
175	Poderosa	1	P.175-MF1-6.5"	0.64	7.82	2.59	1.50%	16.56%	71.28%	38.93%	61.07%	10.66%	6 1/2	6	- 1/2	FALSO	VERDADERO	4.63		
210	Poderosa	1	P.280-MF1-6.5"	0.57	7.82	2.59	1.50%	18.38%	69.61%	39.00%	61.00%	10.52%	6 1/2	6	- 1/2	FALSO	VERDADERO	4.63		
280	Poderosa	1/2	P.175-MF1/2-6.5"	0.58	6.12	2.59	2.50%	18.01%	68.97%	50.42%	49.58%	10.53%	6 1/2	6	- 1/2	FALSO	VERDADERO	4.37		
175	Cono Norte	1	C.N175-A1-6.5"	0.64	6.54	3.09	1.50%	14.44%	74.82%	69.79%	30.21%	9.24%	6 1/2	6	- 1/2	FALSO	VERDADERO	5.50		
210	Cono Norte	3/4	C.N280-A3/4-6.5"	0.60	6.22	3.09	2.00%	18.17%	68.92%	72.16%	27.84%	10.91%	6 1/2	6	- 1/2	FALSO	VERDADERO	5.35		
210	Poderosa	1/2	P.175-MF1/2-6.8"	0.61	6.12	2.59	2.50%	18.36%	67.99%	45.00%	55.00%	11.15%	6 3/4	6	- 3/4	FALSO	VERDADERO	4.18		
280	Cono Norte	3/4	C.N175-MF3/4-6.8"	0.56	6.22	3.09	2.00%	20.83%	65.59%	58.50%	41.50%	11.57%	6 3/4	6	- 3/4	FALSO	VERDADERO	4.92		
175	Socabaya	1	S.175-MF1-7.0"	0.61	7.96	2.57	1.50%	20.49%	65.57%	41.29%	58.71%	12.44%	7	6	-1	FALSO	VERDADERO	4.80	4.91	7
175	Poderosa	1/2	P.175-MF1/2-7.0"	0.57	6.12	2.59	2.50%	19.69%	66.54%	60.61%	39.39%	11.27%	7	6	-1	FALSO	VERDADERO	4.73		
175	Poderosa	1	P.175-MF1-7.0"	0.64	7.82	2.59	1.50%	16.66%	71.11%	38.43%	61.57%	10.73%	7	6	-1	FALSO	VERDADERO	4.60		
210	Poderosa	1	P.280-A1-7.0"	0.58	7.82	2.59	1.50%	16.90%	71.83%	64.52%	35.48%	9.77%	7	6	-1	FALSO	VERDADERO	5.96		
280	Poderosa	1/2	P.280-MF1/2-7.0"	0.55	6.12	2.59	2.50%	21.35%	64.42%	53.00%	47.00%	11.73%	7	6	-1	FALSO	VERDADERO	4.46		
210	Cono Norte	3/4	C.N210-MF3/4-7.0"	0.57	6.22	3.09	2.00%	21.40%	64.33%	59.47%	40.53%	12.27%	7	6	-1	FALSO	VERDADERO	4.95		
280	Cono Norte	3/4	C.N175-MF3/4-7.0"	0.60	6.22	3.09	2.00%	19.09%	67.55%	57.27%	42.73%	11.37%	7	6	-1	FALSO	VERDADERO	4.88		
210	Poderosa	1	P.210-MF1-7.25"	0.60	7.82	2.59	1.50%	17.52%	70.38%	38.55%	61.45%	10.60%	7 1/4	6	-1 1/4	FALSO	VERDADERO	4.61	5.05	7 1/2
175	Cono Norte	1	C.N175-A1-7.5"	0.63	6.54	3.09	1.50%	15.29%	73.54%	69.73%	30.27%	9.67%	7 2/4	6	-1 2/4	FALSO	VERDADERO	5.50		
175	Poderosa	1	P.210-A1-7.75"	0.63	7.82	2.59	1.50%	14.89%	74.29%	61.80%	38.20%	9.32%	7 3/4	6	-1 3/4	FALSO	FALSO	5.82		
210	Socabaya	1	S.280-MF1-8.0"	0.53	7.96	2.57	1.50%	24.51%	60.97%	46.48%	53.52%	13.02%	8	6	-2	FALSO	FALSO	5.08	*No confiable*	*8*
175	Poderosa	1	P.175-MF1-8.0"	0.62	7.82	2.59	1.50%	17.88%	69.59%	39.40%	60.60%	11.03%	8	6	-2	FALSO	FALSO	4.65		
210	Poderosa	1	P.210-MF1-8.0"	0.60	7.82	2.59	1.50%	18.79%	68.42%	39.55%	60.45%	11.29%	8	6	-2	FALSO	FALSO	4.66		
280	Poderosa	1/2	P.175-MF1/2-8.0"	0.59	6.12	2.59	2.50%	19.46%	66.60%	51.38%	48.62%	11.44%	8	6	-2	FALSO	FALSO	4.40		
280	Poderosa	1/2	P.210-MF1/2-8.0"	0.58	6.12	2.59	2.50%	20.32%	65.41%	52.14%	47.86%	11.77%	8	6	-2	FALSO	FALSO	4.43		
175	Poderosa	1	P.280-A1-8.5"	0.61	7.82	2.59	1.50%	15.71%	73.23%	63.81%	36.19%	9.56%	8 1/2	6	-2 2/4	FALSO	FALSO	5.93		

ANEXO

- ***PANEL FOTOGRÁFICO***
- ***MUESTRAS DE DISEÑOS DE MEZCLA***
- ***TABLAS DE DISEÑO***

CUARTEO

GRANULOMETRÍA-PODEROSA 1”

GRANULOMETRÍA-SOCABAYA 1”

ABRASIÓN

ABRASIÓN

CUARTEO

GRANULOMETRÍAS

ABSORCIÓN

- ***A.2 MUESTRAS DE DISEÑOS DE MEZCLA:***

Se tiene el siguiente ejemplo:

Elaborar un diseño de Mezcla con las siguientes características

A) Cemento: Yura IP

B) Agua: Potable de la Zona

C) Agregados:

Agregados	*Fino*	*Grueso*
Cantera	*Socabaya*	*Socabaya*
Perfil	*-*	*Angular-quijada*
PU (Suelto) -(Kg/m3)	*1288.99*	*1369.15*
PU (compactado) -(Kg/m3)	*1570.91*	*1522.24*
P. E. seco-(Kg/m3)	*2437*	*2462*
Módulo de fineza	*2.57*	*5.96*
T.M.N.	*-*	*¾"*
%Absorción	*2.20%*	*2.17%*
W%	*1.11%*	*1.01%*

D) Características del concreto:

F'c=210 Kgf/cm2 .....Para columnas

E) Características Ambientales:

Lugar: Socabaya-Arequipa (sin aire incorporado)

T. ambiental 17°C

Condiciones de exposición normales

Método ACI-Secuencia de diseño:

- ***<u>Selección de la resistencia promedio a partir de la resistencia especificada.</u>***

Para una resistencia f'c 210- Socabaya se tienen las siguientes opciones.

CASO 1: Existen datos estadísticos

F'c requerido (Margen de Seguridad)

F'cr= f'c+1.34 (Ds.)
F'cr= f'c+2.33 (Ds.)-35

Se toma el mayor resultado

(Ds.).....Desviación Estándar

CASO 2: No cuentan con suficientes datos estadísticos

∞ = factor del incremento
F'cr= f'c+1.34 (∞ Ds.)
F'cr= f'c+2.33 (∞Ds.)-35

Se toma el mayor resultado

(Ds.).....Desviación Estándar

Nro de Ensayos	∞
15	1.16
20	1.08
25	1.03
30	1.00

CASO 3: No tienen datos o es muy escaso

Especificado F'c	F'cr
<210	F'c+70
210-350	F'c+84
>350	F'c+98

F'cr=210+84= 294 Kgf/cm2

- ***Selección del T-M.N:*** ¾"
- ***Selección del asentamiento***
  (Tabla 1) 2" a 4"
- ***Selección del contenido de aire(tablas)***
  (Tabla 2) 2.0%
- ***Selección del volumen natural del agua(tabla)***
  (Tabla 3) *205. Lt.*
- ***Selección de la relación agua-cemento por resistencia y durabilidad (tablas)***
  (Tabla 4) *0.558*
- ***Determinación del factor cemento***
  $$\frac{agua}{a/c} = \frac{205}{0.558} = 367.38\frac{Kg}{m3} \ldots\ldots 8.64\ bolsas$$
- ***Determinación del contenido de agregado grueso***
  (tabla5) 0.64

Peso del agregado Grueso

0.64 x 1522.24=974.23 Kg/m3

- ***Determinación de la suma de los volúmenes absolutos de cemento, agua de diseño, aire y agregado grueso.***

Material	*Peso Seco (kg)*	*P.Esp. (Kg/m3)*	*Volumen (m3)*
Cemento	*367.38*	2850	*0.13*
Agua	*205.00*	1000	*0.21*
A.Grueso	*974.23*	2462	*0.40*
Aire%	*2.00%*		*0.02*
		Total	0.75

- ***Contenido de Ag. Fino:***

1-0.75=0.25 m3

0.25 x 2437 = 609.25 Kg.

- ***Diseño en estado Seco:***

Material	*Peso Seco (kg)*
Cemento	*367.38*
Agua	*205.00*
A.Grueso	*974.23*
A. Fino	*609.25*
Aire%	*2.00%*

- ***Teniendo la dosificación es seco se pasa a hacer las correcciones por humedad y absorción.***

CORRECCIÓN POR HUMEDAD

Material	*Peso Seco (kg)*	*Humedad (%)*	*Peso Corregido (kg)*
A.Grueso	*974.23*	1.01	984.069723
A. Fino	*609.25*	1.11	616.012675

CORRECCIÓN POR ABSORCIÓN

Material	Absorción (%)	Humedad (%)	Agua (Lt.)
A.Grueso	2.17	1.01	-11.301068
A. Fino	2.20	1.11	-6.640825
		Agua añadida	**17.941893**

- ***Relaciones Finales:***

Material	Pesos Corregidos(kg)
Cemento	367.38
Agua	222.94
A.Grueso	984.07
A. Fino	616.01
Aire%	2.00%

- ***Finalmente se obtiene la relación en función al cemento.***

1:1.68: 2.68:0.61

C: Af.:Ag.:Agua

Nota: Se parte a partir del siguiente diseño para la variación de Socabaya f'c210 Kgf/cm2 TMN3/4. Presentando variables alternas en las respectivas tablas, al ser demasiada la cantidad de Ag. Grueso a la hora de la mezcla. Código S.210-A3/4"2.5"

Método del Módulo de Fineza-Secuencia de diseño:

- ***Selección de la resistencia promedio a partir de la resistencia especificada.***

Para una resistencia f'c 210- Socabaya se tienen las siguientes opciones.

CASO 1: Existen datos estadísticos

F'c requerido (Margen de Seguridad)

F'cr= f'c+1.34 (Ds.)

Se toma el mayor resultado

F'cr= f'c+2.33 (Ds.)-35

(Ds.).....Desviación Estándar

CASO 2: No cuentan con suficientes datos estadísticos

∞ = factor del incremento

F'cr= f'c+1.34 (∞ Ds.)

F'cr= f'c+2.33 (∞Ds.)-35

Se toma el mayor resultado

(Ds.).....Desviación Estándar

Nro de Ensayos	∞
15	1.16
20	1.08
25	1.03
30	1.00

CASO 3: No tienen datos o es muy escaso

Especificado F'c	F'cr
<210	**F'c+70**
210-350	**F'c+84**
>350	**F'c+98**

F'cr=210+84= 294 Kgf/cm2

- ***Selección del T-M.N:*** ¾"
- ***Selección del asentamiento***
  (Tabla 1) 2" a 4"
- ***Selección del contenido de aire(tablas)***
  (Tabla 2) 2.0%
- ***Selección del volumen natural del agua(tabla)***
  (Tabla 3) *205. Lt.*
- ***Selección de la relación agua-cemento por resistencia y durabilidad (tablas)***

(Tabla 4) 0.558

- ***Determinación del factor cemento***

$$\frac{agua}{a/c} = \frac{205}{0.558} = 367.38\frac{Kg}{m3} \ldots\ldots 8.64\ bolsas$$

- ***Determinación del contenido de agregado grueso (tabla5) 0.64***

Peso del agregado Grueso
0.64 x 1522.24=974.23 Kg/m3

- ***Cálculo de los volúmenes absolutos de los elementos integrantes de la pasta***

Material	Peso Seco (kg)	P.Esp. (Kg/m3)	Volumen (m3)
Cemento	367.38	2850	0.13
Agua	205.00	1000	0.21
Aire%	2.00%		0.02
		Total	0.35

- ***Determinación del volumen absoluto de los agregados***

Volumen de Agregado Total= 1-0.35= 0.75 m3

- ***Cálculo del módulo de fineza de la combinación de agregados***
  (tabla6) m=5.16
- ***Cálculo del módulo de Fineza combinado***

$$Mfc = \frac{mg - m}{mg - mf}$$

$$Mfc = \frac{5.96 - 5.16}{5.96 - 2.57} = 0.234 = 23.6\%$$

- ***Cálculo de Volúmenes absolutos del agregado***

Material	% Ag	Vol Ag (m3)	m3
A.Grueso	76.40%	0.65	0.4966
A. Fino	23.60%	0.65	0.1534

- ***Teniendo la dosificación es seco se pasa a hacer las correcciones por humedad y absorción.***

Material	*m3*	*P.Esp. (Kg/m3)*	*Kg*
A.Grueso	49.66%	2462	1222.6292
A. Fino	15.34%	2437	373.8358

- ***Finalmente se obtiene la relación en función al cemento.***

Material	*Peso Seco (kg)*
Cemento	*367.38*
Agua	*205.00*
A.Grueso	*1222.63*
A. Fino	*373.84*
Aire%	*2.00%*

- ***Teniendo la dosificación es seco se pasa a hacer las correcciones por humedad y absorción.***

Material	*Peso Seco (kg)*	*Humedad (%)*	*Peso Corregido (kg)*
A.Grueso	*1222.63*	1.01	1234.977755
A. Fino	*373.84*	1.11	377.9853774

Material	*Absorción (%)*	*Humedad (%)*	*Agua (Lt.)*
A.Grueso	*2.17*	1.01	-14.18249872
A. Fino	*2.20*	1.11	-4.07481022
		Agua añadida	***18.25730894***

- ***Relaciones Finales:***

Material	*Peso Seco (kg)*
Cemento	*367.38*
Agua	*223.26*
A.Grueso	*1234.98*
A. Fino	*377.99*
Aire%	*2.00%*

- ***Finalmente se obtiene la relación en función al cemento.***
  - *1:1.03: 3.36:0.61*
  - *C: Af.:Ag.:Agua*

Nota: Como podemos notar, el hecho que la piedra sea chancada de un solo lado no garantiza un excelente módulo de fineza combinado, motivo por el cual se modificó esta relación teniendo 15 variables adicionales incrementadas en .01

RELACIÓN DE TABLAS

TABLA 1 "ASENTAMIENTO"

TIPO DE CONSTRUCCIÓN	*Asentamiento*	
	Máximo	*Mínimo*
Zapatas y muros de cimentación armados	*3"*	*1"*
cimentaciones simples, cajones y subestructuras	*3"*	*1"*
Vigas y muros armados	*4"*	*1"*
Columnas de edificios	*4"*	*1"*
Losas y pavimentos	*3"*	*1"*
Concreto ciclópeo	*2"*	*1"*

TABLA 2 DE "CONTENIDO AIRE"

T.M.N	*Aire Atrapado*
3/8"	3.00%
1/2"	2.50%
3/4"	2.00%
1"	1.50%
1 1/2"	1.00%
2"	0.50%
3"	0.30%
6"	0.20%

TABLA 3 "CONTENIDO DE AGUA":

ASENTAMIENTO		*AGUA EN 1/M3 PARA LOS T.M.N. INDICADOS DE AG. GRUESO Y ASENTAMIENTO*							
Mín	Máx	3/8"	1/2"	3/4"	1"	1 1/2"	2"	3"	6"
		SIN AIRE INCORPORADO							
1"	2"	207	199	190	179	166	154	130	113
3"	4"	228	216	205	193	181	169	145	124
6"	7"	243	228	216	202	190	178	160	....
		CON AIRE INCORPORADO							
1"	2"	181	175	168	160	150	142	122	107
3"	4"	202	193	184	175	165	157	133	119
6"	7"	216	205	197	184	174	166	154	....

"RELACIÓN AGUA CEMENTO"

	Relación a/c	
F'cr	*C. sin aire incorporado*	*C. con aire incorporado*
150	0.80	0.71
200	0.70	0.61
250	0.62	0.53
300	0.55	0.46
350	0.48	0.4
400	0.43	....
450	0.38	....

TABLA 5"VOLUMEN DE AGREGADO GRUESO"

TABLA 5	*Volumen de agregado grueso, seco y compactado por unidad de volumen del concreto*			
T.M.N.	2.4	2.6	2.8	3
3/8"	0.5	0.48	0.46	0.44
1/2"	0.59	0.57	0.55	0.53
3/4"	0.66	0.64	0.62	0.6
1"	0.71	0.69	0.67	0.65
1 1/2"	0.76	0.74	0.72	0.7
2"	0.78	0.76	0.74	0.72
3"	0.81	0.79	0.77	0.75
6"	0.87	0.85	0.83	0.81

TABLA 6"MÓDULO DE FINEZA COMBINADO"

Tabla 6	*Módulo de Fineza de Combinación de Agregados*			
Tamaño máximo nominal del agregado grueso	*Contenidos de cemento en sacos/metro cúbico*			
	6	*7*	*8*	*9*
3/8"	3.96	4.04	4.11	4.19
1/2"	4.46	4.54	4.61	4.69
3/4"	4.96	5.04	5.11	5.19
1"	5.26	5.34	5.41	5.49
1 1/2"	5.56	5.64	5.71	5.79
2"	5.86	5.94	6.01	6.09
3"	6.16	6.24	6.31	6.39