Complete ☒

Item of Concrete Properties

Refer to QMP provisions for Concrete. Concrete QMP items are contained in part 7 of the Standard Specifications. Refer to CMM 8.35 for additional guidance.

******Non-QMP Concrete – refer to CMM 8.50 for testing requirements.******

QMP (Class I & II)

Portland Cement

1) Verify source is on the approved list. CONC 1-A
   a. If on the approved list contact Regional Materials for approved sources and for determination of whether your source needs to be tested this year.
   b. If not on the approved list contact Regional Materials for coordination of testing.
2) Diary entry required. (~~optional 900-_____-_____~~) 905-0001-2016 CONC 1
3) Manufacturers certification is required for blended cements. Assign to prefix 900-____-_____ CONC 1-B

Admixtures

Air Entraining Admixtures, Retarder, Water Reducers, Water Reducing Set Retarders

1) Verify source is on the approved list. CONC 1-C1, C2, C3, C4
2) Diary entry required. (optional 900-_____-_____)
3) If admixture is not on the approved list contact Regional Materials.

Other Admixtures

1) If source is not on the approved list obtain a certified report of tests by a qualified independent laboratory showing the requirements of ASTM C494 for the type of admixture are satisfactory. Assign to prefix 900-_____-_____

**If calcium chloride allowed as an accelerator, document in diary entry the concentration and addition rate. (optional 900-_____-_____)

Water

Municipal Source

1) Diary entry required. (optional 900-_____-_____)

Private Wells CONC 1

1) Contact Regional Materials for approved sources and for determination of whether your source needs to be tested.
2) Diary entry required. Reference water test number: 131-0001-2014 (optional 900-_____-_____)

Surface Water

1) Contact Regional Materials for approved sources and for determination of whether your source needs to be tested this year.
2) Diary entry required. Reference water test number: 131-_____-_____ (optional 900-_____-_____)

Aggregates

Fine Aggregates CONC 1

1) Quality Test Required. (test prefix 162)
   a. Obtain hard copy of test and assign a 900-_____-_____

CONC 1 # 0-162-0007-2015

Coarse Aggregates

1) Quality Test Required. (test prefix 225)
   a. Contact Regional Materials for approved sources and for determination of whether your source needs to be tested this year.
   b. Obtain hard copy of test and assign a 900-0001-2016. CONC 1 # 0-225-0065-2015
   c. If not from approved source, sample must be submitted to CO for quality testing.
2) Field Acceptance Testing.
   a. Frequency varies based on application and quantity. See CMM Subsection 8.50 for guidance.

Fly Ash CONC 1

1) Certified report of test or analysis required. Assign to prefix 900-0001-2016 (Must be supplied 14 days prior to use.) # CONC - 1D # CONC - 1F
2) Fly ash samples are required.
   a. For contracts with less than 100 tons, no sampling is required.
   b. For contracts with 100 or more: 1 sample required per 2000 tons.

Slag

1) Certified report of test or analysis required. Assign to prefix 900-_____-_____
2) Slag samples are required.
   a. For contracts with less than 100 tons, no sampling is required.
   b. For contracts with 100 or more: 1 sample required per 2000 tons.

Pozzolans

1) Verify source is on the approved list.
2) Diary entry required. (optional 900-_____-_____)
3) If a pozzolan is not on the approved list contact Regional Materials.

Concrete Curing Compounds SEE ITEM # 502.3200 PROTECTIVE SURFACE TREATMENT 502.3210 PIGMENTED SURFACE SEALER

See CMM Subsection 8.50 and Subsection 415.2.4 of the Standard Specifications for detailed guidance.
NOTE: Lots or batches carried over from the previous year must be tested before use.

1) PAMS and Linseed
   a. Verify source is on the approved list.
   b. Diary entry required. (optional 900-_____-_____)
   c. If source is not on the approved list sampling is required.
      i. For contracts with less than 220 gallons, manufacturer's certification of compliance is required. Assign to prefix 900-_____-_____
      ii. For contracts with 220 or more gallons, one sample per 2000 gallons or fraction thereof.

2) White Water wax-limited to uses referred to and allowed under Std. Spec. 501.2.9
    a. Verify source is on the approved list.
    b. Diary entry required. (optional 900-_____-_____)
    c. If source is not on the approved list sampling is required.
        i. For contracts with less than 220 gallons, manufacturer's certification of compliance is required. Assign to prefix 900-_____-_____
        ii. For contracts with 220 or more gallons, one sample per 2000 gallons or fraction thereof.
3) Clear and Translucent
    a. Diary entry required. (optional 900-_____-_____)
    b. Sampling is required.
        i. For contracts with less than 55 gallons, manufacturer's certification of compliance is required. Assign to prefix 900-_____-_____
        ii. For contracts with 55 or more gallons, one sample per contract.
3) Cure & Seal Compound
    a. Verify source is on the approved list. Concl-F
    b. Diary entry required. (optional 900-_____-_____)
    c. If source is not on the approved list contact Regional Materials.

Project Reporting

1) Develop a 155-005-2016 to cover the entire QMP acceptance. Discuss all aspects of verification testing and contractor testing. (control charts, adjustments, additional testing, etc.) (See CMM 8.45)
    a. Include date of samples, location of sample, quantity, test results, tester names,

Example prefix 155 report for QMP Ancillary Concrete

QMP ANCILLARY CONCRETE
The contractor provided an acceptable QC plan and mix design-documents on file in the project record.
Field-testing was summarized on DOT WS 5013 (located in the project record)
Cylinder compression strength records and printouts were satisfactory and are stored with the project records.
Two sets of QC tests were completed the first day with three sets done each of the subsequent days
QC testing met the frequency and requirements of the QMP specification.

Verification tests

Date	Location	C.Y.	% Air	Temperature	Slump
8/14/2006	C&G Sta. 23+10 - 38+4	102	5.6	78 F	1.5-inch
8/15/2006	6 foot Sidewalk- Sta. 21+10 - 53+87 LT	224	6.3	76 F	1.75-inch
8/16/2006	6 foot Sidewalk- Sta. 21+10 - 53+87 LT	226	5.5	72 F	1.5-inch

Verification cylinders cast Ave = 4567 psi See report 9-999-130-0123-2008

QMP (Class III)

Class III Concrete

1) Certification of compliance is required 3 days prior to use. Assign to prefix 900-_____-_____
    a. If certification of compliance is not supplied, then concrete falls under Class II concrete.
2) Department Verification testing is optional for Class III concrete.

✓
RMS
4/06/16

Cemstone Products Company
Cemstone Ready Mix
Quality Management Plan

Hudson - Baldwin
CTH J Bridge
B-55-0259
1020-01-83

I. Description

This QMP plan describes contractors responsibilities common to QMP's under part 7 including quality control plans; personnel and laboratories certifications; quality control testing; and data submissions and record keeping. This QMP plan also describes department responsibilities; common to all QMP's under part 7, for verification and quality assurance testing. Exceptions and additional requirements under QMP program are specified under specific QMP provisions

II. General

1. Provide and maintain a quality control program, defined as all actives and documentation of the following:
    a. Mix and gradation design
    b. Control and inspection of production and placement processes
    c. Material sampling, testing, and correction of in-place work
2. CMM Chapter 8 provides additional detailed guidance for QMP work and describes required sampling and testing procedures
3. The Departments material reporting system (MRS) software allows contractors to submit selected data to the departments electronically, estimate pay adjustment, and print reports. Qualified personnel may obtain MRS software.

III. Quality Control Plan

1. Organization Chart

Cemstone Engineering Services Techs

Jacob Ostendorf
Cell Number - (715) 441-7373
Email - jostendorf@cemstone.com
Certifications - PCCTECHII, AGGTECHII, CST, ATTS

Dave Horejsi
Cell Number – (612) 363-7104
Email – dhorejsi@cemstone.com
Certifications – PCCTECHII, AGGTECHI, CST

Jack Mickelson
Cell Number – (715) 419-1730
Email – jmickelson@cemstone.com
Certifications – PCCTECHI

2. **Corrective Actions**

   If there is any change to the mix design that was submitted at the start of the job, Jacob Ostendorf will contact the Engineer and discuss a solution to keep the job going. On the job corrective actions can be made during the pour when concrete is not in spec. If the concrete delivered is not in spec the engineer or tech can get a hold of Jacob Ostendorf to figure out an action to bring the concrete back into spec if there is an opportunity to do so.

3. **Cemstone Ready Mix Lab**

   Cemstone Redi Mix has a certified lab in New Richmond, Wisconsin. The lab is certified to do gradations, test batches, cylinder curing, and cylinder breaks.

4. **Cemstone Ready Mix Material Sources**

   1. Fine Aggregate --- Casey
   2. Course Aggregate --- Casey
   3. Cement – Columbia Lafarge Davenport
   4. Fly Ash – Columbia Elm Road
   5. Admixture – BASF Admixes

   If a Material used in the batch process were to change the engineer will be contacted and appropriate action will be discussed. Cemstone will try to keep the same material throughout the job but at times there could be a shortage in Material that was being used. To keep the job going the change in Material will have to be discussed and appropriate action will be taken.

5. **Equipment Checks**

   1. Equipment used in the testing of concrete is assigned to an Engineering Services Tech. The Tech will be able to supply the contractor or engineer with documentation of the calibrations. Also the tech will have Cal Can with them to check there air pot for accuracy. Equipment is always checked every three months.
   2. Equipment used in the Aggregate Testing or Concrete Strength Testing is assigned to the New Richmond Lab. This equipment has documentation of calibrations and is check once a year.
   3. Equipment used to batch material is checked once a year. All admix dispensers are checked one time a year unless a problem is suspected. All delivery trucks are DOT approved.

6. **Frequency of Quality Control Testing**

   1. Aggregate

a. Aggregate Moisture Content
    i. Moistures will always be done for every 50 yards or once a day and will be done before the start of the batching of concrete. The batch man will receive the moisture that the tech recorded and be put into the computer.
b. Aggregate Gradations
    i. Gradations will be performed every 200 yards poured or once a week, based on whichever comes first.
c. Aggregate #200 Wash
    i. A #200 wash will be performed for every time a moisture is done or a gradation is preformed

2. Plastic Concrete
    a. Concrete will be tested for correct air before the job can start. If the concretes entrained air is in specifications of the mix the engineer will be contacted and the pour can start. After the initial test is done the tech will have to do a random test for every 50 yards poured that day. If the contractor is pouring less than 50 yards the tech will still do a random test on the amount poured if under 50 yards. The test will consist of an air test, slump test, temperature, and make cylinders. If at any time a test is being done and the concrete is out of spec the tech will contact Jacob Ostendorf and the engineer on the job. At this time the tech will perform another test. If anything is done to the concrete to bring it back in to spec by adding approved products the tech will perform a test tell the concrete coming to the job is at the correct spec. If the concrete is unable to bring back into spec the concrete can be reject by the engineer.

3. Hardened Concrete
    a. The cylinders that were made will be picked up from the job in a time frame of 24 to 48 hours. These cylinders will then be handled carefully back to lab and labeled. After being labeled the cylinders will be placed in a curing tank for 28 days from the pour. At the 28 day Jacob Ostendorf will perform a strength test with the concrete strength tester. If there was any problem with the strength Jacob Ostendorf will contact the engineer to come up with corrective actions, this could result in breaking a cylinder at 56 Days or take core samples.

7. Mix Design

WHB5146 was designed in 1999 by Cemstone. The mix has been used with great success over the years. Cylinders breaks have always exceeded the 4000psi mark in 28 days. This mix is designed for 4" slump and 6% air.

8. Batch Plant

The concrete being placed will come from the Cemstone's New Richmond Dry Batch Plant. The batch plant is equipped Command Data that produced a computer generated batch weights and tickets. The tickets and batch report will accompany each load. The batch plant is able to produce 80 cubic yards an hour. This plant also has an admixture dispenser.

9. Problems

If there was any issue with the batch plant that occurs during the pour the Cemstone's River Falls plant will be the backup plant. This plant is equipped with the exact same computer generated batch weights and tickets. It also has the same admixture dispenser. Spooner plant can produce 80 cubic yards and hour

IV. Contractor

Placing, surfacing and curing equipment is checked at the site before every pour. Equipment in unsatisfactory condition is repaired or replaced. Replacement parts for key components of the finishing machine and concrete vibrators are on site during the pour. A spare generator, to run the belts, is also on site during deck pours. Concrete will be placed by conveyor belts, concrete pumps, concrete buckets or direct from the chute of the truck. Hand held concrete vibrators will be used to consolidate the concrete as it's placed. Alignment, profile and cross slope will be controlled with the use of a power screed, Bidwell or Comaco finishing machine. Concrete thickness shall be checked with a probe at predetermined intervals during each pour. This information will be documented and presented to the owner after each pour. The overall alignment, profile, depth and cross slopes are set before and during the dry run of the finishing machine. Adjustments to profile, depth and cross slope, necessitated as a result of grade checks made during the pour, will be accomplished by raising or lowering the screed pipe, or modifying the profile set on the finishing machine. Transits will be used to monitor form alignments. Formwork will be adjusted on an as needed basis.

Either hand troweling, single or double drums on the finishing machine, straight edge or darbee will accomplish finishing concrete. Texture, depending on the specifications, will be by combination broom and tiner and/or magnesium float. Curing concrete will be by fogging, when necessary, and covering with burlap prior to specify continuous water application. Concrete will also be cured with burlene, if warranted by weather conditions or span length. Also, curing compound may be used as necessitated by the type of concrete being poured. Steel cover on substructure will be checked by measuring rebar clearances and chair heights and comparing field dimensions with plan clearances. Steel cover on deck concrete will be checked by measuring bottom slab chairs, high chairs and/or standees as appropriate and checking these heights with plan clearances. The top mat of steel will be secured to the formwork with wire to prevent floating. Additionally, steel clearances will be checked and documented during the dry run of the finishing machine. Prior to ordering concrete the weather forecast will be checked. If temperature or precipitation conditions are not favorable, the pour will be cancelled. In the event that concrete is ordered and it starts raining, suitable covering material will be on hand to protect the wet concrete surface. Additionally, the location of emergency headers will be reviewed during the dry running of the finishing machine. Deck concrete smoothness will be checked with a 10-foot long straight edge, overlapping 50% on each pass. Any imperfections that are encountered will be corrected.

V. Certifications

Required Certification	Sampling or Testing Rules
PCC Tech 1	Sampling Fresh Concrete Test for Air Content, Slump, and Temperature Fabrication and Curing of concrete Strength Specimen
Concrete Strength Tester	Concrete Strength Testing
Aggregate Tech 1	Aggregate Sampling Gradations, P 200, and Moisture content testing
PCC Tech 2	Create Mix designs Adjust Add-Mixtures Adjust sand and rock ratio
Aggregate Tech 2	Aggregate Performance Aggregate Properties Aggregate Quality Test Aggregate Blending Extraction Principles WisDot Aggregate Quality Management

	WisDot Standard Specifications
ATTS	La Wear Sodium Sulfate Soundness Freeze/Thaw Soundness Fracture Liquid Limit Specific Gravity Absorption

VI. Laboratory Certifications

The New Richmond Lab is certified every year to do gradations, cylinder breaks, and cylinder curing. All state job testing will be done out of the New Richmond Lab and data will be entered into Atwood's.

VII. Test Numbers

1. Water Test Number—0-131-2-2014
2. Course Aggregate Test Number—225-65-2015
3. Fine Aggregate Test Number—165-7-2015

VIII. Equipment

The New Richmond Lab has all the necessary equipment and supplies to preform Quality control testing. All equipment and supplies have been calibrated and checked for good conditions under CMM 8-30. All equipment has been documented and is available for the engineer to see.

IX. Documentation

1. A Cemstone Tech will document observations, inspection records, and process adjustments daily. Documentations/ test results will be submitted to the Departments Material contact person on the same day it becomes available
2. The forms used will be under CMM Chapter 8. Note other information in permanent field records and as part of the process control documentation in the contractor's quality control plan. Data will be entered into the applicable MRS software within 5 business days after results are available.
3. A summited final testing records and other documentation to the engineer electronically within 10 business days after all contract-required information becomes available. The engineer may also allow submissions of scanned copies and hand-written documentations.

X. Contractor Testing

1. Preform contract required QC tests for samples randomly located according to CMM 8-30. Also perform other test necessary to control production and construction processes, and additional testing

enumerated in the contractor's quality control plan or engineer directs. The test methods that will be used fallow:

Test	Test Standards
Washed P 200 Analysis	AASHTO T11
Sieve Analysis of Fine and Corse Aggregate	AASHTO T27
Aggregate Moistures	AASHTO T255
Sampling Freshly Mixed Concrete	AASHTO R60
Air Content of Fresh Concrete	AASHTO T152
Concrete Slump	AASHTO T119
Concrete Temperature	AASHTO C1064
Concrete Compressive Strength	AASHTO T122
Making and Curing Concrete Cylinders	AASHTO T23
Standard Moist Curing for Concrete Cylinders	AASHTO M201

2. Notify the engineer when an individual test exceeds spec limit. Material from the first out-of-spec test nonconforming testing will be issued tell spec is reached. The department may reject or otherwise determine the final disposition of nonconforming material specified in 106.5
3. The department may periodically observe contractors sampling and testing and direct additions contractors sampling and testing for department observations.

XI. Department Testing General

1. The department conducts verification testing to validate quality and independent assurance testing to evaluate sampling and testing. The department will use the same sampling and testing methods required for contractor testing under 701.3. The department will provide the contractors with a list of names and telephone numbers of project verifications and independent assurance personnel.
2. The department will provide test results to the contractor within 2 days after the department obtains a sample, or in the case of long term testing, within 2 business days after results are available.
3. Correct department-identified deficiencies. If the contractor fails to correct deficiencies or resolve discrepancies, the engineer may suspend production. Resolve disputes as specified in 106.3.4.3.5.

XII. Department Testing Verification Testing

1. The department will have a HTCP certified technician, or ACT working under a certified technician, perform QV sampling and testing. Department QV testing must meet the same certification level requirements specified for contractor testing personnel for each test being verified. The department will notify the contractors before sampling so the contractor can observe QV sampling.
2. The department will sample randomly at locations independent of contractors QC test and use separate equipment and laboratories
3. If verifications test conform to specifications, no further action is required. If verification tests do not conform to specifications, the

department will notify the contractor and Jacob Ostendorf immediately. The engineer and contractor will jointly investigate nonconforming test results. The investigations may include additional testing as well review and observation of department and contractors sampling and testing procedures, equipment, and other documented test results. Both parties will document investigated work.

XIII. Department Testing Independent Assurance Testing

1. The department performs independent assurance testing to evaluate department verification and contractor's QC sampling and testing personnel qualifications, procedures, and equipment. The department will perform independent assurance reviews according to the departments independent assurance program, which may include one or more of the following:
    a. Split sample testing
    b. Proficiency sample testing
    c. Witnessing sampling and testing
    d. Test equipment calibration checks
    e. Reviewing contract-required data and available contractors process control information
    f. Requesting that testing personnel perform additional sampling and testing.

XIV. Payment

Cost of sampling, testing and documentation under part 7 are incidental to the work. The contractor fails to preform work required under the contract QMP provisions; the department may reduce the contractors pay. The department will administer pay reductions under NON-performance of QMP administrative item.

XV. Curing

1. HOT WEATHER:
   Prior to ordering concrete the weather forecast will be checked. If necessary, the pour time will be adjusted to fit the coolest part of the day. Stock piles will be watered as well as the mixer barrels in order to maintain cooler mix temps.

2. COLD WEATHER:
   Prior to ordering concrete, the weather forecast will be checked. If necessary, pre-heat forms and housed and heat the substructure pours. Cover deck pours with single or double burlene or insulating blankets as necessary.

Test Number: CEM001.535 - 132 - 0005 - 2016

Materials Laboratory Testing System Tests On:
Concrete Mix Design
Type: DR - DESIGN REVIEW

Lab Site
Cemstone Ready Mix - New Richmond
CRM- New Richmond -- Dave Horejsi
1190 Cty G
New Richmond, WI 54017

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
04/05/12	04/05/12	04/05/12
By: David Horejsi / 101647	By: STATE	By: STATE

Source: Legal Description: , , Section: , T: N, R: , County:

132 Main Concrete Mix Design - Batch Weights and Proportions

Test Number: CEM001.535 - 132 - 0005 - 2016

Design Mix

ID C WHB5146 Grade : A-FA

Description 4000 PSI

Cementitous Material

Cement: (lbs)	Fly Ash: (lbs)	Slag content: (lbs)	Total :	Net Mix Water: (Gals / Lbs)		Water Cement Ratio	Air Content: (%)
480	109		589	28	233.24	0.40	6

Aggregate Sources	Source:	SSD Weight (lbs):	Absorption %
Coarse 1:	CASEY WEST	930 ✓	1.28
Coarse 2:	CASEY WEST	930 ✓	1.28
Coarse 3:			
Fine 1:	CASEY WEST	1260 ✓	0.76
Fine 2 :			

Admixture

Number	Name	Dosage (oz per 100 WT)
1	MB AE 90	0.80
2	Polyheed 1020	3.00

Remarks: Satisfactory

Verified Date: 03/08/2016 **Verified By:** DAVID HOREJSI

CEM001.535-132-0005-2016

CEMSTONE
ENGINEERING SERVICES

CONCRETE MIXTURE DESIGN

MIX ID: WHB5146

Compressive Strength: 4,000 psi at 28-Days

Created On: 9/21/05

PROJECT: Wisconsin Highway Bridges (WHB)
APPLICATION: Bridge Deck
PLACEMENT: Pumpable Through a 4" Line

CEMENT,	Continental Davenport	(ASTM C 150/TYPE I/II)	480 lbs.	2.44 ft^3
FLY ASH,	Continental Elm Road	(ASTM C 618/CLASS C/F)	109 lbs.	0.68 ft^3
SAND,	Casey	(ASTM C 33)	1,260 lbs. SSD	7.59 ft^3
3/4" GRAVEL,	Casey	(ASTM C 33/#67)	930 lbs. SSD	5.50 ft^3
1.5" GRAVEL,	Casey	(ASTM C 33/#4)	930 lbs. SSD	5.50 ft^3
WATER,	Well		236 lbs. = 28.3 gal.	3.78 ft^3
AIR CONTENT,			6.0 % +/- 1.5%	1.63 ft^3
				27.12 ft^3
WRA,	BASF-1020	(ASTM C 494/TYPE A)	18 oz. (3.0 oz./cwt)	
STABILIZER,	BASF-DELVO	(ASTM C 494/TYPE B)	12 oz. (2.0 oz./cwt)	
AEA,	BASF-AE 90	(ASTM C 260)	4.0 oz.	

WATER-CEMENTITIOUS RATIO,	0.40
SLUMP,	4.00 in.
CONCRETE UNIT WEIGHT,	145.5 pcf
MIX SUITABILITY FACTOR,	21.8

MIXTURE ADJUSTMENT: Material variation and job site conditions may require mixture adjustments to maintain strength, water-cementitious ratio, slump, air content, and yield.
DISCLAIMER: Cemstone disclaims and negates any warranty whatsoever of this concrete mix design if it is provided to, or used by, another concrete producer.

PREPARED BY:

Kevin D. Heindel, P.E.

Document Printed On: 3/15/16

Designed By: Jacob Ostendorf 3/15/16

3-15-16

PORTLAND CEMENT MANUFACTURERS - CERTIFIED SUPPLIERS

Date last edited: 11/10/2015

Manufacturer	Mill Location	Cement Types	Notes
Buzzi Unicem USA			
	Cape Girardeau, MO	I, II	
	Greencastle, IN	I, III	
	Festus, MO	I, II, III	
Continental Cement Company			
	Hannibal, MO	I, II,III	
	Davenport, IA**	I, II, IS	Plant acquired from LaFarge as of 7/18/2015 - Product acceptable from either ownership
CRH Canada Group, Inc.			
	Mississauga, Ontario, Canada**	I	Plant acquired from Holcim as of 7/18/2015 - Product acceptable from either ownership
GCC of America			
	Rapid City, SD	I, II,III	Listed 5/28/2015
Illinois Cement Company	LaSalle, IL	I,III	
LaFargeHolcim Corporation **			
	Alpena, MI	I, II, III	
	Bloomsdale, MO	I, II, IL(10)	
	Portland, CO	I, II	Plant removed 4/9/2015, relisted 5/15/2015, ok to use material produced or delivered 4/9-5/15/2015
	Milaki, Greece (Heracles brand)	I, II	Plant listed 6/5/2015
	Joppa/Grand Chain, IL	I, II	Plant listed 11/6/2015
	Exshaw, Alberta, Canada	I, II	Plant listed 11/6/2015
Lehigh Cement Company			
	Mason City, IA	I, III	
St Marys, Inc.			
	Charlevoix, MI	I, II, III	
	Dixon, IL	I, II	Listed 10/20/2015

** A merger of Holcim and Lafarge has occurred in July 2015. The new name of the merged company will be LafargeHolcim. The former Lafarge plant at Davenport changed ownership to Continental Cement. The former Holcim plant at Mississauga, Ontario, Canada changed ownership to CRH Canadas Group. Do not reject cement as long as the name identified on the bill of lading or certification of compliance matches either the old names or the new names. This flexibility on names will be in effect through the end of calendar year 2015.

Note: Certified Mill Test Reports accompanying all cement shipments should be reviewed at the project level. If there is any notation on the mill cert that fly ash or slag has been added as a process addition during the manufacture of the cement, the maximum percent by weight of these materials added in the field should be reduced by the same amount. If questions , call Jim Parry at 608-246-7939.

Contact:
James Parry, Quality Assurance Unit Supervisor
3502 Kinsman Blvd
Madison, WI
Phone - (608) 246-7939
E-mail:
mailto:james.parry@dot.wi.gov

CONTINENTAL CEMENT

rms 4/6/16

Cement Mill Test Report

Month of Issue: March-2016

Plant:	**Davenport Plant, Buffalo, IA**
Product:	**Portland Cement Type I/II(MH)**
Shipped:	**February-2016**
Manufactured:	**February-2016**

ASTM C 150 and AASHTO M 85 Standard Requirements

CHEMICAL ANALYSIS

Item	Spec limit	Test Result
Rapid Method, X-Ray *(C 114)*		
SiO2 (%)	---	19.7
Al2O3 (%)	6.0 max	4.4
Fe2O3 (%)	6.0 max	3.1
CaO (%)	---	62.7
MgO (%)	6.0 max	2.2
SO3 (%)*	3.0 max	3.6
Loss on ignition (%)	3.0 max	2.3
Insoluble residue (%)	0.75 max	0.34
CO2 (%)	---	1.7
Limestone (%)	5.0 max	4.2
CaCO3 in Limestone (%)	70 min	92
Adjusted Potential Phase Composition *(C 150)*		
C3S (%)	---	54
C2S (%)	---	15
C3A (%)	8 max	6
C4AF (%)	---	9
C3S+4.75*C3A (%)	100 max	85

PHYSICAL ANALYSIS

Item	Spec limit	Test Result
Air content of mortar (%) *(C 185)*	12 max	6
Blaine Fineness (m2/kg) *(C 204)*	280 - 430	382
Fineness, Residue passing on a 45 um sieve (%)	---	92.2
Autoclave expansion (%) *(C 151)*	0.80 max	0.01
Compressive strength (MPa, [PSI]) *(C 109)*		
1 day	---	14.6 [2120]
3 days	12.0 [1740] min	26.2 [3800]
7 days	19.0 [2760] min	33.2 [4820]
28 days**	---	51.1 [7420]
Time of setting (minutes)		
Vicat Initial *(C 191)*	45 - 375	95
Mortar Bar Expansion (%) *(C 1038)***	0.02 max	0.004
Heat of Hydration (KJ/Kg, [cal/g]) *(C 186)*		
7 days (for information only)**	---	348 [83.1]
Density *(C188)***	---	3.15

ASTM C 150 and AASHTO M 85 Optional Chemical Requirements:

NaEq (%)	0.60 max	0.51

* May exceed 3.0% SO3 maximum based on our quarterly C 1038 results of <0.02% expansion at 14 days.

** Current Production run not available - most recent provided

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of current ASTM C 150 & AASHTO M 85 Standard Specifications for Type I and Type II(MH) Cement; ASTM C 150 & AASHTO M 85 Optional Chemical Requirements for Type I & II(MH) Low Alkali Cement.

Certified By:

Adam Oliver

Adam Oliver - Quality Manager

Continental Cement Company - Davenport Plant
301 E. Front St
Buffalo, IA. 52728
563-328-6222

3/14/2016

Cond-B

CONTINENTAL CEMENT

Cement Mill Test Report

Month of Issue: March-16

Plant:	**Davenport Plant, Buffalo, IA**
Product:	**Portland Cement Type I/II(MH)**
Shipped:	**February-2016**
Manufactured:	**February-2016**

Additional ASTM C 150 and AASHTO M 85 Standard data

Base Cement Phase Composition

Item	Test Result
C3S (%)	56
C2S (%)	16
C3A (%)	7
C4AF (%)	10

We certify that the above described cement, at the time of shipment, meets the chemical and physical requirements of current ASTM C 150 & AASHTO M 85 Standard Specifications for Type I and Type II(MH) Cement;
ASTM C 150 & AASHTO M 85 Optional Chemical Requirements for Type I & II(MH) Low Alkali Cement.

Continental Cement Company - Davenport Plant
301 E. Front St
Buffalo, IA. 52728
563-323-2751

Certified By:

Adam Oliver

Adam Oliver - Quality Manager

3/14/2016

✓
RMS
4/6/16

APPROVED Portland Cement Concrete Admixtures Last update: 7/31/2015		Important! Type A and Type D admixtures may not be compatabile only use in combination in the same batch if the manufacturer allows.	
Manufacturer	**Air-Entraining Admixtures (AASHTO M154)**	**Water Reducers (AASHTO M194 - Type A**	**Water Reducing Set Retarders (AASHTO M194 - Type D)**
PINOVA, Inc.[1] P.O. Drawer 1517 Brunswick , GA 31521-1517 Ph: 912-265-3550 http://www.ashland.com/ (1) Formerly Ashland, Inc	Vinsol		
BASF Admixtures, Inc.[2] 223700 Chagrin Blvd. Cleveland, OH, 44122 Ph: 800-628-9990 www.basf-admixtures.com (2) formerly Degussa Admixtures Inc. (formerly Master Builders)	MasterAir AE 200 MasterAir AE 90 MasterAir AE 400 MBVR Standard - Removed 4/9/2015 MaterAir VR 10	MasterPolyheed 997 MasterPolyheed 1020 MasterPozzolith 80 MaterGlenium 7500 MasterGlenium 7511	MasterSet Delvo MasterPozzolith 80 MasterSet R300
CHRYSO, Inc. PO Box 190 Rockwall, TX 75039-1611	Chryso Air 260 Chryso Air TX	Chryso Fluid Premia 180 Chryso Fluid Optima 203 Chryso EnviroMix 159 Chryso EnviroMix 728 Chryso Plast 209	Chryso Tard 100R Chryso NutralSet - Removed 4/9/2015
Euclid Chemical Company 19218 Redwood Road Cleveland , OH 44110-2799 Ph: 800-321-7628 www.euclidchemical.com	Eucon AEA-92-S Eucon Air Mix 200 Eucon Air Mix 250 Eucon AEA-92	Eucon MR Eucon WR Eucon WR-91 Plastol 6420 Eucon MRX	Eucon WR Eucon WR-91 Eucon WO
Fritz-Pack Concrete Admixtures 4821 Eastover Circle Mesquite, TX 75149 http://www.fritzpak.com/	Air Plus Super Air Plus		FR-1 Delayed Set Standard Delayed Set Mini
General Resource Technology 2987 Center Court Eagan, MN 55121 800-324-8154 651-454-4151 www.grtinc.com	Polychem AE Polychem VR Polychem SA Polychem SA-50	Polychem 400NC Polychem SPC Polychem Paver Plus KB-1200	Polychem R Polychem 400 NC
Premier Concrete Admixtures 508 Cedar Street PO Box 277 Pioneer, OH 43554 800-503-3418 http://www.premiereadmix.com/	ConAir ConAir 260	Optiflo 50 Optiflo 500 Optiflo MR Optiflo Plus Optiflo 700	Prolong L Optiflo 500 Optiflo 50
Russtech, Inc 11208 Decimal Drive Louisville KY 40299 Ph: 502-267-7700 www.RussTechnet.com	RSA-10 RVR-15	LC-400 LC-400P FinishEase-NC	LC-400R
Sika Corporation 201 Polito Avenue LyndenHurst, NJ 07071 Ph; 201-933-6800 www.sikausa.com	Sika Air 260 Sika Air 360 Sika Multi-Air 25 Sika AEA-14	Sikament 686 Plastocrete 161 Sikaplast 200 Sikaplast 300 GP Sika Viscocrete 1000	Plastiment ES Sikatard 440 Plastocrete 161
W R Grace and Company 62 Whittemore Avenue Cambridge MA Ph: 617-498-4555 www.grace.com	Darex II AEA Daravair 1000 Daravair M Daravair 1400	WRDA 82 MIRA 62 ADVA Cast 600 MIRA 110 ZYLA 630 Daracem 50 - Removed 4/9/2015 ADVA 140M - Removed 4/9/2015	Recover Daratard 17 WRDA 82

Contact:
James Parry, Quality Assurance Unit Supervisor
3502 Kinsman Blvd
Madison, WI

Phone - (608) 246-7939
E-mail:
james.parry@dot.wi.gov

BASF

The Chemical Company

3	03 30 00	Cast-in-Place Concrete
	03 40 00	Precast Concrete
	03 70 00	Mass Concrete

MasterAir® AE 90

Air-Entraining Admixture

Formerly MB-AE 90*

Description

MasterAir AE 90 air-entraining admixture is for use in concrete mixtures. It meets the requirements of ASTM C 260, AASHTO M 154 and CRD-C 13.

Applications

Recommended for use in:

- Concrete exposed to cyclic freezing and thawing
- Production of high-quality normal or lightweight concrete (heavyweight concrete normally does not contain entrained air)

Features

- Ready-to-use in the proper concentration for rapid, accurate dispensing

Benefits

- Improved resistance to damage from cyclic freezing and thawing
- Improved resistance to scaling from deicing salts
- Improved plasticity and workability
- Reduced permeability – increased watertightness
- Reduced segregation and bleeding

Performance Characteristics

Concrete durability research has established that the best protection for concrete from the adverse effects of freezing and thawing cycles and deicing salts results from: proper air content in the hardened concrete, a suitable air-void system in terms of bubble size and spacing, and adequate concrete strength, assuming the use of sound aggregates and proper mixing, transporting, placing, consolidation, finishing and curing techniques. MasterAir AE 90 admixture can be used to obtain adequate freeze-thaw durability in a properly proportioned concrete mixture, if standard industry practices are followed.

Air Content Determination: The total air content of normal weight concrete should be measured in strict accordance with ASTM C 231, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method" or ASTM C 173/C 173M, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method." The air content of lightweight concrete should only be determined using the Volumetric Method. The air content should be verified by calculating the gravimetric air content in accordance with ASTM C 138/C 138M, "Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete." If the total air content, as measured by the Pressure Method or Volumetric Method and as verified by the Gravimetric Method, deviates by more than 1.5%, the cause should be determined and corrected through equipment calibration or by whatever process is deemed necessary.

MASTER® BUILDERS SOLUTIONS

Concr. 02

Guidelines for Use

Dosage: There is no standard dosage for MasterAir AE 90 admixture. The exact quantity of air-entraining admixture needed for a given air content of concrete varies because of differences in concrete-making materials and ambient conditions. Typical factors that might influence the amount of air entrained include: temperature, cementitious materials, sand gradation, sand-aggregate ratio, mixture proportions, slump, means of conveying and placement, consolidation and finishing technique. The amount of MasterAir AE 90 admixture used will depend upon the amount of entrained air required under actual job conditions. In a trial mixture, use 0.25 to 4 fl oz/cwt (16-260 mL/100 kg) of cementitious material. Measure the air content of the trial mixture, and, if needed, either increase or decrease the quantity of MasterAir AE 90 admixture to obtain the desired air content.

In mixtures containing water-reducing or set-control admixtures, the amount of MasterAir AE 90 admixture needed may be somewhat less than the amount required in plain concrete.

Due to possible changes in the factors that can affect the dosage of MasterAir AE 90 admixture, frequent air content checks should be made during the course of the work. Adjustments to the dosage should be based on the amount of entrained air required in the mixture at the point of placement.

If an unusually high or low dosage of MasterAir AE 90 admixture is required to obtain the desired air content, consult your local sales representative. In such cases, it may be necessary to determine that, in addition to a proper air content in the fresh concrete, a suitable air-void system is achieved in the hardened concrete.

Dispensing and Mixing: Add MasterAir AE 90 admixture to the concrete mixture using a dispenser designed for air-entraining admixtures, or add manually using a suitable measuring device that ensures accuracy within plus or minus 3% of the required amount.

For optimum, consistent performance, the air-entraining admixture should be dispensed on damp, fine aggregate. If the concrete mixture contains fine lightweight aggregate, field evaluations should be conducted to determine the best method to dispense the air-entraining admixture.

Precaution

In a 2005 publication from the Portland Cement Association (PCA R&D Serial No. 2789), it was reported that problematic air-void clustering that can potentially lead to above normal decreases in strength was found to coincide with late additions of water to air-entrained concretes. Late additions of water include the conventional practice of holding back water during batching for addition at the jobsite. Therefore, caution should be exercised with delayed additions of water to air-entrained concrete. Furthermore, an air content check should be performed after post-batching addition of any other materials to an air-entrained concrete mixture.

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: MasterAir AE 90 admixture will neither initiate nor promote corrosion of reinforcing and prestressing steel embedded in concrete, or of galvanized floor and roof systems. No calcium chloride or other chloride-based ingredients are used in the manufacture of this admixture.

Compatibility: MasterAir AE 90 admixture may be used in combination with any BASF admixture, unless stated otherwise on the data sheet for the other product. When used in conjunction with other admixtures, each admixture must be dispensed separately into the concrete mixture.

Storage and Handling

Storage Temperature: MasterAir AE 90 admixture should be stored and dispensed at 31 °F (-0.5 °C) or higher. Although freezing does not harm this product, precautions should be taken to protect it from freezing. If MasterAir AE 90 admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

Shelf Life: MasterAir AE 90 admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterAir AE 90 admixture has been exceeded.

Safety: Chemical goggles and gloves are recommended when transferring or handling this material.

Packaging

MasterAir AE 90 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Safety Data Sheets: MasterAir AE 90 admixture

Additional Information

For additional information on MasterAir AE 90 admixture, or its use in developing a concrete mixture with special peformance characteristics, contact your local sales representative.

The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.

Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

* MB-AE 90 became MasterAir AE 90 under the Master Builders Solutions brand, effective January 1, 2014.

NSF Certified to NSF/ANSI 61

BASF Corporation
Admixture Systems
www.master-builders-solutions.basf.us

United States
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5544
Tel: 800 628-9990 ▪ Fax: 216 839-8821

Canada
1800 Clark Boulevard
Brampton, Ontario L6T 4M7
Tel: 800 387-5862 ▪ Fax: 905 792-0651

BASF

The Chemical Company

3	03 30 00	Cast-in-Place Concrete
	03 40 00	Precast Concrete
	03 70 00	Mass Concrete

MasterPolyheed® 1020

Mid-Range Water-Reducing Admixture

Formerly PolyHeed 1020*

Description

MasterPolyheed 1020 admixture is a patent-pending ready-to-use mid-range water-reducing admixture. MasterPolyheed 1020 admixture, is very effective in producing concrete with different levels of workability and with enhanced finishing characteristics. MasterPolyheed 1020 admixture meets ASTM C 494/C 494M requirements for Type A, water-reducing, and Type F, high-range water-reducing, admixtures.

Applications

Recommended for use in:

- All concrete applications where superior workability, pumpability and finishability qualities are desired, in particular, flatwork, pumped concrete and pervious concrete
- Concrete containing manufactured sand and harsh concrete mixtures

Features

- Based on MasterGlenium® technology
- Dosage flexibility - provides up to 20% water reduction
- Reduced water content for a given level of workability
- Provides better slump retention
- Provides excellent workability
- Enhanced later-age strength
- Excellent finishability, even with manufactured sands and in lean mixtures

Benefits

- Can be used in a wide variety of concrete mixtures as a multi-purpose admixture meeting the performance requirements for ASTM Type A or Type F admixtures
- Faster setting at higher dosages compared to other mid-range water-reducing admixtures
- Enhanced flowability, strength and durability
- Reduces effort required to finish
- Lowers in-place cost
- Increases service life of structures

Performance Characteristics

Setting Time: Concrete produced with MasterPolyheed 1020 admixture sets faster than a mixture containing a typical mid-range water-reducing admixture.

Mixture Data: 517 lb/yd³ (307 kg/m³) of Type I/II cement; slump 5 in. (125 mm); non-air-entrained concrete; Admixture dosage adjusted for 8% water reduction.

Setting Time

Mixture	Initial Set (h:min)	Difference over Reference (h:min)
Reference	4:48	–
Ref. Mid-Range Water-Reducer	6:12	+1:24
MasterPolyheed 1020 admixture	5:18	+0.30

MASTER® BUILDERS SOLUTIONS

Conc1.C3

Compressive Strength: Concrete produced with MasterPolyheed 1020 admixture achieves higher compressive strength at later ages compared to plain concrete and concrete mixtures produced with a typical mid-range water-reducing admixture.

Mixture Data: 517 lb/yd³ (307 kg/m³) of Type I/II cement; slump 5 in. (125mm); non-air-entrained concrete; Admixture dosage adjusted for 12% water reduction.

Compressive Strength, psi (MPa)

Mixture	1-Day	7-Day	28-Day
Plain	1330 (9.2)	3670 (25.3)	5080 (35.0)
Reference MRWR*	1760 (12.1)	5160 (35.6)	6720 (46.3)
MasterPolyheed 1020 admixture	1940 (13.4)	5370 (37.0)	7150 (49.3)

**Mid-Range Water-Reducer*

Note: The data shown are based upon controlled laboratory tests. Reasonable variations from the results shown here may be experienced as a result of differences in concrete making materials and jobsite conditions.

Guidelines for Use

Dosage: MasterPolyheed 1020 admixture has a recommended dosage range of 3 to 12 fl oz/cwt (195 to 780 mL/100 kg) of cementitious materials for most concrete mixtures. A dosage range of 3 to 5 fl oz/cwt (195 to 325 mL/100 kg) is typical for Type A applications and up to 12 fl oz/cwt (780 mL/100 kg) for mid-range and high-range applications. Because of variations in concrete materials, job site conditions, and/or applications, dosages outside of the recommended range may be required. In such cases, contact your local sales representative.

Mixing: MasterPolyheed 1020 admixture can be added with the initial batch water or at the end of the batching sequence.

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: MasterPolyheed 1020 admixture will neither initiate nor promote corrosion of reinforcing or prestressing steel embedded in concrete, or of galvanized steel floor and roof systems. Neither calcium chloride nor other chloride-based ingredients are used in the manufacture of MasterPolyheed 1020 admixture.

Compatibility: MasterPolyheed 1020 admixture is compatible with most admixtures and can be used in combination with other BASF admixtures, unless stated otherwise. When used in conjunction with other admixtures, each admixture must be dispensed separately into the concrete mixture.

MasterPolyheed 1020 admixture is designed to be used with MasterAir® VR 10 and MasterAir AE 90 air-entraining admixtures when the production of air-entrained concrete is desired. **Do not use MasterPolyheed 1020 admixture in combination with naphthalene-based admixtures. Erratic performance in slump may be experienced.**

Storage and Handling

Storage Temperature: MasterPolyheed 1020 admixture should be stored between 35 and 105 °F (2 and 41 °C). If MasterPolyheed 1020 admixture freezes, thaw at 40 °F (5 °C) or above and completely reconstitute using mild mechanical agitation. **Do not use pressurized air for agitation.**

Shelf Life: MasterPolyheed 1020 admixture has a minimum shelf life of 12 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of PolyHeed 1020 admixture has been exceeded.

Dispensing: Consult your local sales representative for the proper dispensing equipment for MasterPolyheed 1020 admixture.

Packaging

MasterPolyheed 1020 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes, and by bulk delivery.

Related Documents

Safety Data Sheets: MasterPolyheed 1020 admixture

Additional Information

For additional information on MasterPolyheed 1020 admixture or its use in developing concrete mixtures with special performance characteristics, contact your local sales representative.

The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.

Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

* Polyheed 1020 became MasterPolyheed 1020 under the Master Builders Solutions brand, effective January 1, 2014.

BASF Corporation
Admixture Systems
www.master-builders-solutions.basf.us

United States
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5544
Tel: 800 628-9990 ▪ Fax: 216 839-8821

Canada
1800 Clark Boulevard
Brampton, Ontario L6T 4M7
Tel: 800 387-5862 ▪ Fax: 905 792-0651

BASF

The Chemical Company

3	03 30 00	Cast-in-Place Concrete
	03 40 00	Precast Concrete
	03 70 00	Mass Concrete

MasterSet® DELVO

Hydration Controlling Admixture

Formerly DELVO Stabilizer*

Description

MasterSet DELVO ready-to-use, liquid admixture is used for making more uniform and predictable high-performance concrete. MasterSet DELVO admixture retards setting time by controlling the hydration of portland cement and other cementitious materials while facilitating placing and finishing operations. MasterSet DELVO admixture meets ASTM C 494/C 494M requirements for Type B, retarding, and Type D, water-reducing and retarding, admixtures.

Applications

Recommended for use in:

- Stabilization of concrete washwater
- Stabilization of returned plastic concrete
- Stabilization of freshly batched concrete for long hauls
- 4x4™ Concrete
- Pumped concrete, shotcrete (wet mix) and conventionally-placed concrete
- Plain, reinforced, precast, prestressed, lightweight and normal weight concrete
- Pervious concrete

Features

- Reduced water content required for a given workability
- Retarded setting time characteristics
- Improved workability

Benefits

- Provides flexibility in the scheduling of placing and finishing operations
- Offsets the effects of slump loss during extended delays between mixing and placing
- Reduces waste associated with concrete washwater and returned concrete
- Increased strength – compressive and flexural

Performance Characteristics

Rate of Hardening: The temperature of a concrete mixture and the ambient temperature (forms, earth, air, etc.) affect the hardening rate of concrete. At higher temperatures, concrete hardens more rapidly which may cause problems with placing and finishing.

One of the functions of MasterSet DELVO admixture is to retard the set of concrete. Within the normal dosage range, it will generally extend the working and setting times of concrete containing normal portland cement, fly ash, slag cement and silica fume approximately 1 hour to 5 hours compared to a plain concrete mixture. This depends on job materials and temperatures. Trial mixtures should be made under approximate job conditions to determine the dosage required.

Compressive Strength: Concrete produced with MasterSet DELVO admixture will develop higher early (within 24 hours) and higher ultimate strengths than plain concrete when used within the recommended dosage range and under normal, comparable curing conditions. When MasterSet DELVO admixture is used in heat-cured concrete, the length of the preheating period should be increased until the initial set of the concrete is achieved. The actual heat-curing period is then reduced accordingly to maintain existing production cycles without sacrificing early or ultimate strengths.

MASTER® BUILDERS SOLUTIONS

Concr. c4

Guidelines for Use

Dosage: MasterSet DELVO admixture is recommended for use at a dosage of 4 ± 1 fl oz/cwt (260 ± 65 mL/100 kg) of cementitious materials for most concrete mixtures using average concrete ingredients. Because of variations in job conditions and concrete materials, dosages other than the recommended amounts may be required. In such cases, contact your local sales representative. For concrete washwater and returned concrete stabilization, utilize MasterSet DELVO charts to determine the appropriate dosage rates.

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: MasterSet DELVO admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: MasterSet DELVO admixture may be used in combination with any BASF admixture. When used in conjunction with another admixture, each admixture must be dispensed separately into the mixture.

Storage and Handling

Storage Temperature: MasterSet DELVO admixture should be stored above freezing temperatures. If MasterSet DELVO admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

Shelf Life: MasterSet DELVO admixture has a minimum shelf life of 12 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your local sales representative regarding suitability for use and dosage recommendations if the shelf life of MasterSet DELVO admixture has been exceeded.

Packaging

MasterSet DELVO admixture is supplied in specially designed 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Safety Data Sheets: MasterSet DELVO admixture

Additional Information

For more information on MasterSet DELVO admixture, contact your local sales representative.

The Admixture Systems business of BASF's Construction Chemicals division is the leading provider of solutions that improve placement, pumping, finishing, appearance and performance characteristics of specialty concrete used in the ready-mixed, precast, manufactured concrete products, underground construction and paving markets. For over 100 years we have offered reliable products and innovative technologies, and through the Master Builders Solutions brand, we are connected globally with experts from many fields to provide sustainable solutions for the construction industry.

Limited Warranty Notice

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Technical Data Guide, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. Any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

NSF Certified to NSF/ANSI 61

* Delvo Stabilizer became MasterSet DELVO under the Master Builders Solutions brand, effective January 1, 2014.

BASF Corporation
Admixture Systems
www.master-builders-solutions.basf.us

United States
23700 Chagrin Boulevard
Cleveland, Ohio 44122-5544
Tel: 800 628-9990 • Fax: 216 839-8821

Canada
1800 Clark Boulevard
Brampton, Ontario L6T 4M7
Tel: 800 387-5862 • Fax: 905 792-0651

RMS 4/6/14 WATER

Test Number: 0 - 131 - 0002 - 2014

Materials Laboratory Testing System Tests On:
Water for concrete
Type: V - VERIFICATION

Main Project ID: 0617-06-00
DISTRICT 6 GENERAL TESTING

Labsite:
Wisconsin Department of Transportation
Bureau of Technical Services-Central Lab
Truax Center, 3502 Kinsman Blvd.
Madison, WI 53704

Quantity:

Date Sampled:	**Date Received:**	**Date Tested:**
01/02/14	01/15/14	02/18/14
By: DAVE HOREJSI	By: NW REGION	By: PAT FITZGIBBON

Source: **Legal Description:** , , Section: , T: N, R: , **County:**

AASHTO - T26

Water Source: NW CEMSTONE NEW RICHMOND 21

Chemical Analysis:			**Specifications**
Acidity (ml of 0.1 N NaO4 to neutralize 200 ml)		0	2 Max
Alkalinity (ml of 0.1 N HCl to neutralize 200 ml)		3	15 Max
Sulfates (%)	ASTM D516	0.00%	0.05 Max
Chlorides (%)	ASTM D512	0.01%	0.1 Max
Physical			
Organic Solids(%)		0.03	0.04 Max
Inorganic Solids (%)		0.00	0.15 Max

Mortar Strength:

Age(days)	Test(T)	Standard(S)	T/S (%)	
3	14.82	16.15	91.73%	90 - 110
7	22.27	21.01	106.01%	

Remarks: Satisfactory
NW CEMSTONE NEW RICHMOND 21

Verified Date: 02/18/2014 **Verified By:** PATRICK FITZGIBBON

Copy
0-131-0002-2014

RMS 4/6/16 FWE AOG.

Test Number: 0 - 162 - 0007 - 2015

Materials Laboratory Testing System Tests On:
Fine & coarse aggregate for concrete
Type: V - VERIFICATION

Main Project ID: 0617-06-00
DISTRICT 6 GENERAL TESTING

Labsite:
Wisconsin Department of Transportation
Bureau of Technical Services-Central Lab
Truax Center, 3502 Kinsman Blvd.
Madison, WI 53704

Date Sampled:
12/08/14
By: David Horejsi / 101647

Date Requested / Received:
01/16/15
By: NW REGION

Date Tested:
01/16/15
By: Richard Tracy / 101240

Source: CASEY PIT Legal Description: , SE, Section: 16, T: 30 N, R: 18, W County: ST. CROIX

Multiple Gradation

SIEVE ANALYSIS (AASHTO T-11. T-27 & T248):
Remarks: Satisfactory

	Percentage Passing					
Sieve Size Metric (English)	**#2 Coarse Aggregate**	**Specs** STANDARD	**#1 Coarse Aggregate**	**Specs** STANDARD	**Fine Gradation**	**Specs** STANDARD
50.0 (2")		100 Min				
37.5 (1 1/2")		90 - 100				
31.5 (1 1/4")						
25.0 (1")		20 - 55		100 Min		
19.0 (3/4")		0 - 15		90 - 100		
12.5 (1/2")						
9.5 (3/8")		0 - 5		20 - 55		100 Min
4.75 (#4)				0 - 10	100	90 - 100
2.36 (#8)				0 - 5	93	
1.18 (#16)					78	45 - 85
0.600 (#30)					52	
0.425 (#40)						
0.300 (#50)					15	5 - 30
0.150 (#100)					2	0 - 10
75 µm (#200)					0.5	0 - 3.5

Liquid Limit (AASHTO T-89):
Plasticity Index (AASHTO T-90):
LA Wear (AASHTO T-96)
@ 100 Revolutions (%):
@ 500 Revolutions (%):
Soundness (AASHTO T-104) (%):
Freeze-Thaw (AASHTO T-103) (%):
Organic Plate Number (AASHTO T-21): 1
Air Correction (%) (AASHTO T-152):
Chert (%) (AASHTO T-113)

Fineness Modulus: 2.59
Specific gravity Absorption
Coarse Aggregate (AASHTO T-85)
Specific Gravity
Absorption
Fine Aggregate (AASHTO T-84)
Specific Gravity 2.652
Absorption 0.695%

Verified Date: 02/18/2015 **Verified By:** MATTHEW ANDREINI

Test Number: 0 - 225 - 0065 - 2015

Materials Laboratory Testing System Tests On:
Aggregate Quality
Type: CDE - CONTRACTOR DATA ENTRY

Main Project ID: 0617-06-00
DISTRICT 6 GENERAL TESTING

Labsite:
Wisconsin Department of Transportation
Bureau of Technical Services-Central Lab
Truax Center, 3502 Kinsman Blvd.
Madison, WI 53704

RMS 4/6/14

~~Coarse~~ COARSE AGGREGATES

Date Sampled:
12/08/14
By: Patrick Savage / 102476

Date Requested / Received:
01/12/15
By: NW REGION

Date Tested:
01/12/15
By: Troy Tabor / 101951

Source: CASEY PIT Legal Description: , SE, Section: 16, T: 30 N, R: 18, W County: ST. CROIX

Material:

Aggregate Source:
Name: CASEY
Type: PIT **County:** St Croix
Location: , SE, SECTION 16, T30N, R18W

SIEVE ANALYSIS (AASHTO T-11, T-27 & T248)

Sieve Size Metric (English)	Percent Passing As Rec'd	Pass 4.75mm
150.0 (6")	100	
75.0 (3")	100	
50.0 (2")	100	
37.5 (1 1/2")	100	
31.5 (1 1/4")	100	
25.0 (1")	100	
19.0 (3/4")	98	
12.5 (1/2")	76	
9.5 (3/8")	53	
4.75 (#4)	4	

Allowed Usage:
HMA<E-3, HMA>=E-3, CONCRETE, OGBC, Base Aggregate

Liquid Limit (AASHTO T-89):	NON-COH
Plasticity Index (AASHTO T-90):	NP ✓
Crushed Particles (%):	61
Lightweight Particles (%): (AASHTO T-113)	
LA Wear (AASHTO T-96)	
@ 100 Revolutions (%):	4.4 ✓
@ 500 Revolutions (%):	19.6 ✓
Soundness (AASHTO T-104) (%):	2.2 ✓
Freeze-Thaw (AASHTO T-103) (%):	
Specific Gravity and Absorption	
Coarse Aggregate (AASHTO T-85)	
Specific Gravity:	2.640
Absorption:	1.633%

Remarks: Satisfactory
Test data provided by American Engineering Testing

Verified Date: 02/09/2015 **Verified By:** MATTHEW ANDREINI

4/16/16

LAFARGE NORTH AMERICA

Lafarge Material Performance Center 1263 Lakeview Drive Romeoville, IL 60446 1-630-243-4699

FLY ASH SOURCE: ELM ROAD UNIT 2 CLASS C
COMPOSITE DATE: 11-Jan-16 to 15-Jan-16
SAMPLE IDENTIFICATION: ER2160111-0115

CHEMICAL ANALYSIS			SPECIFICATIONS ASTM C 618 CLASS C	SPECIFICATIONS AASHTO M 295 CLASS C
SiO2 (silicon dioxide), %	=	34.88		
Al2O3 (aluminum oxide), %	=	17.92		
Fe2O3 (iron oxide), %	=	5.79		
SiO2+Al2O3+Fe2O3, %	=	58.59	50 Min	50 Min
CaO (calcium oxide), %	=	26.66		
MgO (magnesium oxide), %	=	5.86		
SO3 (sulfur trioxide), %	=	2.12	5.0 Max	5.0 Max
Moisture content, %	=	0.06	3.0 Max	3.0 Max
Loss On Ignition, %	=	0.20	6.0 Max	5.0 Max
Na2O (sodium oxide), %	=	1.95		
K2O (potassium oxide), %	=	0.44		
PHYSICAL ANALYSIS				
Fineness, amount retained on #325 sieve, %	=	14.5	34 Max	34 Max
variation, points from average	=	1.7	5 Max	5 Max
Density, Mg/m3	=	2.7		
variation from average, %	=	-0.7	5 Max	5 Max
Strength Activity Index with Portland Cement at 7 days, % of cement control	=	96	75 Min	75 Min
Cement: Lafarge Alpena Type I/II				
Water Requirement % of cement control	=	94	105 Max	105 Max
Soundness, autoclave expansion or contraction, %	=	0.04	0.8 Max	0.8 Max

The test results for this composite sample comply with the applicable specifications of ASTM C 618 and AASHTO M 295. This fly ash source is approved for use by the following state agencies:

3/1/2016
Report Date

Brian Borowski
Quality Assurance Manager
Lafarge North America

ASTM C 618 Note 1 - Finely divided materials may tend to reduce the entrained air content of concrete. Hence, if a mineral admixture is added to any concrete for which entrainment of air is specified, provision should be made to ensure that the specified air content is maintained by air content tests and by use of additional air-entraining admixture or use of an air-entraining admixture in combination with air-entraining hydraulic cement.

Concl. D

✓ RMS 5/12/16

Analytical Testing Service Laboratories, Inc.
P.O. Box 1118, Joplin, Missouri 64802
(417) 782-6573

Mineral Resource Tech. Inc., A CEMEX Co.
929 Gessner, Suite 1900 Houston
Houston, Texas 77024
1-813-671-2266 ext.114

February 11, 2016

Attn: Oscar Jaramillo

Re: 07029 - Rush Island Fly Ash Sample - Monthly Composite - December 2015

	AASHTO-M295 Class "C" Requirements	ASTM C-618 Class "C" Requirements	Actual
Fineness (+325 Mesh)	34% Max	34% Max	14.00%
Moisture Content	3% Max	3% Max	0.12%
Density g/cm^3 C188	****	****	2.82
Density Variation	5.0% Max	5.0% Max	0.46%
Loss on Ignition	5% Max	6% Max	0.75%
Soundness	0.8% Max	0.8% Max	0.08%
S.A.I., 7 Days	75% Min	75% Min	106.90%
S.A.I., 28 Days	75% Min	75% Min	112.10%
Water Req. % Control	105% Max	105% Max	95.00%
Silica SiO_2	****	****	29.31%
Aluminum Oxide Al_2O_3	****	****	19.50%
Ferric Oxide Fe_2O_3	****	****	5.15%
Total	50% Min	50% Min	53.96%
Sulfur Trioxide SO_3	5% Max	5.0% Max	1.96%
Calcium Oxide CaO	****	****	33.32%
Magnesium Oxide MgO	****	****	7.21%
Available Alkalies Na_2O	1.50%Max	****	0.88%

We certify the above was tested in accordance with ASTM C-618 & AASHTO-M295

Analytical Testing Service Laboratories, Inc.

John K. Cupp, Manager

CONCLUDE

Cure & Seal Compounds for Non-Trafficked Surfaces on Structural Masonry

Date last edited: 8/13/2014

PERMANENT PRODUCTS FOR GENERAL USE

Product Name	Manufacturer	Date Approved
Certivex AC 1315 HG	Vexcon Chemicals	4/18/2003 (name change 5-27-2003)
Certivex AC 1315 Concrete Stain	7420 State Road	4/18/2003
Certivex Guard Clear	Philadelphia, PA 19135	1/22/2010
Certivex Guard Chemically Active Concrete Stain (CACS)	www.vexcon.com	1/22/2010
Duraguard 105- Clear	Chemmasters	4/1/2001
Duraguard 105- Gray	Chemmasters	4/1/2001
Super Rez-Seal	The Euclid Chemical Company[1] 19218 Redwood Road Cleveland, Ohio 441100 800-321-7628 http://www.euclidchemical.com/	12/4/2006
TK- Kure and Seal 1315	TK Products	12/1/2005 (name change 8/11/14)
TK-26-Clear	TK Products	4/1/2001
TK-DOT Stain- Gray	TK Products	4/1/2001
TK-AS-1 Achro Seal 1315	TK Products	8/13/2014

Care must be taken ***Not*** **to apply any of these products to concrete surfaces where bonding of subsequent concrete pours is needed .**
Do ***not*** **apply to surfaces where Concrete Protective Surface Treatments are required.**

REMOVABLE PRODUCTS FOR TEMPORARY USE

Product Name	Manufacturer	Date Approved
EZ Strip Cure	Chemmasters	12/1/2001
Clear Resin CureJ11W	Dayton Superior	4/13/2012 (name change 4-13-2012)
TK 2519 DC WB	TK Products	12/1/2001
Spec Rez	SpecChem	10/2/2009

These removable products shall only be used for surfaces where subsequent application of architectural coatings or special surface finish is required. These products may be removed after completion of the curing period with a 2000-3000 PSI high pressure water blast.
(1) **Formerly Tamms Industries**

Contact:
James Parry, Quality Assurance Unit Supervisor
3502 Kinsman Blvd
Madison, WI

Phone - (608) 246-7939
E-mail:
james.parry@dot.wi.gov

Test Number: CEM001.535 - 132 - 0005 - 2016

Materials Laboratory Testing System Tests On:
Concrete Mix Design
Type: DR - DESIGN REVIEW

Lab Site
Cemstone Ready Mix - New Richmond
CRM- New Richmond -- Dave Horejsi
1190 Cty G
New Richmond, WI 54017

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
04/05/12	04/05/12	04/05/12
By: David Horejsi / 101647	By: STATE	By: STATE

Source: Legal Description: , , Section: , T: N, R: , County:

132 Main Concrete Mix Design - Batch Weights and Proportions

Test Number: CEM001.535 - 132 - 0005 - 2016

Design Mix

ID C WHB5146 Grade : A-FA

Description 4000 PSI

Cementitous Material

Cement: (lbs)	Fly Ash: (lbs)	Slag content: (lbs)	Total :	Net Mix Water: (Gals / Lbs)		Water Cement Ratio	Air Content: (%)
480	109		589	28	233.24	0.40	6

Aggregate Sources	Source:	SSD Weight (lbs):	Absorption %
Coarse 1:	CASEY WEST	930	1.28
Coarse 2:	CASEY WEST	930	1.28
Coarse 3:			
Fine 1:	CASEY WEST	1260	0.76
Fine 2 :			

Admixture

Number	Name	Dosage (oz per 100 WT)
1	MB AE 90	0.80
2	Polyheed 1020	3.00

Remarks: Satisfactory

Verified Date: 03/08/2016 **Verified By:** DAVID HOREJSI

Test Number: 630-4.801 - 155 - 0006 - 2016

Materials Laboratory Testing System Tests On:

Miscellaneous Materials
Type: V - VERIFICATION

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled: **Date Requested / Received:** **Date Entered:**
09/06/16
By: RYAN M. SIREK By: RYAN M. SIREK

Source: CASEY PIT Legal Description: , SE, Section: 16, T: 30 N, R: 18, W County: ST. CROIX

Manufacturer: CEMESTONE NEW RICHMOND **Other Associated Projects:**

Material: CONCRETE MASONRY BRIDGES

Supplier:

Remarks:

Description
QMP Structures Summary

Structure Item	Plan Quantity	Final Quantity
502.0100 CONCRETE MASONRY BRIDGES	537 CY	520 CY

QC Plan Received? Yes
QC Plan Reviewed? Yes
QC Plan contains items listed in Standard Spec. 701, 715, & Special provisions? Yes
Reviewed by: JESSICA BOWKER
Date: 04/06/16

Mix Design(s) Received & Reviewed?Yes
Reviewed by: RYAN M. SIREK
Date Reviewed: 04/06/16

Concrete Supplier & Location:
Cemestone Ready Mix Plant, New Richmond WI

Aggregate
Aggregate testing frequency met?Yes
Moisture / P200 testing frequency met?Yes
Data Entered in the MRS?Yes

Size	Pit/Quarry Name	Aggregate Quality #	Tested during production of
#1 STONE	CASEY PIT	225-0065-2015	
#2 STONE	CASEY PIT	225-0065-2015	
FINE AGGREGATE	CASE PIT	162-0007-2015	

Monitoring QC Sampling/Testing
Compressive Strength Curing & Testing - Qualified Laboratory Name & Location:
Cemestone Ready Mix Plant, New Richmond, WI

All cylinder testing personnel CST certified through HTCP?Yes
QC CST Tester(s) Name: JAKE OSTENDORF Certification # 105880

All fresh mix sampling/testing personnel certified through HTCP?Yes / No
QC Sampler(s)/Tester(s) Name: JAKE OSTENDORM Certification #105880
Name: NOLAN PALMER Certification #106157

Results submitted timely per specifications?Yes
Testing frequencies met for slip form?N/A
Testing frequencies met for hand pours?Yes

Final original documentation provided?Yes
Date Submitted: 7/14/16
Reviewed by: Ryan M. Sirek
Date reviewed: 7/20/16

MRS entry completed?Yes
Department reviewed?Yes
Incentive / disincentive items addressed? Yes

QV Sampling/Testing

DATE:	LOCATION LOT/SUBLOT:	AIR:	SLUMP:	TEMP:	MIT/MTS TEST #

Verified Date: 10/07/2016 **Verified By:** RYAN SIREK

Test Number: 630-4.801 - 155 - 0006 - 2016

Materials Laboratory Testing System Tests On:

Miscellaneous Materials
Type: V - VERIFICATION

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled: **Date Requested / Received:** **Date Entered:**
09/06/16
By: RYAN M. SIREK By: RYAN M. SIREK

Source: CASEY PIT Legal Description: , SE, Section: 16, T: 30 N, R: 18, W County: ST. CROIX

4/13/2016	PIER FOOTING	1/1	6.7%	3.25"	69 DEG	6-130-0004-2016
4/25/2016	NORTH ABUTMENT	1/2	5.3%	2.75"	68 DEG	6-130-0006-2016
6/07/2016	SUPERSTRUCTURE	2/1	6.4%	4.00"	67 DEG	6-130-0025-2016
6/15/2016	PARAPET	2/2	4.7%	2.25"	78 DEG	6-130-0037-2016

MIT/MTS Verification Test #:
QV Sampler(s)/Tester(s) Name: RYAN M. SIREK Certification #104589

Remarks:

Due to fly ash shortage Cemestone switched fly ash sources between substructure and superstructure. All QC and QV testing indicated compliance with the WisDOT standards. Appropriate testing results were submitted in a timely manor and reviewed.
Standard deviation for QC Lot 83-1 and QC Lot 83-2 were above the required 350 so no inscentive is warrented.

Verified Date: 10/07/2016 **Verified By:** RYAN SIREK

1020-01-83
CTH J BRIDGE B-55-259
502.0100 CONCRETE MASONRY BRIDGES
CEDARSTONE NEW RICHMOND

LOT # 1	PLAN QTY		RANDOM #	TEST LOCATION
SOUTH ABUTMENT	58 CY	X	0.7814	45 CY
PIER	73 CY	X	0.3174	23 CY
NORTH ABUTMENT	58 CY	X	0.6940	40 CY
SUPERSTRUCTURE LOT # 2				
DECK	297 CY	X	0.5592	166 CY
PARAPETS	51 CY	X	0.3453	18 CY

Test Number: 6 - 130 - 0004 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
04/13/16	04/15/16	05/11/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Patrick Savage / 102476

Source: Legal Description: , , Section: , T: N, R: , County:

Compressive Strength of Cylinders: AASHTO T-22

Grade: A-FA **Class:** AE

Cement content: 480 lb **Brand/Mill:** LaFarge-Davenport, IA **Type:** 11

(●) Fly Ash ( ) Pozzolan

Content: 190 lb **Source:** LaFarge-Oak Creek **Class:** C

Slag content: lb **Source:** **Grade:** 100

Sample Location: 23CY-Pier Footing **Lot:** 1

Concrete Supplier: Cemstone-Roberts **Sublot:** 1

Admixtures:

	Brand and Trade Name	Dosage Rate (oz)
1	Polychem AE	.83
2	Polyheed 1020	3.00
3	BASF-DELVO	2.00

Aggt. Source Names:
Fine: CASEY
Coarse: CASEY
Coarse 2/ Other:

Cylinder Information:

Cylinder Number	Cylinder Made For	Diameter	Area	Max Load	Age	Compressive Strength	Rate of Loading	Date Tested
		inches	inches²	lbs	Days	Psi	Psi/second	
1A	STRUCTURE	6.01	28.33	169,220	28	5,973.0	33	5/11/2016
1B	STRUCTURE	6.02	28.44	167,150	28	5,876.4	33	5/11/2016

Total Aggregate: 3,120 lb/cy **Fine Aggregate:** % **Slump:** 3.25 inches

Net Air: 6.7 %

Lab certifies strength is per ASTM C39. Other data not certified. Conical break unless otherwise noted.

Verified Date: 05/12/2016 **Verified By:** PAT SAVAGE

Test Number: 6 - 130 - 0004 - 2016

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
04/13/16	04/15/16	05/11/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Patrick Savage / 102476

Source: Legal Description: , , Section: , T: N, R: , County:

Remarks:

Verified Date: 05/12/2016 **Verified By:** PAT SAVAGE

Test Number: 6 - 130 - 0006 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
04/25/16	04/27/16	05/23/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Amber Bever / 103186

Source: Legal Description: , , Section: , T: N, R: , County:

Compressive Strength of Cylinders: AASHTO T-22

Grade: A-FA **Class:** AE

Cement content: 480 lb **Brand/Mill:** Continental- Hannibal, MO **Type:** 1

(●) Fly Ash ( ) Pozzolan

Content: 109 lb **Source:** LAFARGE - OAK CREEK **Class:** C

Slag content: lb **Source:** **Grade:** 100

Sample Location: 42 CY - PIER NORTH ABUTMENT **Lot:** 1

Concrete Supplier: Cemstone, (Plant # 21) New Richmond **Sublot:** 2

Admixtures:

	Brand and Trade Name	Dosage Rate (oz)
1	MB AE 90	.83
2	Polyheed 1020	3.00
3	Delvo	2.00

Aggt. Source Names:
Fine: CASEY
Coarse: CASEY
Coarse 2/ Other:

Cylinder Information:

Cylinder Number	Cylinder Made For	Diameter	Area	Max Load	Age	Compressive Strength	Rate of Loading	Date Tested
		inches	inches²	lbs	Days	Psi	Psi/second	
2A	STRUCTURE	6.00	28.27	191,147	28	6,760.4	33	5/23/2016
2B	STRUCTURE	6.00	28.27	194,851	28	6,891.4	32	5/23/2016
2C	STRUCTURE	6.00	28.27					

Total Aggregate: 3,120 lb/cy **Fine Aggregate:** 40 % **Slump:** 2.75 inches

Net Air: 5.3 %

Lab certifies strength is per ASTM C39. Other data not certified. Conical break unless otherwise noted.

Verified Date: 05/31/2016 **Verified By:** AMBER BEVER

Test Number: 6 - 130 - 0006 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	**Date Requested / Received:**	**Date Tested:**
04/25/16	04/27/16	05/23/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Amber Bever / 103186

Source: Legal Description: , , Section: , T: N, R: , County:

Remarks:
Storage Temp Hi: 74*F Low: 54*F

Verified Date: 05/31/2016 **Verified By:** AMBER BEVER

Test Number: 6 - 130 - 0025 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
06/07/16	06/09/16	07/05/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Tucker Stapelmann / 105998

Source: Legal Description: , , Section: , T: N, R: , County:

Compressive Strength of Cylinders: AASHTO T-22

Grade: A-FA **Class:** AE

Cement content: 480 lb **Brand/Mill:** Continental-Davenport, IA **Type:** 1

(●) Fly Ash ( ) Pozzolan

Content: 109 lb **Source:** MIN. RES. TECH - RUSH ISL **Class:** C

Slag content: lb **Source:** **Grade:** 100

Sample Location: 166 CY / LOAD #17 - SUPER STRUCTURE **Lot:** 2

Concrete Supplier: Cemstone, (Plant # 21) New Richmond **Sublot:** 4

Admixtures:

	Brand and Trade Name	Dosage Rate (oz)
1	MB AE 90	.83
2	MasterPolyheed 1020	3.00
3	BASF - DELVO	2.00

Aggt. Source Names:
Fine: CASEY
Coarse: CASEY
Coarse 2/ Other:

Cylinder Information:

Cylinder Number	Cylinder Made For	Diameter	Area	Max Load	Age	Compressive Strength	Rate of Loading	Date Tested
		inches	inches²	lbs	Days	Psi	Psi/second	
QV2-1A	STRUCTURE	6.03	28.51	164,660	28	5,775.4	34	7/5/2016
QV2-1B	STRUCTURE	6.03	28.54	151,940	28	5,324.0	34	7/5/2016
QV2-1C	STRUCTURE	6.02	28.43		28			7/5/2016

Total Aggregate: 3,120 lb/cy **Fine Aggregate:** 40 % **Slump:** 4.00 inches

Net Air: 6.4 %

Lab certifies strength is per ASTM C39. Other data not certified. Conical break unless otherwise noted.

Verified Date: 07/07/2016 **Verified By:** AMBER BEVER

Test Number: 6 - 130 - 0025 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	**Date Requested / Received:**	**Date Tested:**
06/07/16	06/09/16	07/05/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Tucker Stapelmann / 105998

Source: Legal Description: , , Section: , T: N, R: , County:

Remarks:

Verified Date: 07/07/2016 **Verified By:** AMBER BEVER

Test Number: 6 - 130 - 0037 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	Date Requested / Received:	Date Tested:
06/15/16	06/17/16	07/13/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Amber Bever / 103186

Source: Legal Description: , , Section: , T: N, R: , County:

Compressive Strength of Cylinders: AASHTO T-22

Grade: A-FA **Class:** AE

Cement content: 480 lb **Brand/Mill:** Continental-Davenport, IA **Type:** 1

(●) Fly Ash ( ) Pozzolan

Content: 109 lb **Source:** Min. Res. Tech - Rush Isl **Class:** C

Slag content: lb **Source:** **Grade:** 100

Sample Location: 13 CY / Load #2 - Parapet **Lot:** 2

Concrete Supplier: Cemstone, (Plant # 21) New Richmond **Sublot:** 7

Admixtures:

	Brand and Trade Name	Dosage Rate (oz)
1	MasterAir AE 90	.83
2	MasterPolyheed 1020	3.00
3	Delvo	2.00

Aggt. Source Names:
Fine: CASEY
Coarse: CASEY
Coarse 2/ Other:

Cylinder Information:

Cylinder Number	Cylinder Made For	Diameter	Area	Max Load	Age	Compressive Strength	Rate of Loading	Date Tested
		inches	inches²	lbs	Days	Psi	Psi/second	
QV2-2A	STRUCTURE	6.03	28.60	150,945	28	5,278.6	36	7/13/2016
QV2-2B	STRUCTURE	6.03	28.54	153,212	28	5,368.5	37	7/13/2016
QV2-2C	STRUCTURE	6.04	28.69		28			7/13/2016

Total Aggregate: 3,120 lb/cy **Fine Aggregate:** 40 % **Slump:** 2.25 inches

Net Air: 4.7 %

Lab certifies strength is per ASTM C39. Other data not certified. Conical break unless otherwise noted.

Verified Date: 07/20/2016 **Verified By:** AMBER BEVER

Test Number: 6 - 130 - 0037 - 2016

Materials Laboratory Testing System Tests On:
Concrete Cylinders
Type: V - VERIFICATION

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Date Sampled:	**Date Requested / Received:**	**Date Tested:**
06/15/16	06/17/16	07/13/16
By: Ryan Sirek / 104589	By: NW REGION EC	By: Amber Bever / 103186

Source: Legal Description: , , Section: , T: N, R: , County:

Remarks:

Verified Date: 07/20/2016 **Verified By:** AMBER BEVER

Test Number: 6 - 806 - 0001 - 2016

Materials Laboratory Testing System Tests On:
Concrete Strength Testing
Type: IA - INDEPENDENT ASSURANCE

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Qty Represented:

Units Represented:

Date Received:	Date Tested:	Date Sampled
05/11/16	05/11/16	05/11/16
By: NW REGION, EC	By: Jacob Ostendorf / 105880	By: Jacob Ostendorf / 105880

Source: **Legal Description:** , , Section: , T: N, R: , **County:**

HTCP Certified Tester Jacob Ostendorf
Reviewed By Howard Marg
Reviewed Date 05/11/2016
HTCP Tester ID / Company 105880 : Cemstone Ready Mix
Observed Test Type QC
Follow Up Required No

Comments

Test procedures followed all WisDOT and HTCP parameters, although the following exceptions were noted and discussed on site:
-We discussed the value having a notched square to have the cylinder perpendicular in the compression machine.
-It was noted the temperatures of the water tank fluctuated greatly and sometimes out-of-tolerance. This is a concern and should be addressed. A suggestion maybe to add an insulated cover or a circulating pump.

Cylinder Information:

Cylinder Number	Cylinder Made For	Diameter	Area	Max Load	Age	Compressive Strength	Rate of Loading	Date Tested
		inches	inches²	lbs	Days	Psi	Psi/second	
16041311	STRUCTURE	6.01	28.37	160,950	28	5,673.5	35	6/8/2016

Rate of loading standards
[Hydraulic Type = 35 +/- 7 psi/sec (990 lbs/sec +/- 200 lbs/sec); Screw Type = 0.5 in./min]

Y = Acceptable **N = Exception** **X or Nothing = Not Applicable**

LABORATORY CURING AND STORAGE (AASHTO M-201, T-23)

1.0	Y	Cured in a moist environment.
2.0	Y	Temperature of curing room [70] (73 +/- 3 degrees F).
3.0	Y	Water in storage tanks(if used) saturated with Calcium Hydroxide.
4.0	Y	Curing temperatures automatically recorded - temperature charts on file.
5.0	Y	Recording thermometer verified every six months.
6.0	Y	Verification reference thermometer is NIST traceable - accurate and readable to 0.5 degrees C (1 degree F).

CAPPING EQUIPMENT, MATERIALS AND PROCEDURES (AASHTO T-231)

1.0 Capping Materials Used

1.1	X	Neat hydraulic cement.
1.2	X	High-strength gypsum cement.
1.3	X	Sulfur mortar.

2.0 Capping Plates

2.1	X	1/4" glass plate.
2.2	X	0.45-inch machined metal plate.
2.3	X	Polished granite plate 3-inch or greater thick.
2.4	X	In all cases plates are at least 1-inch greater in diameter than test specimen.
2.5	X	Plate is plane to 0.002 inches.

UNBONDED CAPS - ELASTOMERIC PADS - NEOPRENE (ASTM C-1231)

1.0 Pads

1.1	Y	Correct size - thickness 1/2" +/- 1/16", diameter minimum 1/16" smaller than the inside diameter of the retaining ring.
1.2	Y	Number of used pads tallied and recorded.
1.3	Y	Pads are discarded after 100 uses.

Verified Date: 05/24/2016 **Verified By:** HOWARD MARG

Test Number: 6 - 806 - 0001 - 2016

Materials Laboratory Testing System Tests On:
Concrete Strength Testing
Type: IA - INDEPENDENT ASSURANCE

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Qty Represented:

Units Represented:

Date Received:	Date Tested:	Date Sampled
05/11/16	05/11/16	05/11/16
By: NW REGION, EC	By: Jacob Ostendorf / 105880	By: Jacob Ostendorf / 105880

Source: **Legal Description:** , , Section: , T: N, R: , **County:**

HTCP Certified Tester Jacob Ostendorf
Reviewed By Howard Marg
Reviewed Date 05/11/2016
HTCP Tester ID / Company 105880 : Cemstone Ready Mix
Observed Test Type QC
Follow Up Required No

Comments

Test procedures followed all WisDOT and HTCP parameters, although the following exceptions were noted and discussed on site:
-We discussed the value having a notched square to have the cylinder perpendicular in the compression machine.
-It was noted the temperatures of the water tank fluctuated greatly and sometimes out-of-tolerance. This is a concern and should be addressed. A suggestion maybe to add an insulated cover or a circulating pump.

Y = Acceptable **N = Exception** **X or Nothing = Not Applicable**

1.4	Y	If more than 100 uses allowed, are test results and staistical analysis documentation available to establish the permissible number of reuses of the pads?
1.5	Y	Elastomeric pads are not used for acceptance testing of concrete below 1500 psi or above 12000 psi.
1.6	Y	Certification of compliance documentation and related invoice show neoprene caps to be compliant to ATM 2000, line call out M2BC514(50 durometer), M2BC614(60 durometer), M2BC714(70 durometer).
2.0 Retainers		
2.1	Y	Steel.
2.2	X	Aluminum alloy.
2.3	Y	Inside ring diameter is between 102% and 107% of the cylinder diameter {approximately 6 1/8-inch(6.12) to 6 7/16-inch(6.42) }.
2.4	Y	Bearing surface is within 0.002" of plane.
2.5	Y	Bearing surfaces have no gouges, grooves or indentations greater than 0.01" deep or greater than 0.05 square inches in surface area circular area of 0.05 square inches has an approximate diameter of 1/4-inch (0.25-inch) -- about the size of a pencil eraser.

TESTING PROCEDURES (AASHTO T-22, CMM 8.70)

1.0	Y	Cylinders checked for perpendicularity to the axis(neither end can depart from the perpendicular axis by more than 1/8").
2.0	Y	Steel square or equivalent presented for measurement.
3.0	Y	Cylinder ends checked for plane-ness tolerances (each end plane within 1/8", no depressions greater than 1/8").
4.0	Y	Lab has equipment to grind, saw or cap (as allowed) to correct off tolerance ends.
5.0	Y	Proper size guage rod and straight edge presented for measurements.
6.0	Y	Diameter determined by averaging 2 diameters measured at right angles at mid-height of the cylinder -- ALL cylinders are measured.
7.0	Y	Proper caliper or micrometer presented for measurement.
8.0	Y	Diameters recorded to nearest 0.01".
9.0	Y	Cylinders tested as soon as practicable after removal from moist storage.
10.0	Y	Cylinders tested in a moist condition.
11.0	Y	Test specimen is centered on the bearing blocks.
12.0	Y	Tests completed within 6 hours on 7-day cylinder and 20 hours on 28-day cylinder.
13.0	Y	Load applied continuously and without shock (rate of loading may be up to 1/2 the anticipated load for the first half, but must be within the specified loading rates for the second half).
14.0	Y	Cylinder is tested to failure -- a well-defined fracture pattern is developed.

DOCUMENTATION

1.0	Y	Maximum load recorded.
2.0	Y	Type of failure recorded.

Verified Date: 05/24/2016 **Verified By:** HOWARD MARG

Test Number: 6 - 806 - 0001 - 2016

Materials Laboratory Testing System Tests On:
Concrete Strength Testing
Type: IA - INDEPENDENT ASSURANCE

Main Project ID: 1020-01-83
Hudson - Baldwin
CTH J Bridge B-55-0259
I 94

Lab Site
6-NW REGION- Eau Claire
WisDOT NW REGION- Eau Claire Lab (LAN ONLY)
5009 Highway 53 South, IH 94
Eau Claire, WI 54701

Qty Represented:

Units Represented:

Date Received:	Date Tested:	Date Sampled
05/11/16	05/11/16	05/11/16
By: NW REGION, EC	By: Jacob Ostendorf / 105880	By: Jacob Ostendorf / 105880

Source: **Legal Description:** , , Section: , T: N, R: , **County:**

HTCP Certified Tester Jacob Ostendorf
Reviewed By Howard Marg
Reviewed Date 05/11/2016
HTCP Tester ID / Company 105880 : Cemstone Ready Mix
Observed Test Type QC
Follow Up Required No

Comments

Test procedures followed all WisDOT and HTCP parameters, although the following exceptions were noted and discussed on site:
-We discussed the value having a notched square to have the cylinder perpendicular in the compression machine.
-It was noted the temperatures of the water tank fluctuated greatly and sometimes out-of-tolerance. This is a concern and should be addressed. A suggestion maybe to add an insulated cover or a circulating pump.

Y = Acceptable **N = Exception** **X or Nothing = Not Applicable**

3.0	Y	Appearance of the concrete recorded.
4.0	Y	Compressive strength calculated and recorded.
5.0	Y	Results are graphed and the rate of loading is recorded -- print-out is available.
6.0	Y	Printout of test identifies test results and cylinder number.
7.0	Y	Documentation on file and organized (files must be maintained for five years).
8.0	Y	Files from past years readily available.
9.0	Y	Tester and laboratory name on report and graph printout.

COMPRESSIVE TESTING MACHINE (AASHTO T-22)

1.0		Calibration completed by [CalCert] on [12/22/2015] (calibrate every 12 months).
2.0		Machine manufacturer: [Lane]
3.0		Machine Type:
3.1	Y	Hydraulic
3.2	X	Screw Type
4.0		Steel Bearing Blocks:
4.1	Y	Blocks meet the size and tolerance requirements of AASHTO T-22.
4.2	Y	Blocks are parallel to each other.
4.3	Y	Bearing plates are cleaned before each test.
5.0		Load Indicator:
5.1	Y	Numerical (digital) display -- accurate within 1.0% of the max load applied.
5.2	X	Dial type (if used) readable to nearest 0.1% and accurate within 1.0% of the max load applied.

Remarks: Satisfactory

Test procedures followed all WisDOT and HTCP parameters, although the following exceptions were noted and discussed on site:
-We discussed the value having a notched square to have the cylinder perpendicular in the compression machine.
-It was noted the temperatures of the water tank fluctuated greatly and sometimes out-of-tolerance. This is a concern and should
be addressed. A suggestion maybe to add an insulated cover or a circulating pump. UPDATE 5/12/16:
A notched steel square is being used per tester.

Verified Date: 05/24/2016 **Verified By:** HOWARD MARG

Concrete Structure Summary Report
Project: 1020-01-83 Hudson - Baldwin

Printed On 10/10/2016 at 11:17 AM

Lot ID	Sublot Count	Pay Eqn	Mix Design ID	Spec. Limit	Avg. Comp. Str	Std. Dev.	LQI	PWL	Lot Vol.	Est. Strength Adj $	Est. Total Strength Adj $	Appr. Cu. Yds.	Appr. Final Adj $	Review Status
Entered By: JACOB OSTENDORF														
0183-1	5	QMP 2.01	C WHB5146	4000	5273.1	542.0	2.35	100.0	235	0.00	0.00	235.00	0.00	Final Review Ryan M Sirek 09/28/16
0183-2	6	QMP 2.01	C WHB5146	4000	5087.1	387.9	2.80	100.0	300	0.00	0.00	300.00	0.00	Final Review Ryan M Sirek 09/28/16
											Appr. Final Adj. Total $		0.00	

Authorized By: _____

Printed Name: _____

- WI Transporation Builders Assoc. (http://www.wtba.org/)
- U.S. DOT (https://www.transportation.gov)
- Contact Atwood Systems (http://www.atwoodsystems.com/contactasi.htm)
- Atwood Administration (http://www.atwoodsystems.com/integratedlogin/)

Go to...

Project 1020-01-83 Hudson - Baldwin

Print (structuresreview/ProjectSummary.cfm?projid=1020-01-83)

STRUCTURES DATA: Summary Moisture Content P200

Moisture Content Data

Date Tested: 04/11/2016 Time Tested: 07:30

Verified On: 04/20/2016 By: Jacob Ostendorf

Aggregate	Source	Wet Aggt. (grams)	Dry Aggt. (grams)	Moisture Content (%)	Washed Dry Aggt. (grams)	Pct. Passing 200 Sieve (%)
Fine	CASEY	550.0	537.3	2.36	536.0	0.2
Coarse 1	CASEY	6029.0	5931.0	1.65	5915.5	0.3
Coarse 2	CASEY	15572.0	15402.0	1.10	15320.0	0.5
Coarse 3		0.0	0.0	0.00	0.0	0.0

Date Tested: 04/18/2016 Time Tested: 08:00

Verified On: 04/20/2016 By: Jacob Ostendorf

Aggregate	Source	Wet Aggt. (grams)	Dry Aggt. (grams)	Moisture Content (%)	Washed Dry Aggt. (grams)	Pct. Passing 200 Sieve (%)
Fine	CASEY	550.0	531.0	3.58	529.9	0.2
Coarse 1	CASEY	5500.0	5412.0	1.63	5395.0	0.3
Coarse 2	CASEY	15121.0	14958.0	1.09	14871.0	0.6

Coarse 3		0.0	0.0	0.00	0.0	0.0

Date Tested: 04/25/2016 Time Tested: 06:00

Verified On: 04/26/2016 By: Jacob Ostendorf

Aggregate	Source	Wet Aggt. (grams)	Dry Aggt. (grams)	Moisture Content (%)	Washed Dry Aggt. (grams)	Pct. Passing 200 Sieve (%)
Fine	CASEY	550.0	525.8	4.60	523.8	0.4
Coarse 1	CASEY	5533.0	5405.0	2.37	5385.5	0.4
Coarse 2	CASEY	15374.0	15168.0	1.36	15082.0	0.6
Coarse 3		0.0	0.0	0.00	0.0	0.0

Date Tested: 05/03/2016 Time Tested: 06:30

Verified On: 05/05/2016 By: Jacob Ostendorf

Aggregate	Source	Wet Aggt. (grams)	Dry Aggt. (grams)	Moisture Content (%)	Washed Dry Aggt. (grams)	Pct. Passing 200 Sieve (%)
Fine	CASEY	550.0	534.0	3.00	532.7	0.2
Coarse 1	CASEY	5694.0	5604.0	1.61	5582.0	0.4
Coarse 2	CASEY	15552.0	15284.0	1.75	15216.0	0.4
Coarse 3		0.0	0.0	0.00	0.0	0.0

Structures Summary Report For Lot 0183-2

Printed On 10/10/2016 at 10:51 AM

Contract:	20151208021	**County:**	ST CROIX
Project ID:	1020-01-83	**Lot ID:**	0183-2
Description:	Hudson - Baldwin	**Highway:**	CTH J
Testing Company:	CEMSTONE	**Tested By:**	JACOB OSTENDORF
Pay Equation:	QMP 2.01	**Number of Sublots:**	6
Spec. Limit:	4000		
Lot Volume:	300.00	**Average Comp Strength:**	5087.10
Standard Deviation:	387.90	**LQI:**	2.80
Percent Within Limit:	100.0	**Adj / Cu. Yds:**	0.00
Est. Total Strength Adj.:	$ 0.00	**Mix Design:**	C WHB5146
Reviewed By:	RYAN M SIREK	**Date Reviewed:**	09/28/16
Reviewer Approved Lot $ Adj.:	$ 0.00	**Reviewer Approved Lot Volume:**	300.00

Sublot Details

Sublot ID	Date & Time Poured	Sublot Cu Yd	Avg Comp Strength	Lot Spec
83-2-1	06/07/2016 03:30	50.00	5305.90	4,000
83-2-2	06/07/2016 04:25	50.00	5544.70	4,000
83-2-3	06/07/2016 04:45	50.00	5220.40	4,000
83-2-4	06/07/2016 04:50	50.00	4645.10	4,000
83-2-5	06/07/2016 06:25	50.00	5230.40	4,000
83-2-6	06/07/2016 06:45	50.00	4575.90	4,000

Air Slump Details

						Before Pumping			
Sublot ID	**Date Poured**	**Time Poured**	**Test Type**	**Ticket Nbr**	**Load Size**	**Slump**	**Net Air Pct**	**Slump**	**Net Air Pct**
83-2-1	06/07/2016	03:30	QC	3770765	10.00	3.00	7.50	3.00	5.90
83-2-2	06/07/2016	04:25	QC	3770770	9.50			4.00	4.70
83-2-3	06/07/2016	04:45	QC	3770776	9.50	4.00	7.50	3.00	6.50
83-2-4	06/07/2016	04:50	QC	3770783	9.50			4.00	7.50
83-2-5	06/07/2016	06:25	QC	3770789	9.50			4.00	6.90
83-2-6	06/07/2016	06:45	QC	3770797	9.50			4.00	6.70

Reviewed By: _____

Printed Name: RYAN M. SIREK

Structures Sublot Summary Report For Lot 0183-2

Printed On 10/10/2016 at 10:51 AM

Contract:	20151208021	**County:**	ST CROIX
Project ID:	1020-01-83	**Lot ID:**	0183-2
Description:	Hudson - Baldwin	**Highway:**	CTH J
Testing Company:	CEMSTONE	**Tested By:**	JACOB OSTENDORF
Pay Equation:	QMP 2.01	**Number of Sublots:**	6
Spec. Limit:	4000		
Lot Volume:	300.00	**Average Comp Strength:**	5087.10
Standard Deviation:	387.90	**LQI:**	2.80
Percent Within Limit:	100.0	**Adj / Cu. Yds:**	0.00
Est. Total Strength Adj.:	$ 0.00	**Mix Design:**	C WHB5146
Reviewed By:	RYAN M SIREK	**Date Reviewed:**	09/28/16
Reviewer Approved Lot $ Adj.:	$ 0.00	**Reviewer Approved Lot Volume:**	300.00

Sublot ID	Sublot Vol (Cu. Yds.)	Date & Time Poured	Test Type	Slump	Net Air Pct	PCCTEC1 /ACT Name	Cyl ID 1	Stength (PSI)	Cyl ID 2	Stength (PSI)	Cyl 1 + 2 Avg Strength (PSI)	Certified Concrete Strength Tester /ACT Name	Qualified Lab/ Testing Company Name
83-2-1	50	06/07/16 03:30	QC	3.00	5.9	Jacob Ostendorf / 105880	160607-1-1	5337.1	160607-1-2	5274.7	5305.9	JACOB OSTENDORF	CEMSTONE
83-2-2	50	06/07/16 04:25	QC	4.00	4.7	JACOB OSTENDORF	160607-2-1	5378.4	160607-2-3	5711.0	5544.7	JACOB OSTENDORF	CEMSTONE
83-2-3	50	06/07/16 04:45	QC	3.00	6.5	JACOB OSTENDORF	160607-3-2	5335.5	160607-3-3	5105.3	5220.4	JACOB OSTENDORF	CEMSTONE
83-2-4	50	06/07/16 04:50	QC	4.00	7.5	JACOB OSTENDORF	160607-4-1	4476.9	160607-4-2	4813.4	4645.2	JACOB OSTENDORF	CEMSTONE
83-2-5	50	06/07/16 06:25	QC	4.00	6.9	JACOB OSTENDORF	160607-5-1	5111.3	160607-5-3	5349.4	5230.4	JACOB OSTENDORF	CEMSTONE
83-2-6	50	06/07/16 06:45	QC	4.00	6.7	JACOB OSTENDORF	160607-6-1	4552.5	160607-6-2	4599.2	4575.9	JACOB OSTENDORF	CEMSTONE

Reviewed By: _____

Printed Name: RYAN M. SIREK

Structures Sublot Summary Report For Lot 0183-1

Printed On 10/10/2016 at 10:49 AM

Contract:	20151208021	**County:**	ST CROIX
Project ID:	1020-01-83	**Lot ID:**	0183-1
Description:	Hudson - Baldwin	**Highway:**	CTH J
Testing Company:	CEMSTONE	**Tested By:**	JACOB OSTENDORF
Pay Equation:	QMP 2.01	**Number of Sublots:**	5
Spec. Limit:	4000		
Lot Volume:	235.00	**Average Comp Strength:**	5273.10
Standard Deviation:	542.00	**LQI:**	2.35
Percent Within Limit:	100.0	**Adj / Cu. Yds:**	0.00
Est. Total Strength Adj.:	$ 0.00	**Mix Design:**	C WHB5146
Reviewed By:	RYAN M SIREK	**Date Reviewed:**	09/28/16
Reviewer Approved Lot $ Adj.:	$ 0.00	**Reviewer Approved Lot Volume:**	235.00

Sublot ID	Sublot Vol (Cu. Yds.)	Date & Time Poured	Test Type	Slump	Net Air Pct	PCCTEC1 /ACT Name	Cyl ID 1	Stength (PSI)	Cyl ID 2	Stength (PSI)	Cyl 1 + 2 Avg Strength (PSI)	Certified Concrete Strength Tester /ACT Name	Qualified Lab/ Testing Company Name
83-1-1	47	04/13/16 03:44	QC	3.75	6.7	JACOB OSTENDORF	160413-1-2	5243.0	160413-1-3	5282.2	5262.6	JACOB OSTENDORF	CEMSTONE
83-1-2	47	04/22/16 04:15	QC	3.25	6.0	JACOB OSTENDORF	160421-1-1	5085.1	160421-1-3	5195.6	5140.4	JACOB OSTENDORF	CEMSTONE
83-1-3	47	05/04/16 10:00	QC	3.25	4.8	JACOB OSTENDORF	160504-1-1	6032.3	160504-1-3	6315.0	6173.7	JACOB OSTENDORF	CEMSTONE
83-1-4	47	05/04/16 10:00	QC	3.75	6.0	JACOB OSTENDORF	160504-2-2	4532.2	160504-2-3	4911.0	4721.6	JACOB OSTENDORF	CEMSTONE
83-1-5	47	06/15/16 10:30	QC	3.50	5.7	JACOB OSTENDORF	160615-1-2	4876.3	160615-1-3	5258.5	5067.4	JACOB OSTENDORF	CEMSTONE

Reviewed By: _____

Printed Name: RYAN M. SIREK

Structures Summary Report For Lot 0183-1

Printed On 10/10/2016 at 10:49 AM

Contract:	20151208021	**County:**	ST CROIX
Project ID:	1020-01-83	**Lot ID:**	0183-1
Description:	Hudson - Baldwin	**Highway:**	CTH J
Testing Company:	CEMSTONE	**Tested By:**	JACOB OSTENDORF
Pay Equation:	QMP 2.01	**Number of Sublots:**	5
Spec. Limit:	4000		
Lot Volume:	235.00	**Average Comp Strength:**	5273.10
Standard Deviation:	542.00	**LQI:**	2.35
Percent Within Limit:	100.0	**Adj / Cu. Yds:**	0.00
Est. Total Strength Adj.:	$ 0.00	**Mix Design:**	C WHB5146
Reviewed By:	RYAN M SIREK	**Date Reviewed:**	09/28/16
Reviewer Approved Lot $ Adj.:	$ 0.00	**Reviewer Approved Lot Volume:**	235.00

Sublot Details

Sublot ID	Date & Time Poured	Sublot Cu Yd	Avg Comp Strength	Lot Spec
83-1-1	04/13/2016 03:44	47.00	5262.60	4,000
83-1-2	04/22/2016 04:15	47.00	5140.30	4,000
83-1-3	05/04/2016 10:00	47.00	6173.60	4,000
83-1-4	05/04/2016 10:00	47.00	4721.60	4,000
83-1-5	06/15/2016 10:30	47.00	5067.40	4,000

Air Slump Details

						Before Pumping			
Sublot ID	**Date Poured**	**Time Poured**	**Test Type**	**Ticket Nbr**	**Load Size**	**Slump**	**Net Air Pct**	**Slump**	**Net Air Pct**
83-1-1	04/13/2016	03:44	QC	3725300	10.00			3.75	6.70
83-1-2	04/22/2016	04:15	QC	3732833	8.50			3.25	6.00
83-1-3	05/04/2016	10:00	QC	3741990	9.50			3.25	4.80
83-1-4	05/04/2016	10:00	QC	374215	9.50			3.75	6.00
83-1-5	06/15/2016	10:30	QC	3779973	9.50			3.50	5.70

Reviewed By: _____

Printed Name: RYAN M. SIREK

CEMSTONE
ENGINEERING SERVICES

CONCRETE MIXTURE DESIGN

MIX ID: WHB5146

Compressive Strength: 4,000 psi at 28-Days

Created On: 9/21/05

PROJECT: Wisconsin Highway Bridges (WHB)
APPLICATION: Bridge Deck
PLACEMENT: Pumpable Through a 4" Line

CEMENT,	Continental Davenport	(ASTM C 150/TYPE I/II)	480 lbs.	2.44 ft^3
FLY ASH,	Continental Elm Road	(ASTM C 618/CLASS C/F)	109 lbs.	0.68 ft^3
SAND,	Casey	(ASTM C 33)	1,260 lbs. SSD	7.59 ft^3
3/4" GRAVEL,	Casey	(ASTM C 33/#67)	930 lbs. SSD	5.50 ft^3
1.5" GRAVEL,	Casey	(ASTM C 33/#4)	930 lbs. SSD	5.50 ft^3
WATER,	Well		236 lbs. = 28.3 gal.	3.78 ft^3
AIR CONTENT,			6.0 % +/- 1.5%	1.63 ft^3
				27.12 ft^3
WRA,	BASF-1020	(ASTM C 494/TYPE A)	18 oz. (3.0 oz./cwt)	
STABILIZER,	BASF-DELVO	(ASTM C 494/TYPE B)	12 oz. (2.0 oz./cwt)	
AEA,	BASF-AE 90	(ASTM C 260)	4.0 oz.	
WATER-CEMENTITIOUS RATIO,			0.40	
SLUMP,			4.00 in.	
CONCRETE UNIT WEIGHT,			145.5 pcf	
MIX SUITABILITY FACTOR,			21.8	

MIXTURE ADJUSTMENT: Material variation and job site conditions may require mixture adjustments to maintain strength, water-cementitious ratio, slump, air content, and yield.
DISCLAIMER: Cemstone disclaims and negates any warranty whatsoever of this concrete mix design if it is provided to, or used by, another concrete producer.

PREPARED BY:

Kevin D. Heindel, P.E.

Document Printed On: 3/15/16

Designed By: Jacob Ostendorf 3/15/16

3-15-16

Random Numbers

Estimated Total Yards 537 CY
Job 1020-01-83

Lot 55-1		250 Cubic Yards
Sub Lot Size		50 Cubic Yards
Sublot ID #		0260-1
Sublot	**Random**	**Yards**
0260-1-1	0.899858	45.0
0260-1-2	0.190199	59.5
0260-1-3	0.13986	107.0
0260-1-4	0.523786	176.2
0260-1-5	0.05178	202.6

50

Lot 55-1		287 Cub
Sublot size		47.83 Cu
Sublot ID #		026
Sublot	**Random**	**Yards**
0260-2-1	0.438637	21.0
0260-2-2	0.128044	54.0
0260-2-3	0.399883	114.8
0260-4-4	0.812318	182.3
0260-2-5	0.337569	239.5
0260-2-6	0.159156	258.0

Pile Footings

CEMSTONE ENGINEERING SERVICES

Sample Report

General Information	
Technician:	Jake
Date:	4/13/16
Time:	3:44
Mix #:	WHBS146
Plant #:	321 Truck 887
Ticket #:	725306
Contractor:	Lunda Const
Project:	I-94 Cty J Bridg
Sample Location:	Job Site J bridge
Laboratory Present:	
Weather Conditions:	Night / Cloudy

Test Results	
Sample ID:	160413-1
Concrete Temperature:	66°
Ambient Temp:	43°
Base / Form Temp:	
Slump:	3.25
W/C Ratio:	0.386
Air Content:	6.7%
Unit Weight:	
Set Time:	
Days Cylinders are to be broke: 1 [ ] 3 [ ]	
7 [ ] 28 [Z] 56 [ ] 90 [ ]	

Admixtures	
AEA:	4.9oz
WR:	2.50 cwt
HRWR:	
Other:	Pozzolith 1.00 cwt
Other:	
Other:	

Yield	
(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

66° Time = 3:11 Lot 0183-1
6.7%
Sub lot 1-1
3 3/4"
1450
887

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information	
Technician:	Jacob Ostendorf
Date:	4/19/16
Time:	3:35am
Mix #:	WHBS146
Plant #:	21 Truck 11995
Ticket #:	3729939
Contractor:	Lunda Construction
Project:	County Road J bridge
Sample Location:	On Site
Laboratory Present:	x
Weather Conditions:	Rain

Test Results	
Sample ID:	
Concrete Temperature:	66°
Ambient Temp:	50°
Base / Form Temp:	X
Slump:	3.5"
W/C Ratio:	0.395
Air Content:	7%
Unit Weight:	X
Set Time:	
Days Cylinders are to be broke: 1 ☐	3 ☐
7 ☐	28 ☐ 56 ☐ 90 ☐

Admixtures	
AEA:	4.40oz
WR:	3.00cwt
HRWR:	
Other:	Delvo 1.0cwt
Other:	
Other:	

Yield	
(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Qmp test = 22.3 yards

"Initial test Results"

4/13/2016 = 40 yards

4/19/2016 = 23 yards

= 63 yard

Staging Cylinders to be Broke = 4

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information

Technician: Jacob Ostendorf
Date: 4/21/16
Time: 4:15am
Mix #: WHB5146
Plant #: 21 Truck # 881
Ticket #: 3732833
Contractor: Lunda
Project: CTH J
Sample Location: On Site Qmp
Laboratory Present:
Weather Conditions: Dark
Yards Ordered 17

Test Results

Sample ID: 160421-1
Concrete Temperature: 63°
Ambient Temp: 45
Base / Form Temp: X
Slump: 3.25
W/C Ratio: 0.375
Air Content: 6.0%
Unit Weight:
Set Time:
Days Cylinders are to be broke: 1 [ ] 3 [ ]
7 [ ] 28 [2] 56 [ ] 90 [ ]

Admixtures

AEA: 4.10oz
WR: 3.00cwt
HRWR:
Other: DelVo 1.0cwt
Other:
Other:

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 72.3 yards — Initial Results — 4/13/2016 40 yards
Sublot 1-2 — Air = 7.0% — 4/19/2016 23 yards
Lot 0183-1 — slump = 3.75 — 4/21/2016 17 yards
temp = 61° — Total = 80 yards
Stripping Cylinders 6 — Moisture + P200 4/18/16 = 50 yards

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information

Technician: Jacob Osterhof
Date: 4-26-16
Time: 11:20am
Mix #: MNB5146
Plant #: 21
Ticket #: 3734494 Truck 913
Contractor: Lunda
Project: 1020-01-83
Sample Location: Job Site
Laboratory Present: x
Weather Conditions: Cloudy / Rain

Test Results

Sample ID:
Concrete Temperature: 60°
Ambient Temp: 50°
Base / Form Temp: x
Slump: 2 1/2"
W/C Ratio:
Air Content: 5.3%
Unit Weight: x
Set Time: x
Days Cylinders are to be broke: 1 [ ] 3 [ ]
7 [ ] 28 [2] 56 [ ] 90 [ ]

Admixtures

AEA: 4.1 oz
WR: 3.0 oz
HRWR:
Other: DcNo 2.9 oz
Other:
Other:

Yield

(W) Unit Weight: (lbs/ft^3)
(W1) Weight of Material Batched: (lbs)
(yd) Yards Batched: (yd^3)
(W2) Unit Weight = W1 / Yd: (lbs/ft^3)
Yield = W2 / W: (ft^3/yd^3)

Notes / Remarks (Be Specific):

Initial Results Sublot - (0183-1-3) = 149.9 yards
4/21/16 = 80 yards
+ 69.9 yards
= 149.9 yards
D200 wash + Mashers - 4/25/16

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

White - Office Yellow - Lab Pink - Customer

CTH J SOUTH ABOUT

CEMSTONE ENGINEERING SERVICES

Sample Report

General Information

Technician:	Jacob Osterdorf
Date:	5/4/2016
Time:	10:30
Mix #:	WHB5146
Plant #:	021 Truck # 703
Ticket #:	3741490
Contractor:	Lunda Construction
Project:	1020-01-82
Sample Location:	On site
Laboratory Present:	X
Weather Conditions:	Windy / Sun

Test Results

Sample ID:	160504-1
Concrete Temperature:	68°
Ambient Temp:	54°
Base / Form Temp:	X
Slump:	3.25
W/C Ratio:	0.379
Air Content:	4.8%
Unit Weight:	X
Set Time:	>

Days Cylinders are to be broke: 1 [ ] 3 [ ]

7 [ ] 28 [2] 56 [ ] 90 [ ]

Admixtures

AEA:	4.30oz
WR:	3.00cwt
HRWR:	
Other:	Delvo 2 Qcwt
Other:	
Other:	

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Sblot 0260-1-3 149.9 As of 4/25/2016 = 140 parcel

Initial test 5/4/2016 = 60 yards

Slump 3.25 Striping Cylinders 200 yards

Air 4.8%

Temp 67° P200 + Gradation done 5/3/2016

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CTHJ
SOUTH
ABUT.

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information	
Technician:	Jacob Osterdorf
Date:	5/4/2016
Time:	11:00 am
Mix #:	WHBS146
Plant #:	021
Ticket #:	3742154 Truck# 731
Contractor:	Lunda Construction
Project:	1020-01-82
Sample Location:	On Site
Laboratory Present:	X
Weather Conditions:	Windy / Sun

Test Results	
Sample ID:	160504-2
Concrete Temperature:	68°
Ambient Temp:	61°
Base / Form Temp:	X
Slump:	3.25
W/C Ratio:	0.386
Air Content:	6.0%
Unit Weight:	X
Set Time:	
Days Cylinders are to be broke: 1 [ ] 3 [ ]	
7 [ ] 28 [7] 56 [ ] 90 [ ]	

Admixtures	
AEA:	4.80oz
WR:	3.00oz
HRWR:	
Other:	DrNo 2.0oz
Other:	
Other:	

Yield	
(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Sublot 0260-1-4 186.3 yards As of 4/25/2016 1480 yard
5th truck 5/4/2016 1680 yard

#200 + gradation done 5/3/2016

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE ENGINEERING SERVICES

Sample Report

General Information

Technician: Jacob Ostrander
Date: 6-15-16
Time: 10:30
Mix #: WHB5146
Plant #: 021 Truck # 702
Ticket #: 139473
Contractor: Lunda
Project: CTH J 1021-01-83
Sample Location: On site
Laboratory Present:
Weather Conditions:

Test Results

Sample ID: 160515-1
Concrete Temperature: 77°
Ambient Temp: 70°
Base / Form Temp: X
Slump:
W/C Ratio:
Air Content:
Unit Weight: X
Set Time:
Days Cylinders are to be broke: 1 [ ] 3 [ ]
7 [ ] 28 [ ] 56 [ ] 90 [ ]

Admixtures

AEA: 1.0oz
WR: 3.00cwt
HRWR:
Other: Delvo 2.0cwt
Other:
Other:

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Lot 0183-1
S. Lot 83-1-5

P200 done 6/14/16

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information

Technician: Sarah Ostendorf
Date: 6-7-2016
Time: 3:30pm
Mix #: WHBS146
Plant #: 022 Truck #908
Ticket #: 3770765
Contractor: Lunda Construction
Project: 1020-01-83 CTH J
Sample Location: CTH J Bridge
Laboratory Present:
Weather Conditions: Dusk

Test Results

Sample ID: 160607-1
Concrete Temperature: 69°
Ambient Temp: 50
Base / Form Temp: X
Slump: 3.0
W/C Ratio: 0.384
Air Content: 5.9%
Unit Weight: X
Set Time: X
Days Cylinders are to be broke: 1 [ ] 3 [ ]
7 [ ] 28 [ ] 56 [ ] 90 [ ]

Admixtures

AEA: 11.50 oz
WR: 3.0 oz/cwt
HRWR:
Other: Delvo 2.0 oz/cwt
Other:
Other:

Yield

(W) Unit Weight: (lbs/ft^3)
(W1) Weight of Material Batched: (lbs)
(yd) Yards Batched: (yd^3)
(W2) Unit Weight = W1 / Yd: (lbs/ft^3)
Yield = W2 / W: (ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 289
Lot 83-2
Sublot 83-2-1

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE ENGINEERING SERVICES

Sample Report

General Information	
Technician:	Jacob Osterdorf
Date:	6-7-2016
Time:	4:39am
Mix #:	WHB5146
Plant #:	021 Truck #
Ticket #:	3770770
Contractor:	Lunda Construction
Project:	1020-01-83 CTH J
Sample Location:	CTH J Bridge
Laboratory Present:	
Weather Conditions:	Dusk

Test Results	
Sample ID:	160607-2
Concrete Temperature:	68°
Ambient Temp:	51°
Base / Form Temp:	X
Slump:	4.0
W/C Ratio:	0.386
Air Content:	4.7%
Unit Weight:	
Set Time:	
Days Cylinders are to be broke: 1	3
7	28 56 90

Admixtures	
AEA:	11.50oz
WR:	3.00cwt
HRWR:	
Other:	Delvo 2.00cwt
Other:	
Other:	

Yield	
(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 69.1
Lot 83-2
Sublot 83-2-2

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information

Technician:	Jacob Osterdorf
Date:	6-7-2016
Time:	445am
Mix #:	WHBS5146
Plant #:	021 Truck #
Ticket #:	3770776
Contractor:	Lunda Construction
Project:	1020-01-83 CTH 5
Sample Location:	CTH 5 Bridge
Laboratory Present:	
Weather Conditions:	Dusk / cloudy

Test Results

Sample ID:	160607-3
Concrete Temperature:	68
Ambient Temp:	53°
Base / Form Temp:	X
Slump:	3.00
W/C Ratio:	0.385
Air Content:	6.5%
Unit Weight:	
Set Time:	

Days Cylinders are to be broke: 1 [ ] 3 [ ]
7 [ ] 28 [ ] 56 [ ] 90 [ ]

Admixtures

AEA:	11.50
WR:	3.00 oz/cwt
HRWR:	
Other:	Delvo 2.00 oz/cwt
Other:	
Other:	

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 127.5
Lot 83-2
S.b lot 83.2-3

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE ENGINEERING SERVICES

Sample Report

General Information

Technician: Jacob Osterdaf
Date: 6-7-2016
Time: 5:45
Mix #: WHBS146
Plant #: 022 Truck # 688
Ticket #: 377
Contractor: Lunda Construction
Project: 1020-01-83 CTH J
Sample Location: CTH J Bridge
Laboratory Present:
Weather Conditions:

Test Results

Sample ID: 160607-4
Concrete Temperature: 70
Ambient Temp: 55°
Base / Form Temp: X
Slump: 4.00
W/C Ratio: 0.382
Air Content: 7.5%
Unit Weight:
Set Time:
Days Cylinders are to be broke: 1 [ ] 3 [ ]
7 [ ] 28 [ ] 56 [ ] 90 [ ]

Admixtures

AEA: 11.50
WR: 3.00cwt
HRWR:
Other: Delvo 1.00cwt
Other:
Other:

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 192.1
Lot 83-2
Sublot 83-2-4

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information

Technician:	Jacob Osterdorf
Date:	6-2-16
Time:	6:45am
Mix #:	WHB5146
Plant #:	021 Truck # 658
Ticket #:	3770784
Contractor:	Lunda Construction
Project:	1020-01-83 CTH 5
Sample Location:	CTH 5 Bridge
Laboratory Present:	
Weather Conditions:	Sunny

Test Results

Sample ID:	160602-5
Concrete Temperature:	70°
Ambient Temp:	58°
Base / Form Temp:	>
Slump:	4.0
W/C Ratio:	0.385
Air Content:	6.9°
Unit Weight:	
Set Time:	
Days Cylinders are to be broke: 1 [ ] 3 [ ]	
7 [ ] 28 [ ] 56 [ ] 90 [ ]	

Admixtures

AEA:	11.5oz
WR:	3.00oz
HRWR:	
Other:	Delvo 7.0oz
Other:	
Other:	

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 224.8
Lot 83-2
Sublot 83-2-5

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

CEMSTONE
ENGINEERING SERVICES

Sample Report

General Information

Technician:	Jacob Osterdick
Date:	6-7-2016
Time:	6:45am
Mix #:	WHBS146
Plant #:	002 Truck # 903
Ticket #:	3770797
Contractor:	Lunda Construction
Project:	1020-01-83 CTH J
Sample Location:	CTH J Bridge
Laboratory Present:	
Weather Conditions:	Sunny

Test Results

Sample ID:	160607-6
Concrete Temperature:	70
Ambient Temp:	58
Base / Form Temp:	X
Slump:	4.0
W/C Ratio:	0.389
Air Content:	6.7
Unit Weight:	
Set Time:	
Days Cylinders are to be broke: 1 ☐ 3 ☐	
7 ☐ 28 ☐ 56 ☐ 90 ☐	

Admixtures

AEA:	1.5oz
WR:	3.0oz
HRWR:	
Other:	Delvo 2.0oz
Other:	
Other:	

Yield

(W) Unit Weight:	(lbs/ft^3)
(W1) Weight of Material Batched:	(lbs)
(yd) Yards Batched:	(yd^3)
(W2) Unit Weight = W1 / Yd:	(lbs/ft^3)
Yield = W2 / W:	(ft^3/yd^3)

Notes / Remarks (Be Specific):

Random # 250.9
Lot 83-2
Sublot 83-2-6

Cemstone - Engineering Services
2025 Centre Point Boulevard, Suite 300, Mendota Heights, MN 55120
Phone: (651) 688-9292 • Fax: (651) 688-0124

Date Sampled	5/3/16	Sample Weight	15552.0
Date Recived	5/3/16	Dry Weight	15284.0
Date Completed	5/3/16	Moisture %	1.8%
Aggregate Source	Losey stockpile	Washed Weight	15216.0
Sampled By	Jacob Osterdorf	P200 %	0.45
Tested By	Jacob Osterdorf	Aggregate Size	1 1/2"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
2"	0	000	100	100
1.5"	0	000	100	90-100
1"	6904.0	45.4	54.6	20-55
3/4"	14620.0	96.2	3.8	0-15
3/8"	15102.0	99.3	0.7	0-5
#200	15195	99.9	0.1	
Pan	15205	100	0	

Date Sampled	5/3/16	Sample Weight	5695.0
Date Recived	5/3/16	Dry Weight	5604.0
Date Completed	5/3/16	Moisture %	1.6%
Aggregate Source	Losey stockpile	Washed Weight	5582.0
Sampled By	Jacob Osterdorf	P200 %	0.4%
Tested By	Jacob Osterdorf	Aggregate Size	3/4"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
1"	0	0	100	100
3/4"	111.0	2.0	98.0	90-100
3/8"	2741.0	49.1	50.9	20-55
#4	5500.0	98.6	1.4	0-15
#8	5538.0	99.2	0.8	0-5
#200	5568.0	99.8	0.2	
Pan	5580.0	100	0	

Date Sampled	5/3/16	Sample Weight	550.0
Date Recived	5/3/16	Dry Weight	534.0
Date Completed	5/3/16	Moisture %	3.0
Aggregate Source	Losey stockpile	Washed Weight	532.7
Sampled By	Jacob Osterdorf	P200 %	0.24
Tested By	Jacob Osterdorf	Aggregate Size	Concrete Sand

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
3/8"	0	0	100	100
#4	1.6	0.3	99.7	90-100
#8	71.2	13.3	86.7	
#16	121.4	22.7	77.3	45-85
#30	315.8	59.1	40.9	
#50	479.3	89.8	10.2	5--30
#100	527.8	99.2	0.8	0-10
#200	533.0	99.8	0.2	0-3.5
Pan	533.9	100	0	

6th J
graduation

Date Sampled	6/21/2016	Sample Weight	15602
Date Recived	6/21/2016	Dry Weight	15503
Date Completed	6/21/2016	Moisture %	0.63
Aggregate Source	Lacey	Washed Weight	15389
Sampled By	Jacob Osterhof	P200 %	0.74
Tested By	Jacob Osterhof	Aggregate Size	1 1/2"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
2"	0	0	100	100
1.5"	0	0	100	90-100
1"	7654	49.7	50.3	20-55
3/4"	15222.0	98.9	1.1	0-15
3/8"	15341.0	99.7	0.3	0-5
#200	15366.0	99.9	0.1	
Pan	15385.0	100	0	

Date Sampled	6/21/2016	Sample Weight	5700.0
Date Recived	01/21/2016	Dry Weight	5605.0
Date Completed	6/21/2016	Moisture %	1.7%
Aggregate Source	Lacey	Washed Weight	5583
Sampled By	Jacob Osterhof	P200 %	0.39%
Tested By	Jacob Osterhof	Aggregate Size	3/4"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
1"	0	000	0	100
3/4"	147.0	2.6	97.4	90-100
3/8"	3526.0	63.2	36.8	20-55
#4	5389.0	96.6	3.4	0-15
#8	5523.0	99.0	1.0	0-5
#200	5573	99.9	0.1	
Pan	5580	100	0	

Date Sampled	6/21/2016	Sample Weight	550
Date Recived	6/21/2016	Dry Weight	533.6
Date Completed	6/21/2016	Moisture %	3.1%
Aggregate Source	Lacey	Washed Weight	532.2
Sampled By	Jacob Osterhof	P200 %	0.26%
Tested By	Jacob Osterhof	Aggregate Size	Concrete Sand

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
3/8"	0	0	100	100
#4	6.7	1.3	98.7	90-100
#8	54.6	10.3	89.7	
#16	174.7	32.8	67.2	45-85
#30	326.1	61.3	38.7	
#50	451.4	84.8	15.2	5--30
#100	523.8	98.3	1.5	0-10
#200	531.6	99.9	0.1	0-3.5
Pan	532.0	100	0	

CTH J gradation

Date Sampled	6/2/2016	Sample Weight	15534.0
Date Recived	6/2/2016	Dry Weight	15410.0
Date Completed	6/2/2016	Moisture %	0.8%
Aggregate Source	Casey	Washed Weight	15302.0
Sampled By	Jacob Osterdorf	P200 %	0.7%
Tested By	Jacob Osterdorf	Aggregate Size	1 1/2"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
2"	0	0	100	100
1.5"	362.0	2.4	97.6	90-100
1"	7998.0	52.3	47.7	20-55
3/4"	15029	98.2	1.8	0-15
3/8"	15268.0	99.8	0.2	0-5
#200	15285.0	99.9	0.1	
Pan	15297.0	100	0	

Date Sampled	6/2/2016	Sample Weight	5560.0
Date Recived	6/2/2016	Dry Weight	5439.0
Date Completed	6/2/2016	Moisture %	2.2%
Aggregate Source	Casey	Washed Weight	5416.0
Sampled By	Jacob Osterdorf	P200 %	0.4
Tested By	Jacob osterdorf	Aggregate Size	3/4"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
1"	0	0	100	100
3/4"	156.0	2.9	97.1	90-100
3/8"	3652.0	67.5	32.5	20-55
#4	5366.0	99.1	0.9	0-15
#8	5389.0	99.5	0.5	0-5
#200	5409.0	99.9	0.1	
Pan	5414.0	100	0	

Date Sampled	6/2/2016	Sample Weight	550
Date Recived	6/2/2016	Dry Weight	532.8
Date Completed	6/2/2016	Moisture %	3.2%
Aggregate Source	Casey	Washed Weight	531.4
Sampled By	Jacob Osterdorf	P200 %	0.2
Tested By	Jacob Osterdorf	Aggregate Size	Concrete Sand

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
3/8"	0	0	100	100
#4	7.1	1.3	98.7	90-100
#8	52.2	9.8	90.2	
#16	163.1	30.7	69.3	45-85
#30	322.4	60.7	39.3	
#50	449.2	84.5	15.5	5--30
#100	515.9	97.1	2.9	0-10
#200	530.6	99.9	0.1	0-3.5
Pan	531.3	100	0	

Date Sampled	3/14/16	Sample Weight	16058
Date Recived	3/14/16	Dry Weight	15970
Date Completed	3/14/16	Moisture %	0.6%
Aggregate Source	Casey Stockpile	Washed Weight	15871
Sampled By	Jacob Osterdorf	P200 %	0.62
Tested By	Jacob Osterdorf	Aggregate Size	1 1/2"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
2"	0	0	100	100
1.5"	0	0	100	90-100
1"	8796	55.5	44.5	20-55
3/4"	15328	96.6	3.4	0-15
3/8"	15727	99.2	0.8	0-5
#200	15846	99.9	0.1	
Pan	15860	100	0	

Date Sampled	3/14/16	Sample Weight	5566.4
Date Recived	3/14/16	Dry Weight	5458.0
Date Completed	3/14/16	Moisture %	2.0%
Aggregate Source	Casey stockpile	Washed Weight	5452
Sampled By	Jacob Osterdorf	P200 %	0.11
Tested By	Jacob Osterdorf	Aggregate Size	3/4"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
1"	0	0	100	100
3/4"	185.0	3.4	96.6	90-100
3/8"	3344.0	29.9	38.6	20-55
#4	5409.0	99.2	0.8	0-15
#8				0-5
#200	5443.0	99.9	0.1	
Pan	5450.0	100	0	

Date Sampled	3/14/16	Sample Weight	565.6
Date Recived	3/14/16	Dry Weight	548.1
Date Completed	3/14/16	Moisture %	3.20%
Aggregate Source	Casey stockpile	Washed Weight	547.6
Sampled By	Jacob Osterdorf	P200 %	0.09
Tested By	Jacob osterdorf	Aggregate Size	Concrete Sand

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
3/8"	0	0	100	100
#4	0.3	0.05	99.95	90-100
#8	29.0	5.3	94.7	
#16	97.7	17.8	82.2	45-85
#30	268.4	49.0	51.0	
#50	480.9	87.8	12.2	5--30
#100	541.4	98.9	1.1	0-10
#200	546.7	99.9	0.1	0-3.5
Pan	547.4	100	0	

Date Sampled	04/11/16	Sample Weight	15572.0
Date Recived	04/11/16	Dry Weight	15402.0
Date Completed	04/11/16	Moisture %	1.1%
Aggregate Source	Lowery Stockpile	Washed Weight	15320.0
Sampled By	Jacob Osterdorf	P200 %	0.54%
Tested By	Jacob Osterdorf	Aggregate Size	1 1/2"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
2"	0	0	100	100
1.5"	0	0	100	90-100
1"	8644.0	56.5	43.5	20-55
3/4"	14900.0	97.3	2.7	0-15
3/8"	15258.0	99.7	0.3	0-5
#200	15282.0	99.8	0.2	
Pan	15306.0	100	0	

Date Sampled	04/11/16	Sample Weight	6029.0
Date Recived	04/11/16	Dry Weight	5431.0
Date Completed	04/11/16	Moisture %	1.7%
Aggregate Source	Lowery Stockpile	Washed Weight	5415.5
Sampled By	Jacob Osterdorf	P200 %	0.26%
Tested By	Jacob Osterdorf	Aggregate Size	3/4"

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
1"	0	0	100	100
3/4"	113.0	1.4	98.1	90-100
3/8"	4452.0	75.3	24.7	20-55
#4	5742.0	97.1	2.9	0-15
#8	5868.0	99.3	0.7	0-5
#200	5903.0	99.9	0.1	
Pan	5911.0	100	0	

Date Sampled	04/11/16	Sample Weight	550.0
Date Recived	04/11/16	Dry Weight	537.3
Date Completed	04/11/16	Moisture %	2.4%
Aggregate Source	Lowery Stockpile	Washed Weight	536.0
Sampled By	Jacob Osterdorf	P200 %	0.24%
Tested By	Jacob Osterdorf	Aggregate Size	Concrete Sand

Sieve	Amount Retained	Amount Passing	Precent Passing	Spec
3/8"	0	0	100	100
#4	0.5	0.1	99.4	90-100
#8	58.9	11.0	89.0	
#16	160.0	29.4	70.1	45-85
#30	314.2	58.8	41.2	
#50	473.1	88.5	11.5	5--30
#100	525.4	98.4	1.6	0-10
#200	533.2	99.8	0.2	0-3.5
Pan	534.3	100	0	

250 yards

Job 1020-01-83

83-1-1

Cylinder 1604 13-1-2
Lunda
1020-01-83

05-11-16 09:53:16 1604 13.1 2 12.000 89.417 154230 5243
ADMET

RESULTS

Date:	05-11-16
Time:	09:53:16
Specimen ID#:	1604 13.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	89.417
Peak (LB):	154230
Peak (PSI):	5243

Peak at 154230 lbs

B3-1-1

Cylinder 160413-1-3
Lunda
1020-01-85

05-11-16 09:28:36 160413-1 2 12.000 28.340 149700 5282
ADMET

RESULTS

Date:
Time:
Specimen ID#:
Specimen Type:
Specimen Length (IN):
Specimen Area (SQ IN):

Peak (LB):
Peak (PSI):

05-11-16
09:28:36
160413-1
CYLINDER
12.000
28.340

149700
5282

Point of loading
33.5

Load (LB)

150000
125000
100000
75000
50000
25000
0
0.0
25.0
50.0
75.0
100.0
125.0
150.0
Time (sec)

83-1-1

Cylinder 160913-1-1

Lunda

1020-01-83

05-11-16 09:59:37 160A13:1 2 12.000 28.274 160950 5693

ADMET

RESULTS

Date:	05-11-16
Time:	09:59:37
Specimen ID#:	160A13:1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.274
Peak (LB):	160950
Peak (PSI):	5690

83-1-2

Job # 1020-01-83 Honda Ch 5

05-20-15 07:39:16 160423.411 2 12.000 29.228 148610 5085

ADMET

Rate of loading

34.217

RESULTS

Date:	05-20-15
Time:	07:07:16
Specimen ID#:	160422.11
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	29.228
Peak (LB):	148610
Peak (PSI):	5085

83-1-2

Job # 1020-01-83 Lenda 6th J

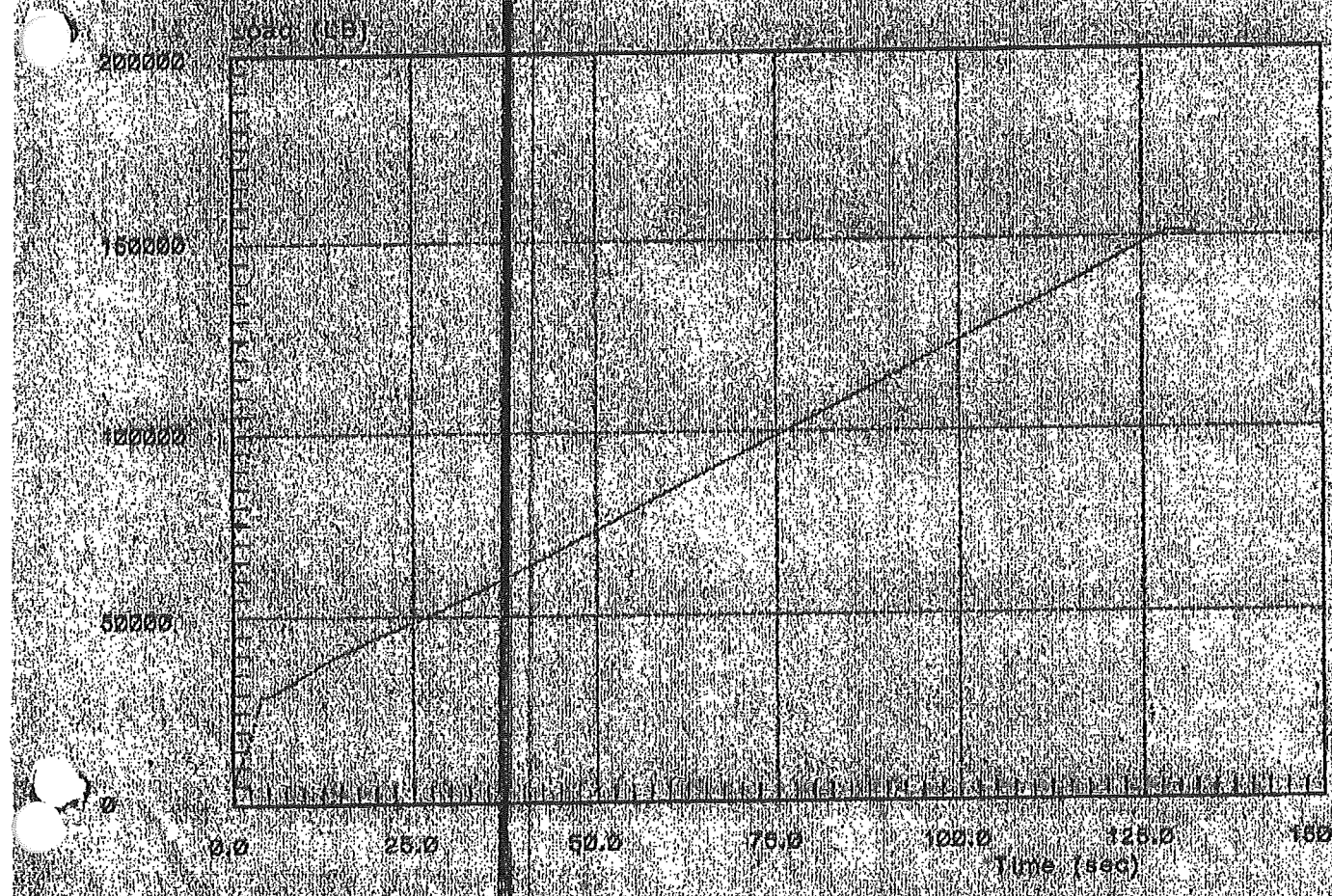
05-20-16 07:41:42 160422.1 S 2 12.000 29.225 151840 5196

ADMET

Rate of loading
34,217

RESULTS

Date:	05-20-16
Time:	07:41:42
Specimen ID#:	160422.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	29.225
Peak (LB):	151840
Peak (PSI):	5196



83-1-Z

06-01-16 10:03:11 1505Ø4.1-3 2 12.000 28.846 182140 6315

ADMET

RESULTS

Date:
Time:
Specimen ID#:
Specimen Type:
Specimen Length (IN):
Specimen Area (SQ IN):

Peak (LB):
Peak (PSI):

06-01-16
10:03:11
150504.1-
CYLINDER
12.000
28.846

182140
6315

Rate of loading 34.67
Job # 1020-01-83

83-1-3

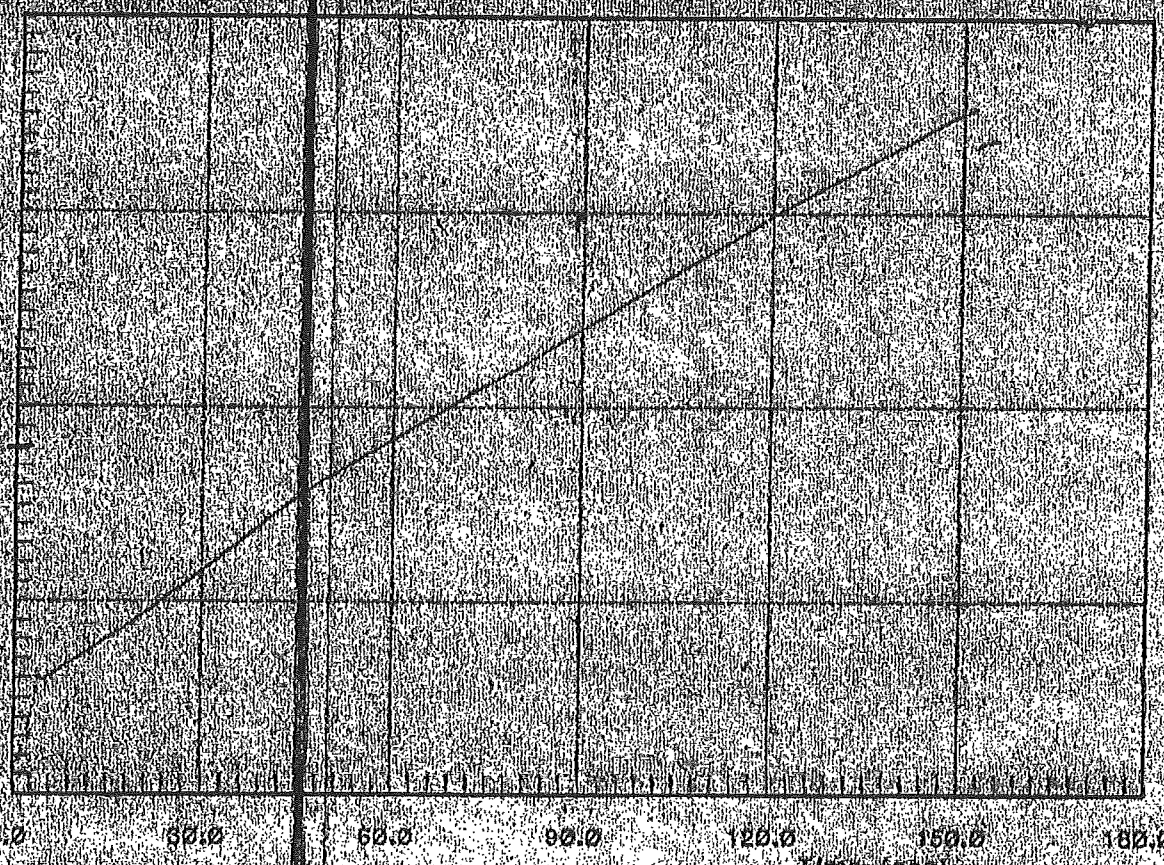
86-01-16 09:58:06 160504.1-12 12.000 29.021 176870 6032

ADMET

Rate of loading 34.11 ✓
Job # 1020-01-83

RESULTS

Date:	86-01-16
Time:	09:58:06
Specimen ID#:	160504.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	29.021
Peak (LBS):	176870 ✓
Peak (PSI):	6032 ✓



83-1-3

86-01-16 09:52:24 160504.1 12.000 20.919 164870 5701

ADMET

RESULTS

Date:	86-01-16
Time:	09:52:24
Specimen ID#:	160504.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	20.919
Peak (LB):	164870
Peak (PSI):	5701

Rate of loading 34.58 ✓

Job # 1020-01-83

83-1-4

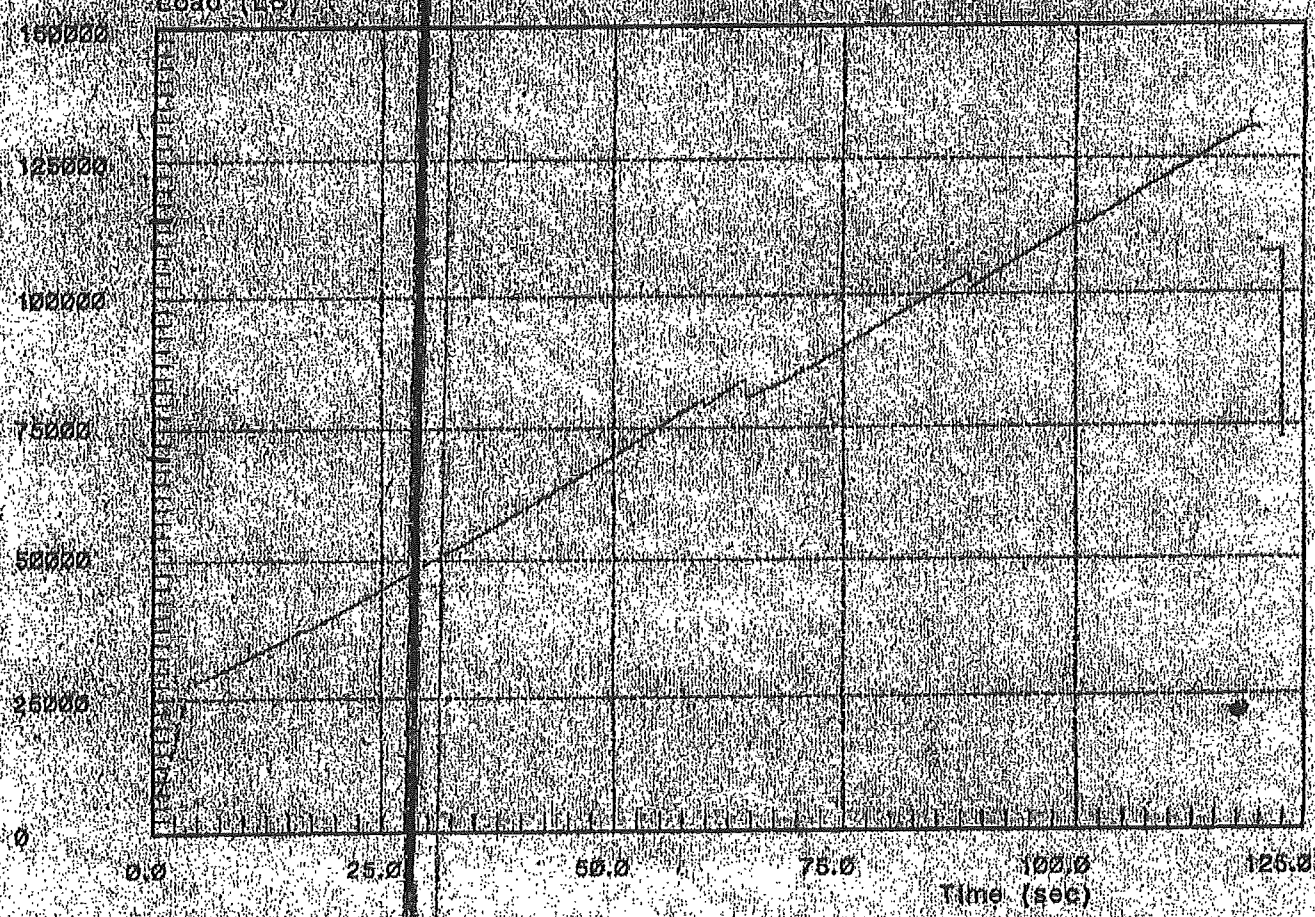
06-01-16 10:13:41 160504:2 12.000 28.824 130720 4535

ADMET

RESULTS

Date:	06-01-16
Time:	10:13:41
Specimen ID#:	160504:2
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQIN):	28.824
Peak (LB):	130720
Peak (PSI):	4535

Rate of loading 31.22
Job # 1020-01-83



83-1-4

86-01-16,14:05:36 160504.2-3 12.000 28.700 141180 4919

ADMET

RESULTS

Rate of loading 30.2
Job # 1020-01-83

Date:	86-01-16
Time:	10:08:36
Specimen ID#:	160504.2
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.700
Peak (LB):	141180
Peak (PSI):	4919

83-1-4

06-01-16 10:18:23 160504.2-1 2 12.000 28.256 126640 4482

ADMET

RESULTS

Date:	06-01-16
Time:	10:18:23
Specimen ID#:	160504.2
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.256
Peak (LB):	126640
Peak (PSI):	4482

Rate of loading 24.77 to Law

Job # 1020-01-83

83-1-5

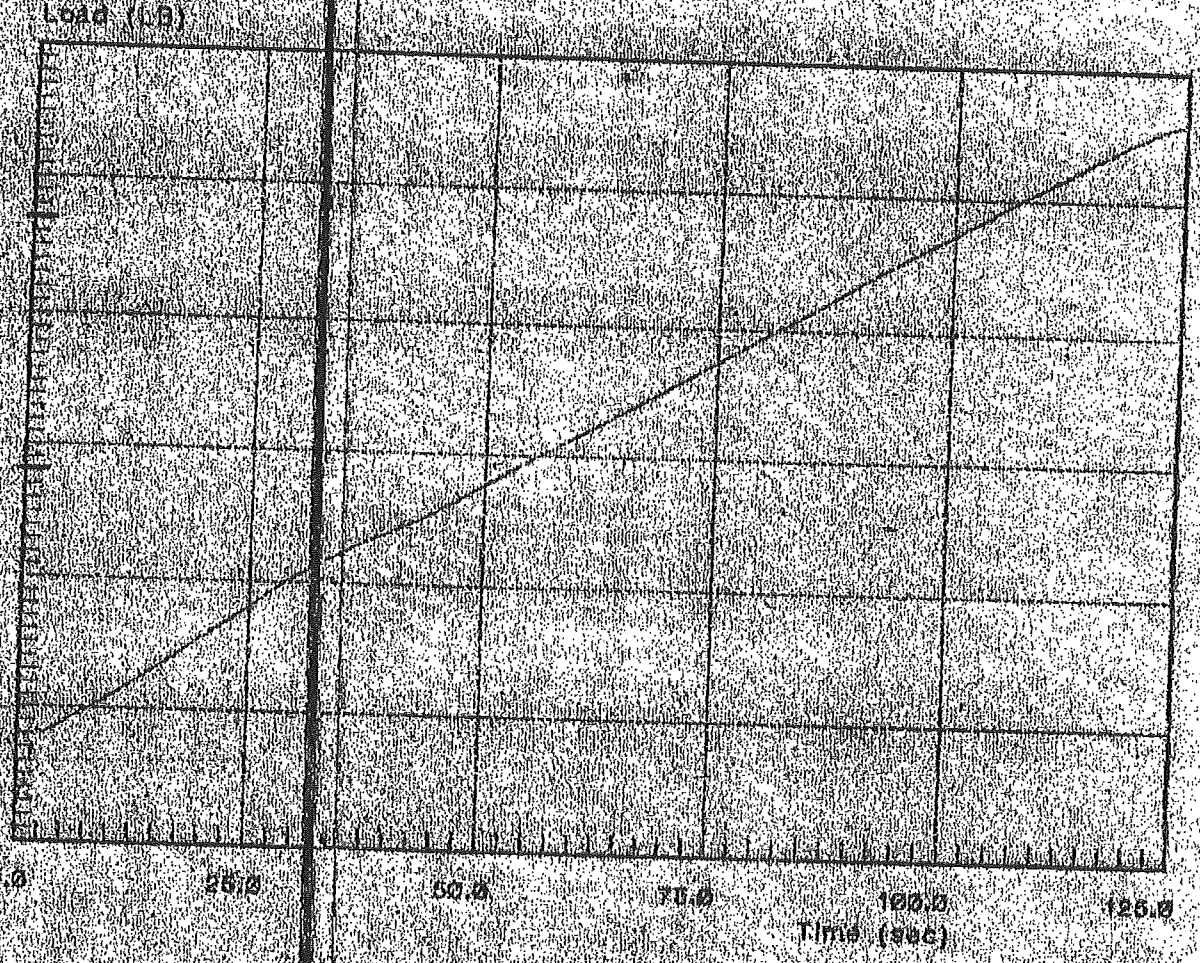
07-13-16 07:47:31 160615.1 L-2.2 12.000 28.653 139720 4876

ADMET

RESULTS

Rate of loading 33.16
Sob # 1020-01-83

Date:	07-13-16
Time:	07:47:31
Specimen ID#:	160615.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.653
Peak (LB):	139720
Peak (PSI):	4876



83-1-5

Lot 83-1

87-13-16 07:12:35 1606[illegible]-3 12.000 28.556 150170 5258

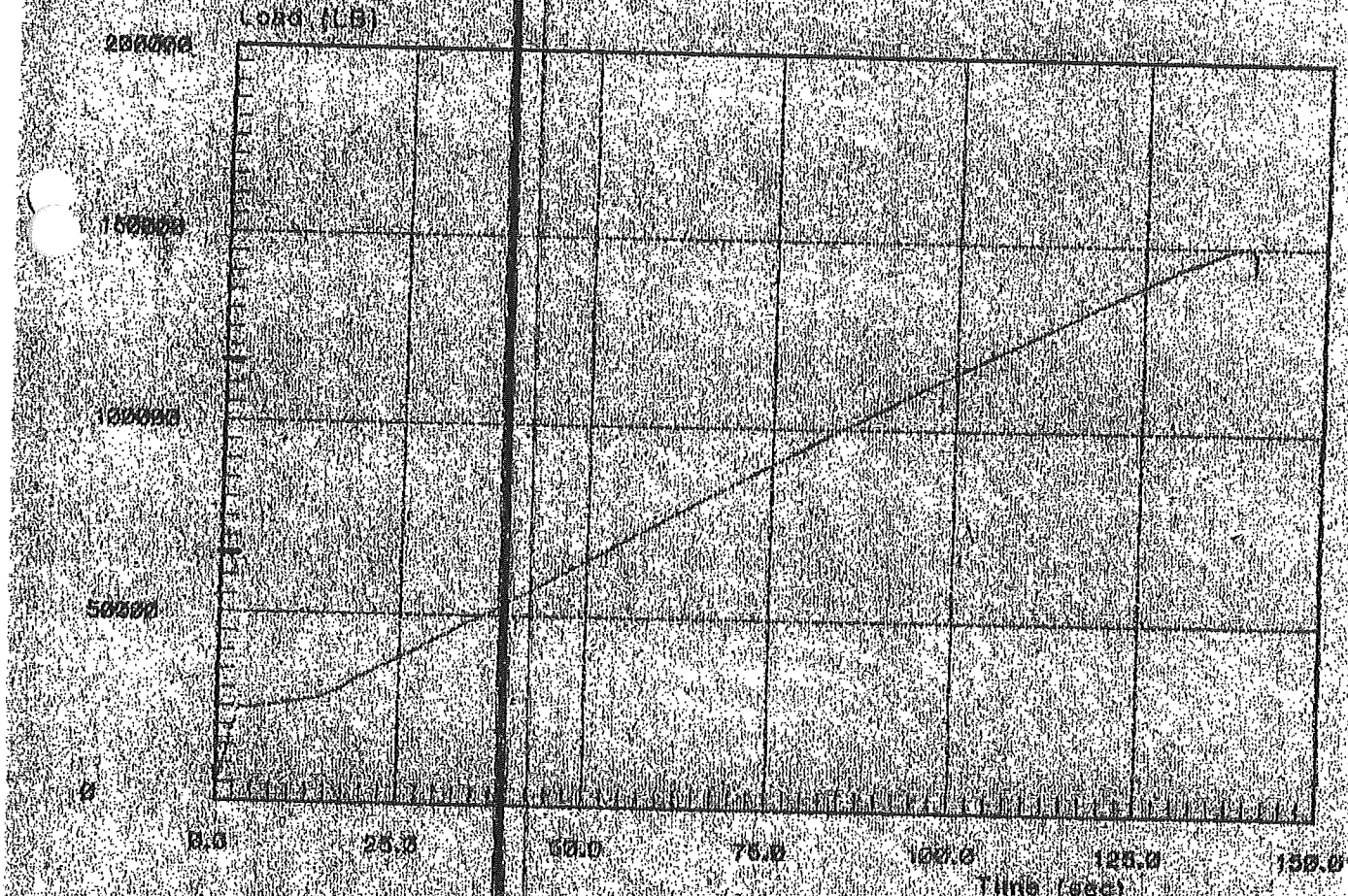
ADMET

RESULTS

Rate of loading 35.02

Job # 1020-01-83

Date:				07-13-16
Time:				07:02:28
Specimen ID#:				1606[illegible]-1
87-12-16 06:28 Specimen Type	12.000	56000	4033	CYLINDER
Specimen Length (IN):				12.000
Specimen Area (SQ IN):				28.556
Peak (LB):				150170
Peak (PSI):				5258



Lot 1 83-1-5

07-13-16 07:52:56 160615.1-1 9 12.000 20.369 136190 4801
AOMET

Rate of loading 36.72
Job #1020-01-83

RESULTS

Date:	07-13-16
Time:	07:52:56
Specimen ID#:	160615.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	20.369
Peak (LB):	136190
Peak (PSI):	4801

Lot 2
83-2-1

07-05-18 07:16:36 160507.1 2 12.000 28.086 149004 5337
ADMET

Rate of loading -35.6
Job# 1021-01-83

RESULTS

Date:	07-05-18
Time:	07:16:36
Specimen ID#:	160507.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.086
Peak (LB):	149004
Peak (PSI):	5337

83-2-1

07-05-18 07:11:43 1626G7.1-2.3 12.000 28.270 149140 5275

ADMET

RESULTS

Rate of loading 33.89
Job # 1020-01-83

Date:	07-05-18
Time:	07:11:43
Specimen ID#:	1626G7.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.274
Peak (LB):	149140
Peak (PSI):	5275

83-2-1

Lot 83-2

07-05-16 07:07:00 160507.1 3.2 12.000 28.274 139160 4921

ADMET

RESULTS

Rate of loading 30.42

Job # 1041-01-83

Date:	07-05-16
Time:	07:07:00
Specimen ID#:	160507.1
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.274
Peak (LBF):	139160
Peak (PSI):	4921

83-2-2

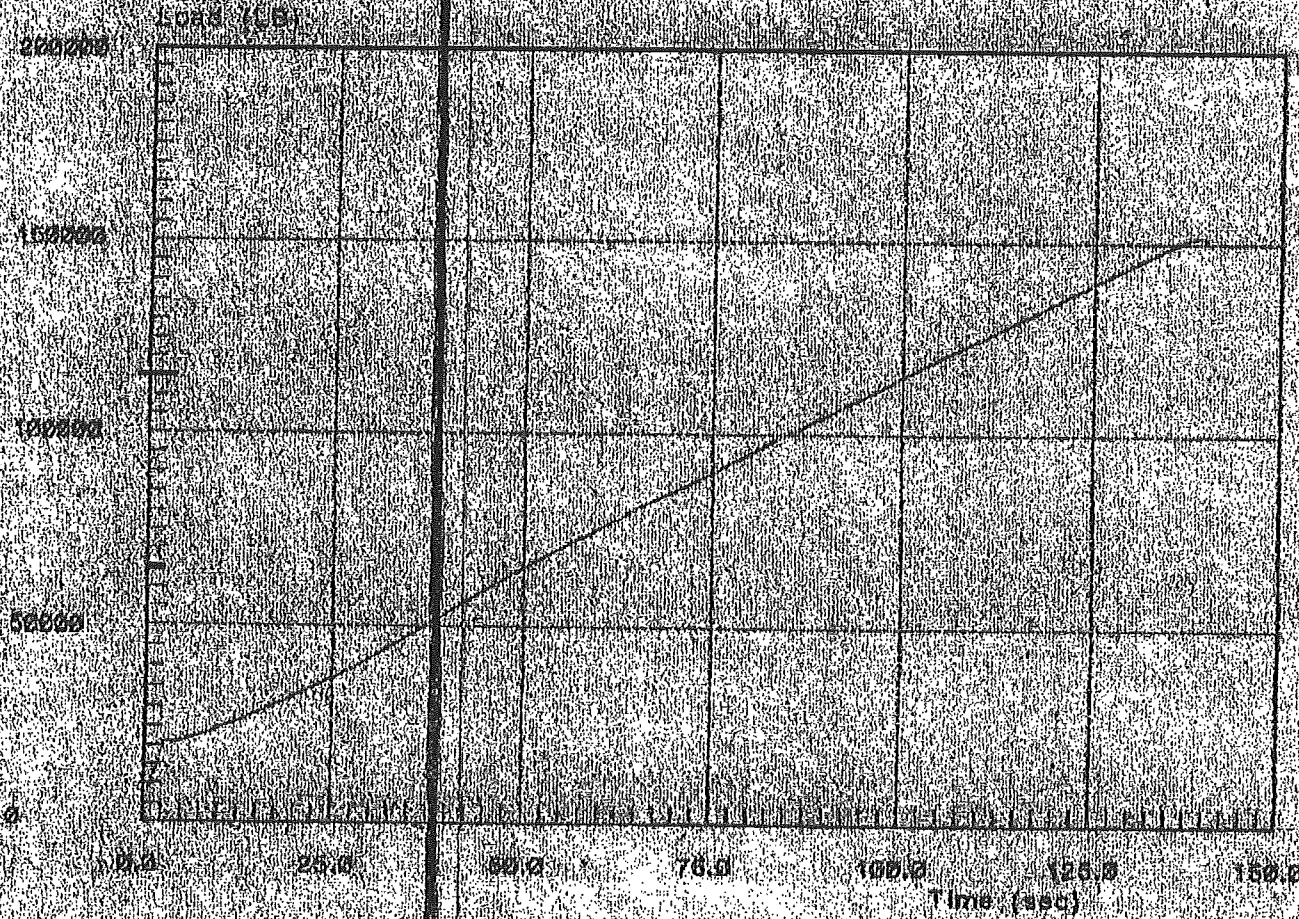
07-05-16 07:21:13 160607.2-2 12.000 28.274 152670 5378

ADMET

RESULTS

Rate of loading 35.37 ✓
Job # loar-01-83

Date:	07-05-16
Time:	07:21:13
Specimen ID#:	160607.2
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.274
Peak (LB):	152670
Peak (PSI):	5378



03-2-2

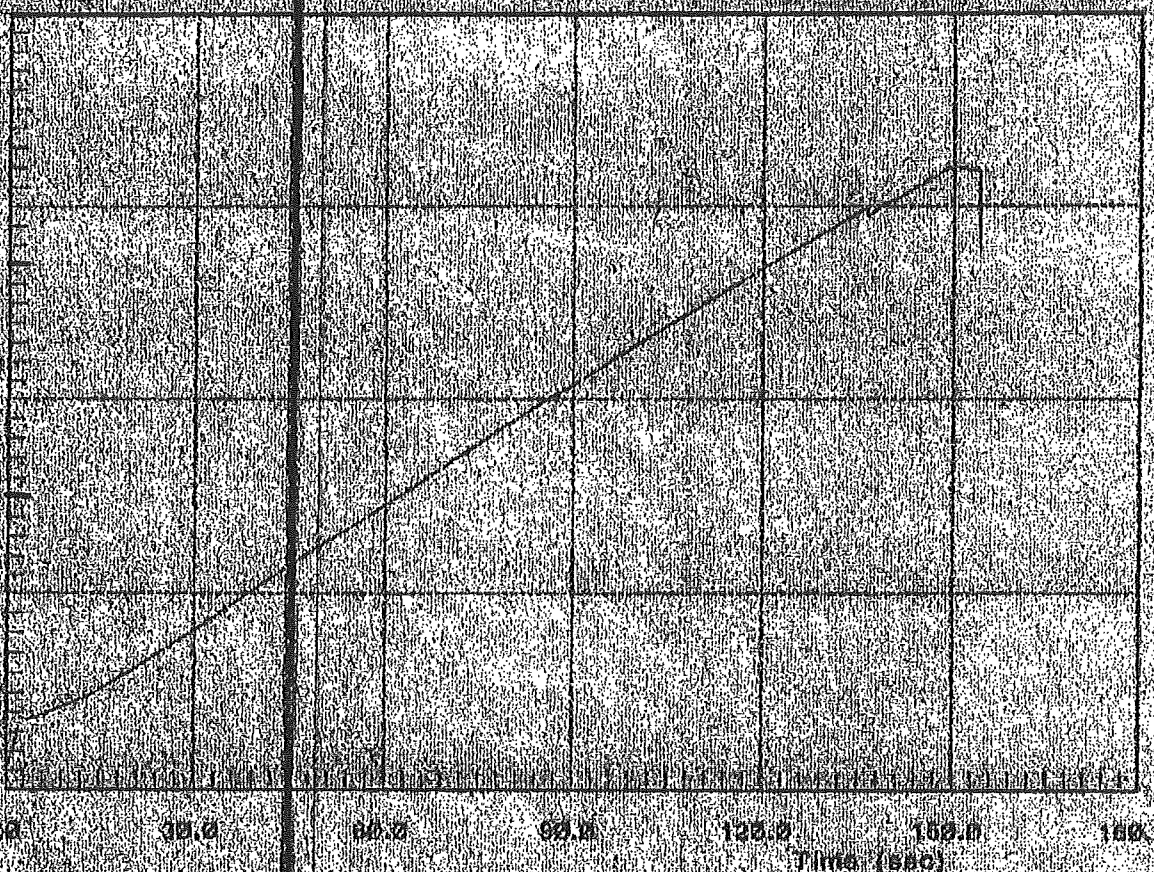
07-05-16 07:25:37 160607.2 G3-2 12.000 28.086 160400 5711

ADMET

RESULTS

Date:	07-05-16
Time:	07:25:37
Specimen ID#:	160607.2
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.086
Peak (LB):	160400
Peak (PSI):	5711

Rate of loading 35.60
Job # 1021-01-03



83-2-3

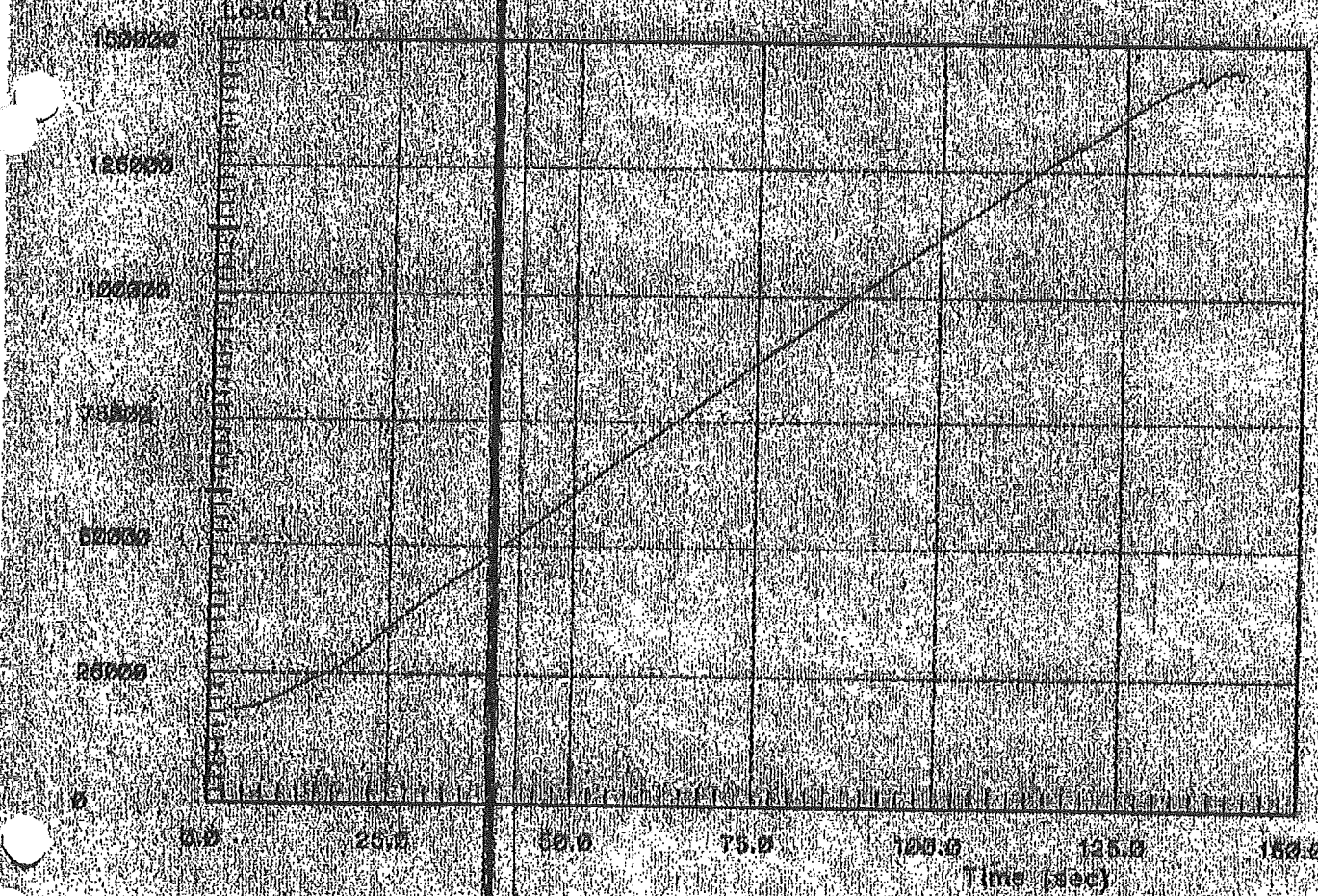
87-05-16 07:30:21 160607.3 37 12.000 28.369 144836 5105

ADMET

RESULTS

Rate of loading 37.01
S.b # 104-01-83

Date:	87-05-16
Time:	07:30:21
Specimen ID#:	160607.0
Specimen Type:	CYLINDER
Specimen Length (CM):	12.000
Specimen Area (SQ IN):	28.369
Peak (LBS):	144836
Peak (PSI):	5105



83-2-3

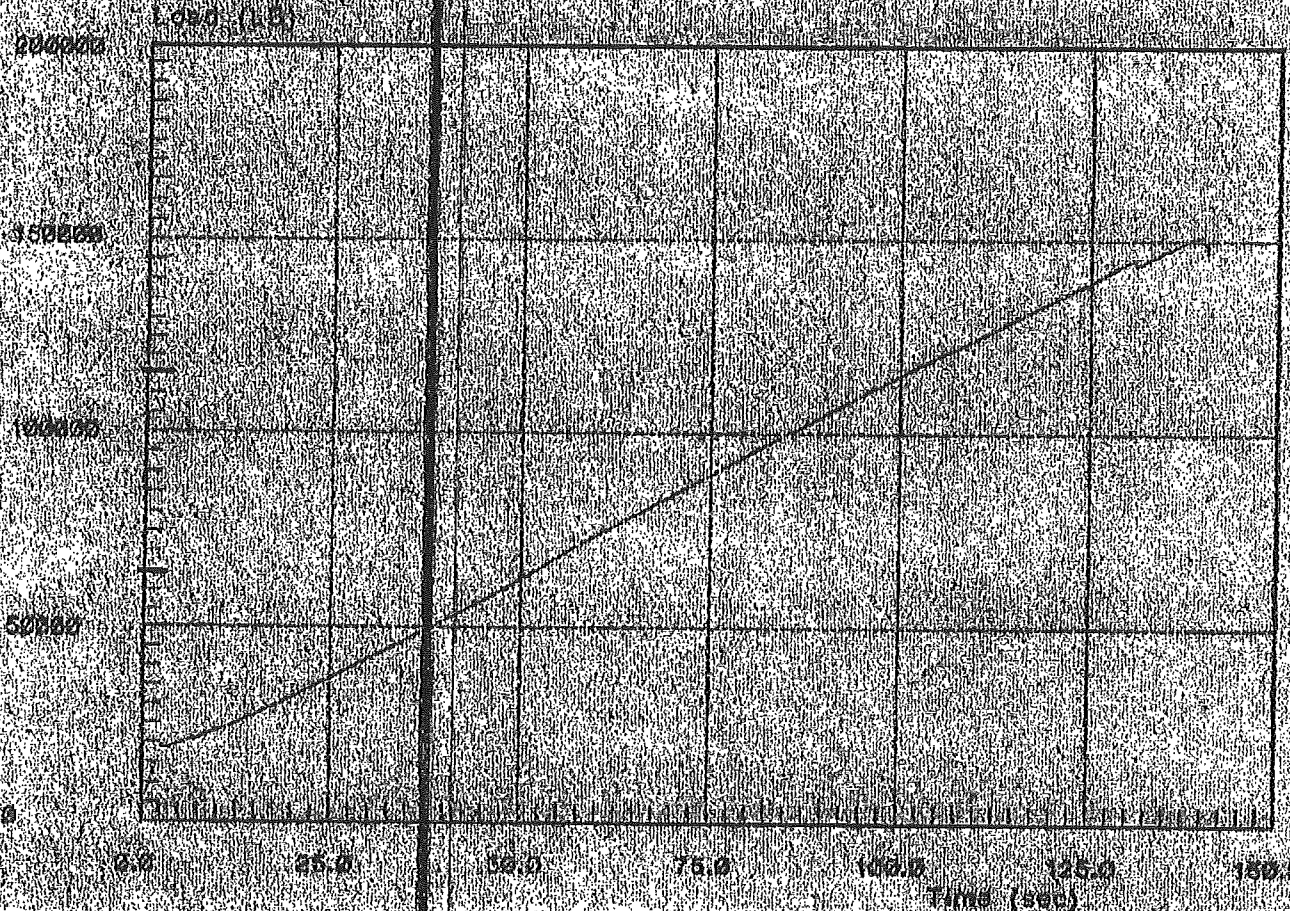
07-05-16 07:35:26 166687.3-2-2 12.000 28.369 151360 5335

ADMET

RESULTS

Rate of loading 35.25
Sob # 102-01-83

Date:	07-05-16
Time:	07:35:26
Specimen ID#:	166687.3
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.369
Peak (LB):	151360
Peak (PSI):	5335



83-2-4

07-05-16 08:16:11 160827-2 12.000 28.256 135190 4815

ADMET

RESULTS

Date: 07-05-16
Time: 08:16:11
Specimen ID#: 160827-2
Specimen Type: CYLINDER
Specimen Length (in): 12.000
Specimen Area (sq in): 28.256

Peak (LB): 135190
Peak (PSI): 4815

Rate of loading 33.82
Sab #102-01-03

83-2-4

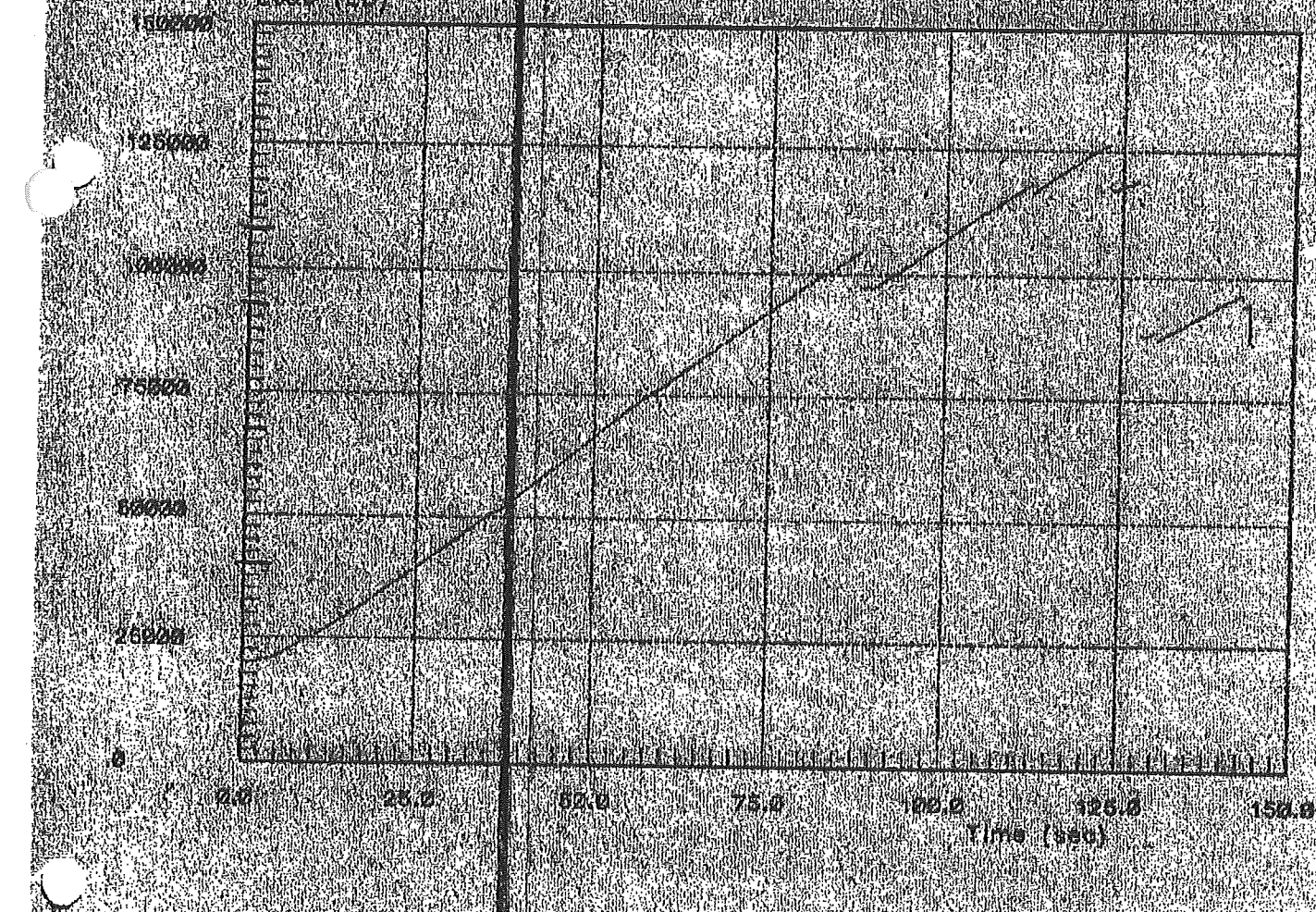
07-05-16 08:22:36 160607.4 Y 2 12.000 28.274 126580 4477

ADMET

RESULTS

Date:	07-05-16
Time:	08:22:36
Specimen ID#:	160607.4
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	28.274
Peak (LB):	126580
Peak (PSI):	4477

Rate of loading 37.14
Sol # 102-1-83



83-2-5

87-05-16 08:27:37 158587.5-1 2 12.008 26.274 144520 5511

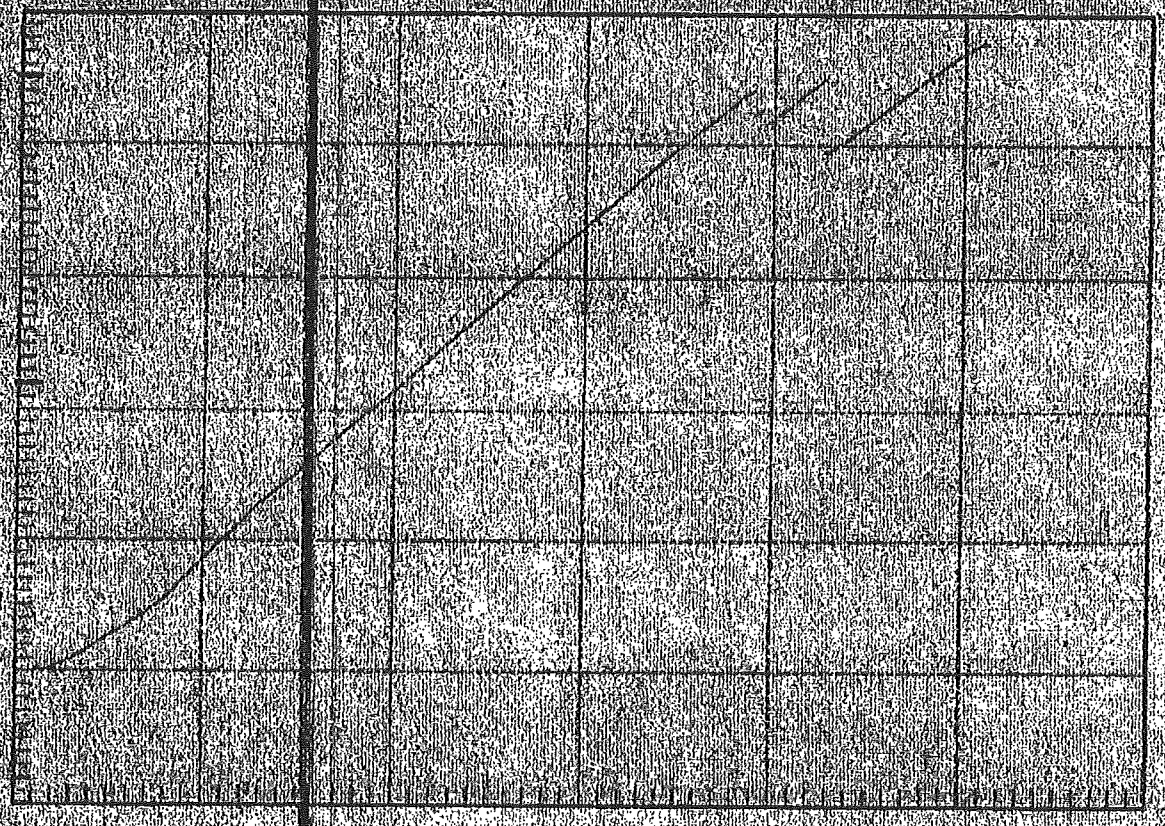
ADMET

RESULTS

Date: 87-05-16
Time: 08:27:37
Specimen ID#: 158587.5
Specimen Type: CYLINDER
Specimen Length (IN): 12.008
Specimen Area (SQ IN): 26.274

Peak (LB): 144520
Peak (PSI): 5511

Rate of loading 3389
Job # 1021-01-83



83-2-5

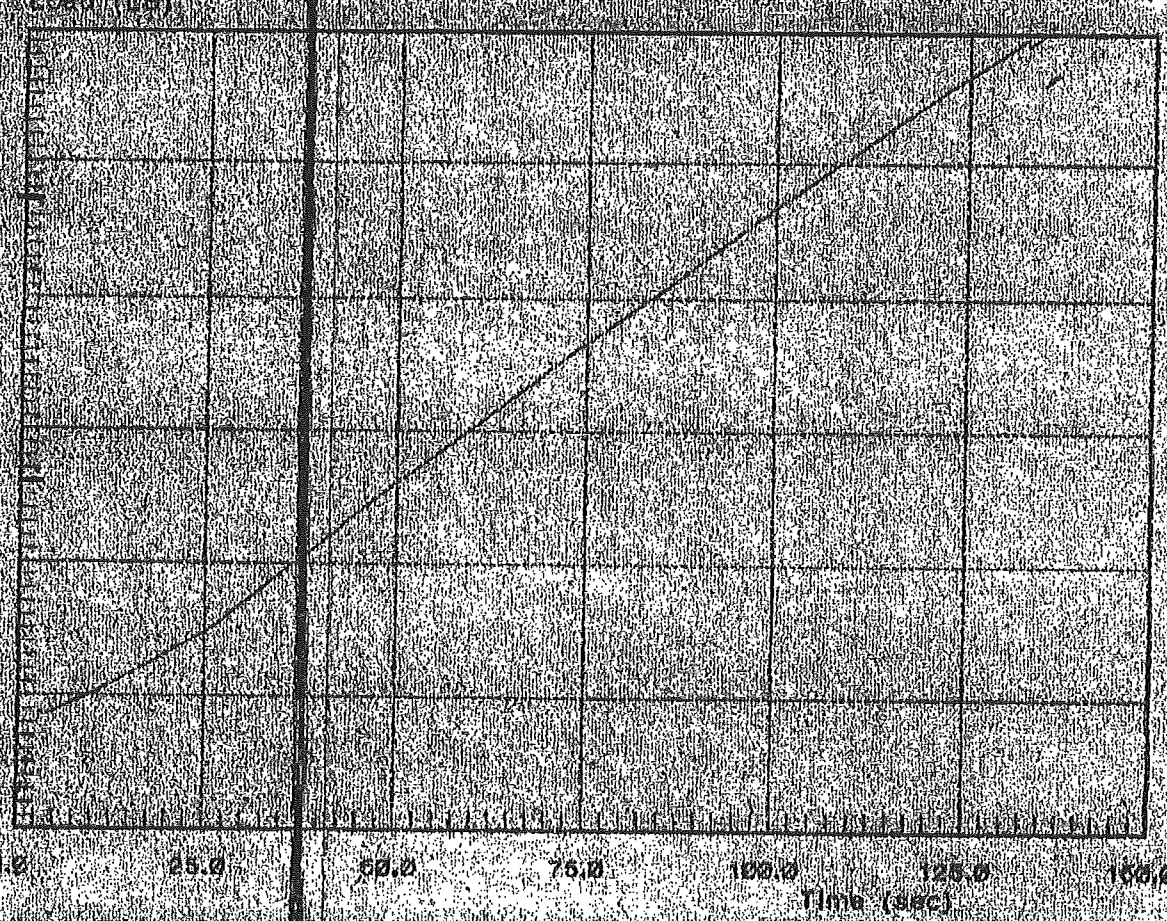
87-05-15 08:32:15 150607.5-3.2 12.000 27.899 149240 5350

ADMET

RESULTS

Rate of loading 37.6#
Job #1081-01-83

Date:	87-05-15
Time:	08:32:15
Specimen ID#:	150607.5
Specimen Type:	CYLINDER
Specimen Length (in):	12.000
Specimen Area (sq in):	27.899
Peak (LBS):	149240
Peak (PSI):	5350



83-2-6

87-05-16 08:41:19 160567.6-1 2 12.000 28.274 128720 4553

ADMET

RESULTS

Date: 87-05-16
Time: 08:41:19
Specimen ID#: 160567.6
Specimen Type: CYLINDER
Specimen Length (IN): 12.000
Specimen Area (SQ IN): 28.274

Peak (LB): 128720
Peak (PSI): 4553

Rate of loading 35.37
Job #

83-2-6

07-05-15 08:30:51 160627.0 2 12.000 25.274 130240 4595

ADMET

RESULTS

Date:	07-05-15
Time:	08:30:51
Specimen ID#:	160627.0
Specimen Type:	CYLINDER
Specimen Length (IN):	12.000
Specimen Area (SQ IN):	25.274
Peak (LBS):	130240
Peak (PSI):	4595

Rate of loading 35.37

Job #

Load (LBS)