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VIRGIL C. SUMMER NUCLEAR STATION
ENGINEERING SERVICES TECHNICAL REPORT

NUCLEAR OPERATIONS

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KAOWOOL TRIPLE WRAP RACEWAY FIRE BARRIER TEST FOR CONDUITS AND CABLE TRAYS

REVISION 0

Andrew F. Roboski — 5/23/2000
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KAOWOOL TRIPLE WRAP RACEWAY FIRE BARRIER TEST FOR CONDUITS AND CABLE TRAYS

Project No. 12000- 105900

May 5, 2000

FIRE ENDURANCE TEST TO QUALIFY PROTECTIVE ENVELOPES FOR CLASS 1E ELECTRICAL CIRCUITS

Prepared For:

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OMEGA POINT LABORATORIES

ABSTRACT

Various raceway assemblies clad with Kaowool Triple Wrap materials as described herein, were evaluated in accordance with the Transco Products, Inc. Test Procedure #SP-0836 "Kaowool Triple Wrap Raceway Fire Barrier Test for Conduits and Cable Trays," and Supplement 1 to the U.S. Nuclear Regulatory Commission Generic Letter 86-10.

The details, procedures and observations reported herein are correct and true within the limits of sound engineering practice. All specimens and test sample assemblies were produced, installed and tested under the surveillance of either Transco Products, Inc.'s or Omega Point Laboratories' in-house Quality Assurance Program. This report describes the analysis of a distinct assembly and includes descriptions of the test procedure followed, the assembly tested, and all results obtained. All test data are on file and remain available for review by authorized persons.

Deggary N. Priest
President

Date May 17, 2000

Cleda Patton for
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Date 5-17-2000

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INTRODUCTION

The protection of vital electrical circuits from the effects of an external fire exposure is of primary concern in the design and construction of an electrical power generating plant. Typical "fire protective envelopes" are designed to protect the contents of an electrical raceway for fire exposure periods of one to three hours, during which time the electrical circuitry must remain functional, as defined in Generic Letter 86-10, Supp. 1.

The external fire exposure selected to evaluate protective envelope systems is that described in the ASTM E119-95a Fire Tests of Building Construction and Materials (E119 Time-Temperature Curve, described later in this document). The ASTM E119 test procedure is identical or very similar to the following standard test methods:

UL 263
UBC 7-1(43-1)
NFPA 251

Typical fire test programs involve the selection and construction of a specific electrical raceway system, instrumentation for thermal and circuit integrity measurements, followed by the application of the protective envelope system by qualified personnel.

This standard should be used to measure and describe the properties of materials, products, or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or risk of materials, products, or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment that takes into account all the factors that are pertinent to an assessment of the fire hazard of a particular end use.

OBJECTIVE

The objective of these tests is to evaluate the ability of Kaowool raceway fire barriers to protect the circuits contained within large and small cable trays and conduits that are representative of those commonly found at the V.C. Summers Nuclear Station.

TEST PROCEDURE

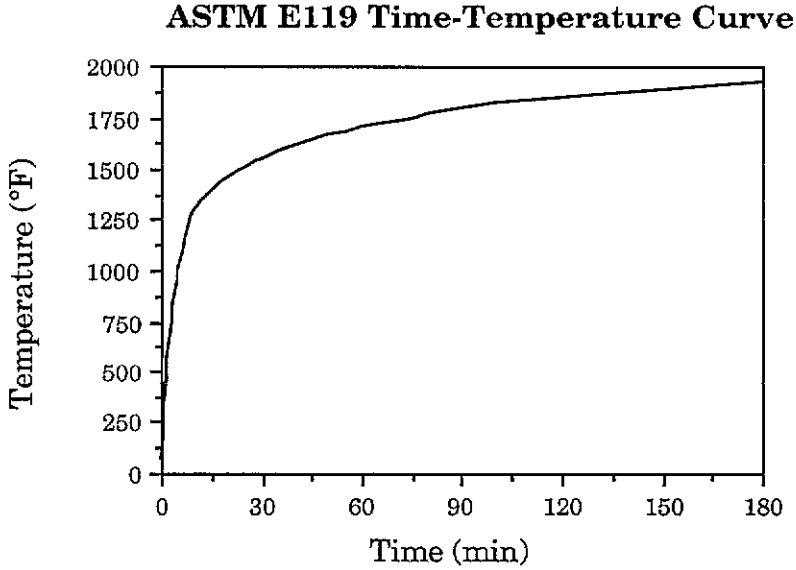
FIRE TEST FURNACE

The 7' x 12' x 40" deep (inside dimensions) horizontal test furnace is designed to allow the specimen to be uniformly exposed to the specified time-temperature conditions. It is fitted with 26 symmetrically-located diffuse-flame natural gas pipe

burners designed to allow an even heat flux distribution across the under surface of a horizontal test specimen. Furnace pressures may be maintained at any value from +0.03" W.C. to -0.05" W.C. The furnace has been constructed so that the front (40" x 12') wall section can be removed to allow the evaluations of wall/ceiling interfaces and other specific applications. The side and rear walls of the furnace are built up with masonry to meet the height of the test article.

The temperature within the furnace is determined to be the mathematical average of thermocouples located symmetrically within the furnace and positioned twelve inches away from the exposed face of the test specimen. The materials used in the construction of these thermocouples are those suggested in the test standard. During the performance of a fire exposure test, the furnace temperatures are monitored at least every 15 seconds and displayed for the furnace operator to allow control along the specified temperature curve. All data is saved to magnetic disk every minute.

The fire exposure is controlled to conform with the standard time-temperature curve shown in Figure 1, as determined by the table below:



Time (min)	Temperature (°F)
0	68
5	1000
10	1300
20	1462
30	1550
45	1638
60	1700
90	1792
120	1850
180	1925

Figure 1

The fire test is controlled according to the standard time-temperature curve, as indicated by the average temperature obtained from the readings of the furnace interior thermocouples symmetrically located across the specimen, 12 in. away. The thermocouples are enclosed in protection tubes of such material and dimensions that the time constant of the thermocouple assembly lies between 5.0 and 7.2

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minutes, as required by the E 119 standard. The furnace interior temperature during a test is controlled such that the area under the time•temperature curve is within 10% of the corresponding area under the standard time•temperature curve for 1 hour or less tests, 7.5% for those less than 2 hours and 5% for those tests of 2 hours or more duration.

The furnace pressure is controlled to be as nearly neutral with respect to the surrounding laboratory atmosphere as possible, measured at the vertical mid-height of the test specimen. Adjusting the neutral plane at that position results in a nominal +0.015 in. WC pressure at the top of the specimen (under the surface of the slab) and –0.015 in. WC pressure at the bottom of the specimen.

Correction Factor

When the indicated resistance period is 1/2 h or over, determined by the failure criteria of the standard, a correction shall be applied for variation of the furnace exposure from that prescribed, where it will affect the classification. This is to be done by multiplying the indicated period by two thirds of the difference in area between the curve of average furnace temperature and the standard curve for the first three fourths of the period and dividing the product by the area between the standard curve and a base line of 68°F (20°C) for the same part of the indicated period, the latter area increased by 3240°F•min to compensate for the thermal lag of the furnace thermocouples during the first part of the test. For a fire exposure in the test higher than standard, the indicated resistance period shall be increased by the amount of the correction. For a fire exposure in the test lower than standard, the indicated resistance period shall be similarly decreased for fire exposure below standard. The correction is accomplished by mathematically adding the correction factor, C, to the indicated resistance period.

The correction can be expressed by the following equation:

$$C = \frac{2\,I\,(A - A_s)}{3\,(A_s + L)}$$

where:

C = correction in the same units as I,
I = indicated fire-resistance period,
A = area under the curve of indicated average furnace temperature for the first three fourths of the indicated period,
A_s = area under the standard furnace curve for the same part of the indicated period, and
L = lag correction in the same units as A and A_s (54°F•h or 30°C•h (3240°F•min or 1800°C•min))

THERMOCOUPLES

Temperatures on the interior of the fire protected systems were measured with Type K, 24 GA, Chromel-Alumel, electrically-welded thermocouples formed from Chromel and Alumel wires of "Special Limits of Error (±1.1°C)," and covered with glass/glass insulation.

DATA ACQUISTION SYSTEMS

The outputs of the specimen thermocouples and furnace probes were monitored by two data acquisition systems. The first data acquisition system (used to monitor the furnace interior temperature) was a 40 channel system consisting of two 20 channel John Fluke Mfg. Co., Model Fluke Hydra Data Acquisition Units, and a Umax (Apple Macintosh compatible) computer. The second system consisted of a 300 channel Yokogawa, Inc., Model Darwin Data Acquisition Unit, and a Umax (Apple Macintosh compatible) computer. Both computers are programmed in LabVIEW 5.0 to send the command to the data acquisition systems to sample the data input lines and to convert the raw data into a usable format for display on screen and storage as an ASCII tab-delimited text file. These files are then opened in Microsoft EXCEL for tabular and graphical display in the test report.

HOSE STREAM TEST

According to the Test Plan, following the fire exposure test, the test specimen is removed from the test furnace and exposed to the impact, erosion, and cooling effects of a hose stream directed perpendicular to the exposed surface of the test specimen as outlined in the standard. The stream is delivered, for a minimum period of 5 minutes, through a 1-1/2 in. fog nozzle with an adjustable stream, with a nozzle pressure of 75 psi, a spray angle of 15° and with the tip of the nozzle a distance of 10 ft. from the exposed face. The nozzle is to flow a minimum of 75 gpm during the hose stream test. It is recognized that, with a three-dimensional object, not all surfaces can be attacked by the hose stream test. For this reason, the hose is moved about to allow the stream to play against the sides, inside and outside vertical surfaces and the underside of the item, resulting in little, if any, direct force being applied to the inside top surface of the specimen. This exposure, however, meets the intent of hose stream applications specified in USNRC GL 86-10 Supplement 1.

TEST ASSEMBLY

TEST SLAB

The test deck and bulkhead each consisted of a perimeter of 8 in. structural steel channel, welded together into an 8 ft by 13 ft rectangle, with the flanges inward. Steel rebar (#7) was welded to the interior web of the perimeter channel in a grid pattern spaced 12 in. o.c. The rebars were located 1-1/2 in. up from the bottom

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(exposed side) of the channel frame. Normal weight concrete was poured into the slab frames and vibrated to remove any air pockets. The assemblies were allowed sufficient curing to gain strength and then rapidly cured by exposure to 325°F air for five days, so as not to be severely damaged by the fire exposure.

The two slabs were then positioned at 90° to each other and welded together along the 13 foot length, to form a deck/bulkhead configuration, normally referred to as an "L-shaped" deck.

Holes were bored through the concrete slab to allow passage of thermocouple lead wires and the test articles to the cold side of the test assembly. After installation of the penetrating items, all holes bored through the slab and all blockouts were completely filled with concrete, ceramic fiber or other material sufficient to produce an adequate high temperature air seal. See Appendix B for complete drawings of the openings in both ceiling and wall slabs.

TEST ITEMS

Raceway materials used in this test were provided by Transco Products, Inc. All fire barrier materials were installed in accordance with Transco Products, Inc. design drawings, field instructions and/or installation procedures. A brief overview is contained herein. Due to the number and relative complexity of the test article configurations, each item and its protection system are outlined below, referenced by individual numbers. Application methods are presented in the "Fire Barrier Installation Drawings" contained in Appendix C. The complete assembly descriptions can be found in Section 3.2 of Appendix A as well as in the "Assembly Drawings" contained in Appendix B

Item 1: 4" diameter rigid steel conduit protected with three 1" thick layers of Kaowool ceramic fiber blanket.

Item 2: 1-1/4" and 4" diameter rigid steel, wall/ceiling (surface) mounted conduit bundle, protected as a common enclosure with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap was held to the concrete barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G.

Item 3: 6" x 6" (inside dimensions) covered steel ladder-back cable tray, protected with three 1" thick layers of Kaowool ceramic fiber blanket. The tray passed through ceiling and wall silicone foam penetration seals that were also covered with three 1" thick layers of Kaowool.

Item 4: 1" rigid steel conduit protected with three 1" thick layers of Kaowool ceramic fiber blanket.

Item 5: 6" x 36" (inside dimensions) covered steel ladder-back cable tray, protected with three 1" thick layers of Kaowool ceramic fiber blanket. The tray passed through ceiling and wall silicone foam penetration seals that were also covered with three 1" thick layers of Kaowool ceramic fiber blanket.

Item 6: 1-1/4" rigid steel wall/ceiling mounted conduit protected with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap was held to the concrete barrier using concrete expansion anchors, metal strips, washers and nuts as specified by SCE&G.

Item 7: 1" rigid steel conduit with a modified wrap. The conduit was protected with three 1" thick layers of Kaowool ceramic fiber blanket and two layers of #TCO-704A Intumescent Cloth.

Item 8: 12" x 12" x 6" x 16 gauge sheet metal ceiling mounted six-sided junction box. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap was overlapped onto the ceiling and held to the concrete barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G. Insulation pins with self-adhering bases were attached to the box prior to Kaowool installation for the purpose of initially attaching the ceramic blanket material to the box.

Item 9: 18" x 24" x 8" deep opening in the horizontal concrete slab filled full depth with Dow Corning #3-6548 RTV Silicone Foam. The exposed surface of the silicone foam was covered with Flamemastic 77 Coating. Prior to the test, the Flamemastic material was removed due to poor adhesion between the silicone foam and Flamemastic coating.

Item 10: Single air drop cable, protected three 1" thick layers of Kaowool ceramic fiber blanket. The air drop projected from the ceiling slab penetration and terminated into Test Item No. 3.

Item 11: 24" x 24" x 12" deep wall-mounted six-sided 16 gauge sheet metal junction box. Test Item 2 (conduit bundle) entered the top of the box while Test Item 1 (single 4" diameter conduit) entered the front of the box. The box was protected with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap was overlapped onto the wall and held to the barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G. Insulation pins with self-adhering bases were also attached to the box prior to Kaowool installation for the purpose of attaching the ceramic blanket to the box.

Item 12: 10" x 10" x 8" deep ceiling-mounted six-sided 16 gauge sheet metal junction box, connected to Test Item 2's 1-1/4" diameter conduit

approximately mid-span of this conduit where it was mounted on the concrete ceiling slab. The box was wrapped with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap was overlapped onto the ceiling and held to the barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G. Insulation pins with self-adhering bases were also attached to the box to hold the ceramic blanket material to the box.

More specific information related to the details of construction of the raceway system and raceway fire barrier systems can be found on the drawings of the test items and supports located in Appendix C: "Fire barrier Installation Drawings." A complete description of the entire project, including the test items can be found in Appendix A: "Test Plan."

THERMOCOUPLE PLACEMENT

In order to monitor temperatures in the interior of the raceways, bare #8 AWG stranded copper wire was instrumented with 24 GA, Type K, Chromel-Alumel electrically-welded thermocouples (Special Limits of Error: ±1.1°C, purchased with lot traceability and calibration certifications) placed nominally every 6 in. along the length of wire. The thermocouples were attached to the bare #8 AWG stranded copper wire by placing the thermojunction in direct contact with the surface of the wire and crimping the junction to the copper wire with a copper Buchanan 2011S open-end splice cap fastened in place with a Buchanan C-24 "pres-SURE" tool. Wires instrumented as such were installed in several conduits and laid atop tray rungs in various raceways, as described in the Test Procedure.

In order to get a realistic measurement of the temperatures on junction box and conduit surfaces, similar thermocouples were positioned nominally every 6 in. along the bottom surface of the conduits, being held in position by clamping under the head of a #8 x 32 x 1/4 in. long stainless steel round-head machine screw in a drilled and threaded hole at each location. The thermocouple leads were routed in the interior of the cable trays and along the conduit runs. Thermocouples were similarly installed in every square foot of junction box surfaces and within 1 in. of conduit to junction box interfaces.

TEST RESULTS

Insulation Resistance (IR) tests were done on specific cables in the test article at three different times: before the test began; after the fire test but before the hose stream test; and, after the hose stream test. The results of the IR tests are contained in Appendix F Quality Assurance. Data sheets that do not indicate post-test IR results are because the cables were destroyed.

The L-shaped test article was placed on the Laboratory's 7' x 12' horizontal test furnace, with the front wall removed and the side and back walls built up with concrete block to a total height of nominally 84" on December 28, 1999. The thermocouples were connected to the data acquisition system and their outputs verified. The laboratory ambient temperature was 65°F with a relative humidity of 28%. The furnace was fired at 1:26 p.m. and the ASTM E119 time-temperature curve followed for a total period of 60 minutes. The pressure differential between the laboratory surrounding the furnace and a point within the furnace level with the vertical midpoint of the exposed portion of the specimen was maintained at approximately +0.00 in. water column or greater throughout the test, following a five minute stabilization period. During the fire exposure, no visual openings into the raceway were observed.

The test was conducted on December 28, 1999 by Deggary N. Priest, Project Manager, with the following persons present:

Deggary N. Priest	-	Omega Point Laboratories (Project Manager)
Troy Bronstad	-	Omega Point Laboratories (Furnace Operator)
Connie Humphrey	-	Omega Point Laboratories (QA/QC Dept)
Cleda Patton	-	Omega Point Laboratories (QA/QC Dept)
Richard Beasley	-	Omega Point Laboratories (Technician/Welder)
Oscar Estrada	-	Omega Point Laboratories (Technician/Welder)
Laudencio Castanon	-	Omega Point Laboratories (Instrumentation Tech)
Mark Salley	-	U.S. NRC
Greg Jarosz	-	Transco Products Inc.
Sandra Bradford	-	Transco Products Inc.
Mark Sollie	-	Transco Products Inc.
L. Wayne Fields	-	Transco Products Inc.
Jim Fields	-	Transco Products Inc.
Mike Kammer	-	SCE&G
Tom Kekeisen	-	SCE&G
Andy Robosky	-	SCE&G
Woody Walker	-	Entergy
Mike Cumbest	-	Grand Gulf Nuclear Power Station
Bob Grubb	-	Grubb Engineering

Observations taken during the test period are as follows:

TIME (min:sec)	OBSERVATION
0:00	Test started @ 1:26 p.m.
1:45	Heavy smoke in the furnace.

TIME (min:sec)	OBSERVATION (continued)
5:00	Neutral pressure plane established at the test article's mid height.
8:20	Furnace still full of smoke. Zero visibility.
10:00	Same.
18:00	Same.
30:00	Same.
38:00	Smoke clearing. No visible changes in the exposed surfaces of the test specimens.
60:00	Furnace extinguished. No visible changes in the test specimens. The test article was removed from the furnace and positioned for the Meggering Test.
65:15	Meggering Test started.
72:26	Meggering Test completed. The test article was positioned for the hose stream test.
73:38	Hose stream test began.
78:38	Hose stream test completed. The hose was operated at a nozzle pressure of 75 psig, with a nozzle angle of 15°, from a distance of 10 feet, for a period of 5 minutes. The test article was positioned for a repeat of the Meggering Test.
80:50	Meggering Test started.
87:00	Meggering Test completed.

An in-depth description of the post-test condition of each protective envelope is presented later in this document.

In accordance with the test standard, a calculation for any correction to the indicated fire resistance period was done. The correction factor was then mathematically added to the indicated fire resistance period, yielding the actual fire resistance period achieved by these specimens:

ITEM	DESCRIPTION	TEST VALUE
C	Correction factor	0.08 min (5 seconds)
I	Indicated fire-resistance period	60 min

ITEM	DESCRIPTION (continued)	TEST VALUE
A	area under the curve of indicated average furnace temperature for the first three fourths of the indicated period	58 387°F•min
As	area under the standard furnace curve for the same part of the indicated period	58 269°F•min
L	lag correction	3240°F•min
	FIRE RESISTANCE PERIOD ACHIEVED BY THIS SPECIMEN ==>	60

Note: The standard specifies that the fire resistance be determined to the nearest integral minute. Consequently, if the correction factor is less than 30 seconds, and the test specimen met the criteria for the full indicated fire resistance period, no correction is deemed necessary.

The significant temperatures within the raceway systems at the end of the prescribed fire exposure are presented in the table below, as well as the actual fire resistance rating achieved for each "set" of thermocouples.

ID	AVERAGE		INDIVIDUAL		RATING (min)
	MAX. TEMP. (°F)	MAX. Allowed (°F)	MAX. TEMP. (°F)	MAX. Allowed (°F)	
Item #1					
4 in. conduit					
Surface:	309	309	378	385	60
Bare #8:	203	309	320	385	60
Item #2					
1-1/4 ~~1~~ in. conduit					
Surface:	224	309	263	385	60
Bare #8:	196	309	257	385	60
4" Conduit					
Surface:	224	310	645	386	56
Bare #8:	127	310	161	386	60

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Table continued from previous page:

ID	AVERAGE		INDIVIDUAL		RATING (min)
	MAX. TEMP. (°F)	MAX. Allowed (°F)	MAX. TEMP. (°F)	MAX. Allowed (°F)	
Item #3					
6 in. x 6 in. Tray					
Right Side Rail:	472	308	576	384	46
Left Side Rail:	473	308	651	384	46
Bare #8:	252	308	363	384	60
Item #4					
1 in. conduit					
Surface	633	308	770	384	43
Bare #8	458	307	606	386	49
Item #5					
6 in. x 36 in. Tray					
Right Side Rail:	282	309	363	385	60
Left Side Rail:	326	309	379	385	58
Bare #8:	205	309	239	385	60
Item #6					
1-1/4 in. conduit					
Surface:	284	310	339	385	60
Bare #8:	215	310	253	386	60
Item #7					
1 in. conduit					
Surface:	615	308	759	385	44
Bare #8:	465	307	613	384	50
Item #8					
Junction Box					
Surface:	350	311	384	386	54
Item #10					
Air Drop					
Bare #8:	828	308	1128	384	31
Item #11					
Junction Box					
Surface:	353	310	402	386	54
Item #12					
Junction Box					
Surface:	377	309	467	385	50

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Following the hose stream test and a suitable cooling period, observations were made of the test items and a disassembly was performed. Those observations are presented below.

ITEM	OBSERVATIONS
1	Some surface ceramic fiber removed, but the majority of the wrap remained in place and intact.
2	Some surface ceramic fiber removed, but the majority of the wrap remained in place and intact.
3	The Kaowool on the first (outer) layer was still white and partly missing. The second layer remained intact and white. The third layer appeared unaffected. All stainless steel bands remained intact and tight to the Kaowool. The cable tray tie wraps had melted off of the rungs. Cables appeared undamaged. The thermal short remained undamaged, with ceramic fiber in place and bands tight. The Zetex was brittle and fragile when removed. All ceramic fiber was in good condition. The wall penetration in the envelope was undamaged.
4	Some surface ceramic fiber removed, but the majority of the wrap remained in place and intact.
5	The outer layer of ceramic fiber was removed from this item by the hose stream. When the bands were cut, the Kaowool fell off in large chunks. The Unistrut had pulled away from the ceiling attachment. The second layer of ceramic fiber was tinted brown, but intact on the vertical section. The third layer was slightly stained, and fell off in large pieces. All cables appear undamaged. The tie wraps (plastic) had melted away from the tray rungs. The was no swelling on the cable jacketing, and the Bare #8 copper conductor was discolored. On the horizontal portion of the cable tray, the kaowool was stained and the tray discolored. The wall penetrations in the enclosure were not damaged. The cables in the horizontal section appear undamaged.
6 - 8	Some surface materials removed, but the majority of the wrap remained in place and intact.
10	The Kaowool on the air drop remained intact. The stainless steel bands were intact and tight. The entire 52" of cable was completely gone. The system was burned through at the point where the cable tray slot was positioned at the cover. Cable jacketing completely burned away.

ITEM	OBSERVATIONS (continued)
11	The insulation pins had lost their attachment to the box. The outer layer of Kaowool insulation had some damage, with a small amount of it being removed by the hose stream test. The insulation pins remained through the insulation and intact, even though separated from the box. The entire box assembly was held together by the 1/2" steel bands. Thermocouples within the box were intact and their paper labels remained legible.
12	Some surface ceramic fiber removed, but the majority of the wrap remained in place and intact.

CONCLUSIONS

Other than the observations, Insulation Resistance and thermocouple data supplied in this document, no other conclusions have been made.

Appendix A

TEST PLAN

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SOUTH CAROLINA ELECTRIC & GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION
ENGINEERING SERVICES SPECIFICATION

NUCLEAR OPERATIONS

COPY NO.

Kaowool Triple Wrap Raceway Fire Barrier Test for Conduits and Cable Trays

SP-0836

REVISION 1

A. F. Rohosky for GREGORY J. JAROSZ — 4/24/2000
ORIGINATOR — DATE

A. F. Rohosky — 4/24/2000
PRINCIPLE ENGINEER — DATE

M. C. Ka — 4/25/00
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Cross Reference
Transco TR400

RECORD OF CHANGES

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SECTION 1

DETAILED TEST PLAN

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Attachments

1 Test Slabs/ Test Item Orientation and Configuration
2 Test Item Cable Type/ Loading

1.0 SYNOPSIS

A one-hour fire test will be conducted in accordance with the performance requirements of NRC GL 86-10, Supplement 1, ASTM E-119 time/ temperature curve and as specified via this specification. The purpose of this test is to evaluate the ability of Kaowool raceway fire barriers to protect the circuits contained within large and small cable trays and conduits that are representative of those commonly found at the V.C. Summer Nuclear Station.

For this test, data will be collected in accordance with this test plan and applicable standards for the purpose of evaluating fire barrier performance to satisfy the requirements as defined in GL 86-10, Supplement 1. The primary intent is to adequately protect the circuits and to ensure these same components as installed in the plant are "free of fire damage" and are capable of performing their design function for a given duration following a fire exposure. The test is initially planned for a one-hour duration with testing being performed at Omega Point Laboratories (San Antonio, Texas). The test will be performed as a Nuclear Safety Related project.

The overall test specimen will consist of an "L" shaped concrete ceiling and wall assembly from which the simulated raceways will be attached to, suspended from and passed through. The sizes and shapes of these raceways are intended to represent conditions that bound equivalent or less severe configurations at VC Summer Nuclear Station. The bounding conditions to be qualified by this test have been defined by SCE&G engineering personnel and are described below.

The concrete deck section with its individual raceway specimens will be joined to a furnace where the raceways will be subjected to the one-hour fire endurance test. Immediately after the conclusion of the fire test, the deck and raceway specimens will be separated as a single unit from the furnace and subjected to additional testing (e.g. hose stream) as described in Section 7.3 of this document.

The raceway items to be tested and conditions they are intended to bound are as noted below.

1.1 Test Configurations (General)

1.1.1 Unless specifically noted otherwise, all raceway test specimens will contain cable and cable fills which are representative of that used at the V.C. Summer Nuclear Station. For the test, the cable fills in conduit and tray will be chosen based on the lowest possible fill of actual protected raceways found in the plant. Representative raceway sizes, among other criteria has been developed to support test configurations. The primary purpose of cable

fill selections is to create the smallest raceway/cable thermal mass in order to bound raceways with higher fills in the plant.

1.1.2 Unless specifically noted otherwise, all test raceway specimens will contain a bare #8 AWG copper wire and thermocouples for evaluating raceway temperatures during the test. The wire and thermocouples will be placed in accordance with the requirements of the USNRC Generic Letter 86-10, Supplement 1. Additional thermocouples outside of these requirements may be used for developmental purposes.

1.1.3 General orientation and configuration of the Test Items and Test slabs are provided in Attachment 1

1.1.4 Cable loading and type for each test item has been determined by SCE&G and is provided in Attachment 2.

1.2 Summary Test Item Descriptions

1.2.1 **Test Item 1:** 4" diameter rigid steel conduit. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket.

1.2.2 **Test Item 2:** 1.25" and 4" diameter rigid steel, wall/ceiling (surface) mounted conduit bundle. These items will be protected as a common enclosure with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap will be held to the concrete barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G.

1.2.3 **Test Item 3:** 6" x 6" (inside dimensions) covered steel cable tray. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket. The tray will pass through ceiling and wall silicone foam penetration seals that are also covered with three 1" thick layers of Kaowool.

1.2.4 **Test Item 4:** 1" rigid steel conduit. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket.

1.2.5 **Test Item 5:** 6" x 36" (inside dimensions) covered steel cable tray. This item is protected with 3 one-inch layers of Kaowool ceramic fiber blanket. The tray will pass through ceiling and wall silicone foam penetration seals that are also covered with three 1" thick layers of Kaowool.

1.2.6 **Test Item 6:** 1.25" rigid steel wall/ceiling mounted conduit. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap will be held to the concrete barrier using concrete expansion anchors, metal strips, washers and nuts as specified by SCE&G.

1.2.7 **Test Item 7:** 1" rigid steel conduit with modified wrap. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket and two layers of #TCO-704A Intumescent Cloth.

1.2.8 **Test Item 8:** 12" x 12" x 6" x 16 gauge sheet metal ceiling mounted six-sided junction box. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap will be overlapped onto the ceiling and held to the concrete barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G. Insulation pins with self-adhering bases will also be attached to the box prior to Kaowool installation for the purpose of attaching the ceramic blanket material to the box.

1.2.9 **Test Item 9:** 18" x 24" x 8" deep blank opening in the horizontal concrete barrier. This opening will be sealed with silicone foam the full depth of the slab. The exposed surface of the silicone foam will be covered with Flamemastic 77 coating.

1.2.10 **Test Item 10:** Single air drop cable. This item is protected with three 1" thick layers of Kaowool ceramic fiber blanket protected from the ceiling slab/ penetration and terminating into Test Item No. 3.

1.2.11 **Test Item 11:** 24" x 24" x 12" deep wall-mounted six-sided 16 gauge sheet metal junction box. Test Item 2 (conduit bundle) enters the top of the box while Test Item 1 (single 4" diameter conduit) enters the front of the box. The box will be protected with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap will be overlapped onto the wall and held to the barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G. Insulation pins with self-adhering bases will also be attached to the box prior to Kaowool installation for the purpose of attaching the ceramic blanket material to the box.

1.2.12 **Test Item 12:** 10" x 10" x 8" deep ceiling-mounted six-sided 16 gauge sheet metal junction box. This box is connected to Test Item 2's 1.25" diameter conduit approximately mid-span of this conduit where it is mounted on the concrete ceiling slab. The box is wrapped with three 1" thick layers of Kaowool ceramic fiber blanket. The wrap will be overlapped onto the ceiling and held to the barrier using concrete expansion anchors, metal strips, washers, and nuts as specified by SCE&G. Insulation pins with self-adhering bases will also be attached to the box prior to Kaowool installation for the purpose of attaching the ceramic blanket material to the box.

2.0 TEST FURNACE

The furnace to be used is Omega Point Laboratories standard floor furnace. The furnace shall be operated in accordance with the requirements of ASTM E-119 for the one-hour fire test duration. A general description of the furnace will be included in the final report.

3.0 PROTECTED TEST ITEMS

3.1 Materials

3.1.1 SCE&G will supply selected materials including conduit, cable, hanger, Kaowool, miscellaneous fasteners and hardware from warehouse stores at VC Summer Nuclear Station. Fire resistive coatings, cable tray, penetration seal materials, #TCO-704A Intumescent Cloth, and miscellaneous other items will be purchased as specified by SCE&G.

3.1.2 An accurate record of materials received and purchased in support of test specimen fabrication shall be included in the final test report. Transco Products Inc. Quality Control will document verification of received materials.

3.1.3 All references to silicone foam seals are Dow Corning #3-6548 RTV silicone foam seals. For the purpose of this test, the installed seals will be the same approximate thickness of the wall/ceiling slabs. The thermal performance of these seals is not under investigation as part of this test.

3.2 Test Item Descriptions

3.2.1 **Test Item 1:** The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used on the largest size protected conduit (horizontal, vertical, and radial bend) used at V.C. Summer. In addition, it is intended to demonstrate associated thermal shorts, and intersections with wall and floor mounted bundles.

- **Description**: This specimen consists of a 4" diameter rigid steel conduit located in free air. The conduit is installed as an "L" shape that hangs 51" vertically from the ceiling slab connected to a standard manufactured 90 degree radial sweep to extend 54-1/2" horizontally (outside measurements of the "L" shape). The manufactured sweep is attached to the straight sections of conduit with standard connectors. The vertical portion of the conduit extends through the ceiling and is grouted in place. A Unistrut P1000 hanger clamped to the conduit supports the horizontal conduit. The Unistrut is suspended from the ceiling slab by two ½" diameter pieces of "all-thread" rod.

  Prior to exiting the furnace, the vertical conduit assembly connects to a horizontal mounted/wrapped conduit bundle (Test Item 2). The

horizontal straight section of Test Item 1 terminates where it connects to the front of Test Item 11 which is a 24" x 24" x 12" wall mounted junction box.

The test assembly includes a radial bend between straight horizontal and vertical conduit legs, hanger thermal shorts, an interface with wall -mounted wraps, and an interface with a junction box. Cable fills are per Attachment 2.

- **Raceway Fire Barrier**: The conduit will be wrapped with three 1" thick layers of Kaowool ceramic blanket. In addition, the Unistrut is wrapped as a thermal short consisting of three layers of 1" thick Kaowool for 9" as measured from the centerline of the conduit. Flamemastic 77 will be applied to a 24" segment in the horizontal conduit run beginning from the outside wrap of Test Item 11. The wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

- **Fire Barrier Interface**: The Kaowool will interface with a different wrapped test item at each end (Test Items 2 and Test Item 11). No special overlaps or extra wrap material will be used at these interfaces outside of the three 1" thick layers of Kaowool that protect each independent item.

3.2.2 **Test Item 2**: The purpose of this specimen is to evaluate and bound the Kaowool fire barrier wrap protecting the largest and smallest surface mounted wall and ceiling multiple conduits and condulets found at V.C. Summers. Selected pull boxes and junction boxes have also been incorporated into this test item. In addition, it is intended to demonstrate associated wall and ceiling mounted thermal shorts, as well as intersections with other protected raceways.

- **Description**: This specimen consists of a "L" shaped wall and ceiling mounted conduit bundle that includes one 1.25" and one 4" diameter rigid steel conduit spaced approximately 12" apart. The elbows of the "L" shapes will consist of standard manufactured 90 degree bends that are attached to the straight sections with conduit connectors. The horizontal ceiling mounted portion of the conduit bundle terminates through the ceiling utilizing a condulet (pulling "L") on the 4" diameter conduit and a manufactured 90degree bend for the 1.25" conduit. The conduits are then grouted in place where they individually exit the furnace through the concrete ceiling slab. The ceiling mounted 1.25" conduit is interrupted approximately mid-span where it is attached to Test Item 12 which is a 10" x 10" x 8" junction box. The vertical sections of each conduit terminate where they are attached to the top

of item 11 which is a 24" x 24" x 12" deep wall mounted junction box.

Prior to exiting the concrete ceiling slab, the conduit bundle assembly interfaces with a 4" diameter free-air conduit (**Test Item 1**) that passes between the 4" and 1.25" conduits. The conduits are mounted/clamped to Unistrut P1000 hangers that are anchored to both the wall and ceiling concrete slabs in order to show surface mounted hangers for both conduit orientations. The Unistrut extends approximately 8" out beyond the wall conduit bundle whereas the horizontal ceiling conduits are mounted to Unistrut that extend across the length of ceiling slab thus allowing the demonstration of thermal shorts into the wrap envelop. The test assembly includes conduit connectors between each straight leg and the radial bends of the conduits as well as couplings between the conduits and junction boxes. Cable fills are per Attachment 2.

- **Raceway Fire Barrier**: The conduits will be wrapped as a single envelope with three 1" thick layers of Kaowool ceramic blanket overlapped onto the concrete wall and ceiling barriers. The Unistrut hangers are incorporated into the primary envelope whereas portions of Unistrut extending outside of the envelope are then to be wrapped as thermal shorts (using three layers of 1" thick Kaowool) continuing for a distance of 9" as measured from the centerline of the conduit. The wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

- **Fire Barrier Interface**: The Kaowool envelope will overlap the barrier. The overlapping ceramic blanket will be held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details. Where Test Item 2 mates with Test Items 1 and 11, all envelope interfaces will consist of simple staggered butt joints (no additional layers of ceramic blanket are used at these interfaces).

3.2.3 **Test Item 3**: The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used on a smaller sized protected cable tray (horizontal, vertical, and radial bend) used at V.C. Summer. In addition, it is intended to demonstrate any associated thermal shorts and intersections with wall and ceiling penetration seal assemblies.

Description: This test specimen consists of a 6" x 6" (inside dimensions) steel ladder-back cable tray. The tray is installed as an "L" shape that hangs 55-7/8" vertically from the ceiling slab and then turns in a radial bend to extend 68-3/4" horizontally (both measurements are taken from a hypothetical right angle inside corner of the vertical and horizontal tray legs). The radial bend attaches to the straight tray

sections with connector plates and screws. The open tops of the horizontal, vertical, and radial bend tray sections are equipped with covers that are attached to the trays with stainless steel banding. A Unistrut P1000 hanger supports the horizontal tray section while also acting as a thermal short to the tray for the test. The Unistrut hanger is suspended from the ceiling by two ½" all thread rods. The tray is also attached to supplemental supports on the outside of the furnace area for additional support. Each tray end exits the furnace through individual 24" x 24" x 8" deep penetrations in the ceiling and wall slabs. Each penetration is sealed approximately full depth with Dow Corning #3-6548 RTV Silicone Foam. Cable fills are per Attachment 2.

- **Raceway Fire Barrier**: The tray will be wrapped with three 1" thick layers of Kaowool ceramic blanket. In addition, the Unistrut is wrapped as a thermal short consisting of three layers of 1" thick Kaowool covered for 9" as measured from the outside edge of the tray. The wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6. A portion of the outside layer of Kaowool extending 24" out from the wall penetration seal envelope is covered with aluminized Zetex to provide additional developmental information for the test.

- **Fire Barrier Interface**: All three layers of the Kaowool tray wrap will butt against the silicone foam penetration seals located in the wall and ceiling barriers. The remaining exposed surfaces of the penetration seals will then be covered with three 1" layers of Kaowool, which will be overlapped a nominal 3" over the perimeter of the surrounding concrete. The overlapping ceramic blanket will be held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details.

3.2.4 **Test Item 4**: The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used on the smallest size protected conduit (horizontal, vertical, and radial bend) used at V.C. Summer. In addition, it is intended to demonstrate any associated thermal short and intersections with wall and floor assemblies.

Description: This specimen consists of a 1.00" diameter rigid steel conduit located in free air. The conduit is installed as an "L" shape that hangs 36" vertically from the ceiling slab and then turns in a radial bend to extend 58-1/2" horizontally (outside corner measurements). The radial bend consists of a standard manufactured 90 degree bend that attaches to the straight sections of conduit with connectors. The conduit is grouted in place where it enters and exits the furnace through the concrete wall and ceiling slabs. Prior to exiting the

furnace, the conduit assembly connects to both a horizontal and vertical wall mounted/wrapped conduit (**Test Item 6**) at both ends. A Unistrut P1000 hanger clamped to the conduit supports the horizontal conduit section and serves as a hanger thermal short for the test. Cable fills are per Attachment 2.

- **Raceway Fire Barrier**: The conduit will be wrapped with three 1" thick layers of Kaowool ceramic blanket. In addition, the Unistrut is wrapped as a thermal short consisting of three 1" thick layers of Kaowool for 9" as measured from the centerline of the conduit. The wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

- **Fire Barrier Interface**: The Kaowool will butt against the horizontal and vertical barrier as an incorporation of the wrap of Test Item 6 at both ends.

3.2.5 **Test Item 5:** The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used for the largest sized protected cable tray (horizontal, vertical, and radial bend) used at V.C. Summer. In addition, it is intended to demonstrate any associated thermal shorts and intersections with wall and ceiling penetration seal assemblies.

Description: This test specimen consists of a 6" x 36" (inside dimension) steel ladder-back cable tray. The tray is installed as an "L" shape that hangs 56" vertically from the ceiling slab and then turns in a radial bend to extend 68" horizontally (both measurements are taken from a hypothetical right angle inside corner of the vertical and horizontal tray legs). The radial bend is held to the straight tray sections with connector plates and screws. The open tops of the vertical, horizontal and radial bend tray sections are equipped with covers attached to the tray with stainless steel banding. A Unistrut P1000 hanger supports the horizontal tray section in order to demonstrate a hanger thermal short to the tray. The Unistrut hanger is suspended from the ceiling with ½" all thread rod which is also incorporated into the thermal short wrap due to its proximity to the tray. The tray is also attached to supplemental angle steel hangers on the outside of the furnace area for additional support. Each tray end exits the furnace through individual 48" x 24" x 8" deep penetrations in the ceiling and wall slabs. Each penetration is sealed approximately full depth with Dow Corning #3-6548 RTV Silicone Foam. Cable fills are per Attachment 2.

- **Raceway Fire Barrier**: The tray will be wrapped with three 1" thick layers of Kaowool ceramic blanket. In addition, the Unistrut and "all-

thread" rod is wrapped as thermal shorts consisting of three layers of 1" thick Kaowool covered for 9" as measured from the edge of the tray. Flamemastic 77 will be applied to a 36" segment in the horizontal and vertical section of the tray beginning from the elbow. The wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

- **Fire Barrier Interface**: The Kaowool will butt against the silicone foam penetration seals located in the wall and ceiling barriers.. The remaining exposed surfaces of the penetration seals will be covered with three 1" thick of Kaowool, which will be overlapped a nominal 3" over the perimeter of the surrounding concrete. The overlapping ceramic blanket is held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details.

3.2.6 **Test Item 6**: The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used on the smallest size protected, surface mounted conduit (horizontal, vertical, and radial bend) used at V.C. Summer. In addition, it is intended to demonstrate any associated thermal short and intersections with wall and floor assemblies.

- **Description**: This specimen consists of a 1.25" diameter surface mounted rigid steel conduit. The conduit is installed as an "L" shape that hangs 35-3/4" vertically from the floor slab and then turns in a radial bend to extend 60" horizontally (inside measurements). The radial bend is a standard manufactured 90 degree bend and is attached to the straight conduit sections with connectors. A second radial bend is used to allow the ceiling mounted conduit to turn up and exit the concrete barrier. Where the conduit exits the wall, it is connected to a condulet (pulling "L") in order to make its right-angle turn. The conduit is grouted in place where it exits the furnace through concrete wall and ceiling slabs. Prior to exiting the furnace, the conduit assembly interfaces with a 1.00" diameter free-air conduit wrap (Test Item 4). The horizontal and vertical legs of the conduit are mounted/clamped to two Unistrut P1000 hangers that are anchored to the concrete slabs. The Unistrut extends approximately 18" out beyond the conduit. The Unistrut demonstrates wall and ceiling surface mounted hanger thermal shorts.

- **Raceway Fire Barrier**: The conduit will be wrapped with three 1" thick layers of Kaowool ceramic blanket overlapped onto the concrete barriers. The wrap is held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details shown on SCE&G drawing number 04 4461 E-201-240, revision 6. In addition, the Unistrut is wrapped as a thermal short consisting of three

layers of 1" thick Kaowool outside of the primary envelope for 9" as measured from the centerline of the conduit. Flamemastic 77 will be applied to the surface of the Kaowool wrap for 24" vertically and horizontally from the intersections of Test Item 4.

- **Fire Barrier Interface**: The Kaowool will butt against the horizontal and vertical barrier. This test item will interface with Test Item 4 where the conduit exits the furnace through the concrete wall and ceiling. No extra layers of Kaowool wrap will be used at either of the interfaces with Test Item 4.

3.2.7 **Test Item 7**: The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used on the smallest size protected conduit (horizontal, vertical, and radial bend) used at V.C. Summer. In addition, it is intended to demonstrate associated thermal short and intersections with wall and ceiling assemblies.

- **Description**: Same at Test Item 4.

- **Raceway Fire Barrier**: Reference Test Item No. 4. In addition, the entire assembly will be covered with two layers of Transco Products Inc. #TCO-704A Intumescent Fabric tied with 18 gauge stainless steel wire every 9" (maximum) on center. The Kaowool wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

- **Fire Barrier Interface**: The Kaowool will butt against the horizontal and vertical barrier.

3.2.8 **Test Item 8**: The purpose of this specimen is to evaluate and potentially bound (qualify) the Kaowool fire barrier wrap used on a typical large protected junction box used at V.C. Summer.

- **Description**: This specimen consists of a 12" X 12" X 6" X 16 gauge sheet metal junction boxmounted directly to the bottom of the ceiling slab.

- **Raceway Fire Barrier**: The junction box will be wrapped with three 1" thick layers of Kaowool ceramic blanket. The ceramic blanket is overlapped onto the concrete barriers and is held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details. Insulation pins with self-sticking backs and speed washers are also used to help secure the wrap to the junction box.

- **Fire Barrier Interface**: The Kaowool will cover the junction box and be attached to the horizontal barrier in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

3.2.9 **Test Item 9**: The purpose of this specimen is to subjectively evaluate a typical silicone foam seal covered with Flamemastic 77 when subjected to a one-hour ASTM E- 119 time/temperature curve fire test and subsequent fire hose stream test.

- **Description**: This specimen consists of a 18" x 24" x 8" deep opening sealed full depth with silicone foam covered with Flamemastic 77, at approximately ¼" wet thickness.

- **Raceway Fire Barrier**: NA

- **Fire Barrier Interface**: NA

3.2.10 **Test Item 10**: The purpose of this specimen is to evaluate the Kaowool fire barrier wrap used for a representative air drop from the floor/ ceiling slab into a cable tray (**Test Item 3**).

- **Description**: A single #EKB1b cable attached to a bare #8 AWG copper wire along with thermocouples drops through an opening in the ceiling slab which is later grouted and then falls for a distance of approximately 52" into a cable tray (Test Item 3) and then exits the furnace as part of Test Item 3's wall penetration seal.

- **Raceway Fire Barrier**: The cable will be wrapped with three 1" thick layers of Kaowool ceramic blanket from the ceiling to the cable tray wrap. The wrap is installed in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6.

- **Fire Barrier Interface**: The Kaowool will butt against the concrete ceiling barrier and tray wrap.

3.2.11 **Test Item 11**: The purpose of this specimen is to evaluate and potentially bound the Kaowool fire barrier wrap used on a typical large protected junction box used at V.C. Summer. This specimen also demonstrates attachments/interfaces with single and multiple conduits/wraps as well as wrap interfaces without attachment of the conduit to the box (as with Test Item 1).

- **Description**: This specimen consists of a 24" X 24" X 12" X 16 gauge

sheet metal junction mounted directly to the wall slab. The back of the box (against the concrete) is equipped with a hole to allow cable and thermocouple wire to exit the specimen and furnace.

- **Raceway Fire Barrier**: The junction box will be wrapped with three 1" thick layers of Kaowool ceramic blanket. The ceramic blanket is overlapped onto the concrete barriers and is held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details. Insulation pins with self-sticking backs and speed washers are also used to help secure the wrap to the junction box.

- **Fire Barrier Interface**: The Kaowool will cover the junction box and be attached to the vertical barrier in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6. Test Item 1 (conduit) enters the box's wrap due to its proximity with the box. Where this occurs, the remainder of the box's wrap is incorporated into Test Item 1's primary wrap.

3.2.12 **Test Item 12**: The purpose of this specimen is to evaluate and potentially bound the Kaowool fire barrier wrap used on a typical small protected junction box used at V.C. Summer. This specimen also demonstrates attachments/interfaces with single conduits and multiple conduit wraps.

- **Description**: This specimen consists of a 10" X 10" X 8" X 16 gauge sheet metal junction box mounted directly to the ceiling slab. The box is attached to/positioned about mid span on the ceiling mounted 1.25" conduit in Test Item 2.

- **Raceway Fire Barrier**: The junction box will be wrapped with three 1" thick layers of Kaowool ceramic blanket. The ceramic blanket is overlapped onto the concrete barriers and is held in place with metal strips, fender washes and concrete expansion anchors per SCE&G installation details. Insulation pins with self-sticking backs and speed washers are also used to help secure the wrap to the junction box.

- **Fire Barrier Interface**: The Kaowool will cover the junction box and be attached to the horizontal barrier in accordance with the general instructions shown on SCE&G drawing number 04 4461 E-201-240, revision 6. The box wrap becomes partially incorporated into the ceramic blanket wrap that is used to envelope Item 2.

4.0 INSTALLATION DETAILS

4.1 General Instructions

4.1.1 If written instructions are not available at the time of installation for any portion of this test including raceway assembly and intumescent cloth installation, the Transco Products Inc. Quality Control Inspector shall document and verify (in writing) step-by-step methods used for installation.

4.1.2 Test installation records will be included as an appendix to the final test report.

4.1.3 Materials used for this test shall be received and installed in accordance with latest approved revision of Transco Products Inc.'s Quality Assurance Program and applicable procedures. Transco Products Inc. Quality Control personnel will witness all fire barrier envelope installation.

4.2 Fire Barrier Materials

4.2.1 The Kaowool and Flamemastic 77 raceway fire barrier materials shall be installed by Transco Products, Inc. personnel in accordance with SCE&G drawing 201-240, revision 6 and SCE&G maintenance procedures or as noted in the final QC records for this test.

4.2.2 The Kaowool wraps shall be made in three distinctive layers, butt jointed. Each adjacent layer and preceeding layer shall be staggered a minimum of 6" (where practical).

4.2.3 Where applied, the Flamemastic 77 shall be applied to a ¼" wet thickness and be permitted to fully cure in accordance with manufacturers recommendations procedures or as noted in the final QC records for this test.

4.3 Silicone Foam Penetration Seals

4.3.1 The silicone foam penetration seals shall be installed using accepted industry standard methods.

4.3.2 THERMOCOUPLES

5.1 Fire Barrier Envelope

5.1.1 The fire barrier envelope is considered all areas of the specimen on the exposed side of the test slab. For these areas, thermocouples shall be mounted to the specimen to gather temperature data for the duration of the fire test. Omega Point Laboratories personnel in accordance with guidance

specified in NRC GL 86-10 and Supplement 1 shall perform thermocouple placement (quantity and locations) as follows:

- **"Cable Trays** - The temperature rise on the unexposed surface of a fire barrier system shall be installed on the cable tray and be measured by placing the thermocouples every 152-mm [6 inches] on the exterior surface of each tray side rails between the cable tray side rail and the fire barrier material.

  Internal raceway temperatures shall be measured by a stranded AWG 8 bare copper conductor routed on the top of the cable tray rungs along the entire length of the tray. This conductor shall run down the longitudinal center of the cable tray run with thermocouples installed every 152-mm (6- inches) along the length of the copper conductor. Thermocouples shall also be placed immediately adjacent to all structural members, supports, and barrier penetrations. ..."

- **Conduits** - The temperature rise of the unexposed surface of a fire barrier system installed on a conduit should be measured by placing thermocouples every 152 mm [6 inches] on the exterior conduit surface between the conduit and the unexposed surface of the fire barrier material. These thermocouples should be attached to the exterior conduit surface opposite of the test deck and closest to the furnace fire source.

  Internal raceway temperatures should be measured by a stranded AWG 8 bare copper conductor routed through the entire length of the conduit system with thermocouples installed every 152 mm [6 inches] along the length of the copper conductor. Thermocouples should also be placed immediately adjacent to all structural members, supports, and barrier penetrations...."

- **Free-Cable Air Drops-** Thermocouples will be installed on the stranded 8 AWG wire used for demonstrating the "free-cable air drop" every 152 mm [6 inches] in accordance with the same requirements for monitoring internal conduit/ cable tray temperatures.

- **Junction box-** Thermocouples will be installed in accordance with the requirements of Generic Letter 86-10, Supplement 1.

- **Penetration Seal-** For purpose of this test, at least three thermocouples will be placed on each of the four penetration seals used as part of Test items 3 and 5. The thermocouples will be placed somewhat evenly spaced across the silicone foam surfaces at the

Kaowool ceramic blanket interface. These thermocouples are used for gathering developmental information

5.1.2 In accordance with NRC GL 86-10, Supplement 1 requirements, "for the thermocouples installed on conduits, cable tray side rails, and bare copper conductors, a ± 13 mm (±1/2 inch) installation tolerance is acceptable". The tolerance is considered to be from the point of individual thermocouple placement and not compounded from one thermocouple to the next (i.e., all thermocouples can not be 6 1/2" from each other but rather must be ±1/2" from the measured 6" [minimum] mark on the item being monitored.)

5.1.3 For test items 4 and 5, additional thermocouples shall be installed on the first and second layers of Kaowool to measure the temperature rise across the barrier during the performance of the test. This temperature data is collected for information purposes only.

5.1.4 All Test Item temperatures shall be monitored using thermocouples (with special limits of error equal or less than 1.1°C [34°F]). Thermo-junctions of all specimen thermocouples shall be welded connections. All thermocouple wire shall be supplied with certifications of purity, accuracy, and calibration.

5.1.5 The installation and location of each uniquely identified thermocouple shall be mapped by Test Laboratory personnel and Transco Quality Assurance personnel and become part of the permanent records of the test.

5.1.6 All thermocouple certifications shall also become a permanent record of the test.

5.2 <u>Test Furnace</u>

5.2.1 Furnace atmosphere thermocouples shall be placed in accordance with ASTM E119-88 requirements. Additional furnace atmosphere thermocouples may be placed at the laboratory's discretion to supplement data acquisition in areas where furnace atmosphere thermocouples cannot be mounted to satisfy ASTM E-119 requirements because of the specimen's configuration, et cetera.

5.2.2 The installation and location of each uniquely identified thermocouple shall be mapped by Test Laboratory personnel and Transco Quality Assurance personnel and become part of the permanent records of the test.

5.2.3 All thermocouple certifications shall also become a permanent record of the test

5.0 FIRE TEST

6.1 Fire Test Duration / Data

6.1.1 The fire test shall be conducted in accordance with the ASTM E-119 time/temperature curve (and temperature tolerance) for a minimum of one (1) hour. The SCE&G Responsible Engineer shall be solely responsible to authorize extensions beyond one hour.

6.1.2 As a minimum, temperature data provided by both furnace and specimen thermocouples should be monitored and documented at nominal two to five minute intervals. The laboratory shall verify and monitor thermocouple performance, in addition to documenting visual specimen performance and occurrences (*i.e.*, smoke, et cetera) for the duration of the test.

6.1.3 It is intent of the test to gather information on as many different raceway configurations as possible. As such, several raceway test specimens exhibit multiple features (*i.e.*, the large tray demonstrates the tray wrap, penetration seal interfaces, hanger thermal shorts, etc.). Testing shall continue on all components for the duration of the test.

7.0 PRE & POST EXPOSURE TESTING/ DATA COLLECTION

7.1 Pre- Test Megger

7.1.1 All circuits (or as designated by SCE&G engineers) are to be Meggered prior to performance of the fire test. Meggering of these circuits shall be performed in accordance with the guidance of NRC GL 86-10, Supplement 1. The Meggering equipment should be calibrated and traceable to a National Standard.

7.1.2 The responsible Transco QC personnel shall document and record the results of the Meggering for incorporation into the final test report.

7.2 Post- Test Megger

7.2.1 At the discretion of the SCE&G Responsible Engineer, selected circuits may be targeted for Meggering following completion of the fire exposure. Should circuits be selected, they are to be tagged, test instrumentation should be detached expeditiously and Meggered in accordance with section 7.1.1.

7.2.2 The responsible Transco QC personnel shall document and record the results of the Meggering for incorporation into the final test report.

7.3 Hose Stream Test

7.3.1 After the conclusion of the fire test, the raceway fire barrier specimens (along with the surrounding penetration seals) shall be subjected to the following hose stream tests (as identified in NRC GL 86-10, Supplement 1): (The hose supply line should have a calibrated gauge for the 75 psi and 75 gpm that is traceable to a National Standard).

- The stream applied at random to all exposed surfaces of the test specimen through 3.8 cm (1 ½-inch) fog nozzle set at a discharge angle of 15 degrees with a nozzle pressure of 517 kPa (75psi) and a minimum discharge of 284 lpm (75 gpm) with the tip of the nozzle at a maximum of 3 meters (10 feet) from the test specimen. The duration of the hose stream application - 5 minutes for 1-hour barriers.

7.3.2 The responsible Transco QC personnel shall verify and document the type of hose stream, distance, time, et cetera employed in the hose stream test for incorporation into the final test report.

7.4 Post Testing Visual Examination

7.4.1 Following completion of the above testing and once sufficient time has elapsed to permit safe visual inspection, external inspection and observations of each test item shall be completed by Test Laboratory and Transco QC personnel.

7.4.2 Examination of cable conditions for each of the test items shall take place following removal of the fire barrier material or cable from the raceway, if feasible. Test Laboratory and Transco QC personnel shall complete these inspections and observations of each test item.

8.0 TEST REPORT

The laboratory performing the test shall provide a written report, which accurately describes the following minimum elements of the test:

- Verification of specimen materials and dimensions used;
- Verification of fire barrier envelope materials, dimensions, and installation techniques (procedures) used;
- Verification of general furnace construction/dimensions and locations of burner, thermocouples, et cetera;

- Verification of specimen thermocouple locations;
- Verification of standards used for conducting fire test along with record of both furnace atmosphere and specimen temperature data acquired during test;
- Record of furnace pressure during fire test;
- Record of visual occurrences/observations of fire and hose stream tests;
- Record of hose stream test(s);
- Photographic records of specimen before fire barrier envelope installation, after fire barrier installation, and post fire/hose stream tests;
- Post test observations including measurements of material loss/ degradation, et cetera;
- Certification of DC #3- 6548 RTV Silicone Foam
- Certification of the report by the agency performing test;
- QC records and notes from installation and test (Report Appendix);
- Record of test items' thermocouple temperature readings.
- Any other items specifically identified for inclusion as identified in this test plan

ALL TEST RECORDS, NOTES, CERTIFICATIONS, REQUIRED BY THIS TEST WILL BE LEGIBLE AND SUITABLE FOR REPRODUCTION.

ATTACHMENT 1

SEE:

ITEM #	PAGE (S)
1	304
2	311
3	323/339
4	340/345
5	347/348
6	365/373
7	374/384
8	385/391/392
9	393/397/398
10	399
11	404
12	404

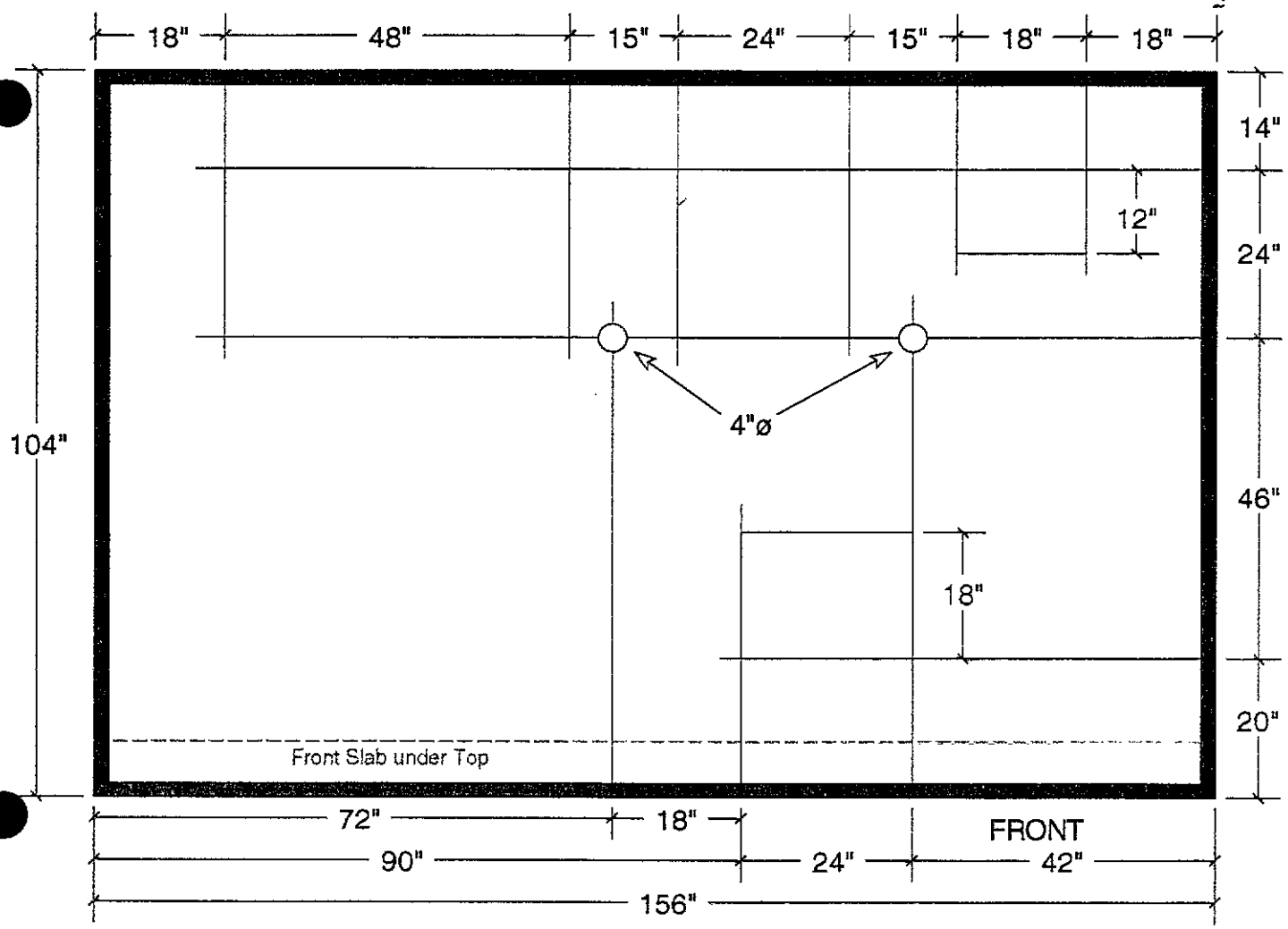
ATTACHMENT 2

SEE
PAGE 332
PAGE 361

Appendix B

ASSEMBLY DRAWINGS

OMEGA POINT LABORATORIES



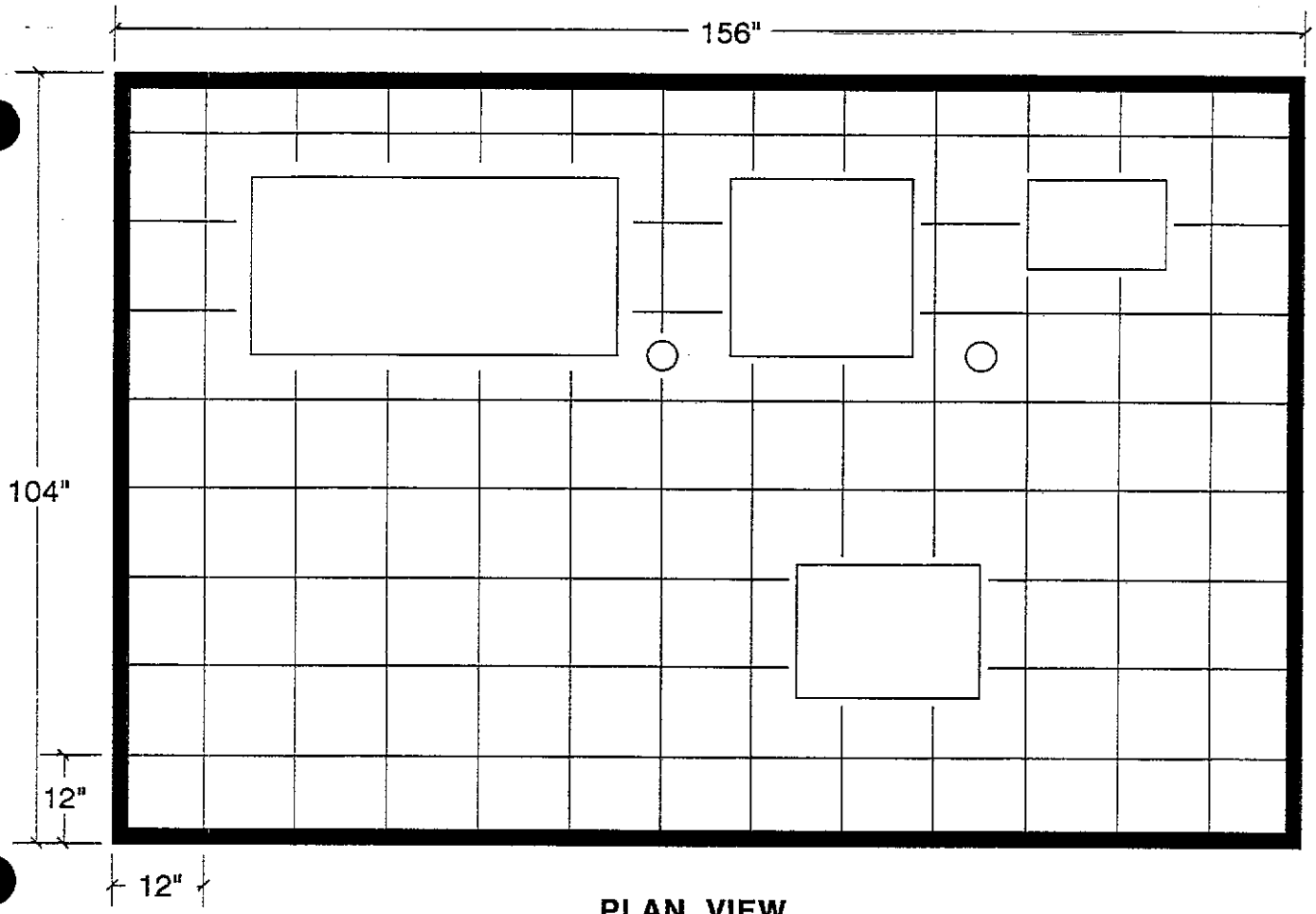
Note:
The top slab of 8" thick, normal-weight concrete, contained four rectangular and two cylindrical blockouts of sizes and position as indicated.

PLAN VIEW

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900
TRANSCO PRODUCTS INC.
Fig. 1 Top Slab Layout
Drwn by: D.N.Priest Date: 11/15/99 OPL Approval: C Humphrey Date: 11/16/99 TPI Approval: Greg Lacy Date: 12/16/99

Scale: 1/2"=1'

OMEGA POINT LABORATORIES



PLAN VIEW

NOTE:
The slab was formed by surrounding the perimeter with 8" structural steel channel, with #5 steel rebar, 12" o.c. with a minimum embedment of 1-1/2". The form was then filled with normal weight concrete, vibrated into position and allowed to set for one week. It was then acceleratedly cured at 350°F for five days.

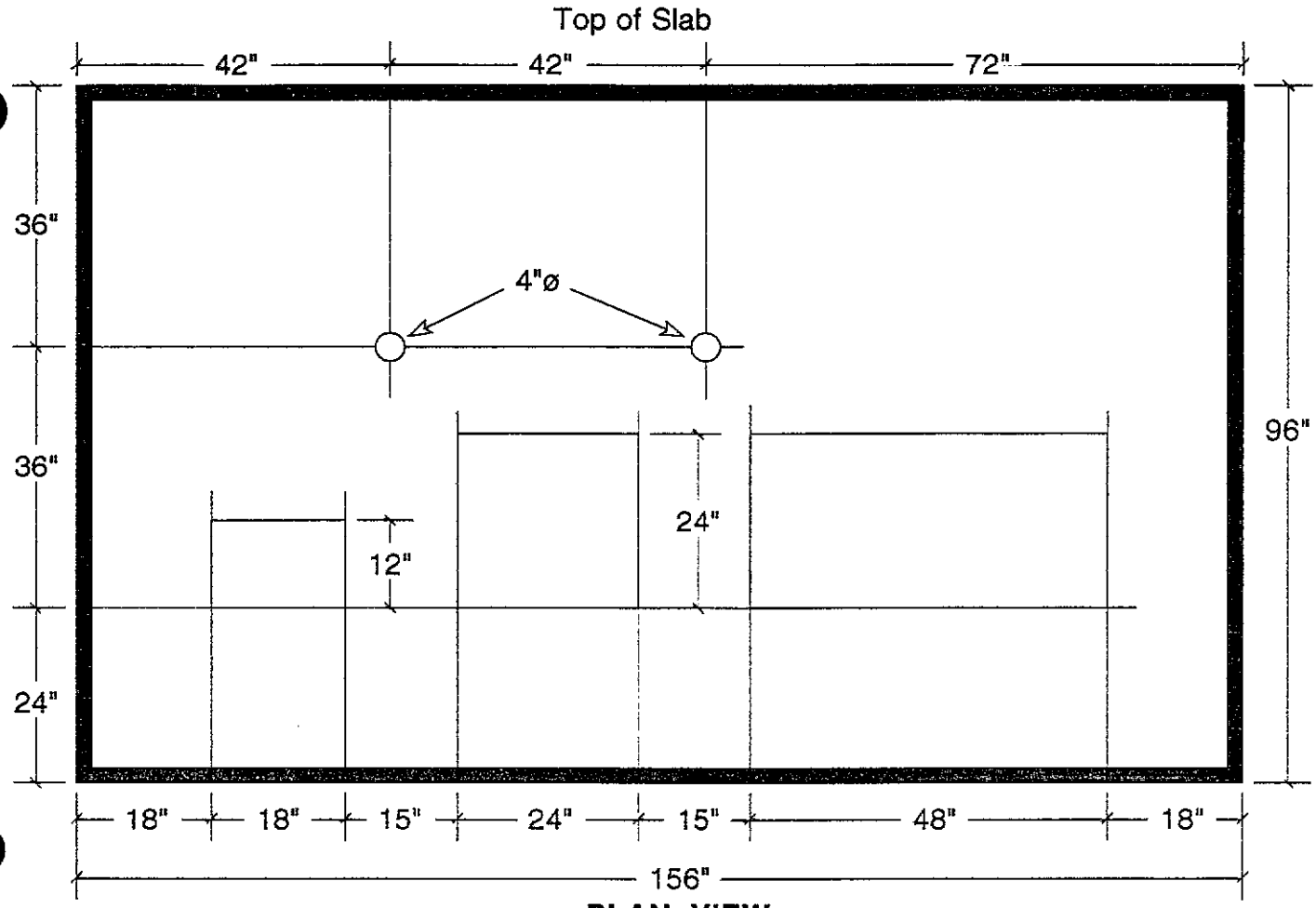
Amount of Concrete: 2.4 yds
8" Channel: 42 ft
#5 Rebars: 155 ft

Weight of slab = 10,580 lbs

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900
TRANSCO PRODUCTS INC.
Fig. 2 Top Slab Reinforcement
Drwn by: D.N.Priest Date: 11/15/99 OPL Approval: C Humphrey Date: 11/16/99 TPI Approval: Greg Savoy Date: 12/16/99

Scale: 1/2"=1'

38



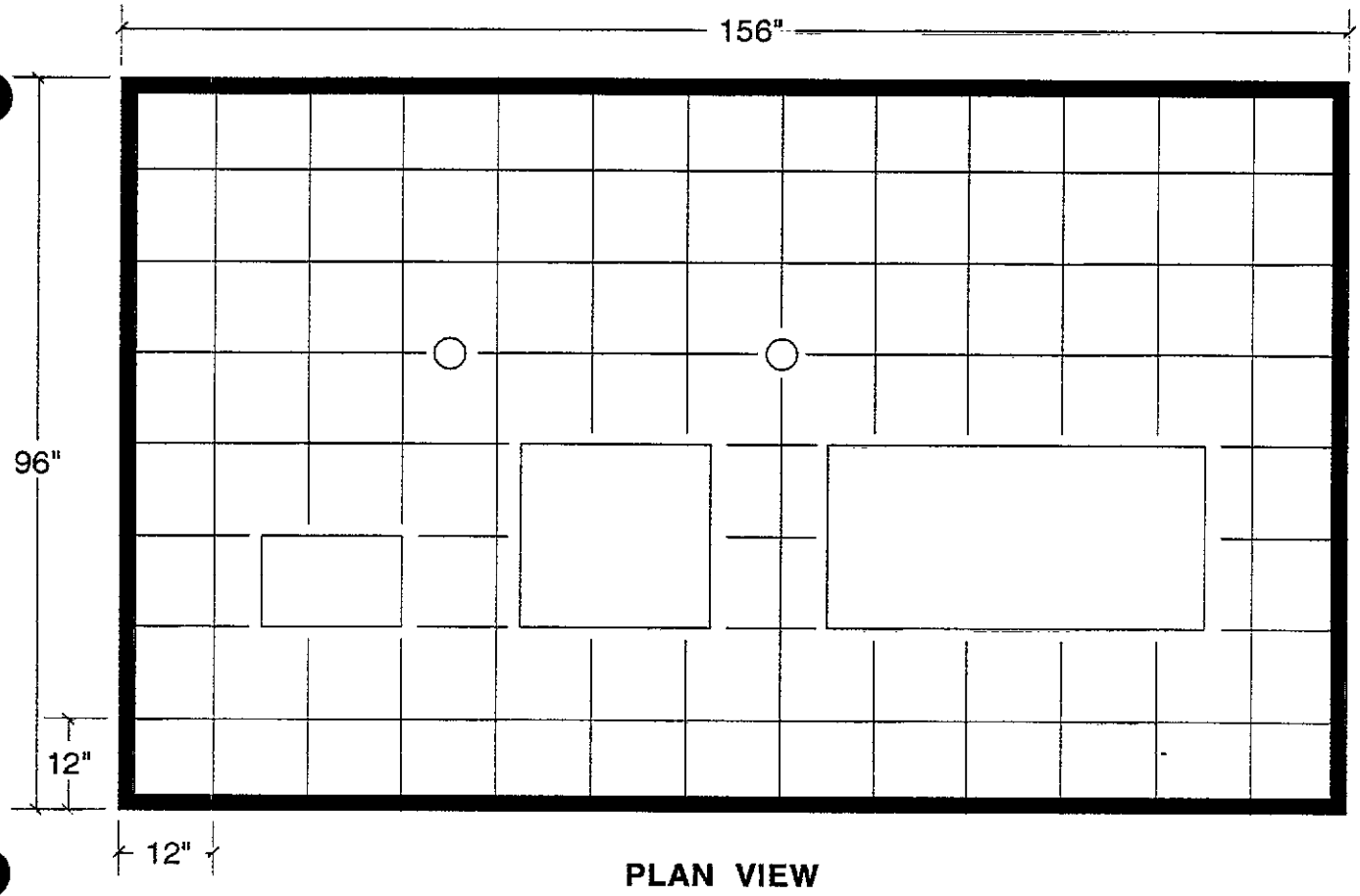
PLAN VIEW

Note:
The vertical slab of 8" thick, normal-weight concrete, contained three rectangular and two cylindrical blockouts of sizes and position as indicated.

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900	
TRANSCO PRODUCTS INC.	
Fig. 3 Vertical Slab Layout	
Drwn by: D.N.Priest	Date: 11/15/99
OPL Approval: C Humphrey	Date: 11/16/99
TPI Approval: Greg Havey	Date: 12/16/99

Scale: 1/2"=1'

OMEGA POINT LABORATORIES



PLAN VIEW

NOTE:
The slab was formed by surrounding the perimeter with 8" structural steel channel, with #5 steel rebar, 12" o.c. with a minimum embedment of 1-1/2". The form was then filled with normal weight concrete, vibrated into position and allowed to set for one week. It was then acceleratedly cured at 350°F for five days.

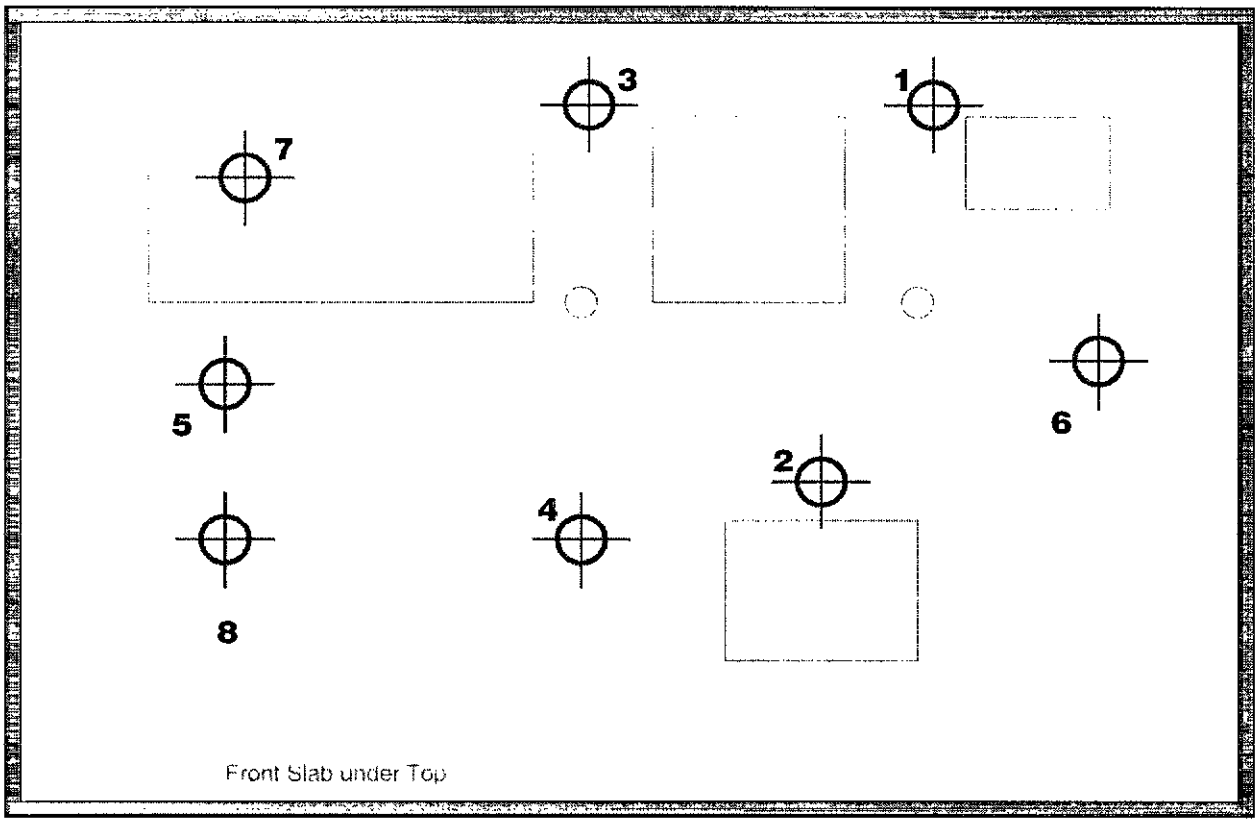
Amount of Concrete: 2.23 yds
8" Channel: 42 ft
#5 Rebars: 155 ft

Weight of slab = 10,000 lbs

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900
TRANSCO PRODUCTS INC.
Fig. 4 Vertical Slab Reinforcement
Drwn by: D.N.Priest Date: 11/15/99 OPL Approval: C Humphrey Date: 11/16/99 TPI Approval: Greg Leroy Date: 12/16/99

Scale: 1/2"=1'

OMEGA POINT LABORATORIES



FRONT

PLAN VIEW

TC #	DEPTH BELOW THE SLAB (IN.)
1	21
2	34
3	48
4	16
5	34
6	52
7	52
8	52

Note:
Standard E119 furnace control probes were located as indicated in the drawing above, with their measuring junctions positioned below the undersurface of the slab as indicated in the table to the left.

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900	
TRANSCO PRODUCTS INC.	
Fig. 5 Furnace Thermocouples	
Drwn by: D.N.Priest OPL Approval: TPI Approval:	Date: 12/28/99 Date: Date:

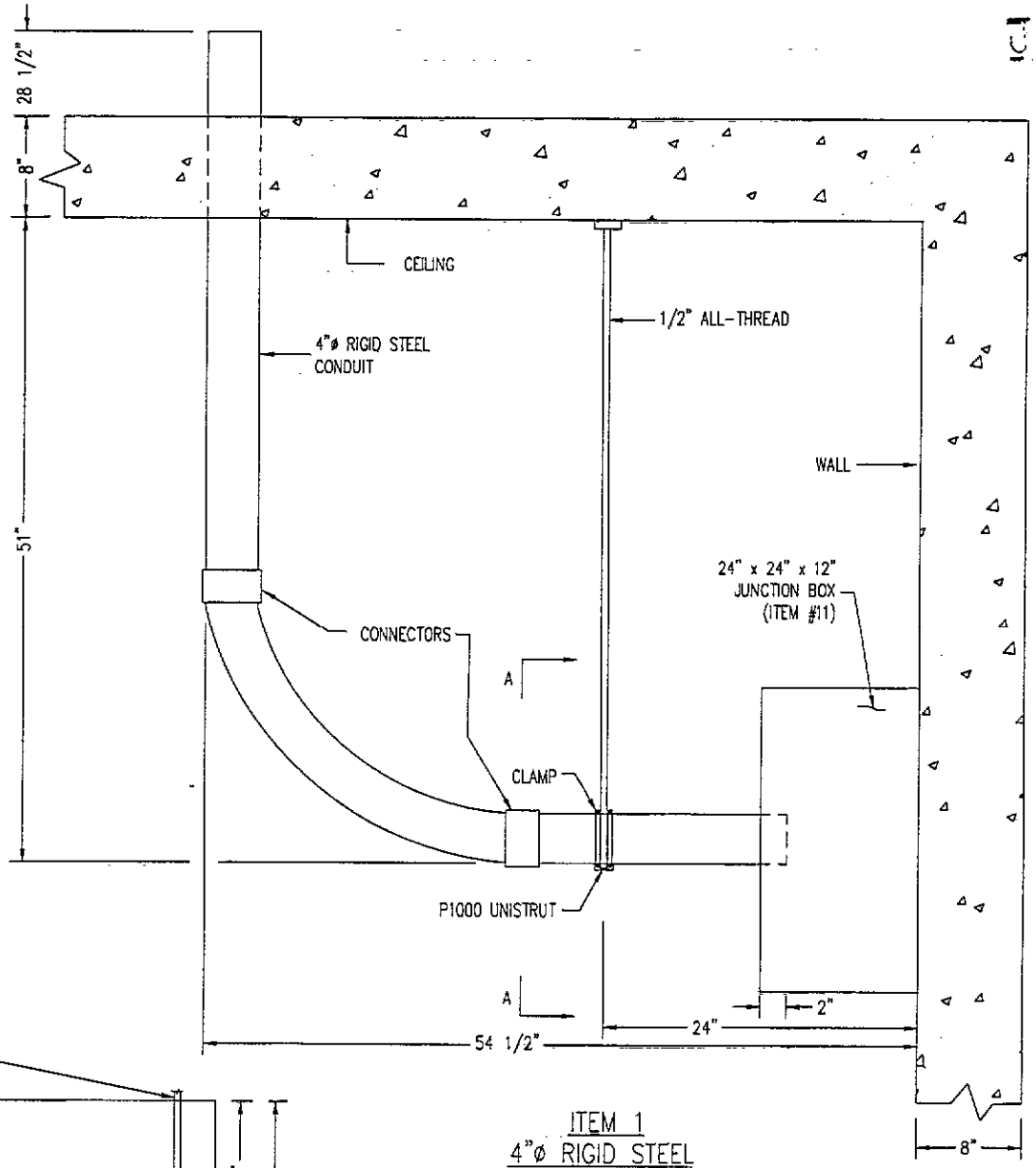
Scale: 1/2"=1'

OMEGA POINT LABORATORIES

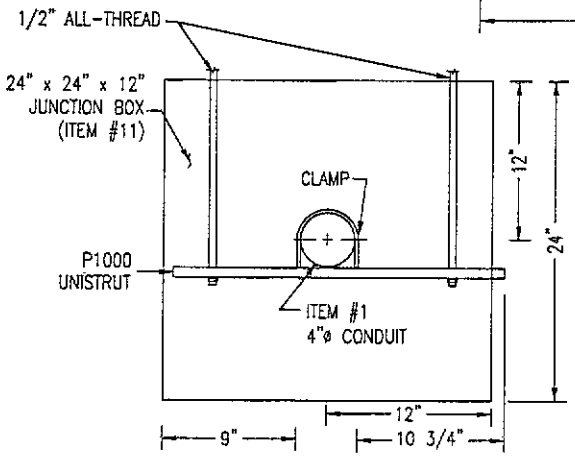
Appendix C

FIRE BARRIER INSTALLATION DRAWINGS

OMEGA POINT LABORATORIES



ITEM 1
4"ø RIGID STEEL
FREE AREA CONDUIT



VIEW A-A

P.O.No. SR707570

NSG CAD File 8102-01.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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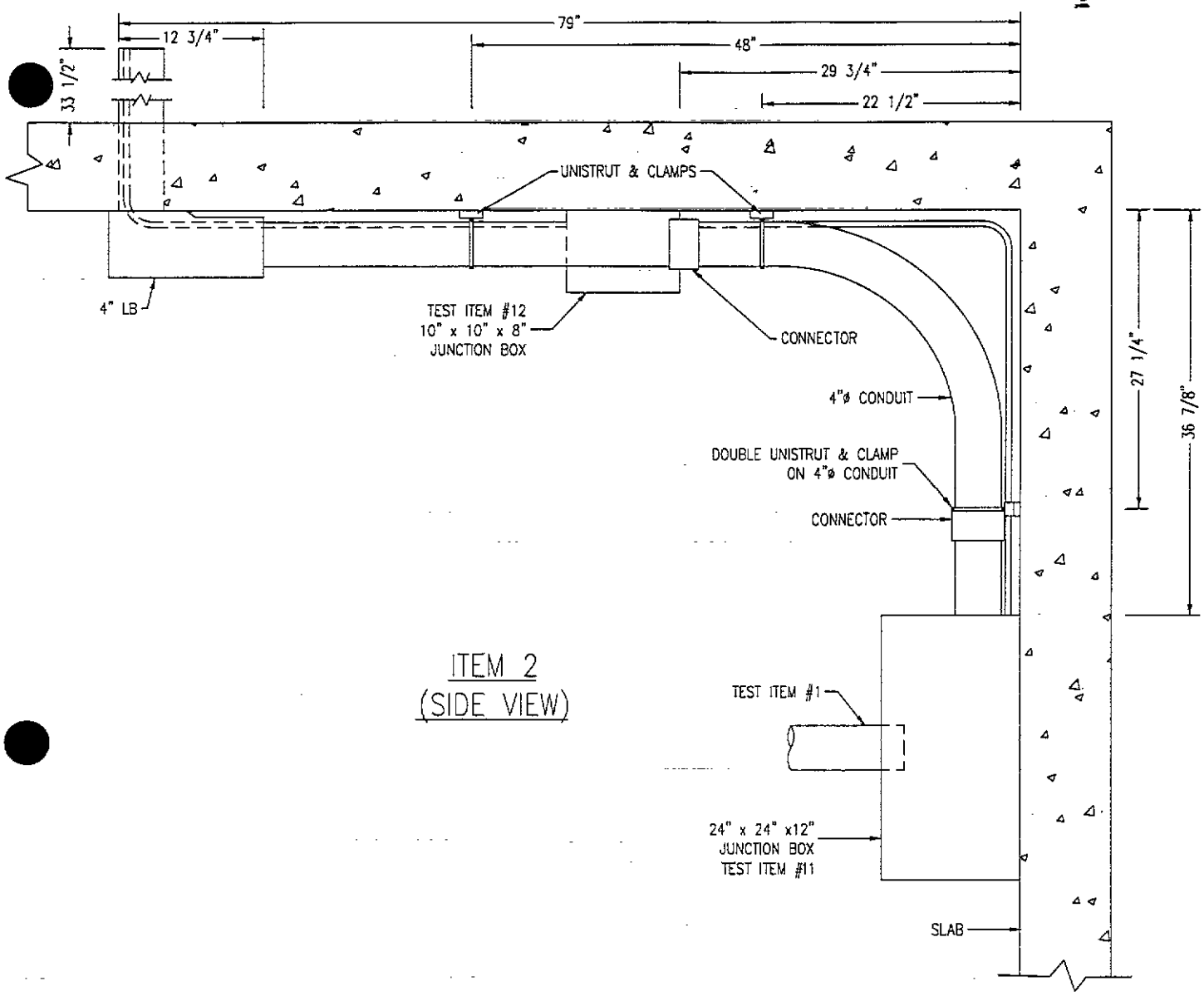
4"ø RIGID STEEL FREE AREA CONDUIT

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-01	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



ITEM 2
(SIDE VIEW)

P.O.No. SR707570

NSG CAD File 8102-01.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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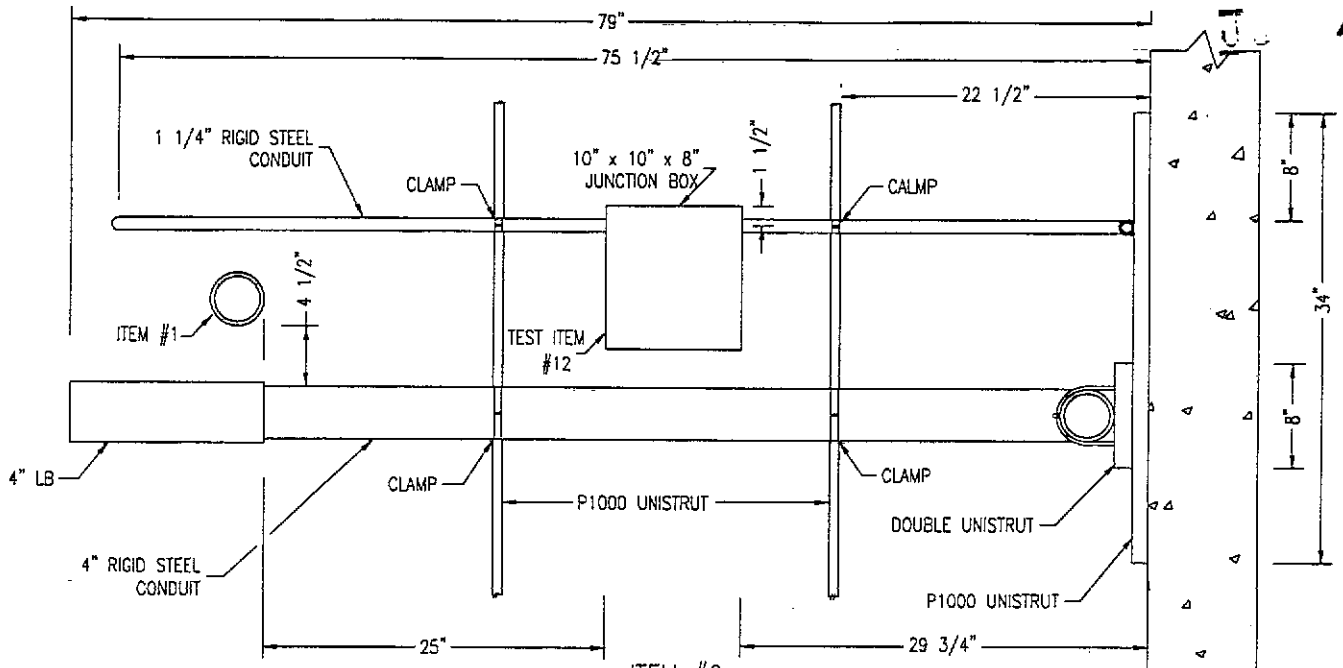
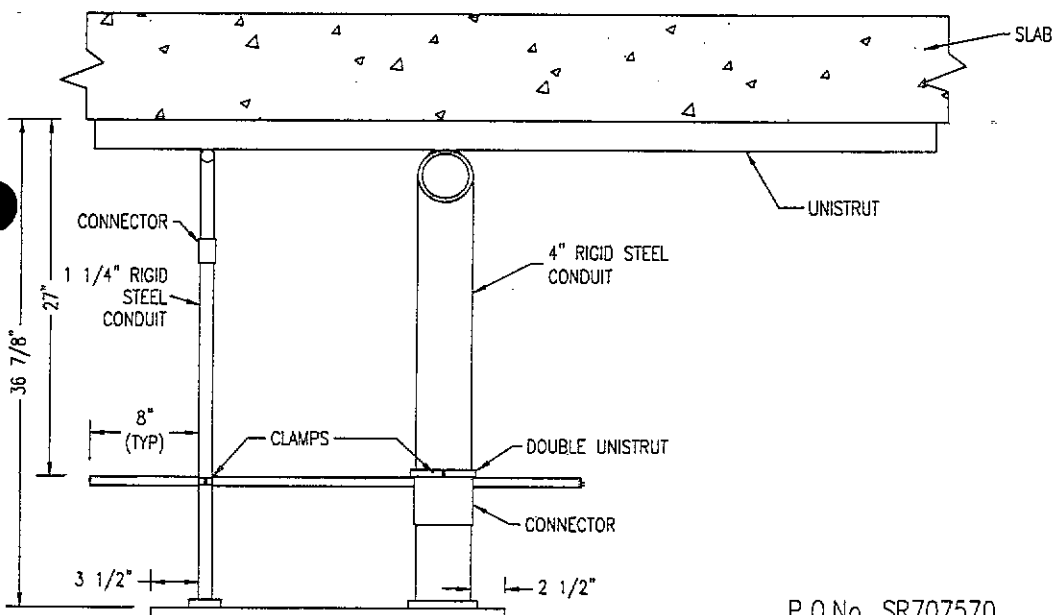
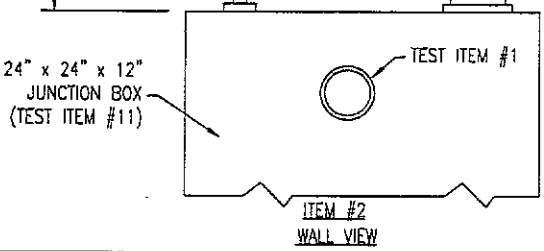
4"ø AND 1 1/4"ø RIGID STEEL SURFACE MOUNTED CONDUITS

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-02	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



ITEM #2
(CEILING VIEW)





ITEM #2
WALL VIEW

P.O.No. SR707570

NSG CAD File 8102-03.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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ITEM #2

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APPROVED G. Jarosz	DATE 12/31/99		
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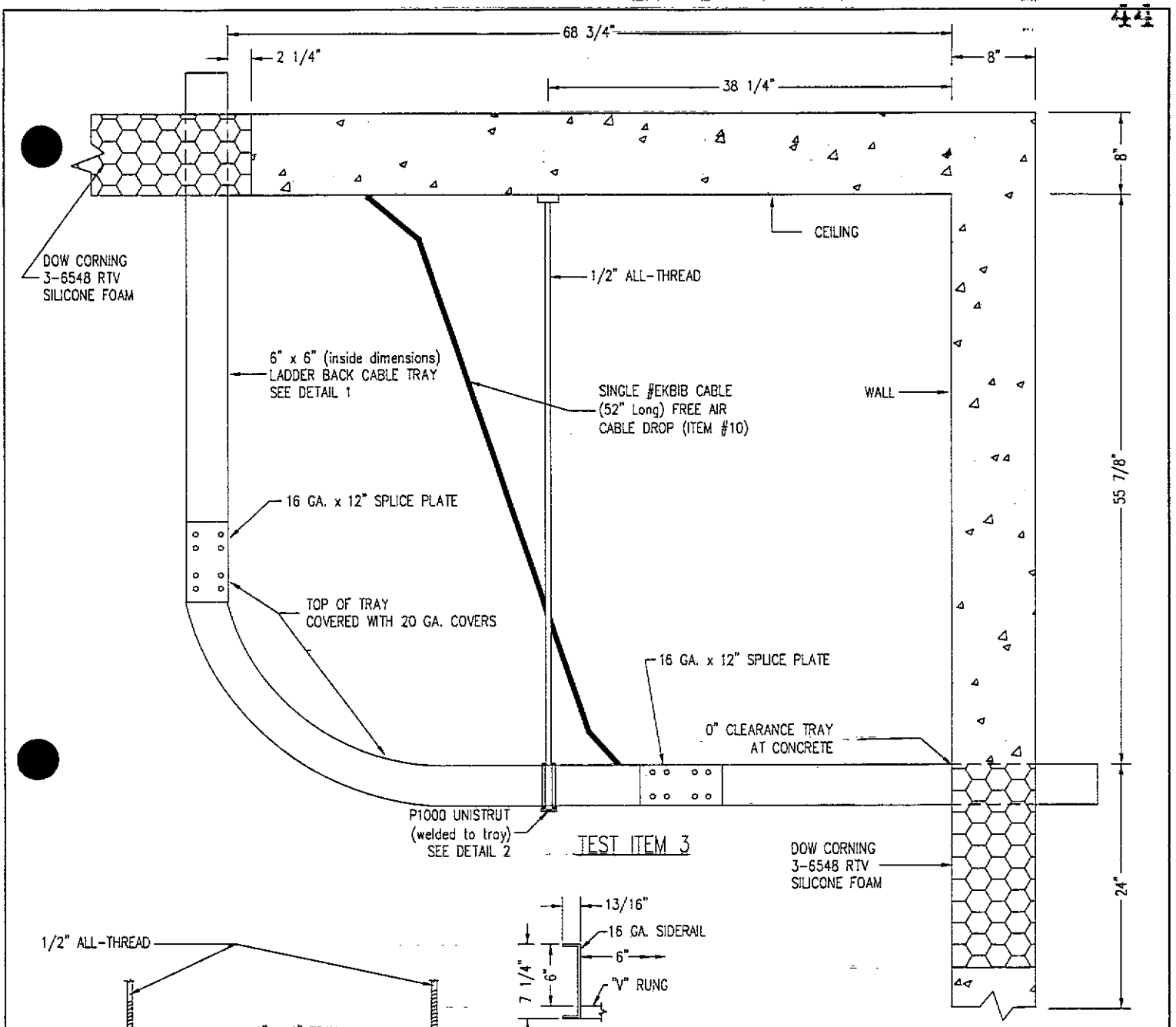
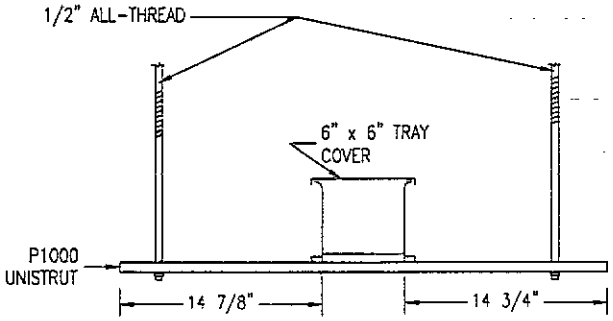


TEST ITEM 3

TRAY SIDERAIL
DETAIL #1



TEST ITEM 3
DETAIL #2

P.O.No. SR707570

NSG CAD File 8102-04.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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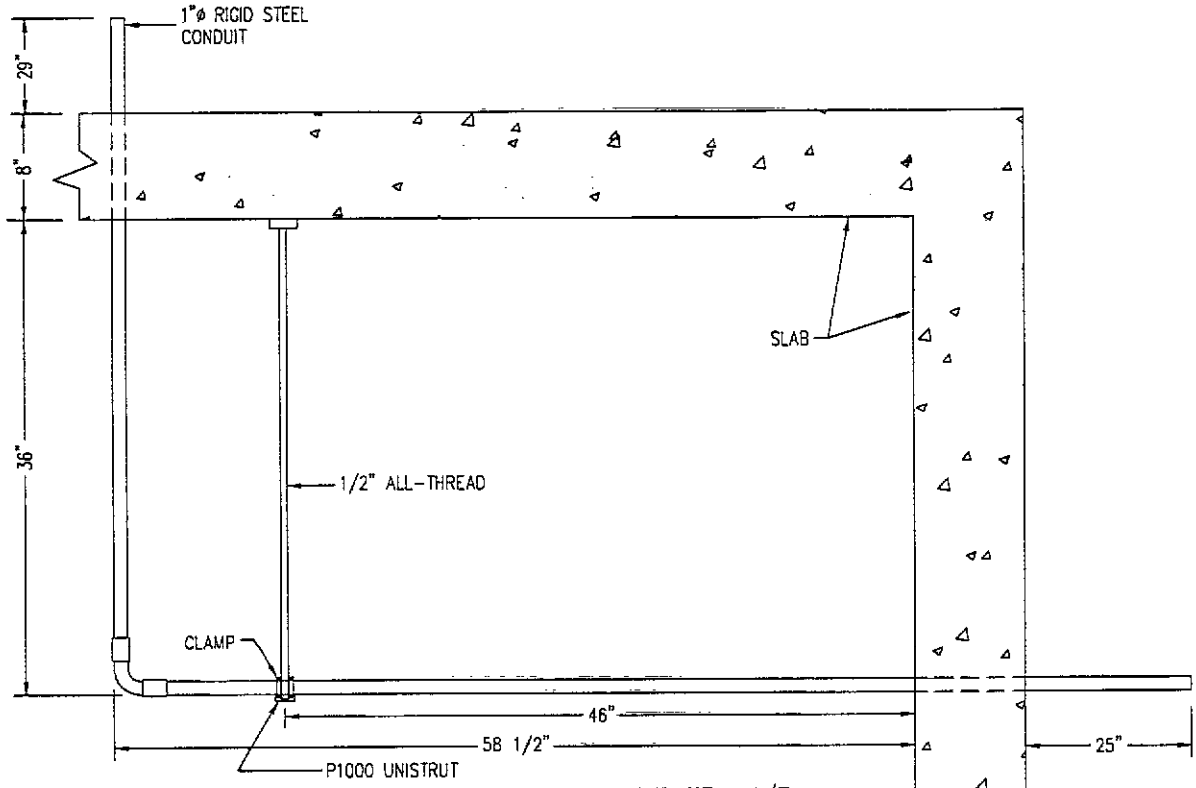
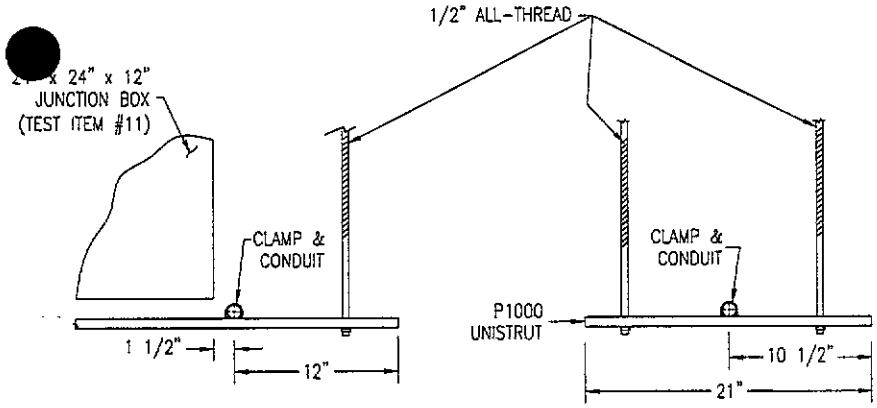
6" X 6" (I.D.) CABLE TRAY

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-04	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



TEST ITEM 4/7
1"ø RIGID STEEL
FREE AIR CONDUITS



ITEM 4 ITEM 7

P.O.No. SR707570 NSG CAD File 8102-05.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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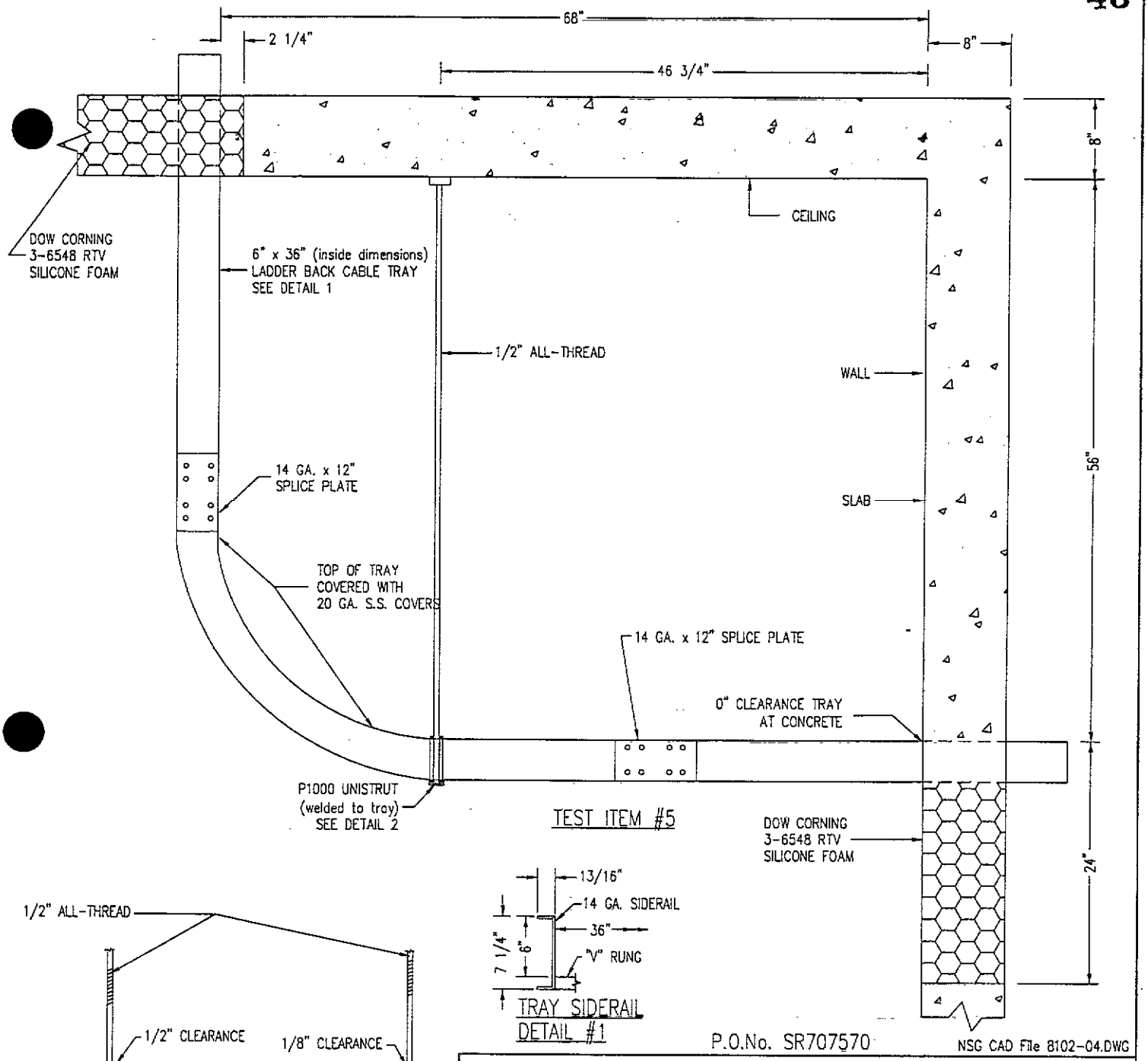
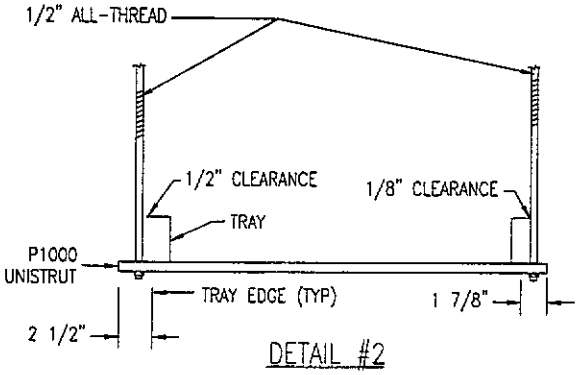
1"ø RIGID STEEL FREE AIR CONDUITS

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-05	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		





P.O.No. SR707570

NSG CAD File 8102-04.DWG

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CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

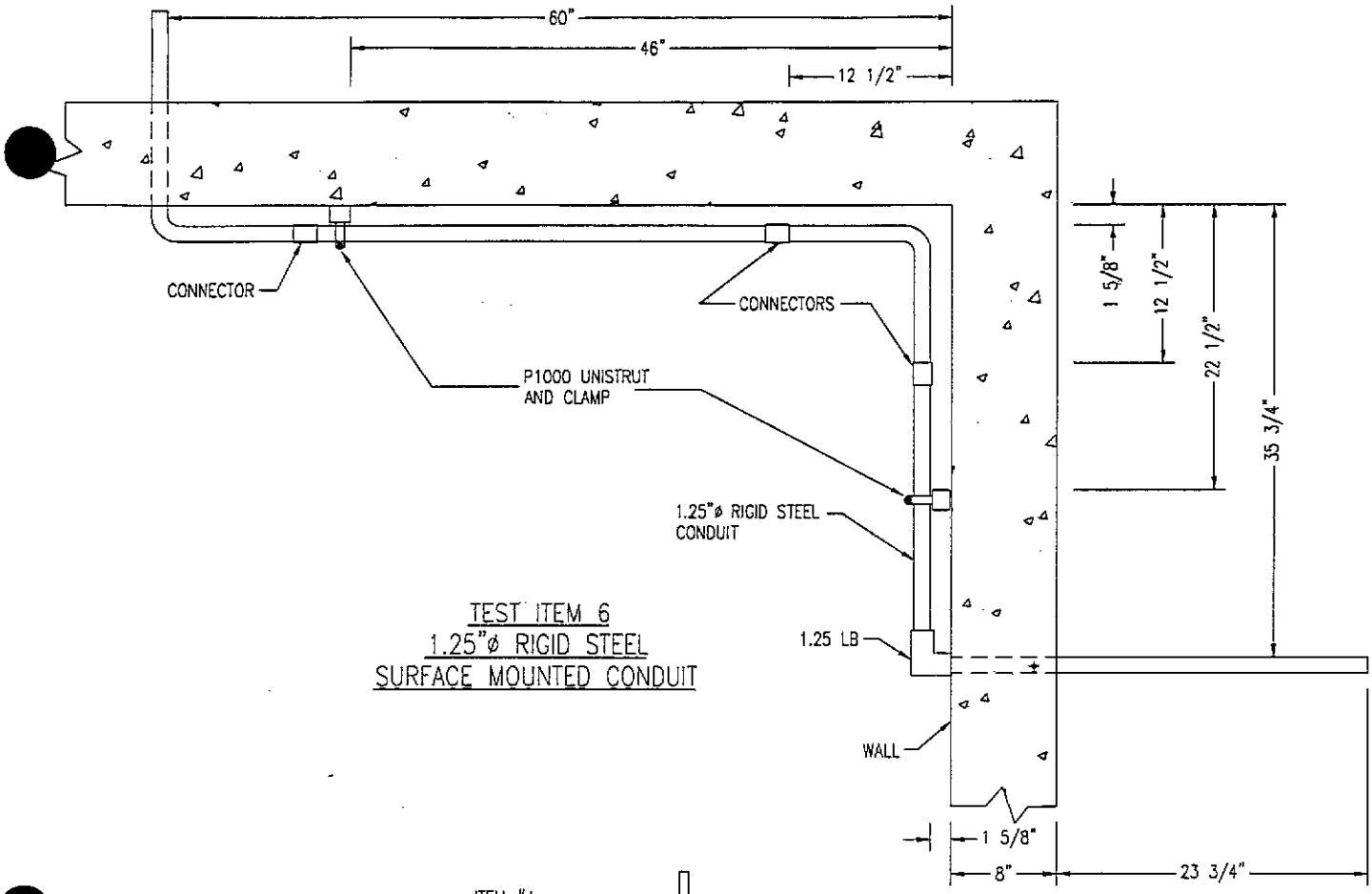
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

6" X 36" (I.D.) LADDER BACK CABLE TRAY

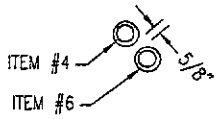
DRAWN	M. Sebastiani	DATE	12/31/99
APPROVED	G. Jarosz	DATE	12/31/99
SCALE	N. T. S.		PLOT "LIMITS"

DWG. NO.: GJ-8102-06

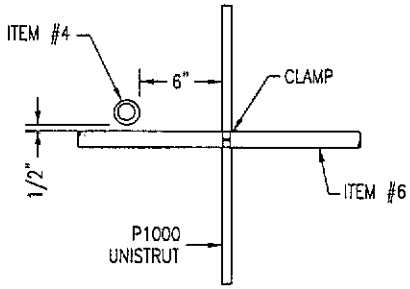
REV. 1



TEST ITEM 6
1.25"ø RIGID STEEL
SURFACE MOUNTED CONDUIT



WALL VIEW OF
SLAB PENETRATION



CEILING VIEW OF CONDUITS
PENETRATING SLAB

P.O.No. SR707570

NSG CAD File 8102-07T.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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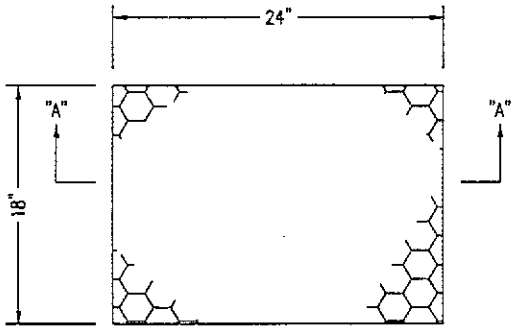
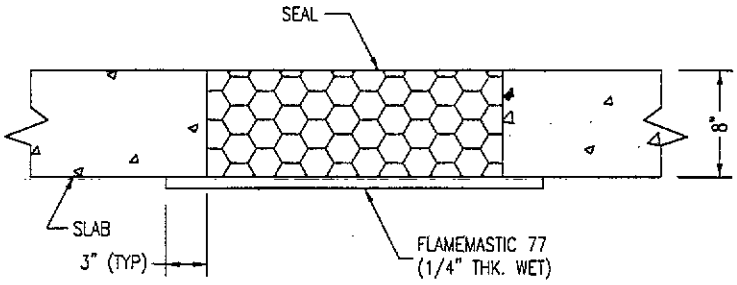
1.25"ø RIGID STEEL SURFACE MOUNTED CONDUIT

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-07	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		

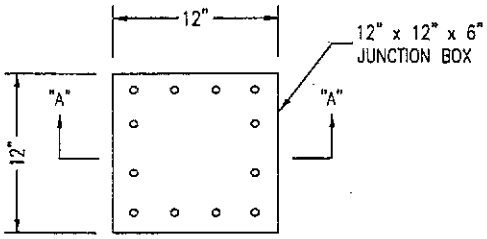


PLAN VIEW
ITEM #9

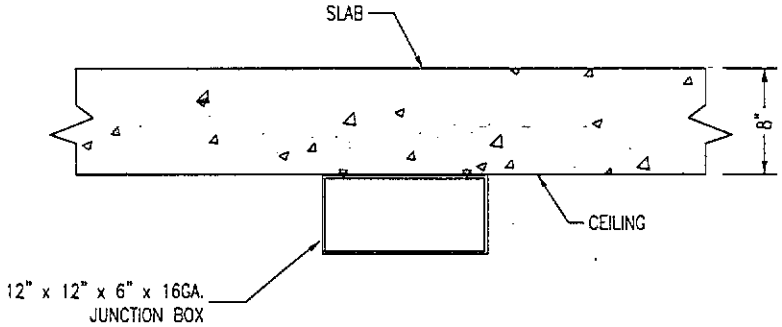


SECTION "A-A"
ITEM #9

8" THK. BLANK SILICONE FOAM SEAL
AND FLAMEMASTIC 77



CEILING VIEW
ITEM #8



SECTION "A-A"
ITEM #8

SURFACE MOUNTED JUNCTION BOX

P.O.No. SR707570

NSG CAD File 8102-08.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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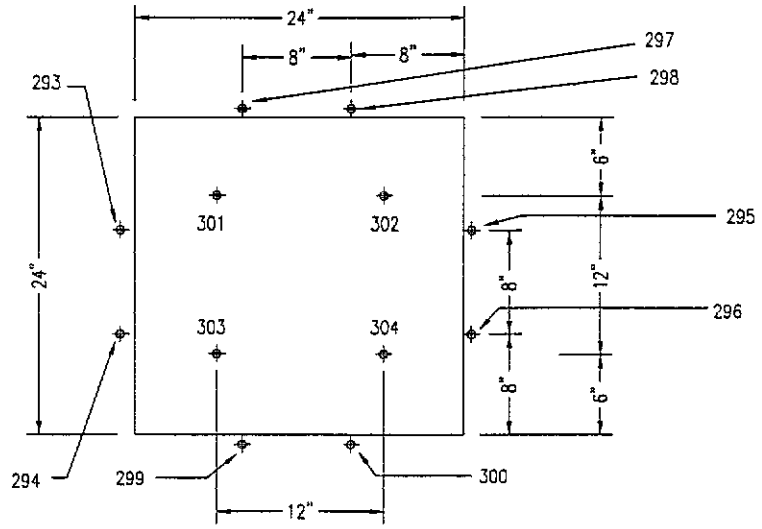
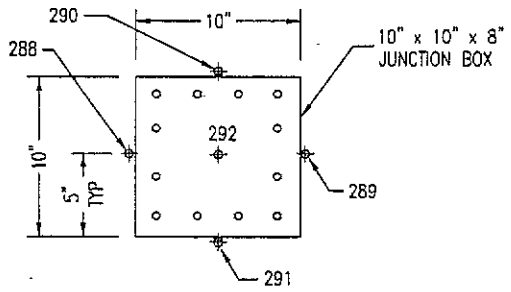
ITEM #8 AND ITEM #9

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-08	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



PLAN VIEW
ITEM #11



CEILING VIEW
ITEM #12

SURFACE MOUNTED JUNCTION BOX

NOTES
T/C's 293-300 on item #11 and T/C's 288-291 are side mounted.

P.O.No. SR707570

NSG CAD File 8102-11.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

NO.	DATE	REVISION	BY	CHECKED	APPROVED
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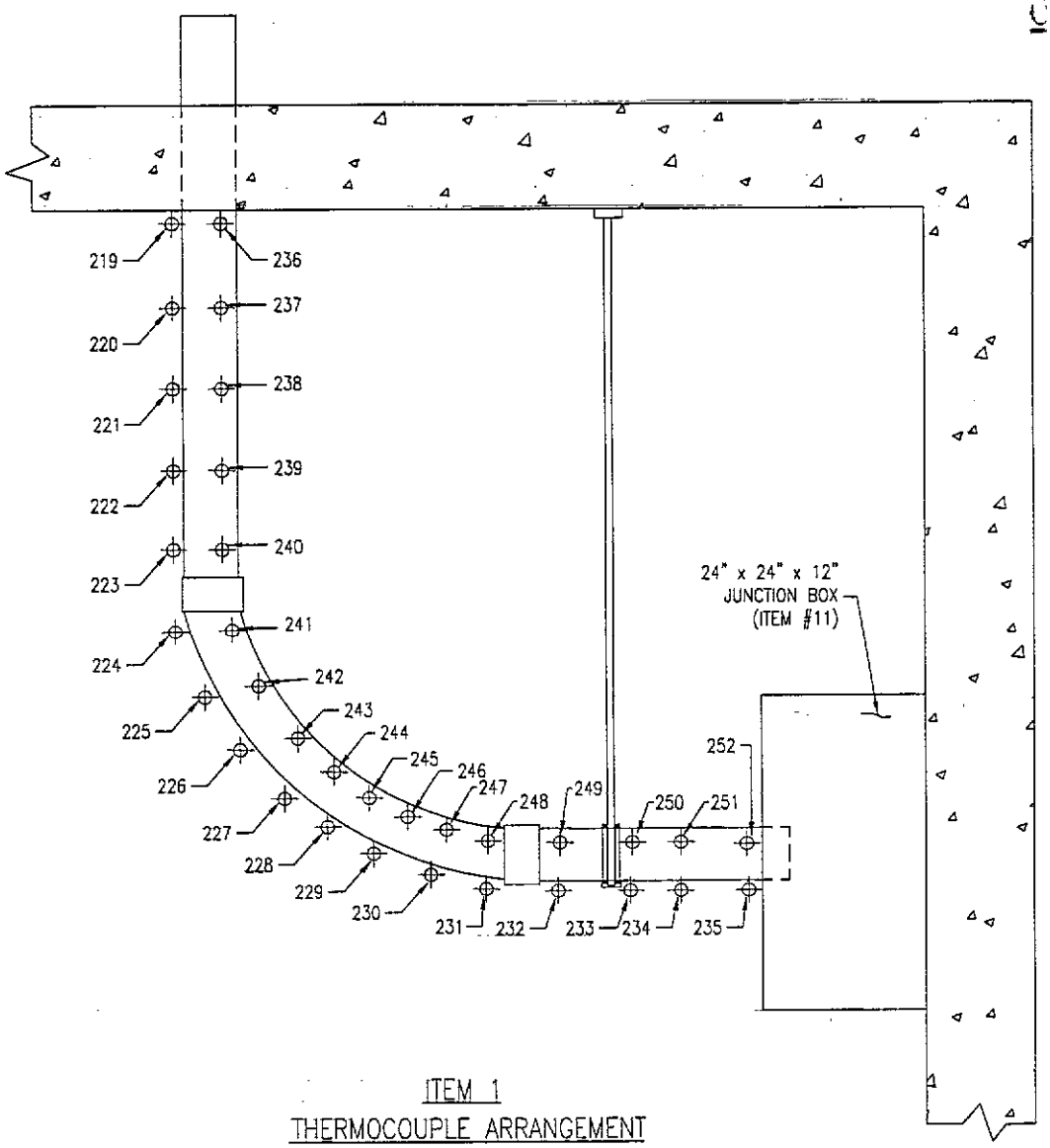
ITEM #11 AND ITEM #12

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-11	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		

Appendix D

THERMOCOUPLE LOCATIONS

OMEGA POINT LABORATORIES



ITEM 1
THERMOCOUPLE ARRANGEMENT

P.O.No. SR707570

NSG CAD File 8102-01T.DWG

NOTES:

T/C's 219-235 were attached directly to the exterior of conduit while T/C's 236-252 were attached to a bare #8 AWG copper wire located inside the conduit.

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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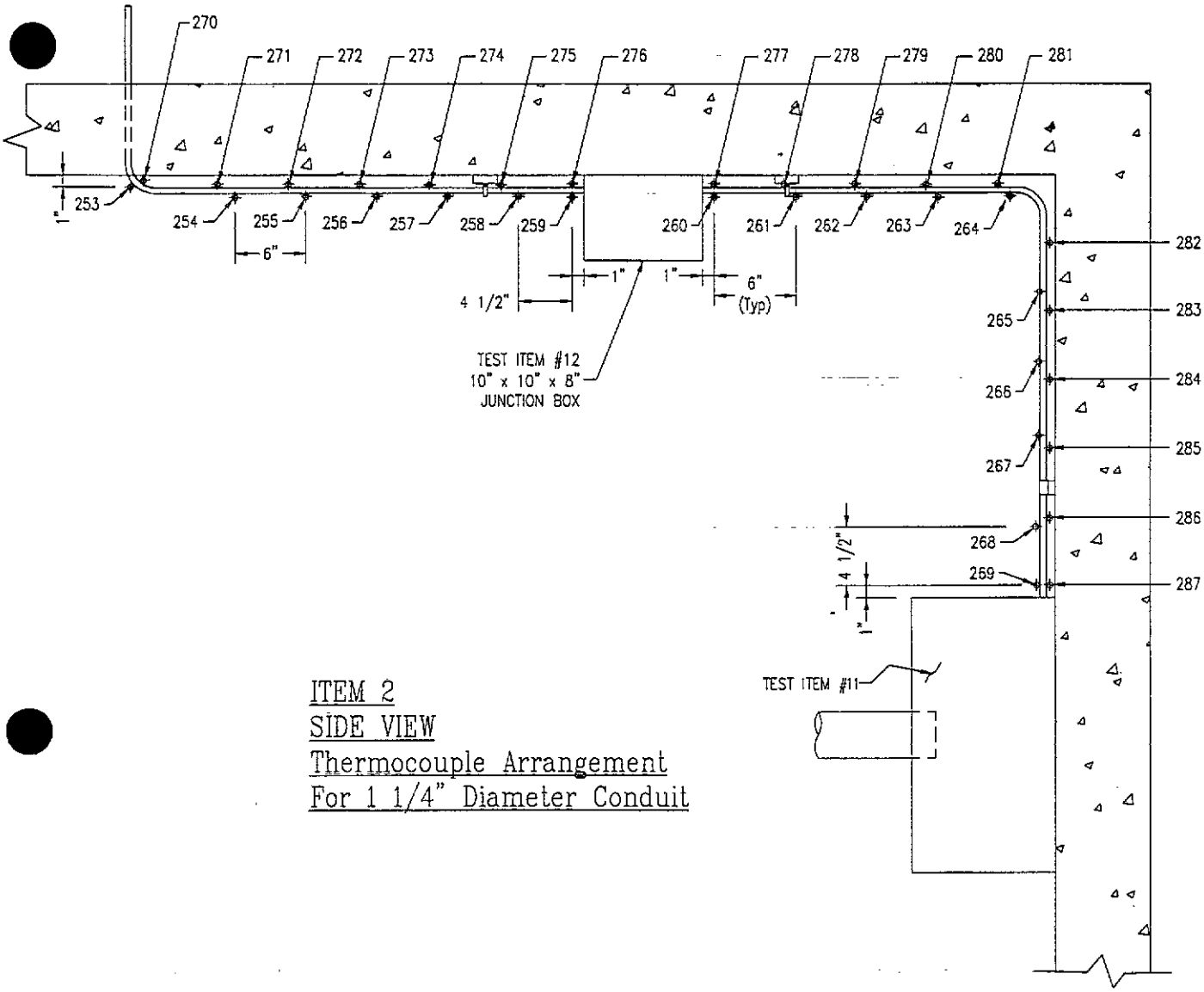
4"ø RIGID STEEL FREE AREA CONDUIT

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-01T	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



ITEM 2
SIDE VIEW
Thermocouple Arrangement
For 1 1/4" Diameter Conduit

NOTE:
T/C's 235-269 were mounted directly to outside of conduit while T/C's 270-287 were attached to a bare #8 AWG copper wire located inside of the conduit.

P.O.No. SR707570

NSG CAD File 8102-02T.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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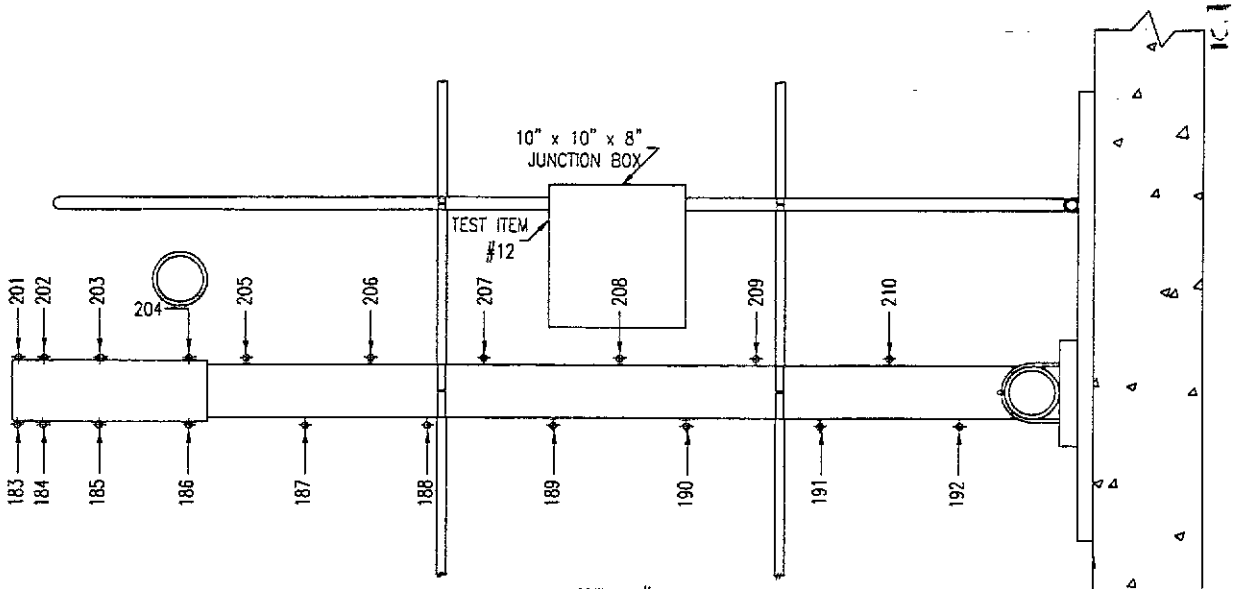
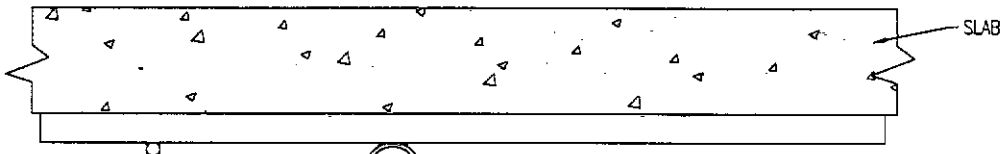
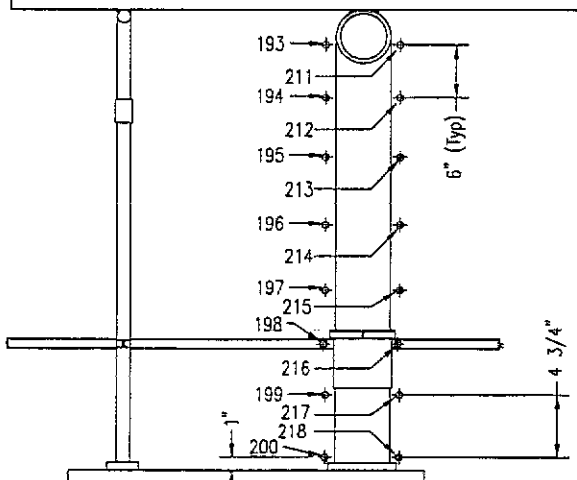
1 1/4"ø NOMINAL RIGID STEEL SURFACE MOUNTED CONDUITS

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-02T	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		

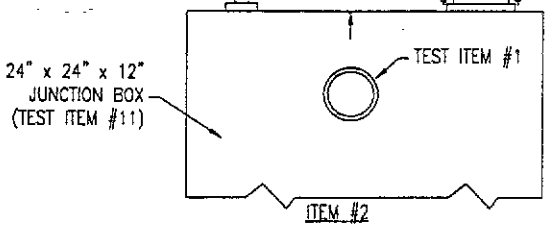


ITEM #2
(CEILING VIEW)
THERMOCOUPLE ARRANGEMENT FOR 4"ø CONDUIT





NOTES:
Thermocouples #183-200 were mounted directly to the exterior of the conduit while T/C's 201-218 were attached to a bare #8 AWG copper wire located inside of the conduit.



ITEM #2
WALL VIEW

P.O.No. SR707570

NSG CAD File 8102-03T.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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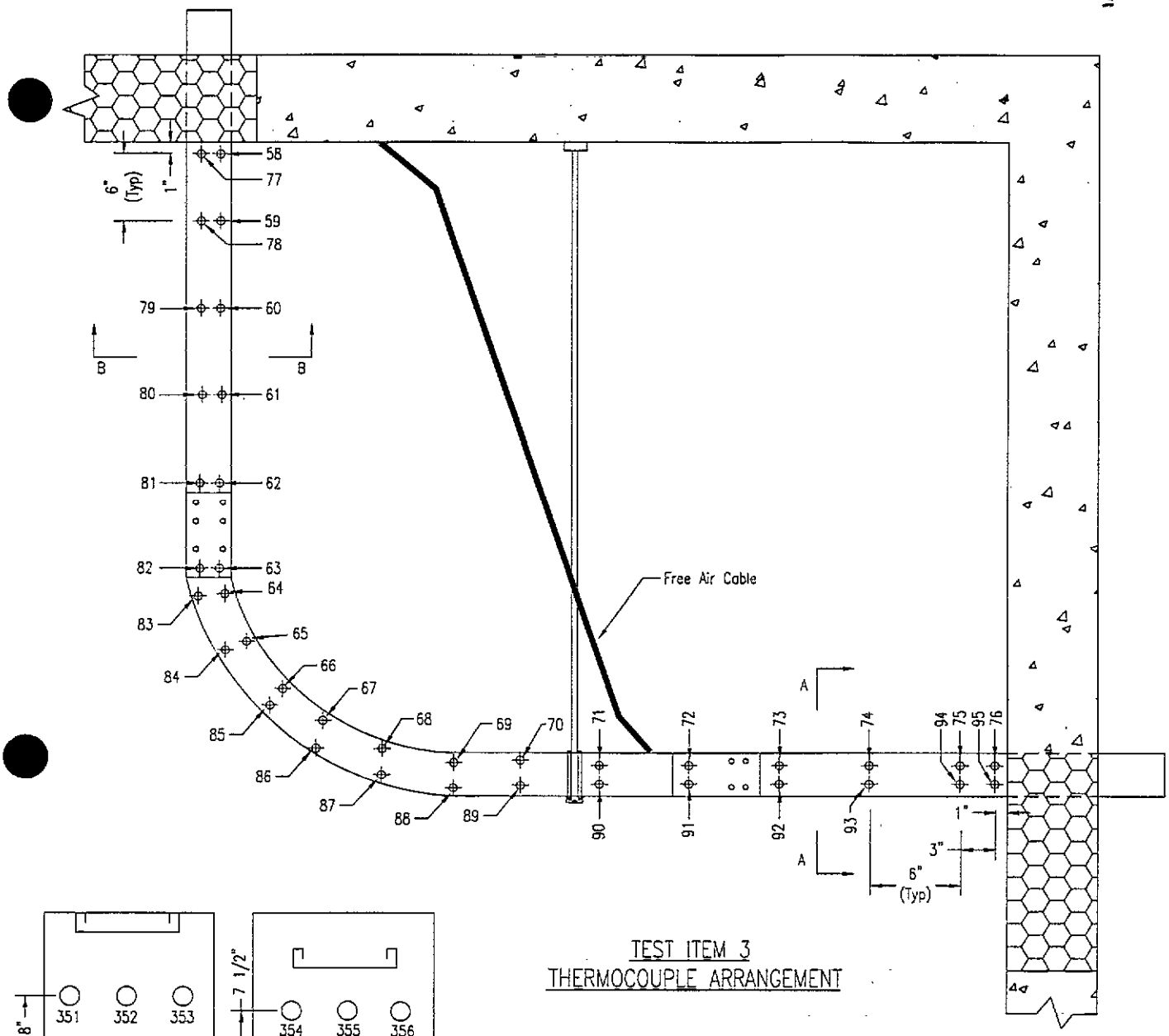
ITEM #2

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-03T	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



TEST ITEM 3
THERMOCOUPLE ARRANGEMENT

VIEW A-A
WALL PENETRATION

VIEW B-B
CEILING PENETRATION

P.O.No. SR707570

NSG CAD File 8102-04T.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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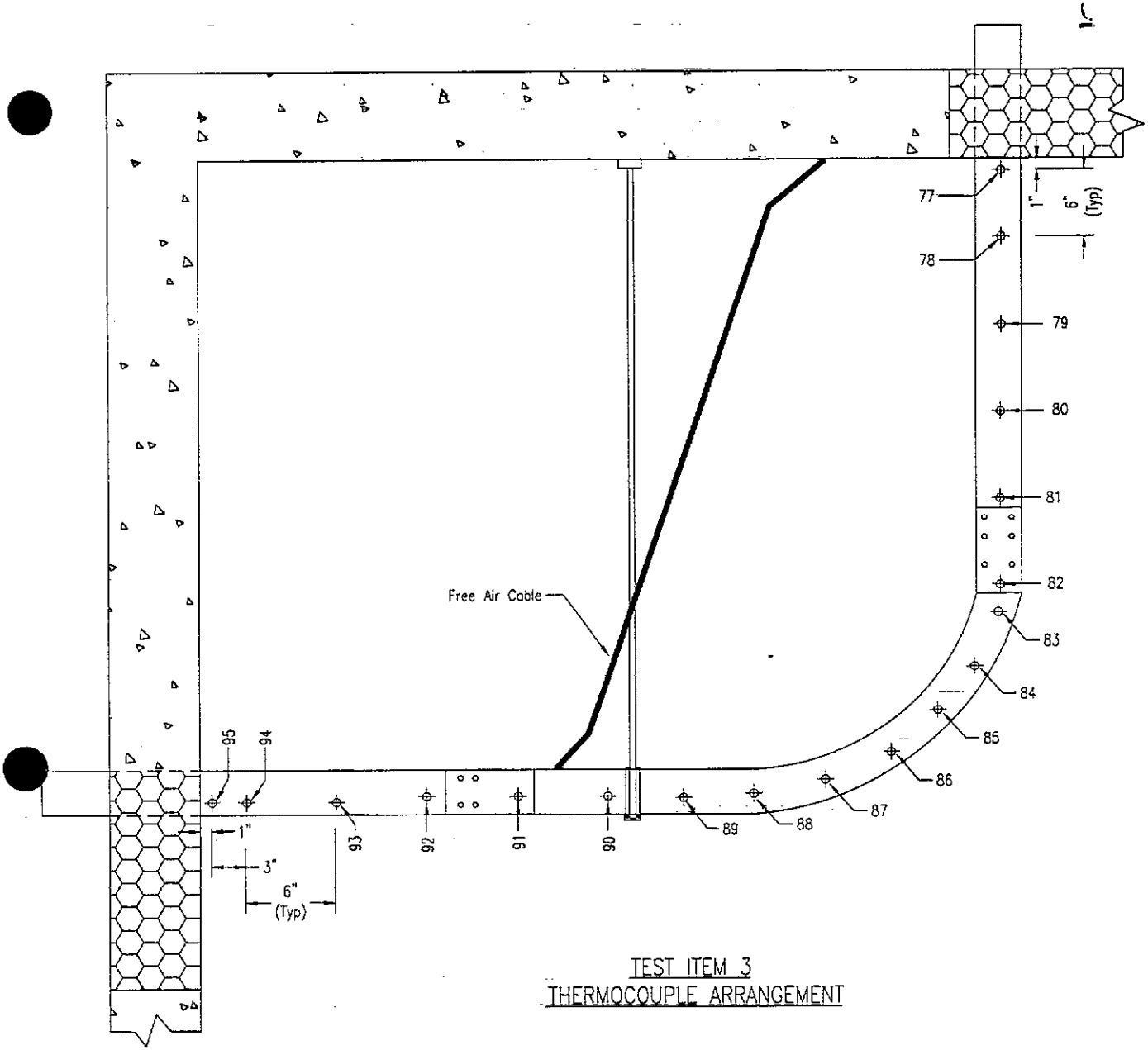
6" X 6" (I.D.) CABLE TRAY

DRAWN	M. Sebastiani	DATE	12/31/99	DWG. NO.:	REV.
APPROVED	G. Jarosz	DATE	12/31/99	GJ-8102-04T	1
SCALE	N. T. S.	PLOT "LIMITS"			



TEST ITEM 3
THERMOCOUPLE ARRANGEMENT

P.O.No. SR707570

NSG CAD File 8102-04T1.DWG

NOTES

T/C's 77-95 are mounted outside of cable tray on left side.

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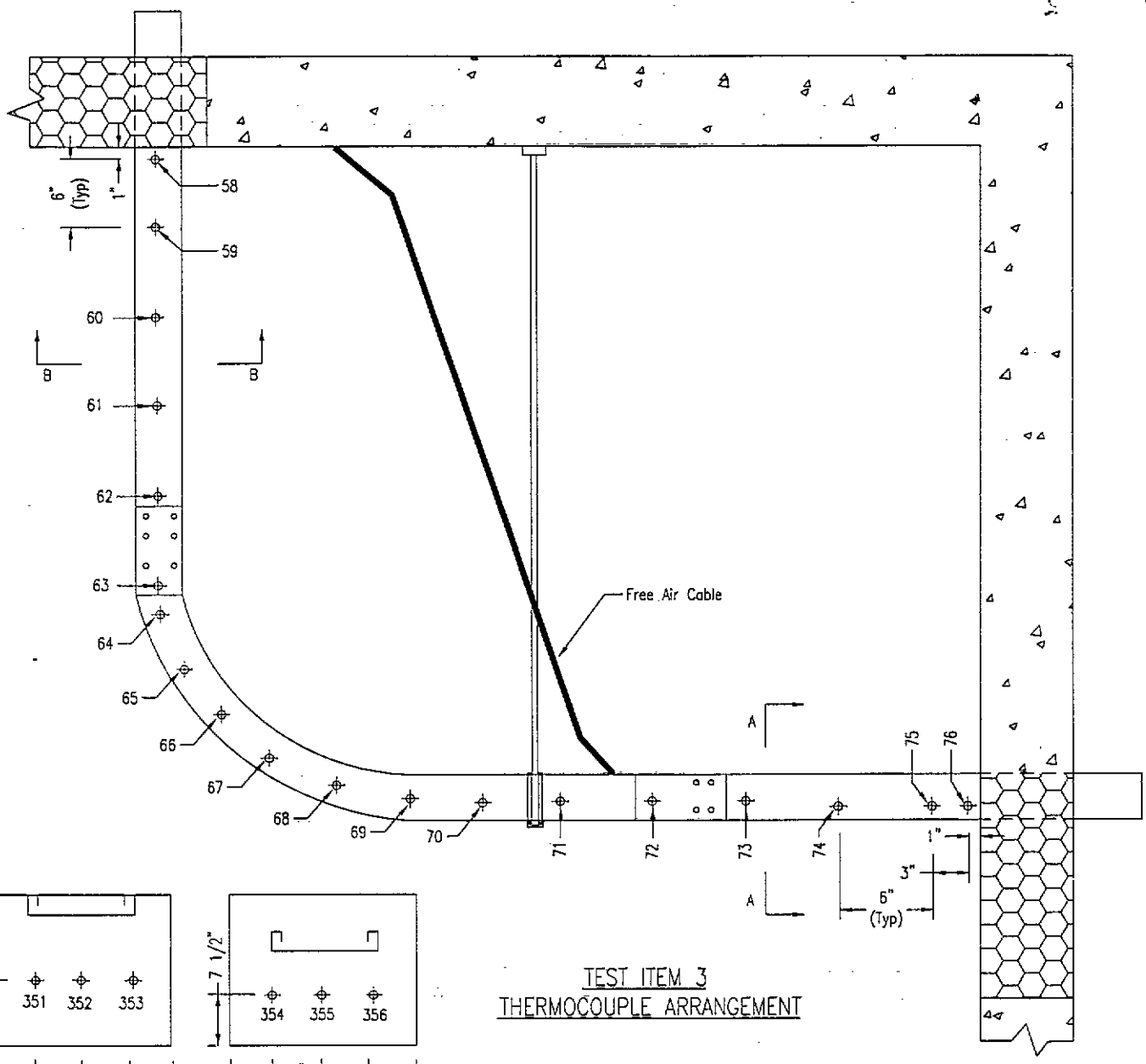
CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

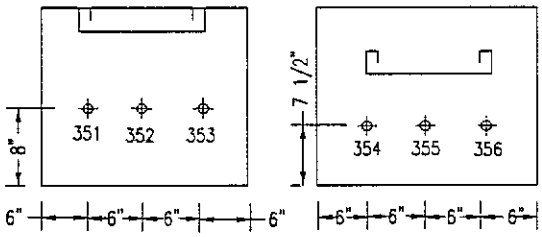
TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

6" X 6" (I.D.) CABLE TRAY

DRAWN	M. Sebastiani	DATE	12/31/99	DWG. NO.:	REV.
APPROVED	G. Jarosz	DATE	12/31/99	GJ-8102-04T1	1
SCALE	N. T. S.	PLOT "LIMITS"			



TEST ITEM 3
THERMOCOUPLE ARRANGEMENT



VIEW A-A
WALL PENETRATION

VIEW B-B
CEILING PENETRATION

P.O.No. SR707570

NSG CAD File 8102-04T2.DWG

NOTES

T/C's 58-76 are mounted outside of cable tray on right side.

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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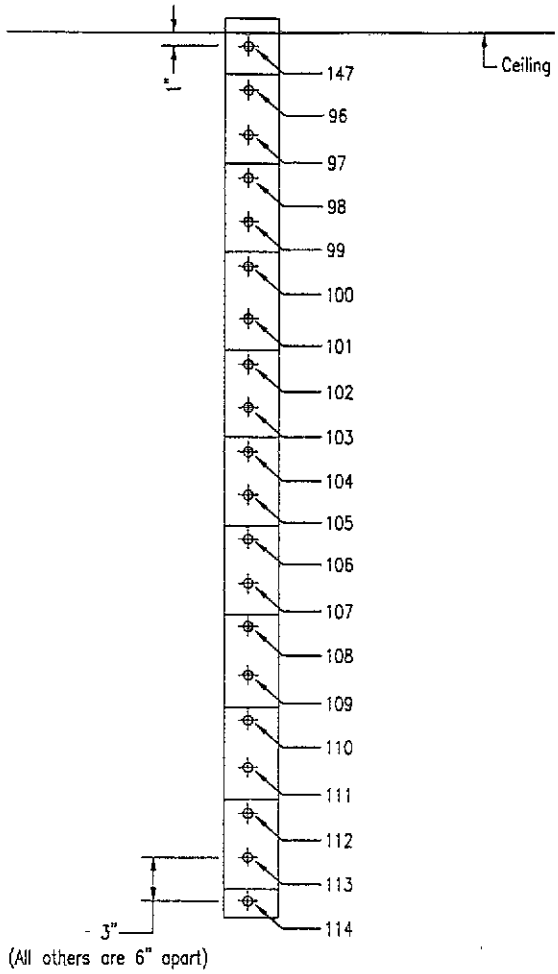
6" X 6" (I.D.) CABLE TRAY

DRAWN	M. Sebastiani	DATE	12/31/99
APPROVED	G. Jarosz	DATE	12/31/99
SCALE	N. T. S.	PLOT "LIMITS"	

DWG. NO.: GJ-8102-04T2

REV. 1



TEST ITEM 3
THERMOCOUPLE ARRANGEMENT

P.O.No. SR707570

NSG CAD File 8102-04T3.DWG

NOTES
T/C's 147, 96-114 are mounted inside of cable tray.

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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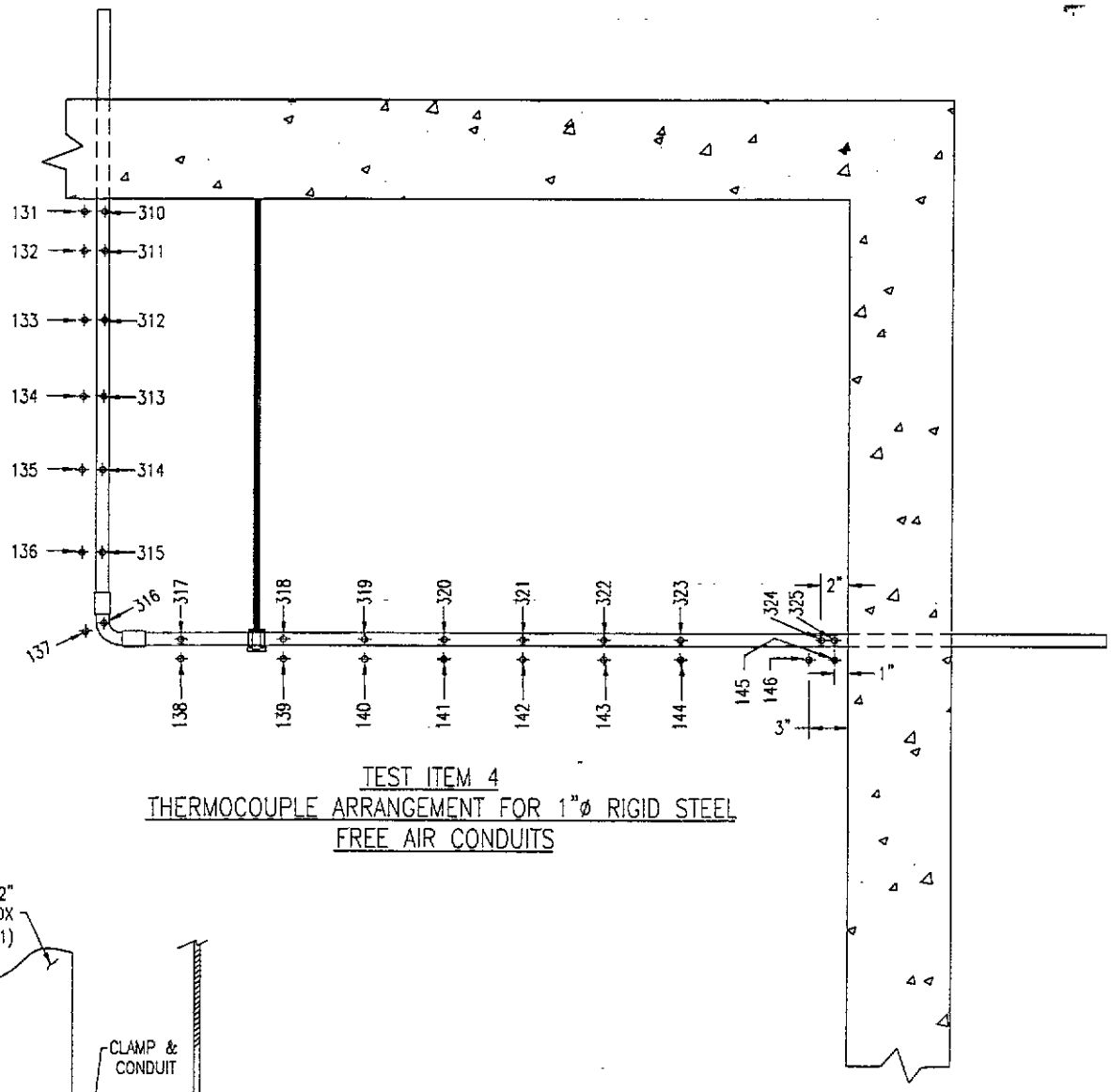
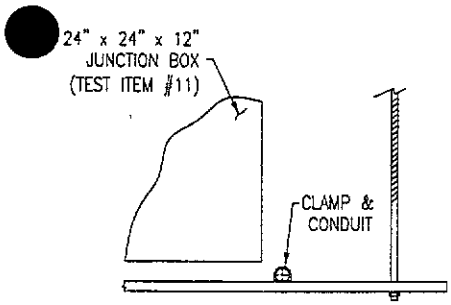
6" X 6" (I.D.) CABLE TRAY

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-04T3	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



TEST ITEM 4
THERMOCOUPLE ARRANGEMENT FOR 1"ø RIGID STEEL
FREE AIR CONDUITS



ITEM 4

P.O.No. SR707570

NSG CAD File 8102-05T.DWG

NOTES:
T/C's 131-146 mounted directly on exterior of conduit while T/C's 310-325 were mounted on a bare #8 AWG wire located inside of conduit.

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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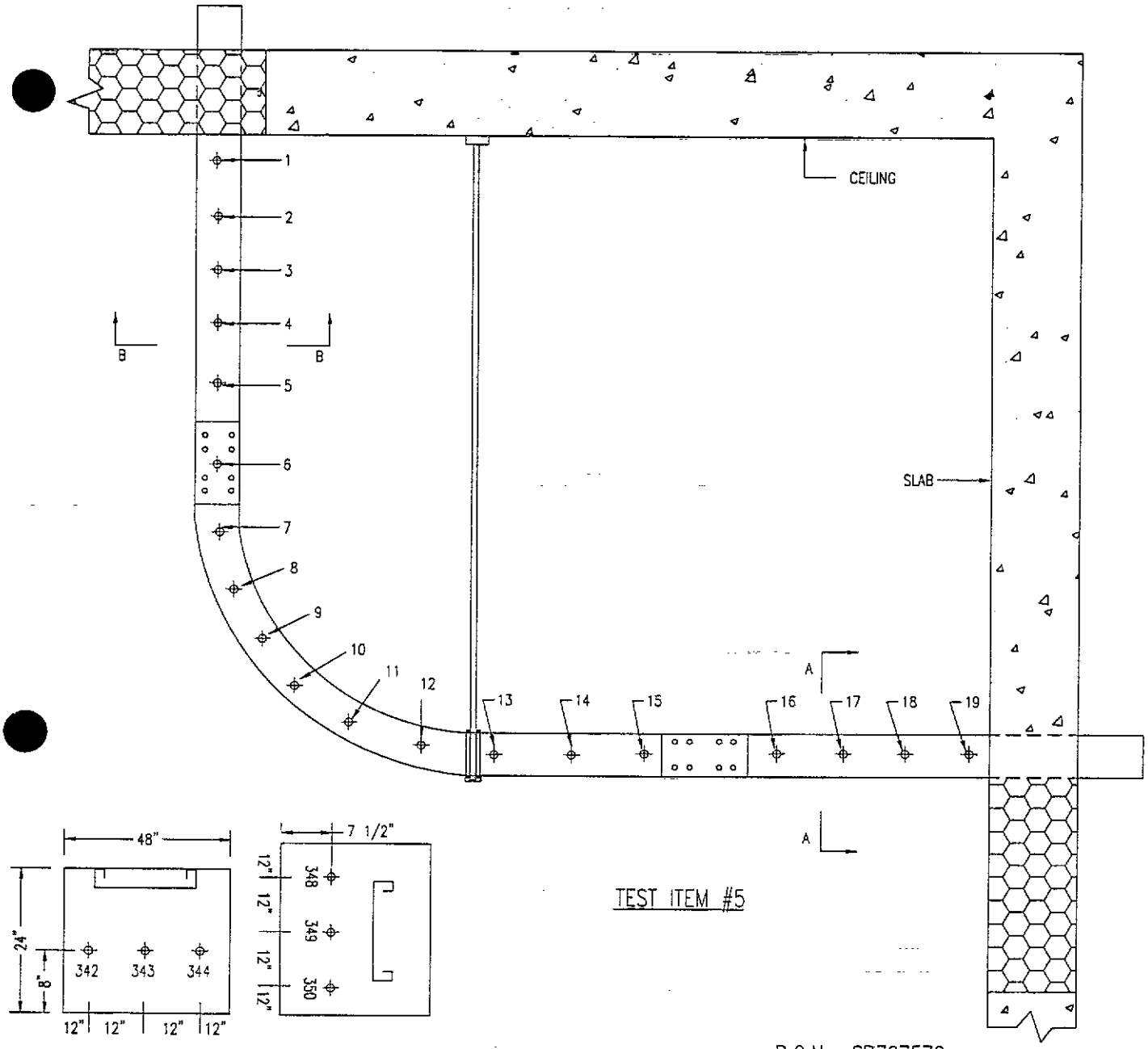
1"ø RIGID STEEL FREE AIR CONDUITS

DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-05T	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



VIEW A-A
WALL PENETRATION

VIEW B-B
CEILING PENETRATION

P.O.No. SR707570

NSG CAD File 8102-06T1.DWG

NOTES

T/C's 1-19 are mounted outside of cable tray on the right side.

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CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

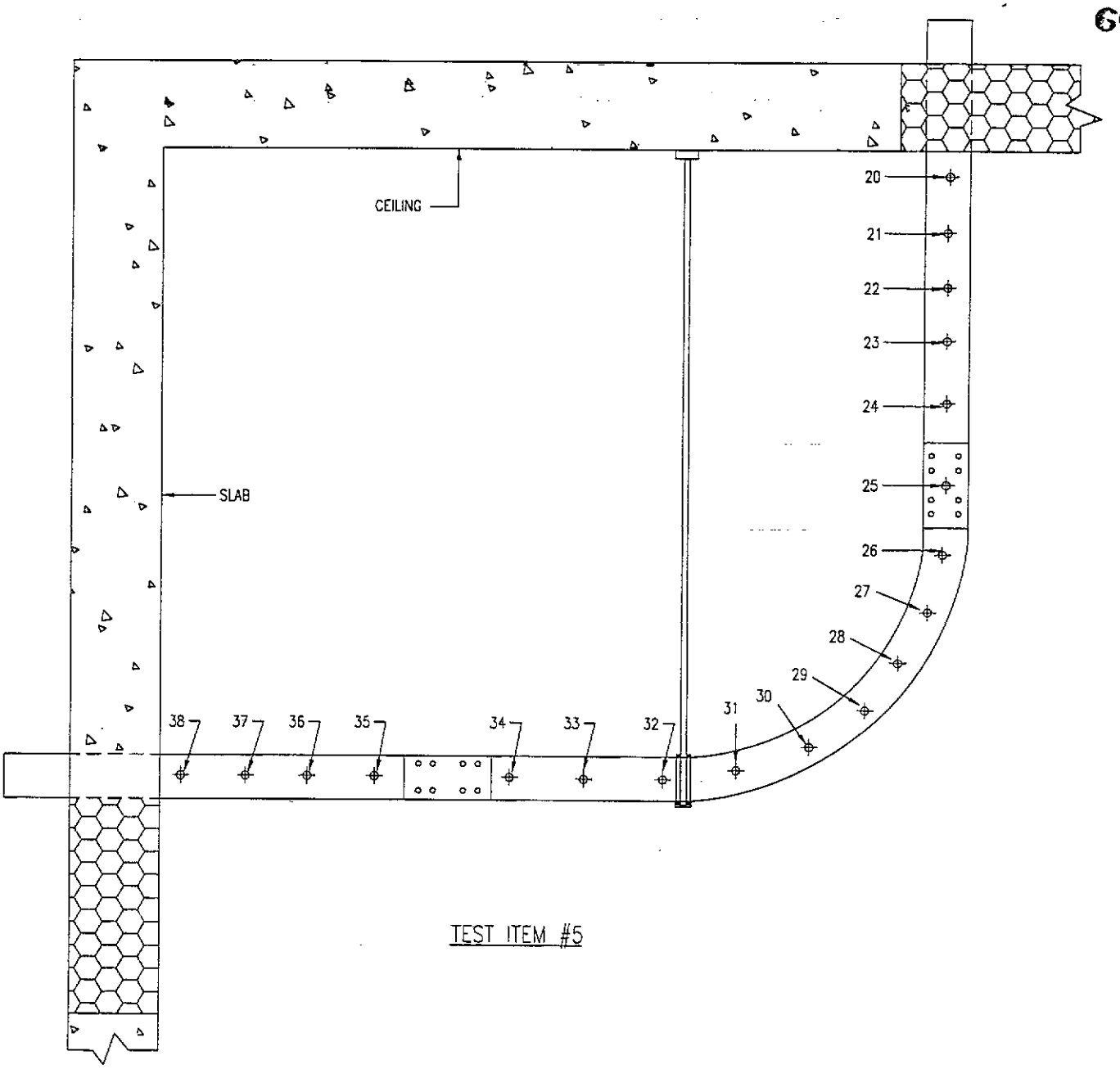
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

6" X 36" (I.D.) LADDER BACK CABLE TRAY

DRAWN	M. Sebastiani	DATE	12/31/99
APPROVED	G. Jarosz	DATE	12/31/99
SCALE	N. T. S.		PLOT "LIMITS"

DWG. NO.: GJ-8102-06T1

REV. 1



TEST ITEM #5

P.O.No. SR707570 NSG CAD File 8102-06T2.DWG

NOTES

T/C's 20–38 are mounted outside of cable tray on the left side.

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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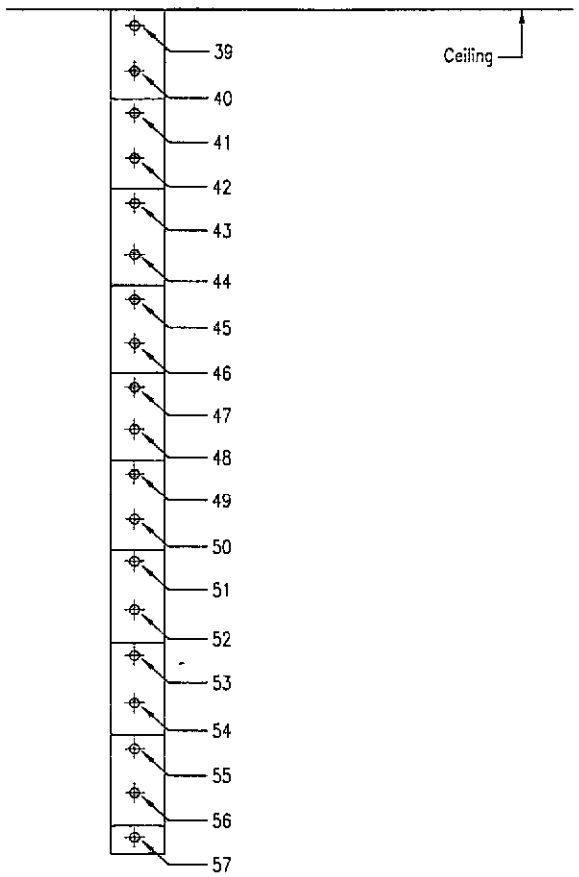
6" X 36" (I.D.) LADDER BACK CABLE TRAY

DRAWN	M. Sebastiani	DATE	12/31/99
APPROVED	G. Jarosz	DATE	12/31/99
SCALE	N. T. S.	PLOT "LIMITS"	

DWG. NO.: GJ-8102-06T2

REV. 1



TEST ITEM 5

P.O.No. SR707570

NSG CAD File 8102-06T3.DWG

NOTES
T/C's 39-57 are mounted on a bare #8AWG copper wire inside of cable tray.

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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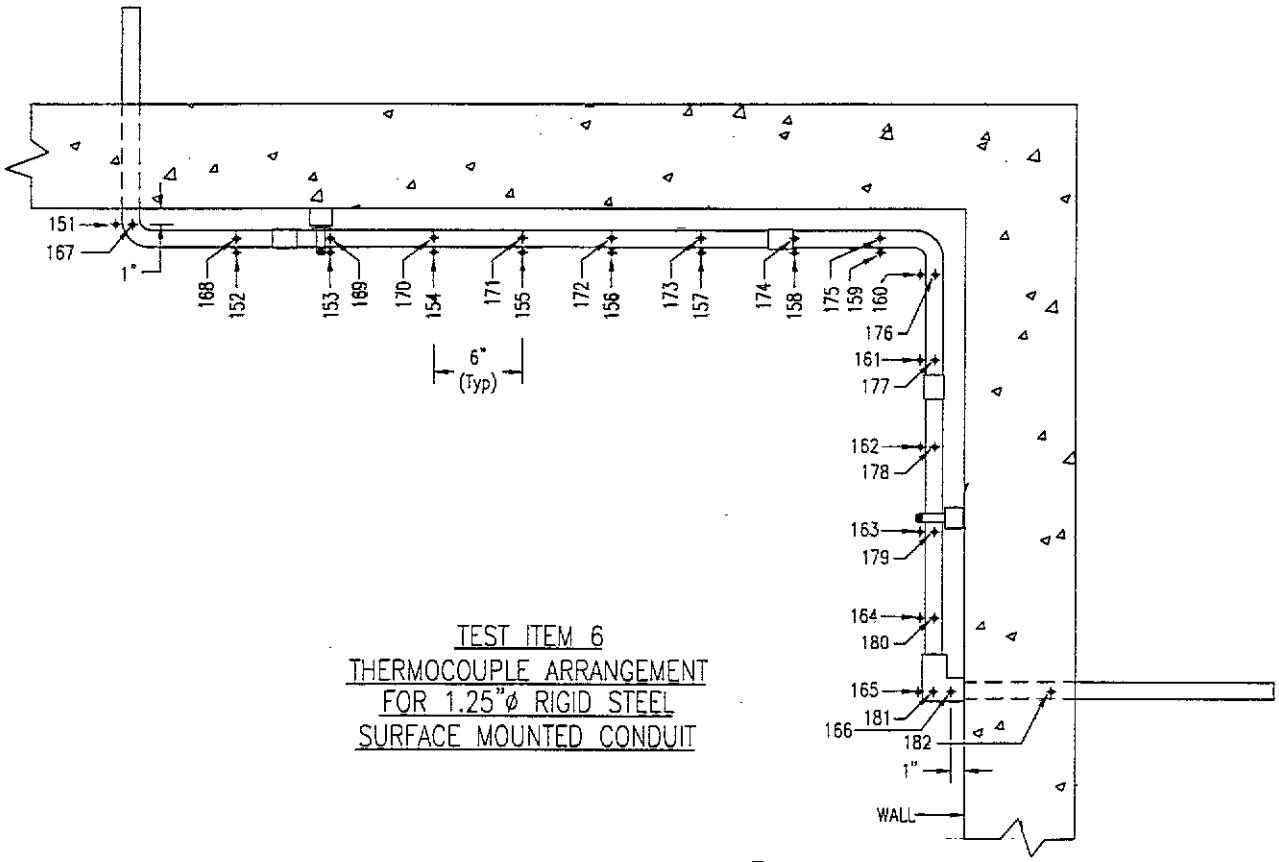
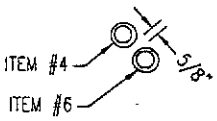
6" X 36" (I.D.) LADDER BACK CABLE TRAY

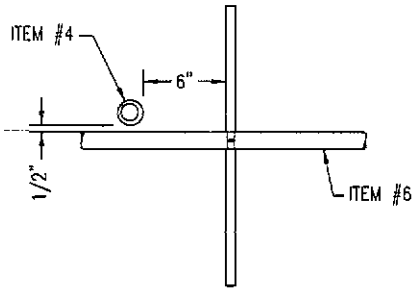
DRAWN M. Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-06T3	REV. 1
APPROVED G. Jarosz	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



TEST ITEM 6
THERMOCOUPLE ARRANGEMENT
FOR 1.25"ø RIGID STEEL
SURFACE MOUNTED CONDUIT



WALL VIEW OF
SLAB PENETRATION



CEILING VIEW OF CONDUITS
PENETRATING SLAB

NOTES:
T/C's 151-166 were mounted directly to the exterior of conduit while T/C's 167-182 were mounted to a bare #8 AWG copper wire located inside of the conduit.

P.O.No. SR707570

NSG CAD File 8102-07T.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

NO.	DATE	REVISION	BY	CHECKED	APPROVED
1	12/31/99	AS BUILT	M.S.	K.H.	G.J.

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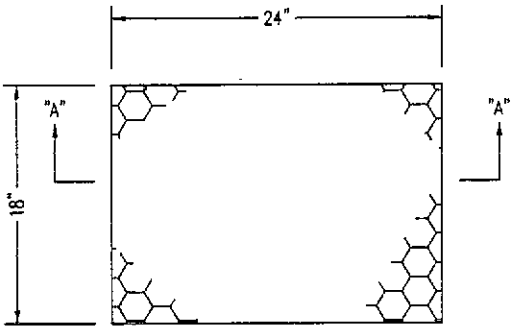
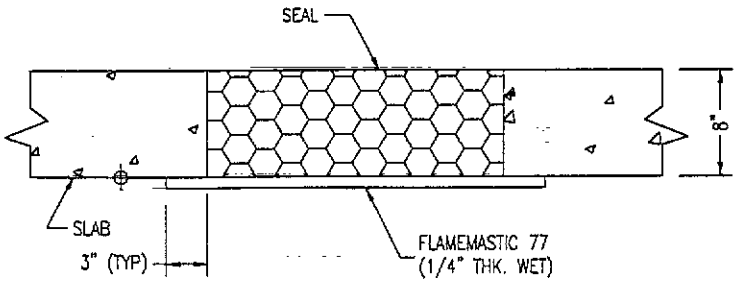
1.25"ø RIGID STEEL SURFACE MOUNTED CONDUIT

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-07T	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		

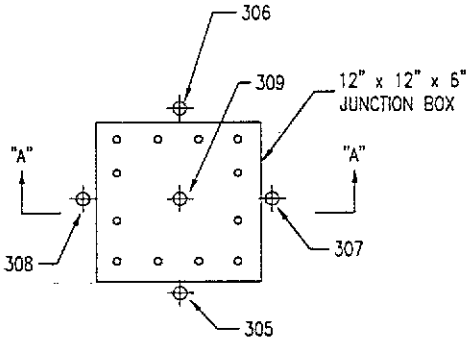


PLAN VIEW
ITEM #9

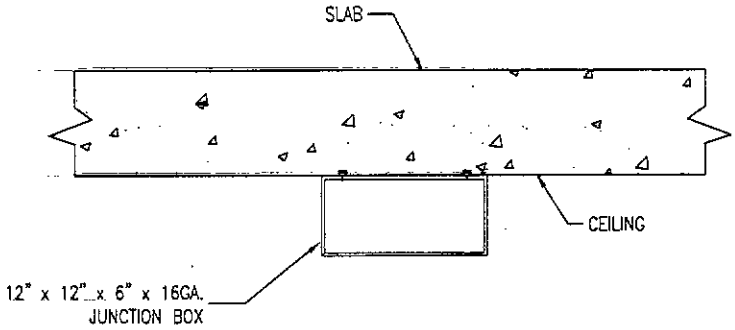


SECTION "A-A"
ITEM #9

8" THK. BLANK SILICONE FOAM SEAL
AND FLAMEMASTIC 77



CEILING VIEW & THERMOCOUPLE ARRANGEMENT
ITEM #8



SECTION "A-A"
ITEM #8

SURFACE MOUNTED JUNCTION BOX

NOTES:

T/C's were mounted to the interior surface of the box with sheet metal screws. T/C's 305-308 were mounted on center to the sides of the box.

T/C 309 installed in center of cover.

P.O.No. SR707570

NSG CAD File 8102-08T.DWG

CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

NO.	DATE	REVISION	BY	CHECKED	APPROVED
1	12/31/99	AS BUILT	M.S.	K.H.	G.J.

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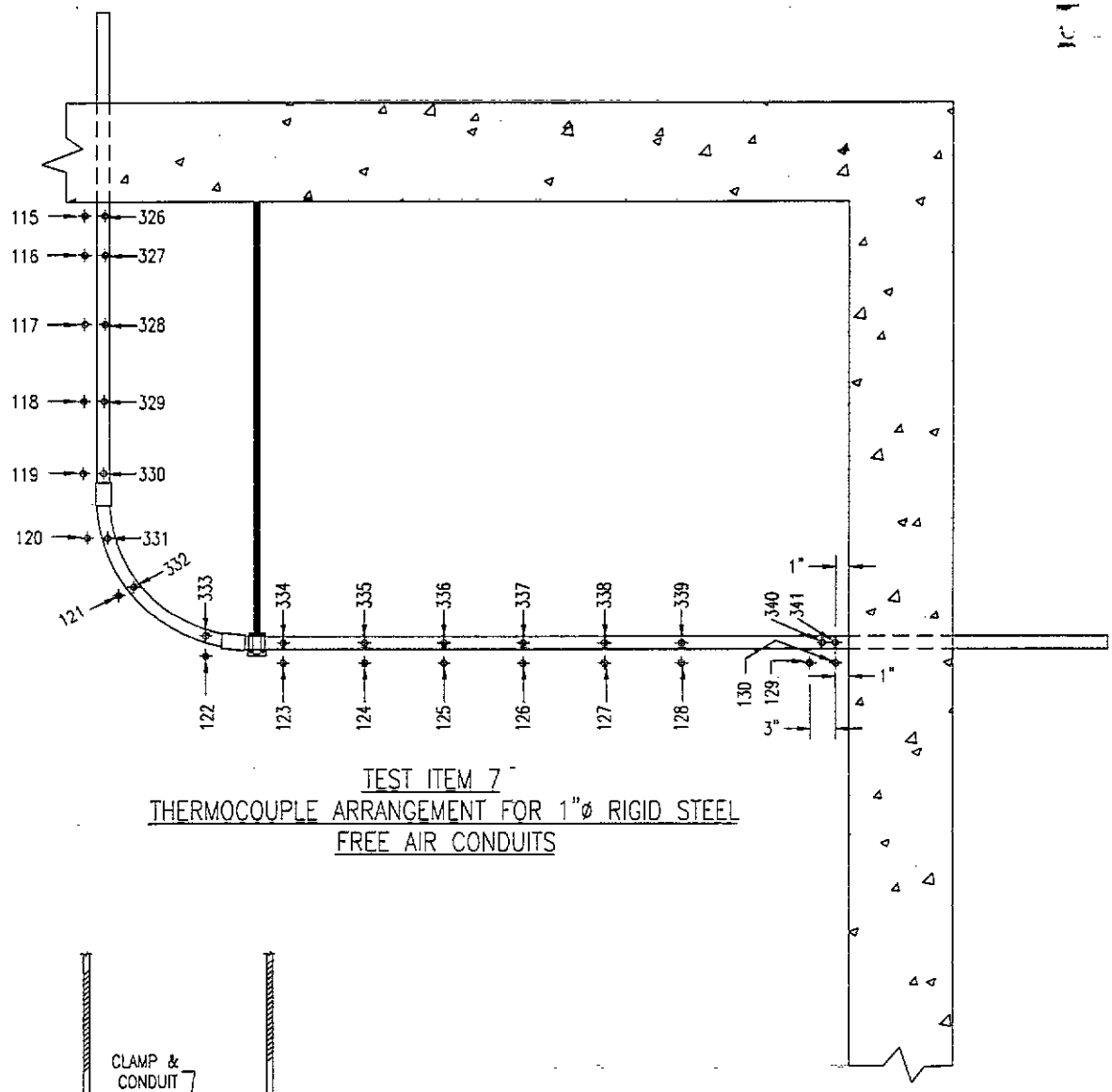
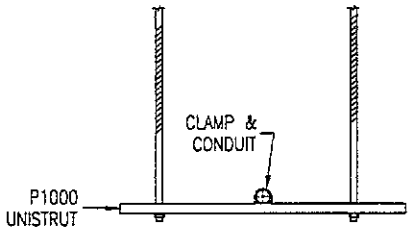
ITEM #8 AND ITEM #9

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-08T	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



TEST ITEM 7
THERMOCOUPLE ARRANGEMENT FOR 1"ø RIGID STEEL FREE AIR CONDUITS



ITEM 7

P.O.No. SR707570

NSG CAD File 8102-09T.DWG

NOTES:
T/C's 115-130 mounted directly on exterior of conduit while T/C's 326-341 were mounted on a bare #8 AWG wire located inside of conduit.

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

NO.	DATE	REVISION	BY	CHECKED	APPROVED
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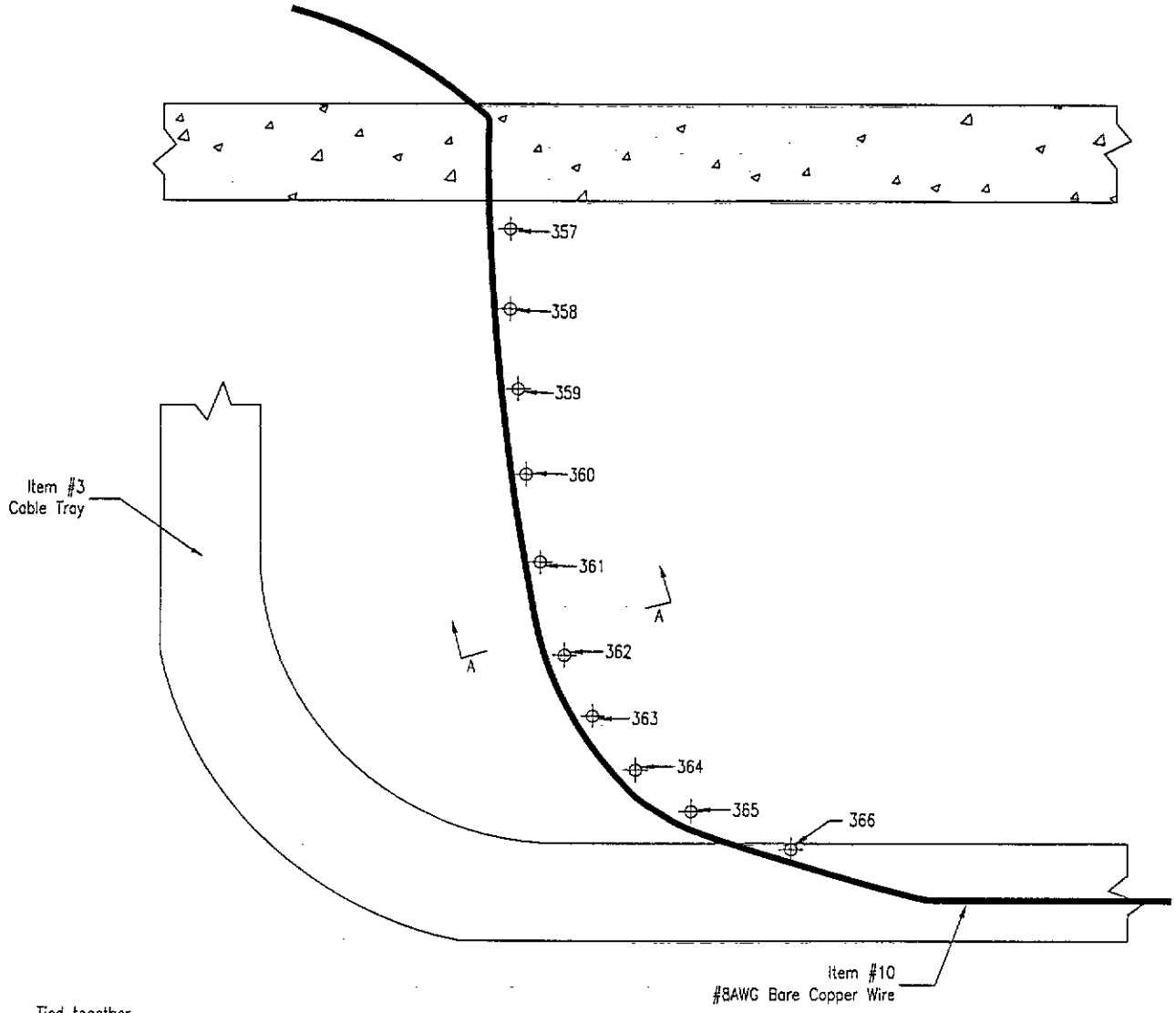
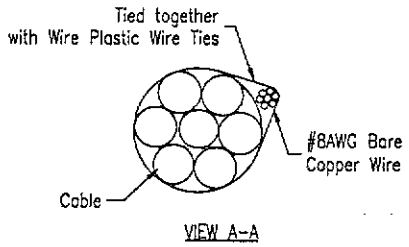
1"ø RIGID STEEL FREE AIR CONDUITS

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-09T	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		





TEST ITEM 10

T/C's ON FREE AIR #8 AWG COPPER WIRE

P.O.No. SR707570

NSG CAD File B102-10T.DWG

NOTES:
T/C's 357-366 are mounted directly on #8AWG Bare Copper Wire which is attached to the cable with wire plastic wire ties.

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CUSTOMER: South Carolina Electric & Gas Company

PROJECT NAME: R. C. Summer Nuclear Station

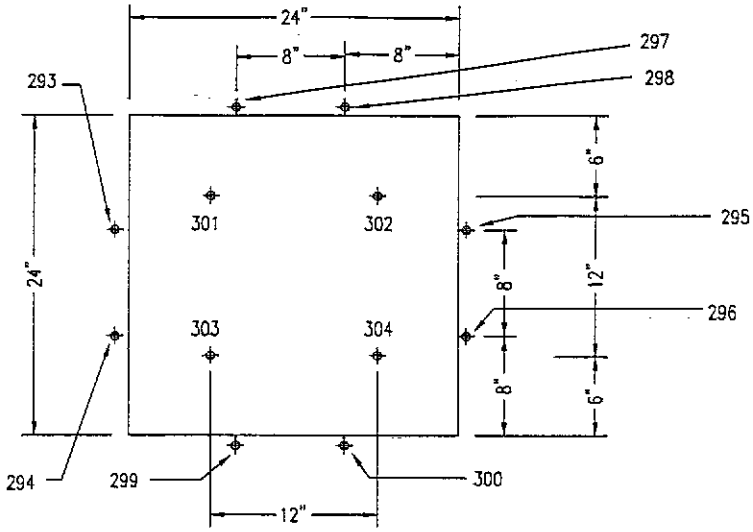
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.

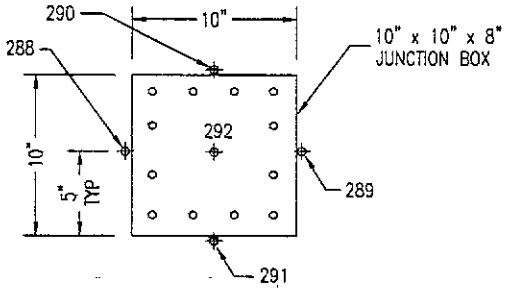
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

THERMOCOUPLES ON FREE AIR #8 AWG COPPER WIRE

DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-10T	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		



PLAN VIEW
ITEM #11



CEILING VIEW
ITEM #12

SURFACE MOUNTED JUNCTION BOX

NOTES
T/C's 293-300 on item #11 are on the side of the box.
T/C's 301-304 are on the cover of item #11.
T/C's 288-291 are on the side of the box.
T/C 292 is on the cover of item #12.

P.O.No. SR707570

NSG CAD File 8102-11T.DWG

CUSTOMER: South Carolina Electric & Gas Company
PROJECT NAME: R. C. Summer Nuclear Station
LOCATION: Jenkinsville, South Carolina

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

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ITEM #11 AND ITEM #12

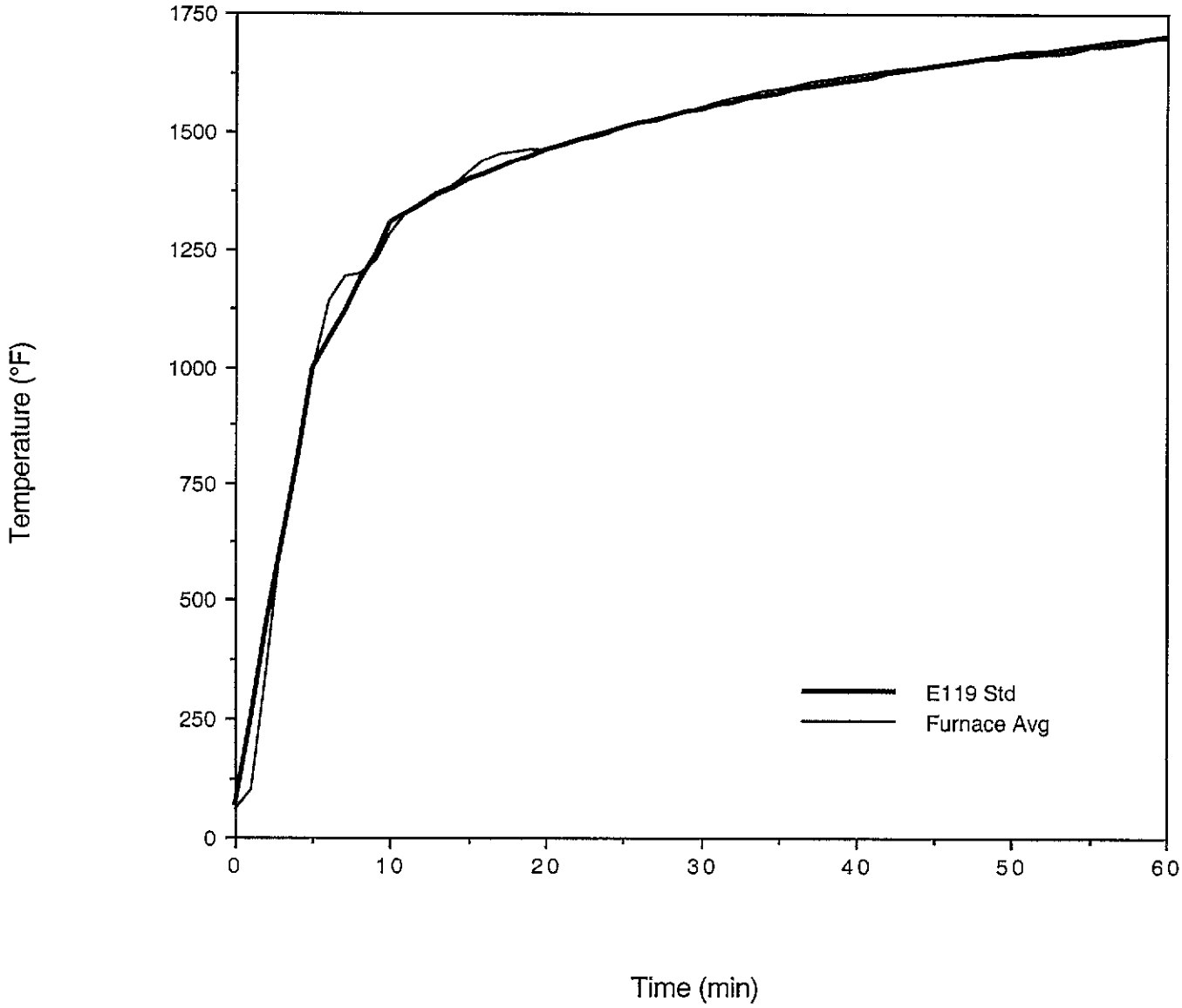
DRAWN M.Sebastiani	DATE 12/31/99	DWG. NO.: GJ-8102-11T	REV. 1
APPROVED G. JAROSZ	DATE 12/31/99		
SCALE N. T. S.	PLOT "LIMITS"		

Appendix E

TEST DATA

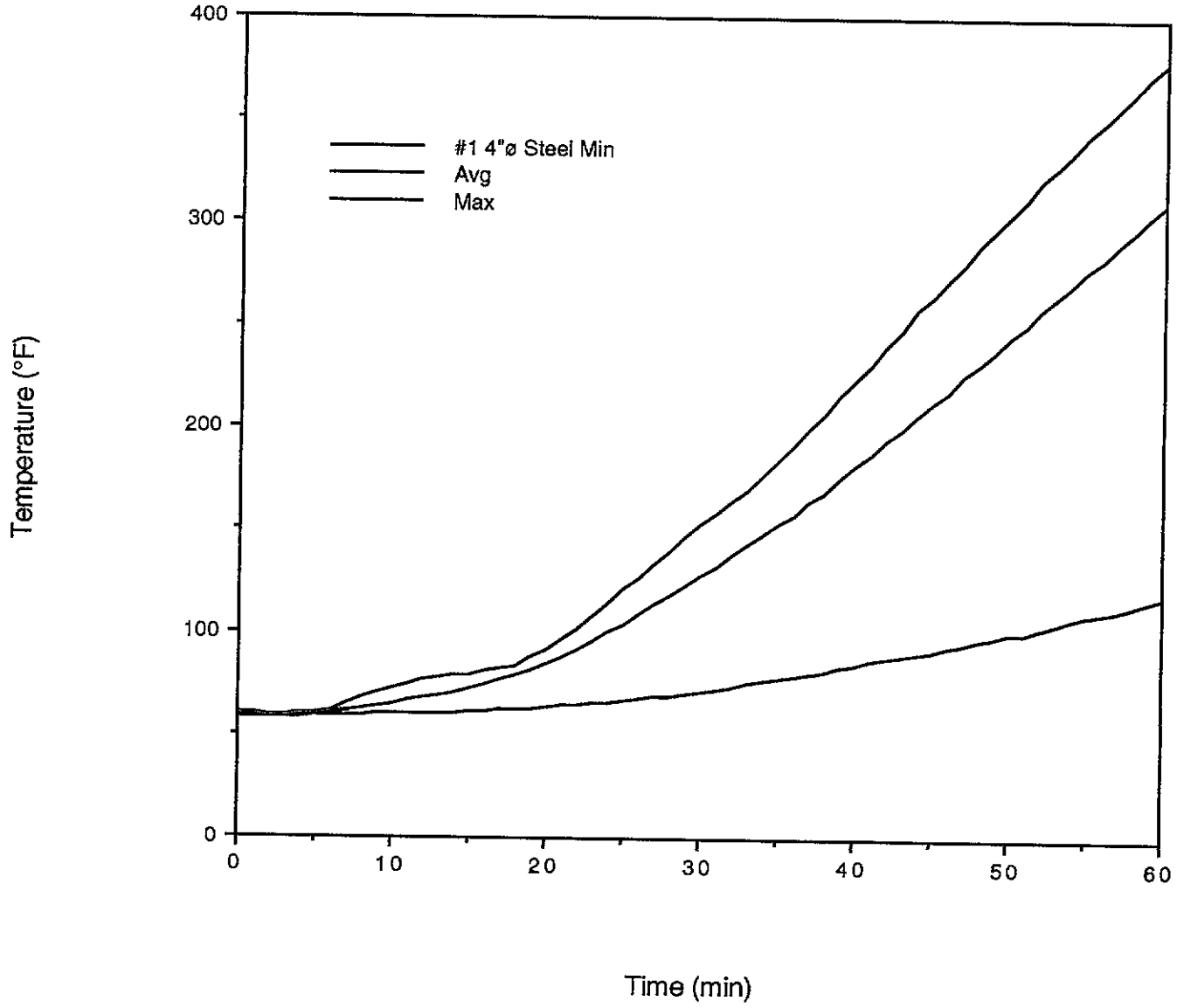
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Furnace Interior Temperature



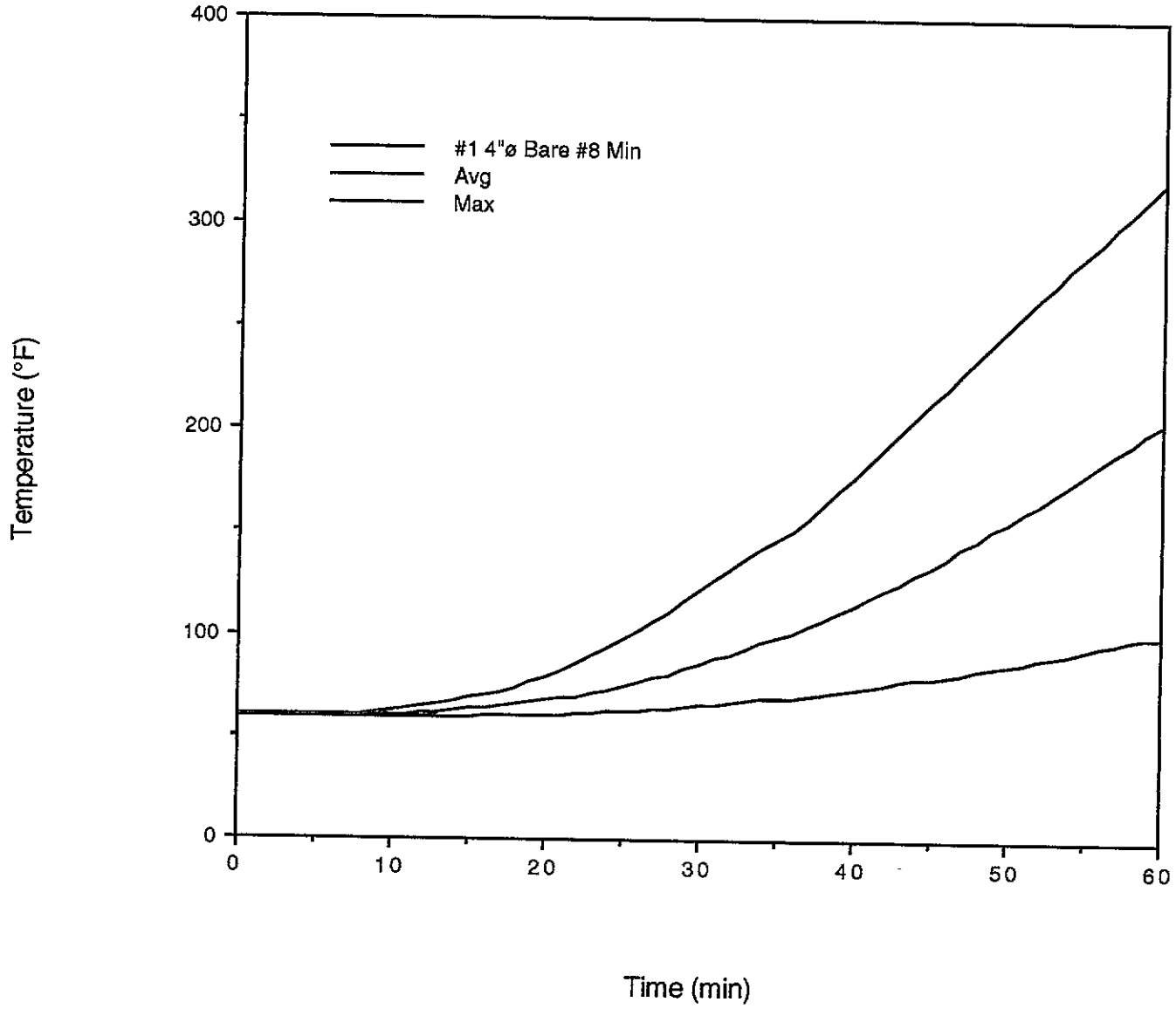
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #1: 4"ø Conduit Steel Temperatures



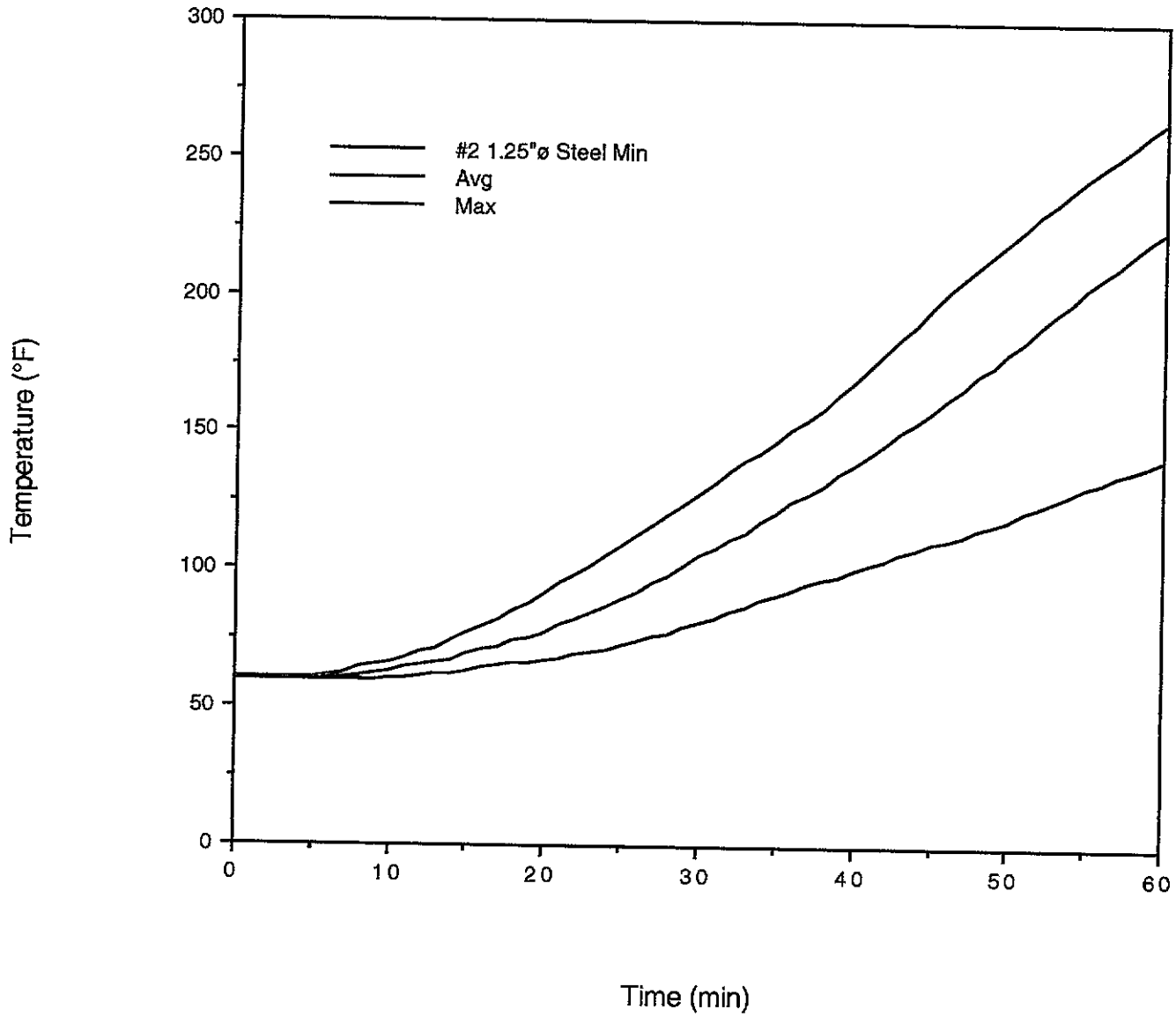
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #1: 4"ø Conduit Bare #8 Temperatures



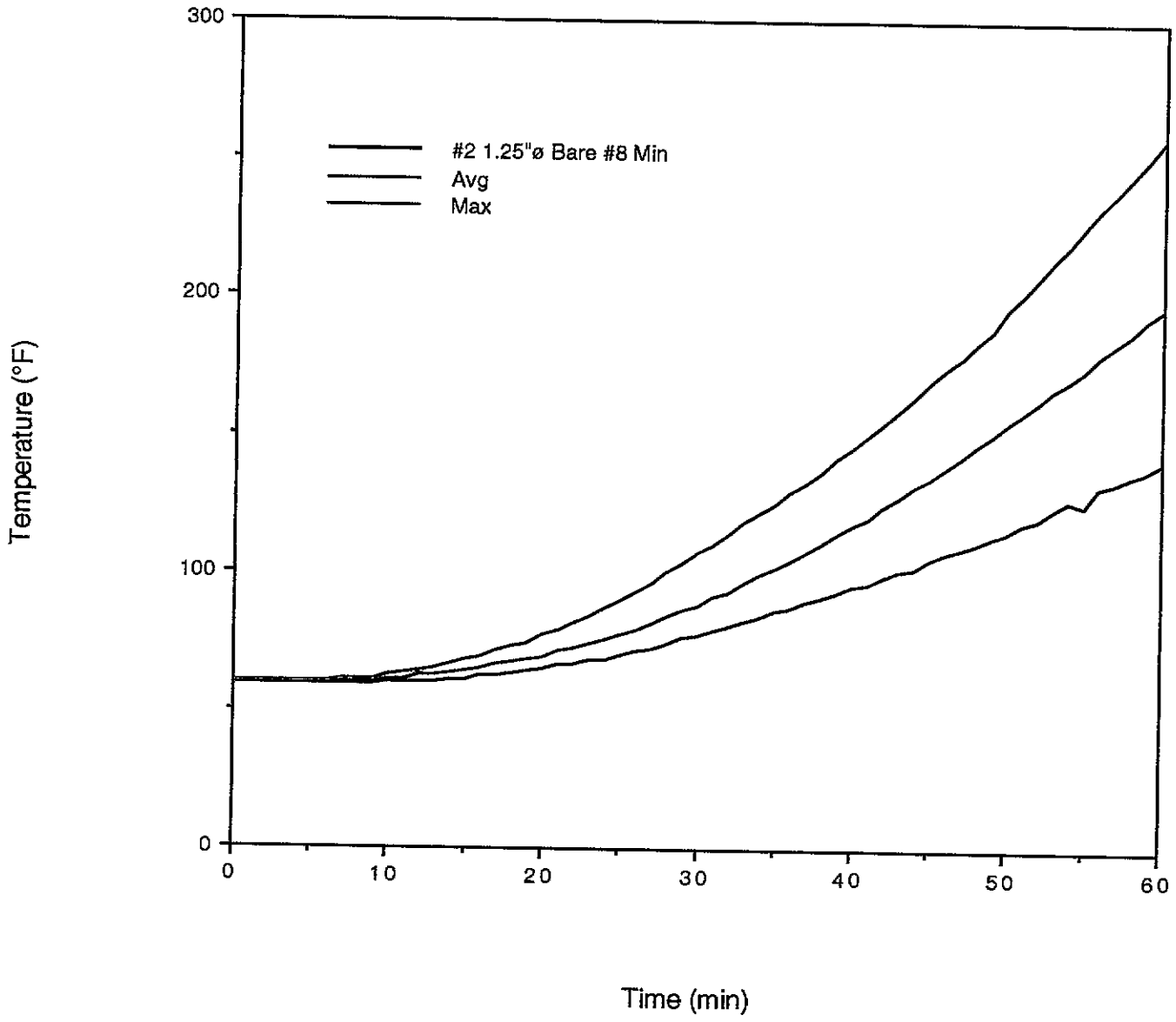
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #2: 1.25"ø Conduit Steel Temperatures



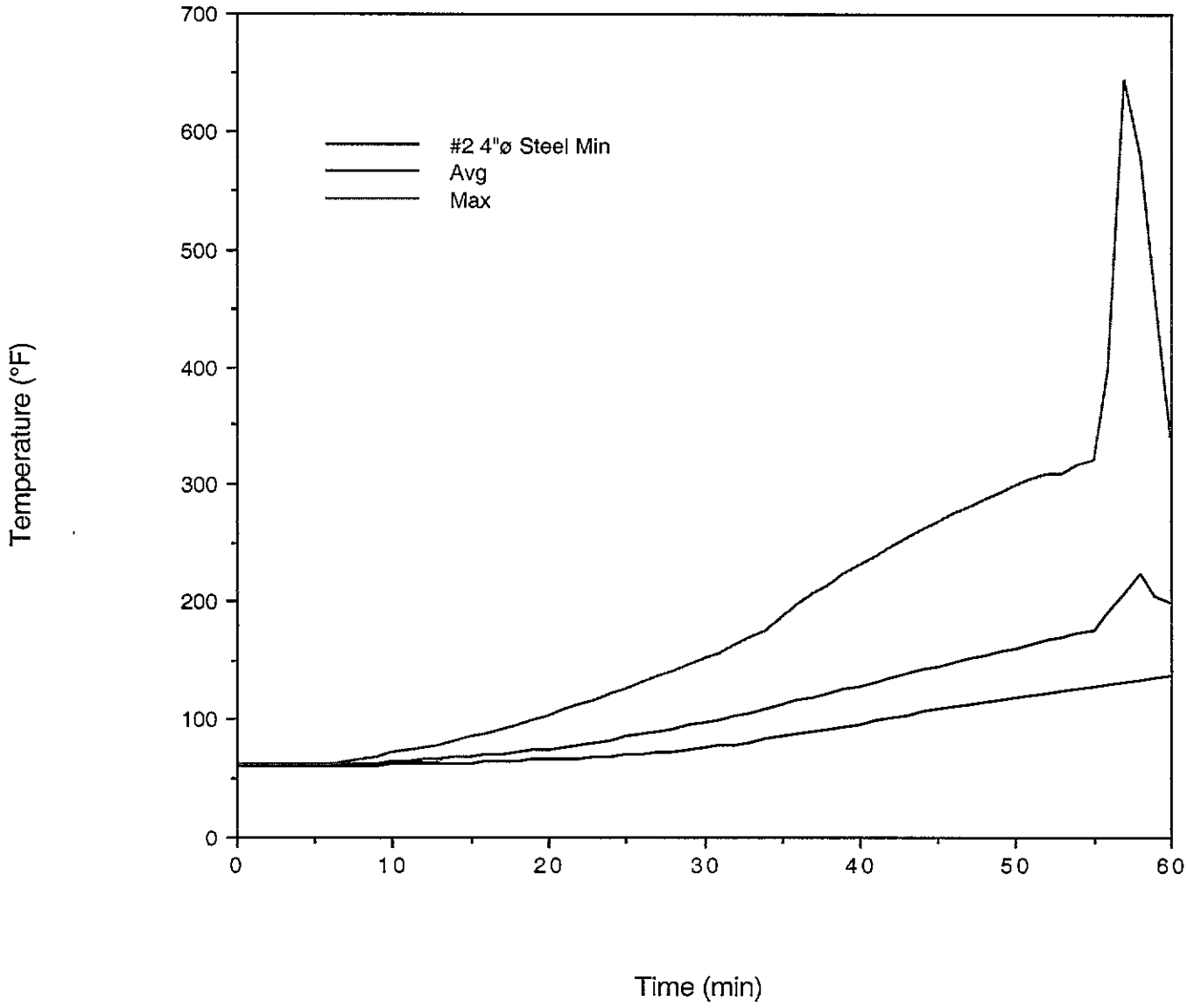
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #2: 1.25"ø Conduit Bare #8 Temperatures



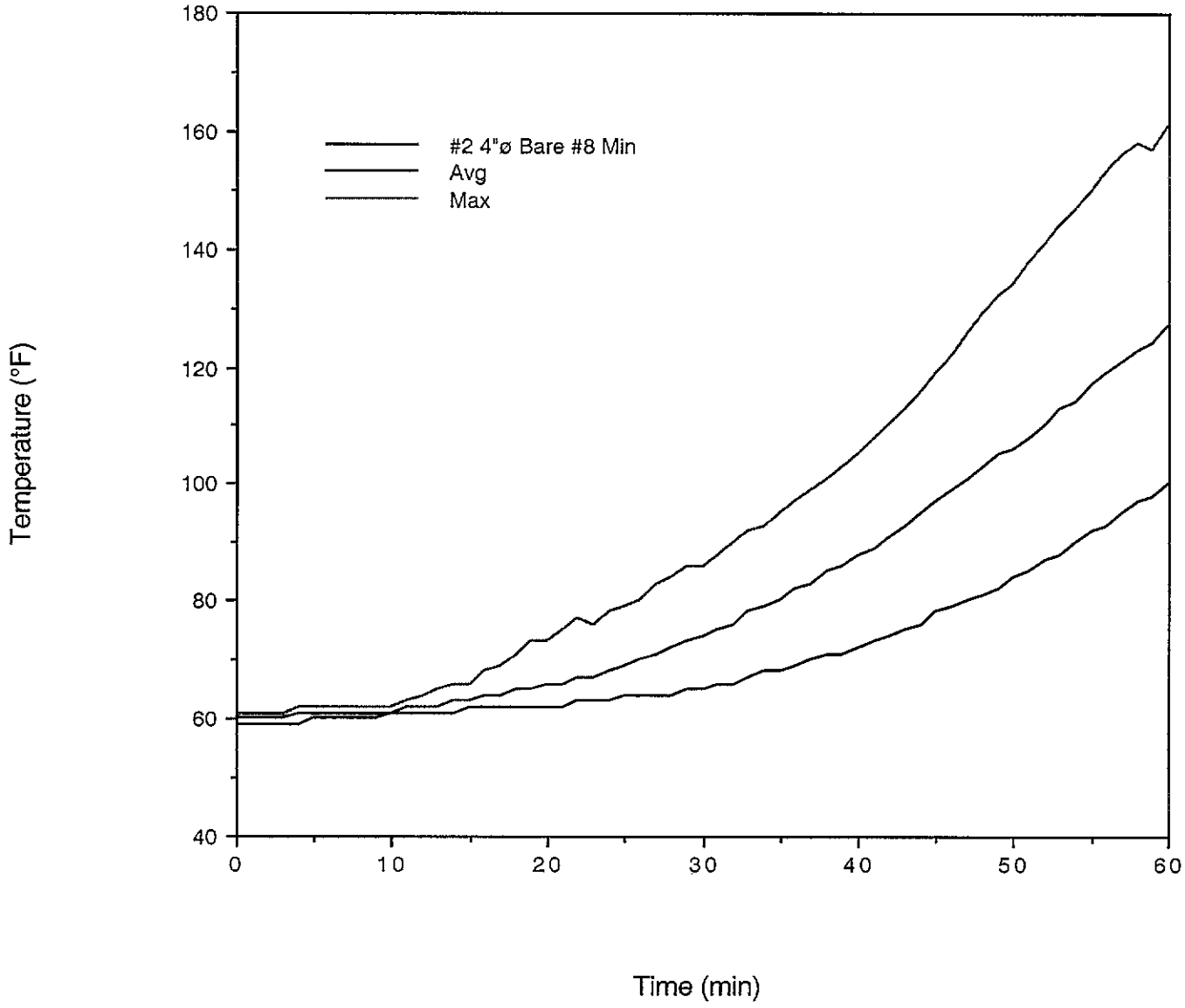
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #2: 4"ø Conduit Steel Temperatures



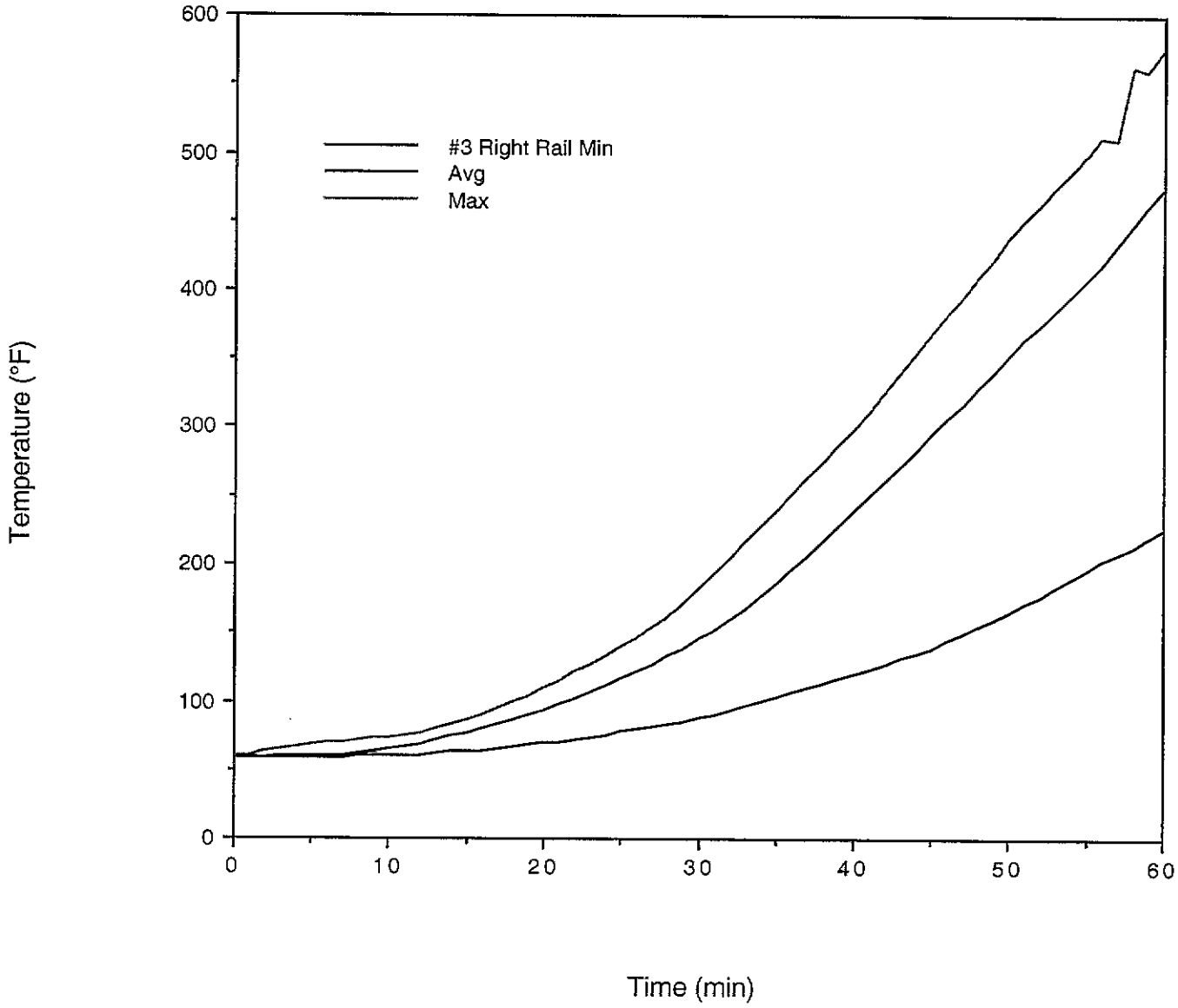
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #2: 4"ø Conduit Bare #8 Temperatures



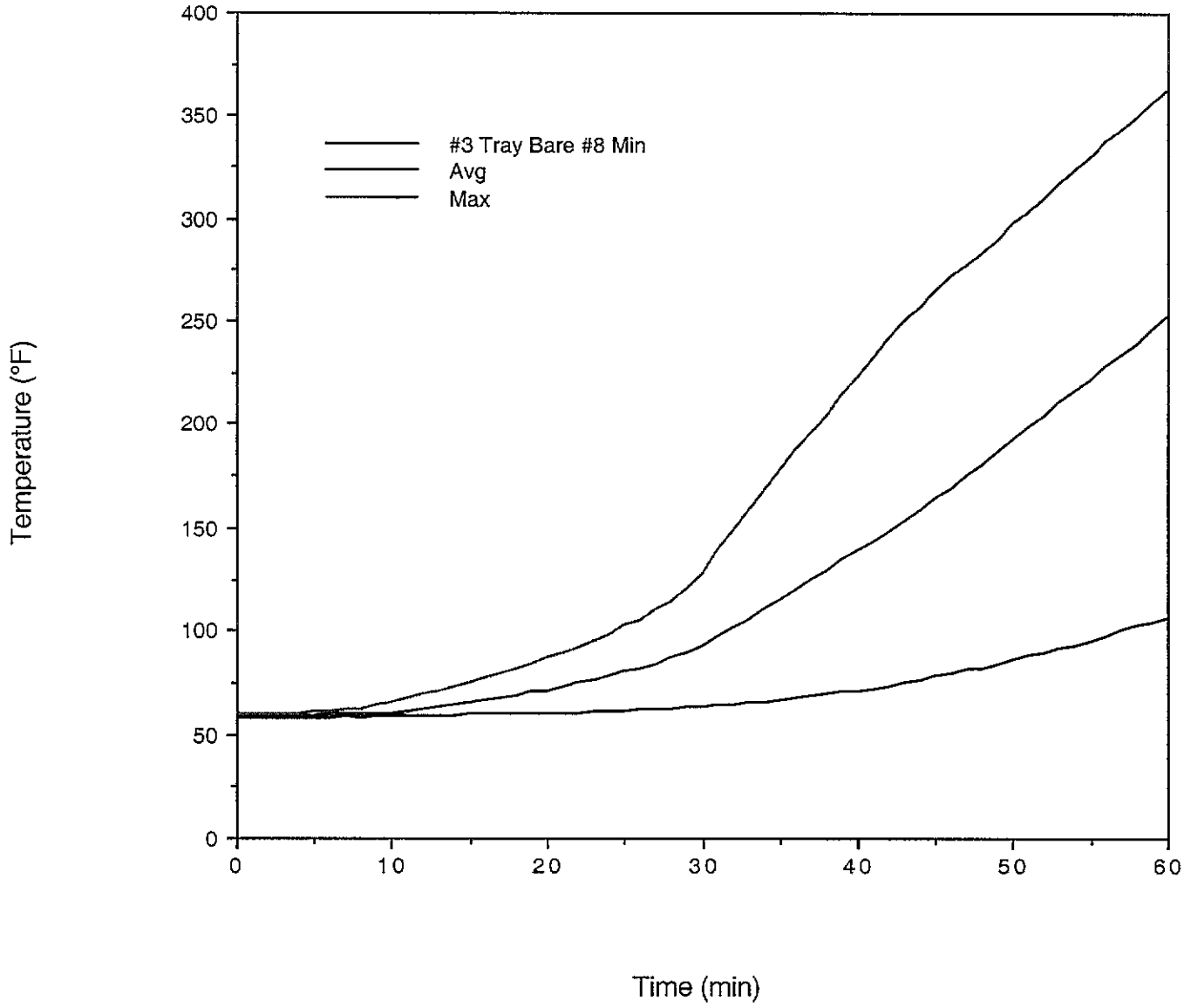
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #3: Right Rail Temperatures



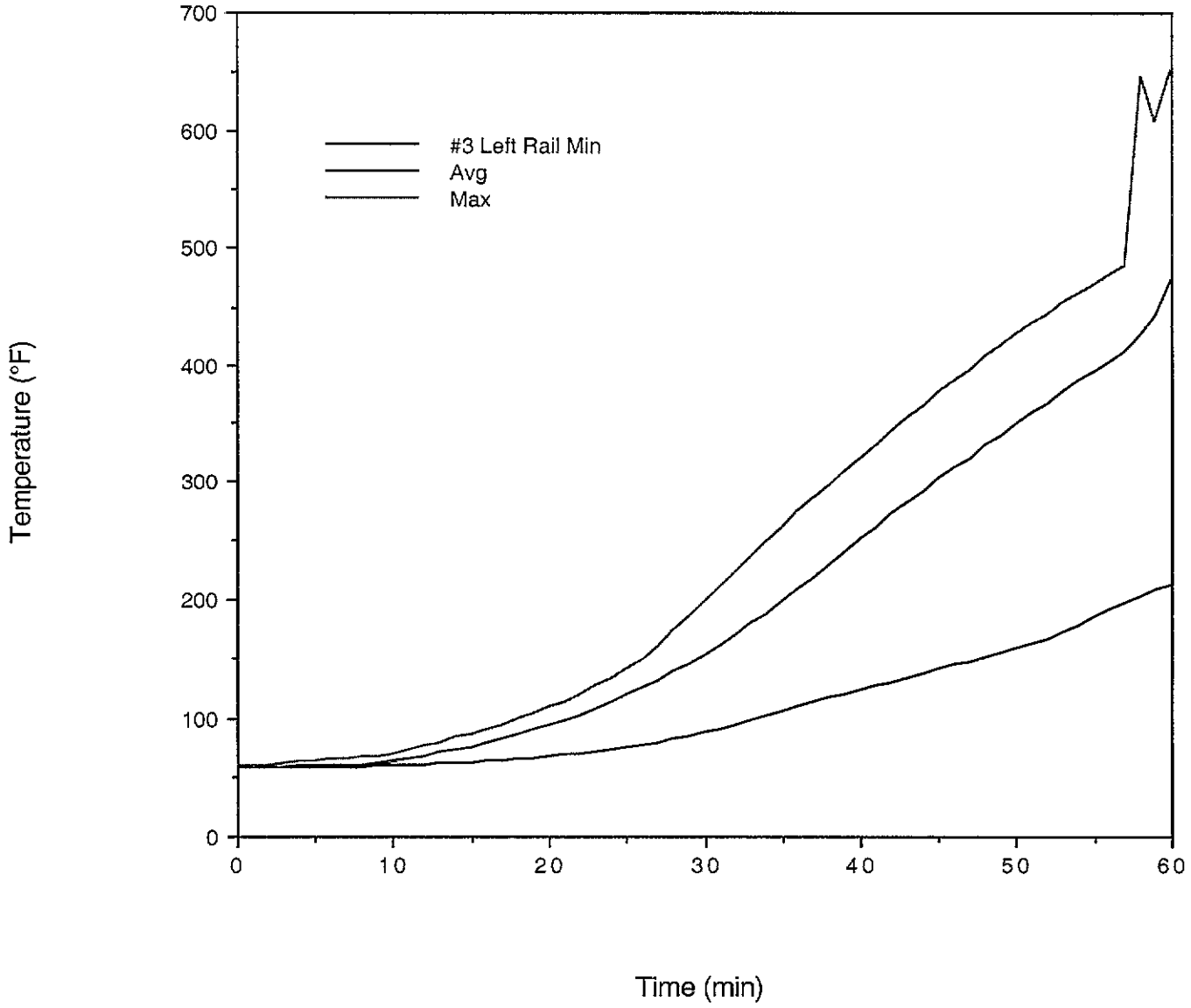
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #3: Bare #8 Temperatures



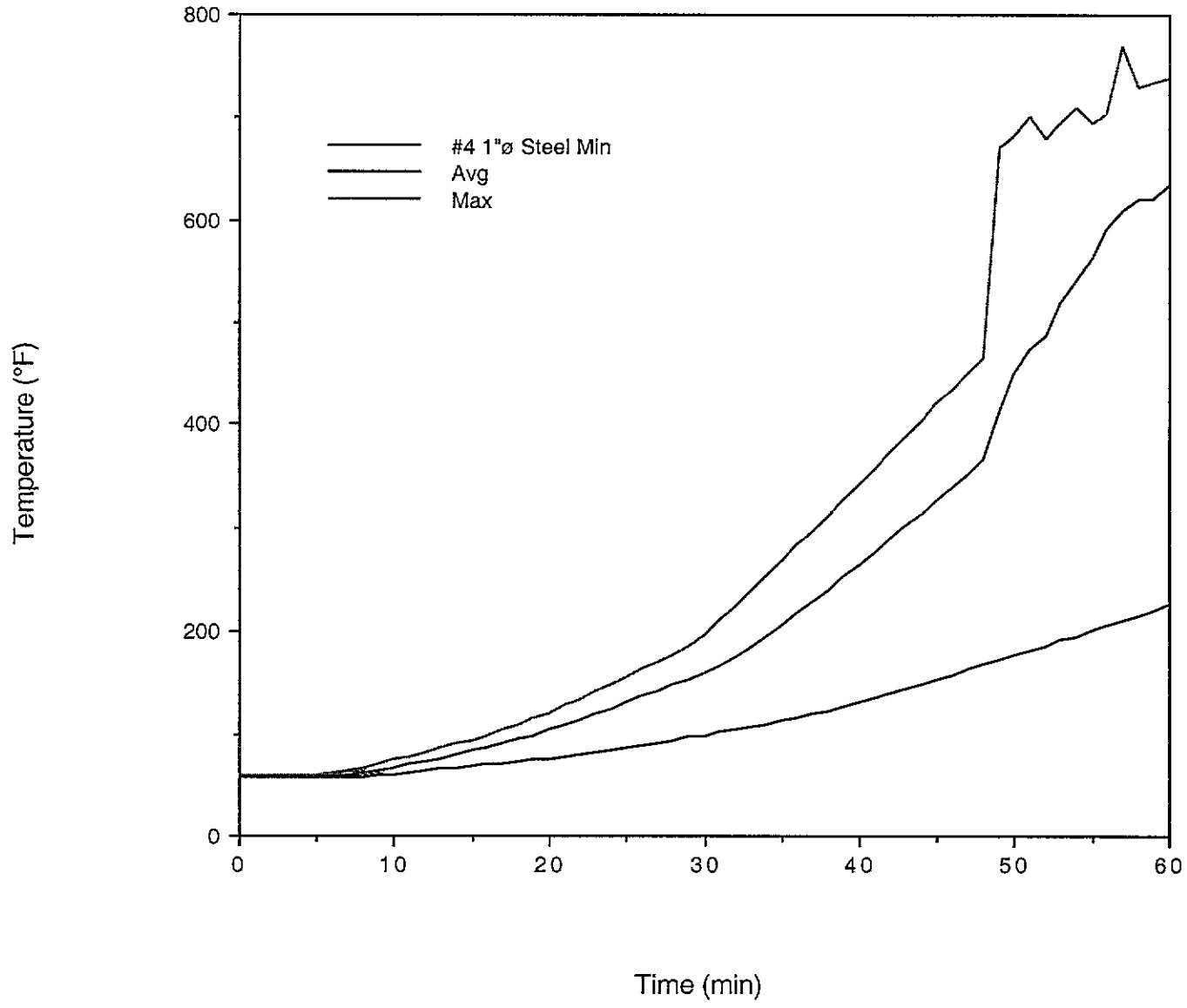
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #3: Left Rail Temperatures



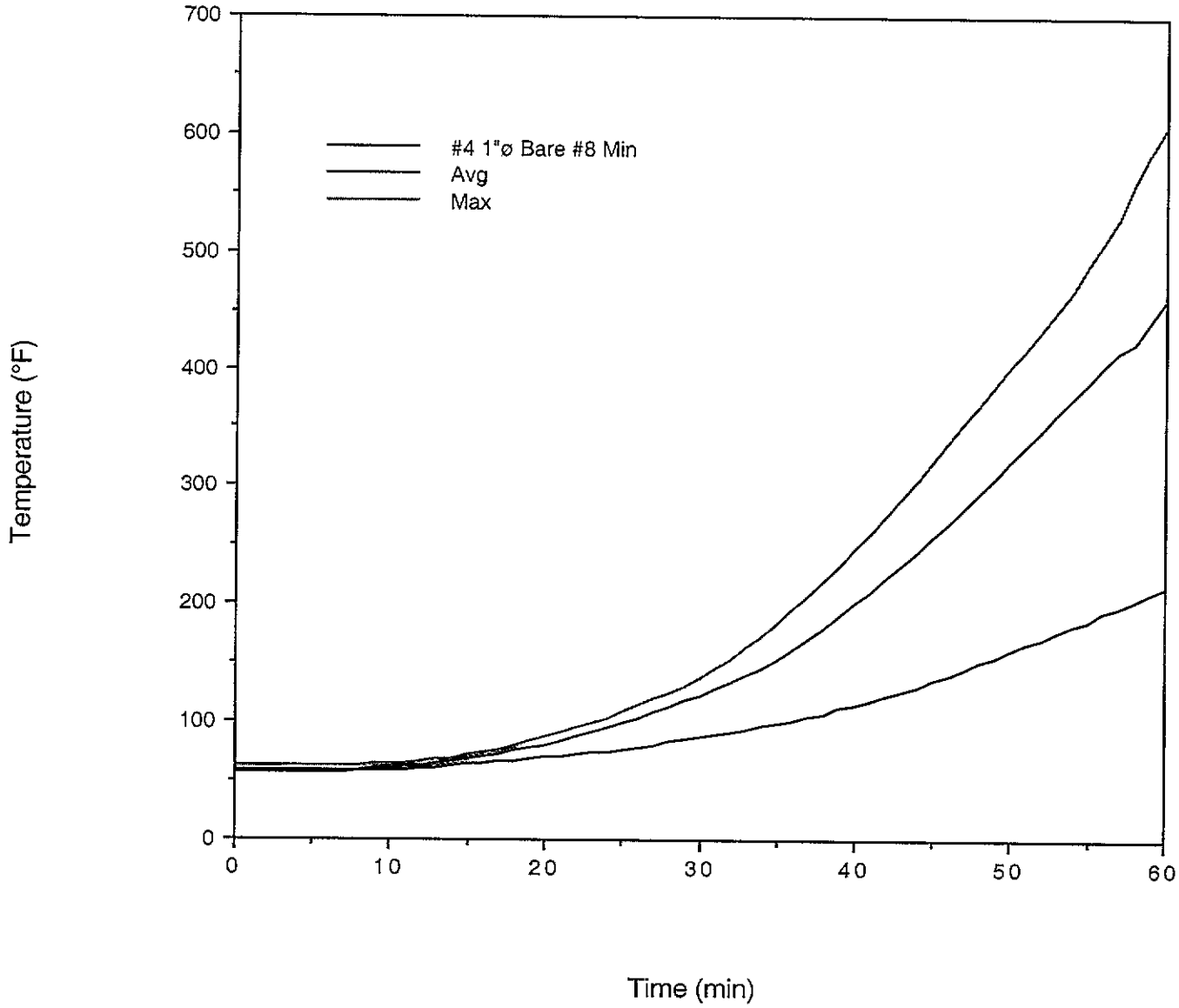
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #4: 1"ø Conduit Steel Temperatures



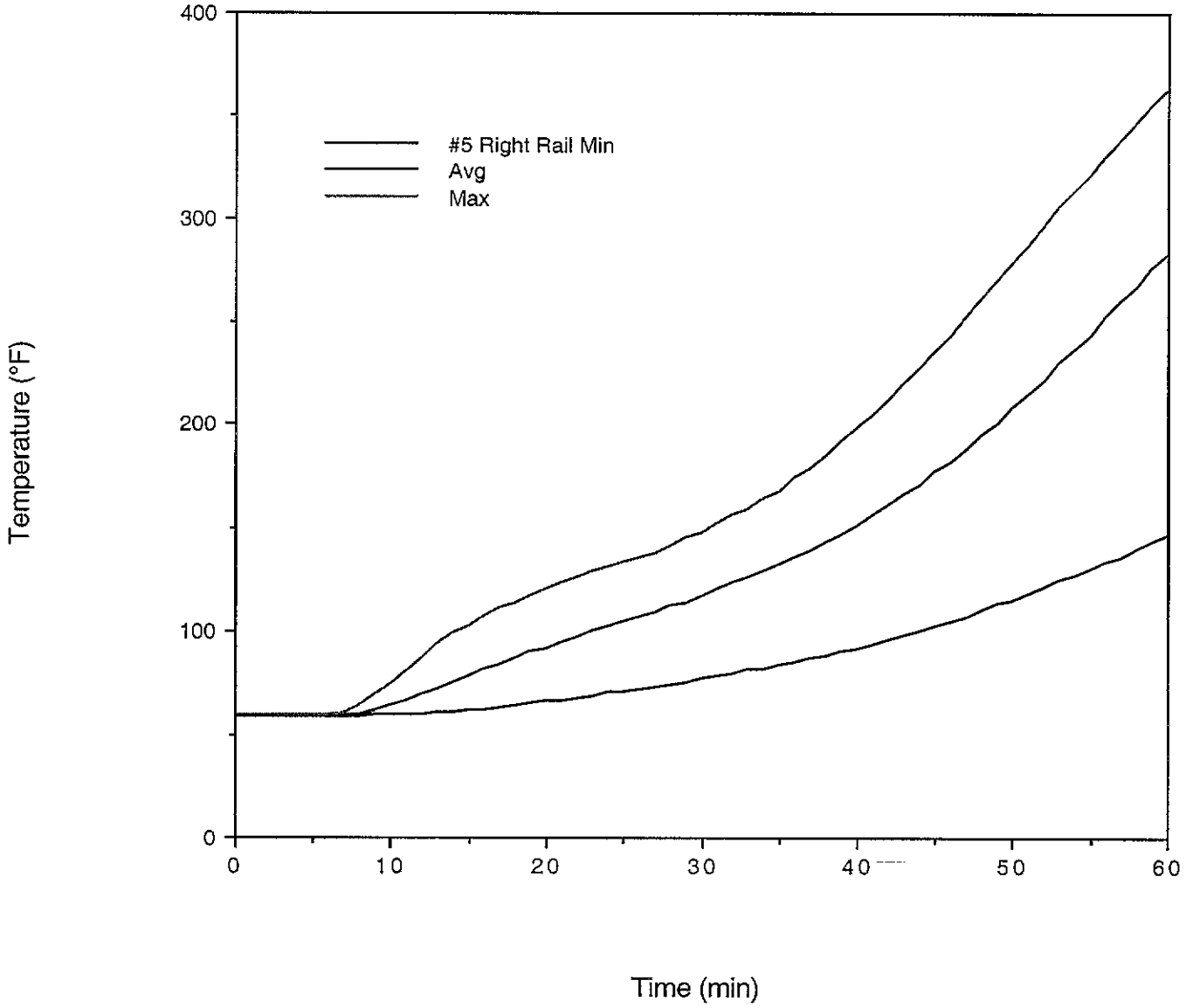
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #4: 1"ø Conduit Bare #8 Temperatures



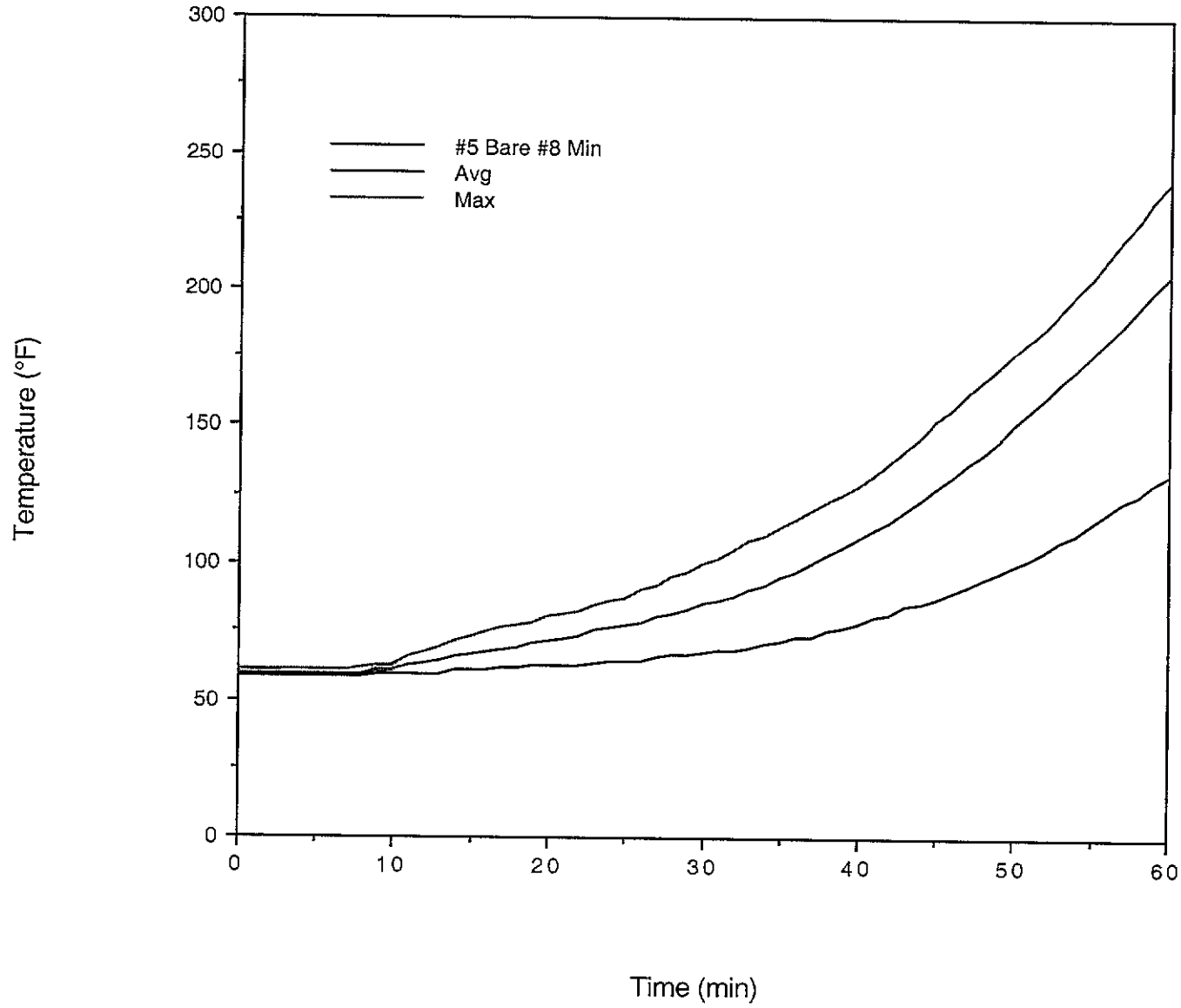
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #5: Right Rail Temperatures



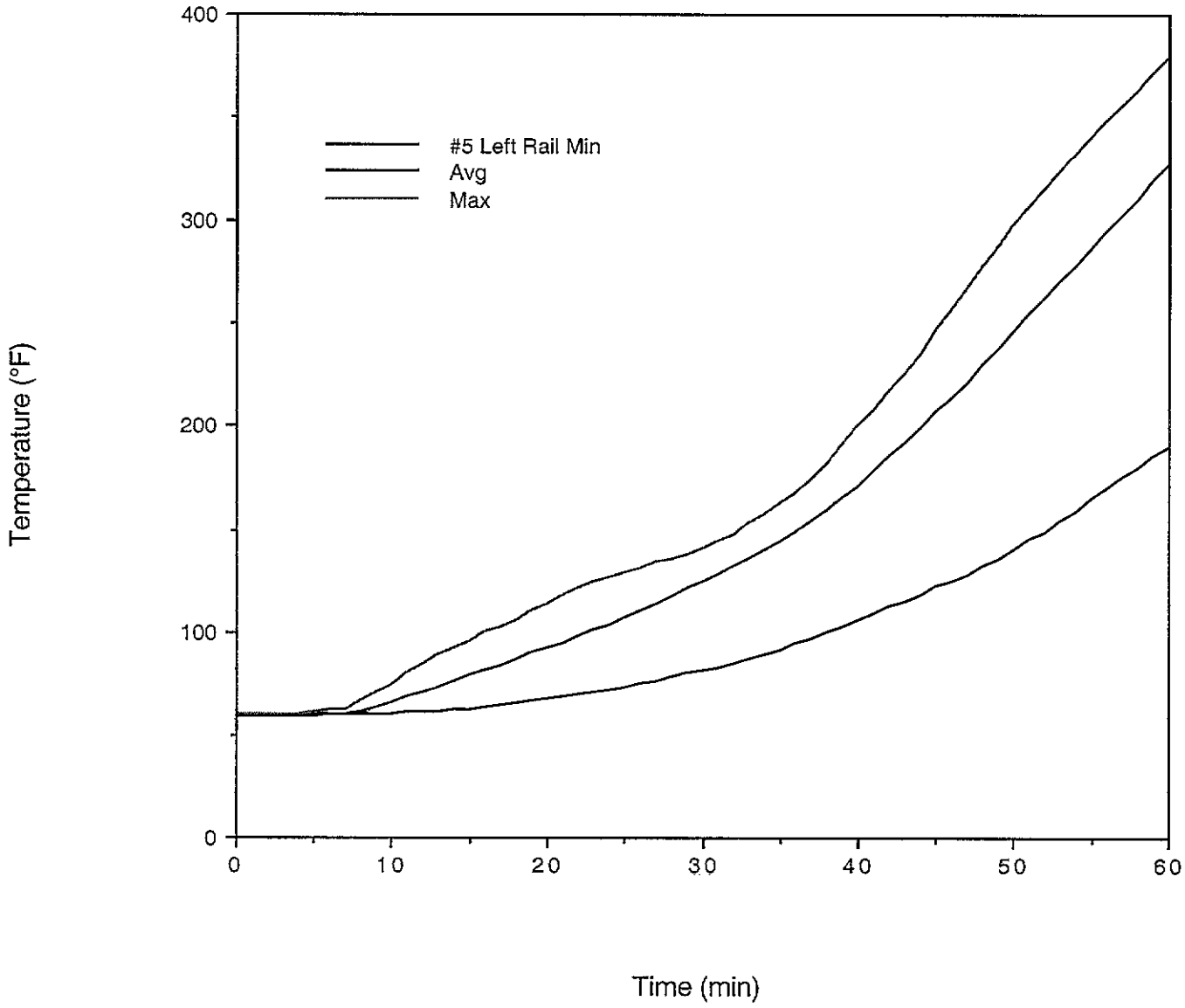
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #5: Bare #8 Temperatures



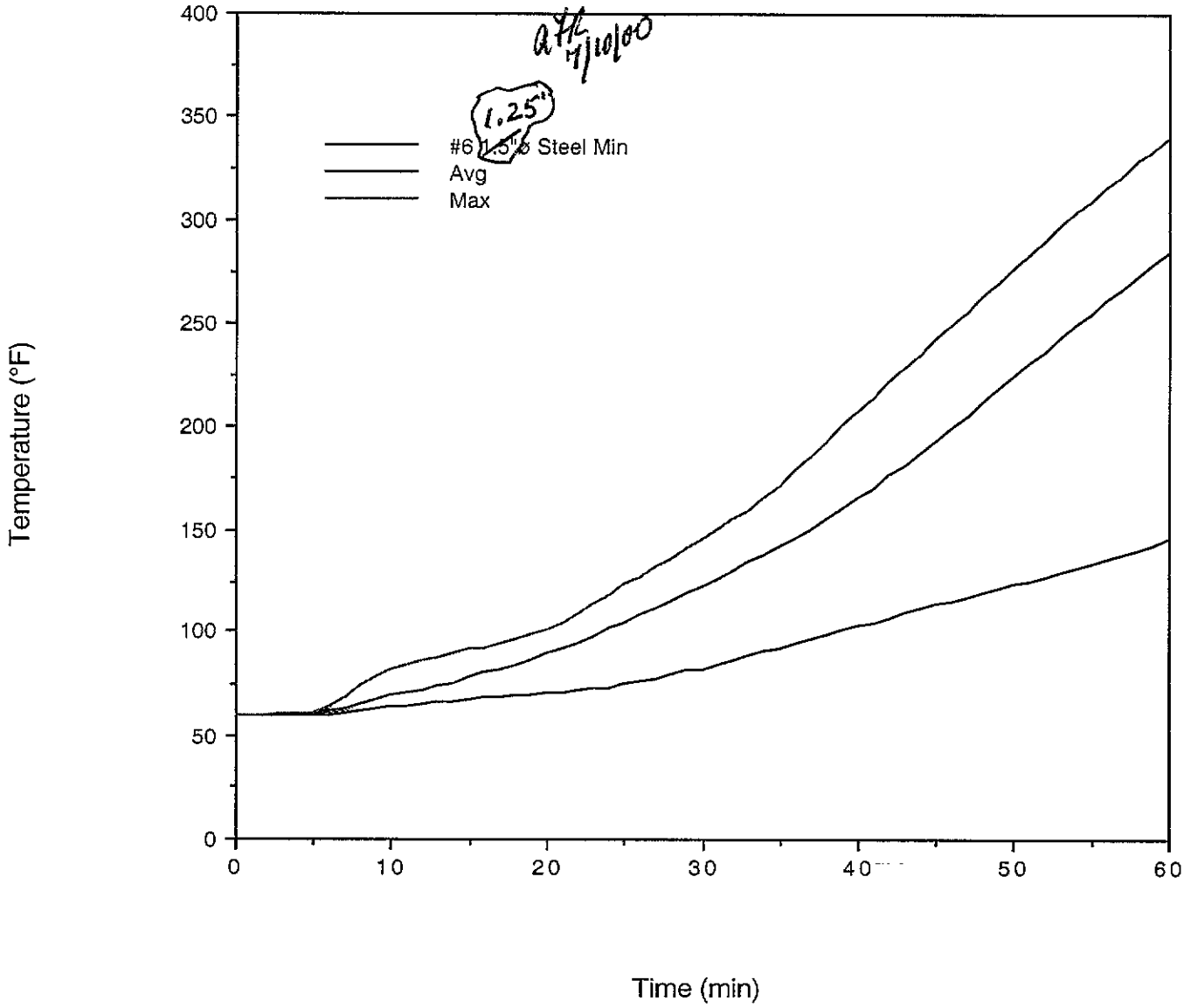
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #5: Left Rail Temperatures



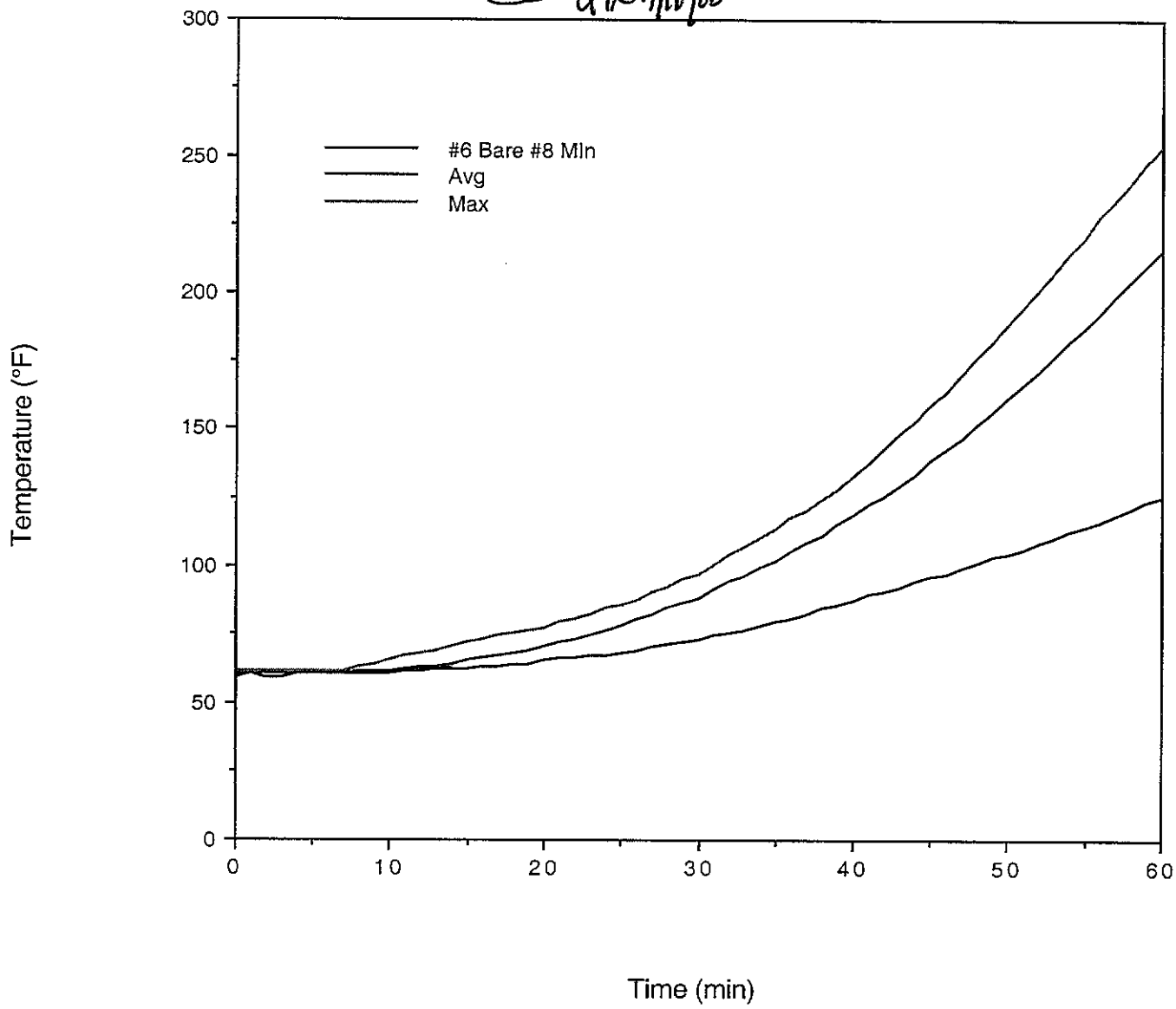
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #6: ~~1.5"ø~~ 1.25" Conduit Steel Temperatures



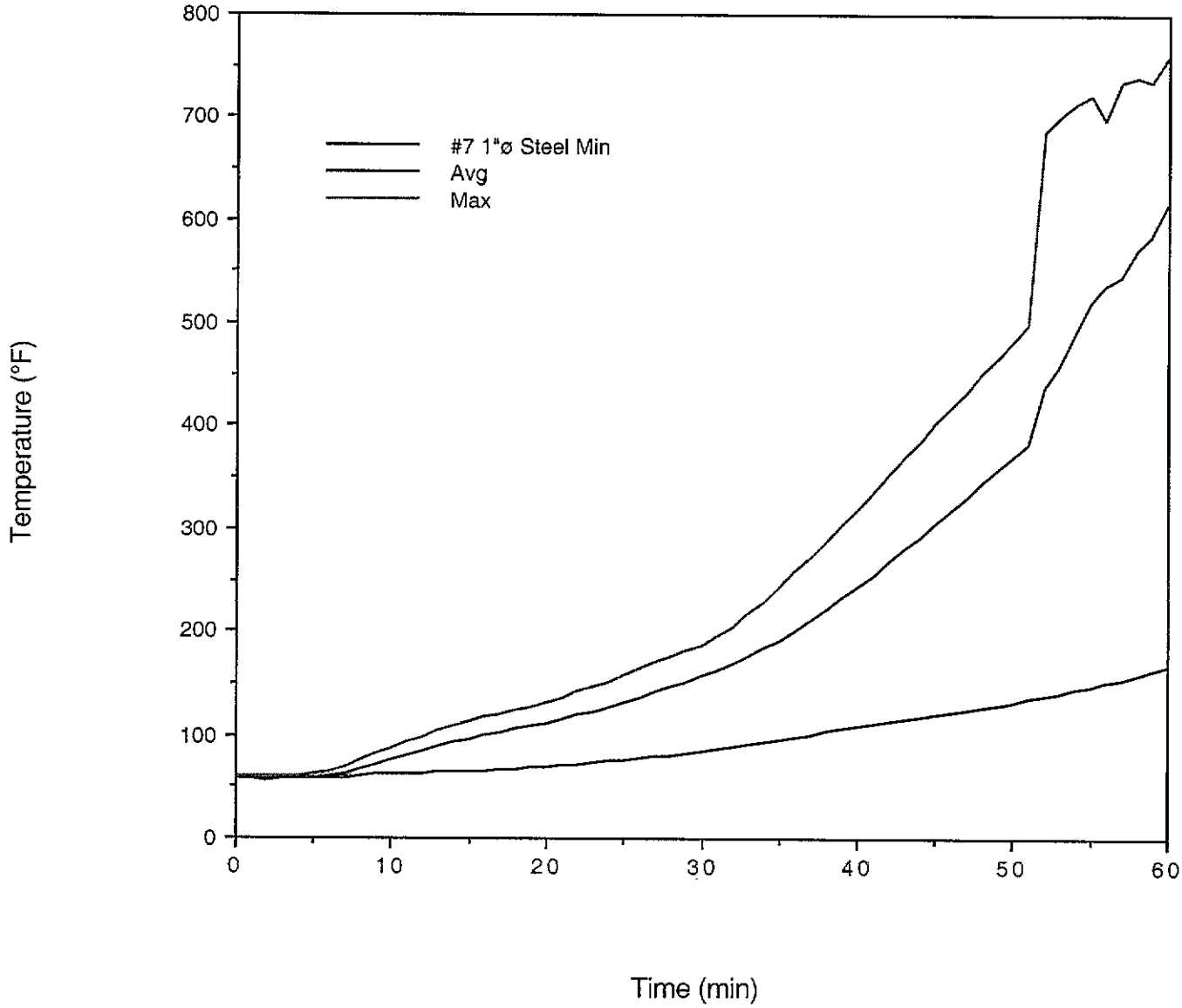
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #6: ~~1.5"~~ 1.25" ø Conduit Bare #8 Temperatures
QTR 7/10/00



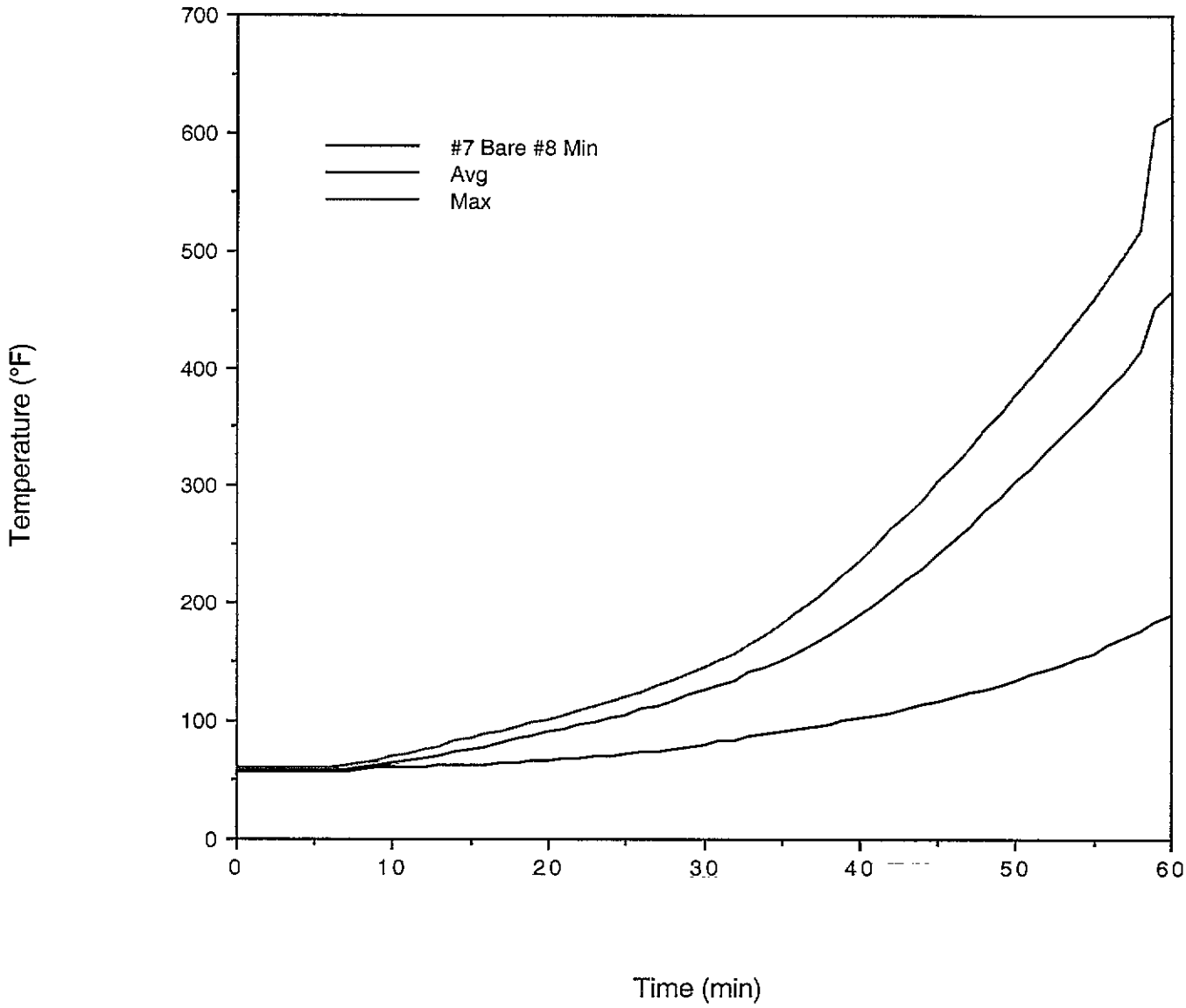
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #7: 1"ø Conduit Steel Temperatures



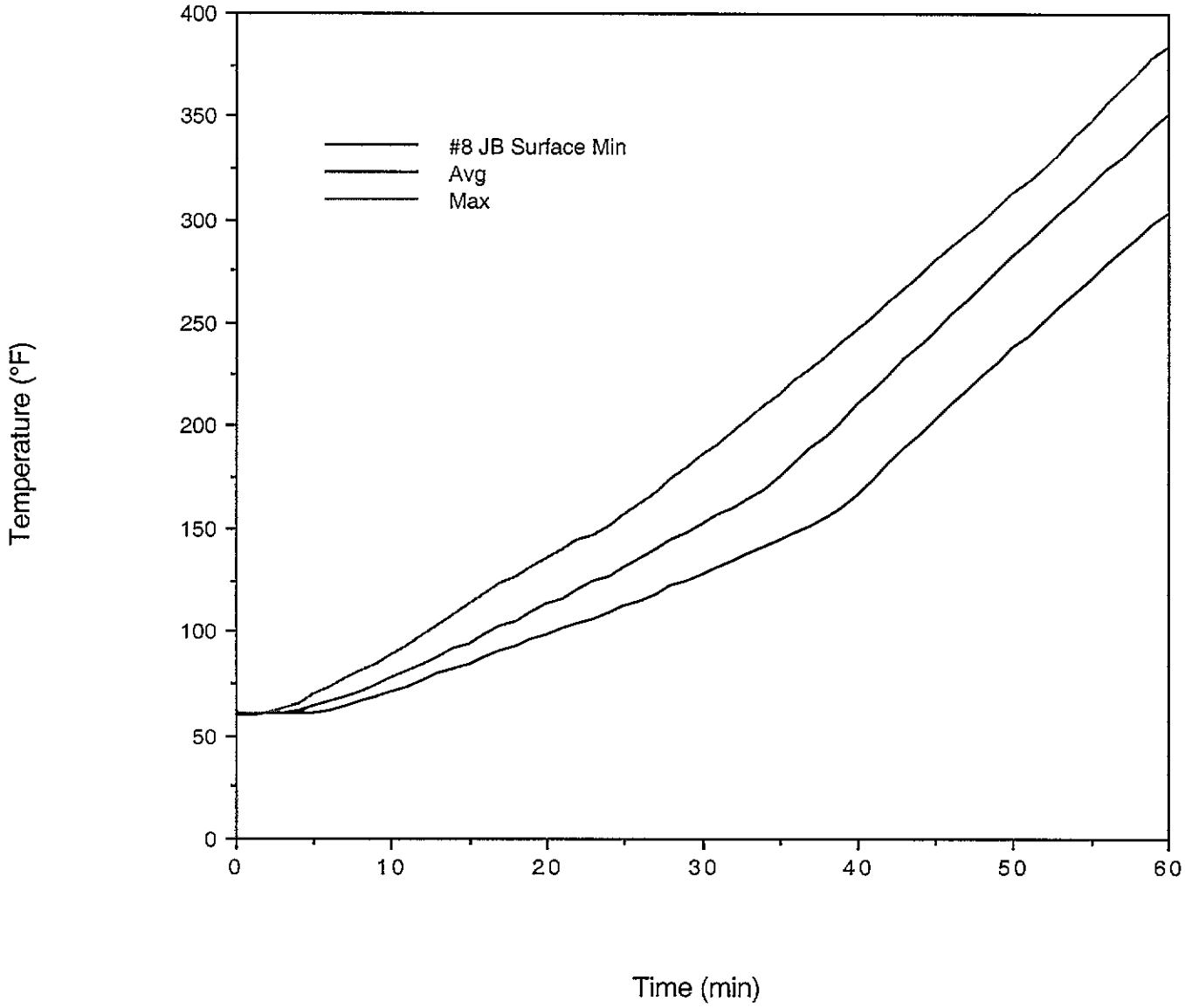
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #7: 1"ø Conduit Bare #8 Temperatures



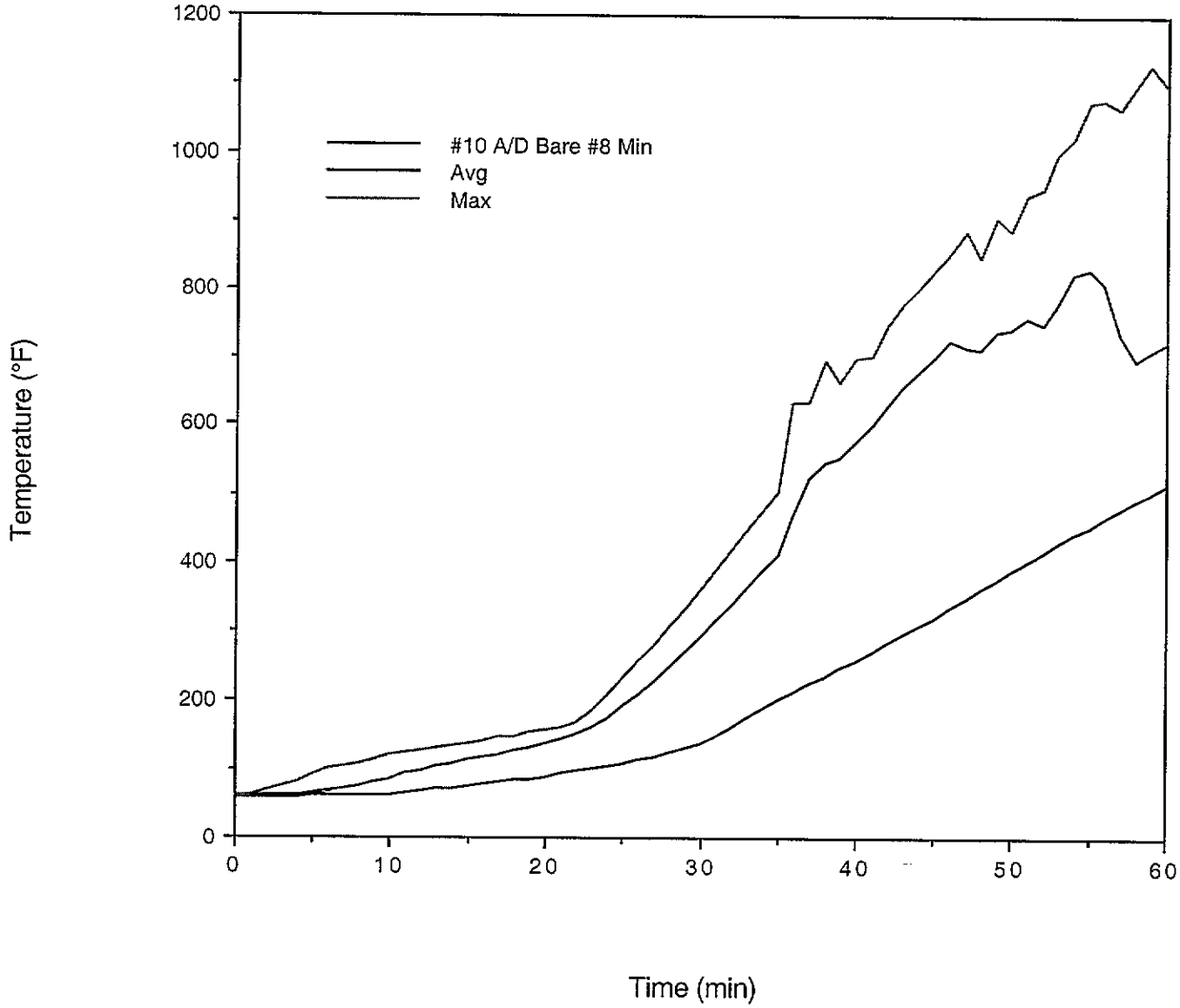
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #8: Junction Box Steel Temperatures



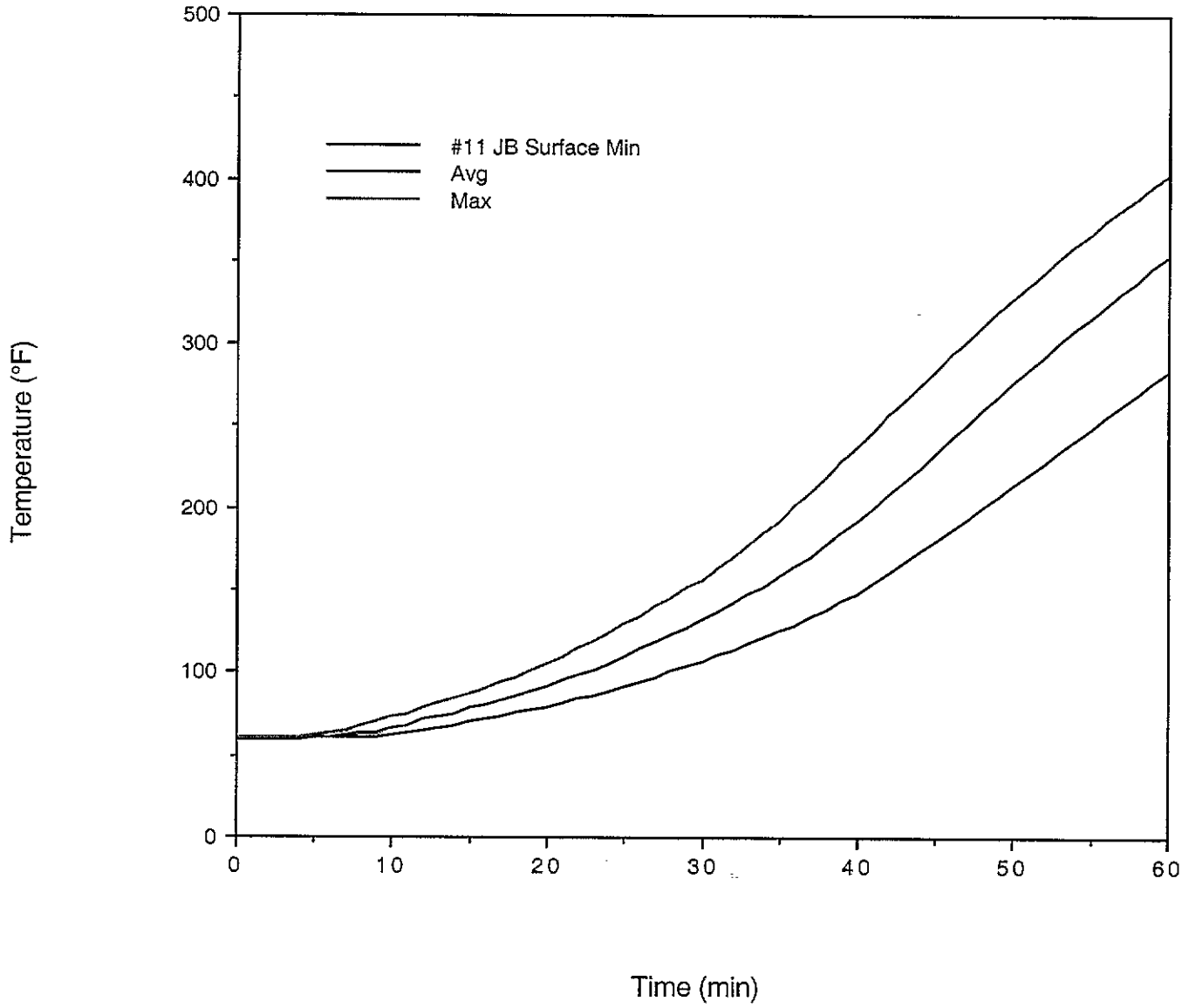
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #10: Air Drop Bare #8 Temperatures



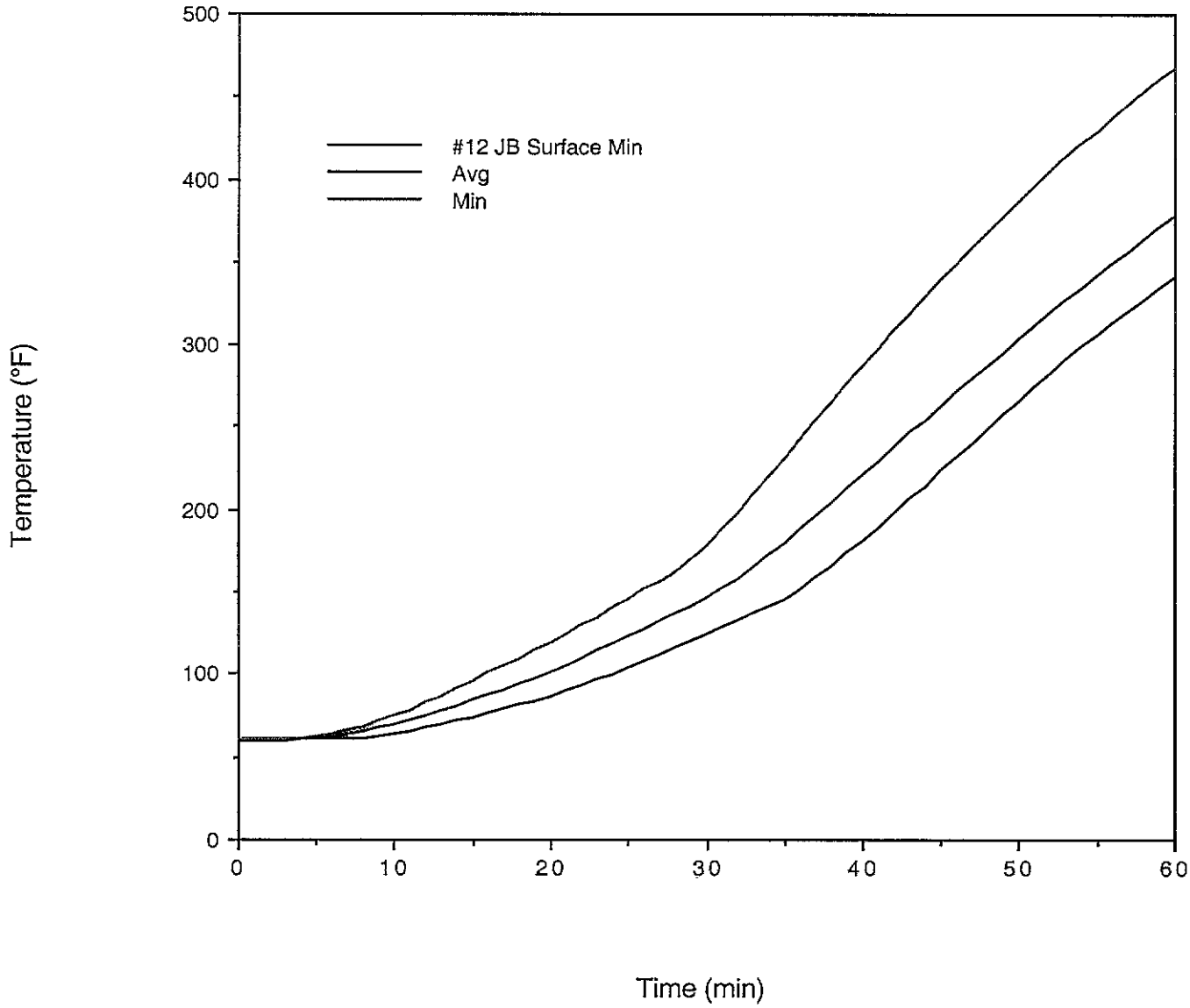
OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #11: Junction Box Steel Temperatures



OMEGA POINT LABORATORIES

Project No. 12000-105900
Transco Products Inc.
Item #12: Junction Box Steel Temperatures



OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #1 Conduit Min. (°F)	Item #1 Conduit Avg. (°F)	Item #1 Conduit Max. (°F)	Item #1 Bare #8 Min. (°F)	Item #1 Bare #8 Avg. (°F)	Item #1 Bare #8 Max. (°F)	Item #2 1.25" Conduit Steel Min. (°F)	Item #2 1.25" Conduit Steel Avg. (°F)
0	58	59	60	59	59	60	59	59
1	58	59	60	59	59	60	59	59
2	58	59	59	59	59	60	59	59
3	58	59	59	59	59	60	59	59
4	58	59	60	59	59	60	59	59
5	59	59	60	59	59	60	59	59
6	59	60	61	59	59	60	59	60
7	59	61	64	59	59	60	59	60
8	59	62	67	59	59	60	59	61
9	60	63	70	59	60	61	59	62
10	60	64	72	59	60	62	60	63
11	60	66	74	59	60	63	60	64
12	60	67	76	59	61	64	61	65
13	60	69	77	59	61	65	62	66
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15	61	72	79	59	63	68	63	69
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25	66	103	120	62	74	97	73	89
26	67	108	126	62	76	102	74	92
27	68	113	133	63	78	106	76	95
28	69	117	139	63	80	111	77	98
29	70	122	146	64	83	116	79	101
30	71	127	152	65	85	122	81	105
31	72	132	158	65	88	127	83	108
32	73	137	164	66	90	132	85	111
33	75	142	169	67	93	137	87	114
34	76	147	176	68	96	141	89	118
35	77	152	183	68	98	146	91	121
36	79	157	191	69	101	150	93	125
37	80	163	199	70	104	156	95	128
38	81	168	207	71	107	163	97	131
39	83	175	215	72	110	170	98	135
40	84	181	223	73	114	177	100	139
41	86	187	231	74	118	184	102	142
42	87	193	240	75	121	191	104	146
43	88	199	248	77	125	199	106	150
44	90	205	257	78	129	206	108	154
45	91	212	264	79	133	213	110	158
46	93	218	273	80	137	220	111	162
47	94	225	280	81	142	228	113	166
48	96	231	289	83	146	235	115	171
49	97	237	296	84	151	242	117	175
50	99	244	304	85	155	250	119	180

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #1 Conduit Min. (°F)	Item #1 Conduit Avg. (°F)	Item #1 Conduit Max. (°F)	Item #1 Bare #8 Min. (°F)	Item #1 Bare #8 Avg. (°F)	Item #1 Bare #8 Max. (°F)	Item #2 1.25" Conduit Steel Min. (°F)	Item #2 1.25" Conduit Steel Avg. (°F)
51	100	250	312	86	160	257	122	184
52	102	257	320	88	164	264	124	189
53	104	264	327	89	169	271	126	194
54	106	270	334	91	174	278	129	198
55	108	277	342	93	179	285	131	203
56	109	283	349	95	184	292	133	207
57	111	290	356	96	189	299	135	211
58	113	296	364	98	193	306	137	216
59	115	303	371	99	199	313	139	220
60	117	309	378	100	203	320	141	224
Max Temp:	117	309	378	100	203	320	141	224
Max Allowed:	383	309	385	384	309	385	384	309

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #2 1.25" Conduit Steel Max. (°F)	Item #2 1.25" Conduit Bare #8 Min. (°F)	Item #2 1.25" Conduit Bare #8 Avg. (°F)	Item #2 1.25" Conduit Bare #8 Max. (°F)	Item #2 4" Conduit Steel Min. (°F)	Item #2 4" Conduit Steel Avg. (°F)	Item #2 4" Conduit Steel Max. (°F)
0	60	59	59	60	59	60	61
1	60	59	59	60	59	60	62
2	60	59	60	60	59	60	62
3	60	59	59	60	59	60	61
4	60	59	60	60	59	60	62
5	60	59	60	60	59	60	62
6	61	59	60	60	59	61	62
7	62	59	60	61	59	61	64
8	64	59	60	61	60	62	66
9	65	59	60	61	60	62	68
10	66	60	61	62	61	63	71
11	68	60	61	63	61	64	74
12	70	60	62	64	61	65	76
13	71	60	62	65	62	66	78
14	74	61	63	66	62	67	81
15	77	61	64	68	62	68	84
16	79	62	65	69	63	69	87
17	82	62	66	71	63	70	91
18	85	63	67	73	64	71	95
19	88	64	68	74	65	73	99
20	91	65	69	77	65	74	103
21	95	66	71	79	66	76	108
22	98	66	72	81	66	78	112
23	101	68	74	84	67	79	116
24	105	68	75	87	68	81	121
25	109	70	77	89	69	84	126
26	113	71	79	93	70	86	131
27	116	72	81	96	71	89	136
28	120	74	84	100	72	91	141
29	124	76	86	103	74	94	146
30	128	77	88	107	75	96	152
31	132	79	91	110	77	99	157
32	136	80	93	114	78	102	163
33	140	82	96	118	80	105	169
34	143	84	99	121	82	108	176
35	147	86	102	125	84	111	187
36	151	87	104	129	86	115	197
37	155	89	107	132	88	118	206
38	159	91	111	136	91	122	215
39	164	93	114	141	93	125	223
40	169	95	117	145	95	128	231
41	174	96	120	150	98	132	239
42	180	98	124	154	100	135	247
43	185	101	127	159	103	138	255
44	190	102	131	164	106	142	262
45	196	105	134	169	108	145	269
46	201	107	138	174	110	148	276
47	206	109	142	178	112	152	282
48	211	111	146	183	114	155	288
49	216	113	150	188	116	158	293
50	220	115	154	195	118	161	299

OMEGA POINT LABORATORIES

Time (min)	Item #2 1.25" Conduit Steel Max. (°F)	Item #2 1.25" Conduit Bare #8 Min. (°F)	Item #2 1.25" Conduit Bare #8 Avg. (°F)	Item #2 1.25" Conduit Bare #8 Max. (°F)	Item #2 4" Conduit Steel Min. (°F)	Item #2 4" Conduit Steel Avg. (°F)	Item #2 4" Conduit Steel Max. (°F)
51	225	118	158	201	120	164	304
52	230	120	162	207	122	167	309
53	234	123	166	213	124	170	309
54	239	126	170	219	125	173	317
55	243	125	174	226	128	176	321
56	247	131	179	232	129	191	398
57	251	133	183	238	131	207	645
58	255	135	187	244	133	224	579
59	259	137	192	250	135	205	467
60	263	140	196	257	137	198	339
Max Temp:	263	140	196	257	137	224	645
Max Allowed:	385	384	309	385	384	310	386

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #2 4" Conduit Bare #8 Min. (°F)	Item #2 4" Conduit Bare #8 Avg. (°F)	Item #2 4" Conduit Bare #8 Max. (°F)	Item #3 Right Tray Rail Min. (°F)	Item #3 Right Tray Rail Avg. (°F)	Item #3 Right Tray Rail Max. (°F)	Item #3 Tray Bare #8 Min. (°F)
0	59	60	61	58	58	59	57
1	59	60	61	58	58	60	57
2	59	60	61	58	58	62	57
3	59	60	61	58	59	64	57
4	59	61	62	58	59	66	57
5	60	61	62	58	59	68	57
6	60	61	62	58	59	70	57
7	60	61	62	58	60	70	58
8	60	61	62	59	61	71	57
9	60	61	62	59	62	72	58
10	61	61	62	60	64	73	58
11	61	62	63	60	66	74	58
12	61	62	64	60	68	76	58
13	61	62	65	61	71	79	58
14	61	63	66	62	74	82	58
15	62	63	66	62	76	86	59
16	62	64	68	63	79	90	59
17	62	64	69	65	83	94	59
18	62	65	71	66	86	99	60
19	62	65	73	67	89	103	60
20	62	66	73	69	93	109	60
21	62	66	75	70	97	114	60
22	63	67	77	71	101	120	60
23	63	67	76	73	106	126	61
24	63	68	78	75	110	132	61
25	64	69	79	77	115	139	61
26	64	70	80	79	121	146	62
27	64	71	83	81	126	153	62
28	64	72	84	83	132	161	62
29	65	73	86	85	138	170	63
30	65	74	86	88	145	181	63
31	66	75	88	90	151	191	64
32	66	76	90	93	158	203	64
33	67	78	92	96	166	215	65
34	68	79	93	99	175	226	65
35	68	80	95	102	185	238	66
36	69	82	97	105	195	250	67
37	70	83	99	109	205	262	68
38	71	85	101	112	216	274	69
39	71	86	103	115	227	286	70
40	72	88	105	119	238	297	71
41	73	89	108	123	249	311	72
42	74	91	110	126	260	324	73
43	75	93	113	130	271	339	75
44	76	95	116	134	282	354	76
45	78	97	119	138	294	367	78
46	79	99	122	143	305	381	79
47	80	101	126	148	316	395	81
48	81	103	129	153	327	409	82
49	82	105	132	158	339	422	84
50	84	106	134	163	351	436	86

OMEGA POINT LABORATORIES

Time (min)	Item #2 4" Conduit Bare #8 Min. (°F)	Item #2 4" Conduit Bare #8 Avg. (°F)	Item #2 4" Conduit Bare #8 Max. (°F)	Item #3 Right Tray Rail Min. (°F)	Item #3 Right Tray Rail Avg. (°F)	Item #3 Right Tray Rail Max. (°F)	Item #3 Tray Bare #8 Min. (°F)
51	85	108	138	170	363	449	88
52	87	110	141	176	374	461	89
53	88	113	144	182	384	473	91
54	90	114	147	189	395	485	93
55	92	117	150	195	406	497	95
56	93	119	153	201	416	510	97
57	95	121	156	206	431	509	100
58	97	123	158	212	446	562	102
59	98	124	157	218	459	558	104
60	100	127	161	224	472	576	106
Max Temp:	100	127	161	224	472	576	106
Max Allowed:	384	310	386	383	308	384	382

OMEGA POINT LABORATORIES

Time (min)	Item #3 Tray Bare #8 Avg. (°F)	Item #3 Tray Bare #8 Max. (°F)	Item #3 Left Tray Rail Min. (°F)	Item #3 Left Tray Rail Avg. (°F)	Item #3 Left Tray Rail Max. (°F)	Item #4 1" Conduit Steel Min. (°F)	Item #4 1" Conduit Steel Avg. (°F)	Item #4 1" Conduit Steel Max. (°F)
0	58	59	57	58	59	57	58	59
1	58	59	58	58	59	57	58	59
2	58	60	57	58	60	57	58	59
3	58	60	57	58	62	57	58	60
4	58	60	57	59	63	57	58	60
5	58	61	57	59	64	57	58	60
6	59	61	58	59	65	57	59	61
7	59	62	58	60	66	58	60	64
8	59	62	58	60	67	58	62	67
9	60	64	59	62	68	59	65	71
10	60	65	59	64	70	60	67	74
11	61	67	60	66	73	62	70	78
12	62	69	60	68	77	64	73	82
13	63	71	61	71	80	66	76	86
14	64	73	62	73	84	67	80	90
15	65	75	62	76	87	69	83	93
16	66	77	63	79	91	70	86	98
17	67	79	64	83	95	71	90	103
18	68	81	65	86	100	73	94	108
19	70	84	66	90	104	74	98	114
20	71	87	68	94	109	76	103	120
21	73	89	69	98	114	77	108	127
22	75	92	70	103	120	79	113	133
23	76	95	72	108	127	81	118	140
24	78	98	74	113	134	83	124	147
25	80	102	76	119	141	85	130	155
26	82	105	78	125	149	88	136	163
27	84	110	80	132	161	91	141	169
28	87	114	82	138	173	93	147	176
29	89	120	85	145	185	96	152	185
30	93	128	88	153	198	98	159	197
31	97	139	91	161	210	101	166	210
32	101	149	95	170	223	104	174	222
33	105	158	98	179	236	106	184	236
34	110	167	102	188	248	109	194	251
35	115	177	106	198	261	112	205	266
36	119	186	110	208	273	115	216	281
37	124	195	114	218	285	119	227	296
38	129	204	117	229	297	122	239	311
39	134	214	120	240	309	126	251	327
40	139	223	123	250	321	130	263	342
41	143	232	127	261	332	134	275	357
42	148	241	130	271	343	138	288	373
43	153	250	133	281	354	143	301	388
44	159	257	137	292	365	148	313	404
45	164	264	140	302	376	152	326	420
46	169	272	144	312	386	157	339	435
47	175	278	147	321	396	162	352	451
48	180	283	150	331	406	167	365	466
49	186	290	154	340	416	171	412	670
50	192	297	158	349	426	176	450	680

OMEGA POINT LABORATORIES

Time (min)	Item #3 Tray Bare #8 Avg. (°F)	Item #3 Tray Bare #8 Max. (°F)	Item #3 Left Tray Rail Min. (°F)	Item #3 Left Tray Rail Avg. (°F)	Item #3 Left Tray Rail Max. (°F)	Item #4 1" Conduit Steel Min. (°F)	Item #4 1" Conduit Steel Avg. (°F)	Item #4 1" Conduit Steel Max. (°F)
51	198	303	162	358	435	181	473	700
52	204	310	166	367	444	186	486	679
53	210	316	172	376	453	191	517	695
54	216	323	178	385	461	195	539	709
55	222	330	185	394	469	200	562	694
56	228	337	191	402	476	204	591	703
57	234	343	197	410	484	209	609	770
58	239	349	202	427	646	214	619	729
59	246	356	208	441	608	218	620	733
60	252	363	213	473	651	225	633	738
Max Temp:	252	363	213	473	651	225	633	770
Max Allowed:	308	384	382	308	384	382	308	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #4 1" Conduit Bare #8 Min. (°F)	Item #4 1" Conduit Bare #8 Avg. (°F)	Item #4 1" Conduit Bare #8 Max. (°F)	Item #5 6"x36" Tray Right Rail Min. (°F)	Item #5 6"x36" Tray Right Rail Avg. (°F)	Item #5 6"x36" Tray Right Rail Max. (°F)	Item #5 6"x36" Tray Left Rail Min. (°F)
0	56	57	61	58	59	60	58
1	56	57	61	58	59	60	58
2	56	57	61	58	59	60	58
3	56	57	61	58	59	60	58
4	56	57	61	58	59	60	58
5	56	58	61	58	59	60	58
6	56	58	61	58	59	60	59
7	56	58	62	58	59	61	59
8	57	58	62	58	60	64	59
9	57	59	63	59	62	69	60
10	57	60	64	59	64	74	60
11	58	61	64	60	66	80	61
12	59	62	65	60	69	87	61
13	60	64	67	61	72	94	61
14	62	66	68	61	75	99	62
15	64	68	71	62	78	103	62
16	64	70	73	62	81	107	63
17	65	72	76	63	84	111	64
18	66	75	79	64	87	114	65
19	67	77	82	65	90	117	66
20	69	80	86	66	92	120	67
21	70	83	90	66	95	123	68
22	71	87	94	67	97	126	69
23	73	91	98	68	100	129	71
24	74	95	103	70	102	131	72
25	76	99	108	71	105	133	73
26	78	103	114	72	107	135	75
27	80	108	119	73	109	138	76
28	82	112	124	74	112	141	78
29	84	117	130	75	114	145	80
30	86	122	136	77	117	148	81
31	88	127	144	78	120	152	83
32	91	133	153	79	123	156	85
33	93	139	162	81	126	159	87
34	96	145	172	82	129	164	89
35	98	153	183	84	132	168	92
36	101	161	194	85	135	174	95
37	104	170	206	87	139	179	97
38	107	179	219	88	143	185	100
39	111	189	232	90	147	192	103
40	114	200	246	92	151	198	106
41	118	210	260	94	156	205	109
42	122	221	274	96	161	212	112
43	126	233	289	98	166	220	115
44	130	244	305	100	171	228	118
45	135	257	321	102	177	236	122
46	139	269	337	105	182	244	125
47	145	282	354	107	188	253	128
48	150	294	369	110	195	261	132
49	155	307	385	113	201	270	136
50	160	320	401	115	208	278	140

OMEGA POINT LABORATORIES

Time (min)	Item #4 1" Conduit Bare #8 Min. (°F)	Item #4 1" Conduit Bare #8 Avg. (°F)	Item #4 1" Conduit Bare #8 Max. (°F)	Item #5 6"x36" Tray Right Rail Min. (°F)	Item #5 6"x36" Tray Right Rail Avg. (°F)	Item #5 6"x36" Tray Right Rail Max. (°F)	Item #5 6"x36" Tray Left Rail Min. (°F)
51	165	334	416	118	215	287	145
52	170	347	433	121	222	296	149
53	175	360	449	124	230	305	154
54	181	374	467	127	237	313	159
55	186	387	489	130	244	321	165
56	192	401	508	133	252	330	170
57	197	414	529	136	260	338	175
58	203	422	560	140	267	347	180
59	209	439	582	143	275	355	185
60	215	458	606	147	282	363	190
Max Temp:	215	458	606	147	282	363	190
Max Allowed:	381	307	386	383	309	385	383

OMEGA POINT LABORATORIES

Time (min)	Item #5 6"x36" Tray Left Rail Avg. (°F)	Item #5 6"x36" Tray Left Rail Max. (°F)	Item #5 6"x36" Tray Bare #8 Min. (°F)	Item #5 6"x36" Tray Bare #8 Avg. (°F)	Item #5 6"x36" Tray Bare #8 Max. (°F)	Item #6 1.25" Conduit Steel Min. (°F)
0	59	60	58	59	60	60
1	59	60	58	59	60	60
2	59	60	58	59	60	60
3	59	60	58	59	60	60
4	59	60	58	59	60	60
5	59	61	58	59	60	60
6	59	62	58	59	60	60
7	60	62	58	59	60	61
8	61	66	58	59	61	62
9	63	70	59	60	62	63
10	65	74	59	60	62	64
11	68	80	59	62	65	64
12	71	85	59	63	67	65
13	73	89	59	64	69	66
14	76	93	60	65	71	66
15	79	96	60	66	73	67
16	82	100	60	67	74	68
17	84	102	61	68	76	68
18	87	106	61	69	77	69
19	90	110	62	70	78	69
20	93	114	62	71	80	70
21	95	118	62	72	81	71
22	98	121	62	73	82	72
23	101	124	63	75	84	73
24	104	127	64	76	86	73
25	107	129	64	77	87	75
26	110	131	64	78	90	76
27	114	134	65	80	92	77
28	117	136	66	81	95	79
29	121	138	66	83	97	81
30	124	141	67	85	100	82
31	128	144	68	86	102	84
32	132	148	68	88	105	86
33	136	153	69	90	108	88
34	140	158	70	92	110	90
35	144	163	71	95	113	92
36	149	168	73	97	116	94
37	154	174	73	100	119	96
38	160	182	75	103	122	98
39	165	191	76	106	125	100
40	171	200	78	109	128	102
41	178	208	80	112	132	104
42	185	217	81	115	136	106
43	192	226	84	119	141	109
44	199	236	85	123	146	111
45	207	247	87	127	152	113
46	214	257	89	131	156	115
47	222	268	92	136	162	117
48	230	278	94	140	166	119
49	238	288	97	145	171	121
50	246	297	99	150	176	123

OMEGA POINT LABORATORIES

Time (min)	Item #5 6"x36" Tray Left Rail Avg. (°F)	Item #5 6"x36" Tray Left Rail Max. (°F)	Item #5 6"x36" Tray Bare #8 Min. (°F)	Item #5 6"x36" Tray Bare #8 Avg. (°F)	Item #5 6"x36" Tray Bare #8 Max. (°F)	Item #6 1.25" Conduit Steel Min. (°F)
51	254	306	102	155	181	125
52	262	315	105	160	186	127
53	270	323	108	165	192	129
54	278	332	111	170	198	131
55	286	340	115	176	204	133
56	294	348	118	181	211	135
57	302	356	122	187	218	138
58	310	364	125	193	225	140
59	318	371	129	199	232	142
60	326	379	132	205	239	145
Max Temp:	326	379	132	205	239	145
Max Allowed:	309	385	383	309	385	385

OMEGA POINT LABORATORIES

Time (min)	Item #6 1.25" Conduit Steel Avg. (°F)	Item #6 1.25" Conduit Steel Max. (°F)	Item #6 1.25" Conduit Bare #8 Min. (°F)	Item #6 1.25" Conduit Bare #8 Avg. (°F)	Item #6 1.25" Conduit Bare #8 Max. (°F)	Item #7 1" Conduit Steel Min. (°F)
0	60	60	59	60	61	57
1	60	60	60	60	61	57
2	60	60	59	60	61	56
3	60	61	59	60	61	57
4	60	61	60	60	61	57
5	61	61	60	60	61	57
6	62	64	60	60	61	57
7	63	68	60	60	61	58
8	65	74	60	61	63	60
9	67	78	60	61	64	61
10	69	81	60	61	65	62
11	70	84	61	62	67	62
12	72	86	61	63	68	62
13	74	87	62	63	69	63
14	75	89	62	64	70	64
15	78	91	62	65	72	65
16	80	92	63	66	73	65
17	82	94	63	67	74	66
18	84	96	64	68	75	67
19	86	98	64	69	76	68
20	89	100	65	70	77	69
21	91	104	66	72	79	70
22	94	108	66	73	80	71
23	97	113	67	74	82	73
24	101	118	67	76	84	74
25	104	123	68	78	85	76
26	108	127	69	80	87	77
27	111	132	70	82	90	79
28	115	136	71	84	92	80
29	119	141	72	86	95	82
30	122	146	73	88	97	84
31	126	150	74	91	100	86
32	130	155	75	94	104	88
33	134	159	76	96	107	91
34	138	165	78	99	110	93
35	142	171	79	102	113	95
36	146	178	80	105	117	98
37	150	185	82	108	120	100
38	155	193	84	111	124	103
39	160	200	85	115	127	105
40	165	207	87	118	132	107
41	170	214	89	122	137	110
42	176	221	90	125	142	112
43	181	228	92	129	148	114
44	187	235	94	133	153	116
45	193	242	96	138	159	119
46	199	249	97	142	164	121
47	205	256	99	146	170	123
48	212	263	101	151	176	126
49	218	270	103	156	182	128
50	224	277	104	161	188	131

OMEGA POINT LABORATORIES

Time (min)	Item #6 1.25" Conduit Steel Avg. (°F)	Item #6 1.25" Conduit Steel Max. (°F)	Item #6 1.25" Conduit Bare #8 Min. (°F)	Item #6 1.25" Conduit Bare #8 Avg. (°F)	Item #6 1.25" Conduit Bare #8 Max. (°F)	Item #7 1" Conduit Steel Min. (°F)
51	230	283	106	166	194	134
52	236	290	108	171	201	136
53	242	296	110	176	207	139
54	249	303	112	182	214	143
55	255	309	114	187	220	146
56	261	315	116	192	227	149
57	267	321	118	198	233	153
58	273	328	121	204	240	157
59	279	333	123	209	246	161
60	284	339	125	215	253	165
Max Temp:	284	339	125	215	253	165
Max Allowed:	310	385	384	310	386	382

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #7 1" Conduit Steel Avg. (°F)	Item #7 1" Conduit Steel Max. (°F)	Item #7 1" Conduit Bare #8 Min. (°F)	Item #7 1" Conduit Bare #8 Avg. (°F)	Item #7 1" Conduit Bare #8 Max. (°F)	Item #8 Junction Box Surface Min. (°F)	Item #8 Junction Box Surface Avg. (°F)
0	58	60	56	57	59	60	61
1	58	60	55	57	59	60	61
2	58	60	56	57	59	61	61
3	58	60	56	57	59	61	61
4	58	60	56	57	59	61	62
5	58	61	56	57	59	61	64
6	60	65	56	57	60	62	66
7	62	69	56	58	61	64	68
8	66	75	57	59	63	66	71
9	70	82	59	61	66	68	74
10	75	87	59	63	69	71	77
11	79	93	60	65	72	73	80
12	84	98	60	67	75	76	84
13	88	104	61	70	78	79	87
14	92	108	61	73	82	81	91
15	95	112	62	76	85	84	94
16	99	116	62	78	88	87	98
17	102	119	63	81	91	90	102
18	105	123	64	84	95	93	105
19	108	126	65	87	98	96	109
20	111	130	66	90	101	98	113
21	114	134	67	93	105	101	116
22	118	140	68	96	108	104	120
23	122	145	69	99	112	106	124
24	126	150	70	102	115	109	127
25	130	156	72	105	120	112	131
26	135	163	73	109	124	115	135
27	140	169	74	112	129	118	140
28	145	175	76	116	134	122	144
29	150	180	78	121	139	125	148
30	156	186	80	125	145	128	152
31	161	193	82	130	150	131	156
32	168	203	83	134	157	134	160
33	174	215	86	140	164	138	164
34	182	228	88	145	172	141	169
35	190	242	90	151	181	144	175
36	199	257	92	157	190	148	182
37	209	272	95	164	200	151	189
38	220	287	97	172	212	155	195
39	231	302	100	180	224	160	202
40	242	318	102	189	236	166	210
41	254	334	105	198	249	174	217
42	267	351	107	208	262	182	224
43	279	367	110	219	274	189	232
44	292	384	113	230	288	196	239
45	305	400	116	241	302	203	246
46	317	417	119	253	317	210	254
47	330	433	123	265	331	217	261
48	343	449	126	277	347	224	268
49	356	465	130	290	361	230	275
50	369	481	134	303	376	238	282

OMEGA POINT LABORATORIES

Time (min)	Item #7 1" Conduit Steel Avg. (°F)	Item #7 1" Conduit Steel Max. (°F)	Item #7 1" Conduit Bare #8 Min. (°F)	Item #7 1" Conduit Bare #8 Avg. (°F)	Item #7 1" Conduit Bare #8 Max. (°F)	Item #8 Junction Box Surface Min. (°F)	Item #8 Junction Box Surface Avg. (°F)
51	382	497	138	315	392	244	289
52	437	686	143	329	408	251	296
53	457	699	147	342	425	258	303
54	489	712	152	355	442	264	310
55	520	721	157	368	459	271	317
56	535	697	164	382	476	278	324
57	545	734	170	396	495	284	330
58	571	739	176	415	516	291	337
59	585	733	183	451	605	297	344
60	615	759	189	465	613	303	350
Max Temp:	615	759	189	465	613	303	350
Max Allowed:	308	385	381	307	384	385	311

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Item #8 Junction Box Surface Max. (°F)	Item #10 Air Drop Bare #8 Min. (°F)	Item #10 Air Drop Bare #8 Avg. (°F)	Item #10 Air Drop Bare #8 Max. (°F)	Item #11 Junction Box Surface Min. (°F)	Item #11 Junction Box Surface Avg. (°F)
0	61	57	58	59	59	60
1	61	57	58	60	59	60
2	61	57	59	67	59	60
3	63	57	60	73	59	60
4	65	57	61	78	59	60
5	69	58	62	89	60	60
6	73	58	65	98	60	61
7	77	58	68	103	60	62
8	80	59	72	106	60	63
9	84	60	78	111	61	64
10	88	61	84	118	62	66
11	93	63	91	122	63	68
12	98	65	96	126	65	71
13	103	68	102	129	66	73
14	108	70	106	132	68	75
15	113	73	111	136	70	78
16	118	76	115	140	71	80
17	123	78	119	144	73	83
18	127	81	124	147	76	86
19	131	84	129	151	77	88
20	136	87	134	154	79	91
21	140	91	141	158	81	95
22	144	95	148	166	84	98
23	147	99	158	183	86	101
24	151	103	172	205	88	105
25	156	106	188	228	91	109
26	162	111	205	253	94	114
27	168	115	225	278	97	118
28	174	121	246	305	100	123
29	180	128	268	332	103	127
30	186	137	290	359	106	132
31	191	147	313	387	110	137
32	197	159	337	415	113	142
33	203	172	361	444	117	147
34	209	186	386	474	121	152
35	215	198	411	504	125	158
36	221	209	467	633	128	164
37	227	220	522	633	133	170
38	234	232	546	693	138	177
39	240	244	551	662	143	184
40	247	255	574	696	148	192
41	253	267	598	702	154	200
42	260	280	625	744	160	208
43	267	293	655	776	167	216
44	273	306	678	801	173	225
45	280	319	698	823	179	233
46	287	333	724	851	186	242
47	293	347	715	882	193	251
48	299	360	710	842	200	259
49	306	374	736	902	206	267
50	313	387	740	883	213	276

OMEGA POINT LABORATORIES

Time (min)	Item #8 Junction Box Surface Max. (°F)	Item #10 Air Drop Bare #8 Min. (°F)	Item #10 Air Drop Bare #8 Avg. (°F)	Item #10 Air Drop Bare #8 Max. (°F)	Item #11 Junction Box Surface Min. (°F)	Item #11 Junction Box Surface Avg. (°F)
51	319	400	758	935	220	284
52	325	413	748	947	227	292
53	332	426	776	996	234	300
54	340	439	820	1017	241	308
55	347	451	828	1071	248	316
56	355	463	806	1075	255	323
57	363	475	735	1061	262	331
58	370	488	694	1097	269	338
59	378	500	706	1128	276	346
60	384	512	722	1099	283	353
Max Temp:	384	512	828	1128	283	353
Max Allowed:	386	382	308	384	384	310

OMEGA POINT LABORATORIES

Time (min)	Item #11 Junction Box Surface Max. (°F)	Item #12 Junction Box Surface Min. (°F)	Item #12 Junction Box Surface Avg. (°F)	Item #12 Junction Box Surface Max. (°F)
0	61	59	59	60
1	61	59	59	60
2	61	59	60	60
3	61	59	60	60
4	61	60	60	61
5	62	60	61	62
6	63	60	62	64
7	65	61	63	66
8	67	61	65	68
9	70	62	67	71
10	73	64	69	74
11	75	65	72	77
12	78	67	75	82
13	81	69	77	86
14	84	71	80	91
15	87	73	84	95
16	90	76	87	100
17	94	78	90	104
18	97	81	94	109
19	101	83	97	114
20	105	86	101	118
21	109	89	105	124
22	114	92	109	129
23	118	96	114	134
24	124	99	118	140
25	129	103	123	145
26	134	107	127	151
27	140	111	132	156
28	145	116	136	161
29	151	120	141	169
30	156	124	146	178
31	162	128	151	187
32	169	132	157	197
33	176	136	164	208
34	184	140	172	219
35	192	145	179	230
36	201	150	187	241
37	210	158	195	253
38	219	165	204	264
39	228	173	212	275
40	237	181	220	286
41	247	189	229	297
42	256	197	237	308
43	265	206	246	318
44	274	214	254	329
45	283	223	262	339
46	293	231	271	349
47	302	240	279	359
48	310	248	287	368
49	319	257	295	377
50	327	265	303	386

OMEGA POINT LABORATORIES

Time (min)	Item #11 Junction Box Surface Max. (°F)	Item #12 Junction Box Surface Min. (°F)	Item #12 Junction Box Surface Avg. (°F)	Item #12 Junction Box Surface Max. (°F)
51	335	274	311	396
52	343	282	319	405
53	351	291	327	413
54	359	299	334	421
55	367	306	342	429
56	374	313	349	437
57	381	320	356	445
58	388	327	363	453
59	395	333	370	460
60	402	340	377	467
Max Temp:	402	340	377	467
Max Allowed:	386	384	309	385

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	E119 Std (°F)	Average Furnace (°F)	Integration of Furn. Avg (°F•min)	Integration E119 Std (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)	Furnace Probe #4 (°F)
0	68	60	0	0	0.00%	59	59	60	59
1	254	103	14	93	-85.5%	101	83	111	93
2	441	335	165	372	-55.8%	455	268	422	280
3	627	636	582	838	-30.5%	916	596	702	574
4	814	822	1243	1490	-16.5%	1095	822	936	759
5	1000	995	2084	2328	-10.5%	1273	998	1147	931
6	1060	1138	3082	3290	-6.32%	1425	1155	1282	1084
7	1120	1189	4178	4312	-3.12%	1426	1213	1304	1141
8	1180	1198	5303	5394	-1.69%	1387	1217	1290	1149
9	1240	1223	6446	6536	-1.38%	1382	1228	1310	1166
10	1307	1280	7629	7738	-1.41%	1445	1280	1365	1211
11	1328	1327	8865	8984	-1.32%	1499	1326	1406	1251
12	1347	1352	10136	10252	-1.13%	1509	1347	1430	1276
13	1364	1368	11428	11539	-0.96%	1509	1360	1446	1294
14	1381	1383	12736	12843	-0.84%	1509	1372	1463	1311
15	1396	1411	14065	14163	-0.69%	1546	1399	1483	1327
16	1410	1436	15420	15497	-0.50%	1570	1428	1493	1340
17	1424	1450	16795	16846	-0.30%	1576	1445	1499	1350
18	1436	1456	18180	18207	-0.15%	1570	1450	1503	1358
19	1448	1460	19570	19581	-0.06%	1563	1453	1507	1366
20	1459	1463	20964	20967	-0.01%	1562	1456	1517	1372
21	1470	1472	22363	22363	0.00%	1571	1463	1529	1382
22	1480	1479	23771	23770	0.00%	1571	1469	1541	1389
23	1490	1486	25185	25187	-0.01%	1569	1477	1552	1395
24	1499	1496	26608	26614	-0.02%	1574	1489	1565	1404
25	1508	1507	28042	28049	-0.03%	1583	1500	1578	1414
26	1517	1517	29486	29494	-0.03%	1587	1512	1589	1424
27	1525	1526	30939	30947	-0.02%	1593	1523	1601	1434
28	1533	1534	32401	32408	-0.02%	1597	1533	1611	1445
29	1541	1544	33872	33877	-0.01%	1603	1545	1623	1456
30	1549	1554	35353	35353	0.00%	1612	1558	1636	1465
31	1556	1561	36843	36837	0.02%	1618	1564	1643	1473
32	1563	1571	38341	38327	0.04%	1626	1575	1656	1484
33	1570	1578	39847	39825	0.06%	1630	1585	1666	1494
34	1576	1584	41360	41329	0.08%	1634	1590	1670	1501
35	1583	1589	42879	42840	0.09%	1636	1596	1676	1507
36	1589	1597	44404	44357	0.10%	1641	1603	1690	1514
37	1595	1606	45937	45880	0.12%	1649	1617	1704	1521
38	1601	1612	47478	47409	0.15%	1655	1624	1713	1528
39	1606	1616	49024	48944	0.16%	1657	1629	1709	1534
40	1612	1620	50574	50485	0.18%	1657	1632	1713	1539
41	1617	1625	52129	52032	0.19%	1660	1638	1720	1546
42	1623	1630	53688	53583	0.20%	1663	1642	1725	1550
43	1628	1632	55251	55140	0.20%	1665	1646	1726	1555
44	1633	1636	56817	56702	0.20%	1664	1654	1731	1561
45	1638	1639	58387	58269	0.20%	1664	1658	1735	1566
46	1643	1644	59960	59841	0.20%	1668	1661	1741	1571
47	1648	1649	61539	61418	0.20%	1672	1663	1743	1575
48	1652	1653	63122	62999	0.19%	1676	1667	1746	1580
49	1657	1653	64707	64585	0.19%	1674	1665	1746	1583
50	1661	1656	66293	66176	0.18%	1673	1667	1749	1587
51	1666	1657	67882	67771	0.16%	1673	1665	1754	1588

OMEGA POINT LABORATORIES

Time (min)	E119 Std (°F)	Average Furnace (°F)	Integration of Furn. Avg (°F•min)	Integration E119 Std (°F•min)	Error (%)	Furnace Probe #1 (°F)	Furnace Probe #2 (°F)	Furnace Probe #3 (°F)	Furnace Probe #4 (°F)
52	1670	1661	69473	69370	0.15%	1677	1668	1759	1592
53	1674	1662	71066	70973	0.13%	1677	1667	1758	1593
54	1678	1670	72664	72581	0.11%	1682	1678	1773	1599
55	1682	1676	74269	74193	0.10%	1687	1683	1777	1605
56	1686	1679	75879	75809	0.09%	1689	1685	1781	1609
57	1690	1681	77491	77429	0.08%	1690	1684	1779	1610
58	1694	1688	79107	79053	0.07%	1696	1694	1786	1617
59	1698	1695	80731	80680	0.06%	1703	1704	1795	1625
60	1701	1698	82359	82311	0.06%	1705	1705	1796	1629

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Lab Ambient (°F)
0	59	60	60	60	67
1	71	100	151	116	69
2	142	280	598	234	69
3	281	627	1041	351	69
4	431	889	1170	478	69
5	581	1086	1320	627	69
6	736	1227	1429	762	68
7	847	1281	1426	876	67
8	909	1285	1397	952	67
9	953	1305	1415	1024	67
10	1002	1349	1488	1101	67
11	1050	1388	1535	1162	68
12	1087	1416	1544	1207	68
13	1114	1436	1546	1241	68
14	1138	1454	1551	1267	68
15	1160	1501	1590	1284	68
16	1182	1552	1620	1300	68
17	1201	1584	1627	1316	68
18	1217	1597	1622	1331	68
19	1230	1597	1617	1343	68
20	1240	1587	1614	1356	68
21	1252	1587	1624	1369	69
22	1263	1592	1623	1385	68
23	1274	1596	1623	1403	68
24	1285	1602	1629	1421	69
25	1297	1610	1640	1436	70
26	1308	1621	1643	1451	67
27	1319	1627	1648	1463	68
28	1330	1634	1651	1475	68
29	1340	1642	1658	1486	68
30	1349	1650	1666	1495	70
31	1357	1659	1673	1503	69
32	1366	1666	1681	1512	70
33	1377	1671	1684	1521	70
34	1386	1677	1689	1528	69
35	1395	1677	1690	1537	69
36	1404	1682	1694	1545	69
37	1412	1689	1702	1552	70
38	1421	1693	1707	1557	69
39	1430	1698	1709	1561	70
40	1437	1703	1711	1567	70
41	1445	1705	1715	1573	70
42	1451	1709	1717	1579	70
43	1457	1706	1718	1586	71
44	1464	1702	1717	1592	69
45	1470	1700	1717	1600	70
46	1476	1705	1723	1604	70
47	1482	1714	1730	1611	70
48	1488	1717	1733	1615	70
49	1492	1717	1730	1618	71
50	1498	1717	1730	1623	70
51	1501	1715	1729	1629	71

OMEGA POINT LABORATORIES

Time (min)	Furnace Probe #5 (°F)	Furnace Probe #6 (°F)	Furnace Probe #7 (°F)	Furnace Probe #8 (°F)	Lab Ambient (°F)
52	1505	1719	1736	1635	70
53	1509	1718	1734	1641	69
54	1515	1723	1740	1651	69
55	1521	1733	1746	1654	69
56	1526	1734	1747	1660	69
57	1529	1736	1750	1668	70
58	1535	1744	1756	1675	70
59	1542	1748	1761	1680	71
60	1548	1751	1764	1688	70

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #1 (°F)	TC #2 (°F)	TC #3 (°F)	TC #4 (°F)	TC #5 (°F)	TC #6 (°F)	TC #7 (°F)	TC #8 (°F)	TC #9 (°F)	TC #10 (°F)
0	60	59	59	59	59	59	59	59	59	59
1	60	59	59	59	58	58	59	59	59	59
2	60	59	59	58	58	58	58	59	59	59
3	60	59	59	59	59	59	59	59	59	59
4	60	59	59	59	59	59	59	59	59	59
5	60	59	59	59	59	59	59	59	59	59
6	60	59	59	59	59	59	60	59	59	59
7	60	60	60	59	60	60	61	59	60	60
8	60	61	61	60	61	62	64	61	62	61
9	61	63	63	62	65	65	69	64	66	64
10	62	65	65	64	68	70	74	68	72	67
11	62	67	68	66	72	75	79	75	80	72
12	64	69	71	69	76	79	85	81	87	77
13	65	72	74	73	79	84	91	87	94	83
14	66	75	77	77	83	88	95	92	99	88
15	68	78	80	80	85	91	99	97	103	93
16	70	81	84	83	88	95	103	101	107	98
17	72	84	87	86	91	98	107	105	111	102
18	73	87	90	90	94	102	111	109	114	107
19	75	89	93	93	97	105	114	112	117	110
20	77	93	96	96	100	108	117	115	120	114
21	79	96	99	99	102	112	120	118	123	117
22	81	99	103	102	105	115	123	121	126	120
23	82	102	106	105	109	118	126	123	129	123
24	84	106	110	109	112	122	129	126	131	126
25	86	110	113	112	114	125	132	129	133	128
26	88	114	117	115	118	128	135	131	135	130
27	91	118	121	118	120	131	138	133	136	132
28	93	123	125	122	123	134	141	135	138	134
29	96	127	128	125	126	137	145	137	140	136
30	98	132	132	129	129	140	148	140	142	138
31	101	136	137	133	133	143	152	142	144	140
32	104	141	141	137	136	147	156	145	146	141
33	107	145	145	141	139	151	159	148	149	143
34	110	149	150	146	143	155	164	151	152	145
35	113	152	155	150	146	159	168	154	155	148
36	116	156	160	155	150	163	174	158	159	150
37	119	160	166	159	154	168	179	162	163	153
38	122	165	172	163	158	173	185	166	167	156
39	124	172	180	168	163	178	192	171	171	159
40	127	179	188	174	167	184	198	176	176	162
41	129	187	196	183	171	190	205	182	181	166
42	131	196	204	191	176	196	212	188	186	170
43	134	204	213	198	181	203	220	195	192	174

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #1 (°F)	TC #2 (°F)	TC #3 (°F)	TC #4 (°F)	TC #5 (°F)	TC #6 (°F)	TC #7 (°F)	TC #8 (°F)	TC #9 (°F)	TC #10 (°F)
44	137	212	221	206	187	210	228	203	198	178
45	141	221	230	213	194	217	236	211	205	183
46	144	228	238	221	201	224	244	219	212	189
47	148	237	246	228	209	232	253	228	220	195
48	152	245	255	236	218	240	261	237	228	202
49	156	253	263	244	226	249	270	246	236	208
50	162	261	271	252	235	258	278	255	245	215
51	167	269	280	260	243	266	287	264	254	222
52	172	277	288	269	252	275	296	273	263	230
53	177	285	296	277	261	284	305	282	272	237
54	183	293	304	285	270	293	313	291	281	244
55	188	301	313	294	279	302	321	300	290	252
56	193	308	321	302	288	311	330	308	298	259
57	198	316	329	311	297	320	338	317	307	267
58	204	324	337	320	306	329	347	326	316	275
59	209	331	345	328	315	337	355	334	324	282
60	215	338	353	336	324	346	363	343	332	290
Max Temp:	215	338	353	336	324	346	363	343	332	290
Max Allowed:	385	384	384	384	384	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #11 (°F)	TC #12 (°F)	TC #13 (°F)	TC #14 (°F)	TC #15 (°F)	TC #16 (°F)	TC #17 (°F)	TC #18 (°F)
0	58	58	58	58	58	58	59	59
1	58	58	58	58	58	58	59	59
2	58	58	58	58	58	58	59	59
3	58	58	58	58	58	58	59	59
4	58	58	58	58	58	58	59	59
5	58	58	58	58	59	59	59	59
6	58	58	58	58	59	59	59	59
7	58	58	58	58	59	59	59	59
8	58	58	58	59	59	59	59	59
9	59	59	59	59	59	59	59	60
10	60	60	59	59	60	60	60	60
11	62	62	60	60	61	61	60	60
12	67	65	60	61	62	62	62	61
13	73	68	62	62	64	63	62	62
14	80	71	63	63	65	65	64	62
15	87	75	65	65	67	66	65	63
16	94	79	67	66	69	68	67	64
17	100	82	69	68	71	70	69	65
18	106	86	71	70	73	72	70	66
19	110	89	73	72	75	74	73	68
20	114	92	75	73	77	76	75	69
21	117	95	78	76	79	78	76	70
22	119	97	80	77	82	80	78	72
23	122	100	82	80	84	83	81	73
24	123	102	85	82	86	85	83	75
25	125	104	87	84	89	87	85	77
26	126	105	89	86	91	90	87	78
27	127	107	91	89	93	92	89	80
28	129	109	93	91	96	95	91	81
29	130	111	96	94	99	97	94	83
30	131	113	98	97	102	100	96	85
31	132	114	101	100	105	103	99	87
32	134	116	104	103	108	106	101	89
33	135	118	107	107	112	109	104	91
34	136	119	109	110	116	113	107	93
35	137	121	113	113	120	116	110	95
36	138	123	116	117	124	120	114	97
37	140	125	119	121	128	124	117	100
38	141	127	122	125	132	129	121	102
39	143	129	126	130	137	132	125	105
40	144	132	129	134	141	137	129	108
41	146	136	133	138	146	141	133	111
42	148	140	137	142	150	145	137	114
43	150	145	140	146	154	149	141	118

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #11 (°F)	TC #12 (°F)	TC #13 (°F)	TC #14 (°F)	TC #15 (°F)	TC #16 (°F)	TC #17 (°F)	TC #18 (°F)
44	152	148	144	151	159	154	145	121
45	155	161	148	155	163	158	149	125
46	157	160	152	159	167	162	153	128
47	159	171	156	164	172	166	157	132
48	162	183	160	168	181	170	162	135
49	165	191	164	175	190	175	166	139
50	168	194	168	184	199	183	171	142
51	171	190	172	192	208	193	178	145
52	174	194	179	200	216	202	188	149
53	178	210	186	207	224	212	196	152
54	181	216	193	215	233	220	204	155
55	185	227	201	223	241	229	212	159
56	190	238	208	231	249	238	221	163
57	194	253	215	238	257	246	228	167
58	199	261	222	246	265	254	236	172
59	204	269	230	254	273	262	244	178
60	210	278	237	262	281	271	252	187
Max Temp:	210	278	237	262	281	271	252	187
Max Allowed:	383	383	383	383	383	383	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #19 (°F)	TC #20 (°F)	TC #21 (°F)	TC #22 (°F)	TC #23 (°F)	TC #24 (°F)	TC #25 (°F)	TC #26 (°F)
0	60	60	59	59	58	58	58	59
1	60	60	59	59	58	58	58	58
2	60	60	59	58	58	58	58	58
3	60	60	59	59	58	58	58	58
4	60	60	60	59	59	59	59	59
5	60	61	60	59	59	59	59	59
6	60	62	60	59	59	59	59	59
7	60	62	61	59	59	62	62	60
8	60	63	62	60	60	65	66	64
9	60	64	64	62	62	69	70	67
10	60	65	66	64	64	72	73	71
11	60	66	69	66	67	75	77	75
12	61	67	71	68	70	78	81	79
13	61	69	74	71	73	81	84	83
14	61	70	77	74	77	84	87	87
15	62	72	79	77	79	86	89	90
16	62	74	82	80	82	88	92	94
17	63	75	85	83	85	91	95	97
18	64	77	87	86	88	93	98	100
19	65	79	90	89	91	96	100	103
20	66	81	93	92	94	98	103	106
21	66	83	97	95	98	101	106	109
22	67	85	100	98	101	104	109	112
23	68	87	104	102	104	107	112	116
24	70	89	108	106	108	110	115	119
25	71	92	112	110	111	113	118	122
26	72	94	117	114	115	116	122	125
27	73	97	122	118	119	120	125	129
28	74	100	127	123	123	124	129	132
29	75	102	132	128	128	128	132	136
30	77	105	137	133	132	132	136	140
31	78	109	142	138	137	136	141	144
32	79	112	147	143	141	140	145	148
33	81	115	151	148	147	144	149	153
34	82	118	155	152	152	149	154	158
35	84	122	158	155	157	153	159	163
36	85	125	161	162	163	158	164	168
37	87	127	172	172	170	163	169	174
38	88	130	182	181	178	168	175	181
39	90	132	191	190	186	174	182	189
40	92	135	200	199	193	179	188	196
41	94	139	208	208	201	186	196	204
42	96	142	217	217	209	194	204	212
43	98	146	226	226	216	202	212	220

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #19 (°F)	TC #20 (°F)	TC #21 (°F)	TC #22 (°F)	TC #23 (°F)	TC #24 (°F)	TC #25 (°F)	TC #26 (°F)
44	100	150	234	235	224	212	217	229
45	102	154	243	243	232	221	226	237
46	105	158	251	252	240	230	235	246
47	107	162	259	261	249	239	246	255
48	110	168	267	269	257	249	255	263
49	113	174	275	278	266	259	265	273
50	115	179	283	287	275	268	274	282
51	118	184	291	295	283	278	284	291
52	121	190	299	304	291	287	293	300
53	124	195	307	312	300	296	303	309
54	127	200	315	321	309	306	312	318
55	130	206	323	329	317	315	321	327
56	133	212	330	338	326	325	331	336
57	136	216	338	345	334	333	340	345
58	140	222	345	354	342	342	349	353
59	143	227	352	361	350	350	358	362
60	147	233	359	369	357	359	366	370
Max Temp:	147	233	359	369	357	359	366	370
Max Allowed:	385	385	384	384	383	383	383	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #27 (°F)	TC #28 (°F)	TC #29 (°F)	TC #30 (°F)	TC #31 (°F)	TC #32 (°F)	TC #33 (°F)	TC #34 (°F)
0	59	59	59	59	59	59	59	59
1	59	59	59	59	59	59	59	59
2	58	58	58	59	59	59	59	59
3	58	58	59	59	58	59	59	59
4	59	59	59	59	58	59	59	59
5	59	59	59	59	58	58	58	59
6	59	59	59	59	59	59	59	59
7	60	60	60	59	59	59	59	59
8	62	63	62	59	59	59	59	60
9	66	68	66	60	61	60	60	60
10	70	74	71	62	63	60	61	62
11	75	80	76	66	66	62	62	63
12	79	85	80	70	71	64	63	65
13	83	89	85	76	76	66	65	67
14	87	93	89	82	79	68	67	69
15	90	96	93	88	83	71	69	71
16	94	100	97	95	86	73	71	74
17	97	102	100	100	89	76	73	76
18	100	105	105	106	92	79	76	79
19	103	108	109	110	95	81	79	82
20	106	112	113	114	97	84	81	84
21	109	115	117	118	100	86	84	87
22	112	119	120	121	102	89	87	91
23	115	123	124	124	104	92	90	95
24	118	126	127	126	106	95	93	98
25	121	128	129	128	109	98	97	102
26	124	131	131	129	111	101	101	107
27	127	133	134	131	113	104	105	111
28	130	136	136	132	115	108	110	116
29	133	138	138	133	118	112	114	122
30	136	141	140	134	120	116	119	127
31	139	144	142	135	122	119	124	132
32	142	147	145	137	125	124	129	138
33	146	150	147	138	128	128	134	144
34	149	154	150	139	130	132	140	150
35	153	157	152	141	134	137	145	156
36	158	162	155	142	137	142	150	162
37	162	167	158	144	140	147	156	167
38	167	172	161	146	144	152	161	174
39	172	178	165	148	148	157	166	183
40	178	184	168	150	152	162	176	193
41	184	191	172	153	156	167	187	204
42	191	198	176	155	160	174	196	215
43	199	205	181	158	164	184	205	225

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #27 (°F)	TC #28 (°F)	TC #29 (°F)	TC #30 (°F)	TC #31 (°F)	TC #32 (°F)	TC #33 (°F)	TC #34 (°F)
44	207	213	186	161	169	192	214	234
45	215	220	192	164	173	201	223	244
46	223	228	198	167	178	209	232	254
47	231	237	204	171	184	218	241	263
48	239	245	211	174	191	227	249	273
49	248	254	218	179	198	236	258	282
50	257	263	225	183	206	245	267	290
51	265	271	232	189	215	254	276	300
52	274	280	240	194	223	263	284	308
53	283	290	248	201	232	272	293	316
54	292	299	255	208	241	281	301	325
55	301	308	263	215	250	290	309	333
56	309	318	271	222	259	299	318	341
57	319	326	279	231	268	308	325	348
58	329	336	287	240	277	316	333	356
59	338	345	296	248	286	325	341	363
60	347	354	304	257	295	333	348	370
Max Temp:	347	354	304	257	295	333	348	370
Max Allowed:	384	384	384	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #35 (°F)	TC #36 (°F)	TC #37 (°F)	TC #38 (°F)	TC #39 (°F)	TC #40 (°F)	TC #41 (°F)	TC #42 (°F)
0	59	59	59	60	60	60	58	58
1	59	59	60	60	60	60	58	58
2	59	59	59	60	60	60	59	59
3	59	59	59	60	60	60	59	59
4	59	59	59	60	60	60	59	58
5	59	59	59	60	60	60	58	58
6	59	59	59	60	60	60	59	59
7	59	59	60	60	60	60	59	59
8	60	59	60	60	61	61	59	59
9	60	60	60	60	61	62	60	60
10	61	60	61	60	62	62	61	61
11	63	62	61	61	63	64	62	62
12	64	63	62	61	65	65	64	64
13	66	64	63	61	66	66	65	65
14	68	66	64	62	67	69	67	67
15	70	68	66	62	68	70	68	68
16	73	70	68	63	70	72	70	70
17	75	72	69	64	71	73	72	71
18	77	75	71	65	73	76	73	72
19	80	77	73	66	74	77	75	74
20	82	79	74	67	75	79	77	75
21	85	82	76	68	76	80	78	77
22	88	85	78	69	77	82	80	78
23	92	87	80	71	79	84	82	79
24	95	90	82	72	81	86	83	81
25	98	93	85	73	83	87	85	82
26	102	97	87	75	85	90	87	84
27	106	100	89	76	87	92	90	86
28	111	105	92	78	89	95	92	88
29	116	109	95	80	92	97	95	90
30	121	113	98	81	94	100	97	92
31	128	118	101	83	97	102	99	94
32	135	123	104	85	100	105	102	96
33	140	128	108	87	102	108	105	99
34	148	133	111	89	104	110	107	101
35	155	139	115	92	107	113	110	104
36	162	145	120	95	109	116	113	107
37	168	151	124	97	112	119	116	110
38	176	157	129	100	114	122	120	113
39	182	163	133	103	116	125	123	116
40	192	168	138	106	118	128	127	119
41	202	176	142	109	120	132	131	123
42	214	184	146	112	122	136	136	128
43	224	193	150	115	123	140	141	132

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #35 (°F)	TC #36 (°F)	TC #37 (°F)	TC #38 (°F)	TC #39 (°F)	TC #40 (°F)	TC #41 (°F)	TC #42 (°F)
44	236	203	153	118	125	145	146	136
45	247	213	157	122	128	150	152	141
46	257	223	162	125	129	154	156	145
47	268	232	168	128	131	159	162	150
48	278	241	174	132	133	164	166	154
49	288	250	181	136	136	168	171	159
50	297	259	188	140	139	173	176	163
51	306	268	195	145	142	179	181	168
52	315	277	203	149	146	183	186	172
53	323	285	210	154	151	189	192	177
54	332	294	217	159	155	194	197	182
55	340	302	224	165	159	200	203	188
56	348	310	232	170	163	205	209	195
57	356	318	239	175	168	212	216	203
58	364	326	246	180	173	217	222	209
59	371	334	254	185	177	222	229	216
60	379	341	261	190	182	227	235	222
Max Temp:	379	341	261	190	182	227	235	222
Max Allowed:	384	384	384	385	385	385	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #43 (°F)	TC #44 (°F)	TC #45 (°F)	TC #46 (°F)	TC #47 (°F)	TC #48 (°F)	TC #49 (°F)	TC #50 (°F)
0	58	58	58	58	58	58	58	59
1	58	58	58	58	58	58	59	59
2	58	59	59	59	59	59	59	59
3	58	59	59	59	59	59	59	59
4	58	59	59	59	59	59	59	59
5	58	58	58	58	58	59	59	59
6	59	59	59	59	59	59	59	59
7	59	59	59	59	59	59	59	59
8	60	59	59	59	59	59	59	59
9	60	60	60	60	61	60	60	60
10	62	62	62	62	62	60	60	60
11	63	64	65	65	63	62	62	60
12	65	65	67	67	66	64	62	61
13	67	67	69	69	68	65	63	62
14	68	69	71	71	70	67	65	62
15	69	70	73	73	71	68	65	64
16	71	72	74	74	73	69	67	65
17	72	73	75	76	73	70	68	66
18	73	74	77	77	75	71	68	67
19	74	75	78	78	76	72	69	68
20	76	76	79	80	77	73	70	68
21	77	77	80	81	79	75	71	69
22	78	79	81	82	80	76	72	70
23	80	80	82	84	82	77	73	72
24	81	81	83	85	83	78	75	73
25	82	82	84	86	85	79	75	73
26	84	84	86	87	86	81	77	75
27	85	86	87	89	88	82	78	76
28	87	87	89	91	89	84	79	77
29	89	89	91	92	91	86	81	79
30	91	91	93	94	92	87	82	80
31	93	93	95	96	94	89	84	82
32	95	96	97	98	96	91	86	84
33	97	98	100	100	98	93	88	86
34	100	101	102	103	101	95	90	88
35	102	103	105	105	104	98	93	90
36	105	106	108	108	107	101	96	93
37	108	109	111	111	110	104	98	96
38	111	113	114	114	114	107	102	98
39	114	116	118	118	116	109	104	101
40	118	120	121	120	119	112	107	104
41	122	124	125	124	123	115	111	107
42	126	128	129	128	127	119	114	111
43	130	133	134	133	130	122	117	114

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #43 (°F)	TC #44 (°F)	TC #45 (°F)	TC #46 (°F)	TC #47 (°F)	TC #48 (°F)	TC #49 (°F)	TC #50 (°F)
44	135	137	139	138	135	126	120	118
45	140	142	145	144	140	130	124	121
46	144	147	150	149	146	133	127	125
47	149	152	156	155	151	138	131	129
48	154	157	161	161	157	143	135	134
49	158	162	167	167	163	149	140	138
50	163	167	173	173	168	154	145	143
51	168	173	179	179	175	160	151	149
52	173	178	185	185	181	166	156	154
53	178	183	191	192	187	172	162	159
54	183	188	197	198	194	177	168	165
55	188	194	203	204	200	184	173	171
56	194	199	209	211	206	190	179	176
57	199	204	215	218	213	196	185	182
58	205	210	221	225	220	203	191	187
59	212	217	228	232	227	210	198	193
60	218	224	235	239	235	217	204	199
Max Temp:	218	224	235	239	235	217	204	199
Max Allowed:	383	383	383	383	383	383	383	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #51 (°F)	TC #52 (°F)	TC #53 (°F)	TC #54 (°F)	TC #55 (°F)	TC #56 (°F)	TC #57 (°F)	TC #58 (°F)
0	58	58	58	58	59	59	59	59
1	58	58	58	58	59	59	59	60
2	58	58	58	58	59	59	59	62
3	58	58	58	58	59	59	59	64
4	58	58	58	58	59	59	59	66
5	58	58	58	58	59	59	59	68
6	58	58	58	59	59	59	59	70
7	58	58	58	58	59	59	59	70
8	58	58	58	59	59	59	60	71
9	59	59	59	59	59	59	60	72
10	59	59	59	59	59	59	60	73
11	59	59	59	59	59	60	60	74
12	59	59	59	59	59	60	60	75
13	60	59	59	59	59	59	60	77
14	61	60	60	60	60	60	60	78
15	62	61	61	60	60	60	60	80
16	62	62	61	61	61	60	61	81
17	63	62	62	62	61	61	61	83
18	64	63	63	62	62	61	61	85
19	65	64	64	63	63	62	62	86
20	66	65	65	64	63	62	62	88
21	67	66	66	65	64	62	62	90
22	68	67	67	66	65	63	62	93
23	69	68	68	67	66	64	63	95
24	70	69	69	68	67	64	64	98
25	71	70	70	69	67	65	64	101
26	72	71	71	69	68	66	64	104
27	74	73	72	71	69	66	65	107
28	75	74	73	72	70	67	66	110
29	77	75	75	73	72	68	66	114
30	78	77	76	74	73	69	67	117
31	80	78	78	76	74	70	68	120
32	82	80	79	77	75	71	68	122
33	84	82	81	79	77	72	69	124
34	86	85	83	80	78	73	70	127
35	88	87	86	82	80	74	71	130
36	91	89	88	85	82	76	73	133
37	93	92	91	86	84	77	73	137
38	96	95	93	89	86	79	75	142
39	99	98	96	92	89	81	76	147
40	102	101	100	94	91	82	78	152
41	105	104	103	97	93	84	80	158
42	109	108	107	100	96	87	81	165
43	112	112	112	104	99	89	84	171

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #51 (°F)	TC #52 (°F)	TC #53 (°F)	TC #54 (°F)	TC #55 (°F)	TC #56 (°F)	TC #57 (°F)	TC #58 (°F)
44	116	116	116	107	102	91	85	177
45	120	121	121	111	105	93	87	183
46	124	126	126	115	109	96	89	189
47	129	131	131	120	113	99	92	202
48	134	136	136	125	117	102	94	206
49	139	142	141	130	122	105	97	234
50	144	147	146	135	126	108	99	263
51	150	153	151	140	131	111	102	284
52	156	158	157	145	136	114	105	300
53	161	164	162	150	140	118	108	312
54	167	170	168	156	145	122	111	323
55	173	176	174	161	150	126	115	360
56	179	182	180	167	156	130	118	375
57	185	188	186	172	161	134	122	467
58	190	194	191	178	166	138	125	483
59	196	200	198	184	171	142	129	497
60	201	206	204	190	176	146	132	509
Max Temp:	201	206	204	190	176	146	132	509
Max Allowed:	383	383	383	383	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #59 (°F)	TC #60 (°F)	TC #61 (°F)	TC #62 (°F)	TC #63 (°F)	TC #64 (°F)	TC #65 (°F)	TC #66 (°F)
0	59	59	58	58	58	58	59	59
1	59	59	58	58	58	58	59	59
2	59	59	58	58	58	59	59	59
3	59	59	58	58	59	59	59	59
4	59	59	59	59	59	59	59	59
5	60	59	59	59	59	59	59	59
6	60	59	59	59	59	59	59	59
7	62	60	59	59	59	59	59	59
8	64	62	60	60	60	60	60	60
9	67	64	62	62	62	62	62	62
10	69	67	63	64	64	64	64	63
11	73	70	65	66	66	67	66	65
12	76	74	68	68	69	69	69	68
13	79	77	71	71	72	73	72	71
14	82	81	74	73	75	76	75	74
15	86	84	77	76	78	79	79	77
16	89	88	80	79	82	82	82	81
17	92	91	83	83	85	86	86	85
18	96	95	87	86	89	90	90	89
19	100	98	90	90	93	93	94	92
20	104	102	93	94	96	97	98	96
21	108	106	98	98	101	102	102	100
22	112	111	102	103	105	106	106	105
23	117	115	106	107	110	110	111	109
24	122	119	110	113	115	115	116	114
25	127	124	115	118	121	121	122	120
26	132	130	120	124	127	127	128	126
27	138	136	126	130	133	133	134	132
28	143	142	132	136	139	139	140	138
29	149	148	138	142	145	146	146	145
30	154	155	144	148	151	152	151	151
31	159	160	150	154	158	158	157	158
32	167	166	156	160	164	164	164	166
33	176	179	162	166	172	172	175	176
34	187	192	168	173	182	185	187	186
35	197	203	175	184	194	198	200	199
36	208	215	187	195	205	211	212	212
37	218	226	198	205	216	223	224	225
38	229	238	209	216	227	235	237	237
39	239	250	221	227	238	247	249	250
40	249	261	232	238	249	260	262	262
41	260	273	244	249	260	272	274	275
42	270	285	255	260	271	284	286	287
43	280	296	267	271	282	296	298	300

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #59 (°F)	TC #60 (°F)	TC #61 (°F)	TC #62 (°F)	TC #63 (°F)	TC #64 (°F)	TC #65 (°F)	TC #66 (°F)
44	290	307	279	283	294	308	310	311
45	299	319	291	295	305	320	322	323
46	309	330	302	306	317	332	334	335
47	319	341	314	317	329	344	345	346
48	328	352	325	329	340	355	357	357
49	338	363	337	340	352	366	368	369
50	347	373	348	351	363	377	379	380
51	356	384	359	362	374	388	391	391
52	364	394	370	373	385	399	402	402
53	373	404	381	384	396	409	412	413
54	381	413	391	395	406	420	423	423
55	390	423	401	405	417	429	433	434
56	398	432	411	416	426	440	442	444
57	406	444	470	426	436	449	453	453
58	414	465	437	436	446	562	462	463
59	422	520	536	446	455	467	471	473
60	429	551	540	456	465	509	480	482
Max Temp:	429	551	540	456	465	562	480	482
Max Allowed:	384	384	383	383	383	383	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #67 (°F)	TC #68 (°F)	TC #69 (°F)	TC #70 (°F)	TC #71 (°F)	TC #72 (°F)	TC #73 (°F)	TC #74 (°F)
0	59	59	59	59	58	58	58	58
1	59	59	59	59	58	58	58	58
2	59	59	59	59	58	58	58	58
3	59	59	59	59	58	58	58	58
4	59	59	59	59	58	58	58	58
5	59	59	59	59	58	58	58	58
6	59	59	59	59	58	58	58	58
7	59	60	60	59	59	59	58	59
8	60	62	61	60	60	60	59	59
9	62	64	62	61	62	62	59	60
10	64	67	64	62	64	63	60	61
11	66	69	65	64	66	66	62	62
12	69	73	67	66	68	68	64	64
13	72	77	70	68	70	71	66	66
14	76	81	72	69	73	75	69	69
15	79	85	75	71	76	78	71	71
16	83	90	78	74	78	82	74	74
17	87	94	81	76	82	87	78	77
18	92	99	85	79	86	91	81	80
19	96	103	88	82	89	95	84	83
20	100	109	92	85	95	100	87	87
21	105	114	96	89	100	105	91	90
22	109	120	101	92	105	110	95	94
23	114	126	106	97	112	115	99	98
24	120	132	112	101	119	120	103	102
25	126	139	118	106	126	125	107	108
26	132	146	124	112	132	131	112	113
27	139	153	130	117	139	138	117	118
28	146	161	135	123	150	145	122	125
29	153	170	142	129	160	153	127	129
30	160	181	148	135	171	161	133	141
31	169	191	154	142	179	169	139	153
32	181	203	160	148	189	178	145	161
33	191	215	167	155	201	187	151	175
34	202	226	175	161	213	197	157	183
35	215	238	185	168	227	208	163	190
36	228	250	196	175	240	219	169	202
37	240	262	208	188	253	232	176	213
38	253	274	219	200	265	246	191	225
39	265	286	231	212	280	260	205	238
40	277	297	242	223	295	275	218	252
41	289	308	254	235	311	290	230	267
42	301	320	266	247	324	305	243	281
43	312	331	278	259	339	320	256	295

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #67 (°F)	TC #68 (°F)	TC #69 (°F)	TC #70 (°F)	TC #71 (°F)	TC #72 (°F)	TC #73 (°F)	TC #74 (°F)
44	325	343	290	271	354	335	268	309
45	337	354	302	283	367	350	280	323
46	348	365	314	295	381	365	293	336
47	359	376	326	307	395	379	305	350
48	371	387	339	319	409	393	317	363
49	381	397	350	331	422	407	328	377
50	392	407	362	342	436	421	340	391
51	402	418	374	354	449	435	351	404
52	413	428	386	365	461	448	362	417
53	423	438	397	375	473	461	373	429
54	433	448	408	386	485	474	384	442
55	443	457	419	397	497	486	394	454
56	453	466	430	407	510	498	404	467
57	462	475	441	417	481	509	414	478
58	472	484	451	428	509	521	424	490
59	481	492	462	437	558	536	433	501
60	490	500	471	447	576	565	443	513
Max Temp:	490	500	471	447	576	565	443	513
Max Allowed:	384	384	384	384	383	383	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #75 (°F)	TC #76 (°F)	TC #77 (°F)	TC #78 (°F)	TC #79 (°F)	TC #80 (°F)	TC #81 (°F)	TC #82 (°F)
0	59	59	59	59	59	59	58	58
1	58	59	59	59	59	59	58	58
2	58	59	60	59	59	59	58	58
3	58	59	62	59	59	59	58	58
4	59	59	63	60	59	59	58	58
5	59	59	64	60	59	59	58	58
6	59	59	65	61	59	59	59	59
7	59	59	66	62	60	60	59	60
8	59	59	67	64	62	61	60	61
9	59	59	68	67	64	63	62	63
10	60	60	70	70	67	65	64	65
11	61	60	71	73	70	67	66	68
12	62	60	74	77	74	70	68	71
13	63	61	75	80	78	73	71	74
14	65	62	78	84	82	76	74	77
15	66	62	79	87	85	79	77	80
16	68	63	81	91	89	82	81	84
17	70	65	84	95	93	86	85	88
18	72	66	86	100	97	91	89	93
19	75	67	87	104	101	95	94	98
20	77	69	90	109	105	99	99	103
21	79	70	93	114	110	104	105	109
22	82	71	96	120	114	109	111	115
23	85	73	99	125	120	115	117	122
24	87	75	103	131	125	121	124	129
25	91	77	106	137	131	128	131	136
26	94	79	110	142	138	135	138	143
27	97	81	115	149	145	142	145	150
28	101	83	120	154	152	149	151	157
29	104	85	124	160	158	155	157	164
30	108	88	129	165	164	161	162	175
31	113	90	133	176	172	167	171	187
32	117	93	137	187	184	177	182	198
33	122	96	141	198	199	189	193	209
34	127	99	144	209	211	201	204	221
35	132	102	148	221	223	212	215	232
36	137	105	153	232	235	223	226	244
37	142	109	158	243	247	235	237	255
38	147	112	163	253	259	246	248	267
39	152	115	167	264	270	258	259	278
40	156	119	174	274	282	270	271	290
41	160	123	181	285	293	281	282	301
42	164	126	188	294	304	293	293	312
43	171	130	194	305	315	304	304	322

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #75 (°F)	TC #76 (°F)	TC #77 (°F)	TC #78 (°F)	TC #79 (°F)	TC #80 (°F)	TC #81 (°F)	TC #82 (°F)
44	180	134	200	315	326	315	315	333
45	192	138	206	325	336	326	326	343
46	202	143	213	334	347	337	337	354
47	211	148	219	343	357	348	347	364
48	221	153	226	352	367	358	358	374
49	230	158	232	361	377	369	368	384
50	239	163	238	370	387	379	379	394
51	248	170	244	378	397	389	389	403
52	256	176	250	386	406	399	399	413
53	265	182	256	394	415	408	409	422
54	274	189	262	402	425	418	419	431
55	282	195	268	410	434	427	428	439
56	291	201	274	417	442	437	437	448
57	299	206	280	425	451	445	446	456
58	307	212	286	432	459	454	455	465
59	315	218	291	494	467	491	464	473
60	323	224	434	551	497	564	473	481
Max Temp:	323	224	434	551	497	564	473	481
Max Allowed:	384	384	384	384	384	384	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #83 (°F)	TC #84 (°F)	TC #85 (°F)	TC #86 (°F)	TC #87 (°F)	TC #88 (°F)	TC #89 (°F)	TC #90 (°F)
0	58	58	58	58	58	58	58	59
1	58	58	58	58	58	58	58	59
2	58	58	58	58	58	58	58	59
3	58	58	58	58	58	58	58	59
4	58	58	59	59	58	58	58	59
5	58	59	59	59	59	58	58	59
6	59	59	59	59	59	59	59	59
7	59	60	60	59	60	59	59	59
8	60	61	61	61	61	59	59	60
9	62	63	62	62	62	60	60	61
10	65	66	64	64	64	61	61	62
11	68	68	67	67	67	62	62	64
12	71	72	70	70	69	64	63	66
13	74	75	73	73	73	66	65	68
14	77	79	76	77	77	68	67	70
15	81	83	79	80	80	70	68	73
16	85	88	83	85	85	73	70	76
17	89	93	88	89	89	75	73	79
18	93	98	92	94	94	78	75	82
19	98	103	97	98	98	81	78	85
20	103	109	103	103	104	85	82	90
21	109	114	109	109	109	88	85	94
22	114	120	115	115	115	93	89	98
23	121	127	122	122	121	97	93	104
24	128	134	129	130	128	102	98	109
25	135	141	137	138	136	108	104	115
26	143	149	145	146	144	114	109	121
27	150	161	153	155	152	120	115	128
28	156	173	161	164	161	126	122	134
29	163	185	173	176	173	133	128	141
30	175	198	185	188	184	139	134	146
31	189	210	197	200	195	146	141	152
32	202	223	210	213	207	152	148	160
33	214	236	222	226	220	159	155	171
34	226	248	234	239	232	167	161	182
35	239	261	247	252	244	177	169	193
36	253	273	259	264	257	187	181	204
37	265	285	271	277	269	198	191	215
38	278	297	283	289	280	209	202	226
39	290	309	295	301	292	220	213	237
40	302	321	308	313	304	231	223	248
41	313	332	320	325	315	242	234	260
42	325	343	331	336	325	253	245	271
43	336	354	342	348	336	264	256	282

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #83 (°F)	TC #84 (°F)	TC #85 (°F)	TC #86 (°F)	TC #87 (°F)	TC #88 (°F)	TC #89 (°F)	TC #90 (°F)
44	348	365	354	359	346	276	267	294
45	359	376	364	370	356	287	277	305
46	370	386	375	380	366	298	288	315
47	381	396	384	390	376	309	299	326
48	391	406	394	400	385	320	309	336
49	401	416	403	409	393	331	320	347
50	411	426	413	418	402	341	330	357
51	420	435	422	426	411	352	340	366
52	429	444	430	433	419	362	350	376
53	439	453	438	441	427	373	361	386
54	448	461	446	449	435	383	370	395
55	456	469	454	456	443	393	380	404
56	465	476	462	464	451	403	390	413
57	473	484	469	471	458	413	399	422
58	481	491	477	646	465	423	408	431
59	490	499	484	608	472	432	418	502
60	512	506	491	651	479	442	427	499
Max Temp:	512	506	491	651	479	442	427	502
Max Allowed:	383	383	383	383	383	383	383	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #91 (°F)	TC #92 (°F)	TC #93 (°F)	TC #94 (°F)	TC #95 (°F)	TC #96 (°F)	TC #97 (°F)	TC #98 (°F)
0	57	58	58	58	59	59	58	58
1	58	58	58	58	59	59	59	59
2	57	57	58	58	59	59	58	58
3	57	57	58	58	59	59	59	59
4	57	57	58	58	59	59	59	59
5	57	58	58	58	59	60	59	59
6	58	58	58	58	59	60	59	59
7	58	58	58	59	59	61	60	59
8	58	58	59	59	59	62	60	59
9	59	59	60	59	59	64	62	60
10	61	60	61	60	59	65	64	62
11	62	62	62	61	60	67	65	63
12	65	64	64	62	60	69	67	64
13	67	66	67	63	61	71	69	66
14	70	69	69	65	62	73	71	68
15	73	71	71	66	62	75	73	70
16	76	75	74	68	63	77	75	72
17	79	77	77	70	64	79	76	74
18	82	80	80	71	65	81	78	76
19	86	84	83	74	66	84	81	79
20	89	87	85	76	68	87	84	81
21	93	90	88	78	69	89	86	84
22	96	94	91	80	70	92	88	86
23	101	98	95	83	72	95	91	89
24	105	102	98	85	74	97	93	91
25	110	106	102	88	76	99	95	94
26	116	110	107	92	78	101	98	97
27	122	115	111	95	80	104	101	99
28	127	121	116	98	82	107	104	103
29	134	127	121	102	85	111	107	106
30	140	133	127	106	88	115	111	110
31	147	139	132	111	91	120	116	115
32	153	145	138	115	95	125	123	122
33	159	151	144	120	98	131	130	128
34	166	157	150	125	102	138	137	135
35	176	163	156	130	106	144	144	141
36	190	169	162	135	110	149	150	148
37	203	181	168	140	114	155	157	155
38	215	195	179	145	117	160	164	162
39	227	208	193	151	120	165	171	169
40	240	220	205	157	123	168	178	176
41	252	232	217	163	127	173	185	183
42	264	244	228	170	130	178	191	190
43	276	256	239	177	133	184	198	197

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #91 (°F)	TC #92 (°F)	TC #93 (°F)	TC #94 (°F)	TC #95 (°F)	TC #96 (°F)	TC #97 (°F)	TC #98 (°F)
44	288	268	250	185	137	190	205	204
45	300	280	261	193	140	195	212	211
46	311	292	272	201	144	202	219	218
47	323	303	283	209	147	207	226	226
48	334	314	293	217	150	213	232	234
49	345	326	303	224	154	217	238	242
50	356	337	314	232	158	222	244	249
51	366	347	324	240	162	226	250	257
52	377	358	334	248	166	231	255	264
53	387	368	344	256	172	235	261	271
54	397	379	353	264	178	240	266	278
55	407	388	363	272	185	244	270	285
56	417	398	372	280	191	249	275	292
57	426	408	382	287	197	253	280	299
58	437	418	390	295	202	259	285	306
59	454	428	399	303	208	264	291	313
60	503	553	408	310	213	269	297	321
Max Temp:	503	553	408	310	213	269	297	321
Max Allowed:	382	383	383	383	384	384	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #99 (°F)	TC #100 (°F)	TC #101 (°F)	TC #102 (°F)	TC #103 (°F)	TC #104 (°F)	TC #105 (°F)
0	58	59	58	58	58	58	58
1	59	59	58	58	58	58	58
2	58	59	58	58	58	58	58
3	59	59	58	58	58	58	58
4	59	59	58	58	58	58	58
5	59	59	58	58	58	58	58
6	59	59	58	58	58	58	58
7	60	59	58	59	59	58	58
8	60	60	59	59	59	58	58
9	62	61	59	60	60	59	59
10	63	62	60	62	61	59	59
11	65	64	61	64	62	59	59
12	67	66	62	66	64	60	60
13	69	67	64	68	65	61	60
14	71	69	66	70	67	62	61
15	73	71	67	72	68	62	62
16	75	72	69	74	70	64	62
17	77	74	71	77	72	65	63
18	79	76	73	79	74	66	64
19	82	78	75	82	77	67	65
20	84	80	77	85	79	69	67
21	87	82	80	88	82	70	68
22	89	84	82	92	84	71	69
23	93	87	85	95	86	73	71
24	95	89	88	98	89	75	73
25	98	92	91	102	92	77	76
26	101	95	93	105	95	79	78
27	104	98	96	110	98	81	81
28	108	102	100	114	102	84	84
29	113	106	103	120	108	87	87
30	117	111	108	128	114	91	91
31	123	115	113	139	121	95	95
32	131	122	120	149	129	99	99
33	138	129	127	158	136	104	104
34	146	136	134	167	143	109	108
35	154	143	141	177	151	114	113
36	161	150	148	186	159	119	118
37	168	156	156	195	167	123	122
38	176	163	163	204	174	127	126
39	183	170	171	214	182	132	129
40	191	177	179	223	190	136	132
41	199	184	186	232	197	141	133
42	207	191	194	241	205	146	136
43	215	199	202	250	212	151	140

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #99 (°F)	TC #100 (°F)	TC #101 (°F)	TC #102 (°F)	TC #103 (°F)	TC #104 (°F)	TC #105 (°F)
44	223	206	210	257	219	157	143
45	231	214	216	264	226	163	148
46	240	222	223	272	233	169	153
47	248	229	230	278	238	176	160
48	256	237	238	283	246	183	166
49	264	246	246	290	252	191	172
50	271	254	254	297	259	198	179
51	279	263	262	303	265	205	186
52	286	271	270	310	271	213	200
53	294	280	279	316	278	222	211
54	302	288	287	323	284	229	221
55	310	296	296	330	291	237	230
56	318	305	304	337	297	245	239
57	326	313	312	343	304	253	247
58	334	322	319	349	310	260	255
59	343	330	327	356	317	267	262
60	350	338	334	363	324	274	270
Max Temp:	350	338	334	363	324	274	270
Max Allowed:	383	384	383	383	383	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #106 (°F)	TC #107 (°F)	TC #108 (°F)	TC #109 (°F)	TC #110 (°F)	TC #111 (°F)	TC #112 (°F)
0	58	58	58	58	58	57	58
1	58	58	58	58	58	57	58
2	58	58	58	58	58	57	58
3	58	58	58	58	58	57	58
4	58	58	58	58	58	57	58
5	58	58	58	58	58	57	58
6	58	58	58	58	58	57	58
7	58	58	58	58	58	58	58
8	58	58	58	58	58	57	58
9	59	58	58	58	58	58	58
10	59	58	59	58	58	58	58
11	59	58	59	58	58	58	58
12	59	59	59	59	59	58	58
13	60	59	59	59	59	58	59
14	60	59	60	59	59	58	59
15	61	60	61	60	59	59	59
16	62	60	61	60	59	59	59
17	63	61	62	61	60	59	60
18	64	62	63	61	60	60	60
19	65	62	64	62	61	60	61
20	66	63	64	62	61	61	61
21	67	64	65	63	62	61	62
22	69	65	66	64	62	62	62
23	71	66	68	66	63	63	63
24	73	67	70	67	64	63	64
25	75	69	71	68	65	64	64
26	77	71	73	69	66	65	65
27	80	72	75	71	67	65	66
28	83	74	77	73	68	66	67
29	86	76	79	75	69	67	68
30	90	79	82	77	70	69	69
31	93	81	84	79	72	70	70
32	97	84	87	82	74	71	71
33	102	87	90	85	76	73	73
34	106	90	94	88	78	74	75
35	111	93	98	91	80	77	77
36	116	97	101	95	82	78	78
37	120	101	105	98	85	80	80
38	125	105	110	101	88	83	83
39	130	109	114	105	91	86	85
40	134	113	118	109	94	89	88
41	138	117	122	114	97	92	91
42	143	121	127	118	101	96	95
43	148	126	131	122	105	99	98

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #106 (°F)	TC #107 (°F)	TC #108 (°F)	TC #109 (°F)	TC #110 (°F)	TC #111 (°F)	TC #112 (°F)
44	153	130	136	126	109	103	102
45	159	135	142	131	113	107	105
46	164	140	147	135	118	112	109
47	170	146	153	140	122	116	113
48	176	151	159	145	127	121	117
49	182	156	165	150	132	126	122
50	188	162	171	155	137	130	126
51	194	167	178	160	141	135	130
52	201	173	184	166	147	140	134
53	207	178	191	171	152	145	139
54	215	185	197	177	157	150	143
55	222	190	204	183	163	156	148
56	228	196	210	188	168	161	152
57	235	201	217	194	174	166	157
58	241	206	222	199	178	172	162
59	248	211	228	204	184	177	167
60	254	218	234	211	190	182	172
Max Temp:	254	218	234	211	190	182	172
Max Allowed:	383	383	383	383	383	382	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #113 (°F)	TC #114 (°F)	TC #115 (°F)	TC #116 (°F)	TC #117 (°F)	TC #118 (°F)	TC #119 (°F)
0	58	58	59	58	58	57	57
1	58	59	59	58	58	57	57
2	58	58	59	58	57	57	57
3	58	59	59	59	58	57	57
4	58	59	59	60	59	58	57
5	58	59	59	61	60	59	57
6	58	59	60	65	63	60	59
7	58	59	60	69	68	64	61
8	58	59	60	75	73	69	65
9	58	59	62	82	80	75	71
10	59	59	63	87	87	81	77
11	58	59	64	92	93	87	83
12	59	59	66	96	98	93	89
13	59	59	68	100	104	98	95
14	59	59	70	103	108	103	100
15	59	59	72	106	112	107	104
16	60	59	74	110	116	112	108
17	60	59	76	113	119	115	112
18	60	60	78	116	123	119	116
19	61	60	80	120	126	122	119
20	61	60	81	124	130	126	123
21	61	60	83	128	134	130	126
22	62	60	85	133	140	135	130
23	62	61	88	138	145	141	134
24	63	61	90	143	150	146	139
25	63	61	92	149	156	152	144
26	64	62	95	154	163	158	150
27	64	62	97	160	169	164	155
28	65	62	100	167	175	171	161
29	66	63	102	174	180	177	168
30	67	63	105	181	186	185	175
31	67	64	108	188	193	192	182
32	68	64	111	197	202	203	190
33	69	65	113	207	213	215	197
34	71	65	116	217	226	228	207
35	72	66	119	228	240	242	218
36	73	67	122	240	255	257	230
37	75	68	125	252	270	272	244
38	77	69	129	265	286	287	258
39	78	70	133	278	302	302	272
40	80	71	137	291	318	318	287
41	82	72	141	304	334	334	302
42	85	73	146	317	351	350	317
43	87	75	152	331	367	366	332

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #113 (°F)	TC #114 (°F)	TC #115 (°F)	TC #116 (°F)	TC #117 (°F)	TC #118 (°F)	TC #119 (°F)
44	89	76	158	344	384	382	347
45	92	78	163	357	400	398	363
46	95	79	169	370	417	414	378
47	97	81	175	383	433	430	393
48	100	82	181	396	449	446	409
49	103	84	186	410	465	462	424
50	106	86	192	422	481	478	439
51	109	88	196	435	497	493	455
52	112	89	631	686	513	509	470
53	115	91	648	699	528	605	476
54	118	93	661	712	544	566	491
55	121	95	666	721	559	609	657
56	124	97	677	694	620	614	673
57	128	100	688	734	634	659	697
58	131	102	701	739	647	703	719
59	135	104	699	714	646	676	729
60	138	106	708	740	701	739	759
Max Temp:	138	106	708	740	701	739	759
Max Allowed:	383	383	384	383	383	382	382

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #120 (°F)	TC #121 (°F)	TC #122 (°F)	TC #123 (°F)	TC #124 (°F)	TC #125 (°F)	TC #126 (°F)
0	57	57	57	57	57	57	57
1	57	57	57	57	57	57	57
2	57	57	56	56	57	57	57
3	57	57	57	57	57	57	57
4	57	57	57	57	57	57	58
5	58	58	57	57	57	58	58
6	59	60	57	58	59	59	58
7	62	65	58	61	62	61	60
8	66	70	60	64	66	65	64
9	71	76	66	68	71	70	68
10	77	82	72	73	77	74	72
11	83	89	79	77	82	79	77
12	90	96	86	82	87	85	81
13	96	102	93	86	92	89	85
14	102	107	98	91	96	93	89
15	107	111	103	95	100	98	93
16	112	116	107	99	104	101	97
17	116	119	110	102	107	105	101
18	120	123	113	107	111	108	105
19	124	126	116	110	114	111	108
20	128	130	119	114	117	114	111
21	132	133	121	118	120	118	114
22	136	137	124	122	124	121	117
23	141	141	127	125	128	125	120
24	145	145	130	130	133	129	124
25	150	150	134	134	138	134	128
26	155	154	138	139	144	139	133
27	161	159	142	144	150	144	138
28	166	164	147	149	156	150	144
29	171	169	152	154	162	156	149
30	177	174	157	159	168	161	156
31	183	181	162	165	174	167	162
32	190	187	167	170	181	174	168
33	197	194	173	175	189	182	174
34	205	201	178	180	199	190	180
35	214	208	184	186	210	200	189
36	224	217	190	192	223	212	199
37	235	226	196	200	236	225	212
38	246	236	203	210	249	239	227
39	259	246	211	221	262	254	242
40	272	258	220	233	276	269	257
41	286	270	231	245	291	284	273
42	300	283	242	258	305	300	289
43	314	296	254	271	319	315	305

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #120 (°F)	TC #121 (°F)	TC #122 (°F)	TC #123 (°F)	TC #124 (°F)	TC #125 (°F)	TC #126 (°F)
44	328	309	267	284	334	330	321
45	342	323	281	298	348	345	338
46	357	336	294	312	363	359	354
47	371	350	308	326	377	375	370
48	386	364	322	340	392	391	386
49	401	378	336	355	406	407	402
50	415	384	356	369	421	423	418
51	430	398	372	384	435	438	434
52	444	412	386	399	450	454	449
53	459	445	412	414	468	470	465
54	474	571	672	429	482	486	480
55	488	576	680	447	617	501	495
56	503	594	669	459	697	516	510
57	525	493	680	474	702	532	526
58	537	659	692	534	704	547	541
59	646	698	733	560	685	563	555
60	663	713	739	613	703	614	645
Max Temp:	663	713	739	613	704	614	645
Max Allowed:	382	382	382	382	382	382	382

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #127 (°F)	TC #128 (°F)	TC #129 (°F)	TC #130 (°F)	TC #131 (°F)	TC #132 (°F)	TC #133 (°F)
0	58	58	59	60	59	59	58
1	58	58	59	60	59	59	58
2	58	58	59	60	59	59	58
3	58	58	59	60	60	59	58
4	58	58	59	60	60	59	58
5	59	59	59	60	60	59	59
6	62	60	60	60	60	61	60
7	66	61	60	60	61	64	62
8	71	64	61	61	62	67	65
9	75	66	62	61	63	71	68
10	79	69	63	62	65	74	72
11	83	72	65	62	66	78	76
12	87	75	66	62	67	82	80
13	90	77	68	63	69	86	84
14	94	80	70	64	70	90	88
15	97	83	72	65	71	93	92
16	100	86	73	65	73	98	96
17	103	89	76	66	74	103	101
18	106	92	78	67	76	108	105
19	109	95	80	68	78	114	111
20	112	97	83	69	80	120	117
21	115	100	85	70	82	127	123
22	119	103	88	71	84	133	130
23	123	107	91	73	87	140	137
24	127	111	94	74	90	147	144
25	132	115	97	76	92	155	151
26	138	120	101	77	95	163	158
27	144	125	105	79	98	169	164
28	150	130	109	80	101	176	170
29	156	136	113	82	104	185	179
30	163	141	117	84	107	197	193
31	168	148	121	86	110	210	207
32	174	153	126	88	113	222	222
33	181	159	130	91	116	235	236
34	188	164	135	93	120	248	251
35	198	169	140	95	124	261	266
36	209	174	144	98	129	274	281
37	222	181	148	100	134	287	296
38	236	189	152	103	139	300	311
39	251	199	155	105	144	313	327
40	267	210	159	107	149	326	342
41	283	221	163	110	154	339	357
42	298	232	169	112	160	352	373
43	313	243	176	114	165	365	388

OMEGA POINT LABORATORIES

Time (min)	TC #127 (°F)	TC #128 (°F)	TC #129 (°F)	TC #130 (°F)	TC #131 (°F)	TC #132 (°F)	TC #133 (°F)
44	328	255	183	116	171	378	404
45	344	267	191	119	176	391	420
46	359	279	198	121	182	404	435
47	374	291	206	123	188	417	451
48	389	304	214	126	193	430	466
49	404	316	222	128	197	443	481
50	419	328	230	131	199	649	533
51	434	341	238	134	210	668	641
52	448	353	247	136	212	679	657
53	463	365	256	139	213	653	671
54	478	377	265	143	213	629	676
55	492	389	274	146	404	649	690
56	506	401	282	149	661	658	703
57	520	413	291	153	677	671	715
58	534	425	300	157	674	684	722
59	551	437	308	161	674	688	733
60	569	449	317	165	698	689	738
Max Temp:	569	449	317	165	698	689	738
Max Allowed:	383	383	384	385	384	384	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #134 (°F)	TC #135 (°F)	TC #136 (°F)	TC #137 (°F)	TC #138 (°F)	TC #139 (°F)	TC #140 (°F)
0	58	57	57	57	57	57	58
1	57	57	57	57	57	57	58
2	57	57	57	57	57	57	58
3	58	57	57	57	57	57	58
4	58	57	57	57	57	57	58
5	58	58	57	57	57	58	58
6	59	58	58	58	57	58	59
7	62	60	59	59	58	60	60
8	65	62	61	60	58	62	62
9	69	65	63	62	59	64	64
10	72	68	66	64	60	67	67
11	76	72	69	67	62	70	71
12	80	76	73	70	64	74	74
13	84	79	76	73	67	78	78
14	88	83	80	76	69	81	82
15	92	86	84	79	72	85	86
16	96	89	87	83	75	88	89
17	100	93	91	87	78	92	94
18	105	97	95	91	82	96	98
19	110	102	99	95	85	100	102
20	117	107	104	99	88	105	107
21	123	113	109	104	92	111	112
22	130	119	115	110	96	116	118
23	137	126	121	115	101	122	124
24	144	133	128	122	106	129	130
25	152	140	134	129	112	135	136
26	159	147	141	135	117	141	142
27	166	154	147	142	123	147	148
28	173	160	154	148	129	153	153
29	180	166	161	154	135	158	158
30	192	172	167	160	140	164	163
31	206	179	173	165	146	170	168
32	220	192	180	171	151	177	177
33	235	204	190	179	156	187	189
34	249	217	202	188	161	199	201
35	264	230	215	198	165	211	213
36	280	244	228	210	171	223	227
37	295	258	241	221	180	236	240
38	310	272	255	232	191	249	254
39	325	286	269	244	203	263	268
40	341	300	283	257	215	276	282
41	356	315	297	270	228	290	296
42	372	330	311	283	241	304	311
43	387	344	326	297	255	318	326

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #134 (°F)	TC #135 (°F)	TC #136 (°F)	TC #137 (°F)	TC #138 (°F)	TC #139 (°F)	TC #140 (°F)
44	403	359	340	311	269	332	340
45	419	374	355	325	283	346	355
46	434	388	370	340	297	361	370
47	449	403	384	354	312	375	385
48	465	418	399	369	327	390	400
49	579	670	447	384	342	521	415
50	634	680	446	421	464	515	430
51	689	700	478	415	492	527	445
52	595	679	531	496	502	544	507
53	674	695	547	610	628	532	539
54	595	709	568	672	655	648	582
55	638	688	644	655	674	601	625
56	657	669	586	699	698	667	645
57	770	678	674	676	715	673	651
58	729	695	703	693	711	714	658
59	722	707	676	682	702	720	704
60	738	728	735	700	683	684	710
Max Temp:	770	728	735	700	715	720	710
Max Allowed:	383	382	382	382	382	382	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #141 (°F)	TC #142 (°F)	TC #143 (°F)	TC #144 (°F)	TC #145 (°F)	TC #146 (°F)	TC #147 (°F)
0	57	57	58	58	59	59	59
1	57	57	58	58	59	59	59
2	57	57	58	58	59	59	60
3	57	57	58	58	59	59	60
4	57	57	58	59	59	59	60
5	58	58	59	59	59	60	61
6	59	59	59	60	60	60	61
7	60	60	61	61	61	60	62
8	62	62	63	63	62	61	62
9	65	64	66	66	64	62	63
10	67	67	68	68	66	63	63
11	71	70	72	71	68	64	64
12	75	73	75	75	70	65	66
13	78	77	78	78	72	66	67
14	83	80	83	82	74	67	68
15	87	84	87	85	76	69	69
16	91	88	91	89	79	70	70
17	96	92	95	93	81	71	71
18	100	97	100	98	84	73	73
19	105	101	105	102	87	74	75
20	110	106	110	107	90	76	77
21	116	111	116	112	94	77	78
22	122	117	122	118	97	79	80
23	128	122	128	124	101	81	82
24	134	128	134	130	105	83	84
25	140	134	140	137	110	85	85
26	145	140	145	143	114	88	87
27	151	145	151	149	118	91	89
28	156	150	156	154	123	93	92
29	161	155	160	159	127	96	94
30	166	159	166	165	132	98	96
31	173	164	173	172	136	101	99
32	184	170	184	181	140	104	102
33	195	181	195	193	145	106	105
34	206	192	206	205	150	109	109
35	219	204	219	217	156	112	112
36	231	217	231	229	162	115	115
37	244	229	244	242	169	119	118
38	257	242	257	255	176	122	120
39	270	255	270	268	183	126	122
40	284	269	284	281	190	130	124
41	298	283	298	294	198	134	125
42	312	297	312	308	205	138	128
43	326	311	326	321	213	143	130

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #141 (°F)	TC #142 (°F)	TC #143 (°F)	TC #144 (°F)	TC #145 (°F)	TC #146 (°F)	TC #147 (°F)
44	341	326	340	334	220	148	133
45	356	340	354	347	227	152	136
46	370	355	369	360	235	157	139
47	385	370	383	373	243	162	142
48	400	384	397	386	250	167	145
49	482	399	412	400	258	171	148
50	536	414	426	413	266	176	151
51	556	429	441	426	273	181	154
52	569	444	455	438	280	186	158
53	651	459	470	451	288	191	161
54	709	498	484	494	295	195	164
55	694	526	500	505	302	200	168
56	660	599	540	505	309	204	171
57	657	579	565	524	316	209	175
58	647	608	594	539	323	214	178
59	646	598	578	546	330	218	182
60	651	647	602	561	337	225	186
Max Temp:	709	647	602	561	337	225	186
Max Allowed:	382	382	383	383	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #148 (°F)	TC #149 (°F)	TC #150 (°F)
0	58	58	59
1	58	58	61
2	59	59	98
3	60	68	121
4	66	85	170
5	78	100	242
6	93	111	316
7	105	115	392
8	113	119	455
9	119	144	503
10	125	181	547
11	135	218	593
12	156	255	637
13	186	294	677
14	225	333	714
15	267	372	748
16	311	409	782
17	356	444	812
18	397	479	837
19	441	511	834
20	484	542	851
21	527	571	870
22	567	598	887
23	606	624	892
24	644	648	903
25	680	671	924
26	714	694	946
27	747	717	952
28	779	738	966
29	809	760	979
30	839	781	992
31	868	802	1007
32	897	822	1018
33	925	843	1031
34	952	862	1043
35	979	881	1056
36	1003	899	1081
37	1025	916	1083
38	1047	932	1099
39	1070	948	1107
40	1092	964	1121
41	1113	979	1133
42	1132	993	1146
43	1150	1006	1158

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #148 (°F)	TC #149 (°F)	TC #150 (°F)
44	1167	1019	1169
45	1183	1032	1180
46	1198	1045	1191
47	1212	1058	1200
48	1065	1070	1209
49	1011	1082	1221
50	1028	1093	1228
51	1048	1103	1236
52	1058	1112	1242
53	629	712	649
54	641	726	662
55	661	677	688
56	677	679	689
57	684	690	688
58	714	692	703
59	705	704	716
60	729	716	750
Max Temp:	1212	1112	1242
Max Allowed:	383	383	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #151 (°F)	TC #152 (°F)	TC #153 (°F)	TC #154 (°F)	TC #155 (°F)	TC #156 (°F)	TC #157 (°F)	TC #158 (°F)	TC #159 (°F)
0	60	60	60	60	60	60	60	60	60
1	60	60	60	60	60	60	60	60	60
2	60	60	60	60	60	60	60	60	60
3	60	60	60	60	60	60	60	60	60
4	60	60	60	60	60	60	61	61	61
5	60	60	61	60	61	61	61	61	61
6	61	61	64	61	62	62	63	62	62
7	62	63	66	62	62	63	64	64	62
8	62	64	69	65	64	65	66	65	64
9	63	66	71	68	66	66	68	67	65
10	64	68	73	70	67	68	70	69	66
11	64	69	76	73	69	70	72	71	67
12	65	71	78	76	71	72	74	73	69
13	66	73	80	78	73	74	76	75	70
14	66	74	82	80	75	76	78	77	72
15	67	76	85	82	78	79	82	79	75
16	68	78	87	84	80	82	85	82	77
17	68	79	89	86	83	85	88	85	79
18	69	80	92	88	86	88	91	89	82
19	69	82	94	91	89	92	95	92	85
20	70	83	96	93	92	95	99	96	87
21	71	85	98	95	95	99	104	100	91
22	72	87	100	98	99	104	108	105	94
23	73	89	103	100	103	108	113	110	97
24	73	91	105	103	107	112	118	114	101
25	75	94	107	107	111	117	123	120	105
26	76	96	110	110	114	121	127	125	108
27	77	100	113	114	119	125	132	129	112
28	79	103	115	117	123	130	136	134	116
29	81	106	118	122	127	134	141	139	120
30	82	109	122	125	132	139	146	143	124
31	84	112	124	129	136	143	150	148	128
32	86	115	127	133	141	148	155	153	132
33	88	118	130	138	145	153	159	157	136
34	90	122	134	142	149	157	165	162	141
35	92	125	137	146	154	162	171	167	145
36	94	128	141	150	158	168	178	173	149
37	96	131	144	154	162	175	185	181	153
38	98	135	148	159	167	182	193	188	158
39	100	138	151	163	174	189	200	195	163
40	102	141	155	167	181	196	207	203	168
41	104	144	159	172	189	203	214	210	174
42	106	148	163	178	196	210	221	217	180
43	109	151	167	185	203	217	228	224	186
44	111	154	172	192	210	224	235	231	192
45	113	158	176	199	217	231	242	238	198
46	115	161	182	206	225	238	249	245	205
47	117	165	188	213	232	246	256	252	211
48	119	169	195	220	239	252	263	259	217
49	121	173	202	227	246	259	270	266	224
50	123	178	208	235	253	266	277	272	230
51	125	183	214	242	260	273	283	279	236
52	127	188	221	249	267	280	290	286	243

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #151 (°F)	TC #152 (°F)	TC #153 (°F)	TC #154 (°F)	TC #155 (°F)	TC #156 (°F)	TC #157 (°F)	TC #158 (°F)	TC #159 (°F)
53	129	193	228	257	273	286	296	292	249
54	131	198	236	264	280	293	303	298	255
55	133	203	243	271	287	299	309	304	262
56	135	208	251	278	293	306	315	311	268
57	138	213	258	286	300	312	321	317	274
58	140	217	265	293	306	318	328	323	280
59	142	222	272	300	312	324	333	329	287
60	145	226	279	307	319	330	339	335	293
Max Temp:	145	226	279	307	319	330	339	335	293
Max Allowed:	385	385	385	385	385	385	385	385	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #160 (°F)	TC #161 (°F)	TC #162 (°F)	TC #163 (°F)	TC #164 (°F)	TC #165 (°F)	TC #166 (°F)	TC #167 (°F)	TC #168 (°F)
0	60	60	60	60	60	60	60	61	61
1	60	60	60	60	60	60	60	61	60
2	60	60	60	60	60	60	60	61	61
3	61	60	60	60	60	60	60	61	60
4	61	60	60	60	60	60	60	61	60
5	61	60	60	61	60	60	60	61	61
6	61	60	60	64	62	63	60	61	61
7	61	62	62	66	64	68	61	61	61
8	62	63	63	67	67	74	62	61	61
9	63	64	64	69	69	78	63	62	62
10	64	66	66	70	71	81	64	62	62
11	65	67	68	72	73	84	65	62	63
12	67	69	70	73	75	86	66	62	64
13	69	71	72	75	77	87	67	63	64
14	70	73	74	77	78	89	68	63	65
15	72	75	76	78	79	91	69	64	66
16	74	77	78	80	81	92	69	64	67
17	76	79	81	81	82	94	70	65	68
18	78	82	84	83	84	96	71	65	69
19	80	85	87	85	85	98	73	66	70
20	82	88	90	87	86	100	74	67	71
21	85	92	93	89	88	103	75	67	72
22	88	95	96	92	89	106	76	68	73
23	91	99	101	95	92	109	78	68	75
24	94	103	104	98	94	113	79	69	76
25	97	107	109	102	96	117	81	70	77
26	101	111	113	105	99	121	82	70	79
27	104	116	118	109	102	125	84	71	80
28	108	120	122	113	106	129	86	73	82
29	112	125	127	117	109	133	88	73	84
30	116	129	131	121	113	137	91	74	85
31	120	134	136	125	116	140	93	76	87
32	125	138	140	130	120	143	95	77	89
33	130	143	145	134	124	145	98	78	91
34	134	148	149	139	128	148	100	79	93
35	139	152	153	143	132	150	102	81	96
36	143	156	158	147	136	154	105	82	98
37	148	160	162	151	140	157	108	84	100
38	153	164	166	156	144	161	110	85	103
39	157	169	173	159	148	165	113	86	105
40	161	176	179	163	151	171	116	88	108
41	166	183	186	168	155	180	118	89	111
42	171	190	193	172	158	188	121	91	113
43	177	197	199	178	162	196	124	93	116
44	185	203	206	184	166	204	127	95	119
45	194	210	212	190	170	212	130	96	122
46	202	217	219	197	175	221	133	98	125
47	209	224	225	204	180	229	137	100	128
48	217	231	232	210	187	237	140	102	131
49	225	238	238	217	194	245	144	104	134
50	233	245	245	223	200	252	148	105	138
51	240	252	251	230	206	259	151	107	141
52	248	259	258	236	212	266	155	109	145

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #160 (°F)	TC #161 (°F)	TC #162 (°F)	TC #163 (°F)	TC #164 (°F)	TC #165 (°F)	TC #166 (°F)	TC #167 (°F)	TC #168 (°F)
53	256	266	264	242	218	272	159	112	149
54	264	273	270	249	224	279	162	114	153
55	271	279	276	255	230	285	166	116	157
56	279	286	283	261	236	291	170	118	162
57	287	293	289	268	242	298	174	121	166
58	294	300	295	274	249	304	178	123	171
59	302	307	301	280	255	311	181	126	176
60	309	313	307	286	260	316	185	128	180
Max Temp:	309	313	307	286	260	316	185	128	180
Max Allowed:	385	385	385	385	385	385	385	386	386

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #169 (°F)	TC #170 (°F)	TC #171 (°F)	TC #172 (°F)	TC #173 (°F)	TC #174 (°F)	TC #175 (°F)	TC #176 (°F)	TC #177 (°F)
0	61	61	60	60	60	60	60	60	60
1	60	61	60	60	60	60	60	60	60
2	60	61	60	60	60	60	60	60	60
3	60	61	60	60	60	60	60	60	60
4	60	61	60	60	60	60	60	60	60
5	60	61	60	60	60	60	60	60	60
6	61	61	60	60	60	60	60	60	60
7	61	61	60	60	60	60	60	60	60
8	61	61	60	60	60	60	60	60	60
9	62	62	60	60	60	60	60	60	60
10	62	62	61	61	61	61	60	60	61
11	63	63	61	61	61	61	61	61	61
12	64	64	62	62	62	62	61	61	61
13	65	64	63	62	62	62	62	62	62
14	66	66	64	63	63	63	62	62	62
15	68	67	65	64	64	64	63	62	63
16	69	68	66	65	65	65	64	63	64
17	70	69	67	66	66	65	64	64	65
18	71	71	68	67	67	67	65	65	66
19	73	72	69	69	69	68	66	66	67
20	74	73	71	70	70	69	67	67	68
21	76	75	73	72	72	71	69	68	69
22	77	77	74	73	73	72	70	69	71
23	79	78	77	76	76	74	72	71	72
24	80	80	78	78	78	76	73	72	74
25	82	82	81	80	80	78	75	74	76
26	84	84	83	82	82	81	77	75	78
27	85	86	85	85	85	83	80	77	80
28	87	88	88	88	88	86	82	80	82
29	89	91	91	91	91	89	84	82	85
30	92	93	93	94	94	92	87	84	87
31	94	96	96	97	97	95	90	87	90
32	96	98	100	100	100	98	93	89	93
33	99	101	102	103	104	101	96	92	96
34	101	104	106	107	107	104	98	95	98
35	104	107	109	110	111	108	102	98	102
36	107	111	113	114	114	111	105	101	105
37	110	114	116	118	118	115	109	105	108
38	113	118	120	122	123	119	112	108	112
39	116	121	124	126	127	123	116	111	115
40	119	125	128	131	132	128	120	115	119
41	122	128	133	135	137	133	124	119	123
42	125	132	137	140	142	138	128	123	127
43	129	136	142	145	148	142	132	127	131
44	133	141	147	151	153	148	137	131	136
45	136	146	153	156	159	153	142	136	141
46	141	151	158	162	164	158	147	141	145
47	145	156	164	168	170	164	152	146	150
48	149	161	170	174	176	170	157	151	156
49	154	167	176	180	182	176	163	156	161
50	159	172	182	186	188	182	168	162	167
51	164	178	188	193	194	188	175	168	173
52	169	185	195	199	201	194	181	174	179

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #169 (°F)	TC #170 (°F)	TC #171 (°F)	TC #172 (°F)	TC #173 (°F)	TC #174 (°F)	TC #175 (°F)	TC #176 (°F)	TC #177 (°F)
53	174	190	201	205	207	200	186	180	185
54	180	197	208	212	214	207	192	186	191
55	186	203	214	218	220	213	199	192	197
56	192	210	221	225	227	219	204	199	203
57	197	217	227	232	233	226	211	205	210
58	204	223	234	238	240	232	218	212	216
59	210	230	241	245	246	239	224	219	223
60	216	237	248	251	253	245	231	226	230
Max Temp:	216	237	248	251	253	245	231	226	230
Max Allowed:	386	386	385	385	385	385	385	385	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #178 (°F)	TC #179 (°F)	TC #180 (°F)	TC #181 (°F)	TC #182 (°F)	TC #183 (°F)	TC #184 (°F)	TC #185 (°F)	TC #186 (°F)
0	60	60	60	59	60	59	59	59	60
1	60	60	60	60	60	59	59	60	60
2	60	60	60	59	60	59	59	59	60
3	60	60	60	59	60	59	59	59	60
4	60	60	60	60	60	59	60	60	60
5	60	60	60	60	60	59	60	60	60
6	60	60	60	60	60	59	62	60	60
7	60	60	61	60	60	59	64	62	60
8	60	61	63	60	60	60	66	63	61
9	60	62	64	61	60	60	68	66	61
10	61	62	65	61	61	61	71	68	62
11	62	64	67	62	61	61	74	70	62
12	62	64	68	63	61	62	76	72	63
13	63	66	69	64	62	62	78	75	63
14	64	66	70	64	62	63	81	76	64
15	65	68	72	65	62	64	84	78	65
16	66	69	73	66	63	65	87	80	66
17	67	70	74	67	63	66	91	82	66
18	68	71	75	68	64	67	95	85	67
19	69	72	76	69	64	68	99	88	68
20	70	73	77	70	65	69	103	92	70
21	72	75	79	71	66	70	108	95	71
22	73	76	80	72	66	71	112	100	73
23	75	78	82	73	67	72	116	104	74
24	77	80	84	75	67	73	121	109	76
25	79	81	85	76	68	75	126	114	78
26	81	84	87	77	69	76	131	119	80
27	83	86	90	79	70	77	136	123	82
28	86	88	92	80	71	79	141	128	85
29	88	91	95	82	72	80	146	133	87
30	91	93	97	85	73	82	152	138	90
31	94	96	100	86	74	84	157	142	93
32	97	99	104	89	75	85	163	146	96
33	100	102	107	91	76	87	169	150	99
34	103	105	110	93	78	88	176	155	102
35	107	109	113	96	79	90	187	159	104
36	110	112	117	98	80	92	197	165	107
37	114	116	120	101	82	94	206	172	111
38	117	119	124	103	84	96	215	178	113
39	121	123	127	106	85	97	223	185	116
40	125	127	131	109	87	99	231	191	119
41	129	131	134	112	89	101	239	199	122
42	133	135	138	114	90	103	247	206	124
43	138	139	141	117	92	104	255	214	127
44	142	143	145	120	94	106	262	222	130
45	147	148	149	123	96	108	269	229	132
46	152	152	153	125	97	110	276	236	135
47	157	157	158	128	99	112	282	242	138
48	163	162	163	131	101	114	288	249	141
49	168	167	168	134	103	116	293	255	144
50	174	173	173	138	104	118	299	261	147
51	180	178	178	141	106	120	304	267	149
52	186	184	183	145	108	122	309	273	152

OMEGA POINT LABORATORIES

Time (min)	TC #178 (°F)	TC #179 (°F)	TC #180 (°F)	TC #181 (°F)	TC #182 (°F)	TC #183 (°F)	TC #184 (°F)	TC #185 (°F)	TC #186 (°F)
53	192	190	189	148	110	124	309	278	155
54	198	196	194	152	112	125	317	283	157
55	204	201	199	156	114	128	321	288	160
56	210	207	205	159	116	129	326	292	163
57	216	213	210	163	118	131	329	297	165
58	223	219	216	168	121	133	334	300	169
59	229	225	221	171	123	135	336	302	172
60	235	231	227	176	125	137	339	305	176
Max Temp:	235	231	227	176	125	137	339	305	176
Max Allowed:	385	385	385	384	385	384	384	384	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #187 (°F)	TC #188 (°F)	TC #189 (°F)	TC #190 (°F)	TC #191 (°F)	TC #192 (°F)	TC #193 (°F)	TC #194 (°F)	TC #195 (°F)
0	60	60	61	61	60	60	60	60	60
1	60	61	61	62	60	60	60	61	61
2	60	60	61	62	60	60	60	60	61
3	60	60	61	61	60	60	60	60	60
4	60	60	61	62	60	60	61	61	61
5	60	61	61	62	60	61	61	61	61
6	61	61	61	62	61	61	61	62	61
7	62	62	62	62	61	62	61	62	61
8	62	62	62	62	62	62	62	63	61
9	63	63	63	63	62	63	62	64	62
10	64	64	64	64	63	64	63	64	62
11	65	66	64	65	64	65	64	65	62
12	66	67	65	66	65	65	65	66	63
13	67	68	66	66	66	66	66	67	64
14	68	68	67	67	66	67	66	68	65
15	69	70	68	68	67	68	67	69	66
16	70	71	69	69	68	69	68	70	66
17	71	72	70	70	69	70	69	72	67
18	73	73	71	71	70	71	70	74	68
19	75	75	72	71	71	73	71	75	69
20	77	77	73	73	73	74	72	77	70
21	78	79	75	74	74	76	73	79	71
22	80	81	77	76	76	78	75	81	72
23	83	84	78	78	78	80	77	84	73
24	85	86	80	79	80	82	78	86	74
25	88	89	83	82	82	85	80	88	76
26	91	92	85	84	84	87	82	91	78
27	93	95	88	87	87	90	84	93	80
28	96	98	91	89	89	92	87	95	82
29	100	101	93	92	92	95	89	98	84
30	103	105	96	95	95	98	92	101	87
31	106	108	99	97	97	100	95	103	89
32	109	111	102	100	100	103	97	106	92
33	112	114	105	104	103	106	100	109	95
34	115	118	108	107	106	109	102	111	97
35	118	121	111	109	109	112	105	114	100
36	122	124	114	112	112	115	108	117	103
37	125	127	117	116	115	118	111	120	106
38	128	131	120	119	118	121	114	123	109
39	131	134	123	121	121	123	116	126	112
40	133	137	126	124	124	127	119	129	115
41	136	140	130	127	127	130	122	132	118
42	139	143	132	130	130	132	125	135	121
43	142	146	135	133	132	135	128	137	124
44	145	149	138	136	135	138	131	140	127
45	148	152	141	139	138	141	134	143	130
46	150	154	144	142	141	143	136	146	132
47	153	157	147	145	143	146	139	149	136
48	156	160	149	148	146	149	142	152	138
49	158	162	152	150	149	151	144	155	141
50	161	165	154	153	151	154	147	158	144
51	163	167	157	155	154	156	150	161	147
52	166	170	159	158	156	158	152	163	150

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #187 (°F)	TC #188 (°F)	TC #189 (°F)	TC #190 (°F)	TC #191 (°F)	TC #192 (°F)	TC #193 (°F)	TC #194 (°F)	TC #195 (°F)
53	169	174	161	160	158	161	155	166	152
54	172	177	163	163	160	163	157	168	155
55	176	181	167	165	163	166	159	172	157
56	180	398	170	168	166	168	161	175	160
57	184	645	174	171	168	171	164	179	163
58	494	579	178	176	172	175	167	182	166
59	204	467	181	179	176	178	169	186	170
60	304	197	185	182	179	181	173	189	173
Max Temp:	494	645	185	182	179	181	173	189	173
Max Allowed:	385	385	386	386	385	385	385	385	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #196 (°F)	TC #197 (°F)	TC #198 (°F)	TC #199 (°F)	TC #200 (°F)	TC #201 (°F)	TC #202 (°F)	TC #203 (°F)	TC #204 (°F)
0	60	60	60	60	60	59	59	59	60
1	61	61	60	60	60	59	59	60	60
2	61	60	60	60	60	59	59	59	60
3	60	60	60	60	60	59	59	59	60
4	61	61	60	60	60	60	59	60	60
5	61	61	60	60	60	60	60	60	60
6	61	61	60	60	60	60	60	60	60
7	61	61	61	60	60	60	60	60	61
8	61	61	61	60	60	60	61	61	61
9	62	61	61	61	61	60	61	62	61
10	62	62	62	61	61	61	62	62	62
11	62	62	62	62	61	62	63	63	62
12	63	63	62	62	61	62	64	64	62
13	64	64	63	62	62	63	65	65	63
14	64	64	64	63	62	64	66	65	64
15	65	65	64	63	62	64	66	66	64
16	66	66	65	64	63	65	68	67	65
17	67	67	66	64	63	66	69	68	65
18	68	68	66	65	64	66	71	69	66
19	69	69	67	66	65	67	73	69	66
20	69	69	68	66	65	68	73	71	67
21	70	70	69	67	66	69	75	71	68
22	71	71	70	67	66	70	77	73	69
23	73	73	71	68	67	71	76	74	70
24	74	74	72	69	68	72	78	76	71
25	75	75	74	70	69	73	79	77	72
26	77	77	75	71	70	73	80	79	74
27	79	79	77	73	71	75	83	80	75
28	81	81	79	74	72	77	84	82	76
29	83	83	81	75	74	78	86	84	77
30	85	85	83	77	75	79	86	86	79
31	88	88	85	79	77	79	88	87	81
32	91	91	88	81	78	81	89	90	83
33	93	93	90	83	80	82	91	92	84
34	96	96	93	85	82	83	93	93	86
35	99	99	96	87	84	84	94	95	88
36	102	102	98	89	86	85	95	97	89
37	105	105	101	92	88	86	97	99	91
38	108	109	104	94	91	87	99	101	93
39	111	112	107	97	93	89	101	103	95
40	114	115	110	99	95	91	102	105	96
41	118	118	113	102	98	92	106	108	98
42	121	121	116	105	100	92	108	110	100
43	124	125	119	107	103	94	110	113	102
44	127	128	122	110	106	96	114	116	103
45	130	131	125	113	109	98	118	119	105
46	133	134	128	115	112	100	121	122	107
47	137	138	131	119	115	103	124	126	109
48	140	141	134	122	118	105	127	129	110
49	143	144	137	125	122	107	130	132	112
50	146	147	140	128	126	109	132	134	114
51	149	150	143	131	129	110	135	138	116
52	152	153	146	134	133	111	138	141	119

OMEGA POINT LABORATORIES

Time (min)	TC #196 (°F)	TC #197 (°F)	TC #198 (°F)	TC #199 (°F)	TC #200 (°F)	TC #201 (°F)	TC #202 (°F)	TC #203 (°F)	TC #204 (°F)
53	154	155	149	137	137	114	142	144	121
54	157	158	152	140	140	116	143	147	124
55	160	161	155	143	144	118	145	150	127
56	162	163	158	146	148	119	149	153	129
57	165	168	161	149	151	120	151	156	132
58	168	172	165	152	155	122	152	158	134
59	171	176	168	155	159	123	151	157	136
60	175	180	172	158	162	123	154	161	138
Max Temp:	175	180	172	158	162	123	154	161	138
Max Allowed:	385	385	385	385	385	384	384	384	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #205 (°F)	TC #206 (°F)	TC #207 (°F)	TC #208 (°F)	TC #209 (°F)	TC #210 (°F)	TC #211 (°F)	TC #212 (°F)	TC #213 (°F)
0	60	60	61	61	61	61	61	61	61
1	60	60	61	61	61	61	60	61	61
2	60	61	61	61	61	61	60	61	61
3	60	61	61	61	61	61	60	61	60
4	61	61	61	61	61	62	61	61	61
5	61	61	61	61	61	62	61	61	61
6	61	61	61	61	62	62	61	61	61
7	61	61	61	61	62	62	61	61	61
8	61	61	61	62	62	62	61	61	61
9	61	61	61	62	62	62	61	62	61
10	62	62	62	62	62	62	62	62	61
11	62	62	62	62	62	63	62	62	62
12	62	62	62	62	62	63	62	62	62
13	62	62	62	62	62	63	63	63	62
14	63	62	62	62	63	63	63	63	63
15	63	63	62	62	63	64	64	64	64
16	63	63	62	62	63	64	64	64	64
17	64	64	63	63	64	64	64	65	65
18	64	64	63	63	64	65	65	65	66
19	65	64	63	63	64	65	65	66	66
20	65	65	64	64	64	66	66	67	67
21	66	65	64	64	65	66	66	67	68
22	66	66	64	64	65	66	67	68	68
23	67	67	65	65	66	67	68	69	69
24	68	67	65	65	66	68	69	70	70
25	68	68	66	65	67	68	70	71	71
26	69	69	67	66	67	69	71	72	73
27	70	70	67	67	68	70	72	73	74
28	71	71	68	67	69	71	73	75	75
29	72	72	69	68	69	72	74	76	77
30	73	73	69	68	70	73	75	77	79
31	75	75	70	69	71	75	77	79	80
32	76	76	71	70	72	76	78	80	82
33	78	77	72	71	73	77	80	82	84
34	79	78	73	71	74	79	81	84	86
35	80	80	74	73	76	80	83	86	89
36	82	81	75	74	77	82	85	87	91
37	83	83	76	75	78	83	87	89	93
38	85	84	77	76	79	85	88	91	95
39	86	86	79	77	81	86	90	93	98
40	88	87	80	78	82	88	92	95	100
41	89	89	81	79	84	90	94	97	102
42	91	91	82	80	85	92	96	99	105
43	92	92	84	82	87	94	98	101	107
44	94	93	85	83	89	96	101	103	110
45	95	95	86	85	90	98	103	105	112
46	96	96	88	86	92	100	105	107	115
47	97	97	89	87	94	102	107	110	117
48	99	98	90	89	96	104	110	112	120
49	100	100	91	90	97	106	112	114	122
50	100	100	93	91	99	108	114	116	124
51	102	102	94	93	101	110	116	118	127
52	103	103	95	94	103	112	118	120	129

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #205 (°F)	TC #206 (°F)	TC #207 (°F)	TC #208 (°F)	TC #209 (°F)	TC #210 (°F)	TC #211 (°F)	TC #212 (°F)	TC #213 (°F)
53	104	104	96	96	104	114	120	122	131
54	106	106	98	97	106	116	122	124	134
55	108	108	100	98	108	118	124	126	136
56	110	110	101	100	109	120	127	128	138
57	112	112	102	101	111	122	129	131	140
58	114	114	104	103	113	124	131	133	143
59	116	116	105	104	114	126	133	135	145
60	118	118	107	106	116	128	136	138	148
Max Temp:	118	118	107	106	116	128	136	138	148
Max Allowed:	385	385	386	386	386	386	386	386	386

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #214 (°F)	TC #215 (°F)	TC #216 (°F)	TC #217 (°F)	TC #218 (°F)	TC #219 (°F)	TC #220 (°F)	TC #221 (°F)	TC #222 (°F)
0	61	61	61	61	60	60	59	58	58
1	61	61	61	61	60	60	59	58	58
2	61	61	61	61	60	59	59	58	58
3	61	61	61	61	60	59	59	58	58
4	61	61	61	61	60	59	60	58	58
5	61	61	61	61	60	59	60	59	59
6	61	61	61	61	60	59	61	59	59
7	61	61	61	61	60	59	62	60	60
8	61	61	61	61	60	59	62	61	61
9	61	61	61	61	61	60	63	62	62
10	61	61	61	61	61	60	64	64	64
11	61	61	61	61	61	60	66	65	65
12	62	61	61	61	61	60	67	67	67
13	62	61	61	61	61	60	69	68	68
14	62	62	62	61	62	60	70	70	70
15	62	62	62	62	62	61	73	72	72
16	63	62	62	62	62	61	74	74	74
17	63	62	62	62	62	62	76	77	77
18	63	62	62	62	63	62	78	80	80
19	64	62	62	62	63	62	81	83	83
20	64	62	62	62	64	63	84	87	87
21	65	63	62	62	64	64	86	91	92
22	65	63	63	63	65	64	89	96	96
23	66	63	63	63	66	65	92	100	101
24	66	64	63	64	66	65	95	105	106
25	67	64	64	64	67	66	98	110	112
26	67	64	64	64	68	67	102	115	117
27	68	65	64	65	69	68	105	121	123
28	69	65	64	65	70	69	109	126	128
29	70	66	65	66	71	70	112	131	134
30	71	66	65	66	72	71	116	137	139
31	72	67	66	67	73	72	120	142	145
32	73	68	66	67	74	73	123	147	150
33	75	68	67	68	76	75	127	152	155
34	76	69	68	69	77	76	131	156	160
35	77	70	68	70	78	77	134	161	164
36	79	71	69	70	80	79	138	165	168
37	80	72	70	71	82	80	141	169	174
38	82	73	71	72	84	81	144	174	181
39	84	74	71	73	85	83	147	181	188
40	85	75	72	74	87	84	150	187	195
41	87	76	73	75	89	86	153	194	201
42	89	78	74	77	92	87	157	201	208
43	91	79	75	78	95	88	161	207	215
44	92	80	76	79	97	90	166	213	222
45	94	81	78	81	100	91	170	220	229
46	96	83	79	82	103	93	175	227	236
47	98	84	80	84	105	94	180	233	243
48	100	86	81	86	108	96	184	239	249
49	102	87	82	87	112	97	189	245	256
50	104	88	84	89	115	99	193	251	262
51	106	90	85	91	118	100	197	257	269
52	108	92	87	93	122	102	202	264	276

OMEGA POINT LABORATORIES

Time (min)	TC #214 (°F)	TC #215 (°F)	TC #216 (°F)	TC #217 (°F)	TC #218 (°F)	TC #219 (°F)	TC #220 (°F)	TC #221 (°F)	TC #222 (°F)
53	110	93	88	95	125	104	206	269	282
54	112	95	90	97	129	106	211	275	288
55	114	97	92	98	132	108	215	281	294
56	116	98	93	101	136	109	219	287	301
57	118	100	95	103	139	111	224	292	306
58	120	102	97	105	143	113	228	298	313
59	122	103	98	107	147	115	232	303	319
60	124	105	100	110	150	117	236	309	325
Max Temp:	124	105	100	110	150	117	236	309	325
Max Allowed:	386	386	386	386	385	385	384	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #223 (°F)	TC #224 (°F)	TC #225 (°F)	TC #226 (°F)	TC #227 (°F)	TC #228 (°F)	TC #229 (°F)	TC #230 (°F)	TC #231 (°F)
0	58	59	59	59	59	59	59	59	59
1	58	59	59	59	59	59	59	59	59
2	58	59	59	59	59	59	59	59	59
3	59	59	59	59	59	59	59	59	59
4	59	59	59	59	59	59	59	60	59
5	59	59	59	59	59	59	59	60	59
6	60	59	59	59	59	60	60	60	60
7	60	60	60	60	60	60	60	60	63
8	62	61	61	61	61	62	61	61	65
9	62	62	62	62	62	63	62	62	67
10	64	63	64	63	63	64	63	63	69
11	65	65	65	65	65	66	65	64	70
12	67	66	67	66	67	67	66	66	72
13	69	68	69	68	69	69	68	68	73
14	71	70	70	70	70	71	70	69	75
15	73	71	72	72	72	73	72	71	76
16	75	74	75	74	74	76	74	73	77
17	78	76	77	77	77	79	77	76	78
18	81	79	81	80	80	83	80	79	80
19	85	83	84	83	83	87	84	82	82
20	88	86	88	87	87	91	88	86	84
21	93	91	93	91	91	96	92	90	85
22	97	95	98	96	96	101	97	95	88
23	102	100	103	101	101	107	103	100	91
24	107	105	108	106	107	113	109	105	94
25	112	111	114	112	113	120	115	110	97
26	117	116	120	118	119	126	122	116	101
27	123	122	127	124	125	133	128	122	106
28	128	128	133	131	132	139	135	128	110
29	134	134	139	137	138	146	141	134	115
30	139	140	145	143	145	152	148	140	120
31	145	146	151	149	151	158	155	146	125
32	150	152	157	155	157	164	161	152	130
33	155	157	162	160	163	169	167	157	136
34	160	162	168	166	168	176	173	162	141
35	165	167	174	171	174	183	179	167	146
36	171	172	181	179	182	191	187	171	151
37	177	180	188	188	191	199	195	177	156
38	183	188	196	196	200	207	203	183	161
39	189	195	204	204	208	215	211	190	165
40	196	202	212	212	217	223	219	197	170
41	203	210	220	220	225	231	227	204	175
42	210	217	228	228	234	240	236	212	181
43	218	225	237	236	242	248	244	219	187
44	225	232	244	244	251	257	252	227	193
45	232	240	253	252	259	264	260	234	201
46	240	247	261	260	268	273	268	241	208
47	247	255	269	269	276	280	276	248	215
48	255	262	277	277	285	289	284	255	223
49	262	269	285	284	293	296	292	262	231
50	269	277	292	292	301	304	299	269	238
51	276	284	300	300	309	312	307	276	246
52	283	291	308	308	316	320	314	283	253

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #223 (°F)	TC #224 (°F)	TC #225 (°F)	TC #226 (°F)	TC #227 (°F)	TC #228 (°F)	TC #229 (°F)	TC #230 (°F)	TC #231 (°F)
53	290	298	315	315	324	327	322	289	261
54	296	305	323	323	332	334	329	296	268
55	303	313	330	330	339	342	336	303	276
56	310	319	337	337	347	349	343	310	283
57	317	326	344	345	354	356	350	317	290
58	323	333	352	352	361	364	358	323	297
59	330	340	359	359	369	371	365	330	304
60	336	347	366	366	376	378	372	336	311
Max Temp:	336	347	366	366	376	378	372	336	311
Max Allowed:	383	384	384	384	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #232 (°F)	TC #233 (°F)	TC #234 (°F)	TC #235 (°F)	TC #236 (°F)	TC #237 (°F)	TC #238 (°F)	TC #239 (°F)	TC #240 (°F)
0	59	59	59	59	59	59	59	59	59
1	59	59	59	59	59	59	59	59	59
2	59	59	59	59	59	59	59	59	59
3	59	59	59	59	59	59	59	59	60
4	59	59	59	59	59	59	59	59	60
5	59	59	59	59	59	59	59	59	60
6	61	59	60	59	59	59	59	59	59
7	64	60	62	59	59	59	59	59	60
8	67	61	64	59	59	59	59	59	60
9	70	63	67	60	59	59	59	59	60
10	72	65	69	61	59	59	59	59	60
11	74	67	70	62	59	59	60	60	60
12	76	69	72	63	59	59	60	60	60
13	77	71	73	64	59	60	60	60	60
14	78	73	75	65	59	60	60	60	61
15	79	75	76	66	59	60	61	61	61
16	81	78	77	67	60	60	61	61	62
17	82	79	79	68	60	60	61	62	62
18	83	81	80	69	60	61	62	62	62
19	85	83	81	71	60	61	62	62	63
20	86	85	83	72	60	61	63	63	64
21	88	87	84	73	60	62	63	64	65
22	91	89	86	74	61	62	64	65	66
23	93	92	88	76	61	63	65	66	67
24	96	94	91	77	62	63	66	67	68
25	99	96	93	78	62	64	67	68	69
26	102	99	96	80	62	65	69	70	71
27	106	102	99	82	63	65	70	71	73
28	110	105	102	85	63	66	71	73	75
29	114	110	106	87	64	68	73	75	77
30	119	114	109	90	65	69	75	76	79
31	123	118	113	93	65	70	77	79	81
32	128	122	117	96	66	71	79	81	83
33	133	126	122	99	67	72	81	83	86
34	138	131	126	102	68	74	83	85	88
35	143	135	130	106	68	75	85	87	91
36	148	140	135	110	69	77	87	89	93
37	153	144	139	114	70	78	89	92	96
38	158	149	144	117	71	80	92	94	98
39	163	154	148	121	72	81	94	97	101
40	168	159	153	125	73	83	96	100	104
41	172	164	157	129	74	85	99	102	107
42	177	169	161	133	75	86	102	105	110
43	181	174	166	137	77	88	105	109	114
44	186	179	170	141	78	90	108	112	118
45	192	183	174	145	79	92	111	116	122
46	199	188	179	149	80	94	114	119	125
47	206	192	183	153	81	96	117	123	129
48	214	195	188	157	83	98	120	126	133
49	221	201	192	161	84	100	124	130	137
50	229	208	198	165	85	102	127	134	141
51	237	216	203	169	86	104	130	138	146
52	244	224	209	174	88	107	134	141	149

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #232 (°F)	TC #233 (°F)	TC #234 (°F)	TC #235 (°F)	TC #236 (°F)	TC #237 (°F)	TC #238 (°F)	TC #239 (°F)	TC #240 (°F)
53	251	233	215	179	89	110	138	146	154
54	259	242	222	185	91	111	141	150	159
55	266	251	228	191	93	114	144	154	163
56	274	260	234	196	95	116	148	158	168
57	281	269	240	202	96	119	152	163	172
58	288	277	247	208	98	122	157	167	177
59	295	286	253	213	99	124	160	172	182
60	302	294	260	219	100	125	163	176	187
Max Temp:	302	294	260	219	100	125	163	176	187
Max Allowed:	384	384	384	384	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #241 (°F)	TC #242 (°F)	TC #243 (°F)	TC #244 (°F)	TC #245 (°F)	TC #246 (°F)	TC #247 (°F)	TC #248 (°F)	TC #249 (°F)
0	59	59	59	59	59	59	59	59	60
1	59	59	59	59	59	59	59	59	59
2	59	59	59	59	59	59	59	59	59
3	59	59	59	59	59	59	59	59	59
4	59	59	59	59	59	59	59	60	60
5	59	59	59	59	59	59	59	60	60
6	59	59	59	60	59	59	60	60	60
7	59	59	60	60	60	60	60	60	60
8	59	60	60	60	60	60	60	60	60
9	59	60	60	61	60	60	60	60	60
10	60	61	61	62	60	60	60	60	60
11	60	62	62	63	61	60	60	61	61
12	61	63	62	64	62	60	61	61	62
13	62	64	63	65	62	61	61	62	62
14	62	65	64	66	63	61	62	62	62
15	63	66	65	68	64	62	62	63	63
16	64	67	66	70	65	62	63	64	64
17	65	69	68	71	66	63	64	64	65
18	66	71	69	73	67	64	64	65	66
19	67	72	71	76	68	65	65	66	66
20	68	74	73	78	70	66	66	66	67
21	70	77	75	82	72	67	67	68	68
22	72	80	78	85	74	68	68	68	69
23	74	83	80	89	76	70	70	69	70
24	76	86	84	93	79	72	71	71	71
25	78	89	87	97	82	74	73	72	72
26	81	93	91	102	85	76	75	73	74
27	84	97	94	106	88	78	77	75	75
28	87	101	98	111	91	80	78	76	77
29	91	106	103	116	95	83	81	78	78
30	94	110	107	122	99	86	84	80	80
31	97	115	111	127	103	89	86	82	82
32	101	119	115	132	107	92	89	84	84
33	104	123	119	137	110	95	92	87	86
34	108	127	124	141	114	98	95	89	89
35	111	131	128	146	118	101	98	92	91
36	114	135	131	150	122	105	101	95	94
37	118	140	135	156	126	108	104	97	96
38	122	145	140	163	131	112	107	100	99
39	126	150	146	170	135	115	111	103	102
40	131	156	152	177	141	120	114	107	105
41	135	162	158	184	146	124	118	109	108
42	140	168	165	191	151	128	122	113	111
43	146	175	171	199	157	133	126	116	114
44	150	181	177	206	163	138	130	120	117
45	156	187	184	213	169	142	135	123	120
46	161	194	190	220	174	147	139	127	124
47	166	200	197	228	181	152	144	131	128
48	172	207	204	235	186	158	149	136	131
49	177	213	211	242	193	163	154	140	136
50	183	219	217	250	199	168	159	144	140
51	188	226	224	257	205	174	164	149	144
52	194	232	231	264	212	180	170	154	148

OMEGA POINT LABORATORIES

Time (min)	TC #241 (°F)	TC #242 (°F)	TC #243 (°F)	TC #244 (°F)	TC #245 (°F)	TC #246 (°F)	TC #247 (°F)	TC #248 (°F)	TC #249 (°F)
53	199	239	237	271	218	185	175	159	153
54	205	245	244	278	224	191	181	164	158
55	210	252	251	285	230	197	186	169	162
56	216	258	257	292	237	203	192	174	167
57	222	264	264	299	243	209	198	180	172
58	228	270	270	306	249	215	204	185	177
59	234	277	276	313	256	221	210	191	183
60	239	283	283	320	262	227	216	196	188
Max Temp:	239	283	283	320	262	227	216	196	188
Max Allowed:	384	384	384	384	384	384	384	384	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #250 (°F)	TC #251 (°F)	TC #252 (°F)	TC #253 (°F)	TC #254 (°F)	TC #255 (°F)	TC #256 (°F)	TC #257 (°F)	TC #258 (°F)
0	60	59	59	59	59	59	59	59	59
1	60	59	59	59	59	59	59	59	59
2	60	59	59	59	59	59	59	59	59
3	60	59	59	59	59	59	59	59	59
4	60	59	59	59	59	59	59	59	59
5	60	59	59	59	59	59	59	60	60
6	60	59	59	59	59	59	60	61	60
7	60	59	59	59	60	60	61	62	60
8	60	59	59	59	61	62	62	64	61
9	60	59	59	59	62	62	63	65	62
10	60	59	59	60	63	64	64	66	63
11	61	59	59	60	64	65	66	68	64
12	62	60	60	61	66	67	68	70	66
13	62	60	60	62	67	68	69	71	67
14	62	60	60	62	68	70	71	74	69
15	64	61	60	63	70	71	73	77	70
16	64	61	60	64	72	73	75	79	72
17	65	62	61	65	74	75	77	82	73
18	66	62	61	66	76	78	79	85	75
19	66	63	61	66	78	80	82	88	77
20	67	63	62	67	80	83	84	91	79
21	68	64	62	68	84	86	88	95	81
22	69	65	63	69	86	89	91	98	83
23	70	65	64	70	89	93	95	101	86
24	71	66	64	71	92	96	98	105	89
25	73	67	65	73	96	100	103	109	92
26	74	68	66	74	99	104	107	113	95
27	75	69	67	76	103	108	111	116	98
28	77	70	67	77	106	112	115	120	101
29	78	71	68	79	110	116	120	124	104
30	80	73	69	81	114	121	124	128	108
31	82	74	71	83	118	125	129	132	111
32	84	75	72	85	121	129	133	136	115
33	86	77	73	87	125	132	137	140	118
34	88	79	75	89	128	136	141	143	122
35	91	81	76	91	131	140	145	147	125
36	93	83	78	93	135	144	150	151	129
37	96	85	79	95	138	148	154	155	132
38	99	87	81	97	142	152	158	159	136
39	101	89	83	98	145	155	164	164	140
40	104	91	86	100	148	159	169	169	143
41	107	93	87	102	151	165	174	174	147
42	110	96	90	104	155	171	180	179	150
43	113	98	92	106	158	176	185	184	154
44	116	101	95	108	163	181	190	189	158
45	119	104	97	110	167	187	196	194	163
46	122	106	100	111	172	192	201	198	168
47	126	109	103	113	177	197	206	203	174
48	130	112	106	115	181	202	211	208	179
49	134	115	109	117	185	206	216	213	184
50	138	118	113	119	190	211	220	217	189
51	142	121	116	122	194	216	225	222	195
52	146	125	120	124	198	221	230	226	200

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #250 (°F)	TC #251 (°F)	TC #252 (°F)	TC #253 (°F)	TC #254 (°F)	TC #255 (°F)	TC #256 (°F)	TC #257 (°F)	TC #258 (°F)
53	151	128	123	126	202	225	234	231	205
54	155	132	127	129	206	230	239	235	210
55	160	136	131	131	210	234	243	239	215
56	165	140	135	133	214	238	247	244	220
57	170	144	139	135	217	242	251	248	225
58	175	148	143	137	221	246	255	252	230
59	180	152	147	139	225	251	259	256	234
60	185	156	151	141	228	255	263	260	239
Max Temp:	185	156	151	141	228	255	263	260	239
Max Allowed:	385	384	384	384	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #259 (°F)	TC #260 (°F)	TC #261 (°F)	TC #262 (°F)	TC #263 (°F)	TC #264 (°F)	TC #265 (°F)	TC #266 (°F)	TC #267 (°F)
0	60	60	59	59	59	59	59	59	59
1	60	60	59	59	59	59	59	59	60
2	59	60	59	59	59	59	59	59	59
3	59	60	59	59	59	59	59	59	60
4	60	60	59	59	59	59	59	59	60
5	60	60	60	59	59	59	59	60	60
6	60	60	60	60	60	60	60	60	60
7	60	61	60	61	60	60	60	60	60
8	61	61	61	62	61	60	60	61	61
9	61	62	62	63	62	61	61	62	62
10	62	63	63	64	62	61	62	62	62
11	63	64	64	65	64	62	62	63	63
12	64	65	66	67	65	63	64	65	65
13	66	66	67	68	66	64	65	66	66
14	67	67	68	69	67	65	66	67	66
15	69	69	69	71	69	67	67	68	68
16	70	70	71	73	70	68	68	69	69
17	71	72	72	74	72	69	70	71	70
18	73	73	74	76	73	71	71	72	72
19	75	75	75	78	75	72	73	73	73
20	76	76	76	80	77	73	74	75	75
21	78	78	78	83	79	74	76	77	77
22	80	80	80	85	80	75	77	79	79
23	82	82	82	88	83	77	79	81	82
24	85	84	84	91	85	78	81	84	84
25	87	87	87	94	88	80	83	86	87
26	90	90	89	97	91	82	86	89	90
27	93	93	92	100	93	85	88	92	93
28	96	96	95	103	96	86	90	94	96
29	99	99	98	106	98	89	93	97	99
30	102	101	101	109	101	91	96	100	102
31	105	104	104	113	104	93	98	104	106
32	108	107	107	116	107	96	101	107	109
33	111	110	111	120	110	98	104	110	113
34	114	113	114	123	113	101	107	114	116
35	118	117	118	127	116	104	111	117	120
36	121	120	121	130	119	107	114	120	123
37	125	123	124	134	123	110	117	124	127
38	128	127	128	137	126	113	120	127	130
39	132	131	131	141	129	116	124	131	134
40	136	134	135	144	132	119	127	134	137
41	140	138	138	148	135	122	131	138	140
42	143	141	141	151	138	126	134	141	143
43	147	145	145	155	142	129	137	144	147
44	151	148	148	159	145	132	140	148	150
45	156	152	152	163	148	135	143	151	154
46	160	156	156	168	152	138	147	154	159
47	165	161	160	172	156	141	150	158	164
48	170	165	165	176	160	143	153	163	168
49	177	170	170	181	164	147	157	168	173
50	183	176	175	185	168	150	161	173	178
51	189	182	179	189	172	153	165	178	183
52	195	188	184	193	176	157	170	183	188

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #259 (°F)	TC #260 (°F)	TC #261 (°F)	TC #262 (°F)	TC #263 (°F)	TC #264 (°F)	TC #265 (°F)	TC #266 (°F)	TC #267 (°F)
53	201	194	188	197	181	162	174	188	192
54	206	200	193	202	185	166	178	192	197
55	212	205	197	205	189	171	182	196	201
56	217	211	201	209	192	175	187	201	206
57	223	217	205	213	197	179	191	205	210
58	229	222	210	217	200	183	195	209	214
59	234	228	214	221	204	187	199	213	219
60	239	233	218	225	208	191	204	217	223
Max Temp:	239	233	218	225	208	191	204	217	223
Max Allowed:	385	385	384	384	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #268 (°F)	TC #269 (°F)	TC #270 (°F)	TC #271 (°F)	TC #272 (°F)	TC #273 (°F)	TC #274 (°F)	TC #275 (°F)	TC #276 (°F)
0	60	60	60	59	59	59	59	60	60
1	60	60	60	59	59	59	59	60	60
2	60	60	60	59	59	59	60	60	60
3	60	60	60	59	59	59	60	60	60
4	60	60	60	59	59	59	60	60	60
5	60	60	60	59	59	60	60	60	60
6	60	60	60	59	59	60	60	60	60
7	60	60	60	59	60	60	60	60	60
8	60	61	60	59	60	60	60	60	60
9	61	61	60	60	60	61	61	60	61
10	62	62	60	60	61	62	61	61	62
11	62	62	61	60	62	63	62	61	62
12	64	63	61	61	63	64	63	62	63
13	64	64	62	62	64	65	64	63	64
14	65	65	62	63	65	66	65	64	65
15	67	66	63	63	66	68	66	65	66
16	68	68	63	64	67	69	67	66	68
17	69	69	64	65	69	71	69	67	69
18	71	71	64	66	70	73	70	68	71
19	72	72	65	67	72	74	72	70	73
20	74	74	66	69	73	77	73	71	75
21	76	76	67	70	75	79	75	73	76
22	78	78	67	71	78	81	77	75	78
23	80	80	68	73	80	84	79	77	80
24	82	82	69	75	82	87	82	78	82
25	85	85	70	77	85	89	84	80	85
26	87	87	71	78	88	93	87	83	88
27	91	90	73	80	91	96	89	85	90
28	93	93	74	83	94	100	92	88	93
29	96	96	76	85	97	103	95	90	96
30	100	99	77	88	101	107	98	93	99
31	103	102	79	90	104	110	101	96	102
32	107	106	80	93	108	114	104	99	105
33	110	109	82	96	111	118	107	102	109
34	114	113	84	98	114	121	111	105	113
35	118	117	86	101	118	125	114	108	117
36	122	120	87	104	122	129	117	112	121
37	125	123	89	107	125	132	121	115	125
38	129	127	91	110	129	136	124	118	130
39	132	131	93	113	132	141	128	122	134
40	136	134	95	115	136	145	132	125	139
41	140	138	96	118	140	150	135	129	144
42	144	141	98	122	145	154	140	133	149
43	149	145	101	124	149	159	144	137	154
44	153	148	102	128	154	164	148	141	160
45	158	152	105	131	158	169	152	145	165
46	162	157	107	135	163	174	157	149	171
47	167	163	109	139	168	178	161	154	177
48	171	169	111	143	172	183	166	158	183
49	176	175	113	146	177	187	170	163	188
50	181	180	115	150	181	192	175	168	195
51	186	186	118	154	186	196	179	173	201
52	191	192	120	157	190	201	184	177	207

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #268 (°F)	TC #269 (°F)	TC #270 (°F)	TC #271 (°F)	TC #272 (°F)	TC #273 (°F)	TC #274 (°F)	TC #275 (°F)	TC #276 (°F)
53	196	198	123	161	194	205	189	182	213
54	201	203	126	165	199	210	193	188	219
55	205	209	125	169	203	214	198	193	226
56	210	215	131	172	208	219	202	198	232
57	215	221	133	176	211	223	207	203	238
58	220	227	135	179	216	227	212	208	244
59	225	233	137	183	220	232	216	213	250
60	230	239	140	187	224	236	221	218	257
Max Temp:	230	239	140	187	224	236	221	218	257
Max Allowed:	385	385	385	384	384	384	384	385	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #277 (°F)	TC #278 (°F)	TC #279 (°F)	TC #280 (°F)	TC #281 (°F)	TC #282 (°F)	TC #283 (°F)	TC #284 (°F)	TC #285 (°F)
0	60	60	60	60	59	59	59	59	59
1	60	60	60	60	59	59	59	59	59
2	60	60	60	60	59	59	59	59	59
3	60	60	60	60	59	59	59	59	59
4	60	60	60	60	59	59	59	59	59
5	60	60	60	60	59	59	59	59	59
6	60	60	60	60	59	59	59	59	59
7	60	60	60	61	59	59	59	59	60
8	60	60	60	61	59	59	59	59	59
9	61	61	61	61	59	59	59	59	60
10	62	62	61	62	60	60	60	60	60
11	62	62	62	62	60	60	60	60	60
12	63	63	62	63	61	60	60	60	60
13	64	64	63	64	61	60	60	61	61
14	65	65	64	65	62	61	61	62	61
15	66	66	65	65	62	61	61	62	62
16	67	67	66	66	63	62	62	63	62
17	69	68	67	67	64	62	62	64	63
18	70	69	68	69	65	63	63	64	64
19	72	71	70	70	66	64	64	65	64
20	73	72	71	71	67	65	65	66	66
21	75	73	72	72	68	66	66	67	66
22	77	75	74	74	69	67	66	68	67
23	79	77	76	76	70	68	68	69	68
24	81	79	77	77	71	69	68	70	69
25	84	81	79	79	73	70	70	72	71
26	86	83	81	81	75	71	71	73	72
27	88	86	83	83	76	73	72	75	74
28	91	88	86	85	78	74	74	77	76
29	94	91	88	87	80	76	76	79	77
30	97	93	91	90	82	77	77	81	79
31	100	96	93	93	84	79	79	83	81
32	102	98	96	95	86	81	81	85	84
33	105	100	98	98	88	83	83	87	86
34	109	103	100	100	91	85	85	90	88
35	113	105	102	103	93	87	87	93	91
36	116	108	104	106	96	89	89	95	93
37	121	111	107	109	98	92	92	98	96
38	125	114	110	112	101	95	95	101	99
39	129	117	113	115	103	97	97	104	101
40	134	121	115	118	106	100	100	106	104
41	138	124	118	121	109	102	102	109	107
42	143	128	122	124	112	105	105	113	110
43	148	131	125	127	114	107	108	115	113
44	153	135	129	130	117	110	111	118	116
45	158	138	132	133	120	113	113	121	119
46	163	142	136	137	123	116	116	124	122
47	168	146	140	140	126	119	119	128	126
48	174	150	143	144	129	122	122	131	129
49	179	154	147	148	132	124	125	134	133
50	185	157	150	151	135	127	128	138	136
51	190	162	154	155	138	130	131	142	141
52	195	166	158	158	142	133	134	146	144

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #277 (°F)	TC #278 (°F)	TC #279 (°F)	TC #280 (°F)	TC #281 (°F)	TC #282 (°F)	TC #283 (°F)	TC #284 (°F)	TC #285 (°F)
53	201	170	161	162	145	136	138	149	148
54	207	175	165	166	148	139	141	153	152
55	212	179	169	170	152	143	144	157	156
56	218	184	173	173	155	146	148	161	161
57	223	188	177	177	158	149	152	165	165
58	229	193	181	181	161	152	156	169	169
59	234	198	185	184	165	155	159	173	173
60	240	203	189	188	168	158	163	177	178
Max Temp:	240	203	189	188	168	158	163	177	178
Max Allowed:	385	385	385	385	384	384	384	384	384

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #286 (°F)	TC #287 (°F)	TC #288 (°F)	TC #289 (°F)	TC #290 (°F)	TC #291 (°F)	TC #292 (°F)	TC #293 (°F)	TC #294 (°F)
0	59	59	59	60	60	59	59	59	59
1	59	59	60	60	60	59	59	59	59
2	59	59	60	60	60	59	59	59	59
3	59	59	60	60	60	59	59	59	59
4	59	59	61	60	60	60	60	59	60
5	59	59	62	60	61	60	60	60	60
6	60	60	64	60	62	61	62	60	60
7	60	60	66	61	63	62	64	61	62
8	60	59	68	61	64	64	67	62	62
9	60	60	71	62	66	65	70	64	64
10	60	60	74	64	68	67	74	66	66
11	60	60	77	65	70	69	77	68	68
12	60	60	80	67	72	72	82	71	70
13	61	61	83	69	75	75	86	73	72
14	62	61	86	71	77	78	91	76	75
15	62	62	89	73	80	80	95	78	77
16	62	62	93	76	83	84	100	81	79
17	63	63	96	78	86	87	104	84	82
18	64	64	100	81	89	91	109	86	84
19	65	64	104	83	92	94	114	89	87
20	66	65	109	86	96	98	118	91	90
21	67	66	113	89	99	102	124	94	92
22	68	67	118	92	103	106	129	97	95
23	69	69	122	96	107	110	134	100	98
24	70	69	127	99	110	114	140	104	101
25	72	71	132	103	114	119	145	108	105
26	73	73	137	107	118	123	151	112	109
27	75	74	141	111	122	128	156	116	113
28	77	76	146	116	126	132	161	121	117
29	79	78	150	120	130	136	169	125	121
30	81	79	154	124	134	140	178	130	125
31	83	82	159	128	137	144	187	134	130
32	85	84	166	132	141	149	197	139	134
33	88	86	174	136	147	156	208	144	139
34	90	89	182	140	153	164	219	148	144
35	93	91	190	145	161	171	230	152	148
36	96	94	199	150	168	178	241	156	152
37	98	97	207	158	175	185	253	159	156
38	102	100	215	165	182	192	264	164	161
39	104	103	224	173	189	199	275	171	166
40	108	106	232	181	196	207	286	180	172
41	111	109	240	189	203	214	297	188	180
42	114	113	249	197	211	222	308	197	188
43	117	116	258	206	218	229	318	205	196
44	120	119	266	214	225	237	329	214	205
45	124	123	274	223	233	244	339	223	213
46	127	127	282	231	240	251	349	232	222
47	131	131	291	240	248	259	359	240	231
48	135	135	299	248	255	266	368	249	239
49	139	139	307	257	263	273	377	258	248
50	143	144	315	265	270	280	386	266	256
51	147	148	323	274	277	287	396	275	264
52	151	153	330	282	285	294	405	283	273

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #286 (°F)	TC #287 (°F)	TC #288 (°F)	TC #289 (°F)	TC #290 (°F)	TC #291 (°F)	TC #292 (°F)	TC #293 (°F)	TC #294 (°F)
53	156	158	338	291	292	302	413	291	281
54	160	163	345	299	299	308	421	300	289
55	164	168	352	307	306	315	429	307	297
56	169	173	359	315	313	321	437	315	304
57	173	178	366	323	320	328	445	323	312
58	178	183	373	330	327	334	453	331	320
59	183	189	380	338	333	341	460	338	327
60	188	194	387	346	340	348	467	346	334
Max Temp:	188	194	387	346	340	348	467	346	334
Max Allowed:	384	384	384	385	385	384	384	384	384

OMEGA POINT LABORATORIES

Time (min)	TC #295 (°F)	TC #296 (°F)	TC #297 (°F)	TC #298 (°F)	TC #299 (°F)	TC #300 (°F)
0	59	59	59	60	59	60
1	59	59	59	60	59	60
2	59	59	60	60	60	60
3	60	60	60	60	60	60
4	60	60	60	60	60	60
5	60	60	61	60	60	60
6	60	61	62	60	60	60
7	60	62	63	61	61	61
8	60	64	65	62	62	62
9	61	66	67	62	63	62
10	62	68	69	63	65	64
11	63	70	71	64	66	65
12	65	73	74	66	68	66
13	66	75	76	67	69	68
14	68	78	79	69	72	70
15	70	80	82	70	74	72
16	71	83	85	72	76	74
17	73	86	87	73	78	76
18	76	89	91	76	80	78
19	78	91	93	77	83	80
20	80	95	97	79	86	82
21	82	98	100	81	88	85
22	85	101	104	84	91	87
23	87	105	108	86	94	90
24	89	109	112	88	97	93
25	92	114	117	91	101	96
26	96	118	122	94	105	100
27	99	123	126	97	109	104
28	102	128	131	100	114	108
29	106	133	135	103	118	113
30	110	138	140	106	123	118
31	114	143	145	110	128	122
32	118	148	149	113	132	127
33	123	153	153	117	137	133
34	127	158	158	121	142	138
35	131	163	163	125	147	143
36	136	168	170	128	151	147
37	140	175	177	133	156	152
38	145	183	185	138	161	156
39	149	192	193	143	168	161
40	153	201	201	148	175	166
41	158	210	210	154	182	174
42	163	220	218	160	190	183
43	168	229	227	167	197	192
44	176	238	235	173	205	201
45	185	248	244	179	213	209
46	194	257	252	186	221	218
47	202	266	261	193	229	226
48	211	275	269	200	237	235
49	219	283	278	206	245	243
50	227	292	286	213	253	251
51	236	301	294	220	260	259
52	245	309	302	227	268	267

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #295 (°F)	TC #296 (°F)	TC #297 (°F)	TC #298 (°F)	TC #299 (°F)	TC #300 (°F)
53	253	317	311	234	275	275
54	262	325	319	241	283	283
55	271	333	326	248	290	290
56	279	340	334	255	297	297
57	287	348	342	262	304	305
58	295	355	350	269	311	312
59	303	362	357	276	318	318
60	311	369	365	283	325	325
Max Temp:	311	369	365	283	325	325
Max Allowed:	384	384	384	385	384	385

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #301 (°F)	TC #302 (°F)	TC #303 (°F)	TC #304 (°F)	TC #305 (°F)	TC #306 (°F)	TC #307 (°F)	TC #308 (°F)	TC #309 (°F)
0	61	61	60	60	61	61	60	61	61
1	61	61	60	60	61	61	60	61	60
2	61	61	60	60	61	61	61	61	61
3	61	61	60	60	63	61	61	61	61
4	61	61	60	61	65	63	61	62	61
5	62	61	60	62	69	65	62	63	61
6	62	61	61	63	73	67	63	65	62
7	63	62	62	65	77	70	64	67	64
8	65	63	62	67	80	73	66	69	66
9	67	65	64	70	84	75	68	72	69
10	69	67	66	73	88	78	71	74	72
11	72	69	68	75	93	81	73	78	76
12	74	72	71	78	98	84	76	80	80
13	78	74	74	81	103	87	79	83	84
14	81	78	77	84	108	90	81	86	88
15	84	81	80	87	113	94	84	89	92
16	87	84	83	90	118	98	87	92	96
17	91	87	86	94	123	102	90	96	100
18	94	90	89	97	127	105	93	99	103
19	98	93	92	101	131	109	96	102	107
20	101	96	95	105	136	113	98	106	110
21	106	100	98	109	140	117	101	110	114
22	110	104	102	114	144	121	104	114	118
23	115	108	107	118	147	125	106	118	122
24	121	113	111	124	151	129	109	121	126
25	126	118	116	129	156	133	112	126	130
26	131	123	121	134	162	136	115	130	134
27	137	128	127	140	168	140	118	134	138
28	143	134	132	145	174	143	122	138	143
29	148	139	138	151	180	147	125	141	147
30	154	145	143	156	186	150	128	145	151
31	159	151	149	162	191	153	131	148	154
32	164	156	154	169	197	157	134	152	158
33	170	161	160	176	203	163	138	155	162
34	177	167	166	184	209	169	141	162	166
35	185	173	173	192	215	175	144	169	174
36	194	180	182	201	221	182	148	176	184
37	203	188	191	210	227	188	151	184	194
38	212	197	200	219	234	194	155	191	203
39	221	207	210	228	240	201	160	198	212
40	230	216	219	237	247	208	166	206	221
41	239	226	228	247	253	215	174	213	230
42	248	235	238	256	260	221	182	220	238
43	258	244	247	265	267	228	189	228	247
44	267	254	256	274	273	235	196	235	256
45	276	263	265	283	280	242	203	242	265
46	285	273	274	293	287	249	210	250	274
47	294	282	283	302	293	256	217	257	282
48	303	291	291	310	299	263	224	264	291
49	312	300	300	319	306	269	230	271	299
50	321	309	308	327	313	276	238	278	308
51	329	318	317	335	319	283	244	286	316
52	337	326	325	343	325	289	251	293	324

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #301 (°F)	TC #302 (°F)	TC #303 (°F)	TC #304 (°F)	TC #305 (°F)	TC #306 (°F)	TC #307 (°F)	TC #308 (°F)	TC #309 (°F)
53	346	335	333	351	332	296	258	299	332
54	354	343	341	359	338	302	264	306	340
55	362	351	348	367	345	309	271	313	347
56	370	359	356	374	351	316	278	320	355
57	377	367	363	381	357	322	284	326	363
58	385	375	371	388	364	328	291	333	370
59	393	383	378	395	370	334	297	339	378
60	400	390	384	402	375	340	303	345	384
Max Temp:	400	390	384	402	375	340	303	345	384
Max Allowed:	386	386	385	385	386	386	385	386	386

OMEGA POINT LABORATORIES

Time (min)	TC #310 (°F)	TC #311 (°F)	TC #312 (°F)	TC #313 (°F)	TC #314 (°F)	TC #315 (°F)	TC #316 (°F)	TC #317 (°F)	TC #318 (°F)
0	61	59	58	57	57	56	56	56	56
1	61	58	58	57	57	56	56	56	56
2	61	58	58	57	57	56	56	56	56
3	61	58	58	57	57	56	56	56	56
4	61	59	58	57	57	56	56	56	56
5	61	59	58	57	57	57	56	56	56
6	61	59	58	57	57	57	56	56	56
7	62	59	58	58	57	57	57	56	56
8	62	60	59	58	57	58	57	57	57
9	63	61	60	59	58	58	58	57	57
10	64	62	61	60	59	60	58	57	58
11	64	63	62	61	60	61	60	58	59
12	65	65	64	63	62	63	61	59	60
13	67	66	66	65	64	65	63	60	62
14	67	68	68	67	66	68	65	62	63
15	69	70	71	69	68	70	67	64	65
16	70	72	73	72	70	73	69	65	67
17	72	74	76	74	73	76	71	68	70
18	73	77	79	77	76	78	74	70	72
19	75	80	82	80	79	82	77	72	75
20	77	83	86	84	82	85	80	75	78
21	78	86	89	87	85	88	83	78	81
22	80	90	94	92	89	92	87	81	84
23	83	94	98	96	93	97	91	84	88
24	85	98	103	101	98	101	95	88	92
25	88	102	108	106	102	106	100	92	96
26	91	106	114	111	108	112	105	96	101
27	93	111	119	116	113	117	110	101	106
28	96	115	124	122	118	123	115	106	111
29	99	120	130	127	124	128	121	111	115
30	102	125	136	133	129	134	126	115	120
31	105	131	144	140	135	139	131	120	125
32	108	138	153	148	142	145	137	126	131
33	112	145	162	157	149	152	142	130	136
34	116	153	172	167	158	160	148	136	143
35	120	162	183	178	167	170	156	142	150
36	125	170	194	189	177	179	164	149	158
37	130	180	206	202	188	190	173	156	166
38	135	190	219	214	200	201	182	164	175
39	140	200	232	228	212	213	192	173	186
40	146	211	246	242	224	225	203	182	196
41	152	222	260	256	237	238	213	192	207
42	158	233	274	271	251	251	225	203	218
43	164	245	289	286	264	264	237	214	230
44	170	257	305	301	278	278	250	226	243
45	177	269	321	317	292	291	263	238	255
46	184	281	337	333	307	305	276	251	269
47	190	290	354	349	322	319	290	265	282
48	196	302	369	365	338	334	303	278	296
49	203	315	385	381	353	348	317	292	310
50	209	327	401	398	369	363	332	306	325
51	216	338	416	415	385	379	347	321	340
52	220	349	433	431	401	394	362	336	355

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #310 (°F)	TC #311 (°F)	TC #312 (°F)	TC #313 (°F)	TC #314 (°F)	TC #315 (°F)	TC #316 (°F)	TC #317 (°F)	TC #318 (°F)
53	223	359	449	449	418	409	377	351	371
54	226	366	467	467	434	425	393	366	386
55	228	375	489	487	451	440	408	381	402
56	229	384	508	508	469	455	424	397	418
57	222	385	528	529	488	471	440	413	434
58	215	359	486	560	508	487	456	429	451
59	218	358	538	582	532	503	472	445	469
60	221	389	577	606	555	523	491	463	488
Max Temp:	229	389	577	606	555	523	491	463	488
Max Allowed:	386	384	383	382	382	381	381	381	381

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #319 (°F)	TC #320 (°F)	TC #321 (°F)	TC #322 (°F)	TC #323 (°F)	TC #324 (°F)	TC #325 (°F)	TC #326 (°F)	TC #327 (°F)
0	56	57	57	57	58	58	59	59	58
1	56	57	57	57	58	58	59	59	58
2	56	57	57	57	58	59	59	59	58
3	56	57	57	57	58	58	59	59	58
4	56	57	57	57	58	58	59	59	58
5	56	57	57	58	58	59	59	59	59
6	57	57	57	58	58	59	59	59	60
7	57	58	58	58	58	59	59	60	61
8	57	58	58	59	59	59	60	60	63
9	58	59	59	60	60	60	60	61	66
10	59	60	60	61	60	60	60	61	68
11	60	61	61	62	62	61	61	62	71
12	61	63	63	64	63	62	61	63	73
13	63	65	65	65	65	62	62	64	76
14	65	67	67	68	67	64	62	66	78
15	67	69	69	70	69	65	64	67	81
16	69	72	71	73	71	66	64	68	83
17	72	74	74	76	73	67	65	69	86
18	75	78	77	79	76	69	66	71	89
19	78	81	80	82	78	70	67	72	91
20	81	85	84	86	82	72	69	73	94
21	85	88	88	90	85	74	70	75	97
22	88	93	92	94	88	76	71	77	100
23	92	97	96	98	92	78	73	78	103
24	97	101	101	103	96	81	74	80	106
25	101	106	106	108	100	83	76	82	110
26	106	111	110	112	104	86	78	83	113
27	111	116	115	118	109	89	80	85	117
28	116	122	121	122	114	92	82	87	121
29	121	127	126	127	118	94	84	89	126
30	126	132	130	132	122	98	86	92	130
31	131	137	136	138	127	101	88	94	135
32	137	144	141	144	133	104	91	96	141
33	143	150	148	151	138	108	93	99	146
34	150	158	155	159	145	111	96	102	153
35	158	167	163	168	153	115	98	105	160
36	167	177	172	177	161	119	101	108	168
37	177	188	182	187	169	124	104	111	176
38	188	199	193	197	178	129	107	114	185
39	199	210	204	208	188	134	111	118	195
40	210	222	216	220	198	139	114	123	204
41	222	234	228	232	208	145	118	127	215
42	235	247	240	244	219	151	122	132	224
43	248	260	253	256	229	157	126	136	234
44	261	273	267	269	241	163	130	141	245
45	275	287	281	282	253	170	135	146	258
46	288	300	295	295	264	178	139	152	269
47	303	315	310	310	277	185	145	157	280
48	317	330	325	324	289	193	150	164	292
49	332	344	340	339	301	200	155	170	303
50	347	359	356	354	313	208	160	177	313
51	362	375	371	369	325	215	165	183	325
52	378	391	386	384	338	222	170	190	337

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #319 (°F)	TC #320 (°F)	TC #321 (°F)	TC #322 (°F)	TC #323 (°F)	TC #324 (°F)	TC #325 (°F)	TC #326 (°F)	TC #327 (°F)
53	393	406	402	400	352	229	175	196	348
54	409	422	417	415	366	237	181	197	360
55	425	439	433	431	379	245	186	201	371
56	441	454	448	446	394	252	192	211	383
57	457	470	463	462	405	259	197	219	393
58	474	486	479	477	418	267	203	226	473
59	491	503	497	494	431	274	209	432	605
60	511	524	515	514	448	283	215	438	613
Max Temp:	511	524	515	514	448	283	215	438	613
Max Allowed:	381	382	382	382	383	383	384	384	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #328 (°F)	TC #329 (°F)	TC #330 (°F)	TC #331 (°F)	TC #332 (°F)	TC #333 (°F)	TC #334 (°F)	TC #335 (°F)	TC #336 (°F)
0	57	57	56	56	56	56	56	56	56
1	57	57	56	56	56	56	55	56	56
2	57	57	56	56	56	56	56	56	56
3	57	57	56	56	56	56	56	56	56
4	57	57	56	57	56	56	56	56	56
5	58	57	56	57	56	56	56	56	56
6	59	57	56	57	56	56	56	56	57
7	61	58	57	57	57	57	56	57	58
8	63	59	58	58	58	58	57	58	59
9	66	61	59	59	60	60	59	60	62
10	69	64	61	62	63	64	61	63	65
11	72	67	64	64	66	67	63	66	68
12	75	69	66	67	70	71	66	69	72
13	78	73	69	71	74	75	69	72	75
14	82	76	73	75	78	79	73	76	79
15	85	80	76	79	82	83	76	79	82
16	88	83	80	82	86	87	80	82	86
17	91	87	84	86	91	90	83	86	89
18	95	90	87	91	94	94	87	89	93
19	98	94	91	94	98	97	90	92	96
20	101	97	94	98	101	100	94	96	99
21	104	100	98	101	105	103	97	99	102
22	108	104	101	105	108	106	100	102	106
23	112	108	105	109	111	109	104	106	109
24	115	111	109	112	115	113	107	110	113
25	120	115	113	116	118	116	111	114	117
26	124	120	117	120	122	120	115	118	122
27	129	124	121	124	126	124	119	122	126
28	134	129	126	128	130	128	123	127	131
29	139	134	130	133	135	132	128	132	136
30	145	140	136	138	139	137	132	137	141
31	150	146	141	143	144	142	137	143	147
32	157	152	146	148	149	147	142	148	152
33	164	159	152	154	154	152	147	154	158
34	172	166	159	159	160	157	153	160	164
35	181	175	166	166	166	162	158	168	171
36	190	184	174	173	172	168	164	175	180
37	200	194	183	181	178	173	170	184	190
38	212	205	192	189	185	180	177	194	200
39	224	217	203	198	193	187	185	204	212
40	236	229	214	208	202	195	193	215	224
41	249	242	225	218	211	204	203	227	236
42	262	255	237	229	221	214	213	239	250
43	274	269	250	240	232	224	223	252	263
44	288	283	263	253	243	235	235	265	277
45	302	298	276	266	255	247	246	278	292
46	317	313	290	279	267	260	259	292	306
47	331	329	304	292	279	272	272	306	322
48	347	344	319	306	292	285	285	321	337
49	361	360	334	321	305	298	298	335	352
50	375	376	349	335	319	312	312	350	368
51	390	392	365	349	333	325	326	365	384
52	406	408	380	364	347	340	341	380	400

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #328 (°F)	TC #329 (°F)	TC #330 (°F)	TC #331 (°F)	TC #332 (°F)	TC #333 (°F)	TC #334 (°F)	TC #335 (°F)	TC #336 (°F)
53	422	425	397	379	361	354	356	395	416
54	437	442	413	395	376	368	371	410	432
55	452	459	429	410	390	383	386	425	448
56	468	476	446	426	406	398	402	441	465
57	484	495	463	442	420	413	417	456	481
58	503	516	482	459	436	428	433	472	497
59	521	539	503	477	452	443	450	488	514
60	537	567	521	494	467	458	466	504	530
Max Temp:	537	567	521	494	467	458	466	504	530
Max Allowed:	382	382	381	381	381	381	381	381	381

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #337 (°F)	TC #338 (°F)	TC #339 (°F)	TC #340 (°F)	TC #341 (°F)	TC #342 (°F)	TC #343 (°F)	TC #344 (°F)	TC #345 (°F)
0	56	56	57	58	59	61	61	61	58
1	56	56	57	58	59	61	61	61	58
2	56	56	57	58	59	61	61	61	58
3	56	56	57	58	59	61	61	61	58
4	56	56	57	58	59	61	61	61	58
5	56	56	57	58	59	61	62	61	58
6	56	57	57	58	59	61	62	61	59
7	57	57	58	58	59	61	62	61	60
8	58	58	58	58	59	61	62	61	63
9	59	59	59	59	59	61	62	61	65
10	61	61	60	59	60	61	62	61	69
11	63	62	61	60	60	62	62	62	72
12	66	65	62	61	60	62	63	62	76
13	69	67	64	62	61	62	64	62	80
14	72	69	66	64	61	62	64	62	83
15	75	72	68	65	62	62	65	62	86
16	78	74	70	66	62	63	66	62	90
17	81	77	72	68	63	64	68	62	94
18	84	80	74	70	64	64	69	62	96
19	87	82	76	71	65	65	70	62	99
20	90	85	78	73	66	66	71	62	102
21	93	88	81	75	67	66	73	63	107
22	96	91	83	77	68	67	74	63	113
23	99	93	86	79	69	68	76	64	122
24	102	96	88	82	70	69	77	64	131
25	105	100	91	84	72	70	79	64	141
26	109	103	94	87	73	71	80	65	152
27	113	107	97	89	74	72	82	65	164
28	117	111	101	92	76	74	85	66	177
29	121	115	105	96	78	75	87	67	190
30	126	119	108	99	80	77	90	67	203
31	131	124	113	102	82	79	94	68	217
32	136	129	117	106	83	81	99	69	232
33	141	134	121	110	86	84	103	70	246
34	147	139	126	113	88	86	108	71	261
35	153	145	131	118	90	89	112	72	276
36	159	152	136	121	92	92	117	74	291
37	168	159	142	125	95	96	122	75	306
38	177	166	148	129	97	100	128	77	321
39	186	175	154	133	100	103	133	79	335
40	197	184	161	138	102	108	139	81	350
41	209	195	169	143	105	113	145	82	363
42	222	206	177	148	107	118	150	85	377
43	235	218	186	154	110	123	157	87	391
44	248	230	196	161	113	129	163	89	625
45	262	242	206	167	116	135	170	92	636
46	277	255	216	174	119	141	177	94	636
47	292	269	227	182	123	148	185	97	649
48	307	283	239	190	126	155	194	100	677
49	322	297	250	199	130	162	203	103	691
50	338	311	263	208	134	170	212	106	703
51	354	326	274	217	138	177	222	110	718
52	370	341	287	225	143	185	231	114	732

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #337 (°F)	TC #338 (°F)	TC #339 (°F)	TC #340 (°F)	TC #341 (°F)	TC #342 (°F)	TC #343 (°F)	TC #344 (°F)	TC #345 (°F)
53	386	356	299	234	147	193	241	118	743
54	402	371	311	243	152	202	250	122	753
55	421	387	323	249	157	210	260	127	763
56	439	403	335	258	164	218	270	131	774
57	456	418	347	266	170	227	280	136	744
58	474	435	360	275	176	236	290	141	744
59	492	452	373	285	183	245	299	146	753
60	510	469	387	294	189	254	310	152	746
Max Temp:	510	469	387	294	189	254	310	152	774
Max Allowed:	381	381	382	383	384	386	386	386	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #346 (°F)	TC #347 (°F)	TC #348 (°F)	TC #349 (°F)	TC #350 (°F)	TC #351 (°F)	TC #352 (°F)	TC #353 (°F)	TC #354 (°F)
0	58	57	61	61	61	61	61	61	61
1	58	57	61	61	61	61	61	61	61
2	58	57	61	61	61	61	61	61	61
3	58	58	61	61	61	61	61	61	62
4	61	58	62	61	61	61	61	61	66
5	67	58	62	61	61	61	61	61	74
6	75	61	62	61	61	61	61	61	84
7	83	66	63	62	61	61	61	61	90
8	90	77	65	63	62	61	62	61	93
9	95	88	67	64	62	61	62	61	96
10	101	97	70	67	63	61	62	61	100
11	107	105	73	69	65	61	62	61	103
12	113	112	74	71	66	62	63	62	105
13	122	119	76	74	67	62	64	62	106
14	132	125	78	76	69	63	65	63	107
15	146	130	81	78	71	63	66	64	108
16	163	133	82	80	73	64	67	65	109
17	180	135	85	82	74	65	68	65	110
18	198	137	86	85	76	66	70	66	111
19	217	140	89	86	78	67	71	67	112
20	624	144	92	89	80	68	73	68	114
21	713	146	95	91	82	69	74	69	116
22	740	160	98	94	83	70	75	71	119
23	761	181	103	97	86	72	77	72	122
24	782	197	108	101	88	73	78	73	125
25	802	214	114	105	91	74	80	74	129
26	822	231	122	109	94	75	81	75	133
27	841	247	129	114	97	76	83	77	137
28	861	265	137	119	101	78	85	78	143
29	879	282	144	124	104	79	87	80	148
30	898	299	151	130	108	81	89	81	155
31	918	317	159	136	113	83	92	83	161
32	937	334	166	143	117	85	95	85	169
33	955	351	174	151	122	88	98	88	178
34	978	369	181	158	127	91	102	91	376
35	990	386	189	166	132	94	106	93	683
36	1001	403	196	173	138	97	110	96	742
37	1007	420	204	179	145	100	115	99	771
38	1017	437	213	187	152	104	120	102	801
39	1030	454	221	198	160	107	125	105	776
40	1045	471	230	206	168	110	131	109	773
41	1057	487	240	216	176	114	137	112	693
42	1067	503	249	224	184	118	143	116	724
43	1073	518	258	233	193	122	150	121	724
44	1079	533	268	242	201	127	157	126	735
45	1088	669	276	251	209	132	164	131	739
46	1098	690	285	260	217	138	172	137	767
47	1108	637	294	269	225	144	181	143	786
48	1116	650	302	281	233	150	190	150	816
49	1124	663	310	291	240	157	198	156	839
50	1130	675	319	301	248	164	207	164	824
51	1137	688	327	308	256	171	216	171	841
52	1144	699	335	317	263	179	225	178	852

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #346 (°F)	TC #347 (°F)	TC #348 (°F)	TC #349 (°F)	TC #350 (°F)	TC #351 (°F)	TC #352 (°F)	TC #353 (°F)	TC #354 (°F)
53	1150	711	343	326	271	186	234	186	857
54	1153	722	352	334	278	194	243	194	854
55	1160	734	359	343	285	202	252	202	854
56	1160	745	368	352	292	209	261	210	856
57	1168	755	375	361	299	218	270	219	857
58	1175	766	383	369	306	225	279	227	865
59	1183	776	391	377	314	233	288	236	863
60	1191	786	398	385	321	241	298	245	869
Max Temp:	1191	786	398	385	321	241	298	245	869
Max Allowed:	383	382	386	386	386	386	386	386	386

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #355 (°F)	TC #356 (°F)	TC #357 (°F)	TC #358 (°F)	TC #359 (°F)	TC #360 (°F)	TC #361 (°F)	TC #362 (°F)	TC #363 (°F)
0	62	61	58	57	57	57	59	58	58
1	62	61	60	58	57	57	59	58	58
2	62	62	67	60	57	57	59	58	58
3	62	62	73	62	57	57	59	58	58
4	62	62	78	65	58	57	59	58	58
5	62	62	89	69	59	58	60	59	58
6	62	62	98	75	61	59	61	61	60
7	62	64	103	80	65	62	64	64	62
8	62	66	106	86	71	67	69	70	68
9	62	68	111	93	78	74	76	76	75
10	63	70	118	102	86	81	83	84	83
11	64	72	122	109	94	89	91	91	91
12	65	75	126	115	101	97	98	98	98
13	66	77	129	120	108	103	104	104	105
14	67	79	132	124	113	109	110	110	110
15	68	81	136	128	118	113	115	115	115
16	69	83	140	132	123	118	120	121	120
17	71	86	144	136	127	122	126	128	126
18	72	88	147	140	132	127	131	134	131
19	74	92	151	144	137	132	137	140	138
20	75	95	154	149	144	138	145	148	144
21	76	100	158	155	153	145	154	156	151
22	78	105	161	164	165	152	164	166	157
23	81	110	166	177	180	162	178	183	168
24	83	116	170	195	198	177	197	205	189
25	86	121	176	216	218	199	216	228	214
26	89	127	187	239	235	223	239	253	239
27	93	135	201	262	260	249	264	278	264
28	97	142	216	286	286	277	290	305	290
29	101	149	232	310	312	305	317	332	316
30	105	157	249	335	339	333	345	359	344
31	109	166	265	360	366	361	374	387	372
32	113	175	280	386	394	389	402	415	401
33	118	184	295	412	422	418	430	444	431
34	122	195	311	439	451	447	459	474	463
35	126	205	326	466	481	476	485	504	496
36	130	217	633	493	510	504	537	538	529
37	135	228	633	573	587	625	623	619	568
38	141	239	599	630	693	661	626	602	602
39	148	251	624	662	620	603	658	617	625
40	155	263	654	696	646	626	633	666	664
41	161	274	678	687	680	656	668	701	702
42	169	286	703	726	711	689	673	744	744
43	176	297	756	754	746	728	700	775	776
44	184	308	760	727	783	760	764	798	801
45	192	320	780	764	812	762	786	816	823
46	200	331	796	830	819	788	817	839	851
47	209	343	863	769	882	724	835	702	812
48	217	355	824	809	816	735	842	697	831
49	226	366	838	829	863	769	902	735	857
50	234	378	883	834	874	793	834	737	825
51	243	390	910	869	935	791	816	793	810
52	252	402	947	759	847	797	876	789	812

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #355 (°F)	TC #356 (°F)	TC #357 (°F)	TC #358 (°F)	TC #359 (°F)	TC #360 (°F)	TC #361 (°F)	TC #362 (°F)	TC #363 (°F)
53	260	413	955	780	763	803	996	841	846
54	269	425	940	854	894	816	991	868	1017
55	278	435	963	832	877	846	988	888	1071
56	287	445	907	703	853	769	1045	918	1075
57	296	455	919	719	735	606	1061	813	718
58	305	465	715	623	755	620	1097	772	625
59	314	475	697	640	781	634	1128	766	640
60	591	484	851	654	801	652	1099	710	654
Max Temp:	591	484	963	869	935	846	1128	918	1075
Max Allowed:	387	386	383	382	382	382	384	383	383

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #364 (°F)	TC #365 (°F)	TC #366 (°F)
0	58	57	58
1	58	58	58
2	58	58	58
3	58	58	58
4	58	58	58
5	58	58	58
6	59	58	58
7	62	59	58
8	67	60	59
9	73	62	60
10	79	65	61
11	86	68	63
12	93	72	65
13	99	76	68
14	104	79	70
15	109	83	73
16	113	86	76
17	118	89	78
18	123	93	81
19	128	97	84
20	136	101	87
21	142	106	91
22	148	111	95
23	154	116	99
24	162	121	103
25	177	125	106
26	196	130	111
27	218	136	115
28	242	145	121
29	266	157	128
30	290	170	137
31	315	186	147
32	340	203	159
33	367	220	172
34	395	236	186
35	424	252	198
36	454	267	209
37	485	282	220
38	516	298	232
39	544	313	244
40	569	329	255
41	595	345	267
42	623	361	280
43	645	379	293
44	684	396	306
45	707	413	319
46	741	429	333
47	766	446	347
48	722	463	360
49	718	480	374
50	735	496	387
51	742	513	400
52	713	529	413

OMEGA POINT LABORATORIES

Transco Products Inc. Project No. 12000-105900 December 28, 1999

Time (min)	TC #364 (°F)	TC #365 (°F)	TC #366 (°F)
53	801	548	426
54	820	563	439
55	790	579	451
56	740	589	463
57	699	606	475
58	628	619	488
59	641	635	500
60	634	652	512
Max Temp:	820	652	512
Max Allowed:	383	382	383

OMEGA POINT LABORATORIES

Appendix F

QUALITY ASSURANCE

OMEGA POINT LABORATORIES

Quality Assurance Statement

Omega Point Laboratories, Inc. is an independent, wholly owned company incorporated in the state of Texas, devoted to engineering, inspection, quality assurance and testing of building materials, products and assemblies. The company has developed and implemented a Quality Assurance Program designed to provide its clients with a planned procedure of order and document processing for inspection and testing services it provides to assure conformity to requirements, codes, standards and specifications. The Program is designed to meet the intent of ANSI 45.2 Quality Assurance Program Requirements for Nuclear Power Plants, and complies with the requirements of the ASME Code, SPPE, Military Standards and other less stringent programs. It is the Laboratory's intention to adhere strictly to this Program, to assure that the services offered to its clients remains of the highest quality and accuracy possible.

The overall responsibility of the supervision, operation and coordination of this Quality Assurance Program is that of the Quality Assurance Manager, a person not involved with the performance of the inspection or testing services, and who is under the full time employ of the Laboratory. This individual is responsible for implementing and enforcing all procedures presented in the Quality Assurance Manual and the Procedures Manual. All personnel involved with activities which fall under the scope of this Program are required to cooperate with the letter and intent of this Program.

All QA Surveillance documents remain on file at the Laboratory, and are available for inspection by authorized personnel in the performance of an on-site QA Audit. All materials, services and supplies used herein were obtained with appropriate QA Certifications of Compliance, which may be found in the following pages.

OMEGA POINT LABORATORIES

ACCEPTABILITY DOCUMENTATION

PROJECT NO. 12000-105900

TRANSCO Test Program

The following signatures attest to the review and acceptance of each attribute listed regarding the above-noted project:

I. TEST ITEM ASSEMBLY

C Humphrey — 12/17/99
Omega Point Laboratories, Inc. — Date

Gregory Haroy — 12/17/99
TRANSCO — Date

II. THERMOCOUPLE INSTALLATION

C Humphrey — 12/17/99
Omega Point Laboratories, Inc. — Date

Gregory Haroy — 12/17/99
TRANSCO — Date

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112-9784
210-635-8100 / FAX: 210-635-8101 / 800-966-5253
www.opl.com / e-mail: moreinfo@opl.com

III. FIRE PROTECTION BARRIER

C Humphrey
Omega Point Laboratories, Inc.

12/28/99
Date

Gregory L. Haroy
TRANSCO

12/28/99
Date

IV. FINAL PRE-BURN INSPECTION

C Humphrey
Omega Point Laboratories, Inc.

12/28/99
Date

Gregory L. Haroy
TRANSCO

12/28/99
Date

OMEGA POINT LABORATORIES

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: A, IR Dead 10 A

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	POST HOSE ~~ACCEPTANCE~~
White to Black	200K mΩ	failed	failed

Date Pre-Test IRT: 12-28-99
Technician: C Dalton
Date Post-Test IRT: 12-28-99
Technician: [illegible]

CABLE TYPE: EKB1B-8

* IRT = Insulation Resistance Test

Insul. Res. SN: 720 5-27-2000

Pre-Test IC Cal. Due	Post-Test IC Cal. Due
Post 65 min	Post Hose stream 80.50 sec

(1)

210

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 3B

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	POST HOSE ~~ACCEPTANCE~~
Red to Green	200K mΩ	12 MΩ	1.1 mΩ
Red to White	200K mΩ	1.2 MΩ	1.1 MΩ
Red to Black	200K mΩ	11 MΩ	1 mΩ
Green to White	200K mΩ	13 MΩ	2 mΩ
Green to Black	200K mΩ	11 MΩ	1.2 mΩ
White to Black	200K mΩ	11 MΩ	1.2 mΩ

Date Pre-Test IRT: 12-27-99
Technician: [illegible]
Date Post-Test IRT: 12-28-99
Technician: [illegible]

CABLE TYPE: EKBIJ

* IRT = Insulation Resistance Test

Doc Res	Pre-Test	Post-Test
SN: 720	IC	IC
8-27-2000	Cal. Due	Cal. Due

OMEGA POINT LABORATORIES

POST

(2)

POST HOSE STREAM

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 3A

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	POST HOSE ~~ACCEPTANCE~~
white to Black	200K mΩ	failed	.32 mΩ

Date Pre-Test IRT: 12-27-99
Technician: [illegible]
Date Post-Test IRT: 12-28-99
Technician: [illegible]

CABLE TYPE:
EKB1B-8

* IRT = Insulation Resistance Test

	Pre-Test	Post-Test
A[illegible]eRes	IC	IC
SN.120	Cal. Due	Cal. Due
8-27-2000		

OMEGA POINT LABORATORIES

POST

3

POST HOSE

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 3 C

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	POST HOSE ~~ACCEPTANCE~~
Red to Black	∞	∞	100 KmΩ
Red to white	∞	∞	failed
Black to white	∞	∞	100 KmΩ

Date Pre-Test IRT: 12-27-99
Technician: [illegible]
Date Post-Test IRT: 12-28-99
Technician: [illegible]

CABLE TYPE:
EKA3H

* IRT = Insulation Resistance Test

Pre-Test	Post-Test
IC	IC
Cal. Due	Cal. Due

OMEGA POINT LABORATORIES

POST (4)

POST HOSE

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 4A

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	POST HOSE ~~ACCEPTANCE~~
white to Black	100K mΩ	failed	failed
white to Red	100K mΩ	failed	failed
white to Green	100K mΩ	failed	failed
white to Orange	100K mΩ	failed	failed
Black to Red	100K mΩ	failed	failed
Black to Green	100K mΩ	failed	failed
Black to Orange	100K mΩ	failed	failed
Red to Green	100K mΩ	failed	failed
Red to Orange	100K mΩ	failed	failed
Green to Orange	100K mΩ	failed	failed

Date Pre-Test IRT: 12-27-99
Technician: [signature]
Date Post-Test IRT: 12-28-99
Technician: [signature]

CABLE TYPE: EKBIK

* IRT = Insulation Resistance Test

	Pre-Test	Post-Test
	IC	IC
	Cal. Due	Cal. Due

Hi Res
SN: 720
8-27-2000

OMEGA POINT LABORATORIES

POST 5

POST HOSE finished 2:54pm

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 2A

214

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
Red to Green	100K MΩ		
Red to White	200K MΩ		
Red to Black	200K MΩ		
Red to Orange	200K MΩ		
Red to Black White	200K MΩ		
Red to Blue	200K MΩ		
Green to White	200K MΩ		
Green to Black	200K MΩ		
Green to Orange	200K MΩ		
Green to Black White	200K MΩ		
Green to Blue	200K MΩ		
White to Black	200K MΩ		
White to Orange	200K MΩ		
White to Black White	200K MΩ		
White to Blue	200K MΩ		
Black to Orange	200K MΩ		
Black to Black White	200K MΩ		
Black to Blue	200K MΩ		
Orange to Black White	200K MΩ		
Orange to Blue	200K MΩ		
Black White to Blue	200K MΩ		

Date Pre-Test IRT: 12-27-99
Technician: [signature]
Date Post-Test IRT: 12-28-99
Technician: [signature]

CABLE TYPE: EKBIL

* IRT = Insulation Resistance Test

	Pre-Test	Post-Test
Ao Rev.	IC	IC
SN: 720	Cal. Due	Cal. Due
8-27-2000		

OMEGA POINT LABORATORIES

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 5AE

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20 ft
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
Red to Black	∞		
Red to White	∞		
Black to White	∞		

Date Pre-Test IRT: 12-27-99
Technician: [signature]
Date Post-Test IRT: 12-28-99
Technician: [signature]

CABLE TYPE: EK A3H

* IRT = Insulation Resistance Test

Pre-Test	Post-Test
IC	IC
Cal. Due	Cal. Due

A[illegible]c. Res.
SN: 720
8-27-2000

OMEGA POINT LABORATORIES

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 5D

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
Red to Green	∞		
Red to White	∞		
Red to Black	∞		
Green to White	∞		
Green to Black	∞		
White to Black	∞		

Date Pre-Test IRT: 12-27-99
Technician: [signature]
Date Post-Test IRT: 12-28-99
Technician: [signature]

CABLE TYPE:
EK BIJ

* IRT = Insulation Resistance Test

Pre-Test	Post-Test
IC	IC
Cal. Due	Cal. Due

OMEGA POINT LABORATORIES

Fluke Res
SN: 720
8-27-2000

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 5B

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
Red to White	∞		
Red to BLACK	∞		
White to BLACK	∞		

Date Pre-Test IRT: 12-27-99
Technician: [signature]
Date Post-Test IRT: 12-28-99
Technician: [signature]

CABLE TYPE: EKA3J

* IRT = Insulation Resistance Test

Pre-Test IC Cal. Due	Post-Test IC Cal. Due
A[illegible]c Rec. SN: 720 8-27-2000	

OMEGA POINT LABORATORIES

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 5C

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
BLACK to White	∞		
BLACK to Ground	∞		
White to Ground	∞		

Date Pre-Test IRT: 12-27-99
Technician: [illegible]
Date Post-Test IRT: 12-28-99
Technician: [illegible]

CABLE TYPE:
EKCIA

* IRT = Insulation Resistance Test

Ar[illegible] Res.
SN: 720
8-27-2000

Pre-Test IC Cal. Due	Post-Test IC Cal. Due

OMEGA POINT LABORATORIES

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 5A

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
white to Black	200K mΩ		

Date Pre-Test IRT: 12-27-99
Technician: [illegible]
Date Post-Test IRT: 12-28-99
Technician: [illegible]

CABLE TYPE: EK BIB-8

* IRT = Insulation Resistance Test

Arc Res
SN 720
8-27-2000

Pre-Test	Post-Test
IC	IC
Cal. Due	Cal. Due

OMEGA POINT LABORATORIES

TRANSCO
INSULATION RESISTANCE MEASUREMENT
DATA SHEET

This individual cable has been labeled with the letter shown in the box to the right, to simplify rapid identification.

CABLE CODE: 6A

PROJECT NO: 12000-105900

CABLE LENGTH (FT): 20
IR ACCEPTANCE VALUE:

READ IN MEGAOHMS @ 1KVDC

CIRCUIT TESTED	PRE-TEST IR	POST-TEST IR	ACCEPTANCE
Red to White	∞		
Red to BLACK	∞		
White to BLACK	∞		

Date Pre-Test IRT: 12-27-99
Technician: [signature]
Date Post-Test IRT: 12-28-99
Technician: [signature]

CABLE TYPE: EKA3J

* IRT = Insulation Resistance Test

	Pre-Test	Post-Test
	IC	IC
	Cal. Due	Cal. Due

tra[illegible] Res.
SN:720
8-27-2000

OMEGA POINT LABORATORIES

Event Log

OMEGA POINT LABORATORIES

EVENT LOG

FIRE ENDURANCE TEST OF ARTICLES PROTECTED WITH A FIRE BARRIER SYSTEM

TRANSCO PRODUCTS, INC.
55 East Jackson Boulevard
Chicago, Illinois 60604

Project:

#12000-105900

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
Omega Point receives Transco purchase order # 21178 by fax from Kevin Hawlis, Transco Project Manager.	11/15/99	CH
Deg Priest, OPL President and Project Manager receives drawings for the horizontal and vertical Fire Test Slabs from Transco. Transco submits project drawings to OPL for the Plan view and each fire test item. All drawings revision 0.	11/15	CH
Deg Priest issues OPL drawings for: 1.) Top Slab Layout showing correct furnace dimensions and penetration placement 2.) Top Slab reinforcement 3.) Vertical Slab Layout showing correct furnace dimensions 4.) Vertical Slab Reinforcement	11/15	CH
OPL technicians begin construction of the horizontal and vertical test Slab CH frames.	11/16	CH
Construction of test slab frames is completed by OPL technicians.	11/18	CH
OPL QA/QC personnel begin verification of test slab frame dimensions.	11/18	CH
QA/QC verification of test slab frames is completed by OPL QA/QC personnel.	11/19	CH
OPL technicians pour concrete into the horizontal and vertical test frames.	11/19	CH
Both test slabs are put into the large horizontal test furnace to accelerate the concrete cure time.	11/24	CH
	11/24/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
Test slabs are removed from the test furnace after the accelerated curing process by OPL technicians.	11/30/99	CH
OPL receives TRANSCO Test Procedure #TR-400 from Greg Jarose from Transco.	11/30	CH
OPL QA/QC personnel receive test project materials ordered by Transco. (Electrical cable and Rockwool).	11/30	CH
Transco personnel arrive at OPL.		
Sandy Bradford QC		
Wayne Fields Installer		
Jimmy Fields "		
OPL QA/QC personnel order project hardware materials.	11/30	CH
Greg Jarose, Transco Project Mgr., arrives at OPL.	12/1	CH
All project personnel attend a meeting held by Greg Jarose to review test plan TR-400 requirements.	12/1	CH
Holes of San Antonio arrive to drill the 4" penetrations on the horizontal and vertical slabs.	12/1	CH
Drilled penetrations are verified to project drawings by OPL QA/QC.	12/1	CH
Transco Project Manager, Greg Jarose determines that the penetrations should be 6" in diameter and Holes of San Antonio is rescheduled to return on Dec 3rd	12/1	CH
OPL technicians complete the assembly of the vertical and horizontal slabs	12/2	CH
	12/2/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
Project materials ordered by OPL are received by OPL QA/QC personnel.	12/2/99	CH
OPL technicians weld slabs together and Transco installers begin installing project hardware.	12/2	CH
Holes of San Antonio arrives and one 6" diameter penetration on the horizontal or top slab is enlarged to 7" diameter and a new 7" diameter penetration is drilled in the vertical slab.	12/3	CH
Transco installs items #4 and #6 conduits into the test assembly. The all thread and unistrut hangers were installed.	12/4	CH
Project cable tray arrive at OPL. Transco personnel assemble the tray and install in the test assembly.	12/6	CH
Junction boxes #8, #11 and #12 are installed by Transco.	12/6	CH
Installation of thermocouples is begun by OPL technicians. Greg Jadoe, Transco Project mgr. decides to add additional TC's to items #3, #4 and #5.	12/7	CH
Transco continues installing the project hardware.	12/7	CH
Electrical cables are cut and the installation begins by Transco.	12/8	CH
Holes of San Antonio returns to drill a 6" diameter penetration	12/8	CH
	12/8/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
on the top slab per Greg Janose.	12/8/99	CH
Thermocouples on bare #8 copper wires is installed on Items #3 and #5 by OPL technicians after verification of TC's by OPL QA/QC.		
Thermocouples are installed and verified on Items #3, #4, #5 and #7 by OPL.	12/8	CH
Thermocouples are installed and verified on both conduits in Item #2 by OPL and Transco.	12/9	CH
Items #8, #11 and #12 Junction Boxes are thermocoupled and the verified by OPL QA/QC.	12/9	CH
Greg Jakouse decides to add an air drop from the top slab near penetration Item #9 to the 6" cable tray Item #3 using a BIB cable with a bare #8 copper wire with thermocouples.	12/9	CH
Transco installs damming materials in preparation to pour seals.	12/9	CH
Application of the grout in seals Items #1, #2, #4, #6, #7 and #10 is started.	12/~~10~~ 9	CH 12/10/99 CH
Grouting continues by Transco.	12/10	CH
Foam seal installation is started on Item #3, #5 and #9. CH 12/10/99	12/10	
Seals are damaged with the removal of the damming boards on Item #3, #5 and #9. Grouting is completed on Items #1, #2, #4, #6, #7	12/11	CH
	12/11/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
and #10.	12/11/99	CH.
Greg Jarouse decides to have the foam seal material removed from Items #3, #5 and #9. Transco personnel remove seal material and prepare the electrical cables for mezzaring.	12/12	CH
Transco personnel install new damming material on items #3, #5 and #9 using 2" rigid DOW foam material.	12/13	CH
BIJ cable in Item #6 was ~~replaced~~ removed CH 12/13/99 and was replaced with an A3J electrical cable. The BIJ cable was installed in Item #5. The bare #8 TC on CH the BIJ cable ~~were~~ was CH 12/13/99 installed on the A3J cable.	12/13	CH
Kaowool insulation is started on Items #1, #4 and #7.	12/13	CH
Electrical cables and bare #8 copper wires with TC's are installed on Items #4 and #7.	12/14	CH
Installation of seals continues.	12/14	CH
Flammastic is troweled on items #3 and #5.	12/15	
Work continues insulating Items #4 #7 and #1.	12/15	CH
Flammastic falls off Items #3 & #5.	12/16	CH
Jerry Nolting and Mike Kemmer from SCE&G arrive at OPL.	12/16	CH
Transco personnel install three layers of Kaowool held by 1-1/2" metal	12/16/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
banding over the junction box	12/16/99	CH
The second layer of Flammastic is installed on Items #3, #5 and #9, but is later removed on instructions of mike Kammer.	12/16	CH
Item #2 "cocoon" of Kaowool is completed. Unistrut is filled with Kaowool.	12/16	CH.
Thermocouples are installed in the top and vertical walls of Items #3 and #5 and verified by OPL QA/QC personnel.	12/17	CH
One roll of Zetex is brought by mike Kammer. OPL receives three (5) gallon buckets of Flammastic 77 and five boxes of Kaowool.	12/17	CH
Another six boxes of Kaowool is received by OPL.	12/18	CH
The Flammastic 77 application is completed over the radius section of the 36" cable tray in Item #5.	12/18	CH
Item #4 is wrapped in three layers of Kaowool. Item #12 is wrapped in Kaowool (3 layers)	12/18	CH
Item #1 layers 2 and 3 of Kaowool are applied. Flammastic is applied per detail 24" from box and hanger.	12/18	CH
Item #1 Flammastic completed. Item #4 completed. Item #3 completed.	12/19	CH
Item #5 Ceiling penetration Kaowool is installed.	12/19	CH
	12/19/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
Item #3 Zetex installation is	12/19/99	CH
completed. Item #2 Kaowool "cocoon"		
is completed.		
Flammastic is applied on Item #6	12/19	CH
and the Intumescent Cloth is installed		
in two layers on Item #7.		
Item #9 Flammastic had pulled	12/19	CH
away. The seal was punctured to		
release expanded gasses and was		
recoated with Flammastic.		
Transco new departs lab.	12/19	CH
OPL notes the Flammastic on Item #9	12/20	CH
has fallen off.		
Transco personnel return to OPL	12/27	CH
Wayne Fields		
Jimmy Fields		
Sandy Bradford		
Greg Tarosz		
Mike Kammer and Andy Robosky from	12/27	CH
SCE&G arrive at OPL.		
Mark Salley, USNRC arrives at OPL.	12/27	CH
Flammastic is reapplied to Item	12/27	CH
#9 by Transco personnel.		
Grubb Engineering personnel	12/27	CH.
conduct the pitot measuring		
per Transco requirements.		
OPL QA/QC personnel reverify some	12/27	CH
project thermocouples.		
Transco installers add two, ½"	12/28	CH
stainless steel bands on Item #5, both		
top and vertical seals and one band		
on Item #3 top and vertical seals.	12/28/99	CH

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
OPL technicians move the test assembly to the test furnace and attach the thermocouples to the data acquisition equipment. Connections are verified by OPL QA/QC.	12/28/99	CH
The pretest checklist is done by Deg Priest, OPL President and Project Manager.	12/28	CH
On site to witness the One Hour Fire Test of Project # 105900 are:	12/28	CH
Deg Priest Omega Point Labs		
Connie Humphrey " " "		
Cleda Patton " " "		
Troy Bronstad " " "		
Zaldencio Castanon " " "		
Richard Beasley " " "		
Oscar Estrada " " "		
Mark Salley US NRC		
Greg Jarosz Transco		
Sandra Bradford "		
Mark Sollie "		
Wayne Fields "		
Jim Fields "		
Mike Kammer SCE&G		
Tom Kiekiesen "		
Andy Robasky "		
Woody Walker Entergy		
Mike Cumbest Grand Gulf Nuclear		
Bob Grubb Grubb Engineering		
The test was started at 1:26pm and was completed in one hour. Following	12/28	CH
the fire test, ~~Fotive~~ CH cables were	12/28/99	CH

12/28/99

OPL EVENT LOG

TRANSCO
Client # 12000

NOTE:
This Log is used to document the date and note each step during the completion of test project #105900. The following is a brief description of this project:

Proj. No. 105900: One Hour Fire Endurance Test of various conduits, cable tray and penetrations protected with a Fire Barrier System

Item	Date	Initial
meggered by Gruber Engineering.	12/28/99	CH
Following the megger testing a hose stream test was done by OPL Technicians. This hose stream test used a 15 degree spray at 75 psi from a distance of 10 feet for a five minute period.		
~~Following~~ CH 12/28/99 The pressure gage used was OPL equip. no. 99CE202 0-100 psi range with calibration due on 4-27-2000.		
Following the hose stream test the same five cables were meggered again by Gruber Engineering.	12/28	CH
After the completion of all testing, Transco and OPL personel removed the insulation and inspected the condition of the electrical cables and test article hardware, documenting their findings.	12/28	CH
Transco personnel pull the electrical cables from Items #4 and #7. These cables are sent to South Carolina Electric and Gas.	12/29/99	CH
All Transco personnel depart OPL.	12/29/99	CH
— end —		

Certifications of Calibration and Conformance

OMEGA POINT LABORATORIES

TRANSCO® PRODUCTS INC.
EXECUTIVE OFFICES
Fifty Five East Jackson Boulevard
Suite 2100
Chicago, Illinois 60604-4166
312-427-2818
Facsimile 312-427-4975

Gregory J. Jarosz
Product Manager - Fire Protection Services

Celebrating Our 64th Year (1936-2000)!

Ms. Cleda Patton
Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, Texas 78112

January 25, 2000

Sent Via Facsimile to 210-635-8101

Subject: Fire Test for V.C. Summer Kaowool Raceway Fire Barriers
Request for Certification of Hose Stream Test GPM Rate

Dear Cleda,

As a follow-up to our telephone conversation of today's date, we were requested by the V.C. Summer's Quality Assurance Inspector who witnessed part of the specimen fabrication to confirm the "gallons per minute delivery" rate for Omega Point's typical hose stream test. Since this was an official QA/QC request, its now also become an engineering issue that needs to be resolved.

If there is no other way to certify the GPM delivery rate of the hose, we suggest a volumetric/time test be done to confirm. This can be done on a limited time basis (for example: weigh the amount of water collected in a drum, etc., for a period of thirty seconds and then multiply by two to arrive at gallons per minute). We are open to any other suggestions you may have on how to accomplish this provided the final method leaves no outstanding questions as to the delivery rate of water through the hose nozzle when adjusted to 15 degrees at 75 psi.

This is an urgent request. Please contact me if I can be of any further assistance on this item.

Sincerely,
TRANSCO PRODUCTS INC.

Gregory J. Jarosz
Product Manager

January 25, 2000

Gregory J. Jarosz
Transco Products, Inc.
55 East Jackson Boulevard, Suite 2100
Chicago, IL 60604-4166

Re: Fire Test for V.C. Summer Kaowool Raceway Fire Barriers
Request for Certification of Hose Stream Test GPM Rate

Dear Mr. Jarosz:

This letter will serve to address your comments concerning the rate of flow through our 1-1/2" nozzle, operating at an included spray angle of 15°.

The manufacturer of the nozzle states that the rate of flow through the nozzle will be greater than 75 gpm (gallons per minute) at a nozzle pressure of 75 psig (pounds per square inch gauge). Although we have determined the flow previously, we repeated the experiment today. To determine the flow rate, the nozzle pressure was set at 75 psig, the nozzle discharge angle was adjusted to 15°, and the nozzle was allowed to discharge into an empty 55 gallon drum (with no top lid). The time required to completely fill the drum was then noted. The verification was repeated at an included spray angle of 30°. The details of the verification are as follows.

The pressure gauge used to measure the nozzle pressure was a 0 – 100 psig gauge, Serial No. 99LE002, due to be re-calibrated on April 27, 2000, and is registered on our QA/QC Program as a calibrated transducer. The time to fill the drum was taken on ten consecutive observations, with the following results:

Time (min)	Flow Rate @ 15° (gpm)
43.0	76.7
42.5	77.6
43.2	76.4
43.5	75.9
43.0	76.7
43.12	76.5
44.0	75.0
43.6	75.7
43.8	75.3
43.1	76.6

Time (min)	Flow Rate @ 30° (gpm)
43.6	75.7
43.2	76.4
43.8	75.3
43.5	75.9
43.7	75.5
43	76.7
43.2	76.4
43.6	75.7
43.1	76.6
43.9	75.2

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112-9784
210-635-8100 / FAX: 210-635-8101 / 800-966-5253
www.opl.com / e-mail: moreinfo@opl.com

Time (min)	Flow Rate @ 15° (gpm)
Low =	75.0
Average =	76.3
High =	77.6
Std Dev =	0.78

Time (min)	Flow Rate @ 30° (gpm)
Low =	75.2
Average =	75.9
High =	76.7
Std Dev =	0.55

CONCLUSIONS

As the verification procedures described above have shown, the nozzle meets or exceeds a flow rate of 75 gallons per minute at a nozzle pressure of 75 pounds per square inch (gauge), at both the 15° and the 30° settings. No attempt to determine the degree of accuracy of this verification was made. However, the standard deviations for both sets of nozzle angle indicate that the repeatability is fairly good. This experiment was intended to serve as a simple verification of the flow rates through the nozzle, and not a formal calibration as described in the Laboratory's Quality Control Manual.

I hope these procedures will serve to answer your concerns in this matter. If you or anyone else has any questions or comments, please call me at your convenience.

Sincerely,

Deggary N. Priest
President

DNP/dnp

OMEGA POINT LABORATORIES

CERT. NUMBER: 59771

236

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Grubb Engineering, Inc.
P.O.Box 65
Converse, TX 78109
210-658-7250

MFG: Assoc Res
MODEL: 2253A
NOMEN: Variable Voltage Meg-Chek
S/N: 720
CUST. ID:

CAL DATE: 08/27/1999
DUE DATE: 08/27/2000

CONTROL NO.: 290 - 24392
TECHNICIAN: 4
SPECIFICATIONS: MFG
PROCEDURE: MFG
WORK ORDER: 73955
CUSTOMER P.O.:
RECEIVED CONDITION: OUT OF TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 73 °F
RELATIVE HUMIDITY: 40 %

DATE RECEIVED: 08/17/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
173	FLUKE	80T08	9074382	08/02/2000
182	ROTHE	130	001	03/11/2000

APPROVED BY: Peter J. Stemmer ☑ CMS ☐ QCO DATE: 08/30/1999

RDMSD 1001
08/97

This certificate may not be reproduced, except in full, without written approval of Rothe Development, Inc. Metrology Services Division.

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: ASSOCIATED REASEARCH MODEL 2956A MEG-CHECK

CUSTOMER: Grubb Engineering
WO NUMBER: 73855
SERIAL: 720
CUST ID:

DATE: 27 Aug 99
TECH: AJS
INST NO: 24592

CALIBRATION DATA TAKEN

INCOMING ✓
OUTGOING

CONDITION OF EQUIPMENT

IN TOLERANCE
OUT OF TOLERANCE ✓ *

VOLTAGE METER ACCURACY

METER INDICATION	MIN	READING	MAX
1000	900	1014	1100 V
2000	1900	2043	2100
3000	2900	3059	3100
4000	3900	3982	4100
5000	4900	4938	5100

MEGOHMS METER ACCURACY

RANGE	METER INDICATION	MIN	READING	MAX	
0.1	2.0	2.45	3.131	2.55 mA	*
	2.8	1.735	2.249	1.835	
	4.0	1.20	1.612	1.30	
	8.0	.575	.838	.675	
	20.0	.200	.353	.300	
1	2.0	245	313	255 uA	
10	2.0	24.5	31.2	25.5	
100	2.0	2.45	3.12	2.55	*

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: ASSOCIATED REASEARCH MODEL 2956A MEG-CHECK

CUSTOMER: Grubb Engineering
WO NUMBER: 73855
SERIAL: 720
CUST ID:

DATE: 27 Aug 99
TECH: PJS
INST NO: 24592

CALIBRATION DATA TAKEN

INCOMING
OUTGOING ✓

CONDITION OF EQUIPMENT

IN TOLERANCE ✓
OUT OF TOLERANCE

VOLTAGE METER ACCURACY

METER INDICATION	MIN	READING	MAX
1000	900	1016	1100 V
2000	1900	2043	2100
3000	2900	3041	3100
4000	3900	3984	4100
5000	4900	4934	5100

MEGOHMS METER ACCURACY

RANGE	METER INDICATION	MIN	READING	MAX
0.1	2.0	2.45	2.49	2.55 mA
	2.8	1.735	1.76	1.835
	4.0	1.20	1.26	1.30
	8.0	.575	.635	.675
	20.0	.200	.251	.300
1	2.0	245	249	255 uA
10	2.0	24.5	24.9	25.5
100	2.0	2.45	2.49	2.55

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: Thermal Ceramics
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1951-1200
DATE RECEIVED: 12-18-99
DATE INSPECTED: 12-18-99
INSPECTED BY:

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	GOOD MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTION	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Kaowool 1"	NA	~~0~~	6	~~0~~		Y	N	GOOD	None	X			Receiving verification only

FORM
1/29/93

SOUTHERN WAREHOUSE CORPORATION

THIS MEMORANDUM is an acknowledgement that a Bill of Lading has been issued and is not the Original Bill of Lading, nor a copy or duplicate, covering the property named herein, and is intended solely for filing or record. RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

RR1951 CH 12/18/99

PAGE # 4 of 1 40

CARRIER

SHIPPER'S INSTRUCTIONS:

SHIP FROM: 10
THERMAL CERAMICS
SOUTHERN WAREHOUSE #10
5411 MESA ROAD
HOUSTON, TX 77033

AS AGENT FOR SHIPPER BELOW
SHIP TO:
OMEGA POINT LAB
16015 SHADY FALLS ROAD
ATTN TRANSCO
ELMENDORF, TX 78112

SHIP FOR DELIVERY 8:00AM SATURDAY
12/18/99
1-800-966-5253

WHSE B/L	340864
ARRIVE DATE	12/17/99
SHIP DATE	12/17/99
ORDER DATE	12/17/99
ROUTE	PICK-UP
FREIGHT CHARGE	N/A

VEHICLE NO.	CARRIER	SCAC	P.O. NUMBER	SHIPPERS REFERENCE NO.
	DCH TRANSPORTATION		21369	18929761

SEALS

VNDR SHIP POINT#

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

PRO NUMBER	APPOINTMENT #	APPT. DATE / APPT. TIME	CARRIER ARRIVAL / DATE	MOSE LEAVES FACILITY / DATE / TIME	DLDC SLSC / DLSC SLDC

H/M	QUANTITY	ITEM NO.	DESCRIPTION (WHSE. LOT NO. / PRODUCTION CODE)	GROSS WEIGHT
	6	8218806004000	EA L-24-1 KAWL BLK 1 S 300 X 24 X 6 1463801 300X24X1 8#	225
			* * END-OF-ORDER * * *	
			**********	
			SHIPPED ON _____ PALLETS	
		N.M.F.C.		
	6		NO NMFC DESCRIPTION	225
			* * ORDER TOTALS * *	
	6	NET WGT	199 CUBES: 0.00* GR WGT	225

CHARGES ADVANCED:
$

Rec'd. $ to apply in prepayment of the charges on the property described hereon.
Agent or Cashier

Per
(The signature here acknowledges only the amount prepaid)

†The Paper Bags, Fibre Pails, Fibre Drums, Fibre Boxes used for this Shipment conform to the specifications set forth in the maker's certificate thereon, and all other Requirements of rules for these packages in Uniform Freight Classification and the National Motor Freight Commission.

†This is certify that the herein named articles are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

"Shipper's imprint in lieu of stamp; not a part of bill of lading approved by the Department of Transportation."

* If this shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."
NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Per

Subject to Section 7 of Conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

C Howell
Per
(Signature of Consignor)

FOR THE ACCOUNT OF: (SHIPPER) 13771
THERMAL CERAMICS
ATTN MS JAN DIETZMANN
2170 NORTH LOOP W STE 102
HOUSTON, TX 77018

FACILITY NO.:

SEND FREIGHT BILL WITH COPY OF BILL OF LADING TO:
THERMAL CERAMICS
PO BOX 923 ANN PARKER MS#105
AUGUSTA, GA 30903

CARRIER: ABOVE SHIPPERS REF. AND WHSE. B/L NO. MUST APPEAR ON ALL FREIGHT BILLS

HAVE RECEIVED THE ABOVE IN GOOD ORDER: DATE 12-17-99 AGENT FOR DCH CARRIER BY AGENT OR DRIVER

DCH

TRANSPORTATION, INC.
P.O. BOX 811
TOMBALL, TEXAS 77377-0811
PHONE: 281-351-6222

WAYBILL HD-69291
DATE 12-17-99
LOCAL ☐
INTRASTATE ☐ COLLECT ☐
INTERSTATE ☐ PREPAID ☐

SHIPPER
Name: Thermal Ceramics [illegible]
Address: [illegible]
City: [illegible] State: Tx
Shipper No.: [illegible]

CONSIGNEE
Name: Omega Point L.L.
Address: 1605 Shady Falls Rd
City: Elmendorf State: Tx
Consignee No.: Aux. Transco B

Bill To: Name
Address
City State

INTERLINE CARRIER
BILL NO.
INTERLINE CHARGES ☐ PREPAID ☐ COLLECT ☐ TRANS. CHGS. ADVANCED
DECLARED VALUE $ ADVANCE FEE

NO. OF PIECES	DESCRIPTION OF MATERIAL OR SERVICE	Weight Actual or Estimated
6	Boxes Thermal Blankets	22-[illegible]
	PO# 21[illegible]	
	BoL # 14929[illegible]	

FORWARDING CHARGE	
EXCESS VALUE CHARGE	
% FOR INTERLINE CHARGES	
SHIPPER'S C.O.D.	
C.O.D. FEE	
TOTAL	

☐ Exclusive Use of Vehicle
☐ Expedited Service Requested or Required

SHIPPED PER

TRUCK TRAILER ☐ ☐ REQUESTED ☐
STAKEBED ☐ POLE TRAILER ☐ REQUESTED ☐

Tract
Lease
Well
Wt. Ticket #

EXTRA STOPS	
INS PASS THRU	
FUEL SURCHARGE	
EXTRA DRIVER	
EXTRA LABOR	

Tariff Item
(MR) @(WT)
x RATE =
Sub-Total
(RTM) x Rate =
Sub-Total
TOTAL

STATE	TEXAS	LOUISIANA	OKLAHOMA	NEW MEXICO			
ALL MILES							
GALLONS PURCHASED							

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CONSIGNEE
DRIVER [signature]
DATE TIME TRUCK # TRAILER #
MAX. $60.00 UNLESS SPECIFIED DECLARED VALUE
$

Terms: NET CASH - Bills Due and Payable Seven Days After Receipt of Statement, Due at Houston, Harris County, Texas, Attorney Fees and Interest Charged On All Past Due Accounts

Important *ALL CLAIMS FOR LOSS OR DAMAGE MUST BE PRESENTED WITHIN (72) HOURS AFTER DELIVERY.*
NOT RESPONSIBLE FOR CONCEALED DAMAGE.

CONSIGNEE COPY

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: Thermal Ceramics
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1950 . 12000
DATE RECEIVED: 12-17-99
DATE INSPECTED: 12-17-99
INSPECTED BY: O'Dallon

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTION	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Kaowool 1"	NA	~~0~~	5	~~0~~		Y	N	GOOD	None	X			Receiving inspection only

FORM
1/29/93

SOUTHERN WAREHOUSE CORPORATION

Original Bill of Lading, not a copy or duplicate, covering the property named herein, and is intended solely for filing or record. RECEIVED, subject to the classifications and tariffs in effect on the date of the receipt by the carrier of the property described in the Original Bill of Lading.

CARRIER

SHIPPER'S INSTRUCTIONS:

CR 1950 12/17/99

PAGE # 5 243 OF 1

SHIP FROM:
THERMAL CERAMICS
SOUTHERN WAREHOUSE #10
5411 MESA ROAD
HOUSTON, TX 77033

AS AGENT FOR SHIPPER BELOW
SHIP TO:
OMEGA POINT LAB
ATTN TRANSCO
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DCH ON THEIR WAY

WHSE B/L	340739
ARRIVE DATE	12 17 99
SHIP DATE	12 17 99
ORDER DATE	12 17 99
ROUTE	LTL TRUK
FREIGHT CHARGE	PREPAID

VEHICLE NO.	CARRIER	SCAC	P.O. NUMBER	SHIPPERS REFERENCE NO.
	DCH TRANSPORTATION		21369	18929760

SEALS | VNDR SHIP POINT#

The property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated below, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed, as to each carrier of all or any of said property over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the terms and conditions of the Uniform Domestic Straight Bill of Lading set forth (1) in Uniform Freight Classification in effect on the date hereof, if this is a rail or rail-water shipment or (2) in the applicable motor carrier classification or tariff if this is a motor carrier shipment.
Shipper hereby certifies that he is familiar with all the terms and conditions of the said bill of lading, including those on the back thereof, set forth in the classification or tariff which governs the transportation of this shipment, and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

PRO NUMBER	APPOINTMENT #	APPT. DATE / APPT. TIME	CARRIER ARRIVAL DATE	MDSE LEAVES FACILITY DATE / TIME	DLDC ☐ SLSC ☐ DLSC ☐ SLDC ☐

H/M	QUANTITY	ITEM NO.	DESCRIPTION (WHSE. LOT NO. / PRODUCTION CODE)	GROSS WEIGHT
	5	BC198060004000	EA L-24-1 KAWL BLKT 5 300 X 24 X 5 1462801 300X24X1 8#	198
			* * END-OF-ORDER * * *	
			**********	
		SHIPPED ON _____ PALLETS		
		N.M.F.C.		
	5		NO NMFC DESCRIPTION	198
			* * ORDER TOTALS * *	
	5	NET WGT	167 CUBES: 0.00* GR WGT	198

CHARGES ADVANCED:
$

Rec'd. $ to apply in prepayment of the charges on the property described hereon.
Agent or Cashier

Per
(The signature here acknowledges only the amount prepaid)

†The Paper Bags, Fibre Pails, Fibre Drums, Fibre Boxes used for this Shipment conform to the specifications set forth in the maker's certificate thereon, and all other Requirements of rules for these packages in Uniform Freight Classification and the National Motor Freight Commission.

†This is certify that the herein named articles are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation, according to the applicable regulations of the Department of Transportation.

"Shipper's imprint in lieu of stamp; not a part of bill of lading approved by the Department of Transportation."

* If this shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's or shipper's weight."
NOTE - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

Per

Subject to Section 7 of Conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

C Howell
Per
(Signature of Consignor)

FOR THE ACCOUNT OF: (SHIPPER) 13771
THERMAL CERAMICS
ATTN MS JAN DIETZMANN
2[illegible] NORTH LOOP W STE 102
HOUSTON, TX 77018

FACILITY NO.:

SEND FREIGHT BILL WITH COPY OF BILL OF LADING TO:
THERMAL CERAMICS
PO BOX 923 ANN PARKER MS#103
AUGUSTA, GA 30903

CARRIER: ABOVE SHIPPERS REF. AND WHSE. B/L NO. MUST APPEAR ON ALL FREIGHT BILLS

HAVE RECEIVED THE ABOVE IN GOOD ORDER: DATE 12 17 99 AGENT FOR D'H CARRIER BY D McCleston AGENT OR DRIVER

DCH

TRANSPORTATION, INC.
P.O. BOX 811
TOMBALL, TEXAS 77377-0811
PHONE: 281-351-6222

WAYBILL HD-69245 244
DATE 12-17-99
LOCAL ☐
INTRASTATE ☒ COLLECT ☐
INTERSTATE ☒ PREPAID ☐

SHIPPER
Name: Thermal Ceramics So South Wa
Address: 2411 Alva
City: Houston State: Tx
Shipper No. 18-9-2776

CONSIGNEE
Name: Omega Point Hal
Address: 1695 Shady Falls Rd
City: Elmwood State: Tx
Consignee No: ATTN Transco

Bill To: Name
Address
City State

INTERLINE CARRIER
BILL NO.
INTERLINE CHARGES ☐ PREPAID ☐ COLLECT ☐ TRANS. CHGS. ADVANCED
DECLARED VALUE $ ADVANCE FEE

NO. OF PIECES	DESCRIPTION OF MATERIAL OR SERVICE	Weight Actual or Estimated
5	Lr 27-ea	

FORWARDING CHARGE	
EXCESS VALUE CHARGE	
% FOR INTERLINE CHARGES	
SHIPPER'S C.O.D.	
C.O.D. FEE	
TOTAL	

☐ Exclusive Use of Vehicle
☐ Expedited Service Requested or Required

SHIPPED PER

Tract
Lease
Well
Wt. Ticket #

EXTRA STOPS
INS PASS THRU
FUEL SURCHARGE
EXTRA DRIVER
EXTRA LABOR

Tariff Item
(MR) @(WT)
x RATE =
Sub-Total

BOX TRAILER ☐ ☐ REQUESTED ☐
STAKEBED ☐ POLE TRAILER ☐ REQUESTED ☐

STATE	TEXAS	LOUISIANA	OKLAHOMA	NEW MEXICO			
ALL MILES							
GALLONS PURCHASED							

(RTM) x Rate =
Sub-Total
TOTAL

RECEIVED, subject to the classifications and tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of shipment.
Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

CONSIGNEE
DATE 12-17-99 TIME 3:50PM
DRIVER Don Williamson
TRUCK # TRAILER #
MAX. $50.00 UNLESS SPECIFIED DECLARED VALUE
$

Terms NET CASH - Bills Due and Payable Seven Days After Receipt of Statement, Due at Houston, Harris County, Texas
Attorney Fees and Interest Charged On All Past Due Accounts

Important ALL CLAIMS FOR LOSS OR DAMAGE MUST BE PRESENTED WITHIN (72) HOURS AFTER DELIVERY.
NOT RESPONSIBLE FOR CONCEALED DAMAGE.

CONSIGNEE COPY

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: Flamemaster
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1949 . 12000
DATE RECEIVED: 12-17-99
DATE INSPECTED: 12-17-99
INSPECTED BY:

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Flamemastic 77	NA	Q	3	Q	9909024	Y	N	GOOD	None	X			Receiving Verification Only

FORM
1/29/93

RR 1949 12/17/99 CH

246

CUSTOMER ORDER NO. VERBAL/ SREB
REL. OR B/O
DATE: 12-16-99
FREIGHT: PREPAY & ADD
F.O.B. SUN VALLEY, CA
SHIP VIA: UNITED PARCEL/ REDIII
SHIPPING DATE: 12-16-99
SHIPPING NO.: 30834 -1
TAXABLE: OS
CAGE CODE #14439

FLAMEMASTER CORPORATION
CHEM SEAL DIVISION
11120 Sherman Way
Post Office Box 1458
Sun Valley, California 91353-1458
Telephone (818) 982-1650
Fax: (818) 765-5603

SOLD TO
TRANSCO PRODUCTS
55 E. JACKSON BLVD.
SUITE 2100
CHICAGO, IL 60604
ATTN: GREG JAROSZ

SHIP TO
OMEGA POINT LAB
16105 SHADY FALLS RD
ELMENDORF, TX 78112
ATTN. TRANSCO
PROTECT FROM FREEZING

TERMS: NET 30 DAYS VISA

INVOICE DATE _____ INVOICE NO. _____

ORDERED	BACK ORD.	SHIPPED	UNIT	DESCRIPTION	BATCH NO.	UNIT PRICE	AMOUNT
3	-0-	3	EA	5-GAL PAIL, FLAMEMASTIC 77	9909024	[redacted]	[redacted]
				MASTIC			
				PKG DTE: 12/99 EXP DTE: 12/02			
				SHELF LIFE 3 YEARS			
				STORAGE TEMP. 40 DEG.F -90 DEG.F			
				THE PURCHASER OF THIS FIRE PROTECTIVE			
				COMPOSITION IS HEREBY LICENSED UNDER			
				UNITED STATES PATENT 3,642,531 DATED			
				FEBRUARY 15,1972 TO USE THE SAME AS A			
				COATING FOR ELECTRECAL CABLES			
				PROTECT FROM FREEZING			

SPECIAL INSTRUCTIONS: ☐ CERTIFICATIONS ☐ TEST REPORT ☒ MSDS

WE CERTIFY THAT THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND CONFORMS TO THE REQUIREMENTS OF LISTED SPECIFICATIONS. TEST DATA PERTAINING TO THIS MATERIAL IS ON FILE AND AVAILABLE FOR INSPECTION UPON REQUEST. CHLOROFLUROCARBONS (CFCs) AND HALONS ARE NOT USED. PRODUCT(S) FREE FROM MERCURY.

Rec'd 12/17/99 DMB.

QUALITY CONTROL MANAGER

DATE SHIPPED: 12/16/99 CARRIER: UPS RED NO. PACKAGES: 3-CARTONS GROSS WEIGHT: 210 LBS.

PRIOR APPROVAL MUST BE OBTAINED FOR THE RETURN OF ANY MERCHANDISE. RETURN FREIGHT MUST BE PREPAID.

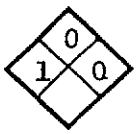
SELLER HAS COMPLIED WITH THE APPLICABLE PROVISIONS OF THE FAIR LABOR STANDARDS ACT OF 1938 AS AMENDED.

CERTIFICATION/PACKING LIST

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard. 29 CFR 1910.1200 Standard must be consulted for specific requirements

HMIS



247

FED-STD-313 LATEST REV.

CAS registration no.

Type of data sheet: ☐ NEW ☒ Revised (No. of Revised, Sec. Supersede 1-18-91)

SECTION I GENERAL INFORMATION

Commercial ID (as on label and list): FLAMEMASTIC 77

Manufacturer's Name: FLAMEMASTER CORPORATION

Mfgs. Address (No. Street, City, State, Zip): 11120 SHERMAN WAY, SUN VALLEY, CA 91352

Gov't. Contract or Order No.:

National Stock No./ACN/LSN/SIN:

Part No., Product &/or Trade Name: FLAMEMASTIC 77

Hazardous Items: ☐ YES ☒ NO MARINE POLLUTANT - NO

Emergency Telephone Number: 1-800-424-9300 CHEM TREC

Information Telephone Number: 1-818-982-1650

Date Prepared: JANUARY 12, 1998

Mfgr. CAGE code: 14439

Name of Preparer: HERBERT H. MOORE

Signature of Preparer:

NRC License Number: N/A

EPA Registration Number: N/A

Specification Number: N/A

Spec. Type: SPRAYABLE/MASTIC

Spec. Grade: N/A

Spec. Class: N/A

Section II - Hazardous Ingredients/SARA III INFORMATION*

Hazardous Components (Specific Chemical Identity: Common Name(s)	Other Limits	%	OSHA PEL	ACGIH TLV	NIOSH #	CAS #
PROPRIETARY FORMULATION						
ANTIMONY OXIDE		4.7	N/A	0.5mg/M^3 (dust)	CC5650000	1309-64-4

* Indicates toxic chemical(s) subject to the reporting requirements of section 313 of Title III and of 40 CFR 372.

Section III - Physical/Chemical Characteristics

Boiling Point: 212°F.	Specific Gravity (H_2O = 1): 1.4	Autoignition Temperature: N/A	Decomposition Temp.: 300°F.
Vapor Pressure (mm Hg.): H_2O AT R.T.	pH: 7.4	% Volatile by Volume: 31	Magnetism (Milligauss): N/A
Vapor Density (AIR = 1): H_2O VAPOR	Evaporation Rate (Butyl Acetate = 1): N/A	Viscosity: 80,000 cps	Corrosion Rate: N/A
Solubility in Water: MISCIBLE	Melting Point: 32°F.		Temp: Mat. Ref:

Appearance and Odor: WHITE-HEAVY BODY PAINT, SLIGHT ODOR.

Volatile Organic Compound (VOC): 5 grams/LITER

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used): NONE (WATER BASE)

Flammable Limits: N/A | LEL | UEL

Extinguishing Media: N/A

Special Fire Fighting Procedures: N/A

Unusual Fire and Explosion Hazards: NONE

Section V - Reactivity Data

Stability			Conditions to Avoid	Neutralizing Agent
	Unstable			
	Stable	X	NONE KNOWN	

Incompatibility (Materials to Avoid): SLIGHT CORROSIVE EFFECT ON STAINLESS STEEL.

Hazardous Decomposition Products: CARBON MONOXIDE, CARBON DIOXIODE, HYDROGEN CHLORIDE.

Hazardous Polymerization			Conditions to Avoid
	May Occur		
	Will Not Occur	X	NONE KNOWN

Rcvd 10/17/91 Amb.

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME TRANSCO
CLIENT/PROJECT NUMBER 12000-105900
RECEIVED FROM Radian Corp
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1948.12000
DATE RECEIVED 12-15-99
DATE INSPECTED 12-15-99
INSPECTED BY: CBatton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CTNR. INTG Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
DowCorning Part A	NA	Ø	8	Ø	0000406637	✓	Y	GOOD	None	X			Receiving verification only
DC-36548-80	—												
Silicone Foam	—												
DCorning DC-36548-80 Part B	NA	Ø	5	Ø	0000410144	✓	Y	GOOD	None	X			
DowCorning DC-36548-80 Part B	NA	Ø	3	Ø	0000415673	✓	Y	GOOD	None	X			
Silicone Foam	—												

FORM
1/29/93

247 A

247 B

RADIAN CORPORATION

7831 N Nagle Avenue • Morton Grove, IL 60053-2620 • 847 965 4888 • Fax 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/15/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548-80 PART A

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000406637

QUANTITY: 8

CUSTOMER P.O.: 212-98

MANUFACTURER DATE: 11/17/99

EXPIRATION DATE: 11/08/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is [illegible] *Quality Assurance Program Dated April 1, 1993, REV. 2.0.*

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

247 C

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/15/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548-80 PART B

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000415673

QUANTITY: 3

CUSTOMER P.O.: 2/298

MANUFACTURER DATE: 11/24/99

EXPIRATION DATE: 11/13/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. 2.0.

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

247 D

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/15/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548-80 PART B

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000410144

QUANTITY: 5

CUSTOMER P.O.: 2/298

MANUFACTURER DATE: 11/24/99

EXPIRATION DATE: 11/13/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. 2.0.

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

TO EXPEDITE MOVEMENT, AIR FREIGHT SHIPMENT MAY BE DIVERTED TO MOTOR CARRIER UNLESS SHIPPER GIVES OTHER INSTRUCTIONS HEREO

USE TYPEWRITER WHENEVER POSSIBLE
PLEASE COMPLETE ALL UNSHADED AREAS

TAZMANIAN freight forwarding inc.

IATA

For shipment inquiries:
Toll Free:
Phone:
Fax:

Corporate Office
Cleveland Hopkins Int'l Airport
AMF • P.O. Box 811090
Cleveland, OH 44181/1090
(216) 267-7900 OR 1-800-426-0653
FAX (216) 267-7901

DATE	ORIGIN CODE	DEST. CODE	AIR BILL NO.
12-13-11			134751

BILL TO:
☒ SHIPPER ☐ CONSIGNEE
☐ THIRD PARTY

BILLED TO SHIPPER IF NOT MARKED

SHIPPER'S SIGNATURE
(SUBJECT TO TERMS AND CONDITIONS ON REVERSE SIDE)
X

EXTRA CHARGES

SERVICE REQUESTED (check one)

SAME DAY	NEXT DAY	2ND DAY	EXTRA SERV. (check all that apply)
☐ CHARTER	☐ SPEC DEL (extra chg.)	☐ SPEC DEL (extra chg.)	☐ SAT P/U ☐ AFT HRS P/U
☐ N.F.G.	☐ AM SERV (extra chg.)	☐ AM SERV (extra chg.)	☐ SAT DEL ☐ AFT HRS DEL
☐ N.F.O.	☐ BEFORE 5 PM	☐ BEFORE 5 PM	☐ SUN P/U ☐ OTHER ____
☒ EXPED TRUCK	☐ EXPED TRUCK	☐ EXPED TRUCK	☐ SUN DEL ECONOMY SERVICE
☐ OTHER ____	☐ OTHER ____	☐ OTHER ____	3 DAY ☐ 4 DAY ☐

The declared value for carriage of this shipment is agreed and understood to be $50.00 or $0.50 per pound, whichever is greater, unless a higher value is declared below and applicable charges paid thereon.
DECLARED VALUE FOR CARRIAGE
(enter amount) $ _____
(Subject to the terms and conditions on reverse side, the liability of Tazmanian Freight Forwarding., Inc. for loss/damage is as stated above.)

TOTAL EXTRA CHARGES
CHARGEABLE WEIGHT
ZONE | RATE
TOTAL AIR CHARGE
F.C.C.O.D.
C.O.D.
TOTAL CHARGES

SHIPPER
NAME: [illegible] TECHNOLOGIES, INC.
ADDRESS: [illegible] #150
CITY: [illegible] | STATE: TX | ZIP CODE: 77429
SENT BY (NAME/DEPT.): [illegible] | PHONE: 281-372-4040
TAZMANIAN ACCOUNT NO. | REF. NO.

CONSIGNEE
NAME: [illegible]
ADDRESS: 16[illegible] FARM [illegible]
CITY: EDMENCORF | STATE: TX | ZIP CODE: 75112
ATTN: (NAME/DEPT.) [illegible] WHITE FIELDS | PHONE: 972-[illegible]
TAZMANIAN ACCOUNT NO. | REF. NO.

NO. PIECES	DESCRIPTION	WEIGHT	SPECIAL INSTRUCTIONS:	BILL TO THIRD PARTY:
1	SILICONE FOAM MISC [illegible]	200 LBS		

WT. SUBJECT TO CORRECTION

DIMENSIONAL WEIGHT

PCS	L	W	H
1			5

AIR BILL NO. 134751
PICKED UP BY: TAZMANIAN FREIGHT FRWDG OR AGENT
SIGNATURE: [illegible] | NO. PCS: 1 | TIME: [illegible] | DATE: [illegible]

DESCRIBED FREIGHT IN GOOD ORDER EXCEPT AS NOTED
DELIVERED BY
COMPANY
DRIVER

RECEIVED BY (CONSIGNEE'S SIGNATURE): X [illegible]
PLEASE PRINT NAME: Richard Beasley
NO. PCS
DATE:
TIME:

CUBIC INCHES
CUBIC WEIGHT

PAGE (4) CONSIGNEE COPY

247E

247 F

DOW CORNING

Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701

Telephone (270) 737-1881
Fax (270) 737-4568

Certificate of Analysis

Fax(Ship-to: 1034066) (847)965-7841		Date Generated 13Dec99
Delivery Number 81266110	Item Number 000020	Delivery Date 14Dec99
Sales Order Number 734649	Item Number 000020	Sales Order Date 13Dec99
Purchase Order Number 2356		PO Date 13Dec99

Ship-to: 1034066
Quality Assurance Department
TRANSCO PRODUCT INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALL ROADUE
ELMENDORF TX 78112

Our Material 2157241
DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART B,18.1 KG (40 LB) Pail

Customer Material

Batch 0000415673	Shelf Life Expiration Date 13Nov01
Delivery Quantity 4.0 Pail	Date of Manufacture 24Nov99

FAX C OF A TO CHRIS, SHIP EMERY AIR A.M.

Characteristic	Value	Unit of Measure	Lower Limit	Upper Limit
VISCOSITY	67	Poise	50	75
SPECIFIC GRAVITY 25/25 C	1.09		1.05	1.11
APPEARANCE	0			
APPEARANCE	Pass			
SNAP TIME	1.4	min	1.0	2.0
DENSITY	18.1	lb/ft3	14.0	20.0
Flammability - Extinguish Time	<= 10	s		10
Date of Manufacture	11/24/1999			

This is to certify that the above designated material has been tested and did comply with the listed specifications (with listed exceptions) when supplied in original container. The material is subject to the conditions listed on the Dow Corning invoice. The above is a copy of information on file. The lot acceptance data are available for examination. This certificate is valid unsigned.
The characteristics listed above correspond to the CTM (Corporate Test Method) referenced in the Dow Corning Sales Specification.

Internal reference: 1645218

DOW CORNING

Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701

Telephone (270) 737-1881
Fax (270) 737-4568

Certificate of Analysis

Fax(Ship-to: 1034066) (847)965-7841		Date Generated 13Dec99
Delivery Number 81266110	Item Number 000010	Delivery Date 14Dec99
Sales Order Number 734649	Item Number 000010	Sales Order Date 13Dec99
Purchase Order Number 2356		PO Date 13Dec99

Ship-to: 1034066
Quality Assurance Department
TRANSCO PRODUCT INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALL ROADUE
ELMENDORF TX 78112

Our Material 2157233
DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART A,18.1 KG (40 LB) Pail

Customer Material

Batch 0000406637	Shelf Life Expiration Date 06Nov01
Delivery Quantity 8.0 Pail	Date of Manufacture 17Nov99

FAX C OF A TO CHRIS, SHIP EMERY AIR A.M.

Characteristic	Value	Unit of Measure	Lower Limit	Upper Limit
VISCOSITY	61	Poise	40	75
SPECIFIC GRAVITY 25/25 C	1.08		1.05	1.11
APPEARANCE	BLACK UNIFORM VISCOUS FLUID			
APPEARANCE	Pass			
SNAP TIME	1.3	min	1.0	2.0
DENSITY	18.3	lb/ft3	14.0	20.0
Flammability - Extinguish Time	<= 10	s		10

This is to certify that the above designated material has been tested and did comply with the listed specifications (with listed exceptions) when supplied in original container. The material is subject to the conditions listed on the Dow Corning invoice. The above is a copy of information on file. The lot acceptance data are available for examination. This certificate is valid unsigned.
The characteristics listed above correspond to the CTM (Corporate Test Method) referenced in the Dow Corning Sales Specification.

Internal reference: 1645200

247 H

DOW CORNING

Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701

Telephone (270) 737-1881
Fax (270) 737-4568

Certificate of Analysis

Fax(Ship-to: 1034066) (847)965-7841		Date Generated 13Dec99
Delivery Number 81266110	Item Number 000020	Delivery Date 14Dec99
Sales Order Number 734649	Item Number 000020	Sales Order Date 13Dec99
Purchase Order Number 2356		PO Date 13Dec99

Ship-to: 1034066
Quality Assurance Department
TRANSCO PRODUCT INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALL ROADUE
ELMENDORF TX 78112

Our Material 2157241
DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART B,18.1 KG (40 LB) Pail

Customer Material

Batch 0000410144	Shelf Life Expiration Date 13Nov01
Delivery Quantity 4.0 Pail	Date of Manufacture 24Nov99

FAX C OF A TO CHRIS, SHIP EMERY AIR A.M.

Characteristic	Value	Unit of Measure	Lower Limit	Upper Limit
VISCOSITY	64	Poise	50	75
SPECIFIC GRAVITY 25/25 C	1.09		1.05	1.11
APPEARANCE	0			
APPEARANCE	Pass			
SNAP TIME	1.2	min	1.0	2.0
DENSITY	17.8	lb/ft3	14.0	20.0
Flammability - Extinguish Time	2	s		10
Date of Manufacture	11/24/1999			

This is to certify that the above designated material has been tested and did comply with the listed specifications (with listed exceptions) when supplied in original container. The material is subject to the conditions listed on the Dow Corning invoice. The above is a copy of information on file. The lot acceptance data are available for examination. This certificate is valid unsigned.
The characteristics listed above correspond to the CTM (Corporate Test Method) referenced in the Dow Corning Sales Specification.

Internal reference: 1645218

LD02

2471

DOW CORNING

Dow Corning Corporate Center
PO box 994
Midland MI 48686-0994

Telephone (800) 248-2481
Fax (517) 496-6299

Delivery Note

Delivery Number	Issue Date	Shipment Reference
81266110	13Dec99	

Route	Delivery Date
Etown Area to Illinois, 1 Day Air	14Dec99

Terms of Delivery	Shipping Conditions
FOB SHIPPOINT COLLECT	Expedite Airfreight

Mode of Transport	Emergency Call Numbers
Air	DowCorning (888) 335-1331 ChemTrec (800) 424-9300

Ship-to 1034066
TRANSCO PRODUCT INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALL ROADUE
ELMENDORF TX 78112
Attn: GOODS RECEIPT
Telephone (847)965-4850

Sold-to 1034066
RADIAN CORP
7831 NORTH NAGLE AVENUE
MORTON GROVE IL 60053-2712

Shipping point 0049
Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701
Telephone (270) 737-1881
Fax (270) 737-4568

HM	Goods Description	Quantity	Net Weight	Gross Weight

Forwarding Agent:

Sales Order Number: 734649 Standard Order from 13Dec99
Purchase Order Number: 2356 from 13Dec99 Delivery Number: 81266110

FAX C OF A TO CHRIS, SHIP EMERY AIR A.M.

	PLASTIC MAT O/T FOAM,LIQ,NOI 156240 CL/60			
2157233	DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART A,18.1 KG (40 LB) Pail			
Item total: 8.000 Pail				
	Batch: 0000406637	8 Pail	144.8 KG	154.2 KG
	PLASTIC MAT O/T FOAM,LIQ,NOI 156240 CL/60			
2157241	DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART B,18.1 KG (40 LB) Pail			
Item total: 8.000 Pail				
	Batch: 0000410144	4 Pail	72.4 KG	77.1 KG
	Batch: 0000415673	4 Pail	72.4 KG	77.1 KG

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse of the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.....DOW CORNING CORP. (signature of consignor)

Carrier certifies that Emergency Response Information, as required by 49 CFR, Part 172, Sub Part G, is maintained in this transport vehicle.
When Carrier furnished container, carrier certifies that container supplied for this shipment is a proper container for the transport of each commodity named hereon.
Carrier acknowledges that prior to or at the time this shipment was offered for transportation, the shipper provided or affixed the required placards or orange pannels (including prescribed identification numbers) according to applicable regulations for each hazarous material named hereon.
Carrier hereby certifies that he is familiar with all the conditions, representations, notices, and certifications contained here on this document.

DOW CORNING CERTIFIES THAT ALL MATERIAL LISTED ON THIS DOCUMENT COMPLIES WITH THE PUBLISHED SALES SPECIFICATIONS UNLESS OTHERWISE AGREED.

SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE.

Shipped by:

Received by carrier:

Received by customer:

Total Weights: 289.6 KG 308.5 KG

No. of shipping units:

000 Pallet 000 Drum
016 Pail 000 Carton
000 IBC 000 Box
000 Bulk

Carr. Ref:

Carrier: EMERY AIR FREIGHT CORP

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: Radian Corp / TRANSCO
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1946 . 12000
DATE RECEIVED: 12-10-99
DATE INSPECTED: 12-10-99
INSPECTED BY: C Patton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTION	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Dow Corning	NA												Receiving Verification Only
36548 RTV Silicone													
Part A		Q	7	Q	0000406637	Y	Y	GOOD	None	X			
Part B		Q	7	Q	0000410144	Y	Y	GOOD	None	X			

FORM
1/29/93

LD02

DOW CORNING

Dow Corning Corporate Center
PO box 994
Midland MI 48686-0994

Telephone (800) 248-2481
Fax (517) 496-6299

Delivery Note

249

Delivery Number	Issue Date	Shipment Reference
81256554	08Dec99	

Route	Delivery Date
Etown Area to West Texas, 1 Day Air	09Dec99

Terms of Delivery	Shipping Conditions
FOB SHIPPOINT PREPAID AND ADD	Expedite Airfreight

Mode of Transport	Emergency Call Numbers
Air	DowCorning (888) 335-1331 ChemTrec (800) 424-9300

Ship-to 1034066
TRANSCO PRODUCTS INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF TX 78112
Attn: GOODS RECEIPT
Telephone (847)965-4850

Sold-to 1034066
RADIAN CORP
7831 NORTH NAGLE AVENUE
MORTON GROVE IL 60053-2712

Shipping point 0049
Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701
Telephone (270) 737-1881
Fax (270) 737-4568

HM	Goods Description	Quantity	Net Weight	Gross Weight

SEND FREIGHT BILL TO: CORPAY SOLUTIONS, INC. P.O. BOX 195000,BURTON, MI 48519-5000 (NOTE: COPY OF DELVY NOTE MUST ACCOMPANY FRT. BILL)

Forwarding Agent:

Sales Order Number: 728974 Standard Order from 08Dec99
Purchase Order Number: 2348 from 08Dec99 Delivery Number: 81256554

PO 21298

PLASTIC MAT O/T FOAM,LIQ,NOI 156240 CL/60
2157233 DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART A,18.1 KG (40 LB) Pail
Item total: 7.000 Pail
Batch: 0000406637 7 Pail 126.7 KG 135.0 KG

PLASTIC MAT O/T FOAM,LIQ,NOI 156240 CL/60
2157241 DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART B,18.1 KG (40 LB) Pail
Item total: 7.000 Pail
Batch: 0000410144 7 Pail 126.7 KG 135.0 KG

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Subject to Section 7 of conditions of applicable bill of lading, if this shipment is to be delivered to the consignee without recourse of the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.....DOW CORNING CORP. (signature of consignor)

Carrier certifies that Emergency Response Information, as required by 49 CFR, Part 172, Sub Part G, is maintained in this transport vehicle.
When Carrier furnished container, carrier certifies that container supplied for this shipment is a proper container for the transport of each commodity named hereon.
Carrier acknowledges that prior to or at the time this shipment was offered for transportation, the shipper provided or affixed the required placards or orange pannels (including prescribed identification numbers) according to applicable regulations for each hazarous material named hereon.
Carrier hereby certifies that he is familiar with all the conditions, representations, notices, and certifications contained here on this document.

DOW CORNING CERTIFIES THAT ALL MATERIAL LISTED ON THIS DOCUMENT COMPLIES WITH THE PUBLISHED SALES SPECIFICATIONS UNLESS OTHERWISE AGREED.

SUBJECT TO THE TERMS AND CONDITIONS ON THE REVERSE SIDE.

Shipped by:

Received by carrier:

Received by customer:

Total Weights: 253.4 KG 269.9 KG

No. of shipping units:

000 Pallet 000 Drum
014 Pail 000 Carton
000 IBC 000 Box
000 Bulk

Carr. Ref:

Carrier:

250

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/10/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548 80LBS KITS

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000406637

QUANTITY: 7

CUSTOMER P.O.: 21298

MANUFACTURER DATE: 11/17/99

EXPIRATION DATE: 06/11/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. 2.0.

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/10/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548 PART B 80LBS KIT

MANUFACTURER: Dow Corning

LOT NUMBERS: 0000410144

QUANTITY: 7

CUSTOMER P.O.: 21298

MANUFACTURER DATE: 11/24/99

EXPIRATION DATE: 11/13/2001

CUSTOMER PART NUMBER:

The material meets or exceeds aerospace purchase [illegible] requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1990, REV. [illegible].

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

[redacted]

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

21298

12/07/99

☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

252

PURCHASE ORDER

EQ'N NO.	DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
	99/12/07	PP&A	YOUR PLANT	NET 30

TO: RADIAN CORPORATION
7831 NORTH NAGLE
MORTON GROVE IL 60053

VENDOR NO. 70400

BILL Transco Products Inc.
& SHIP TO: OMEGA POINT LABS
16015 SHADY FALLS ROAD
ELMENDORF TX 78112-978

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	ACCOUNT CODE	DESCRIPTION	PRICE/UNIT	TOTAL
	7	80# KITS DOW CORNING SILICONE FOAM ..DELIVERY REQ'D AT DESTINATION.. ASAP ...NOTE.. SEE ATTACHMENT 'A' FOR QUALITY REQUIREMENTS	895.000	6265.00
			TOTAL	6265.00

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED
QUALITY CONTROL REQUIREMENTS...
CONTROL [illegible] DATE 12/7/99

CONSUMPTION	ACCOUNT NO.	REQUIRED FOR	PURCHASING AGENT
☐	GJ-8102		M. Young-Lai

OTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in tripilcate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
21298		RADIAN CORPORATION		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

Rec'd 12/10/99 DMB

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items requested and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

VENDOR: RADIAN CORP

DATE: 12/07/99
P.O. No.: 21298
Q.A. REVIEW: ESHS

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

Description	N/A	REQUIRED
1.) Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.		X
2.) Certified Material Mill Test Report per Specifications Listed. (See Item 1)		
3.) Identify Lot No.'s and Quantities		X
4.) 10CFR 50 Appx-B applicable		X
5.) 10CFR 21 Safety Related applicable	X	
6.) Specific Performance Test Reports		
7.) Other as specified: COPY OF DOW CORNING MATERIAL ANALYSIS AND STANDARD RADIAN C. of C.		

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

Description	N/A	REQUIRED
1.) Each container shall be clearly labeled to identify its contents, MFG. Part No. and TPI P.O. No.		X
2.) The vendor shall supply any special instructions for handling and storage, including shelf life of items.		X
3.) Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
a.) Items shipped free from dirt, oil and moisture		X
b.) Items packaged with water resistant vinyl barrier		X
c.) Items must be packaged in manufacturer		X
d.) Ship in a manner to prevent physical damage to item or packaging		X
e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		X
4.) Other as specified	X	

Rec'd 12/10/99 DMB

DEC 07 '99 10:06 TOTAL P.03

DEC 10 '99 09:32 13124274975 TOTAL P.04 PAGE.04

DOW CORNING

Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701

Telephone (270) 737-1881
Fax (270) 737-4568

Certificate of Analysis

Fax(Ship-to: 1034066) (847)965-7841		Date Generated 08Dec99
Delivery Number 81256554	Item Number 000020	Delivery Date 09Dec99
Sales Order Number 728974	Item Number 000020	Sales Order Date 08Dec99
Purchase Order Number 2348		PO Date 08Dec99

Ship-to: 1034066
Quality Assurance Department
TRANSCO PRODUCTS INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF TX 78112

Our Material 2157241
DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART B,18.1 KG (40 LB) Pail

Customer Material

Batch 0000410144	Shelf Life Expiration Date 13Nov01
Delivery Quantity 7.0 Pail	Date of Manufacture 24Nov99

PO 21298

Characteristic	Value	Unit of Measure	Lower Limit	Upper Limit
VISCOSITY	64	Poise	50	75
SPECIFIC GRAVITY 25/25 C	1.09		1.05	1.11
APPEARANCE	0			
APPEARANCE	Pass			
SNAP TIME	1.2	min	1.0	2.0
DENSITY	17.8	lb/ft3	14.0	20.0
Flammability - Extinguish Time	2	s		10
Date of Manufacture	11/24/1999			

This is to certify that the above designated material has been tested and did comply with the listed specifications (with listed exceptions) when supplied in original container. The material is subject to the conditions listed on the Dow Corning invoice. The above is a copy of information on file. The lot acceptance data are available for examination. This certificate is valid unsigned.
The characteristics listed above correspond to the CTM (Corporate Test Method) referenced in the Dow Corning Sales Specification.

Internal reference: 1645218

DOW CORNING

Dow Corning (MAW) Corporation
U.S. 31 W. South
Elizabethtown KY 42701

Telephone (270) 737-1881
Fax (270) 737-4568

Certificate of Analysis

Fax(Ship-to: 1034066) (847)965-7841		Date Generated 08Dec99
Delivery Number 81256554	Item Number 000010	Delivery Date 09Dec99
Sales Order Number 728974	Item Number 000010	Sales Order Date 08Dec99
Purchase Order Number 2348		PO Date 08Dec99

Ship-to: 1034066
Quality Assurance Department
TRANSCO PRODUCTS INC
C/O OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF TX 78112

Our Material 2157233
DOW CORNING(R) 3-6548 RTV SILICONE FOAM-PART A,18.1 KG (40 LB) Pail

Customer Material

Batch 0000406637	Shelf Life Expiration Date 06Nov01
Delivery Quantity 7.0 Pail	Date of Manufacture 17Nov99

PO 21298

Characteristic	Value	Unit of Measure	Lower Limit	Upper Limit
VISCOSITY	61	Poise	40	75
SPECIFIC GRAVITY 25/25 C	1.08		1.05	1.11
APPEARANCE	BLACK UNIFORM VISCOUS FLUID			
APPEARANCE	Pass			
SNAP TIME	1.3	min	1.0	2.0
DENSITY	18.3	lb/ft3	14.0	20.0
Flammability - Extinguish Time	< = 10	s		10

This is to certify that the above designated material has been tested and did comply with the listed specifications (with listed exceptions) when supplied in original container. The material is subject to the conditions listed on the Dow Corning invoice. The above is a copy of information on file. The lot acceptance data are available for examination. This certificate is valid unsigned.
The characteristics listed above correspond to the CTM (Corporate Test Method) referenced in the Dow Corning Sales Specification.

Internal reference: 1645200

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: Lamemaster
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1945 . 12000
DATE RECEIVED: 12-9-99
DATE INSPECTED: 12-9-99
INSPECTED BY: [illegible]

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	CORD MATL Y/N	CERT. REQ'D Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Lamemastic 77	NA	0	3	0	9909024	Y	Y	Good	None	X			Receiving verification only
5gal. Pails													

FORM
1/29/93

255 A

REL. OR B/O 12-08-99
DATE: . . . . . PREPAY SADD
FREIGHT: . . . . . SUN VALLEY, CA
F.O.B. . . . . UNITED PARCEL / REB11
SHIP VIA: 12-08-99
SHIPPING DATE: . . . 30834
[illegible]PPING NO.: 05
[illegible]ABLE: . . . . . .
CAGE CODE #14439

FLAMEMASTER CORPORATION
CHEM SEAL DIVISION 255 B
11120 Sherman Way
Post Office Box 1458
Sun Valley, California 91353-1458
Telephone (818) 982-1650
Fax: (818) 765-5603

SOLD TO:
TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD.
SUITE 2100
CHICAGOL, IL 60604
ATTN: GREG JAROSZ

SHIP TO:
OMEGA POINT LABS
16015 SHADY FALLS RD
ELMENDORF, TX 78112
ATTN: TRANSCO
PROTECT FROM FREEZING

TERMS: ~~NET 30 DAYS~~ TISA

INVOICE DATE _____ INVOICE NO. _____

ORDERED	BACK ORD.	SHIPPED	UNIT	DESCRIPTION	BATCH NO.	UNIT PRICE	AMOUNT
3	-0-	3	EA	5-GAL PAIL, FLAMEMASTIC \77 MASTIC	9909024		
				PKG DTE: 12/99 EXP DTE: 12/02 SHELF LIFE 3 YEARS			
				STORAGE TEMP.: 40 DEG.F - 90 DEG.F			
				THE PURCHASER OF THIS FIRE PROTECTIVE COMPOSITION IS HEREBY LICENSED UNDER UNITED STATES PATENT 3,642,531 DATED FEBRUARY 15,1972 TO USE THE NAME AS A COATING FOR ELECTRICAL CABLES.!!			
				PROTECT FROM FREEZING			

SPECIAL INSTRUCTIONS: ☒ CERTIFICATIONS ☐ TEST REPORT ☒ MSDS

FAX INVOICE TO TRANSCO

WE CERTIFY THAT THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND CONFORMS TO THE REQUIREMENTS OF LISTED SPECIFICATIONS. TEST DATA PERTAINING TO THIS MATERIAL IS ON FILE AND AVAILABLE FOR INSPECTION UPON REQUEST. CHLOROFLUROCARBONS (CFCs) AND HALONS ARE NOT USED. PRODUCT(S) FREE FROM MERCURY.

QUALITY CONTROL MANAGER

DATE SHIPPED: 12/8/99 CARRIER: UPS RED NO. PACKAGES: 3-CARTONS GROSS WEIGHT: 216 LBS.

PRIOR APPROVAL MUST BE OBTAINED FOR THE RETURN OF ANY MERCHANDISE. RETURN FREIGHT MUST BE PREPAID.

SELLER HAS COMPLIED WITH THE APPLICABLE PROVISIONS OF THE FAIR LABOR STANDARDS ACT OF 1938 AS AMENDED.

CERTIFICATION/PACKING LIST

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME TRANSCO
CLIENT/PROJECT NUMBER 12000-105900
RECEIVED FROM TRANSCO
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1944.12000
DATE RECEIVED 12-9-99
DATE INSPECTED 12-9-99
INSPECTED BY: C Dalton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
18ga SS wire	NA	Ø	5lbs	Ø	18GA. S.S. WIRE	Y	Y	GOOD	None	X			Receiving Verification
Cloth	NA	Ø	25yds	Ø	Intrumercent cloth (PINK/BLUE cloth)	Y	Y	GOOD	None	X			

FORM
1/29/93

255 C

255 D

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE **No.** 4112

1215 E. 12th STREET
STREATOR, IL 61364

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
N/A	GJ-8102	STREATOR, IL	****	

SOLD TO:	SHIP TO:	DATE SHIPPED:
	OMEGA POINT LABORATORIES 16015 SHADY FALLS ROAD ELMENDORF, TX 78112	12/07/99
		ROUTE: UPS BLUE
		COMP. SHIP: **** / PART SHIP NO.

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
1	5 LBS.		18 GA. S.S. WIRE	-0-	5 LBS.
	25 YDS.		INTRUMESCENT CLOTH (PINK/BLUE CLOTH)	-0-	25 YDS.

Rec'd 12/10/99 DMB

SHIPPING COPY

co Products Inc.
Jackson Blvd. Chicago, IL 60604-4166
427-2818 Telex No. 25-6134

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

PURCHASE ORDER NO. 19022
DATE 12/03/98
☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

255 E

PURCHASE ORDER

DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
98/12/03	BESTWAY PREPD & ADYOUR PLANT		NET 30

LMASCO CORP
O BOX 516
TRO WV 25143

VENDOR NO. 89890

BILL & SHIP TO: Transco Products Inc.
1215 East 12th Street
P.O. Box 537
Streator IL 61364

enter the following order, which order expressly limits ance to the terms and conditions stated on this page and on the side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

QUANTITY ORDERED	DESCRIPTION	PRICE/UNIT	TOTAL
000	SQ. FT.;TCO-704 "A" INTRUMESCENT CLOTH; (2025 CLOTH WITH VIMASCO 31-R COATING APPLIED @ 50 OZ PER SQUARE YARD +/-5oz) PINK COLOR; FINISHED ROLLS APPROX = 25 YD. X 40"	3.540	70800.00
50	GALLONS; (10) 5 GALLON PAILS; TCO-705 "A" INTUMESCENT COATING; (31-R); PINK	22.840	1142.00
	SEE ATTACHMENT "A"		
	DELIVERY REQ'D AT DESTINATION: ON OR BEFORE 01/08/99		
		TOTAL	71942.00

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS...
QA APPROVAL [signature] DATE 12/4/98

Previously MXED DO NOT DUPLICATE ORDER

CONSUMPTION	ACCOUNT NO	REQUIRED FOR:	PURCHASING AGENT
☐	KH-7813/PP&L		M. Young Lai

CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
☐		VIMASCO CORP		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 12/02/98
P.O. No. 19022
Q.A. REVIEW:

VENDOR: VIMASCO

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

	Description:	N/A	REQUIRED
1.)	Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.	X	
2.)	Certified Material Mill Test Report per Specifications Listed. (See Item 1)	X	
3.)	Identify Lot No.'s and Quantities		X
4.)	10CFR 50 Appx.-B applicable	X	~~X~~ 12/14/9
5.)	10CFR 21 Safety Related applicable	X	
6.)	Specific Performance Test Reports		
7.)	Other as specified		X

MATERIALS ARE TO BE BATCHED AND MANUFACTURED IN ACCORDANCE WITH YOUR LETTER TO TRANSCO DATED NOVEMBER 17, 1998. TRANSCO MUST PROVIDE PRIOR WRITTEN APPROVAL TO ANY PROCEDURAL OR FORMULA CHANGES.

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

	Description	N/A	REQUIRED
1.)	Each container shall be clearly labeled to identify it's contents, MFG. Part No. and TPI P.O. No.		X
2.)	The vendor shall supply any special instructions for handling and storage, including shelf life of items.		X
3.)	Packaging and Shipping shall meet ANSI N45 2.2 as follows:		
	a.) Items shipped free from dirt, oil and residue		X
	b.) Items packaged with water resistant vinyl barriers		X
	c.) Items must be packaged in container/crates		X
	d.) Ship in a manner to prevent physical damage to item or packaging		X
	e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		X
4.)	Other as specified	X	

255 G

P. O. Box 516
Nitro, W.Va. 25143-0516
(304)755-3328
(800) 624-8288
(304) 755-7153 - fax

Vimasco Corporation

December 28, 1998

Transco Products, Inc.
Chicago, IL

Re: P.O. 19022

CERTIFICATION

This is to certify that Vimasco's Cable Coating 3i-R Pink supplied on the above order conforms to all requirements of the order and was manufactured in accordance with our standard specification and does not contain mercury, mercury compounds or asbestos.

Further, the coated fabric was coated in accordance with Specification for Coating Fiberglass Fabric with Vimasco Cable Coating 3i-R Cable Coating and meets all requirements of this specification.

Also, the technical data delivered herewith are complete, accurate, and complies with all requirements of the contract/purchase order. The data provided represents the actual attributes of the items furnished and indicates full compliance with all applicable specifications and contract/purchase order requirements.

Kathie M. Brown

Kathie M. Brown, QSA

Attachment: 1

We work hard to earn your business

D.B.
12-30-98

INDUSTRIES, INC.
Insulation Products Division
P.O. BOX 99
810 F/M 521 FRESNO, TEXAS 77545 U.S.A.
(281) 437-6000 1 (800) 688-4118 FAX (281) 437-5708

CERTIFICATE OF CONFORMANCE

ACS INDUSTRIES, LP hereby certifies that all material supplied to **ADVANCE THERMAL PRODUCTS, PO #** V15868 **ACS Sales Order No.** N/A, conforms to the material and/or manufacturing specifications and is found to be with the maximum chemical ranges listed below. All parts were manufactured from new materials.

Material : 304Lss .047" Tie Wire

Ni	8.0 – 12.0	Si	1.00
C	0.03	Cr	18.0 – 20.0
Mn	2.00	P	0.045

Roberto Sanchez, QA/QC Manager
ACS INDUSTRIES, LP

Date

Rec'd 12/10/99 JMB

☐ CHICAGO	☐ JACKSONVILLE	☐
☐ STREATOR	☐ TOLEDO	☐
☐ TAFTVILLE	☐ WILLIAMSPORT	☐
☐ LOGANSPORT	☐ BLASDELL	☐ BUCYRUS
☒ BENSENVILLE	☐ OELWEIN	☐ NEWTON FALLS

DATE ORDERED : 6/11/99 255 I
DEL'Y REQUESTED : ASAP
SHIP VIA : Bestway
F.O.B. :
TERMS : N/30
FREIGHT CHARGES: Prepaid or Collect

TO: ACS INDUSTRIES
14211 INDUSTRY ROAD
HOUSTON, TX. 77053

REF. FOR: (JOB NO. OR END USE) Stock
ACCOUNT NO. 2100-20
RESALE X CONSUMPTION

THE FOLLOWING HAS BEEN ORDERED

ITEM NO.	QUANTITY	DESCRIPTION—INDICATE OUR NUMBER IF KNOWN	UNIT PRICE	EXTENSION
1	100 LBS	S.S. WIRE 18 GA .047 (H-511)	2.38 LB	238.00

Date Rec'd.: 06/18/99
Received by:
Signed (Req'n By) Morton
Approved

ABOVE INFORMATION MUST BE FILLED OUT COMPLETELY

REV. FORM NO. 106

PLANT COPY

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME TRANSCO
CLIENT/PROJECT NUMBER 12000-105900
RECEIVED FROM Graybar
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1940 . 12000
DATE RECEIVED 12-7-99
DATE INSPECTED 12-7-99
INSPECTED BY: C Dalton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	CORRO MATL Y/N	CERT. REQ'D Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
1 1/4" galv 90°	12268Q	2	2	Ø	1-1/4-galv-all	Y	Y	GOOD	None	X			
4" galv LB	12268Q	1	1	Ø	4" LB Conduit body	Y	Y	GOOD	None	X			
3 1/2-4 Stl Cond Body Cvr	12268Q	1	1	Ø	4" cover	Y	Y	GOOD	None	X			
4" gasket	12268Q	1	1	Ø	3 1/2-4" Neogasket	Y	X	GOOD	None	X			

FORM
1/29/93

255

16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

255 K

PURCHASE ORDER
12268Q

Date: 12/6/99
Page: 1 of 1

Order From: Graybar Electric
1223 North Hackberry
San Antonio
TX 78208
(210) 227-9241

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112
(210) 635-8100

Vendor No: 0166

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
4" Galv. LB	001	1	Each	$200.42	$200.42
4" Cover	002	1	Each	$11.97	$11.97
Gasket	003	1	Each	$7.74	$7.74
1/4" Galv 90°	004	2	Each	$5.35	$10.70

Received 1 1/4" galv 90° (2) 12/6/99 8

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval [signature]
Date 12-6-99

Please Quote Purchase Order Number on all Correspondence.

Special Instructions:
Please include Certificate of Compliance to Catalog Specs.

Subtotal:	$230.57
Freight:	0.00
Tax Amount:	17.87
Total Value:	$248.40

080625/11-89

DATE 12/06/99 13:3 OUR REFERENCE NO. OM IEH122686 -ORIGINAL INVOICE- X

(SATX)
(SATX)

GraybaR

INVOICE NO. 127-585660
PAYMENT TYPE: OA

RETURN REQUESTED

FROM **GraybaR**
1223 N. HACKBERRY STREET
SAN ANTONIO TX 78202

YOUR ORDER NO. 127706

SOLD TO
BWGBWG***BWG***
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF, TX 78112

SHIP TO
BWGBWG***BWG***
OMEGA POINT LABORATORIES
WILL CALL

SCHED.	DATE SHIPPED AND ROUTING	F.O.B.	RECEIPTS	PKG. LISTS	SELECTED	CHECKED	PACKED
BW	12/06/99 WAREHOUSE-PICKUP T/S-9	S/P-F/A		1			

QUANTITY SHIPPED	CATALOG # / DESCRIPTION	QUANTITY ORDERED	QUANTITY BACKORDERED
	~~ORDER SHIPPED COMPLETE~~		
	-UNIT PRICE- -EXTD AMT-		
2	1 1/4-GALV-ELL 513.000 10.26 CONDUIT 90 DEG RIGID EL WHSE LOC:F 10F3	2	
	SUBTOTAL: 10.26 TX TAX: .79 TOTAL: 11.05		

NUMBER		COMMODITY	POUND
	BOXES	10153	
	PIECES		
	BUNDLES		
	REELS		
	COILS		

SHIPPING CHARGES:
M _____ T _____

RECEIVED BY: _____

THE ABOVE MATERIAL IS BEING PURCHASED FOR AND WILL BE INCORPORATED IN THE _____ JOB. SIGNED _____ AGENT DATE _____

PACKING SLIP/LABEL COPY

PACKING SLIP/LABEL COPY

GBRSF5OS 4/97

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: TRANSCO
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1939 . 12000
DATE RECEIVED: 12-6-99
DATE INSPECTED: 12-6-99
INSPECTED BY: CBatton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	COND. RECD Y/N	CONTAINER INTEGRITY	EXCEPTION!	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
6"X36" cabletray	NA	~~0~~	1	~~0~~	NA	Y	N	Good	None	X			
6"X6" cabletray	NA	~~0~~	1	~~0~~	NA	Y	N	Good	None	X			

FORM
1/29/93

255 M

CONSOLIDATED FREIGHTWAYS

CFWY

CONSIGNEE COPY

INVOICE NUMBER
REFER TO THIS NUMBER

EQUIP. NUMBER	DATE	ORIGIN	CF REVENUE	ADVANCE	BEYOND	DESTINATION	
17-9252	12/02/99	PEI				SNA	562-379775

CONSIGNEE
PRIME TIME SERVICE 12/06/99 17100 LFY
OMEGA POINT LABS PEN
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

SHIPPER'S NUMBER
SN# 2-6201
PO# 4109

INVOICE NUMBER(S)
1206MD
562-379775

ROUTE (CARRIERS, PRO DATE & NO., JUNCTIONS)

SHIPPER
TRANSCO PRODUCTS INC
1215 E 12TH ST
STREATOR, IL 61364

BILL TO

# PCS.	HM	DESCRIPTION OF ARTICLES AND MARKS	WEIGHT (LBS)	RATE	TOTAL CHARGES
2		CRTS TRAYS 11470 CL70	610		
		FUEL SURCHARGE 2.00% JC4-13			
		DRCG WEIGHT AND INSPECTION CHARGE			
2		TOTAL	610		PPD
		AUTH: WEIGHT CORRECTED - PEI 12/03/99			
		CORRECT WEIGHT IS 610 OLD			
		WEIGHT WAS 450^			
		MULTIPLE PO#'S: 4109, GJ-8102			

255N

1:50pm

SHRINK WRAP INTACT? ☒ YES ☐ NO ☐ INSIDE DEL. ☐ CONSTRUCTION SITE ☐ REDEL ☐ SORT # PCS. _____ ☐ LIFT GATE DETENTION TIME: START _____ END _____
OTHER _____

12 6 99

DUNS # 04-411-0690

LEAVE THIS COPY WITH CONSIGNEE

CONSOLIDATED FREIGHTWAYS CORP OF DEL DBA
CONSOLIDATED FREIGHTWAYS
P.O. Box 4488
Portland, Oregon 97208-4488

8

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE **No.** 4109

1215 E. 12th STREET
STREATOR, IL 61364

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
	GJ-8102	STREATOR, IL	****	

SOLD TO:	SHIP TO:	DATE SHIPPED:
	OMEGA POINT LABORATORIES 16015 SHADY FALL ROAD ELMENDORF, TX 78112	12/02/99
		ROUTE: CF PRIME TIME
		COMP. SHIP: **** / PART SHIP NO.

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
			BILL OF LADING 2-6201		
1	1 LOT		CABLE TRAY MATERIAL	-0-	1 LOT

SHIPPING COPY

255 0

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME TRANSCO
CLIENT/PROJECT NUMBER 12000-105900
RECEIVED FROM HILTI
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1938 . 12000
DATE RECEIVED 12-3-99
DATE INSPECTED 12-3-99
INSPECTED BY: Dalton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY R.O.	I.D. NO.	COND MATL Y/N	CERT. REQ'D Y/N	CONTAINER INTEGRITY	EXCEPTION!	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
1/4"X3/4" KWIK-BOLT	NA	X	200	X	00045361 KB11 1/4"X3/4"	Y	N	GOOD	None	X			Receiving Verification Only

FORM
1/29/93

255 P

255 Q

:404 S. 122 E. AVE.
TULSA, OK 74146

5327616

SHIP TO
TRANSCO PRODUCT INC
OMEGA PT LABS
[redacted]015 SHADY FALLS RD
[redacted]MENDORF, TX 78112

Att MR JAROSZ (312) 427-2818

Cust P.O. #21271

5404 S. 122 E. AVE.
TULSA, OK 74146

SHIP TO
TRANSCO PRODUCT INC
OMEGA PT LABS
16015 SHADY FALLS RD
ELMENDORF, TX 78112

Att MR JAROSZ (312) 427-2818

Cust P.O. #21271

ORDER DATE	ORDER #	SLS #	SLS NAME	SHIP LOC.	
02-DEC-99	14307179	1370	BROOKS, TODD 604103	100	Deliver By 03-DEC-9

ACCT. #	ACCT. NAME AND CUSTOMER PURCHASE ORDER NO.	DDAATT
6859297	TRANSCO PRODUCT INC 21271	604103

Pick Slip:5327616
Batch :7742757
Printed :02-DEC-99 10:21
Booked :02-DEC-99 10:19
Priority : AM DELIVERY 10:3
Frt.Terms: HILTI PAYS
Ship Via : FED EX

SALES/PRODUCT INQUIRIES: CALL 1-800-879-8000

MATT WILLIAMSON X6184

LINE #	ITEM #	ITEM DESCRIPTION	Qty Ordered	Unit	Pcs/ Unit	Qty Shipped	Weight	Bin Locator
	00045361	KBII 1/4" x 3 1/4" Kwik-Bolt Stud Anchor	2	BOX	100	2	10.4	115-51-39-01
		Total Estimated Net Weight (Lb) :					10.4	
		[redacted]K ORDERED ITEMS WILL NOT APPEAR ON THIS SHIPPER.						
		[redacted]U WILL RECEIVE BACK ORDERED ITEMS ON ANOTHER SHIPPER.						

For Internal use only

Received by:
Title:

Date Received:

Shipment Mode

[redacted] Local ☐ Bus
☐ Truck ☐ Air
☐ UPS ☐ Walk in

Carrier
Bill of Lading
Freight Cost

Charge to Customer
☐ Yes ☐ No

No of packages: 1
Weight lbs ozs
Date shipped
Picked by Checked by
Packed by

:2026 00096450 (1-99) PACKING SLIP SUBJECT TO TERMS AND CONDITIONS ON REVERSE SIDE

255 R

5404 S. 122 E. AVE.
TULSA, OK 74146

5327616

SHIP TO
TRANSCO PRODUCT INC
OMEGA PT LABS
15015 SHADY FALLS RD
ELMENDORF, TX 78112

Att MR JAROSZ (312) 427-2818

Cust P.O. # 21271

5404 S. 122 E. AVE.
TULSA, OK 74146

SHIP TO
TRANSCO PRODUCT INC
OMEGA PT LABS
15015 SHADY FALLS RD
ELMENDORF, TX 78112

Att MR JAROSZ (312) 427-2818

Cust P.O. # 21271

ORDER DATE	ORDER #	SLS #	SLS NAME	SHIP LOC.	
02-DEC-99	14307179	1370	BROOKS, TODD 604103	100	Deliver By 03-DEC-9-

ACCT. #	ACCT. NAME AND CUSTOMER PURCHASE ORDER NO.	DDAATT
5858297	TRANSCO PRODUCT INC 21271	604103

Pick Slip: 5327616
Batch : 7742767
Printed : 02-DEC-99 10:21
Booked : 02-DEC-99 10:19
Priority : AM DELIVERY 10:3
Frt.Terms: HILTI PAYS
Ship Via : FED EX

SALES/PRODUCT INQUIRIES: CALL 1-800-879-8000

MATT WILLIAMSON X6184

NE #	ITEM #	ITEM DESCRIPTION	Qty Ordered	Unit	Pcs/ Unit	Qty Shipped	For Internal use only: Weight	Bin Locator
	00045361	KBII 1/4" x 3 1/4" Kwik-Bolt Stud Anchor	2	BOX	100	2	10.4	115-51-39-01
		Total Estimated Net Weight (Lb) :					10.4	

K ORDERED ITEMS WILL NOT APPEAR ON THIS SHIPPER.
YOU WILL RECEIVE BACK ORDERED ITEMS ON ANOTHER SHIPPER.

Received by:
Title:

Date Received:

Shipment Mode
- [x] Local
- [ ] Bus
- [ ] Truck
- [ ] Air
- [ ] UPS
- [ ] Walk in

Carrier
Bill of Lading
Freight Cost

Charge to Customer
- [ ] Yes
- [ ] No

No of packages: 1
Weight ____ lbs ____ ozs
Date shipped
Picked by D Checked by
Packed by

2026 00096450 (1-99) COPY SUBJECT TO TERMS AND CONDITIONS ON REVERSE SIDE

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: TRANSCO
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1937 . 12000
DATE RECEIVED: 12-2-99
DATE INSPECTED: 12-2-99
INSPECTED BY: C Batten

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
FIRE BOXES 16ga	NA	Ø	1	Ø	24"X24"X12"	Y	N	GOOD	None	X			Receiving verification only
	NA	Ø	1	Ø	12"X12"X6"	Y	N	GOOD	None	X			
	NA	Ø	1	Ø	10"X10"X8"	Y	N	GOOD	None	X			

FORM
1/29/93

255's

255 T

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE **No.** 4108

1215 E. 12th STREET
STREATOR, IL 61364

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
	GJ-8102	STREATOR, IL	****	

SOLD TO:	SHIP TO:	DATE SHIPPED:
	OEMGA POINT LABORATORIES 16015 SHADY FALLS ROAD ELMENDORF, TX 78112	12/01/99
		ROUTE: UPS RED
		COMP. SHIP: **** / PART SHIP NO.

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
1	3		FIRE BOXES	-0-	3

Recd 12/2/99

SHIPPING COPY

OMEGA POINT LABORATORIES

Client Name: TRANSCO

Page: 1 of 255 u

Client #: 12000 Project #: 105900

Date: 12-2-99

Description: Junction Boxes

Name: C Patton

RR# 1937

Box 1 - 24" X 24" X 12"

Box 2 - 12" X 12" X 6"

Box 3 - 10" X 10" X 8"

16 ga..

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME: TRANSCO
CLIENT/PROJECT NUMBER: 12000-105900
RECEIVED FROM: Graybar
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1936-12000
DATE RECEIVED: 12-1-99
DATE INSPECTED: 12-1-99
INSPECTED BY: O Bottom

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND. MATL Y/N	CERT. INCO Y/N	CONTAINER INTEGRITY	EXCEPTION	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
4" galv conduit	12260Q	40'	40'	Q	4-Galv Conduit	Y	Y	Good	None	X			
4" galv 90°		2	2	Q	4-galv-ELL								
4" galv ~~Elbow~~ coupling 12-1-99		4	4	Q	4-galv-coup								
1" galv conduit		20'	20'	Q	1-galv-conduit								
1" galv 90°		1	1	Q	1-GALV-ELL								
1" galv coupling		2	2	Q	1-galv-coup								
1¼" galv conduit		30'	30'	Q	1¼-galv-conduit								
1¼" galv 90°		~~4~~ 2 12-1-99	~~4~~ 2 12-1-99	Q	1¼-galv ELL								
1¼" galv coupling	✓	~~8~~ 4 12-1-99	~~8~~ 4 12-1-99	Q	1¼galv-coup	✓	✓	✓	✓	✓			
1" galv conduit		20'	20'	Q	1-galv conduit								
1" galv 90°		1	1	Q	1-gal ELL								
1" galv coup	✓	2	2	Q	1-galcoup	✓	✓	✓	✓	✓			

FORM
1/29/93

255 V.

255 W

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
12260Q

Date: 11/30/99
Page: 1 of 1

Order From: Graybar Electric
1223 North Hackberry
San Antonio
TX 78208
(210) 227-9241

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112
(210) 635-8100

Vendor No: 0166

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
1" Conduit ridged galvanized	001	40	Feet	$1.06	$42.40
1" Galvanized 90*	002	2	Each	$3.57	$7.14
Galvanized couplings	003	4	Each	$1.08	$4.32
1 1/4" Conduit ridged galvanized	004	30	Feet	$1.40	$42.00
1 1/4" Galvanized 90*	005	2	Each	$5.13	$10.26
1 1/4" Galvanized couplings	006	4	Each	$1.35	$5.40
4" Conduit ridged galvanized	007	40	Feet	$6.86	$274.40
4" Galvanized 90*	008	2	Each	$45.87	$91.74
4" Galvanized couplings	009	4	Each	$9.19	$36.76

See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements.

QA Approval C Patton
Date 11-30-99

Please Quote Purchase Order Number on all Correspondence

Special Instructions:
Please include Certificate of Compliance to Catalog Specs.

Subtotal:	514.42
Freight:	0.00
Tax Amount:	39.87
Total Value:	$554.29

080625/11-89

DATE 11/30/99 OUR REFERENCE NO. OM1EH122600 X

14:26

RETURN REQUESTED

GraybaR (SATX)
(SATX)

INVOICE NO. 127-564634
PAYMENT TYPE: OA

FROM GraybaR 1223 N. HACKBERRY STREET
SAN ANTONIO TX 78202

YOUR ORDER NO.
122600

SOLD TO
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF, TX 78112

SHIP TO
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF TX 78112

SHIP TO

SCHED.	DATE SHIPPED AND ROUTING	F.O.B.	RECEIPTS	PKG. LISTS	SELECTED	CHECKED	PACKED
OA	12/01/99 GRAYBAR TRUCK - AH (T)	S/P-F/A		1			

QUANTITY SHIPPED	CATALOG # / DESCRIPTION	QUANTITY ORDERED	QUANTITY BACKORDERED
	ORDER SHIPPED COMPLETE		
40 T	4-GALV CONDUIT RIGID CONDUIT WHSE LOC:Q01A3 W01E4 W01D2	40	
2	4-GALV-ELL CONDUIT 90 DEG RIGID ELBOW WHSE LOC:F10G3	2	
4	4-GALV-COUP CONDUIT RIGID COND COUPL WHSE LOC:E08H5	4	
20 T	1-GALV CONDUIT RIGID CONDUIT WHSE LOC:Q01B2 W02B2	20	
1	1-GALV-ELL CONDUIT 90 DEG RIGID ELBOW WHSE LOC:F10F3	1	
2	1-GALV-COUP CONDUIT RIGID COND COUPL WHSE LOC:E08H4	2	
	FORWARD		

NUMBER		COMMODITY	POUN
1	BOXES		
11	PIECES		
	BUNDLES		
	REELS		
	COILS		

SHIPPING CHARGES:

M _____ T _____

RECEIVED BY: _____

THE ABOVE MATERIAL IS BEING PURCHASED FOR AND WILL BE INCORPORATED IN THE _____ JOB. SIGNED _____ AGENT-DATE _____

PACKING SLIP/LABEL COPY

GPBSF5OS 4/97

255 X

DATE 11/30/99 14:26 OUR REFERENCE NO. OM1EH122600 X

RETURN REQUESTED

GraybaR (SATX) (SATX)

INVOICE NO. 127-584634
PAYMENT TYPE: OA

FROM GraybaR 1223 N. HACKBERRY STREET SAN ANTONIO TX 78202

YOUR ORDER NO. 122600

SOLD TO
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF, TX 78112

SHIP TO
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF TX 78112

PAGE 002

SCHED.	DATE SHIPPED AND ROUTING	F.O.B.	RECEIPTS	PKG. LISTS	SELECTED	CHECKED	PACKED
6A	12/01/99 GRAYBAR TRUCK - AM (T)	S/P-F/A		1	R		

QUANTITY SHIPPED	CATALOG # / DESCRIPTION	QUANTITY ORDERED	QUANTITY BACKORDERED
30 FT	1-1/4-GALV CONDUIT RIGID CONDUIT WHSE LOC:Q01A9 W02E4	30	
4	1-1/4-GALV-COUP CONDUIT RIGID COND COU WHSE LOC:E08H4	4	
2	1-1/4-GALV-ELL. CONDUIT 90 DEG RIGID EL WHSE LOC:F10F3	2	

NUMBER		COMMODITY	POUND
	BOXES		
	PIECES		
	BUNDLES		
	REELS		
	COILS		
			255 Y

SHIPPING CHARGES:

M _____ T _____

RECEIVED BY: _____

THE ABOVE MATERIAL IS BEING PURCHASED FOR AND WILL BE INCORPORATED IN THE _____ JOB. SIGNED _____ AGENT DATE _____

PACKING SLIP/LABEL COPY

SF50S 4/97

DATE 11/30/99 OUR REFERENCE NO. OM1EH12260Q X
15:47

RETURN REQUESTED

(SAT)
(SA,X)

GraybaR

INVOICE NO. 127-584664
PAYMENT TYPE: OA

FROM **GraybaR** 1223 N. HACKBERRY STREET
SAN ANTONIO TX 78202

YOUR ORDER NO.
12260Q

SOLD TO
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF, TX 78112

SHIP TO
OMEGA POINT LABORATORIES
16015 SHADY FALLS RD
ELMENDORF TX 78112

SCHED.	DATE SHIPPED AND ROUTING	F.O.B.	RECEIPTS	PKG. LISTS	SELECTED	CHECKED	PACKED
6A	12/01/99 GRAYBAR TRUCK - AM (1)	S/P-F/A		1			

QUANTITY SHIPPED	CATALOG # / DESCRIPTION	QUANTITY ORDERED	QUANTITY BACKORDERED
	ORDER SHIPPED COMPLETE		
20	1-GALV. CONDUIT RIGID CONDUIT WHSE LOC:Q01B2 W02B2	20	
1	1-GALV-ELL CONDUIT 90 DEG RIGID ELBOW WHSE LOC:F10F3	1	
2	1-GALV-COUP CONDUIT RIGID COND COUPL WHSE LOC:E08H4	2	

NUMBER		COMMODITY	POUNDS
1	BOXES		
	PIECES		
1	BUNDLES		
	REELS		
	COILS		

SHIPPING CHARGES:

M _____ T _____

RECEIVED BY: _____

THE ABOVE MATERIAL IS BEING PURCHASED FOR AND WILL BE INCORPORATED IN THE _____ JOB. SIGNED _____ AGENT-DATE _____

PACKING SLIP/LABEL COPY

G-BSF50S 4/97

255 N

255 AA

GraybaR

P. O. BOX 8258
SAN ANTONIO, TX 78208

W. M. HOLCOMB
Branch Manager
Phone 210-227-9241
Fax 210-227-5185

Omega Point Laboratories
16015 Shady Falls Rd.
Elmendorf, TX 78112

Reference P.O.# 12260Q

Gentleman:

We hereby certify that the items supplied on this order conform to applicable standards and specifications.

Jim Chavez
Quality Control Representative

1223 N. HACKBERRY STREET, SAN ANTONIO, TEXAS 78202

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME TRANSCO
CLIENT/PROJECT NUMBER 12000-105900
RECEIVED FROM VC Summer Nuclear Station
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1935 - 12000
DATE RECEIVED 11-30-99
DATE INSPECTED 11-30-99
INSPECTED BY: [illegible]

ITEM DESCRIPTION	P.O. NO.	QUANTITY			I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE			REMARKS
		Order	Rec'd	B.O.						Accept	Hold	Reject	
See attached pages													See attached pages

FORM
1/29/93

255 AB

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

Original OPL-QA/QC 11-30-99

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS Shipped	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2 ✓	48-2790-0273-00	4" galvanized conduit coupling	NN	2			✓
2	6 ✓	48-2790-0021-00	4" galvanized conduit bushing	NN	6			✓
3	4 ✓	48-2790-0215-00	4" conduit locknut	NN	4			✓
4	20' ✓	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		✓
5	33' ✓	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		✓
6	2 ✓	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			✓
7	6 ✓	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			✓
8	4 ✓	48-2790-0209-00	1.25" conduit locknut	NN	4			✓
9	1 ✓	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			✓
10	30' ✓	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		✓
11	2 ✓	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			✓
12	4 ✓	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			✓
13	35' ✓	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			✓
14	3 ✓	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			✓
15	4 ✓	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			✓
16	4 ✓	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			✓
17	200' ✓	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Box	2 Box	RC2C1 & RC4D2	961568407
18	200' ✓	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Box	4 Box	RA3B1	9904205002 48
19	642' ✓	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	✓

255 AC

Dalton
OPL
QA/QC
11-30-99

20	2	70-8155-0007-13	18 gauge galvanized plate, 4'x8' sheet	NN	80 sq ft		BK24C1	✓
21	72	59-9229-0319-00	1/4" dia. fender washer	NN	40			✓
22	20	13-1112-0129-13	Cable, SCE&G BM EK- A1C	NN	20FT			✓
23	40	13-1112-0130-13	Cable, SCE&G BM EK- A1E	NN	40FT			✓
24	200	13-1112-0041-13	Cable, SCE&G BM EK- A3H	NN	200FT			✓
25	216	13-1112-0013-13	Cable, SCE&G BM EK- A3J	NN	~~245FT~~ 216			✓
26	400	13-1112-0078-12	Cable, SCE&G BM EK- B1H	NN	430 FT			✓
27	400	13-1112-0079-00	Cable, SCE&G BM EK- B1J	NN	~~376FT~~	400FT		✓
28	32	13-1112-0080-00	Cable, SCE&G BM EK- B1K	NN	32FT			✓
29	20	13-1112-0047-00	Cable, SCE&G BM EK- B1L	NN	20FT			✓
30	560	13-1112-0014-13	Cable, SCE&G BM EK- C1A	NN	600FT			✓
31	560	13-1112-0037-13	Cable, SCE&G BM EK- C6C	NN			Problem: none available. C6A(168') and C6B (100'), **HOLD**	

Page ___ of ___

ES APPROVAL [signature] 11/21/99
Signature /Date

255 AD

VCS FORM NO. 93
REV. 6/8/95

255 A

SOUTH CAROLINA ELECTRIC AND GAS COMPANY
V. C. Summer Nuclear Station
STORES REQUISITION

№ 091584

WORK DOCUMENT: _____ SAFETY RELATED: _____

EQUIPMENT NO. _____ QUALITY RELATED: _____ NNS: _____

WO / MBJO _____ ACCT.# _____ DIST.# _____ COST# _____ CO.# _____ NOE # _____ DEPT.# _____

PART NUMBER	DESCRIPTION	P.O.	REQUIRED	ISSUED	LOCATION	IIR TAG NO.
59-9229-0319-00	Washers Fender 1/4"		40	40	✓	9804140929
54-8408-0012-13	Clamp Unistrut 1/4"	Q280830	4	4		$61516-2142
54-8408-0013-13	" " 1"	Q280830	4	4		$60858-21429
54-8408-0009-13	" " 4"	SN-10778	2	2		$84942-21424
48-2790-0209-00	Locknut 1 1/4"	F337111-2	4	4		961023173
48-2790-0015-00	Bushing 1 1/4"	NN705652	6	6		9903031344
48-2790-0267-00	Coupling 1 1/4"	NN703907-4	2	2		9807281448
48-2790-0014-00	Bushing 1"	NN705652-12	4	4		9903031341
48-2790-0266-00	Coupling	NN707084-1	2	2	✓	9907300851
48-2790-0313-00	Conduiet 1 1/4"	NN705819-2	1	1		9903291607

Approved _____ Date _____ Issued _____ Date _____ Received _____ Date _____

VCS FORM NO. 93
REV. 6/8/95

SOUTH CAROLINA ELECTRIC AND GAS COMPANY
V. C. Summer Nuclear Station
STORES REQUISITION

№ 091520

WORK DOCUMENT: _____ SAFETY RELATED: _____

EQUIPMENT NO. _____ QUALITY RELATED: _____ NNS: _____

WO / MBJO _____ ACCT.# _____ DIST.# _____ COST# _____ CO.# _____ NOE # _____ DEPT.# _____

PART NUMBER	DESCRIPTION	P.O.	REQUIRED	ISSUED	LOCATION	IIR TAG NO.
48-2790-0215-00	Locknut 4"	NN700728-5	4	4		9708260806
48-2790-0273-00	Coupling 4"	X	2	2		18296
48-2790-0021-00	Bushing 4"	X	6	6		9708120749

Approved _____ Date _____ Issued _____ Date _____ Received _____ Date _____

255AF

South Carolina Electric & Gas Company
VIRGIL C. SUMMER NUCLEAR STATION
Hwy. 215, P.O. Box 88 — Jenkinsville, SC 29065
(803) 345-5209

SAFETY RELATED _____
QUALITY RELATED _____
NON-SAFETY _____

SHIPPING REPORT

No. ~~11-29-9~~ QP10879

DATE 11-29-99

SHIPPER:

South Carolina Electric & Gas Company
V.C. Summer Nuclear Station
Hwy. 215 — P.O. Box 88
Jenkinsville, SC 29065

SHIP TO:

Omega Point Lab,
16015 Shady Fall Rd
Elmendorf, Tx. 78112-9784
210-635-8100

Shipment Requested by MIKE KANNER

Shipment Authorized by AZONIA BOYARD

Date Shipped _____

Req. # _____

P.O. # _____

Shipped-prepaid ☑ Collect ☐

Return Authorization # _____

Via-R.R. Freight ☐ Motor Freight ☑ Air Freight ☐ Parcel Post ☐ UPS ☐ Our Truck ☐

Other _____

Reason for Shipping Transco Fire Test

Originating Carrier _____

Transportation Receipt # _____ Date _____

STOCK/NON-STOCK NUMBER	QTY.	UNIT	DESCRIPTION	
			SEE ATTACHED SHEETS	

DATE _____ STOREKEEPER/DATE [signature] 11-29-99

Packaging/Shipping Level _____

Form # 88-2662-0007-03 (Rev. 12 9

LANDSTAR RANGER

UNIFORM STRAIGHT BILL OF LADING

255 AG

CLS 213487

Carrier's Pro No. _____
Shipper's Bill of Lading No. _____
Consignee's Reference/PO No. _____
Carrier's Code (SCAC) _____

Name of Carrier LANDSTAR RANGER

RECEIVED, subject to individually determined rates or contracts that have been agreed upon in writing between the carrier and shipper, if applicable, otherwise to the rates, classifications and rules that have been established by the carrier and are available to the shipper, on request;

From SCE&G V.C. SUMMER STATION Date 11-29-99
Street HWY 215 City JENKINSVILLE County FAIRFIELD State SC Zip 29065

the property described below, in apparent good order, except as noted (contents and condition of contents of packages unknown) marked, consigned, and destined as shown below, which said carrier agrees to carry to destination, if on its route, or otherwise to deliver to another carrier on the route to destination. Every service to be performed hereunder shall be subject to all the conditions not prohibited by law, whether printed or written, herein contained, including the conditions on the back hereof, which are hereby agreed to by the shipper and accepted for himself and his assigns.

Consigned to OMEGA POINT LAB. PHONE # 210-635-8100
On Collect on Delivery Shipments, the letters "COD" must appear before consignee's name.

Destination Street 16215 SHADY FALLS ROAD
City ELMENDORF County _____ State TEXAS Zip 78112-9784
Delivering Carrier LANDSTAR RANGER Trailer No. 442298

Additional Shipment Information
Unless a greater value is specified below, the liability of the carrier for damage or loss to the goods shall be released to the lesser of $2.50 per pound or $100,000 per truckload shipment (or $1.00 per pound/$50,000 per truckload shipment for shipments of used goods), not to exceed the actual loss.

Collect on Delivery $ _____ and remit to: _____
Street _____ City _____ State _____

C.O.D. charge to be paid by: Shipper ☑ Consignee ☐

Handling Units No. Type	Packages No. Type	✪ HM	Kind of Package, Description of Articles, Special Marks and Exceptions (Subject to correction)	Weight (Subject to Correction)	Class or Rate Ref. (For Info. Only)	Cube (Optional)
1	LT		CABLE + MATERIAL			
			FOR TRANSCO FIRE TEST			
			SEAL # 0004577			

✪ Mark "X" to designate Hazardous Materials as defined in DOT Regulations.

NOTE (1) Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property as follows:

"The agreed or declared value of the property is specifically stated by the shipper to be not exceeding _____ per _____."

NOTE (2) Liability Limitation for loss or damage on this shipment may be applicable. See 49 U.S.C. § 14706(c)(1)(A) and (B).

NOTE (3) Commodities requiring special or additional care or attention in handling or stowing must be so marked and packaged as to ensure safe transportation with ordinary care. See Sec. 2(e) of NMFC Item 360.

Freight charges are PREPAID unless marked collect.
CHECK BOX IF COLLECT ☐

FOR FREIGHT COLLECT SHIPMENTS:
If this shipment is to be delivered to the consignee, without recourse on the consignor, the consignor shall sign the following statement:
The carrier may decline to make delivery of this shipment without payment of freight and all other lawful charges.
_____ (Signature of Consignor)

Notify if problem enroute or at delivery _____ (for informational purposes only)
Name Fax No. Tel. No.

Send freight bill to: _____
Company Name City Street State Zip

Shipper _____ Carrier LRGR
Per _____ Per _____ Date 11/29/99

Shipper Certification	Carrier Certification
This is to certify that the above named materials are properly classified, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the DOT. Per _____ Date _____	Carrier acknowledges receipt of packages and required placards. Carrier certifies emergency response information was made available and/or carrier has the DOT emergency response guidebook or equivalent document in the vehicle. Per _____ Package Nos. _____ Date _____

©ATA 1997 American Trucking Associations. Reproduced with permission. Only carriers participating in the National Motor Freight Classification at the time the transportation occurs may use this Bill of Lading.

FORM NO. R-943-4619-010-819 (R-10/98)

SHIPPING ORDER

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME Omega Point Lab
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM PMC
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1831 . OPL
DATE RECEIVED 10-1-98
DATE INSPECTED 10-5-98
INSPECTED BY: [illegible]

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. REC'D Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Teflon TCWire	11383Q	~~0~~	5,255'	0	KK-TA/TA-24	Y	Y	Good	None	X			Original RR # 1824 for 5,500' Teflon Spool # 24554-2 for this 5,255' DK' left.

FORM
1/29/93

256

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11383 Q

Date:7/30/98
Page: 1 of 1

Order From: PMC
680 Hayward Street
Manchester
NH 03103
603-622-3500

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112-9784
(210) 635-8100

Vendor No: 0024

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Teflon TC Wire KK-TA/TA-24	001	20.00	Thousand	$350.00	$7,000.00
Calibration Services	002	1.00	Each	105.00	105.00
Fiberglass TC Wire KK-FB/FB-24	003	20.00	Thousand	182.00	3,640.00
Calibration Services	004	1.00	Each	207.00	207.00

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements"
QA Approval C Sutton
Date 7-30-98

9/15/98
Received 5.500' teflon TC Wire
Receiving Report #1824

10/1/98.
Received 5.255' teflon TC Wire
Receiving Report #1831

CALIBRATION CERT. REQUIREMENTS
1. Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Subtotal:	$10,952.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$10,952.00

Special Instructions:
Please provide calibration services per attached Material Purchasing Specification and QA Requirements.

OMEGA POINT LABORATORIES
MATERIAL PURCHASING SPECIFICATIONS

SPECIFICATION NUMBER: MS-- 113830-OPL

VENDOR: PMC

VENDOR PRODUCT NUMBER: KK-TA/TA-24

PRODUCT DESCRIPTION: Teflon Coated Thermocouple Wire

Material as defined above shall be provided in accordance with the Critical Characteristics as listed below:

TEST	DESCRIPTION	SPECIFICATION RANGES MINIMUM	MAXIMUM
ASTM E230-93	Std. Temperature-EMF Tables for Standardized Thermocouples	Temp. Range +32°F to +545°F Special Limits of Error ±2°F Temp. Range +545°F to 2300°F Special Limits of Error ±.4%	

QUALITY ASSURANCE REQUIREMENTS

1.0 QUALITY PROGRAM

Seller shall furnish this item in accordance with Quality Program approved by Omega Point Laboratories. Material specified herein is to be produced and tested in accordance with vendor quality standards, methods, guidelines and manufacturing instructions as defined in that Quality Program.

2.0 QUALITY VERIFICATION

Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

Document Review - Final acceptance shall be based on satisfactory review of required certifications and/or supporting documents.

3.0 CERTIFICATIONS

3.1 Certification that supplied materials comply with this material specification and listing Critical Characteristics shall be provided. This certificates shall reference Omega Point Labs purchase order number and specification number for all material furnished under this specification. This Certification shall be signed by the appropriate vendor representative.

3.2 The material furnished under this specification shall be a product that complies with the following:

3.2.1 Has been tested and passed all tests specified herein.

3.2.2 Manufacturing methods for this material have not changed. Vendor will advise Omega Point in writing of any changes in the manufacturing prior to material manufacture.

3.2.3 Raw materials used in the manufacture of this material meet Vendor specifications.

4.0 AUDITS/RIGHTS OF ACCESS

Omega Point Labs reserves the right to audit your facility to verify compliance with the purchase order and specification requirements with a minimum ten (10) day notice.

5.0 IDENTIFICATION

Seller shall identify each item with a unique traceability number by physical marking or tagging. These identification numbers shall be traceable to certifications and packing lists.

6.0 PACKING/SHIPPING

All materials shall be packaged in air tight, moisture free containers and shall be free of foreign substances such as dirt, oil, grease or other deleterious materials.

All materials shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping.

QUALITY ASSURANCE APPROVAL

C. Patton

Title Quality Assurance Mgr. Assistant

Date 7-30-98

AVL Verification

Class: B

OMEGA POINT LABORATORIES

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #245542

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/24/98
Cust PO#: 11383Q
Job #: 38725-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5255'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	+0.4	-0.1
600	-1.5	-1.9
800	-2.7	-3.0
1000	-2.3	-2.7

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525S
SERIAL #:306172
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306179
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257880

9/24/98
QUALITY ASSURANCE TECHNICIAN DATE

9/24/98
QUALITY ASSURANCE MANAGER DATE

PFA Insulated Thermocouple Wire

PRODUCT CODE: TA/TA

Our customers have grown to expect only the highest quality products from PMC. We are continuously committed to meet the specific needs of industry and our customers. This construction includes Teflon* PFA insulataion extruded on the single conductors which are then laid parallel and jacketed with Teflon PFA.

Teflon PFA (perfluoroalkoxy) was released in 1972 by Dupont. It possesses similar properties of the other Teflon products such as outstanding electrical characteristics, resistance to virtually all chemicals and excellent flame resistance.

PFA is a true thermoplastic material extrudable by conventional means, and available in long continuous lengths. This construction provides flexibility and toughness with stress crack resistance, resistance to weather, non-aging characterisics, and low coefficient of friction for ease of pulling through conduit.

Like TFE, suggested upper continuous temperature is 500°F (260°C), however, it does not have TFE's solder iron resistance.

The thermocouple grade products shown are used to form temperature sensors and the extension grade products become the interconnecting link in the temperature sensing system.

You will find our qualified sales and engineering staff eager to assist in selecting a design to meet the requirements of your specific application. Variations of this construction are available upon request, including aluminum Mylar* to reduce noise problems found in so many of today's plants.

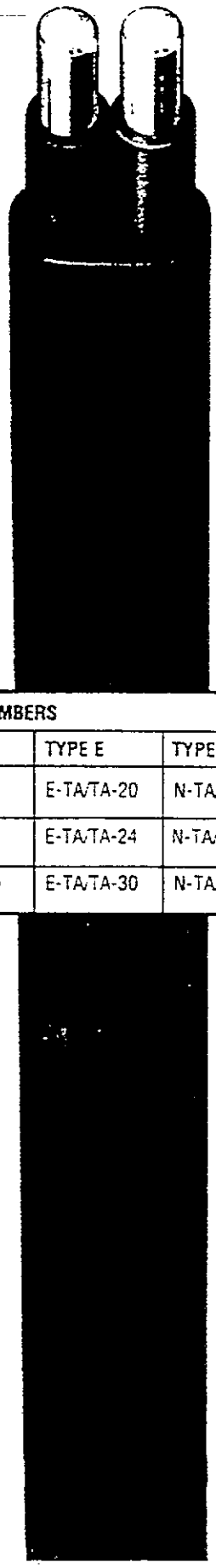
Typical applications include aircraft and automotive engine testing, rapid transit cables, and down hole cable in the oil industry.

*Registered trademark of E.I. DuPont Inc.

Calibrated conductors for high system accuracy

500°F (260°C) PFA insulation for improved electrical properties and high temperature applications

500°F (260°C) PFA jacket for chemical inertness to solvents, acids and oils



GRADE OF WIRE	GAUGE SIZE	WIRE TYPE	PART NUMBERS				
			TYPE J	TYPE K	TYPE T	TYPE E	TYPE N
THERMOCOUPLE	20	SOLID	J-TA/TA-20	K-TA/TA-20	T-TA/TA-20	E-TA/TA-20	N-TA/TA-20
THERMOCOUPLE	24	SOLID	J-TA/TA-24	K-TA/TA-24	T-TA/TA-24	E-TA/TA-24	N-TA/TA-24
THERMOCOUPLE	30	SOLID	J-TA/TA-30	K-TA/TA-30	T-TA/TA-30	E-TA/TA-30	N-TA/TA-30

The above part numbers represent the more popular constructions. However, other designs are available upon request.

PMC CORPORATION
57 Harvey Road
Londonderry, NH
03053

Tel. (603) 432-9473
FAX (603) 432-0435

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Color code & initial calibration tolerances for thermocouple wire

THERMOCOUPLE TYPE		COLOR CODE		INITIAL CALIBRATION TOLERANCES		
WIRE ALLOYS	ANSI SYMBOL	+/- INDIVIDUAL	JACKET	TEMPERATURE RANGE	STANDARD LIMITS	SPECIAL LIMITS
*Iron (+) vs. Constantan™ (-)	J	WHITE/RED	BROWN	+32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +1400°F (+750°C)	±4°F (2.2°C) ±.75%	±2°F (1.1°C) ±.4%
Chromel™ (+) vs. *Alumel™ (-)	K	YELLOW/RED	BROWN	-330°F (-200°C) to -165°F (-110°C) -165°F (-110°C) to +32°F (0°C) +32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	±2% ±4°F (2.2°C) ±4°F (2.2°C) ±.75%	 ±2°F (1.1°C) ±.4%
Copper (+) vs. Constantan™ (-)	T	BLUE/RED	BROWN	-330°F (-200°C) to -85°F (-65°C) -85°F (-65°C) to +270°F (+130°C) +270°F (+130°C) to +660°F (+350°C)	±1.5% ±1.8°F (1°C) ±.75%	±.8% ±.9°F (.5°C) ±.4%
Chromel ™ (+) vs. Constantan ™ (-)	E	PURPLE/RED	BROWN	-330°F (-200°C) to -270°F (-170°C) -270°F (-170°C) to +480°F (+250°C) +480°F (+250°C) to +640°F (+340°C) +640°F (+340°C) to +1600°F (+900°C)	±1% ±3°F (1.7°C) ±3°F (1.7°C) ±.5%	±1.8°F (1°C) ±1.8°F (1°C) ±.4% ±.4%
Nicrosil™ (+) vs. Nisil™ (-)	N	ORANGE/RED	BROWN	+32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	±4°F (2.2°C) ±.75%	±2°F (1.1°C) ±.4%

Color code and initial calibration tolerances for extension wire

*Iron vs. Constantan™	JX	WHITE/RED	BLACK	+32°F (0°C) to +400°F (+200°C)	±4°F (2.2°C)	±2°F (1.1°C)
Chromel™ vs. *Alumel™	KX	YELLOW/RED	YELLOW	+32°F (0°C) to +400°F (+200°C)	±4°F (2.2°C)	±2°F (1.1°C)
Copper vs. Constantan™	TX	BLUE/RED	BLUE	-75°F (-60°C) to +210°F (+100°C)	±2°F (1.1° C)	±1°F (.5°C)
Chromel™ vs. Constantan™	EX	PURPLE/RED	PURPLE	+32°F (0°C) to +400°F (+200°C)	±3°F (1.7°C)	±2°F (1.1°C)
Nicrosil™ vs. Nisil™	NX	ORANGE/RED	ORANGE	+32°F (0°C) to +400°F (+200°C)	±4°F (2.2°C)	±2°F (1.1°C)
Copper vs. Copper Alloy	SX RX	BLACK/RED	GREEN	+75°F (+25°C) to +400°F (+200°C)	±12°F (7°C)	

* Magnetic
™Trade Mark, Hoskins Mfg. Co.

NOTE – Percent limits apply directly to temperatures in °C units, but for °F equivalents are applied to the numbers of °F above or below the ice point (+32°F).
(i.e. Limit (°F) = (Temp. °F – 32°F) X Percentage)

Thermocouple wire cannot be expected to meet the limits of error at temperatures below the ice point unless specified at time of purchase.

TA/TA physical properties

INSULATION CHARACTERISTICS	INSULATION	JACKET
SPECIFIC GRAVITY	2.15	2.15
DUROMETER HARDNESS	55	55
TENSILE STRENGTH p.s.i. (min.)	4000 p.s.i.	4000 p.s.i.
ELONGATION %(min.)	300%	300%
MINIMUM BEND RADIUS	5 X O.D.	10 X O.D.
ABRASION RESISTANCE	VERY GOOD	VERY GOOD
CUT THROUGH RESISTANCE	GOOD	GOOD
MOISTURE RESISTANCE	EXCELLENT	EXCELLENT
SOLDER IRON RESISTANCE	VERY GOOD	VERY GOOD
SERVICE TEMPERATURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE
FLAME TEST	NON-FLAMMABLE	NON-FLAMMABLE

GAUGE SIZE	NOMINAL INSULATION WALL (INCHES)	NOMINAL JACKET WALL (INCHES)	NOMINAL DIAMETER (INCHES)	APPROX. SHIP. WEIGHT LBS. PER 1000 FT
20	.008	.010	.068 X .116	12
24	.008	.010	.056 X .092	7
30	.004	.006	.030 X .048	2

PRICING POLICY > Shipments will be invoiced at PMC's prices in effect at time of shipment. Quotations are given with an escalation clause and prices, terms, and conditions are subject to change without prior notice. PMC will, however, make every attempt to hold to current quoted prices. All prices quoted are in United States currency, and shall be subject to correction for errors. Unless otherwise stated in writing to PMC.

REELS, SPOOLS & COILS > All shipments, unless specified otherwise by PMC, are made on non-returnable reels, spools or coils in one continuous length.

SHORTAGES & RETURNS > All claims for shortage or incorrect material must be made within 10 days after receipt of the goods to which such claim pertains. Goods may only be returned for credit within 1 month of the date of authorization. Goods that are special in any way shall not be returned to PMC. Material returned for any reason, without written authorization will be refused and returned at shipper's expense. A return request must be processed through our Londonderry, N.H. sales office.

TOLERANCES > Due to allowances in manufacturing processes for wire, cable and similar products, PMC reserves the right to ship a variation of ±10% from the quantity of such goods ordered. Physical tolerances shown are nominal. Shipping weights are an average of all types of conductors and are listed for estimating only. These weights can vary substantially due to different types of spools, reels and/or conductors.

The material contained in this document is presented in good faith and believed to be reliable and accurate. However, because testing conditions may vary and material quality or information that may be provided in whole or part by others may be beyond our control, no warranty, expressed or implied, is given and PMC Corporation can assume no liability for results obtained or damages incurred through the application of the data tests presented. NOTE: PMC reserves the right to substitute an equal product on all registered trademark items

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

78238

SHIP TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/31/98	OME0001	96	96	96	38725

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
113030			1. MFT 5. METERS 2. CFT 6. FEET 3. POUNDS 7. LOT 4. EACH NET 8. OTHER

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

ITEM	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
	14500.00	KK-TA/TA-24	5255
	1.00	CALIBRATION AT 200, 600, 800, 1000'F I/O	1
	20000.00	KK-FB/FB-24 SCHED. SHIP 9/10/98 TO SOONER	
	1.00	CALIBRATION AT 200, 600, 800, 1000'F I/O	

Thank you!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-24-98		1	33	✓		✓		JR

PACKING SLIP

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME Omega Point Lab
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM Graybar
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1799 - OPL
DATE RECEIVED 8-4-98
DATE INSPECTED 8-4-98
INSPECTED BY: O Batton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Stranded Barett 8	11377Q	1 roll	1 roll	0	8AWG7Str	Y		GOOD	None	X			

09-016-9/97

264

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER

11377Q

265

Date 7/28/98

Project #

Page: 1

Order From: Graybar Electric Co
P.O. Box 8258
San Antonio TX 78208
(210) 227-9241 Ext. 0000
~~Fax # (000) 000-0000 Ext. 0000~~

Deliver to: Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmedorf
TX 78112-9784

Vendor ID: 0166

7/28/98

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Bare #8	001	1.00	Roll	$0.00	

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements"

QA Approval C Patton

Date 7-28-98

Please Quote Purchase Order Number on all correspondence.

Special instructions:
Please include Certificate of Compliance to Catalog Specs.

Subtotal:	$0.00
Freight:	$0.00
Tax amount:	$0.00
Total Value:	$0.00

080625/11-89

SERVICE WIRE CO.

MANUFACTURER

CULLODEN, WV (304)743-6600 PITTSBURGH, PA (724)325-1666 HOUSTON, TX (713)674-6666

THIS MATERIAL IS MADE TO APPROPRIATE UL, ASTM, OR CUSTOMER STANDARDS AS SPECIFIED BY THE ORDER.

MADE BY:

SHIP TO:

GRAYBAR-SAN ANT-5554506
1223 N HACKBERRY ST

SAN ANTONIO TX 78208

ORDER NO: 393643

SAJA

SAJA

This shipment is bound by the terms and conditions of the Uniform Straight Bill of Lading included in the NMFC 100 series.

This shipment is bound by the terms and conditions of the Uniform Straight Bill of Lading included in the NMFC 100 series.

SHIP/SPECIAL INSTRUCTIONS:
PP/ADD FOB ORIGIN

12798224

66287011695

MFG DATE

HST-625806

HST-625806

BASTR7SD8
8 AWG 7STR BARE CU STRAND
SD

1058

GROSS

TARE

NET

FEET

CUTTING

DRAWING

STRANDING

CABLING

ARMOR

JACKET

INSULATION

TESTING

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME Omega Point Labs
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM PMC
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1824 - OPL
DATE RECEIVED 9-14-98 + 9-15-98
DATE INSPECTED 9-14-98 + 9-15-98
INSPECTED BY: C Patton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Teflon TC Wire	113300	15K'	10,800'	4,200'	KK-TA/TA-24	Y	Y	GOOD	None	X			Spool #'s 243823, 243825
Teflon TC Wire	113300	15K	5.2K'	0	KK-TA/TA-24	Y	Y	Good	None	X			Spool #243822 ; Spool 243824 is for PO 113300
Teflon TC Wire	113830	20K'	5.5K'	15K'	KK-TA/TA-24	Y	Y	Good	None	X			

09-016-9/97

267

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER

11330 Q

268

Date:7/08/98
Page: 1 of 1

Order From: PMC
680 Hayward Street
Manchester
NH 03103
603-622-3500

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112-9784
(210) 635-8100

Vendor No: 0024

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Teflon TC Wire KK-TA/TA-24	001	15.00	Thousand	$350.00	$5,250.00
Calibration Services	002	1.00	Each	105.00	105.00
Fiberglass TC Wire KK-FB/FB-24	003	10.00	Thousand	182.00	1,820.00
Calibration Services	004	1.00	Each	207.00	207.00
9/98 Change Order #1 - addition Teflon TC Wire KK/TA/TA-24	005	4.00	Thousand	350.00	1,400.00

8 Received 4K' Teflon on 9/11/98 - RR 1822
Received 10,800' " on 9/14/98 - RR#1824
Received 5,200' " on 9/15/98 - RR#1824

Teflon TC order complete

Received 3,500' fiberglass on 10/5/98 RR# 1833

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval C Sutton
Date 7/8/98

Special Instructions:
Please provide calibration services per attached Vendor Purchasing Specification and QA Requirements.

Please Quote Purchase Order Number on all correspondence.

Subtotal:	8,782.00 ~~$7,382.00~~
Freight:	0.00
Tax Amount:	0.00
Total Value:	~~$7,382.00~~ 8,782.00

CALIBRATION CERT. REQUIREMENTS
1. Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

0B0625/11-89

OMEGA POINT LABORATORIES
MATERIAL PURCHASING SPECIFICATIONS

SPECIFICATION NUMBER: MS-- 113300-OPL

VENDOR: PMC

VENDOR PRODUCT NUMBER: KK-TA/TA-24

PRODUCT DESCRIPTION: Teflon Coated Thermocouple Wire

Material as defined above shall be provided in accordance with the Critical Characteristics as listed below:

TEST	DESCRIPTION	SPECIFICATION RANGES MINIMUM	MAXIMUM
ASTM E230-93	Std. Temperature-EMF Tables for Standardized Thermocouples	Temp. Range +32°F to +545°F Special Limits of Error ±2°F	

QUALITY ASSURANCE REQUIREMENTS

1.0 QUALITY PROGRAM

Seller shall furnish this item in accordance with Quality Program approved by Omega Point Laboratories. Material specified herein is to be produced and tested in accordance with vendor quality standards, methods, guidelines and manufacturing instructions as defined in that Quality Program.

2.0 QUALITY VERIFICATION

Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

Document Review - Final acceptance shall be based on satisfactory review of required certifications and/or supporting documents.

3.0 CERTIFICATIONS

3.1 Certification that supplied materials comply with this material specification and listing Critical Characteristics shall be provided. This certificates shall reference Omega Point Labs purchase order number and specification number for all material furnished under this specification. This Certification shall be signed by the appropriate vendor representative.

3.2 The material furnished under this specification shall be a product that complies with the following:

3.2.1 Has been tested and passed all tests specified herein.

3.2.2 Manufacturing methods for this material have not changed. Vendor will advise Omega Point in writing of any changes in the manufacturing prior to material manufacture.

3.2.3 Raw materials used in the manufacture of this material meet Vendor specifications.

4.0 AUDITS/RIGHTS OF ACCESS

Omega Point Labs reserves the right to audit your facility to verify compliance with the purchase order and specification requirements with a minimum ten (10) day notice.

5.0 IDENTIFICATION

Seller shall identify each item with a unique traceability number by physical marking or tagging. These identification numbers shall be traceable to certifications and packing lists.

6.0 PACKING/SHIPPING

All materials shall be packaged in air tight, moisture free containers and shall be free of foreign substances such as dirt, oil, grease or other deleterious materials.

All materials shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping.

QUALITY ASSURANCE APPROVAL

Title Quality Assurance Mgr.

Date 7/8/98

AVL Verification

Class: B

OMEGA POINT LABORATORIES

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243822

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/8/98
Cust PO#: 11330Q
Job #: 38417-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5200'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.7	-1.8
600	-2.3	-1.2
800	-2.1	-0.4
1000	-0.1	+1.4

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #:110208
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306177
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

Phil Robinson 9/8/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyer 9/8/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243823

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/4/98
Cust PO#: 11330Q
Job #: 38417-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5300'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.9	-1.3
600	-2.3	-1.4
800	-3.1	-2.3
1000	-0.8	-0.2

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #: 306171
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306178
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

John Robinson 9/4/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyer 9/4/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243825

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/4/98
Cust PO#: 11330Q
Job #: 38417-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5500'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.2	-0.4
600	-1.2	-1.3
800	-1.0	-1.3
1000	+1.5	+0.9

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #: 306171
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306178
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

John Robinson 9/4/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyer 9/4/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

78238

SHIP TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/10/98	OMEG001	96	96	96	38417

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
113300			1. MFT 5. METERS 2. CFT 6. FEET 3. POUNDS 7. LOT 4. EACH NET 8. OTHER

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

ITEM	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
1	15000.00	KK-TA/TA-24 SCHED. SHIP 8/28/98 OR SOONER	10,800
2	1.00	CALIBRATION AT 200, 600, 800, 1000'F I/O	1
3	10000.00	KK-FB/FB-24 SCHED. SHIP 9/11/98 OR SOONER	—
4	1.00	CALIBRATION AT 200, 400, 600, 800, 1000'F I/O	—

Thank You!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-4-98		2	67	✓		✓		[illegible]

PACKING SLIP

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

78238

SHIP TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/10/98	OMEG001	96	96	96	38417

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
113300			1. MFT 5. METERS 2. CFT 6. FEET 3. POUNDS 7. LOT 4. EACH NET 8. OTHER

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

ITEM	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
1	15000.00	KK-TA/TA-24 SCHED. SHIP 6/28/98 OR SOONER	5200
2	~~1.00~~	~~CALIBRATION AT~~ ~~200, 600, 800, 1000°F I/O~~	
3	10000.00	KK-FB/FB-24 SCHED. SHIP 9/11/98 OR SOONER	
4	1.00	CALIBRATION AT 200, 400, 600, 800, 1000°F I/O	

Thank you!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-29-98		1	31	✓		✓		

PACKING SLIP

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11383 Q

276

Date:7/30/98
Page: 1 of 1

Order From: PMC
680 Hayward Street
Manchester
NH 03103
603-622-3500

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112-9784
(210) 635-8100

Vendor No: 0024

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Teflon TC Wire KK-TA/TA-24	001	20.00	Thousand	$350.00	$7,000.00
Calibration Services	002	1.00	Each	105.00	105.00
Fiberglass TC Wire KK-FB/FB-24	003	20.00	Thousand	182.00	3,640.00
Calibration Services	004	1.00	Each	207.00	207.00

9/15/98 -
Received 5.500' teflon TC Wire
Receiving Report #1824

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval C Sutton
Date 7-30-98

CALIBRATION CERT. REQUIREMENTS
1. Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Subtotal:	$10,952.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$10,952.00

Special Instructions:
Please provide calibration services per attached Material Purchasing Specification and QA Requirements.

080625/11-89

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243824

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/8/98
Cust PO#: 11383Q
Job #: 38725-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5500'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.9	-0.9
600	-2.7	-2.9
800	-2.9	-3.1
1000	-0.7	-1.0

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #:110208
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306177
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

* 600° reading ok per Cleda at Omega Point Labs.

John Robinson 9/8/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyko 9/8/98
QUALITY ASSURANCE MANAGER DATE

OMEGA POINT LABORATORIES
MATERIAL PURCHASING SPECIFICATIONS

SPECIFICATION NUMBER: MS-- 113830-OPL

VENDOR: PMC

VENDOR PRODUCT NUMBER: KK-TA/TA-24

PRODUCT DESCRIPTION: Teflon Coated Thermocouple Wire

Material as defined above shall be provided in accordance with the Critical Characteristics as listed below:

TEST	DESCRIPTION	SPECIFICATION RANGES MINIMUM	MAXIMUM
ASTM E230-93	Std. Temperature-EMF Tables for Standardized Thermocouples	Temp. Range +32°F to +545°F Special Limits of Error ±2°F	
		Temp. Range +545°F to 2300°F Special Limits of Error ±.4%	

QUALITY ASSURANCE REQUIREMENTS

1.0 QUALITY PROGRAM

Seller shall furnish this item in accordance with Quality Program approved by Omega Point Laboratories. Material specified herein is to be produced and tested in accordance with vendor quality standards, methods, guidelines and manufacturing instructions as defined in that Quality Program.

2.0 QUALITY VERIFICATION

Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

Document Review - Final acceptance shall be based on satisfactory review of required certifications and/or supporting documents.

3.0 CERTIFICATIONS

3.1 Certification that supplied materials comply with this material specification and listing Critical Characteristics shall be provided. This certificates shall reference Omega Point Labs purchase order number and specification number for all material furnished under this specification. This Certification shall be signed by the appropriate vendor representative.

3.2 The material furnished under this specification shall be a product that complies with the following:

3.2.1 Has been tested and passed all tests specified herein.

3.2.2 Manufacturing methods for this material have not changed. Vendor will advise Omega Point in writing of any changes in the manufacturing prior to material manufacture.

3.2.3 Raw materials used in the manufacture of this material meet Vendor specifications.

4.0 AUDITS/RIGHTS OF ACCESS

Omega Point Labs reserves the right to audit your facility to verify compliance with the purchase order and specification requirements with a minimum ten (10) day notice.

5.0 IDENTIFICATION

Seller shall identify each item with a unique traceability number by physical marking or tagging. These identification numbers shall be traceable to certifications and packing lists.

6.0 PACKING/SHIPPING

All materials shall be packaged in air tight, moisture free containers and shall be free of foreign substances such as dirt, oil, grease or other deleterious materials.

All materials shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping.

QUALITY ASSURANCE APPROVAL

C. Patton

Title Quality Assurance Mgr. Assistant

Date 7-30-98

AVL Verification

Class: B

OMEGA POINT LABORATORIES

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243824

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/8/98
Cust PO#: 11383Q
Job #: 38725-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5500'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.9	-0.9
600	-2.7	-2.9
800	-2.9	-3.1
1000	-0.7	-1.0

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #:110208
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306177
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

* 600° reading ok per Cleda at Omega Point Labs.

John Robinson 9/8/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyko 9/8/98
QUALITY ASSURANCE MANAGER DATE

281

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

78238

SHIP TO

OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/31/98	OMEG001	96	96	96	38725

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
113830			1. MFT 5. METERS 2. CFT 6. FEET 3. POUNDS 7. LOT 4. EACH NET 8. OTHER

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

ITEM	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
1	20000.00	KK-TA/TA-24 SCHED. SHIP 9/11/98 OR SOONER	5500
2	1.00	CALIBRATION AT 200, 600, 800, 1000'F I/O	
3	20000.00	KK-FB/FB-24 SCHED. SHIP 9/18/98 OR SOONER	
4	1.00	CALIBRATION AT 200, 600, 800, 1000'F I/O	

Thank You!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-8-98		1	34	✓		✓		[illegible]

PACKING SLIP

PFA Insulated Thermocouple Wire

PRODUCT CODE: TA/TA

Our customers have grown to expect only the highest quality products from PMC. We are continuously committed to meet the specific needs of industry and our customers. This construction includes Teflon* PFA insulataion extruded on the single conductors which are then laid parallel and jacketed with Teflon PFA.

Teflon PFA (perfluoroalkoxy) was released in 1972 by Dupont. It possesses similar properties of the other Teflon products such as outstanding electrical characteristics, resistance to virtually all chemicals and excellent flame resistance.

PFA is a true thermoplastic material extrudable by conventional means, and available in long continuous lengths. This construction provides flexibility and toughness with stress crack resistance, resistance to weather, non-aging characterisics, and low coefficient of friction for ease of pulling through conduit.

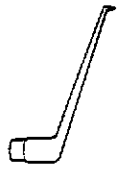
Like TFE, suggested upper continuous temperature is 500°F (260°C), however, it does not have TFE's solder iron resistance.

The thermocouple grade products shown are used to form temperature sensors and the extension grade products become the interconnecting link in the temperature sensing system.

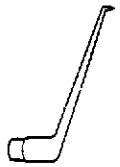
You will find our qualified sales and engineering staff eager to assist in selecting a design to meet the requirements of your specific application. Variations of this construction are available upon request, including aluminum Mylar* to reduce noise problems found in so many of today's plants.

Typical applications include aircraft and automotive engine testing, rapid transit cables, and down hole cable in the oil industry.

*Registered trademark of E.I. DuPont Inc.

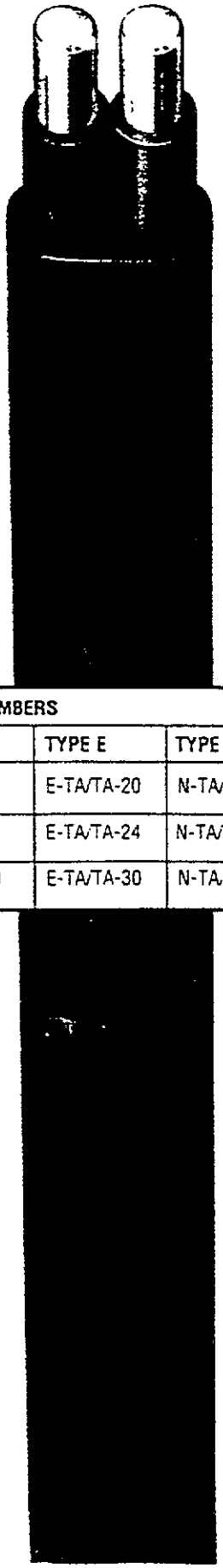


Calibrated conductors for high system accuracy



500°F (260°C) PFA insulation for improved electrical properties and high temperature applications

500°F (260°C) PFA jacket for chemical inertness to solvents, acids and oils



GRADE OF WIRE	GAUGE SIZE	WIRE TYPE	PART NUMBERS				
			TYPE J	TYPE K	TYPE T	TYPE E	TYPE N
THERMOCOUPLE	20	SOLID	J-TA/TA-20	K-TA/TA-20	T-TA/TA-20	E-TA/TA-20	N-TA/TA-20
THERMOCOUPLE	24	SOLID	J-TA/TA-24	K-TA/TA-24	T-TA/TA-24	E-TA/TA-24	N-TA/TA-24
THERMOCOUPLE	30	SOLID	J-TA/TA-30	K-TA/TA-30	T-TA/TA-30	E-TA/TA-30	N-TA/TA-30

The above part numbers represent the more popular constructions. However, other designs are available upon request.

PMC CORPORATION
57 Harvey Road
Londonderry, NH
03053

Tel. (603) 432-9473
FAX (603) 432-0435

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Color code & initial calibration tolerances for thermocouple wire

THERMOCOUPLE TYPE		COLOR CODE		INITIAL CALIBRATION TOLERANCES		
WIRE ALLOYS	ANSI SYMBOL	+/- INDIVIDUAL	JACKET	TEMPERATURE RANGE	STANDARD LIMITS	SPECIAL LIMITS
*Iron (+) vs. Constantan™ (-)	J	WHITE/RED	BROWN	+ 32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +1400°F (+750°C)	± 4°F (2.2°C) ± .75%	± 2°F (1.1°C) ± .4%
Chromel™ (+) vs. *Alumel™ (-)	K	YELLOW/RED	BROWN	-330°F (-200°C) to -165°F (-110°C) -165°F (-110°C) to +32°F (0°C) +32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	± 2% ± 4°F (2.2°C) ± 4°F (2.2°C) ± .75%	± 2°F (1.1°C) ± .4%
Copper (+) vs. Constantan™ (-)	T	BLUE/RED	BROWN	- 330°F (-200°C) to -85°F (-65°C) -85°F (-65°C) to +270°F (+130°C) +270°F (+130°C) to +660°F (+350°C)	± 1.5% ±1.8°F (1°C) ± .75%	± .8% ± .9°F (.5°C) ± .4%
Chromel ™ (+) vs. Constantan ™ (-)	E	PURPLE/RED	BROWN	-330°F (-200°C) to -270°F (-170°C) -270°F (-170°C) to +480°F (+250°C) +480°F (+250°C) to +640°F (+340°C) +640°F (+340°C) to +1600°F (+900°C)	±1% ±3°F (1.7°C) ±3°F (1.7°C) ± .5%	± 1.8°F (1°C) ± 1.8° F (1°C) ± .4% ± .4%
Nicrosil™ (+) vs. Nisil™ (-)	N	ORANGE/RED	BROWN	+ 32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	± 4°F (2.2°C) ± .75%	± 2° F(1.1°C) ± .4%

Color code and initial calibration tolerances for extension wire

*Iron vs. Constantan™	JX	WHITE/RED	BLACK	+ 32°F (0°C) to +400°F (+200°C)	± 4°F (2.2°C)	± 2°F (1.1°C)
Chromel™ vs. *Alumel™	KX	YELLOW/RED	YELLOW	+32°F (0°C) to +400°F (+200°C)	± 4°F (2.2°C)	± 2°F (1.1°C)
Copper vs. Constantan™	TX	BLUE/RED	BLUE	-75°F (-60°C) to +210°F (+100°C)	± 2°F (1.1° C)	± 1°F (.5°C)
Chromel™ vs. Constantan™	EX	PURPLE/RED	PURPLE	+32°F (0°C) to +400°F (+200°C)	± 3°F (1.7°C)	± 2°F (1.1°C)
Nicrosil™ vs. Nisil™	NX	ORANGE/RED	ORANGE	+32°F (0°C) to +400°F (+200°C)	± 4°F (2.2°C)	± 2°F (1.1°C)
Copper vs. Copper Alloy	SX RX	BLACK/RED	GREEN	+75°F (+25°C) to +400°F (+200°C)	± 12°F (7°C)	

* Magnetic
™Trade Mark, Hoskins Mfg. Co.

NOTE – Percent limits apply directly to temperatures in °C units, but for °F equivalents are applied to the numbers of °F above or below the ice point (+32°F).
(i.e. Limit (°F) = (Temp. °F – 32°F) X Percentage)

Thermocouple wire cannot be expected to meet the limits of error at temperatures below the ice point unless specified at time of purchase.

TA/TA physical properties

INSULATION CHARACTERISTICS	INSULATION	JACKET
SPECIFIC GRAVITY	2.15	2.15
DUROMETER HARDNESS	55	55
TENSILE STRENGTH p.s.i. (min.)	4000 p.s.i.	4000 p.s.i.
ELONGATION %(min.)	300%	300%
MINIMUM BEND RADIUS	5 X O.D.	10 X O.D.
ABRASION RESISTANCE	VERY GOOD	VERY GOOD
CUT THROUGH RESISTANCE	GOOD	GOOD
MOISTURE RESISTANCE	EXCELLENT	EXCELLENT
SOLDER IRON RESISTANCE	VERY GOOD	VERY GOOD
SERVICE TEMPERATURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE
FLAME TEST	NON-FLAMMABLE	NON-FLAMMABLE

GAUGE SIZE	NOMINAL INSULATION WALL(INCHES)	NOMINAL JACKET WALL(INCHES)	NOMINAL DIAMETER (INCHES)	APPROX. SHIP. WEIGHT LBS. PER 1000 FT
20	.008	.010	.068 X .116	12
24	.008	.010	.056 X .092	7
30	.004	.006	.030 X .048	2

PRICING POLICY > Shipments will be invoiced at PMC's prices in effect at time of shipment. Quotations are given with an escalation clause and prices, terms, and conditions are subject to change without prior notice. PMC will, however, make every attempt to hold to current quoted prices. All prices quoted are in United States currency, and shall be subject to correction for errors. Unless otherwise stated in writing to PMC.

REELS, SPOOLS & COILS > All shipments, unless specified otherwise by PMC, are made on non-returnable reels, spools or coils in one continuous length.

SHORTAGES & RETURNS > All claims for shortage or incorrect material must be made within 10 days after receipt of the goods to which such claim pertains. Goods may only be returned for credit within 1 month of the date of authorization. Goods that are special in any way shall not be returned to PMC. Material returned for any reason, without written authorization will be refused and returned at shipper's expense. A return request must be processed through our Londonderry, N.H. sales office.

TOLERANCES > Due to allowances in manufacturing processes for wire, cable and similar products, PMC reserves the right to ship a variation of ±10% from the quantity of such goods ordered. Physical tolerances shown are nominal. Shipping weights are an average of all types of conductors and are listed for estimating only. These weights can vary substantially due to different types of spools, reels and/or conductors.

The material contained in this document is presented in good faith and believed to be reliable and accurate. However, because testing conditions may vary and material quality or information that may be provided in whole or part by others may be beyond our control, no warranty, expressed or implied, is given and PMC Corporation can assume no liability for results obtained or damages incurred through the application of the data tests presented. NOTE. PMC reserves the right to substitute an equal product on all registered trademark items

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92061
Calibration Date:	9/23/99
Recalibration Date:	3/23/2000
Manufacturer:	Yokogawa
Model No.:	300 Channel DAU
Serial No.:	48JF0082
Equipment Description:	300 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	Tegam Calibrator/Themometer, Model 840A, Serial # T-207318

PERFORMANCE:

Overall Tolerance (°F) +1/-0.6

Calibration Performed by:

James R. Bundick
James R. Bundick
Systems Engineer

OMEGA POINT LABORATORIES

© OOES 7-48

Channel Verification for Yokogawa 300 Channel

Serial No.: ~~9812004~~ 9/23/99 48JF0082

Calibrator Used: Tegam T-207318

Temperature Setting (°F): 32.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	31.8	-0.2	105	31.6	-0.4	205	31.8	-0.2
15	31.6	-0.4	115	31.8	-0.2	215	31.8	-0.2
25	32.2	0.2	125	32.2	0.2	225	32.0	0.0
35	32.2	0.2	135	31.8	-0.2	235	31.8	-0.2
45	31.8	-0.2	145	32.2	0.2	245	32.2	0.2
55	31.5	-0.5	155	32.2	0.2	255	31.6	-0.4
65	31.8	-0.2	165	31.6	-0.4	265	32.2	0.2
75	31.8	-0.2	175	32.2	0.2	275	32.5	0.5
85	32.0	0.0	185	32.0	0.0	285	31.8	-0.2
95	31.6	-0.4	195	31.5	-0.5	295	32.2	0.2

Temperature Setting (°F): 1500.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	1499.9	-0.1	105	1499.9	-0.1	205	1500.4	0.4
15	1499.7	-0.3	115	1500.1	0.1	215	1499.7	-0.3
25	1499.9	-0.1	125	1499.9	-0.1	225	1499.9	-0.1
35	1500.4	0.4	135	1499.7	-0.3	235	1500.1	0.1
45	1500.1	0.1	145	1499.5	-0.5	245	1500.4	0.4
55	1499.9	-0.1	155	1499.4	-0.6	255	1500.1	0.1
65	1499.9	-0.1	165	1499.4	-0.6	265	1500.4	0.4
75	1499.7	-0.3	175	1499.4	-0.6	275	1500.4	0.4
85	1499.5	-0.5	185	1500.6	0.6	285	1499.9	-0.1
95	1499.9	-0.1	195	1500.6	0.6	295	1499.9	-0.1

Temperature Setting (°F): 1999.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	1999.8	0.8	105	1999.8	0.8	205	2000.0	1.0
15	1999.2	0.2	115	1999.9	0.9	215	1999.8	0.8
25	1999.4	0.4	125	1999.9	0.9	225	1999.8	0.8
35	2000.0	1.0	135	1999.4	0.4	235	1999.9	0.9
45	1999.9	0.9	145	1999.4	0.4	245	2000.0	1.0
55	1999.9	0.9	155	1998.9	-0.1	255	1999.9	0.9
65	1999.0	0.0	165	1998.7	-0.3	265	2000.0	1.0
75	1999.9	0.9	175	1998.5	-0.5	275	1999.8	0.8
85	1999.8	0.8	185	2000.0	1.0	285	1999.4	0.4
95	1999.9	0.9	195	2000.0	1.0	295	1999.8	0.8

Overall Tolerance (°F): **+1/-0.6**

Performed by:

James Bundick — Systems Engineer (Title) — 9/23/99 (Date)

Approved by:

James Bundick — Systems Engineer (Title) — 9/23/99 (Date)

OMEGA ENT LABORATORIES

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92058
Calibration Date:	5/26/99
Recalibration Date:	5/26/2000
Manufacturer:	Yokogawa
Model No.:	100 Channel DAU
Serial No.:	99LE004
Equipment Description:	100 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	FLUKE Digital Multimeter, Model 8062-A, Serial # 4405

PERFORMANCE:

Equal to ± 0.1 mV

Calibration Performed by:

James R. Bundick
James R. Bundick
Fire Test Engineer

OMEGA POINT LABORATORIES

Verification Sheet

Channels checked at 10.0 mV using the Fluke Digital Multimeter Serial #4405 to verify the mV signal from the DC voltage generator

Channels checked at 70 °F using the Tegam T-207318

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
mV Reading	10.0	10.1	10.1	10.1	9.9	10.0	9.9	9.9	10.0	10.0	9.9	10.0	9.9	10.1	10.1	10.1	10.1	9.9	9.9	10.0	9.9	10.0	10.0	10.0	9.9	9.9	10.0	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	10.0	10.0	9.9	9.9	10.0	10.0	10.0	9.9	10.0	10.0	10.0	9.9	10.0	10.0	10.0
Temperature (°F)	69	69	71	71	70	69	69	69	70	69	70	71	69	70	70	71	70	71	70	70	69	69	71	71	70	69	69	69	71	71	69	71	69	71	70	69	69	70	71	70	70	69	69	71	70	71	69	69	69	71

Channel	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
mV Reading	9.9	10.0	9.9	10.0	10.0	10.0	9.9	9.9	10.0	10.0	10.0	10.0	10.0	10.0	9.9	9.9	10.0	9.9	10.0	9.9	10.0	10.0	10.0	10.0	9.9	9.9	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.9	10.0	9.9	9.9	10.0	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.9	9.9	10.0	9.9	10.0
Temperature (°F)	71	69	70	70	71	71	71	71	69	70	70	71	70	69	69	71	70	71	71	70	70	69	69	69	69	71	71	70	70	70	69	71	71	70	70	70	69	71	70	70	71	71	71	70	70	70	70	71	71	71

05/26/99 James Burdick

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME: Omega Point Labs
CLIENT/PROJECT NUMBER: OPL Equipment
RECEIVED FROM: Rothe
PROJECT LOCATION: Omega Point Labs

REPORT NUMBER: 1895 - OPL
DATE RECEIVED: 5-14-99
DATE INSPECTED: 5-14-99
INSPECTED BY: D. Bottom

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. REQ'D Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
0-100psi Pressure Gage	118640	1	1	0	SN: 99LE001	Y	Y	Good	None	X			Calibration Service
0-100psi Pressure Gage	118640	1	1	0	SN: 99LE002	Y	Y	Good	None	X			
0-100psi Pressure Gage	118640	1	1	0	SN: 98LE001	Y	Y	Good	None	X			

FORM
1/29/93

288

16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11864Q

Date: 4/15/99
Page: 1 of 1

Order From: Rothe Develoment Inc.
4614 Sinclair Road
San Antonio
TX 78222
210-648-3131

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112
(210) 635-8100

Vendor No: 0161

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
0-100 psi Pressure Gage SN: 99LE001	001	1.00	Each	$44.00	$44.00
0-100 psi Pressure Gage SN: 99LE002	002	1.00	Each	$44.00	$44.00
0-100 psi Pressure Gage SN: 98LE001	003	1.00	Each	$44.00	$44.00

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval [signature]
Date 4-15-99

CALIBRATION CERT. REQUIREMENTS1.
Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Special Instructions:
Please provide calibration services per attached Vendor Purchasing Specification and QA Requirements

Subtotal:	$132.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$132.00

080625

VENDOR PURCHASING SPECIFICATION AND QUALITY ASSURANCE REQUIREMENTS

Vendor Rotho

Purchase Order No. 118640

Any or all of the following Quality Assurance requirements shall be incorporated as conditions to this procurement when corresponding box is marked. Failure to comply with any requirement specified herein may result in rejection and/or return of shipment at seller's expense.

1.0 QUALITY PROGRAM

☒ Seller shall furnish all items on this Purchase Order in accordance with Quality Program approved by Buyer.

2.0 QUALITY VERIFICATION

When additional quality verification activities are required as a condition to this procurement, invoices will not be paid until satisfactory completion of such activities. Excessive rejection rates may result in removal from buyer's Approved Vendors List.

☒ Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

☐ Independent Laboratory Tests - Samples of materials furnished shall be tested independently for conformance to specification requirements proir to final acceptance. Rejected materials shall be returned at seller's expense.

☒ Document Review - Final acceptance shall be based on satisfactory review of required certifications and other supporting documents.

3.0 CERTIFICATIONS

When certifications are required as a condition to this procurement, the seller shall furnish one reproducible copy either with or prior to each shipment. Shipments will not be accepted and invoices will not be paid until certifications are in buyer's possession.

VENDOR Rothe

PURCHASE ORDER NO. 118640

☐ Certificate of Compliance/Conformance Required - Certification that materials and/or services comply with purchase order requirements. Certification shall reference purchase order number and traceability numbers (when applicable).

☐ Certified Test Report Required - Certification that material complies with applicable material specification(s) and the purchase order. Include actual results of required tests.

☒ Certificate of Calibration Required - Certification shall be traceable to National Bureau of Standards. (Renamed NIST, Nat. Institute of Science & Technology)

4.0 AUDITS/RIGHT OF ACCESS

☒ The buyer reserves the right to audit your facility to verify compliance with purchase order, code and specification requirements with minimum of ten (10) days notice.

☒ Shipments shall only originate from facilities approved by the buyer.

☐ Buyer reserves the right to inspect any or all work included in this order at seller's facility with as early notice as practicable.

5.0 IDENTIFICATION

☐ Seller shall identify each item with a unique traceability number by physical marking or tagging. Traceability numbers shall be traceable to certifications and packing lists.

☒ Seller shall identify each container with a unique identification number. The identification number shall be traceable to certifications and packing lists.

6.0 10 CFR, PART 21

☐ The material, equipment and/or services to be furnished under the provisions of this purchase order are involved in the testing of basic components of a Nuclear Regulatory Commission (NCR) licensed facility. Accordingly, the seller is subject to the provisions of 10 CFR, Part 21 (Reporting of Defects and Non-compliance)

VENDOR Rothe

PURCHASE ORDER NO. 118640

7.0 PACKING/SHIPPING

[X] All materials shall be packaged in air tight, moisture free containers and shall be free from all foreign substances such as dirt, oil, grease or other deleterious material.

[ ] All materials and equipment shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping. Wherever practical, equipment shall be palletized for ease of unloading and storage at destination. each container shall be clearly marked with buyer's purchase order number.

QUALITY ASSURANCE APPROVAL [signature] DATE 4-15-99

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE #107 CONTROL #556 - 29821 WORK ORDER #71669 293

CUSTOMER

RECEIVED FROM: Omega Point Laboratories
DATE: 04/20/1999
PHONE #: 635-8100
FAX #: 635-8101

ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9784

CONTACT NAME: Ms. Clada Patton
PURCHASE ORDER #: 118640

ITEM

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE002
CUST ID: 99LE002
ACCESS
RCVD:

***** Need Manual *****

CUSTOMER COMMENTS/REQUIREMENTS:

DATA: BEFORE & AFTER DATA REQUIRED

OUR PO:

RECEIVED:
(X) IN TOLERANCE
( ) OUT OF TOLERANCE
( ) INOPERATIVE

RETURNED:
(X) IN TOLERANCE
( ) LIMITED CALIBRATION
( ) REPAIR ONLY
( ) NO ACTION DATA

CALIBRATION INTERVAL: 12mos.
CAL DATE: 4/27/99
DUE DATE: 4/27/00

CAL'D AT:
(X) RDMSD
( ) ON-SITE
( ) SUB

ENVIRONMENTAL CONDITIONS:
68 °F
47 %RH

SPECIFICATIONS:
( ) MFG
( ) RDMSD:
(X) OTHER: Omega +/- 3 PSI

PROCEDURE:
( ) MFG
( ) RDMSD:
(X) OTHER: NAVAIR 17-20MP-41

RDMSD TECH: SAM

SERVICE CODE: J

FAULT/SYMPTOM:

WORK PERFORMED:

Calibrated

THIS IS NOT A CERTIFICATE

TR#'S:
261

LIMITED CALIBRATION:

COMMENTS:

CKT REF	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS: _____		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	11	00
						TAX 7.75%	3	41
						TOTAL	47	41

SHIPPING:

DATE:

RDMSD 2002
08/97

RCVD BY
(SIGNED): _____ (PRINTED): _____

CERT. NUMBER: 58174 294

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE002
CUST. ID: 99LE002

CAL DATE: 04/27/1999
DUE DATE: 04/27/2000

CONTROL NO.: 556 - 28321
TECHNICIAN: 2
SPECIFICATIONS: OMEGA +/-3PSI
PROCEDURE: NAVAIR 17-20MP-41
WORK ORDER: 71669
CUSTOMER P.O.: 118640
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 47 %

DATE RECEIVED: 04/20/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
261	HEISE	ATS2000	ATS-10521	04/28/1999

Calibration Certificate Acceptance

Item Pressure Gage 0-100 psi
SN 99LE002

	Q/A	Eng.
NIST Traceability Adequate	[illegible]	[illegible]
As Found/As Left Values	[illegible]	[illegible]
Calibration Data Sufficient	[illegible]	[illegible]
Tolerance Range Adequate	[illegible]	[illegible]
Date of Review:	5-14-99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: Peter J. Stemmer ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001 08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Lab
WO NUMBER: 71669
SERIAL:
CUST ID: 99LE002

DATE: 4/27/99
TECH: JAM
INST NO: 28821

CALIBRATION DATA TAKEN

INCOMING X
OUTGOING X

CONDITION OF EQUIPMENT

IN TOLERANCE X
OUT OF TOLERANCE

MANUFACTURER McDaniel

RANGE 0-100 PSI

ACCURACY +/- 3PSI

GAUGE PRESSURE	STANDARD READING
10	10.40
30	30.25
50	50.04
70	70.29
95	95.35

Rothe Development, Inc.

METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 28820 WORK ORDER # 71668 296

CUSTOMER

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9794
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 119610

DATE: 04/20/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE001
CUST ID: 99LE001
ACCESS
RCVD:

Need Manual

CUSTOMER COMMENTS/REQUIREMENTS:

OUR PO:

DATA: BEFORE & AFTER DATA REQUIRED

RECEIVED:	RETURNED:	CALIBRATION INTERVAL: 12mos.	CAL'D AT:
(X) IN TOLERANCE	(X) IN TOLERANCE		(X) RDMSD
( ) OUT OF TOLERANCE	( ) LIMITED CALIBRATION	CAL DATE: 4/27/99	( ) ON-SITE
( ) INOPERATIVE	( ) REPAIR ONLY	DUE DATE: 4/27/00	( ) SUB
	( ) NO ACTION Data		

ENVIRONMENTAL CONDITIONS:	SPECIFICATIONS:	PROCEDURE:	RDMSD TECH:	SERVICE CODE:
68 °F	(X) MFG	( ) MFG		
47 %RH	( ) RDMSD:	( ) RDMSD:		
	(X) OTHER: ~~0-~~ +/- 3PSI Omega	(X) OTHER: NANAIR 17-29mP-41	JAM	J

FAULT/SYMPTOM:

THIS IS NOT Calibrated

WORK PERFORMED:

R#'S: 261

LIMITED CALIBRATION:

COMMENTS:

PKT REF	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS: _____		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	44.00	
						TAX 7.750%	3	41
						TOTAL	47	41

SHIP VIA: DATE:

RDMSD 2002 9/97

RCVD BY

(SIGNED): _____ (PRINTED): _____

CERT. NUMBER: 58173 297

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE001
CUST. ID: 99LE001

CAL DATE: 04/27/1999
DUE DATE: 04/27/2000

CONTROL NO.: 556 - 28820
TECHNICIAN: Z
SPECIFICATIONS: OMEGA +/-3PSI
PROCEDURE: NAVAIR 17-20MP-41
WORK ORDER: 71668
CUSTOMER P.O.: 118640
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 47 %

DATE RECEIVED: 04/20/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-94, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR>4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
261	HEISE	AT52000	AT5-10521	04/28/1999

Calibration Certificate Acceptance

Item 0-100 Pressure gage
SN 99LE001

	Q/A	Eng.
NIST Traceability Adequate		
As Found/As Left Values		
Calibration Data Sufficient		
Tolerance Range Adequate		
Date of Review:	5-11-99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: Peter J. Stemmer ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001 08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Lab
WO NUMBER: 71668
SERIAL:
CUST ID: 99LE001

DATE: 4/27/99
TECH: JAM
INST NO: 28820

CALIBRATION DATA TAKEN

INCOMING X
OUTGOING X

CONDITION OF EQUIPMENT

IN TOLERANCE X
OUT OF TOLERANCE

MANUFACTURER McDaniel.

RANGE 0-100 PSI

ACCURACY +/-3 PSI

GAUGE PRESSURE	STANDARD READING
10	9.65
30	29.91
50	50.17
70	70.55
95	95.90

Rothe Development, Inc.
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 26672 WORK ORDER # 71679 **299**

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9794
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 119640

DATE: 04/20/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM
MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 98LE001
CUST ID: 98LE001
ACCESS
RCVD:
**** Need Manual ****

CUSTOMER COMMENTS/REQUIREMENTS:

OUR PO:

DATA: ~~BEFORE & AFTER DATA REQUIRED~~

RECEIVED:
( ) IN TOLERANCE
( ) OUT OF TOLERANCE
( ) INOPERATIVE

RETURNED:
(X) IN TOLERANCE
( ) LIMITED CALIBRATION
( ) REPAIR ONLY
( ) NO ACTION
DATA

CALIBRATION INTERVAL: 12mos.
CAL DATE: 4/21/99
DUE DATE: 4/21/00

CAL'D AT:
(X) RDMSD
( ) ON-SITE
( ) SUB

ENVIRONMENTAL CONDITIONS:
68 °F
47 %RH

SPECIFICATIONS:
( ) MFG
( ) RDMSD:
(X) OTHER: 0 Mega +/- 3PSI

PROCEDURE:
( ) MFG:
( ) RDMSD:
(X) OTHER: NAVAIR 17-20MP-41

RDMSD TECH: SAD

SERVICE CODE: 3

FAULT/SYMPTOM:

THIS IS NO calibrated

WORK PERFORMED:

R#'S:
261

LIMITED CALIBRATION:

COMMENTS:

KIT REF	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS: _____		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	14	00
						TAX 7.750%	3	41
						TOTAL	47	41

HIRE MA: DATE:

RDMSD 2002 4/97

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: 58175 300

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 98LE001
CUST. ID: 98LE001

CAL DATE: 04/27/1999
DUE DATE: 04/27/2000

CONTROL NO.: 556 - 26672
TECHNICIAN: 2
SPECIFICATIONS: OMEGA +/-3PSI
PROCEDURE: NAVAIR 17-20MF-41
WORK ORDER: 71670
CUSTOMER P.O.: 118640
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 47 %

DATE RECEIVED: 04/20/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
261	HEISE	ATS2000	ATS-10521	04/28/1999

Calibration Certificate Acceptance

Item 0-100psi Pressure Gage
SN 98-LE001

	Q/A	Eng.
NIST Traceability Adequate	[illegible]	ES
As Found/As Left Values	[illegible]	ES
Calibration Data Sufficient	[illegible]	ES
Tolerance Range Adequate	[illegible]	ES
Date of Review:	5/14/99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: Peter J Stemmer ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001
08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Lab
WO NUMBER: 71670
SERIAL:
CUST ID: S8LE001

DATE: 4/27/99
TECH: Sam
INST NO: 26672

CALIBRATION DATA TAKEN

INCOMING X
OUTGOING X

CONDITION OF EQUIPMENT

IN TOLERANCE X
OUT OF TOLERANCE

MANUFACTURER McDaniel

RANGE 0-100 PSI

ACCURACY +/- 3 PSI

GAUGE PRESSURE	STANDARD READING
10	9.89
30	30.09
50	50.30
70	70.63
95	95.86

Index Test Report #400

1.) Item #1 documentation: 8 pages
Item #2 documentation: 11 pages
Item #3 documentation: 17 pages
Item #4 documentation: 7 pages
Item #5 documentation: 18 pages
Item #6 documentation: 9 pages
Item #7 documentation: 11 pages
Item #8 documentation: 8 pages
Item #9 documentation: 5 pages
Item #10 documentation: 5 pages
Item #11 and #12 documentation: 12 pages

2.) Receiving Inspection Log:

R.I.R. 99-12-01 7 pages
R.I.R. 99-12-02 8 pages
R.I.R. 99-12-03 9 pages
R.I.R. 99-12-04 6 pages
R.I.R. 99-12-05 3 pages
R.I.R. 99-12-06 3 pages
R.I.R. 99-12-07 7 pages
R.I.R. 99-12-08 5 pages
R.I.R. 99-12-09 9 pages
R.I.R. 99-12-10 3 pages
R.I.R. 99-12-11 3 pages
R.I.R. 99-12-12 3 pages
R.I.R. 99-12-13 2 pages
R.I.R. 99-12-14 2 pages
R.I.R. 99-12-15 2 pages
R.I.R. 99-12-16 2 pages
R.I.R. 99-12-17 2 pages
R.I.R. 99-12-18 2 pages
R.I.R. 99-12-19 2 pages
R.I.R. 99-12-20 3 pages
R.I.R. 99-12-21 1 page
R.I.R. 99-12-22 1 page
R.I.R. 99-12-23 1 page
R.I.R. 99-12-24 1 page
R.I.R. 99-12-25 5 pages

GM
6/20/00

	Data on Kaowool Refractory Ceramic Fire Material Shelf Life Tracking Log	1 page
	99-12-09	
	99-12-09	
	99-12-09	
	99-12-10	
3.)	Test Slab Data:	2 pages
4.)	Indoctrination/Training Records:	2 pages
5.)	Certification of Personnel	1 page
	Robert D. Grubb Jr.	1 page
	Sandra M. Bradford	8 pages
6.)	Calibration of Equipment	
7.)	Certificate of Calibration Log	1 page
	Variable Voltage Meg Check	3 pages
	Channel Verification for Fluke Hydias	1 page
	Digital Caliper	13 pages
	Teflon Thermocouple Wire	28 pages
	6" Dial Caliper	25 pages
	100 Channel Data Acquisition System	2 pages
	300 Channel Data Acquisition System	2 pages
	0-100 Psi Pressure Gauge	14 pages
	Data Acquisition Unit	2 pages
	Yokogawa Packing Slip for Equipment	1 page
8.)	Thermocouple Placement for all items	28 pages
9.)	General Notes	17 pages
10.)	Attendance at Fire Test	1 page

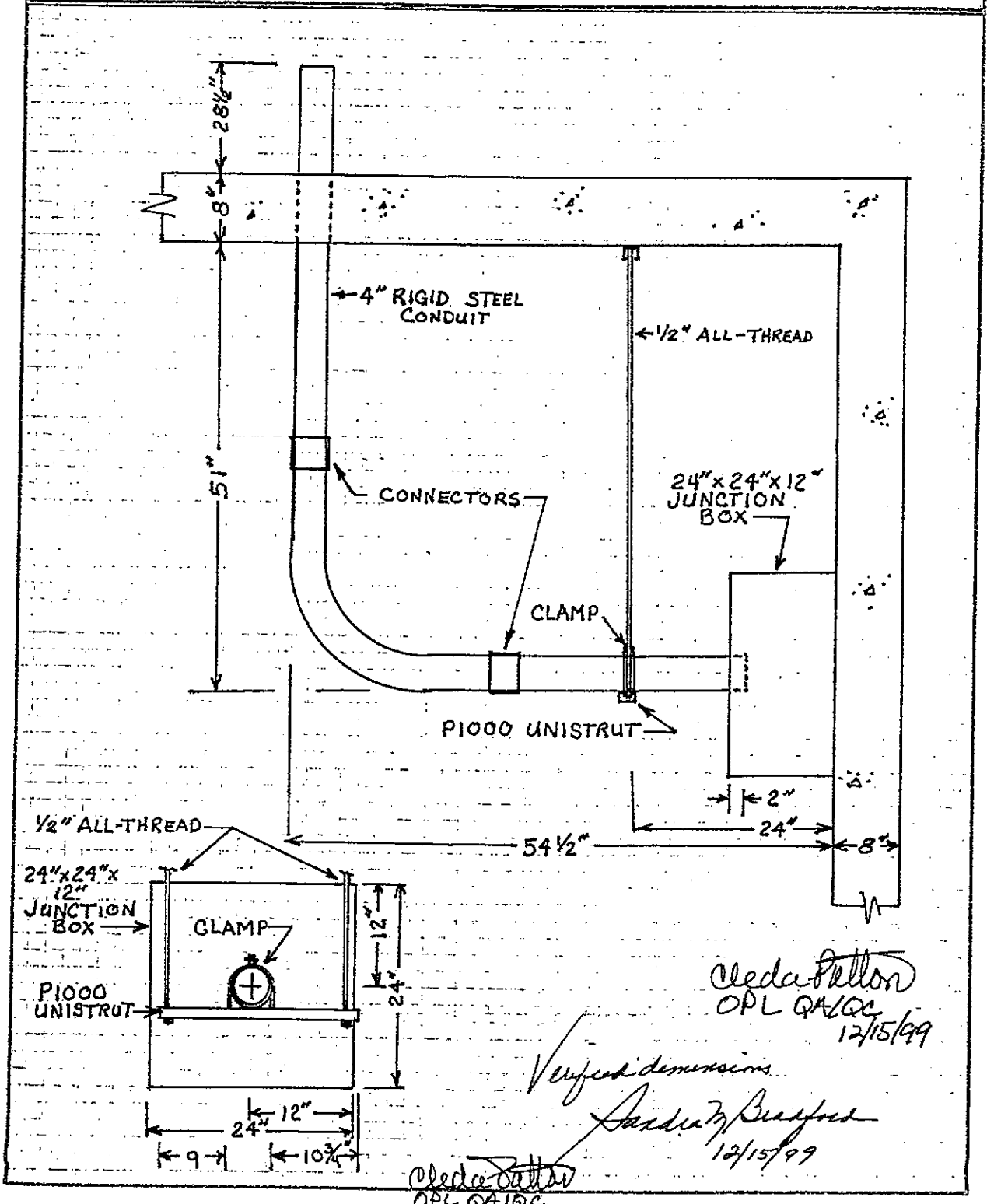
CPM 6/20/00

~~303~~
304
-GJ
06/201

pg 1 of 8

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #1 CHKD _____



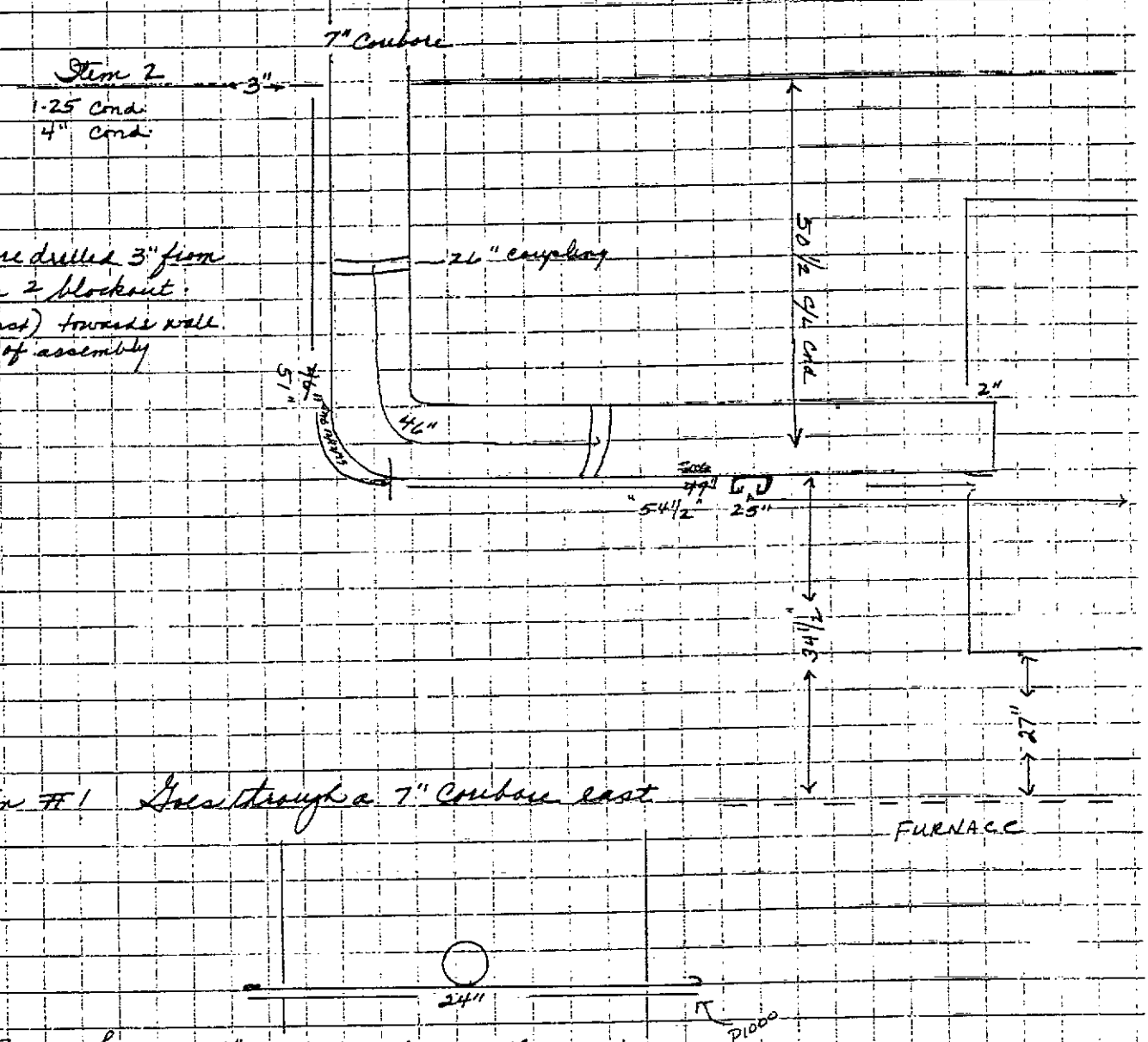
Cleda Patton
OPL QA/QC
12/15/99

Verified dimensions
Sandra Bradford
12/15/99

Cleda Patton
OPL QA/QC
12/15/99

ITEM #1 Pg 288 TR 400 12/10/99

4" rigid steel conduit entering front of Item #11 terminating 2" into box. No bushing or coupling installed.



Support hanger 24" conduit centered allowing for T-shirt of 9" each side.

support hanger 25" from back wall

From concrete slab to bottom of conduit ~~46~~ 51" from back to box ~~49~~ 54 1/2" to inside box 2"

Total length ~~97~~ 105 1/2"

From coupling to coupling 46" (C/L to C/L of coupling)

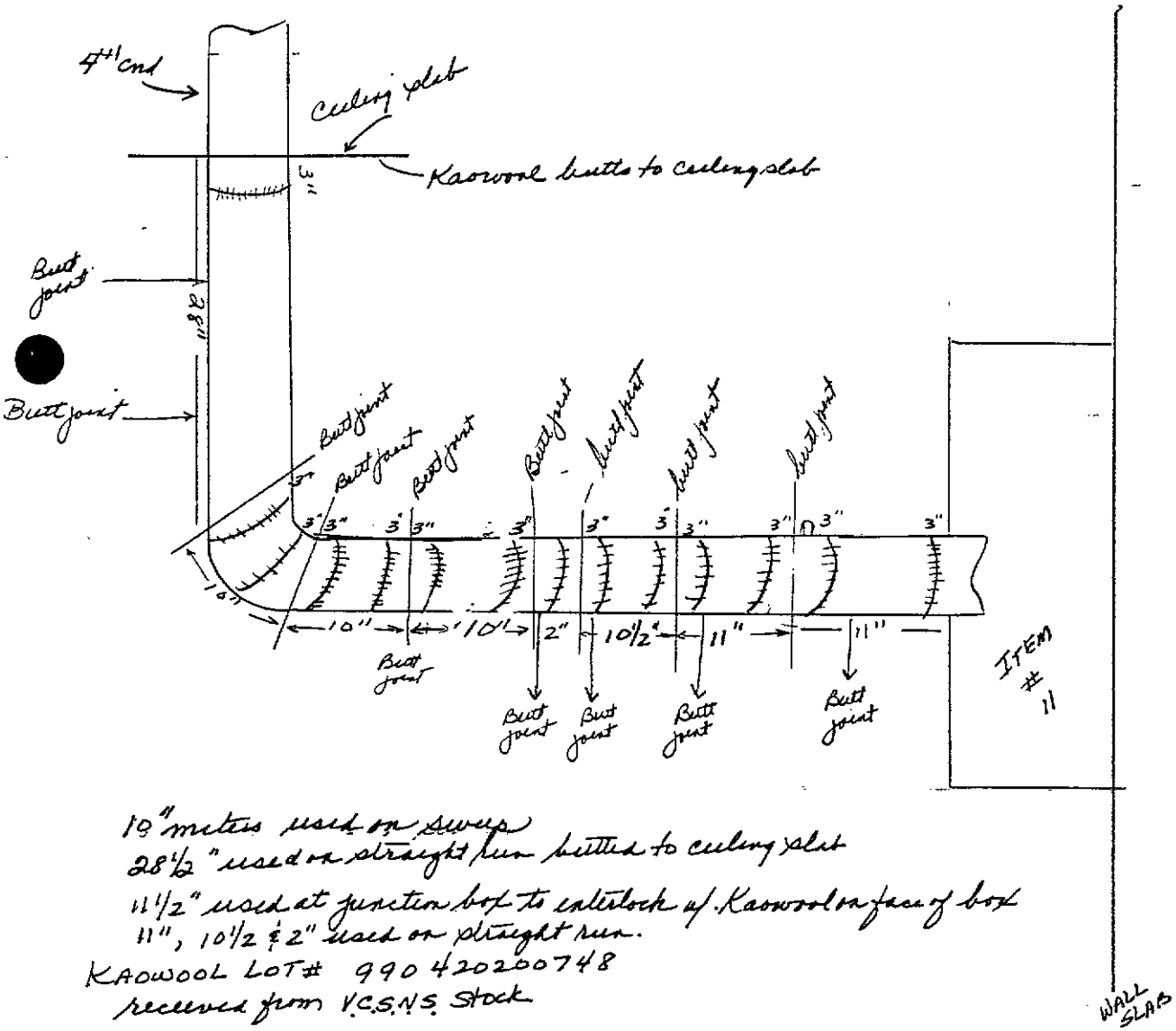
Extends 28 1/2 above slab out of furnace

Gordon M Bedford 12/10/99

OPL QA/QC 12-10-99 [illegible]

TR 4/10
12/13/99
pg. 3 of 8

ITEM #1
First Layer
4" rigid steel conduit



10" miters used on sweep
28 1/2" used on straight run butted to ceiling slab
11 1/2" used at junction box to interlock w/ Kaowool on face of box
11", 10 1/2 & 2" used on straight run.
KAOWOOL LOT# 990420200748
received from V.C.S.N.S. Stock

1/2" stainless steel bands at 3" max at butt joints and do not exceed max 12" spacing

Aleda Patton
QA/QC OPL
12/14/99

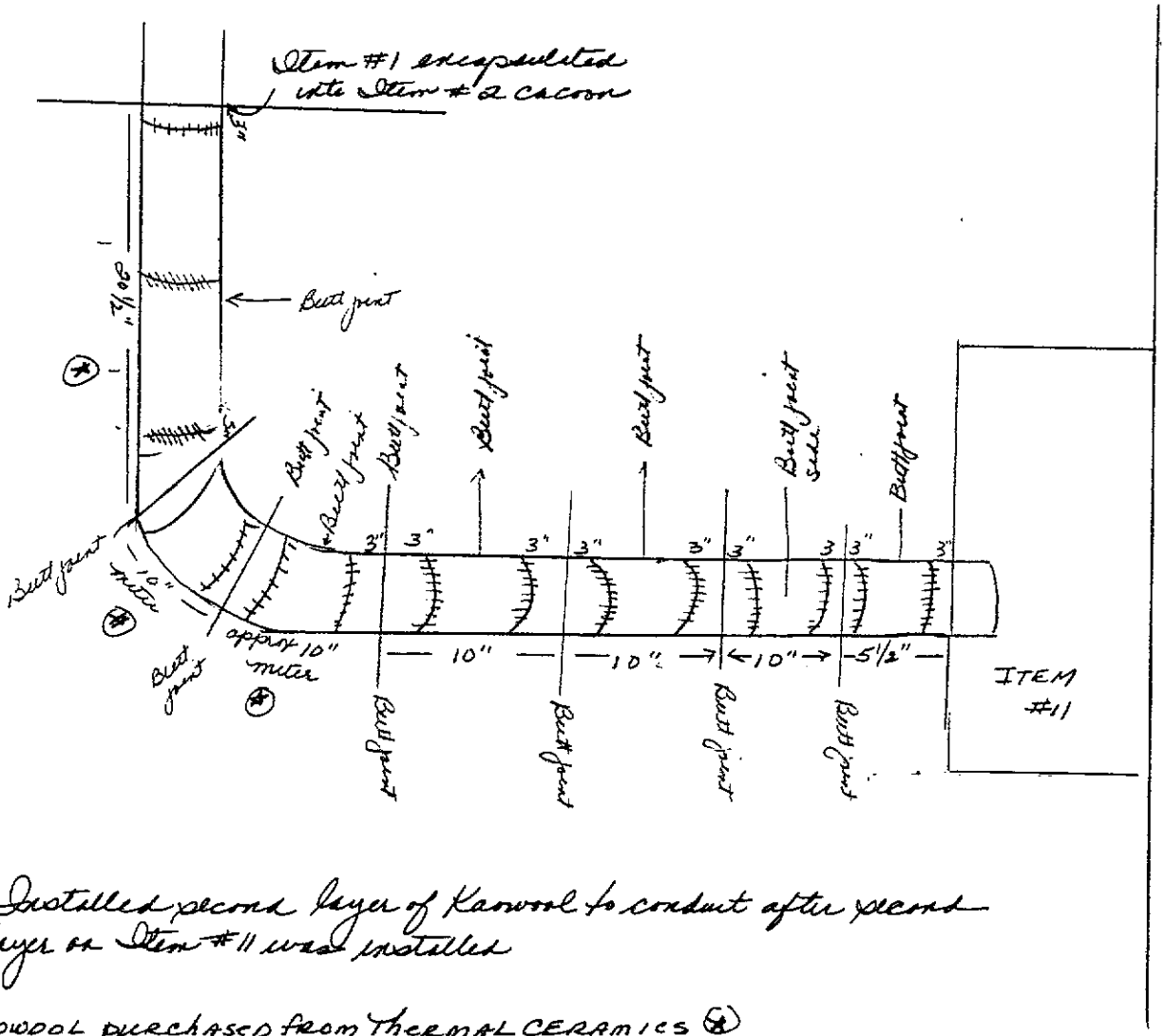
Sandy Bradford 12/14/99

TP 400
12/14/99
Pg 4 of 8

ITEM #1

Second Layer.

4" conduit (rigid steel) at Item #11 interface to ceiling slab lift



Installed second layer of Kaowool to conduit after second layer on Item #11 was installed

KAOWOOL purchased from THERMAL CERAMICS (*)
KOAWOOL LOT # 990420200748 rec'd from VCSNS
1/2" x .020 Steel Band LOT # BLFPX042NB

Cleda Patten
OPL QA/QC 12/18/99

Sandra M. Bradford 12/18/99

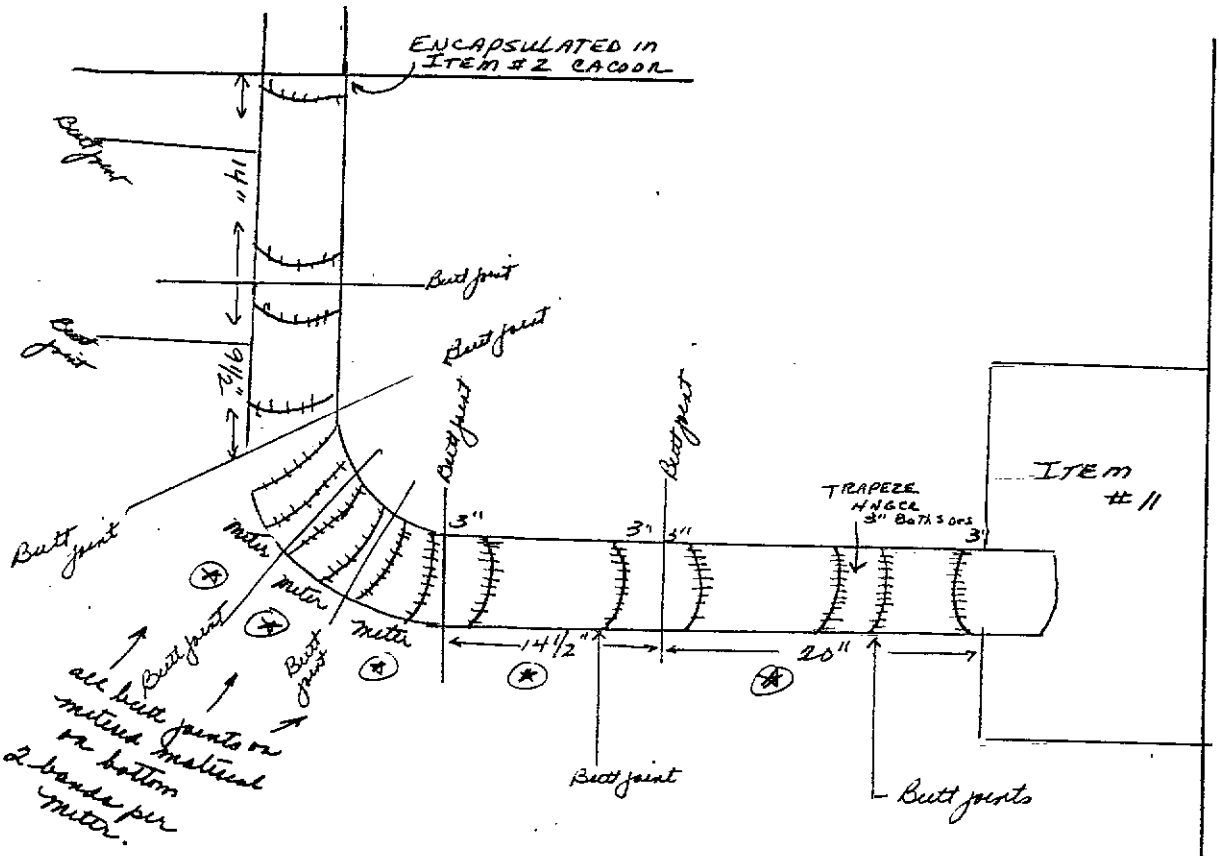
ITEM #1

TR 400
12/18/99

4" rigid steel conduit at Item 11 interface to ceiling slab
edit

Third Layer

pg 5 of 8



Trapeze hanger cut out all three layers.
1/2" x .020 steel bands do not exceed 3" and 12" spacing.

KAOWOOL purchased from thermal Ceramics Houston ⊛
1/2 x .020 steel bands BLFPX042NB rec'd from VCSNS stock

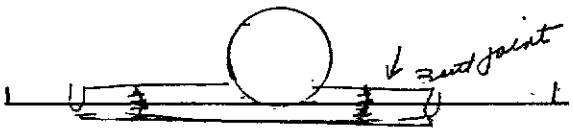
Cleda Patton
OPL QA/QC
12/18/99

Sandy Bradford
12/18/99

TR 410
12/18/99
Pg 6 of 8

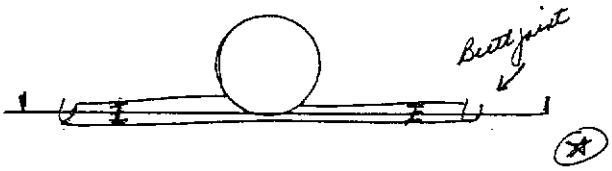
ITEM #1

T-Short Trapeze Hanger - P1000



FIRST LAYER

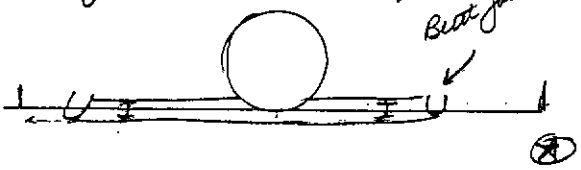
First layer installed as 1 piece goes under conduit 19" length of blanket



all butt joints are at top of P1000

Second LAYER

Second layer installed as 1 piece under conduit 19" length

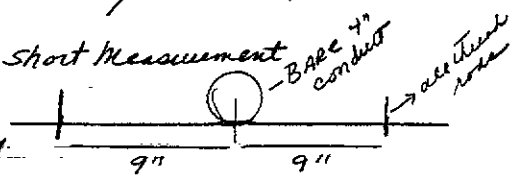


THIRD LAYER

Installed as 1 piece runs under conduit 19" length

Item #1 trapeze hanger. - T-short measured from center of conduit 9" out on both sides. 3-1" layers of Kaowool w/ 1/2 x .020 steel bands.

T-Short Measurement



P1000
24" Long

K[illegible]OOL purchase from Thermal Ceramics Houston

1/2 x .020 steel bands. BLFPX042NB rec'd from VCSNS Stock

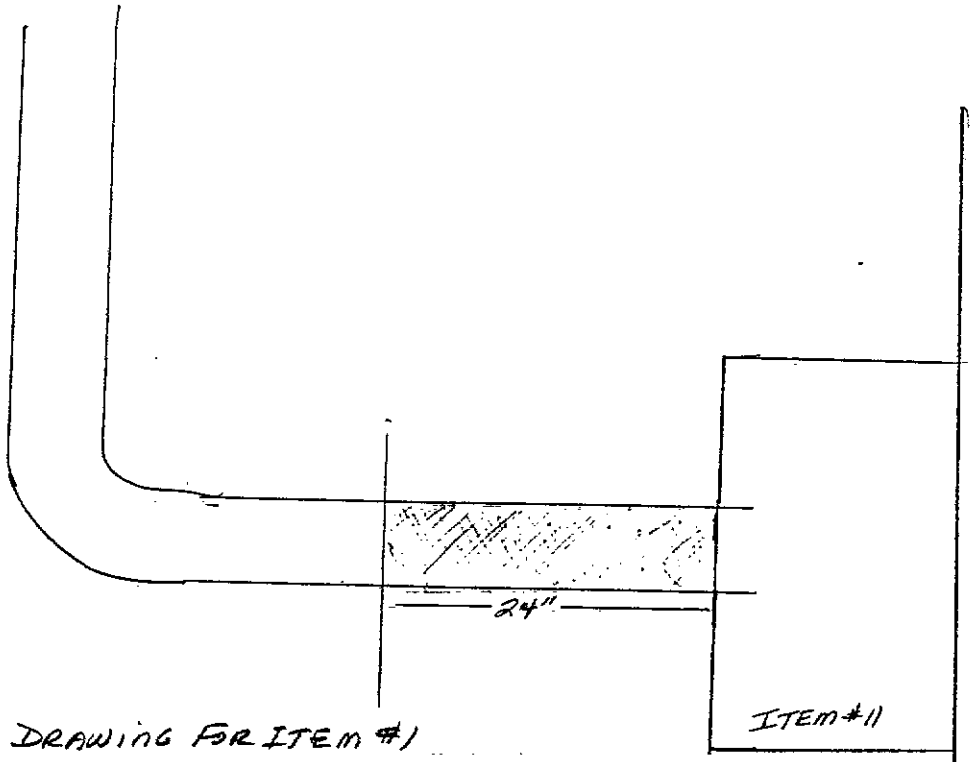
Cleda Patton
QA/QC DPL
12-18-99

Sandy Bufford
12/18/99

ITEM #1

FLAMEMASTIC Installation

#TR 400
12/19/99
pg 7 of 8



SEE DRAWING FOR ITEM #1

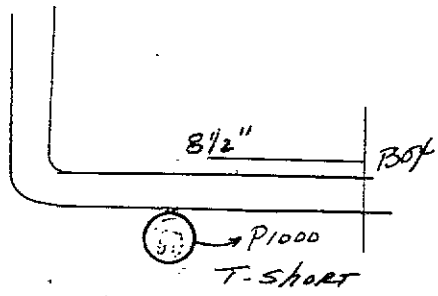
FLAMEMASTIC 77 installed from FACE of ITEM # 11 - 24" out into Horizontal Conduit.

Conduit wrapped with 3- 1" LAYERS of KAOWOOL

FLAMEMASTIC LOT # 9909024

1/8" layer Flamemastic installed 12/17/99
1/8" layer Flamemastic installed 12/18/99

Flamestic 77 installed over thermal short it is in the 24" Coverage on Item #1 required by VCSNS Eng.

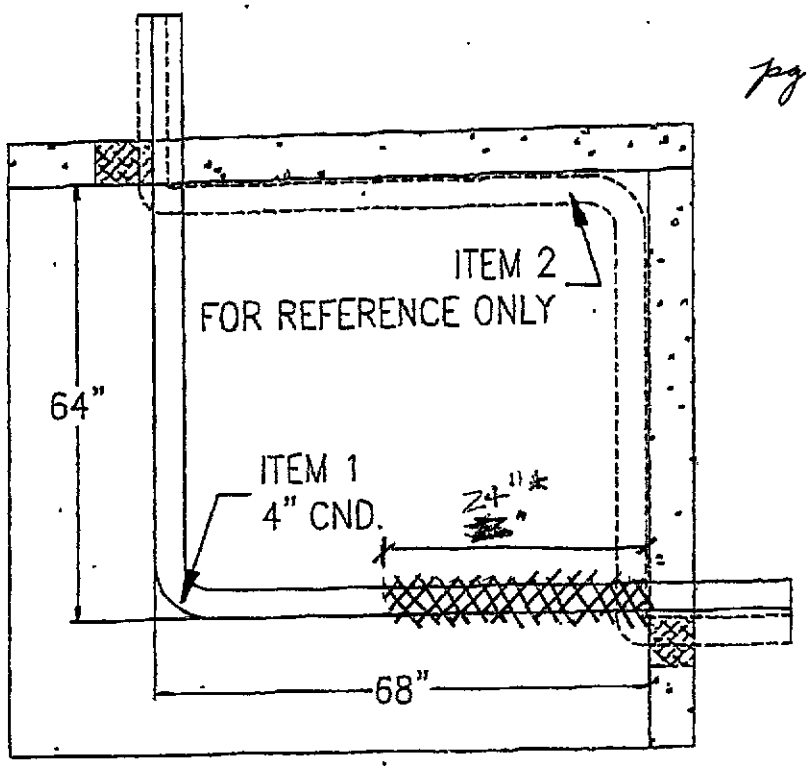


SEE ITEM # 5 drawing

Clada Fitter
OPL QA/QC
12/19/99

8 1/2" from face of box
Sandra Bradford 12/19/99

FLAMEMASTIC/ZETEX
SKETCHES
MCK
12/17/99
pg 8 of 8



ELEVATION ITEM 1

- FLAMEMASTIC 77
MCK 12/17/99

* FROM LAST LAYER OF "BOX" MOUNTED KAOWOOL.

Verified 1/8" layer installed Flamemastic 77 12/18/99
Verified 1/8 Flamemastic installed 12/19/99 [signature] 12/21/99

0	10-28-99	AS BUILT			
No.	DATE	REVISION BY		BY	CHECKED APPROVED

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
56 E. JACKSON BLVD. (312) 427-2818 CHICAGO, IL 60604

TRANSCO PRODUCTS INC.
TEST

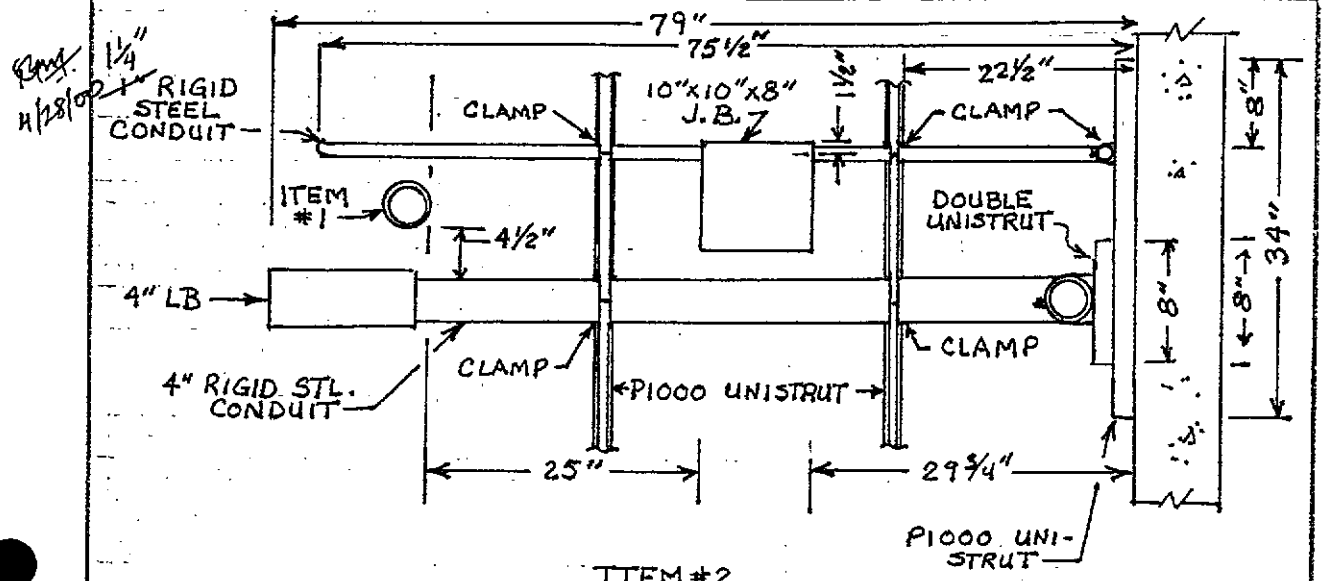
DRAWN: L.F.S.	DATE: 11/1/99	No. 40: Fire Test ITEM 1	REV: 0
CHECKED:	DATE:		
SCALE: N.T.S	FULL (L)mits @ 1=10		

Cleda Patton
OPL QA/QC
12-19/99

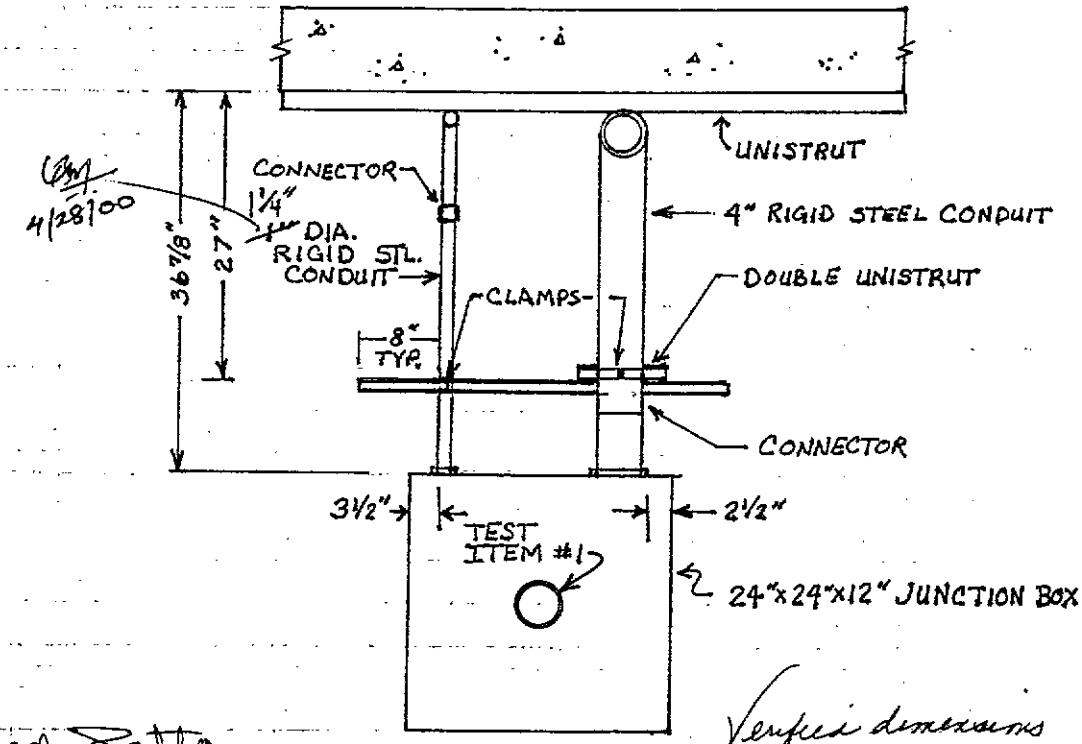
pg. 1 of 11

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #2 ITEM #11 ITEM #12 CHKD _____



ITEM #2
(CEILING VIEW)



ITEM #2
WALL VIEW

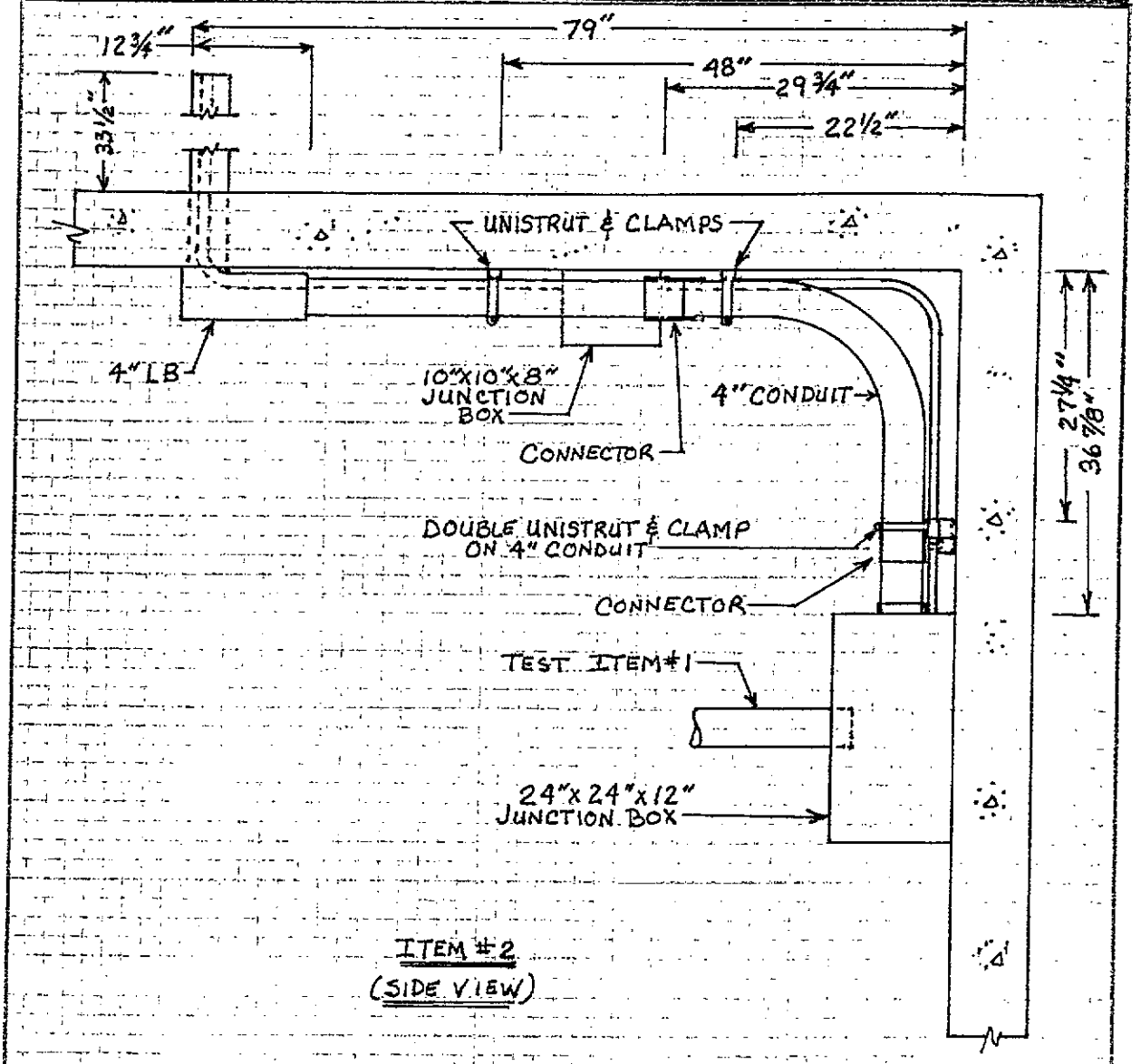
Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions
Darlene M Bradford
12/15/99

Pg 2 of 11

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #2 ITEM #11 ITEM #12 CHKD _____



ITEM #2
(SIDE VIEW)

Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions
Sidney Beaufore 12/15/99

NO INFORMATION FOR ITEM 2

ON THIS PAGE

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VERIFIED BY: 5/5/00

B.C. MACHCHHAR
TRANSCO, INC. CORPORATE
QUALITY ASSURANCE MANAGER

NO INFORMATION FOR ITEM 2

ON THIS PAGE

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VERIFIED BY: 5/5/00

B.C. MACHCHHAR
TRANSCO, INC. CORPORATE
QUALITY ASSURANCE MANAGER

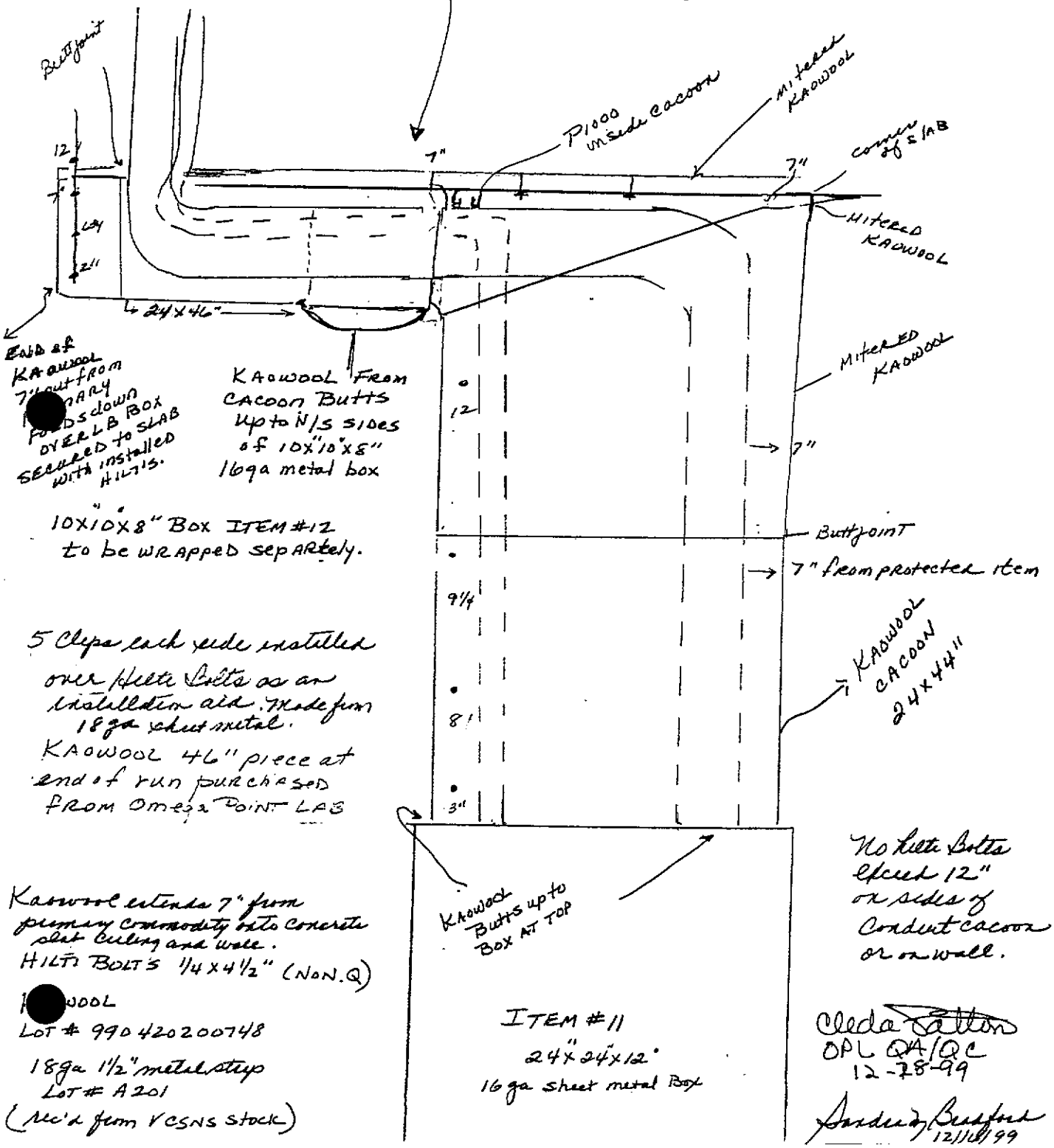
ITEM # 2

LAYER 1

CACOON DESIGN

#TR 400
12/16/99
Pg. 5 of 11

From wall west Hilti Bolts across ceiling are 8" - 11 15/16 - 6, 9 1/4" - 9 1/4" 6" - 12", 12" both sides of cacoon



Cleda Patton
OPL QA/QC
12-28-99

Sandra Bedford
12/16/99

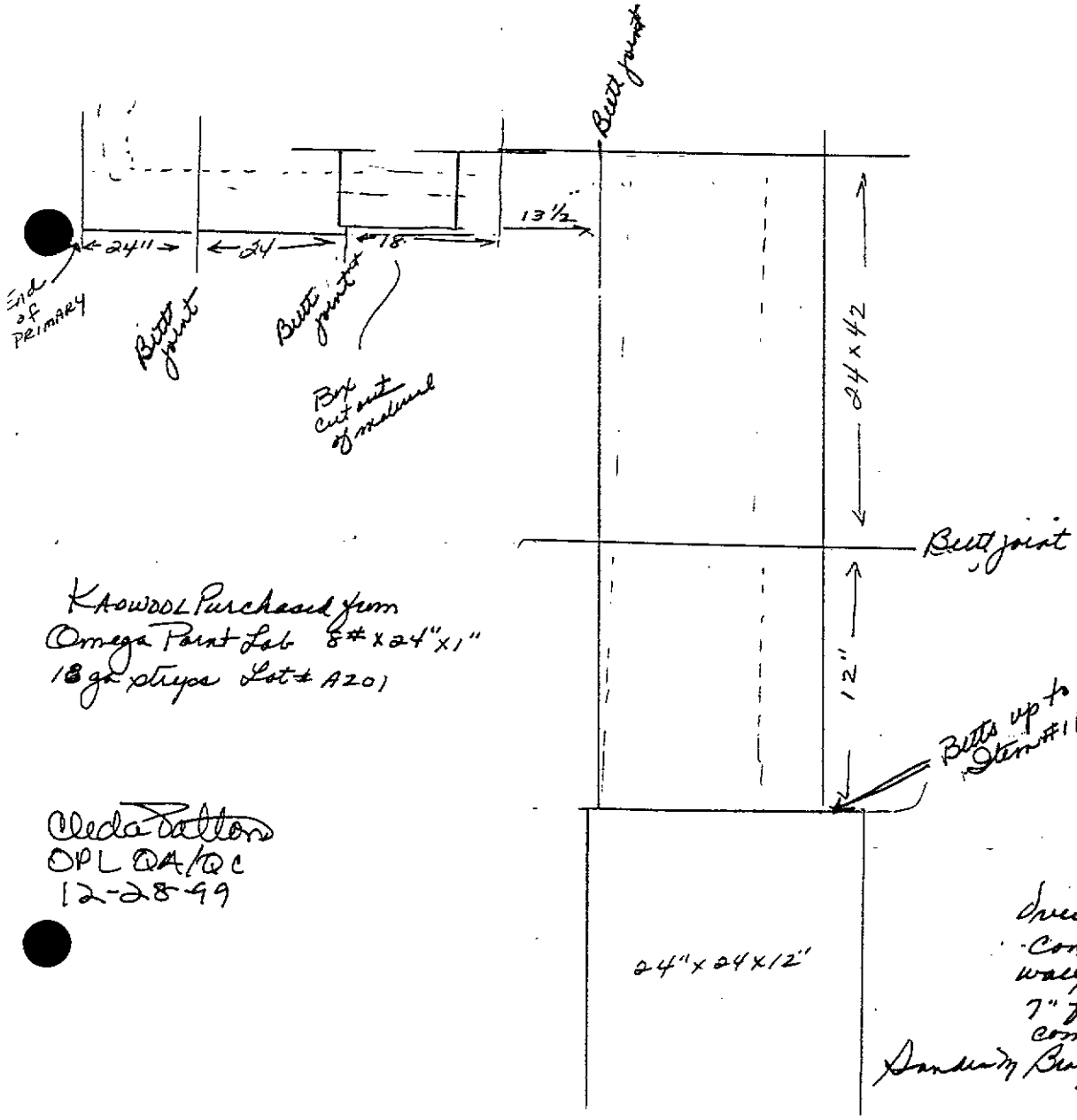
ITEM #2

TR 410
12/17/99
Pg 6 of 11

SECOND LAYER

Cacoon placed over conduits (primary commodity.
10x10x8" 16 ga sheet box not included in cacoon.

All butt joints all layers are 6"-12" staggered.
overlaps onto concrete 7" from primary commodity
Installed washer clips made of 18 ga sheet metal to hold material prior to 18 ga metal straps being installed. Metal clips installation aid only.
Installed



KAOWOOL Purchased from
Omega Paint Lab 8# x 24" x 1"
18 ga straps Lot # A201

Ulda Patton
OPL QA/QC
12-28-99

Overlaps onto concrete wall/ceiling by 7" from primary commodity.
Sandra Bradford 12/17/99

ITEM#2

TR 400
12/17/99
pg. 7 of 11

THIRD LAYER

1/28/00

1¼" ~~4"~~ rigid steel conduit and 4" rigid steel conduit in a cacoon detail. Fastened to ceiling and wall.

KAOWOOL purchased from Omega Point LAB 8#x24"x1"
18ga metal strip Lot # A201

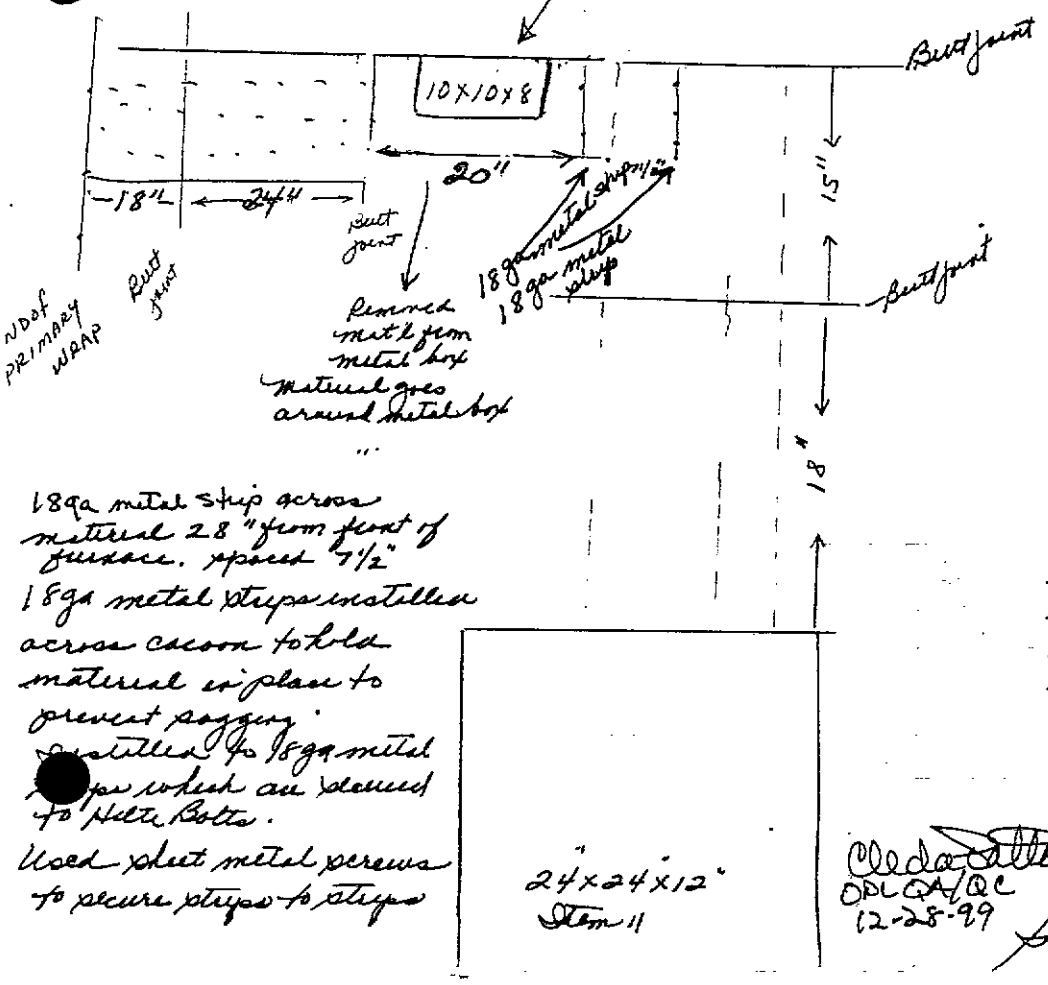
Kaowool extends out into Concrete 7" from primary commodity.

All butt joints are 6"-12" staggered all layers.

: at Item 2 - 4" conduit installed a section of Kaowool 12"x12" approx, to hold in place a 18ga metal strip used from side across cacoon to other side. Secured to 18ga strip that is bolted to ceiling. Sheet metal screws used to secure strip to strip.

Metal strips 18 ga installed with ~~Hilti~~ bolts with fender washer ¼x1¼ and nut (installed over 3-1" layers of Kaowool.)

Item #12



18ga metal strip across material 28" from front of furnace. spaced 7½"
18ga metal strips installed across cacoon to hold material in place to prevent sagging.
Installed to 18ga metal strips which are secured to Hilti Bolts.
Used sheet metal screws to secure strips to strips

Provided 18" ga metal strips 1½" wide installed with Hilti Kwik Bolts and secured w/ washer/nut
3-1" layers of Kaowool installed under metal strip. (washer = fender washer ¼x1¼"

Cleda Allen
ODL QA/QC
12-28-99

Gordon M Bedford 12/18/99

TR 400
12/16/99
pg. 8 of 11

ITEM #2

18 ga.-1½" METAL strip

(Nom.) 1½" 18 ga. sheet metal strip

LOT # A201
recured from VCSNS stock

Predrilled prior to installation over ¼" x 4½" HILTI BOLTS AT ceiling SLAB and WALL SLAB for installation of CACOON design over 1" rigid steel conduit and 4" rigid steel conduit Three LAYERS of 1" KAOWOOL installed under. 1½" 18 ga. sheet metal strip Secured with WASHER and nut.

The metal strip runs up WALL Both sides and ACROSS CEILING SLAB.

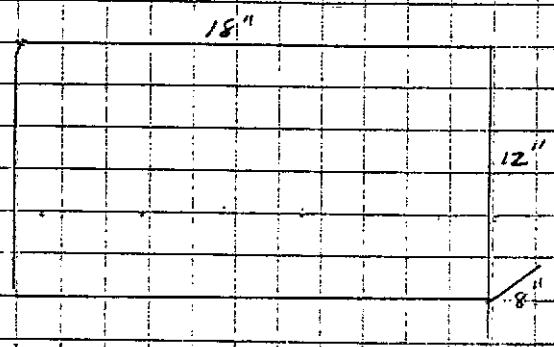
Cleda Patton
OPL QA/QC
12-28-99

Sandy Bedford 12/16/99

TR 400
12/9/99
pg 9 of 11

ITEM # 5 1-2
12/9/99

BLOCK OUT 18" x 12" x 8"



BLOCK on WALL SLAB (VERTICAL SLAB) SEALED with Quik Rete Ready to Use Concrete mix.
Block out not used.

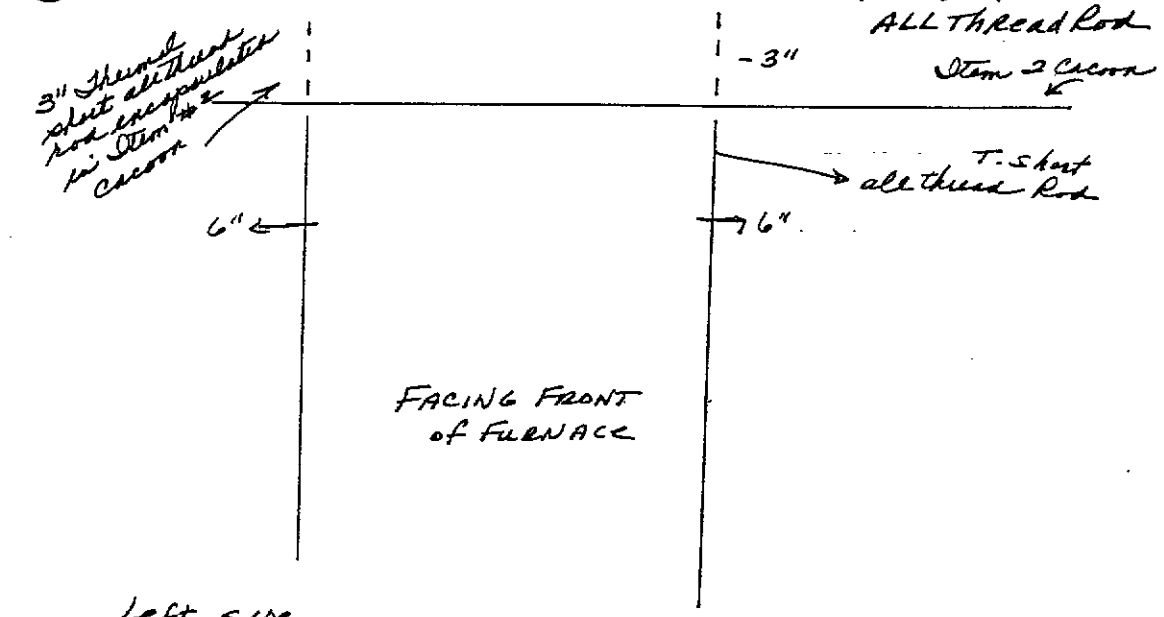
12/9/99

OPL QA/QC 12-9-99

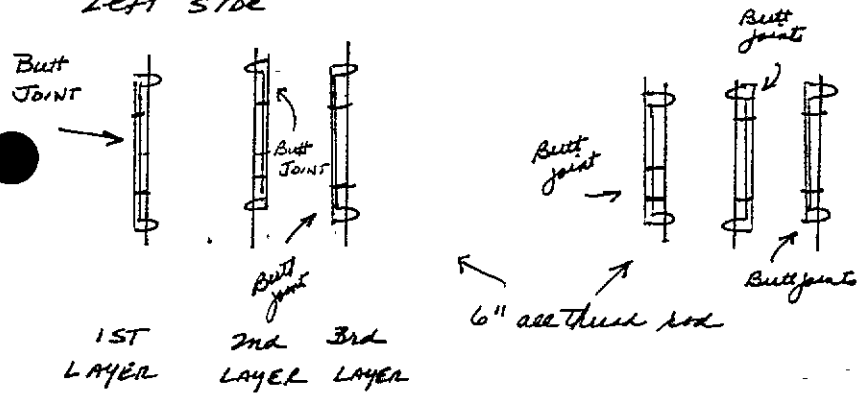
Item #2

TR 400
12/18/99
Pg 10 of 11

T-SHORT
ALL Thread Rod



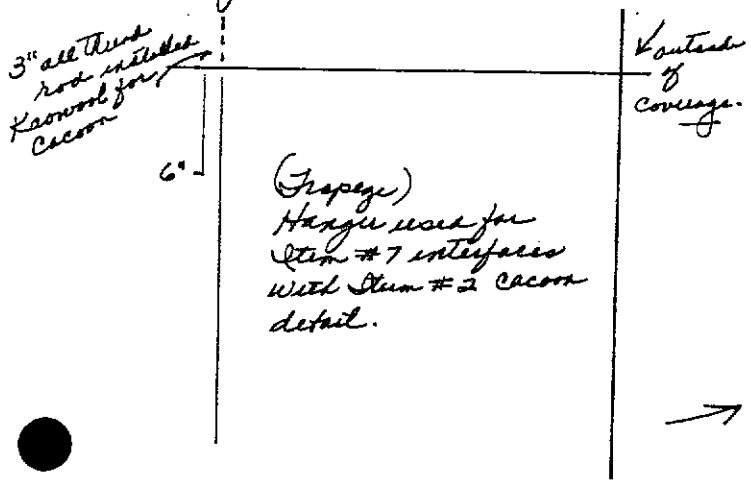
Left side



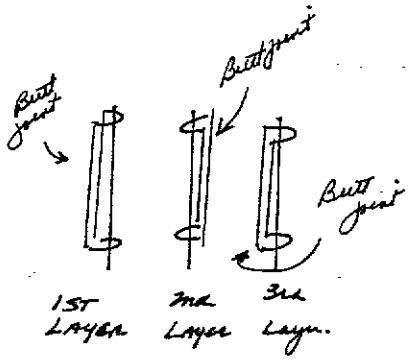
First and second layer 2 bands
Third layer 2 bands

Thermal short 6" from cocoon, 3" encapsulated in Item #2 Cocoon.

Sm Bradford
12/18/99



(Trapeze)
Hanger used for Item #7 interfaces with Item #2 cocoon detail.



on assembly T-short, ~~tape~~ band 1/2 x .020 installed at bottom to hold 3 layers of Kaowool on all thread rod. (Weight was pulling it down from top). 12/18/99

First, second and third layer 2 bands each.

Sandra M Bradford 12/18/99

Cleda Patton
DPL QA/QC 12-28-99

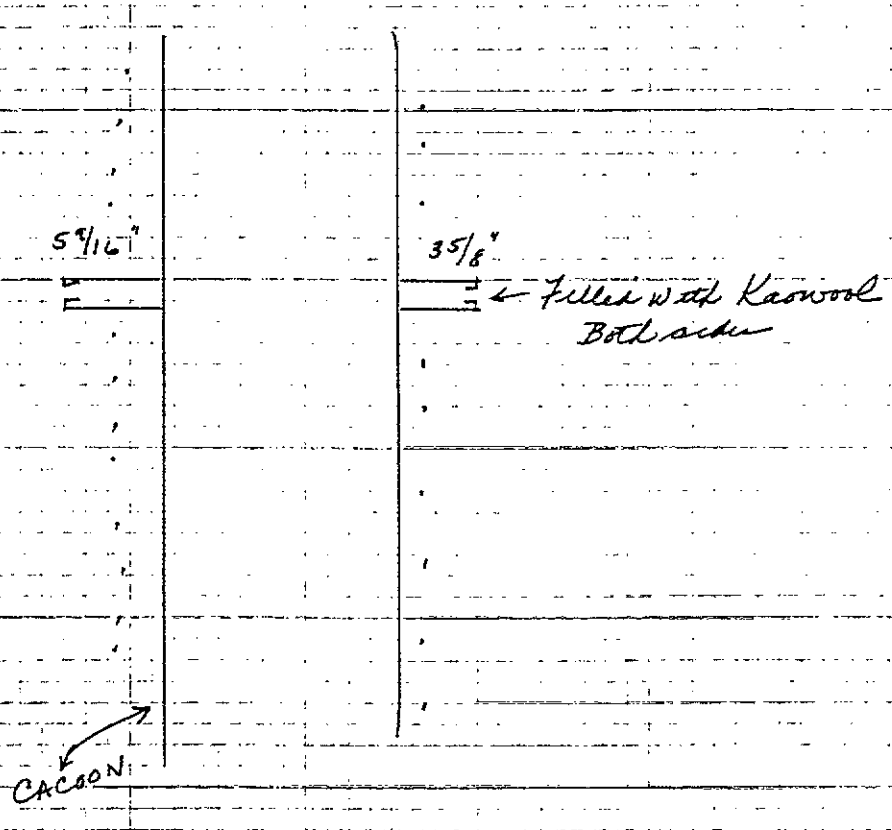
Pg. 11 of 11

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

TR 400
12/19/99

Item #2
T-Shorts P1000



Heitis Knuk Bolt II 1 1/2" up on wall above and below P1000 Thermal Short.

Three layers of Kaowool installed over each Heitis Bolt secured using 1/4 x 1 1/4" fender washer and nut.

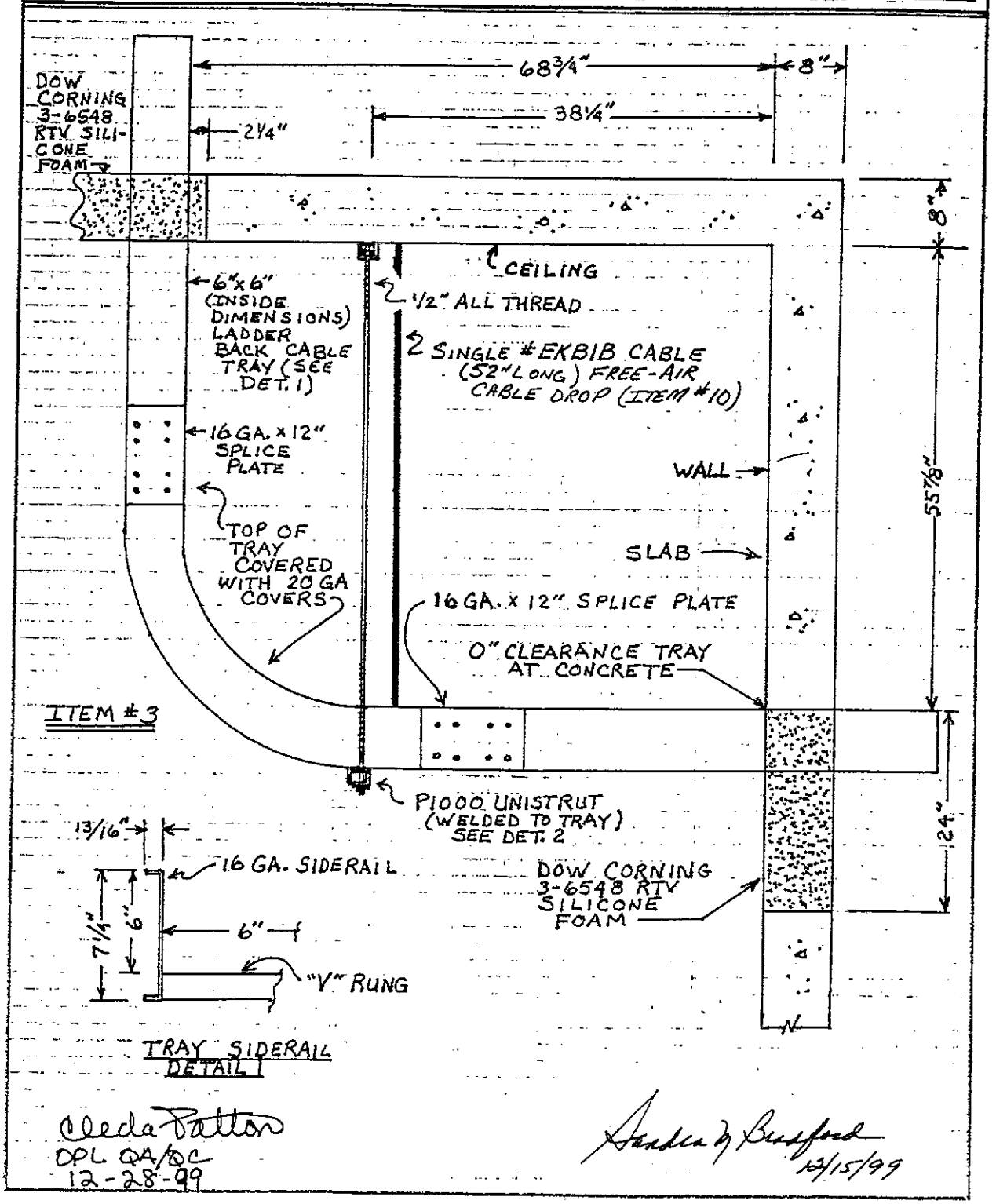
Kaowool purchased from (Hanston) Thermal Ceramics ⊕

Cleda Dalton
OPL QA/QC 12-28-99

Sandra M Bradford 12/19/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY Pg 1 of 15
ITEM #3 CHKD _____



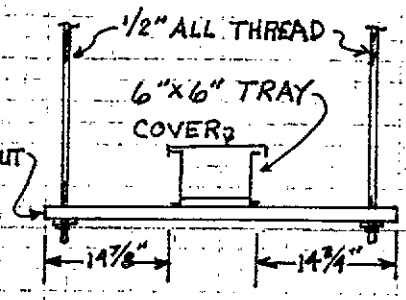
Cleda Patton
OPL QA/QC
12-28-99

Sandra J. Bradford
12/15/99

PAGE 1A OF 15 RM 9/5/00

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____



ITEM 3
DETAIL #2

Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions
Sandra Bradford
12/15/99

Notes

*TR400
12/17/99
~~pg. 4 of 4~~
Pg 5 of 100

Verified width on 18 ga. 1½" metal strips.
Cut with plasma cutter 1½ ± ⅛" Found acceptable.
20 strips.

Pg. 1B of 15

Sandra M Bisgard 12/17/99

Item #3 Installed cable tray cover
20 ga. stainless steel Cut out hole for air drop installation

Item #3 will have a portion of cable tray wrapped with Zetex Cloth
The purpose is for physical protection. This Zetex is installed over
the 3-1" layers of Kaowool. The banding requirements are 3" ~~max~~ min
from termination of cloth and 12" max between bands. SMB 12/17/99

Zetex supplied by VCSN'S delivered to Omega on 12/17/99

Installed cable tray covers. 20 ga stainless steel to 36". Installed ½ X 0.20
steel bands cut to length. Secured with wing seals.

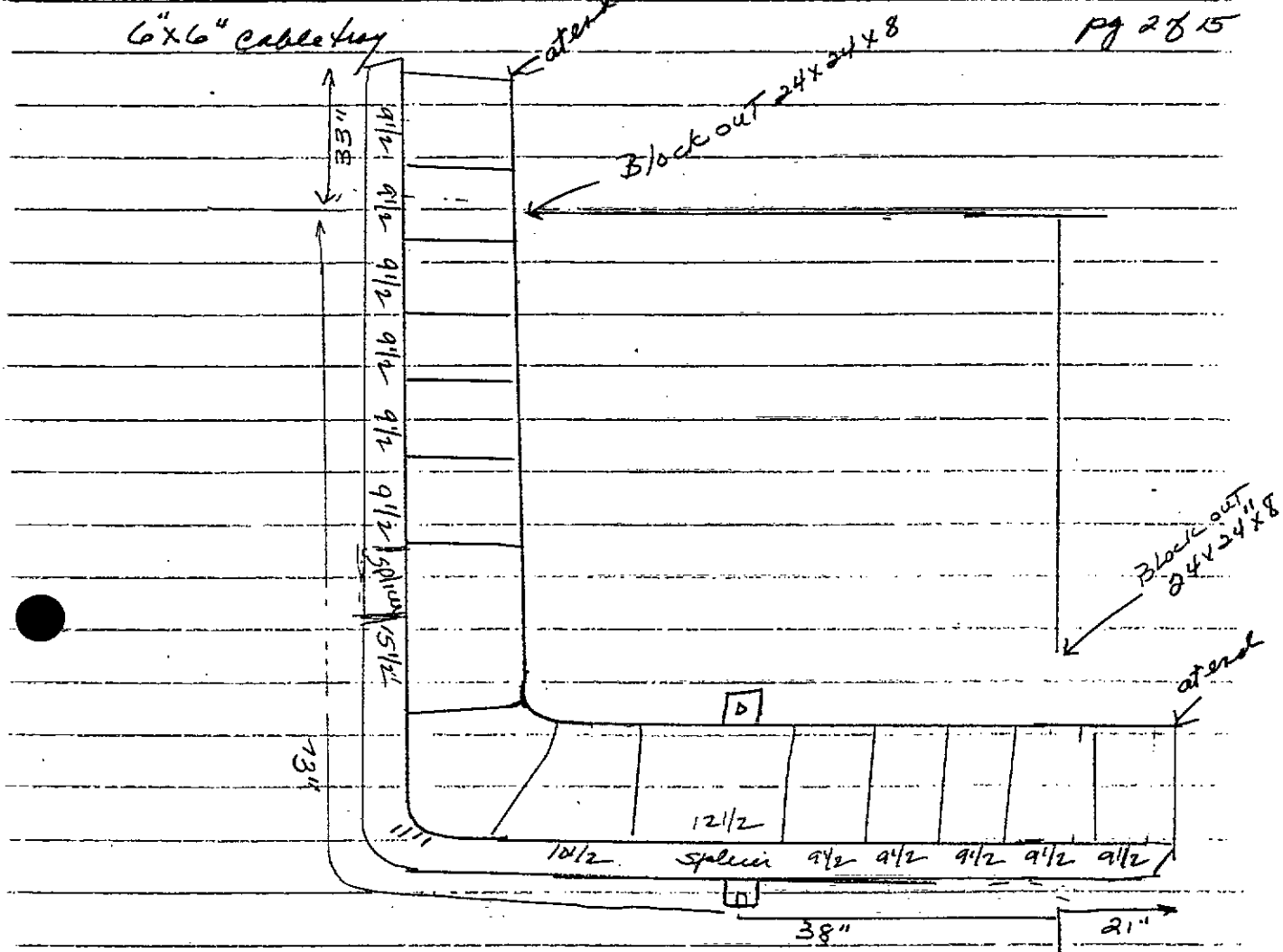
Received 5 boxes of 1" X 24" 8# Thermal Ceramic Kaowool.

Cleda Patton
OPL QA/QC
12-28-99

TR 400
12/6/99

Item #3

pg 2 of 5



8" through BO

73" from Blockout to hanger on heel
38 from hanger to Vertical wall
side rails 7"
Vertical splice plate 12"x6 1/2 6 3/4 8 screws
Both sides
Horizontal splice plate 12"x6 1/2-6 3/4 8 screws FURNACE
Both sides of cable tray
Vertical blockout top of cable tray to top of Blockout 0° clearance.
Bottom of Cable tray to bottom of Blockout 17"
17" + 32" 49" from bottom of furnace.

OPL QA/QC 12-6-99 Carlton

Sandra Bradford 12/6/99

TRANSCO PRODUCTS INC.
55 East Jackson
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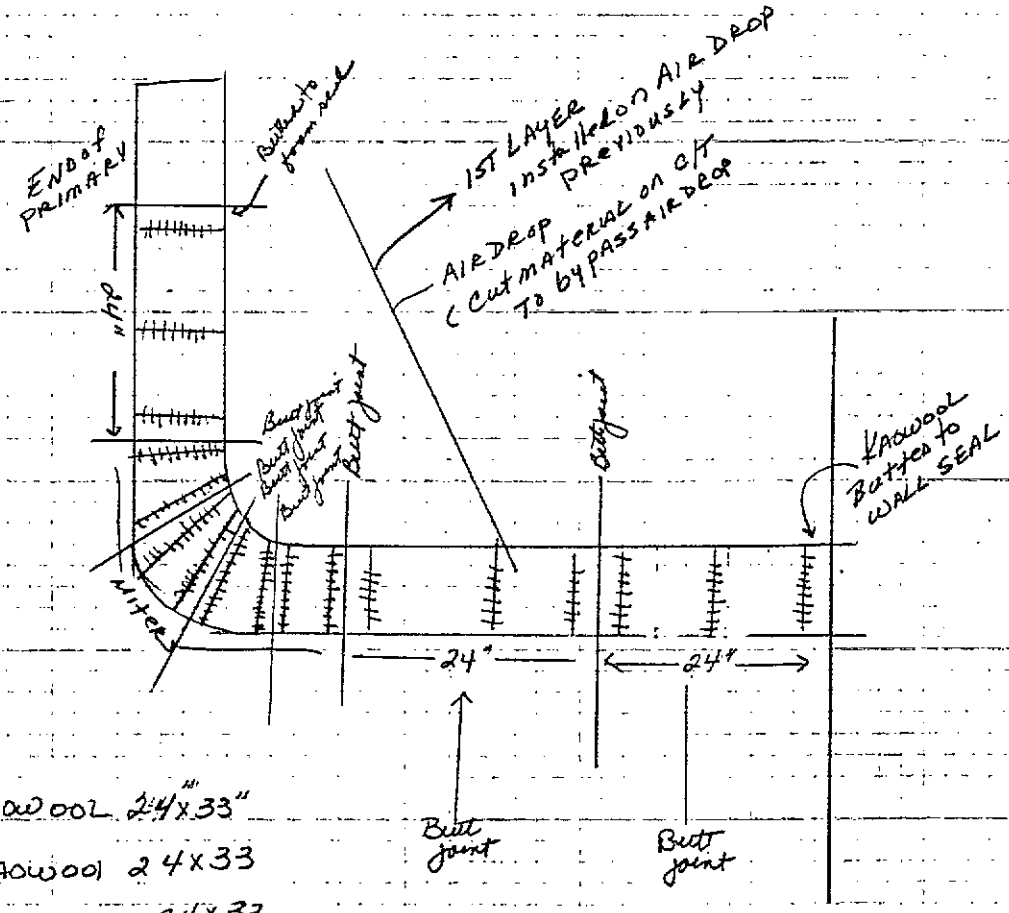
DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD Pg 3 of 15

ITEM #3 TR 400
FIRST LAYER 12/19/99



KAOWOOL 24"x33"
KAOWOOL 24x33
KAOWOOL 24x33
Miters @ 90°
1ST layer of Kowool goes over Pyro construct when they was mapped.
KAOWOOL purchased from Therinal Ceramics Houston ⊛
1/2 x .020 Steel BANDS LOT # BLFAX042NB rec'd from VCSHS Stock

Clede Patton
DPL QA/QC
12-28-99

Sandra Bedford 12/19/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
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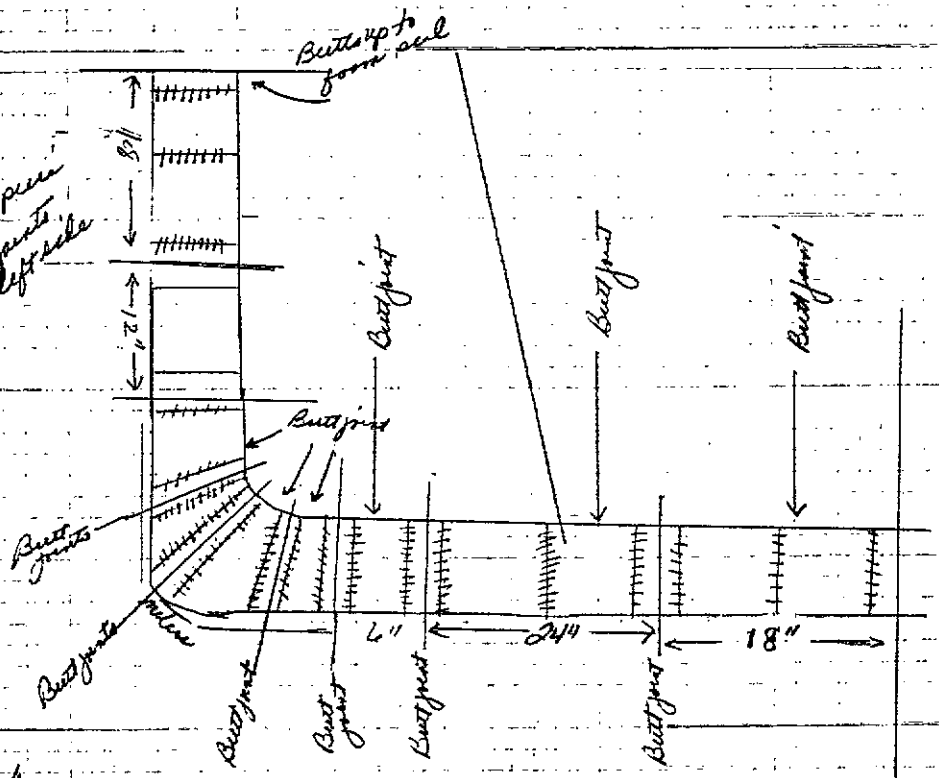
CHKD Pg 4 of 15

ITEM #3 TR 4/00
12/19/99

Second Layer
Kaowool



Second layer installed to P000 under cable tray when cable tray was unwrapped.

2 bands installed on each meter.
No bands spaced the 3 or 12 each requirement.

Kaowool purchased from Thermal Ceramics Houston (*)
1/2 X .020 Bands BLFPX042NB Rec'd from VCSNS stock

Cleda Patton
OPL QA/QC 12-28-99

Sandra G Bufford
12/19/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

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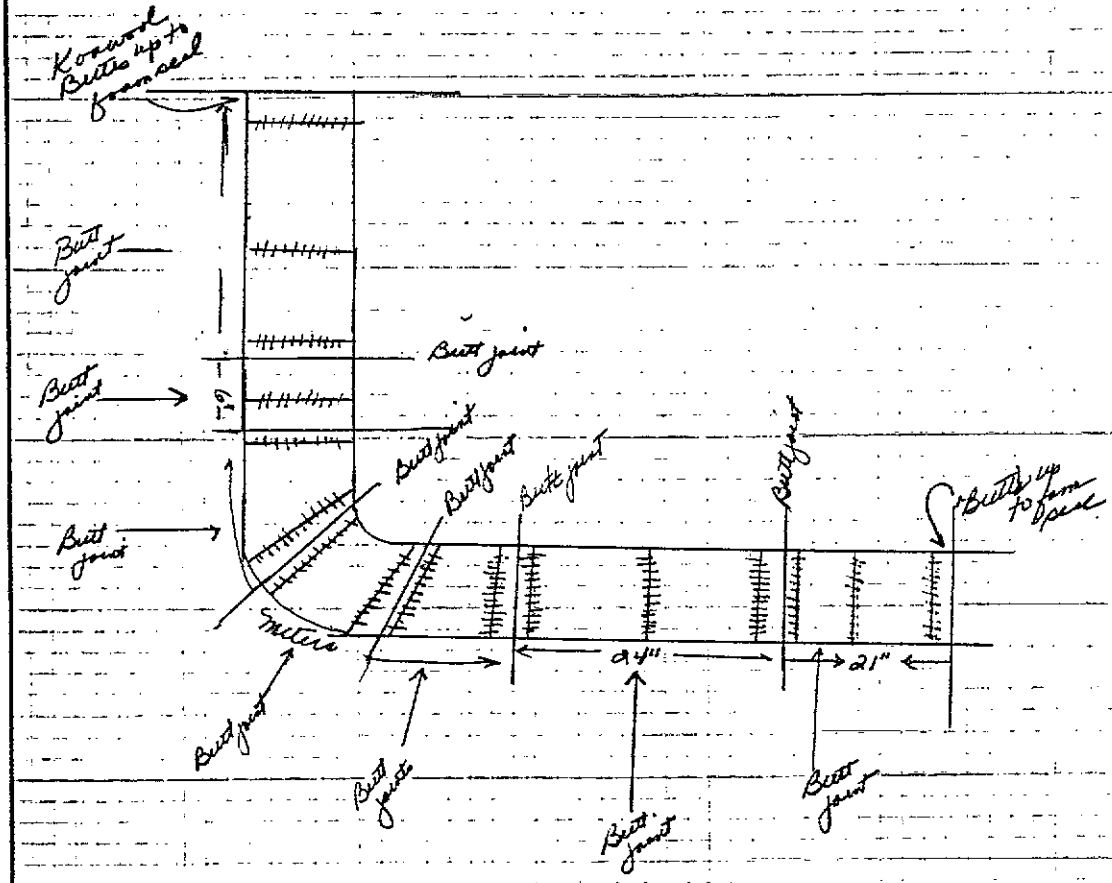
CHKD Pg 5 of 15

ITEM 3 — TR 402
THIRD LAYER — 12/19/99



Kaowool 3rd layer on cable tray includes P1000 insert at 3rd layer.

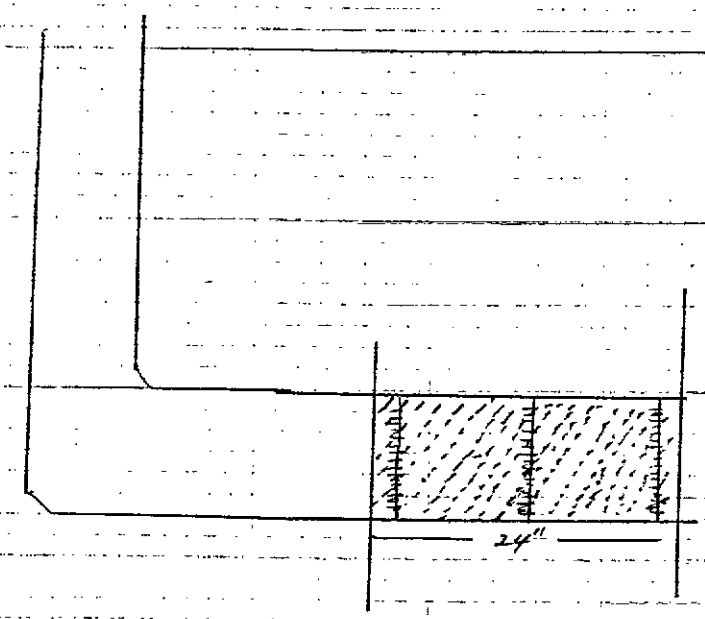
Kaowool purchased from Thermal Ceramics Houston (*)
1/2 x .020 Band - BLFPx042NB rec'd from VCBNS stock
Cleda Patton OPL QA/QC 12-28-99
Sandra Bufford 12/19/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

ITEM #3 — TR 4-10 12/19/99

Zetex Installation — Pg 6 of 15



Zetex installed 24" from wall with 6" overlap
Band 1/2 x .020 installed 3" max spacing (from wall)
and termination and 12" max spacing between bands.
Bands snug tight, Lap on left side (front of furnace)

See drawing for Item #3

1/2 x .020 bands BLFPx042NB
Zetex rec'd from VCSNS stock

Cleda Patton
OPL-QA/QC 12-28-99

Sandra J. Bunfone
12/19/99

ITEM #3 TR 400
6" CABLE TRAY 12/8/99

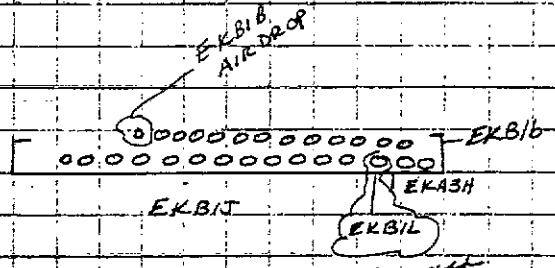
EKA3H - 3/c 8 AWG STRANDED 55 mils HT Kerite insul. CABLED 65 mils FR JACKET CLASS B STRANDING Copper Conductor .82" MAX. Pg 7 of 15

EKB1L 7/c 12AWG (7 STRANDS) 40 mils FR insul. CABLED, Zinc tape, 65 mils FR jacket CLASS B STRANDING copper tin-coated conductor .80" MAX.

Removed per Mike Kammer see Repair list DMB 12/10/99

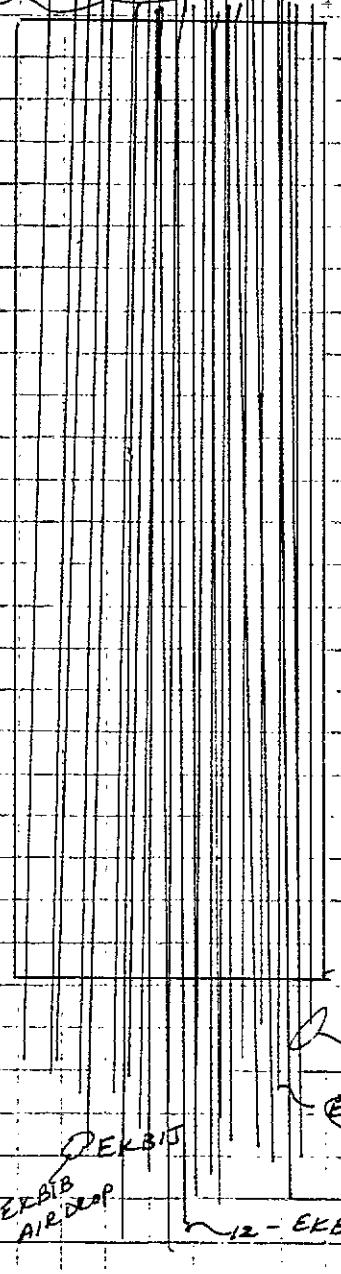
EKB1J 4/c 12AWG (7 STRANDS) 40 mils FR insulation CABLED, Zinc tape, 65 mils FR jacket CLASS B STRANDING copper tin-COATED Conductor 0.69" MAX

EKB1B No description



removed per mike Kammer 12/10/99

ABJ not installed due to length sent from VCSNS



removed per M. Kammer 12/10/99 DMB

EKB1B will drop entire cable tray to make 5T cables.

EKA3H - 2 - 20' LENGTHS
EKB1L - 1 - 20' LENGTHS — Removed from cable tray DMB 12/10/99
EKB1J - 12 - 20' LENGTHS
EKB1B-8 12 - 20' LENGTHS (In Lieu of EKB1H) per M. Kammer

Darlene Burford 12/8/99

OPL QA/QC 12-8-99 [illegible]

pg 8 of 15

Test Item Loading Summary

Test Item	Bill of Material	Cut Length	Number of Lengths	Comments
1	EK- A1C	20'	1	
2	EK- A1E	20'	1	4.00" conduit
	EK- B1L	20'	1	1.25 " conduit
3	EK- B1H 8	20'	~~12~~ 12	~~[illegible] 15'~~
	EK- B1J	20'	~~12~~ 11	1 LENGTH @ 19'
	EK- A3H	20'	~~3~~ 2	
	EK- A3J	20'	2	
4	EK- B1K	16'	1	
5	EK- A1E	20'	1	20% laid volume
	EK- B1H	20'	8	B1H/ B1J at 25% of laid volume
	EK- B1J	20'	8	
	EK- A3H	20'	8	A3H/ A3J at 30% of laid volume
	EK- A3J	20'	~~8~~ 7	
	EK- C1A	20'	28	C1A at 20% of laid volume
	EK- C6B	20'	~~1~~ 6	C6B at 5% of laid volume
6	EK- A3J	16'	1	
7	EK- B1K	16'	1	

SANDY—
BIL CABLE YOU INDICATED IN TEST ITEM #3 BELONGS IN THE 1.25" CONDUIT IN TEST ITEM #2 (SEE ABOVE).

A3J CABLE
- 216' PER WAREHOUSE
- ONLY 150' SHIPPED.

TO: MIKE KAMMER

DEC 09 '99 11:33 610 855 2038 PAGE.02

SANDY / GREG

12/9/99 12:00 EST
pg 9 of 15

ITEM #1 - GREG WILL COORDINATE & REVISE IN THE FIELD FOR FINAL CONFIGURATION
SEE ATTACHED FOR BEND RADIUS FOR 4" CONDUIT

ITEM #2 - GREG WILL COORDINATE & REVISE IN THE FIELD FOR FINAL CONFIGURATION.

FAX: 210-655-3101
GREG JAROSZ
SANDRA BRADFORD
/TRANSCO

ITEM #3 -

A3H - WE WILL CHANGE THE NUMBER OF LENGTHS OF THIS CABLE FROM 3 TO 2. SEE ATTACHED MARK-UP

B1J - WE WILL CHANGE THE NUMBER OF LENGTHS OF THIS CABLE FROM 12 TO 11. ALSO ACCEPT AND INSTALL THE 19' LENGTH TO TOTAL 11 FOR THIS ITEM. SEE ATTACHED MARK-UP.

B1L - THERE IS NO "B1L" IN TEST ITEM No. 3. THIS SHOULD BE IN THE 1.25" CONDUIT FOR TEST ITEM #2 [THIS WAS A TYPO IN THE PREVIOUS VERSION OF THIS CHART]

A3J - THE (2) 20' LENGTHS IS WHAT IS NEEDED IN THIS TRAY (SEE ATTACHED).

B1H - USE THE B16-8 CABLE IN LIEU OF THE B1H CABLE.

ITEM #5

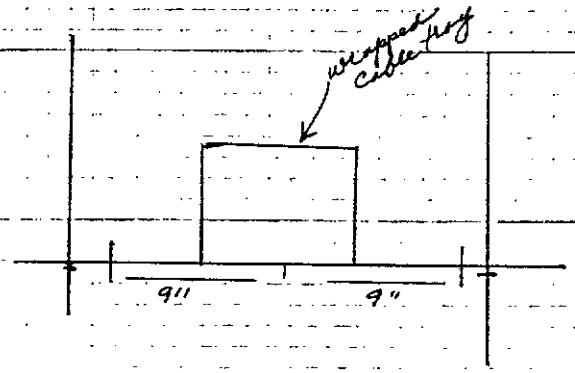
B1H - PER YOUR USE OF B16-8, YOU INDICATED YOU HAVE WHAT YOU NEED.

A3J - WE WILL CHANGE THE NUMBER OF LENGTHS OF THIS CABLE FROM 8 TO 7. SEE ATTACHED MARK-UP

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

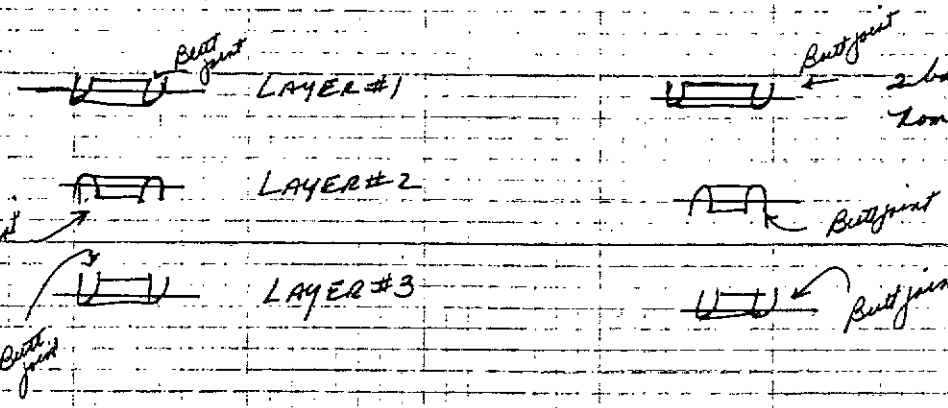
ITEM #3 — TR 400
12/19/99
T-SHORT
TRAPEZE HANGER P1000 — pg 10 of 15



LOOKING AT FURNACE (FRONT)

First and second layer installed to hanger when cable tray was wrapped.

T-Short measured from center of cable tray out 9" to each side



Kaowool purchased from thermal ceramics Houston #
1/2 x .020 steel bands BLFPX042NB rec'd from VCSNS stock

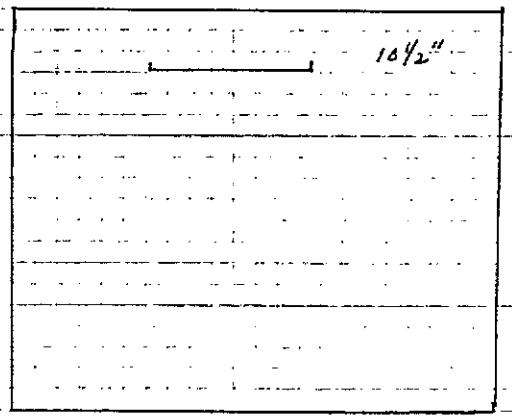
Cleda Patton CPL QA/QC
12-28-99

Sandra M. Bradford 12/19/99

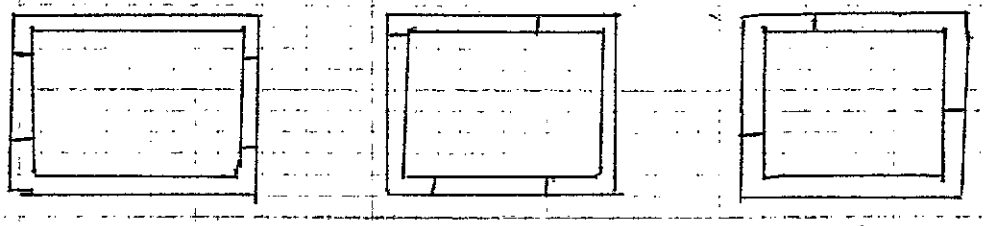
TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM # 3 CHKD _____

KAOWOOL COLLAR Installation #TR400
12/19/99
pg 11 of 15



Installed Hilti Kwik II Bolts 1/4 x 4 1/2" into ceiling slab. Bolts are between 9"-10" space. Three bolts to each side.
This is last application for Item #3



LAYER #1 LAYER #2 LAYER #3

Installed Kaowool Collar to ceiling - min of 7" out from primary commodity. All layers have staggered butt joints. Installed 18 ga metal strip and butts after third layer of Kaowool.
(Butts up against Item #6 circon)

18 ga sheet metal strip LOT A201 rec'd from VCSNS stock
Kaowool purchased from Thermal Ceramics Houston
1/4 x 1 1/4 fender washer/nut

Cleda Patton
DPL QA/QC 12-28-99

Sandra J. Bradford 12/19/99

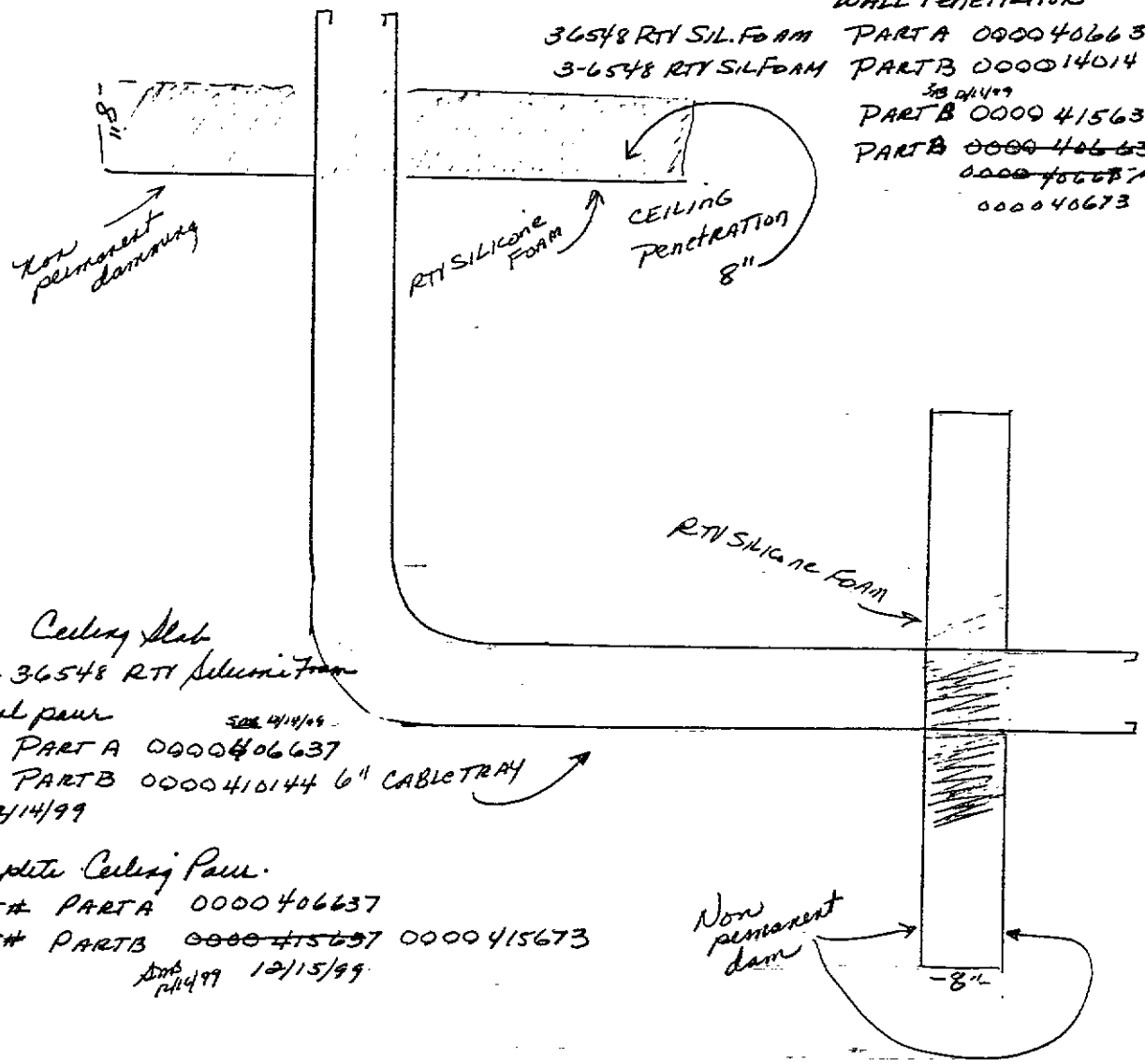
ITEM #3

TR 400
12/12/99
pg 12 of 15

Penetration Seal

6" CABLE TRAY penetrates through CEILING + WALL penetration.

WALL Penetration
3-6548 RTV SIL. FOAM PART A 0000406637 12/15
3-6548 RTV SILFOAM PART B 0000140144
SB 12/14/99
PART B 0000415637 12/15
PART B ~~0000406637~~
~~0000406673~~ SB
0000406673 12/14/99



Ceiling Slab
Pour 36548 RTV Silicone Foam
Partial pour
SB 12/14/99
LOT# PART A 0000406637
LOT# PART B 0000410144
12/14/99

Complete Ceiling Pour.
LOT# PART A 0000406637
LOT# PART B ~~0000415637~~ 0000415673
SB 12/14/99 12/15/99

Non permanent damming
Installed blueboard for non permanent damming to east and west side of penetration through ~~horizontal~~ vertical slab (wall) and on bottom of ceiling penetration (horizontal slab) SMS 12/12/99 Scrap ceramic blanket used between cables.

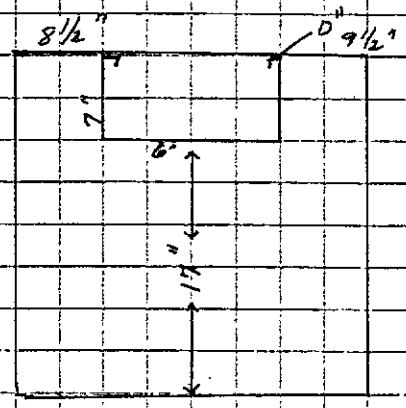
Removed non permanent dams from wall penetration and dam from ceiling penetration. Don Bedford 12/15/99
Foam seals Acceptable 12/15/99
OPL QA/QC 12-12-99 C Patton

Don Bedford 12/15/99

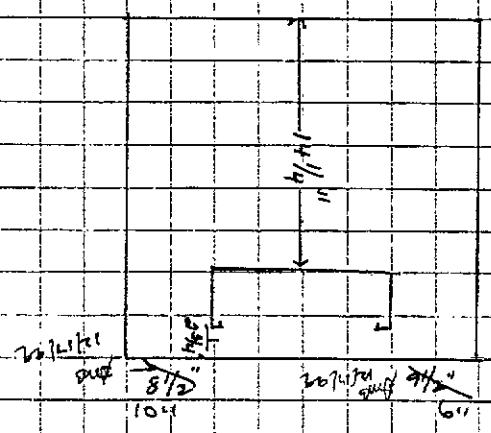
#TR400
12/9/99
Pg 13 of 15

ITEM #3
CABLETRAY

BLOCK OUT 24 x 24 x 8"
CABLETRAY 6" x 7"



VERTICAL SLAB - WALL



HORIZONTAL SLAB - CEILING.

SILICONE FOAM #36548

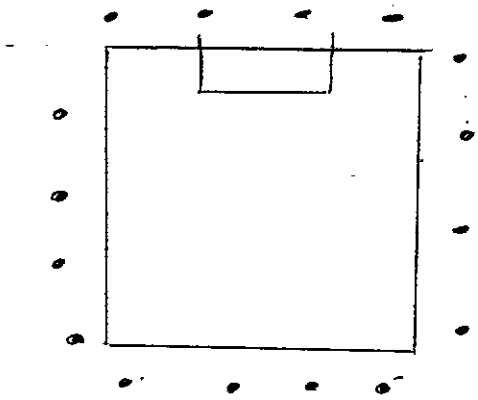
OPL QA/QC 12-9-99
Coatton

Sandra M. Bunford
12/9/99

TR 400
12/18/99
Pg 14 of 15

ITEM # 3

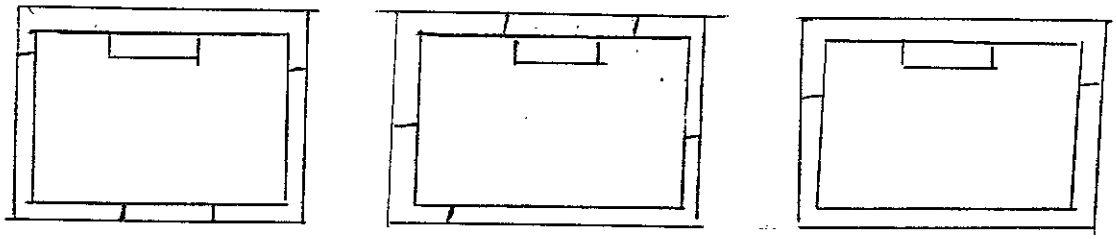
Collar Installation



Installed Hilti Kwik Bolts 3" from edge and within 12" spacing
Top and Bottom 7" spacing 4 Hiltis at top + 4 hiltis at bottom
Right side, left side 4 hiltis each side. between 7-8 1/4" spacing.

Last application to Item # 3

all layers has staggered butt joints



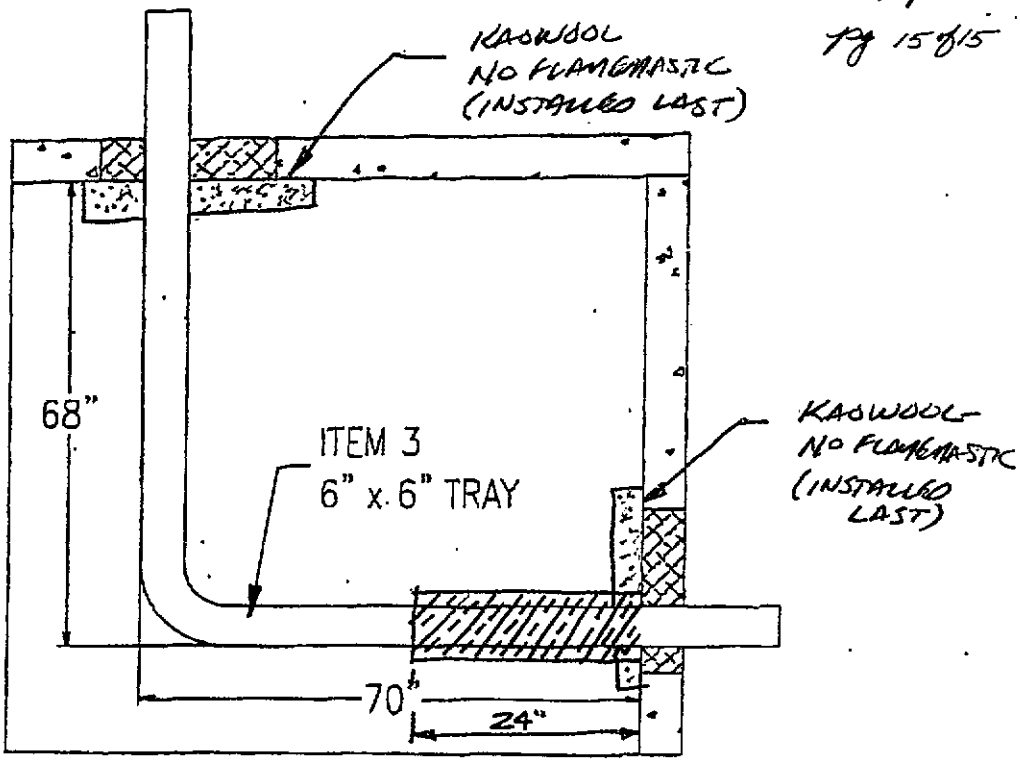
Extends 7" from pressure onto concrete covering foam seal
Impaled on Hilti bolts, 18 ga metal strip installed over 3-1" layers Kaowool
LAYER #1 LAYER #2 1/4x1 1/4 fender washer + nut installed LAYER 3

Kaowool purchased from Thermal Ceramics Houston (#)
Hilti Bolts 1/4 x 4 1/2"
x 1 1/4" fender washer
18 ga sheet metal strip (1 1/2") LOT # A201 Rec'd from YCSNS stock

Cleda Fulton DPL QA/QC
12-28-99

Sandra M Bradford
12/19/99

FLAMEMASTIC / ZETEX SKETCHES
MCK 12/17/99
Pg 15 of 15



ELEVATION ITEM 3

- ZETEX FIRE BARRIER (ONE LAYER, 6" OVERLAP)

Verified installation of Zetex 24" from wall with 6" overlap. Bands installed at 3" and 12" spacing
MCK 12/17/99

Sandra J. Bunford 12/19/99

Ola Patton
OPL QA/QC 12-28-99

No.	DATE	REVISION BY	BY	CHECKED	APPROVED
0	11/1/99	AS BUILT	LFS		

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD (312)427-3818 CHICAGO, IL 60604

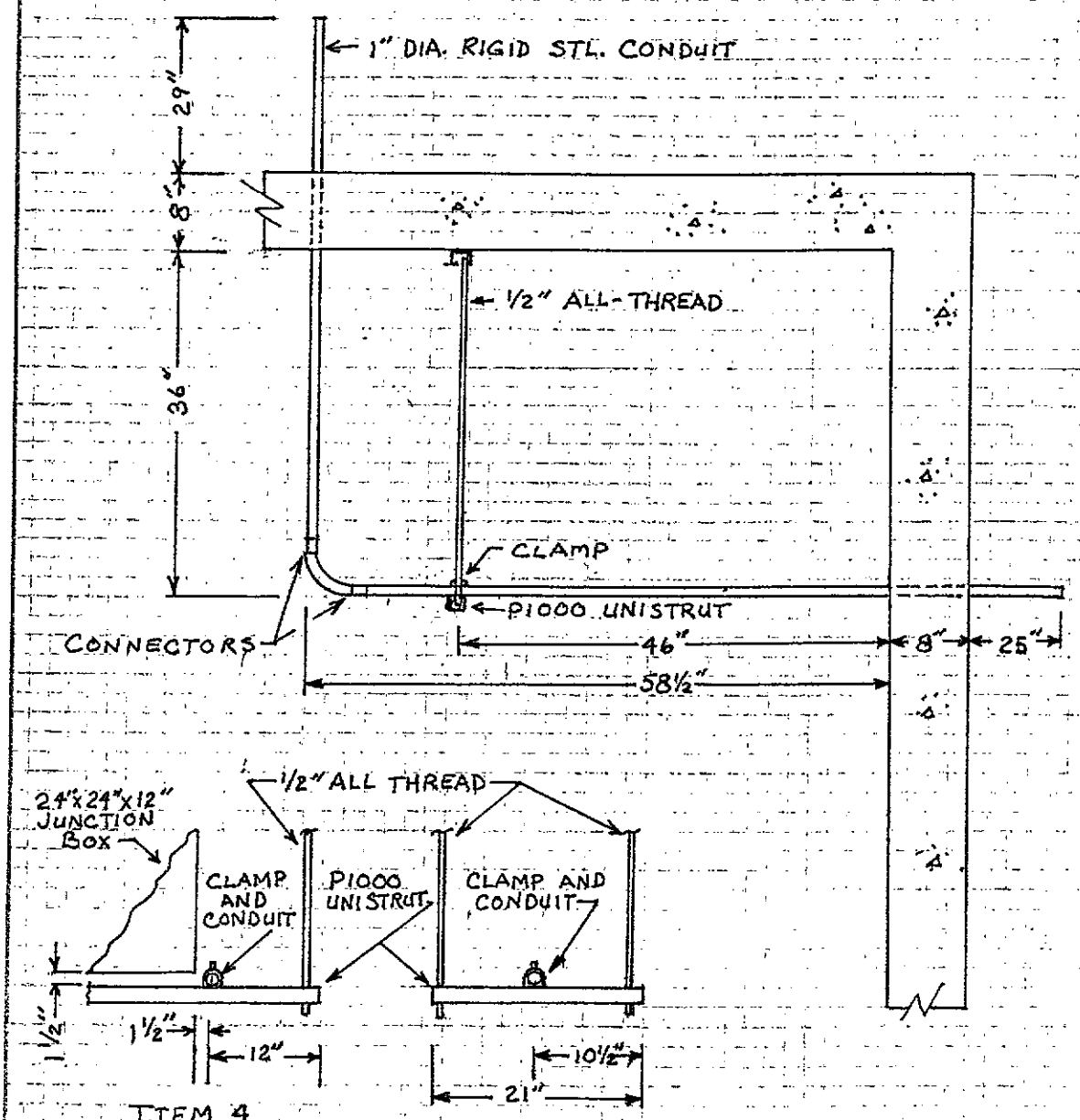
TRANSCO PRODUCTS INC.
TEST

DRAWN: L.F.S.	DATE: 11/1/99	TITLE: Fire Test ITEM 3	REV: 0
APPROVED:	DATE:		
SCALE: N.T.S.	PLOT: (L)imits @ 1=10		

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM # 4 CHKD _____

pg 1 of 1



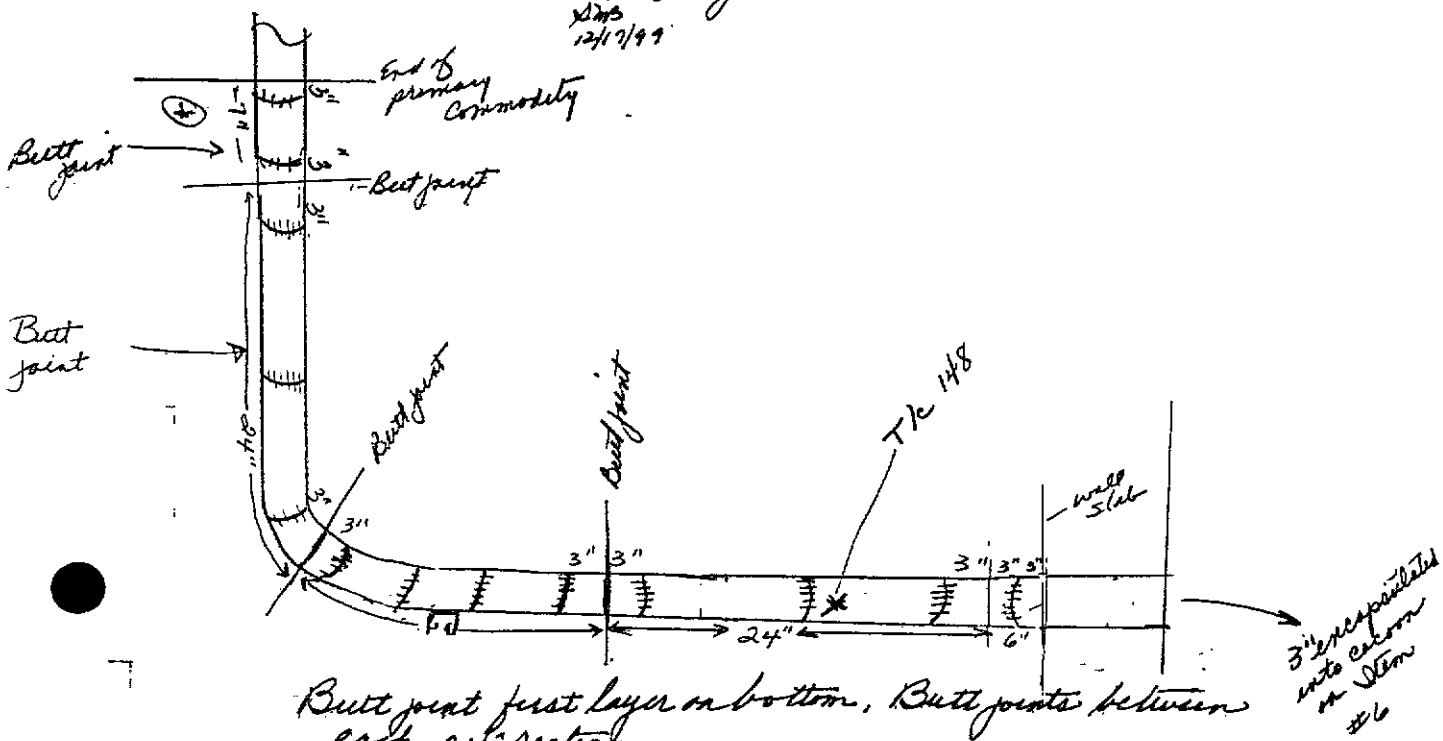
Verified dimensions
[illegible]
12/15/99

[illegible]
OPL QA/QC
12-28-99

TR 400
12/13/99
pg 2 of 7

ITEM 4

First Layer
1"
~~7/4~~" rigid steel conduit
12/17/99



Butt joint first layer on bottom, Butt joints between each 24" section.
Not spacing on ends is 3" and 12" spacing between bands

Thermocouple T/c #148 is 32" from furnace wall.

KAOWOOL purchased from Thermal Ceramics Houston

KAOWOOL LOT NO 9902020 0748
received from V.C.S.N.S. stock
24"x 7" KAOWOOL
24"x 7" KAOWOOL
24"x 7" KAOWOOL

Cleda Patton
OPL QA/QC
12-28-99

Sandra M Burgess 12/18/99

TR 400
12/13/99
pg 3 of 7

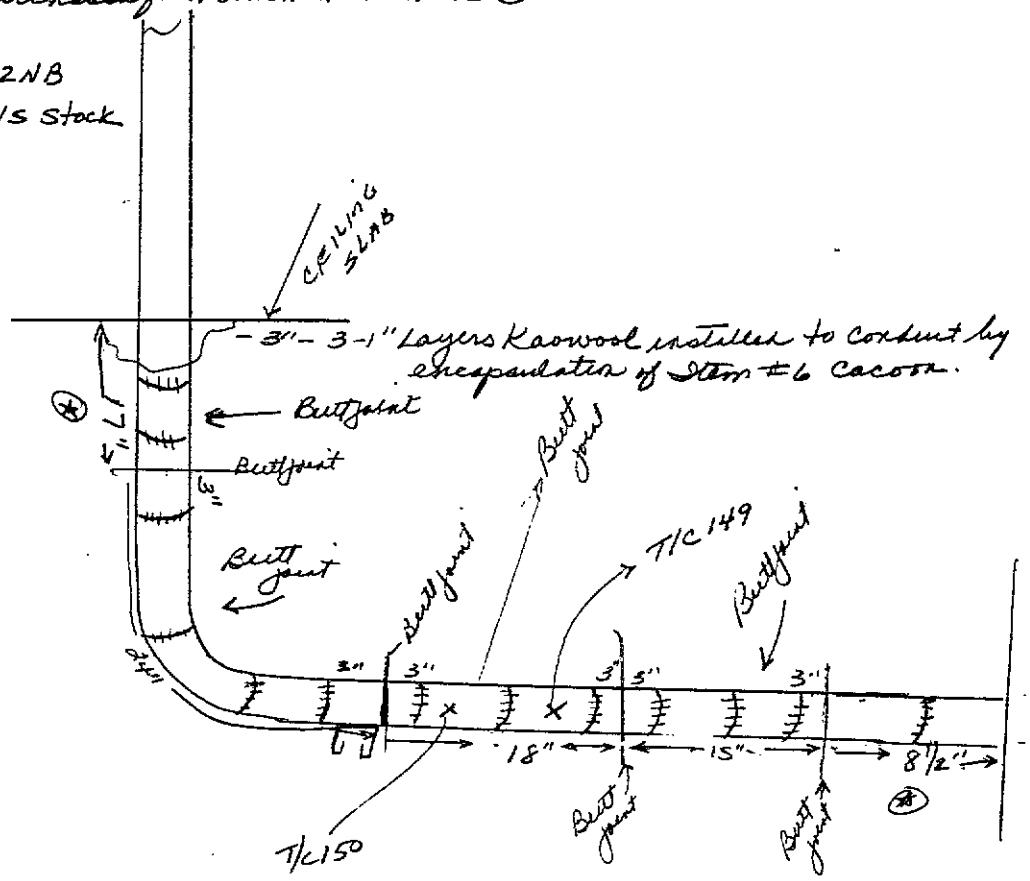
ITEM #4

Second Layer

1" rigid steel conduit.

KAOWOOL LOT NO. 9904202-00748
received from VCSNS stock
Kaowool purchased from Thermal Ceramics (*)

1/2 x .020 bands
Lot# BLFPx042NB
rec'd from VCSNS stock



Kaowool goes over top of support

Oleda Patton
OPL QA/QC
12-28-99

24" x 11 1/2" Kaowool

Sandy Bufford
12/18/99

1/2" stainless steel bands 3" from terminations
not of 12" Between Bands

Sandy Bufford
12/18/99

Stainless steel bands 1/2 x .020

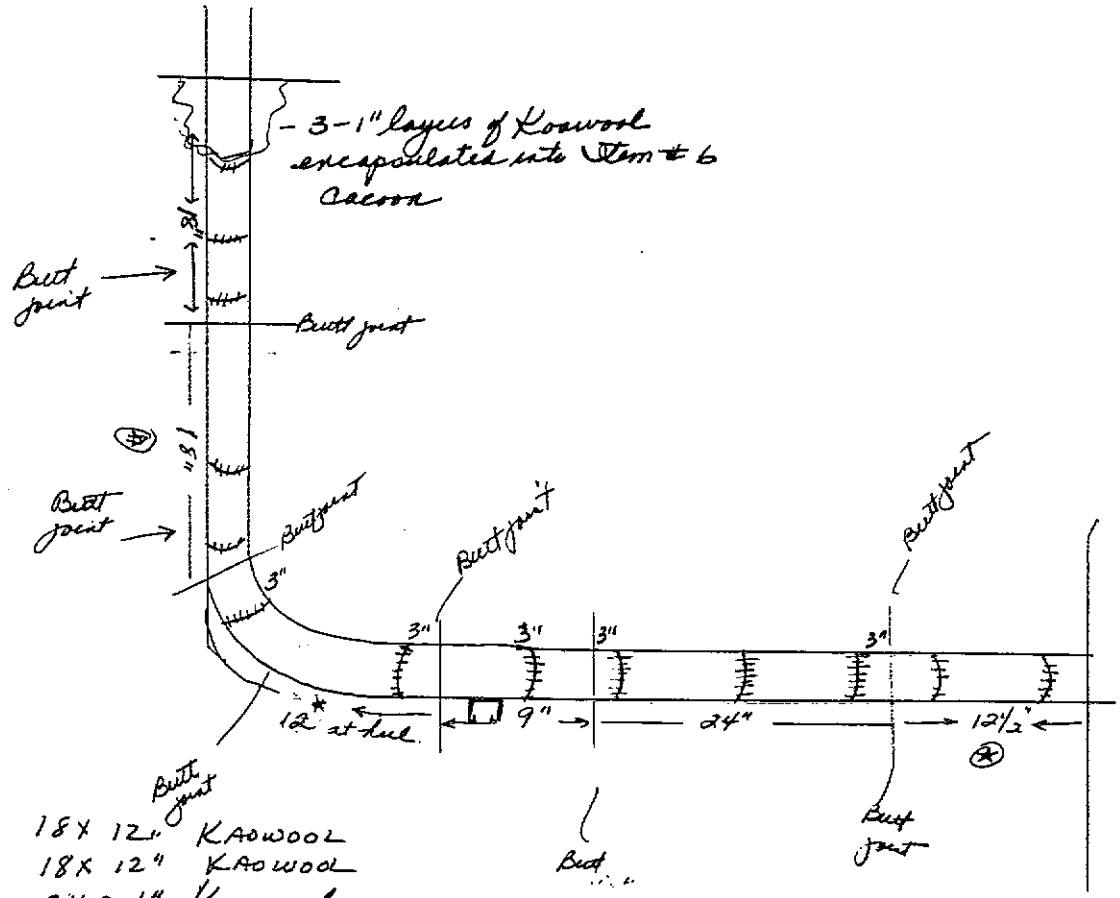
Each layer marked with appropriate layer and at a min 1 set of
intitials to item

ITEM #4
Third Layer

TR400
12/12/99
pg 4 of 7

1" rigid steel conduit

KAOWOOL LOT no. 990420200748
received from VCSNS stock
KAOWOOL purchased from Thermal Ceramics Houston (*)
1/2 x 020 bands BLFPX042NB received from VCSNS stock



18 X 12" KAOWOOL
18 X 12" KAOWOOL
19 X 24" Kaowool
9 X 24 Kaowool
* Miter used at radial bend 12" at heel
12 1/2" Kaowool

9" Kaowool goes over P1000 Longe support

Nominal 3" on bands at Butt joints

Cleda Patton
DPL QA/QC
12-28-99

Sandra M Bufford 12/29/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

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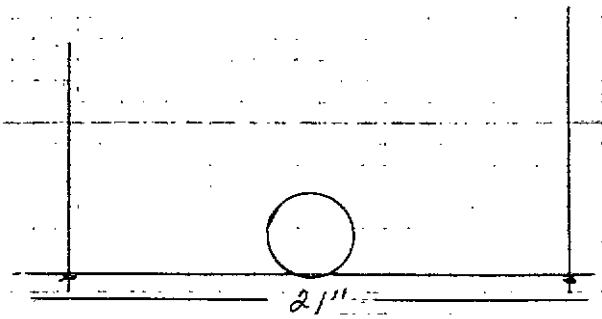
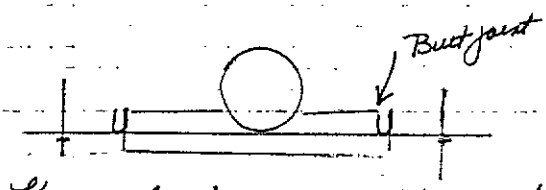
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

ITEM # 4
TRAPEZE HANGER

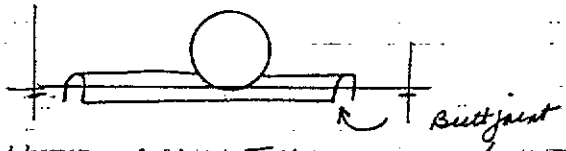
TR 400
12/19/99
pg 5 of 7





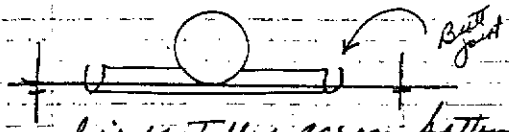
Layr #1

Layr #1 Kaowool is installed across bottom of P1000 Layer and extends out 9" both sides. Butt joint on top.
2 Bands installed each side.



Layr #2

Layr #2 Kaowool is installed across bottom of P1000 Layer and extends out 9" both sides. Butt joint on bottom.
2 Bands installed each side.

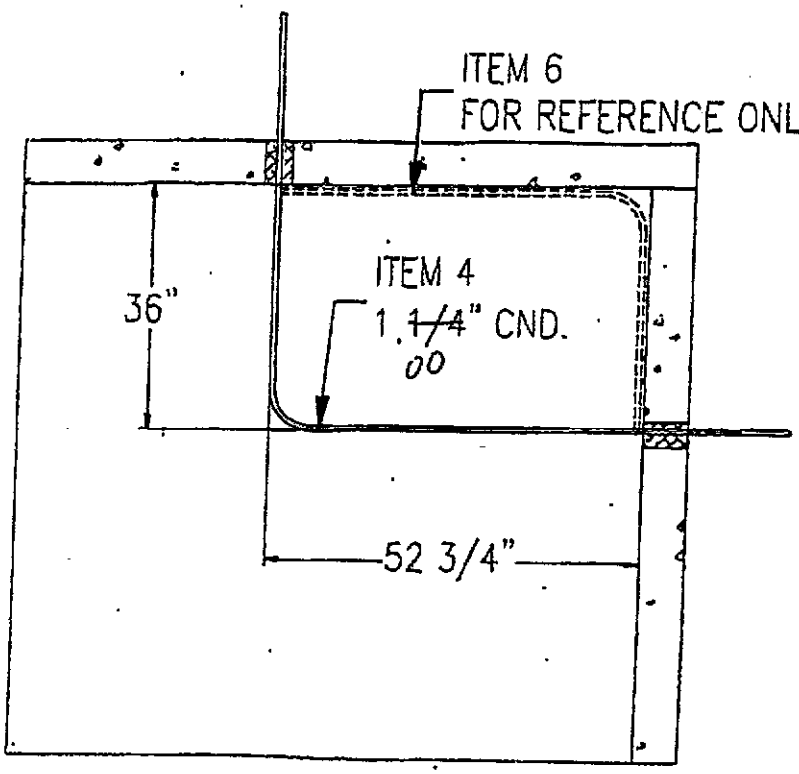


Layr #3 Kaowool is installed across bottom of P1000 Layer and extends out 9" on both sides. Butt joint is at top.
2 Bands installed each side
(To measure internal short-center of conduit measure 9" each side)
Kaowool purchased from thermal ceramics (Houston) ⊛
1/2 x .020 steel bands BLFPX042NB rec'd from VC SNS stock

Cleda Patton
DPL QA/QC
12-28-99

Sandra Bradford 12/19/99

FLAMEMASTIC / ZETEX SKETCHES
MCK
12/17/99
Pg 6 of 7



ELEVATION ITEM 4

No FLAMEMASTIC OR ZETEX THIS ITEM
MCK 12/17/99

No additional material this item Sandra M Bufford 12/27/99

No.	DATE	REVISION	BY	CHECKED	APPROVED
0	10-15-99	AS BUILT	LFS		

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
[illegible] (312)427-[illegible] CHICAGO, IL [illegible]

TRANSCO PRODUCTS INC.
TEST

DRAWN LFS	DATE 11/1/99	DWG NO. Fire Test ITEM 4	REV. 0
CHECKED	DATE		
SCALE N.T.S	SCALE (Limits @ 1=10)		

Cleda Patton
OPL QA/QC
12-28-99

TR 400
12/4/99
pg. 787

Item # 4
1.0" rigid steel conduit

1.0" rigid steel conduit exits top slab and back slab through core bores. (to be grouted)

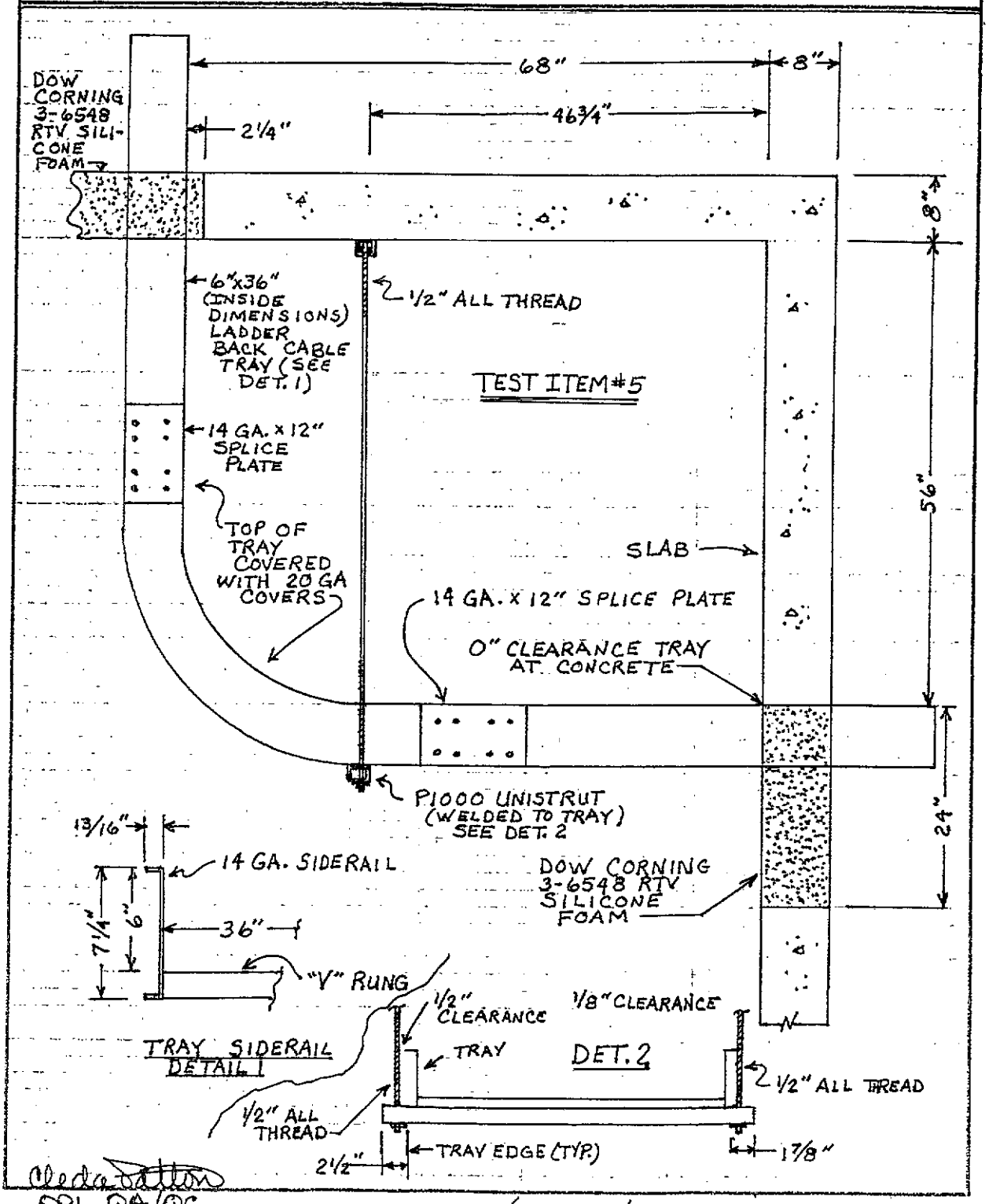
straight conduit from top slab hanger 36"
radial bend 16" from coupling to coupling
straight conduit 52 3/4 to exit through vertical slab.
P1000 trapeze hanger 21" length
all thread rod for hanger. 40" length
(flat washer on outside of ceiling P1000 w/ nut at trapeze hanger P1000 ~~fender~~ flat washers and nuts inside + outside of P1000.
SMB 12/4/99

Cleda Patton
OPL QA/QC
12-28-99

Sandra J. Bonfoss
12/4/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET 1 OF 18
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM#5 CHKD _____

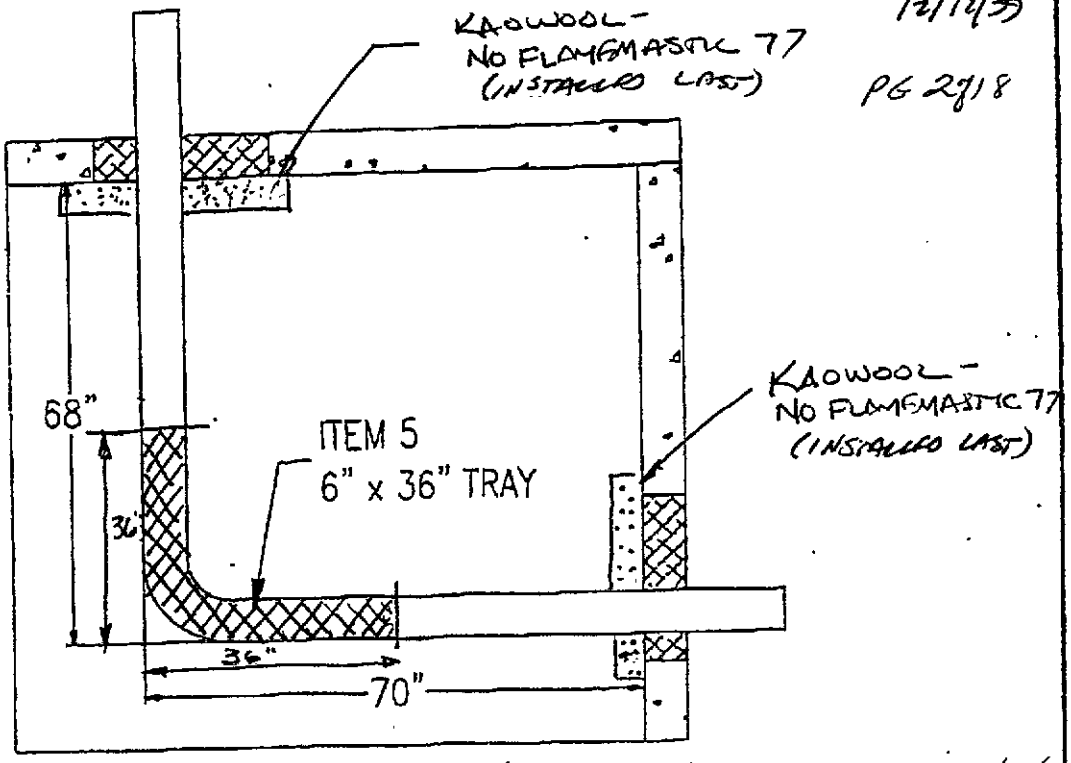


Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions
Sandra Bunford 12/15/99

KAOWOOL / BETTER SKETCHES
MCK
12/12/99

PG 2 of 8



Verified 1/8" Flamemastic 77 on 12/18/99
Verified 1/8" Flamemastic 77 on 12/17/99

ELEVATION ITEM 5

12/19/99
1/8" - FLAMEMASTIC 77
MCK 12/17/99

THERMOCOUPLES

- 3 ADDITIONAL THERMOCOUPLES IN HORIZONTAL TRAY SECTION.
- (1) 18"± FROM WALL, 1ST & 2ND LAYERS
  (1) 18"± FROM WALL, 2ND & 3RD LAYERS
- (1) 39"± FROM WALL, 1ST & 2 & 3RD LAYER

3	11/1/99	AC PART	LFS		
No.	DATE	REVISION BY	BY	CHECKED	APPROVED

CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-1818 CHICAGO, IL 60604

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TEST

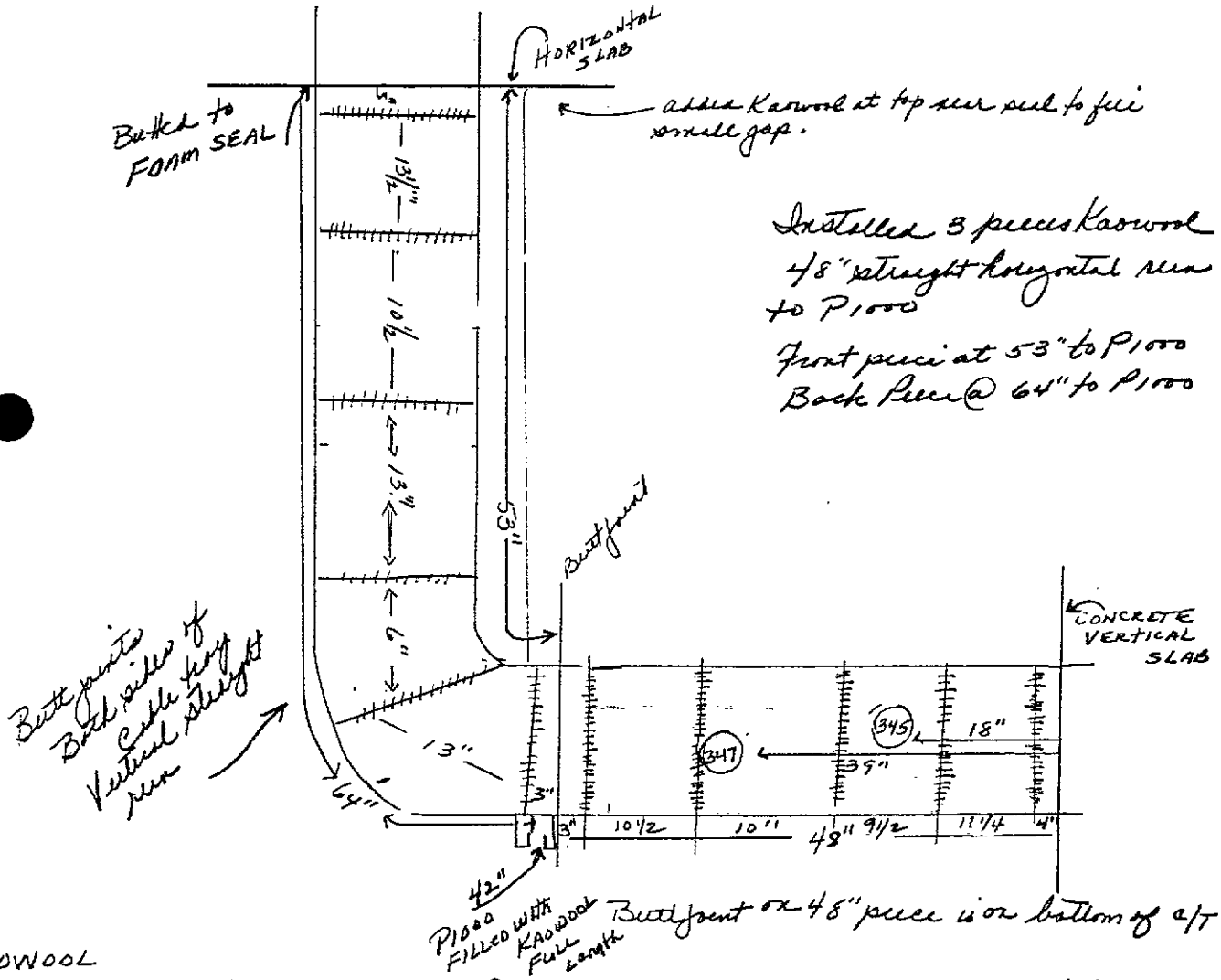
DRAWN	LFS.	DATE	11/1/99	DWG. NO. Fire Test ITEM 5	QTY 0
CHECKED		DATE			
SCALE	N.T.S.	SCAL	(L)imits @ 1=10		

Cleda Patton
DPL QA/QC
12-28-99

TR 400
12/17/99
PG 3 of 18

ITEM # 5

1ST LAYER



Installed 3 pieces Kaowool 4/8" straight horizontal seam to P1000
Front piece at 53" to P1000
Back Piece @ 64" to P1000

Butt joint on 48" piece is on bottom of c/T

KAOWOOL
LOT# 961568407
received from VCSNS stock

1/2 x .020 STEEL BANDS
LOT [redacted]LFPX042NB
received from VCSNS stock

Installed 20 ga. stainless steel corner w/ 1/2 x .020 steel bands as needed.
T/C # 346 installed center of cable tray 18 from wall
T/C # 345 installed center of cable tray 18" from wall
T/C # 347 installed center of cable tray 39" from wall
embedded 1/4" into Kaowool
Vertical slab

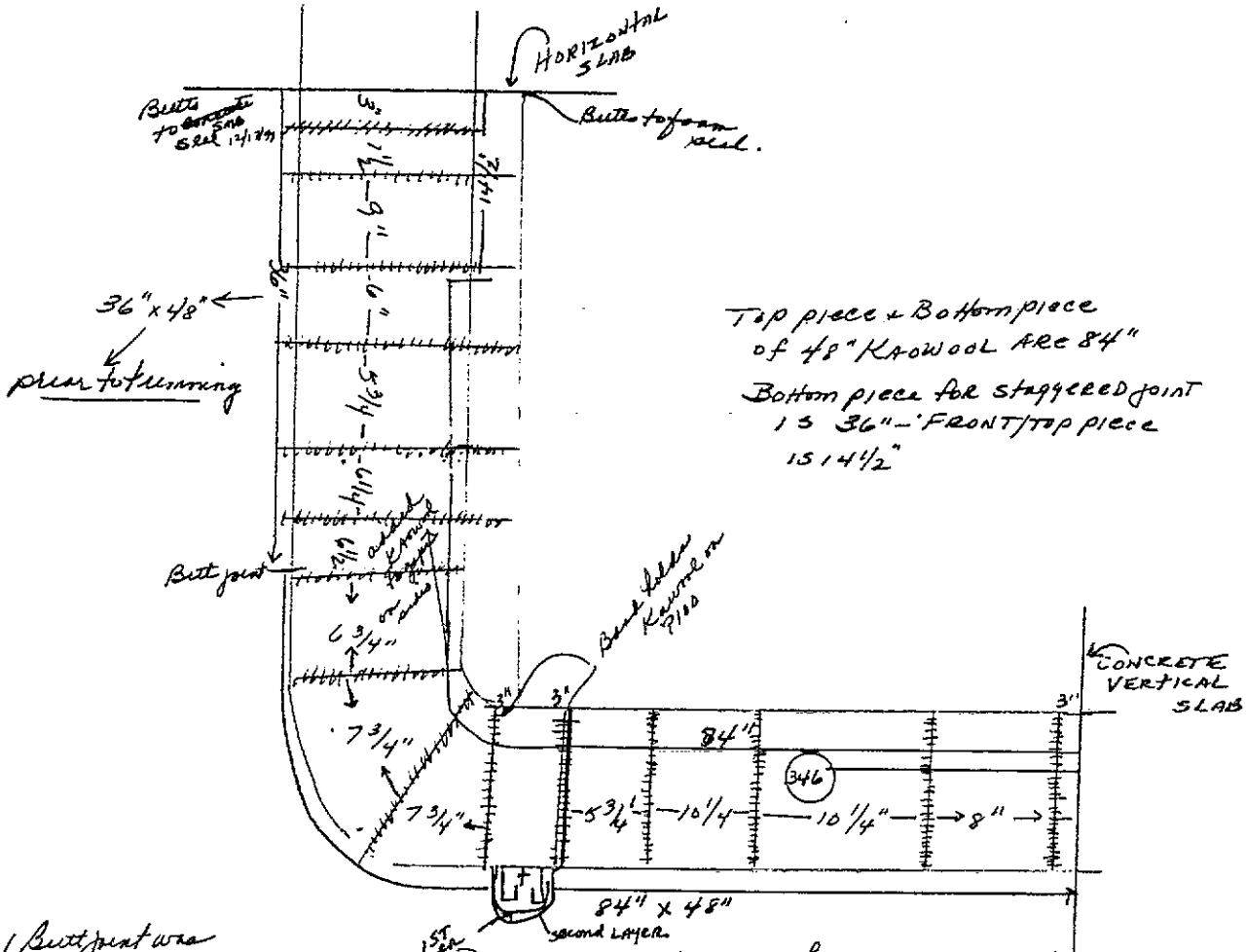
Oleda Patton
OPL QA/QC 12/28/99

Sandra M Bradford
12/17/99

TR 400
12/17/99
Pg 4 of 18

ITEM # 5

SECOND LAYER



Top piece & Bottom piece of 48" KAOWOOL ARE 84"

Bottom piece for staggered joint is 36" - FRONT/TOP piece is 14 1/2"

Note.
Layer 1 Butt joint was on front corner.

KAOWOOL
LOT# 961568407
received from VCSNS stock

1/2 x .020 STEEL BANDS
LOT# BLFPX042NB
received from VCSNS stock

1ST LAY Butt joints on sides on horizontal run @ foam seal

Butt joints are reverse corner of cable tray (back corner)

Installed 20 ga. stainless steel covers w/ 1/2 x .020 steel bands as needed.

Bands ± 1/2"

T/C #346 - 18" from WALL center of cable tray
Vertical slab embedded 1/4" into Kaowool.

No bands closer 12" max

NTS.

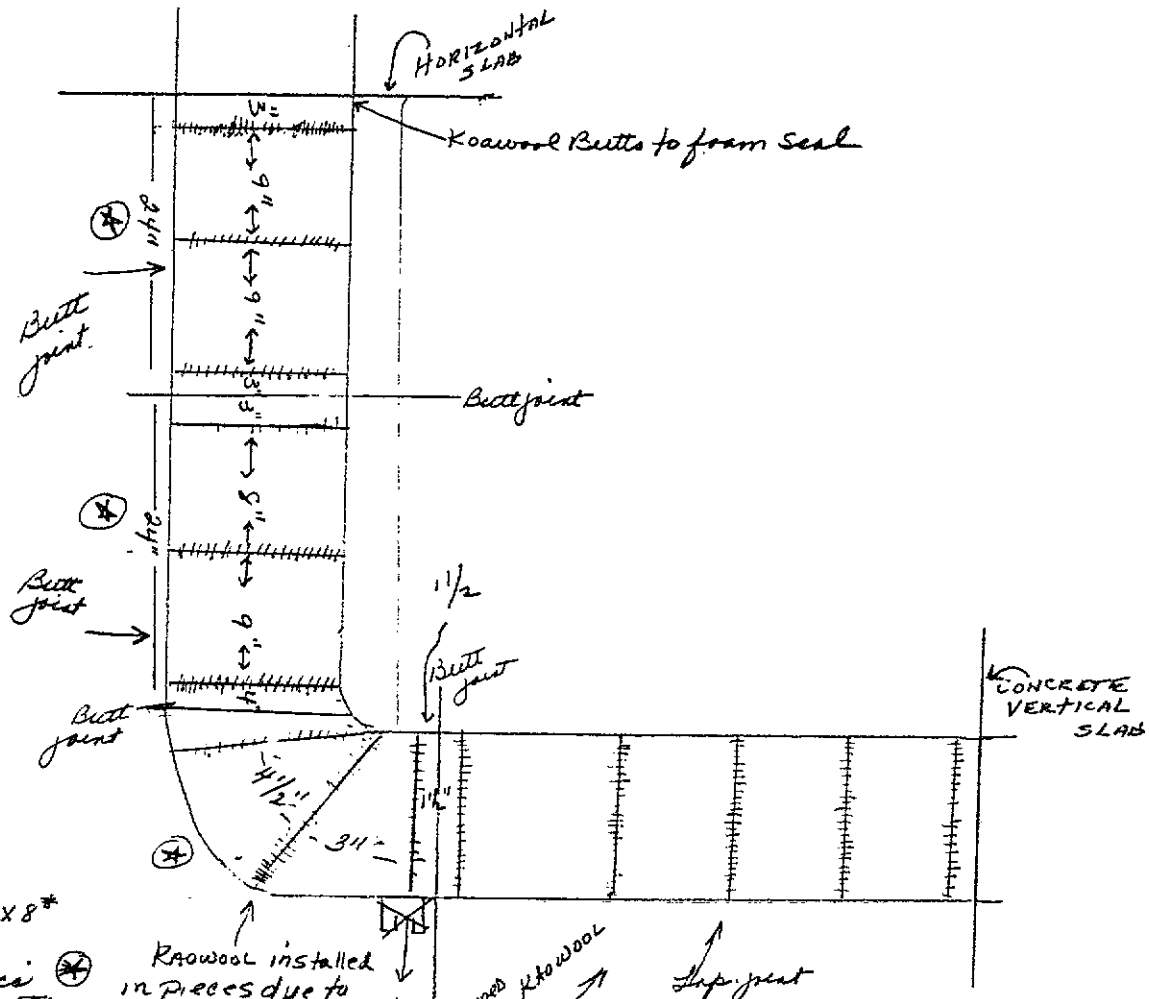
Cleda Patton
OPL QA/QC 12-28-99

Sandra Bradford 12/17/99

TR 400
12/17/99
pg 5 of 18

ITEM # 5

THIRD LAYER



KAOWOOL 1"x24"x8* Purchased from Thermal Ceramics Houston TX

KAOWOOL
LOT# 961568407
received from VCSNS stock

1/2 x .020 STEEL BANDS
LOT# BLFPX042NB
[illegible]ved from VCSNS Stock

Note * KOAWOOL PURCHASED from HOUSTON - 12/17/99

when bands were tightened 48" piece lapped approx 3 1/2"

Installed 20 ga. stainless steel cover w/ 1/2 x .020 steel bands as noted.

Koawool installed over foam seals (collar) is installed last. See Item #5 drawing for Directions.

Note 1ST LAYER WRAPPED AROUND tray horizontal
2nd LAYER WRAPPED AS 2 pieces - Seam in FRONT
Horizontal Seam on SIDES.
3rd LAYER WRAPPED AROUND TRAY, horizontal section

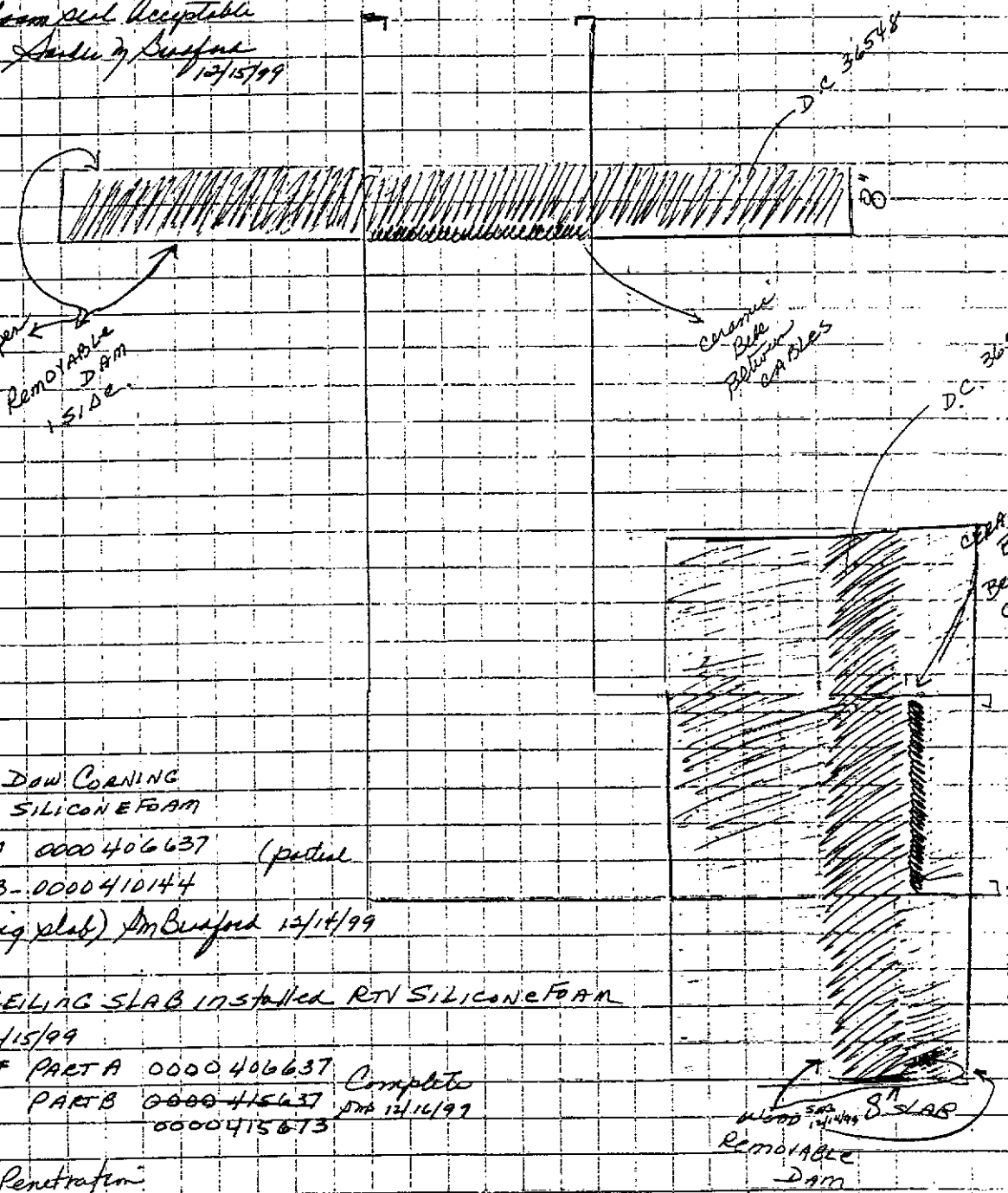
Cleola ~~Bottom~~ DPL QA/QC 12/28/99

Sandra M. ~~Bennefield~~ 12/17/99

TR 400
12/16/99
Pg 6 of 18

ITEM #5
Penetration Seal Ceiling & Wall

Removed non permanent dam
Found from seal Acceptable
Sandra Bunford 12/15/99



3-6548 Dow Corning
RTV Silicone Foam
PART A 0000406637 (partial
PART B 0000410144
(Ceiling slab) Sandra Bunford 12/14/99

AT CEILING SLAB installed RTV SILICONE FOAM
ok 12/15/99
LOT # PART A 0000406637 Complete
PART B ~~0000415637~~ 0000415673 SMB 12/16/99

WALL Penetration
RTV SILICONE FOAM 3-6548
PART B SMB 12/16/99 0000410144
PART A SMB 12/16/99 0000406637 12/15/99
PART A 0000415637
PART B ~~0000406637~~ 12/15/99 SMB 12/16/99 0000415673

Found From Seal Acceptable
12/15/99 Sandra Bunford

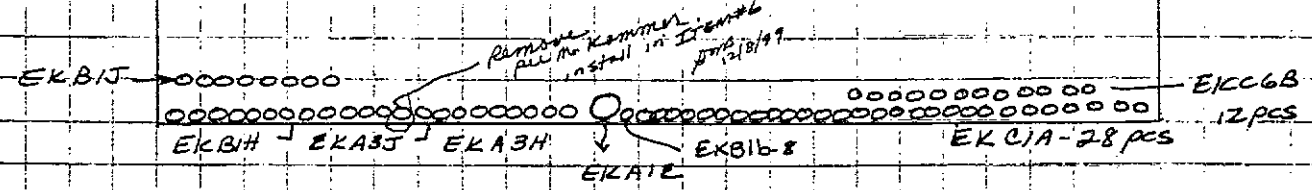
Clyde Patton
OPL-GA/QC
12-28-99

Removed non permanent dams from wall penetration. Sandra Bunford 12/15/99

CABLE LOADING
ITEM 5

TR 470
12/8/99
Pg 17 & 18

EKBIH 3/C 12 AWG (7 STRANDS, 40 mil FR INSUL., CABLED ZINC TAPE 65 mils FR jacket CLASS B STRANDING Copper tin COATED Conductor 0.64" MAX
EKA3J 3/C 10 AWG STRANDED 40 mils UT Kerite INSULATION CABLED, 65 mils FR jacket CLASS B STRANDING Copper Insul 0.69" MAX
EKA3H 3/C 8 AWG STRANDED, 55 mils Kerite insul. CABLED 65 mils FR jacket CLASS B STRANDING Copper Conductor .79 MAX.
EKAIE 3/C # 4/0-19 STRANDS tinned copper, extruded semi conducting STRAND SCREEN .175" OKOGUARD INSULATION extruded semi-conducting INSULATION SCREEN .005 FLAT tinned copper tape helically applied. CABLED with fire and moisture resistant fibrous fillers .012 neoprene filled binder tape double WRAP .015 hypalon bedding tape .005 corrugated bronze tape applied helically .012 neoprene filled binder tape .140 OKOLON outer jacket. CABLE sequentially marked per the above referenced GAI Spec. SP-551-044461-000 2.42"



TIE WRAPS 6 different LOCATIONS to LADDER RUNGS.

EKCIA DEKORON Instrument Wire DEKORON PART # 1952-68640 1/PR. SHIELDED 16 AWG 7-STRAND tinned copper conductor, PRIMARY INSUL. of 30 mils EPDM with a 15 mil Hypalon primary jacket. COLOR CODED black/white. conductors twisted with 16 AWG 7 STRAND tinned copper drain wire. 20 mil alum./MYLAR SHIELD. 45 mil Hypalon outer jacket .462"
EKCC6B 7300 Equip. CABLE 12 PAIR # 18-19 STRANDS tinned copper .010 Tefzel INSULATION. COLOR CODED, twisted, CABLED w/ fiberglass fillers, MYLAR alum. tape 1 x # 187 STRAND tinned copper DRAIN, tape .020 Tefzel jacket .528"

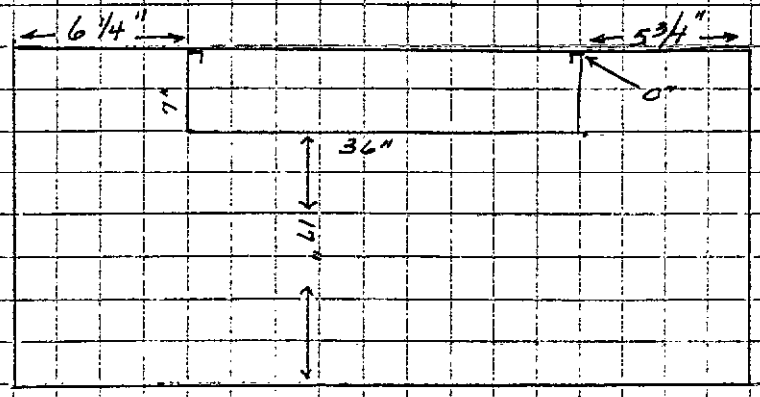
Looking EAST OPL QA/QC 12/18/99 Sandra J. Bunford 12/8/99

ITEM 5
36" CABLE TRAY

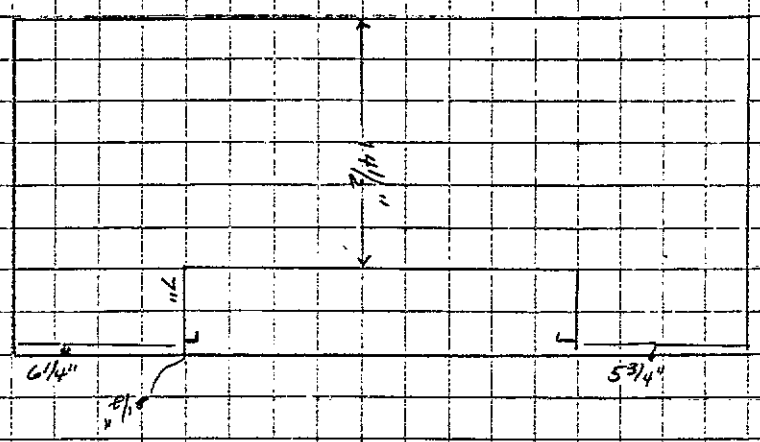
TR 400
12/9/99
pg 8 of 18

LOOKING EAST

Penetration SEAL BLOCK 48 X 24 X 8
CABLE TRAY 36" X 7"



VERTICAL SLAB - WALL



HORIZONTAL SLAB - CEILING

SILICONE FOAM #36548

ODL QA/QC
12-8-99 [illegible]

Sandra J. Bradford
12/8/99

ITEM #5

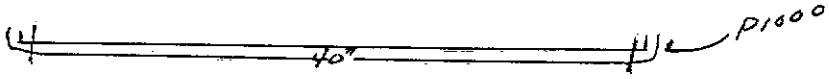
T= SHORT

P1000 Trapeze HANGER

TR 400
12/17/99
Pg 9 of 18

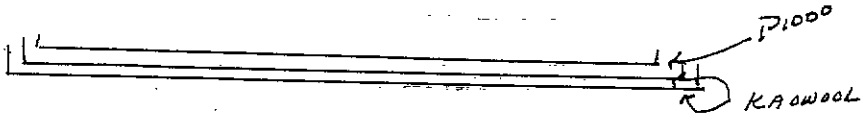
Installed Kaowool 24"x6" to P1000 under cable tray on trapeze hanger. LOT# 990420200748

Installed first layer to P1000 - 40". Bands 1/2x.020 that are 3" on either side of P1000 hold first layer on hanger.



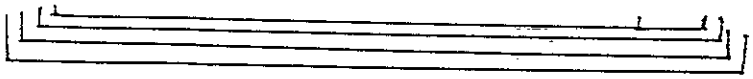
FIRST LAYER

40"x6"
~~2x5 (1" each side) Amsp~~ DMS 12/17/99
2 pcs 5x5 installed to ends of P1000



SECOND LAYER

SECOND LAYER installed when 2nd LAYER WAS put on CABLE tray bottom. ALSO held on with second LAYER BANDS



THIRD LAYER

THIRD LAYER installed: When third LAYER of KAOWOOL installed to CABLE TRAY THAT WAS third LAYER for P1000 unistrut TRAPEZE HANGER
1/2x.020 BANDS USED for CABLE TRAY ALSO used for P1000.

Clede Patton
QA/QC OPL 12/28/99

Sandy Bradford
12/17/99

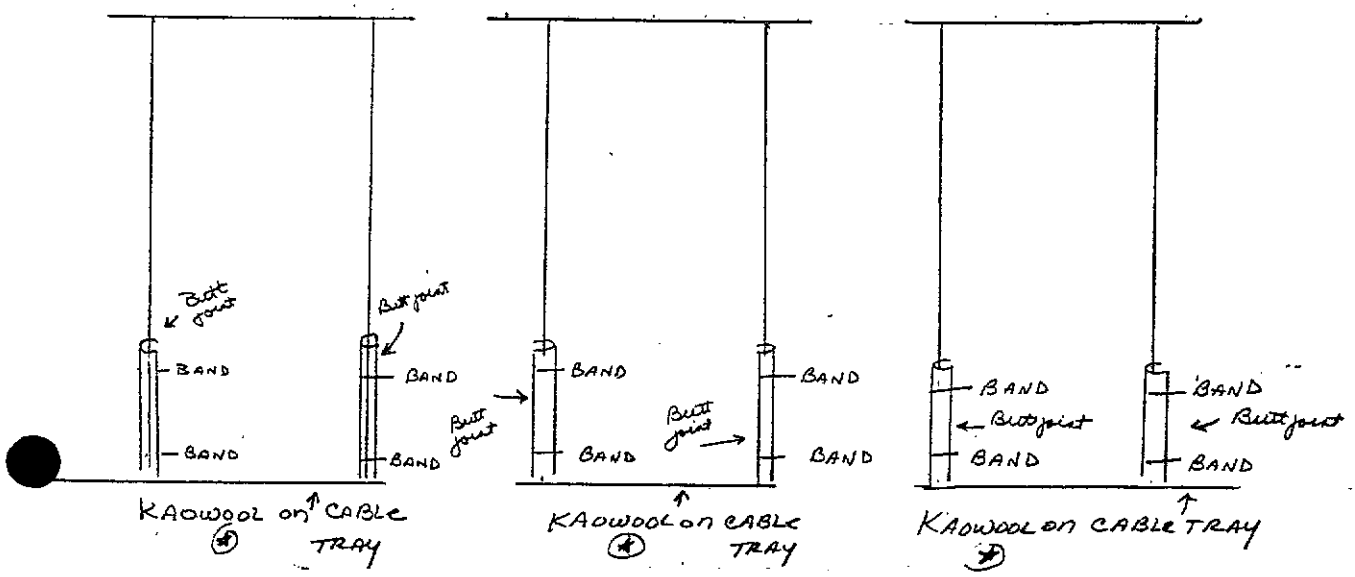
ITEM #5

#TR 4/10
12/17/99

T-short 1/2" ALL THREAD ROD - min 9" from Top of SIDE RAILS

1/2" ALL THREADS on TRAPEZE HANGER APPROX 7 1/2" outside of CABLE TRAY WRAP.

Pg 10 of



KAOWOOL on ALL THREAD Butts up to CABLE TRAY KAOWOOL

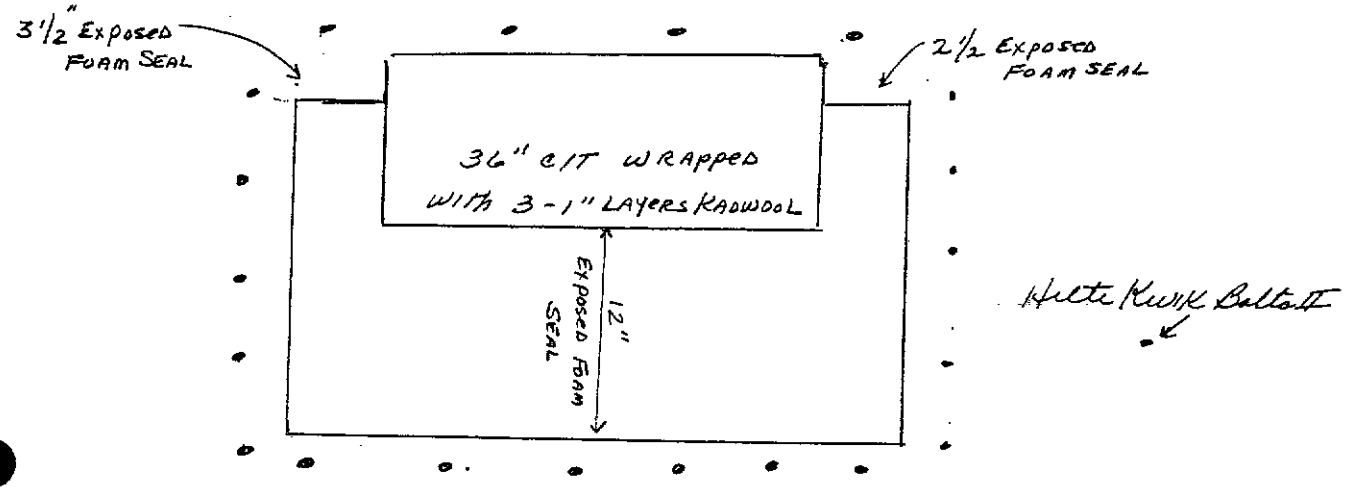
KAOWOOL purchased from Thermal Ceramics Houston
1/2" X .020 bands LOT# BLFPX042NB

Cleda Patton
OPL QA/QC
12-28-99

Sandra Bradford 12/17/99

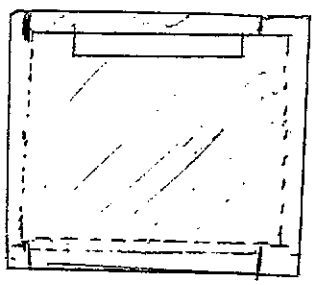
TR 400
12/17/99
pg 11 of 18

ITEM #5
Penetration at Vertical SLAB
Wall Penetration RTV Silicone Foam

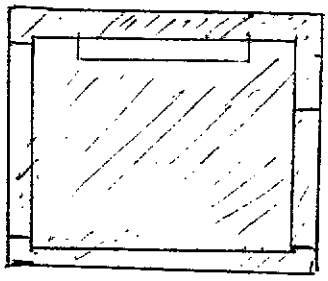


— 5 Hilti Kwik Bolts each side 3" from edge approx 7 1/2" spacing
6 Hilti Kwik Bolts Bottom 12" Spacing
4 Hilti Kwik Bolts Top 12" Spacing

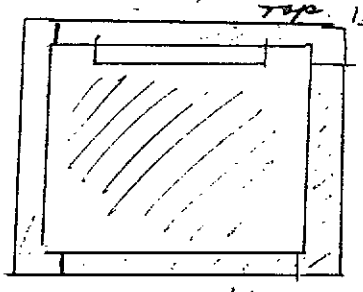
SEE ITEM #5 DRAWING -
16ga Metal strip LOT # A201 rec'd from VCSNS stock
Kaowool - purchase Thermal Ceramics Houston (*)
Hilti Kwik Bolts II 1/4" x 4 1/2" (non Q)



Top 41 1/2 x 4
Left 36" x 6"
Bottom 51 x 16"
RIGHT 18" x 8
LAYER 1



TOP 55 x 4
Left 29 x 6
Bottom 51" 16
RIGHT 34 x 8
LAYER 2



TOP 54 x 4 1/4
Left 17" x 8"
Bottom 17 x 43
RIGHT 6 x 29
LAYER 3

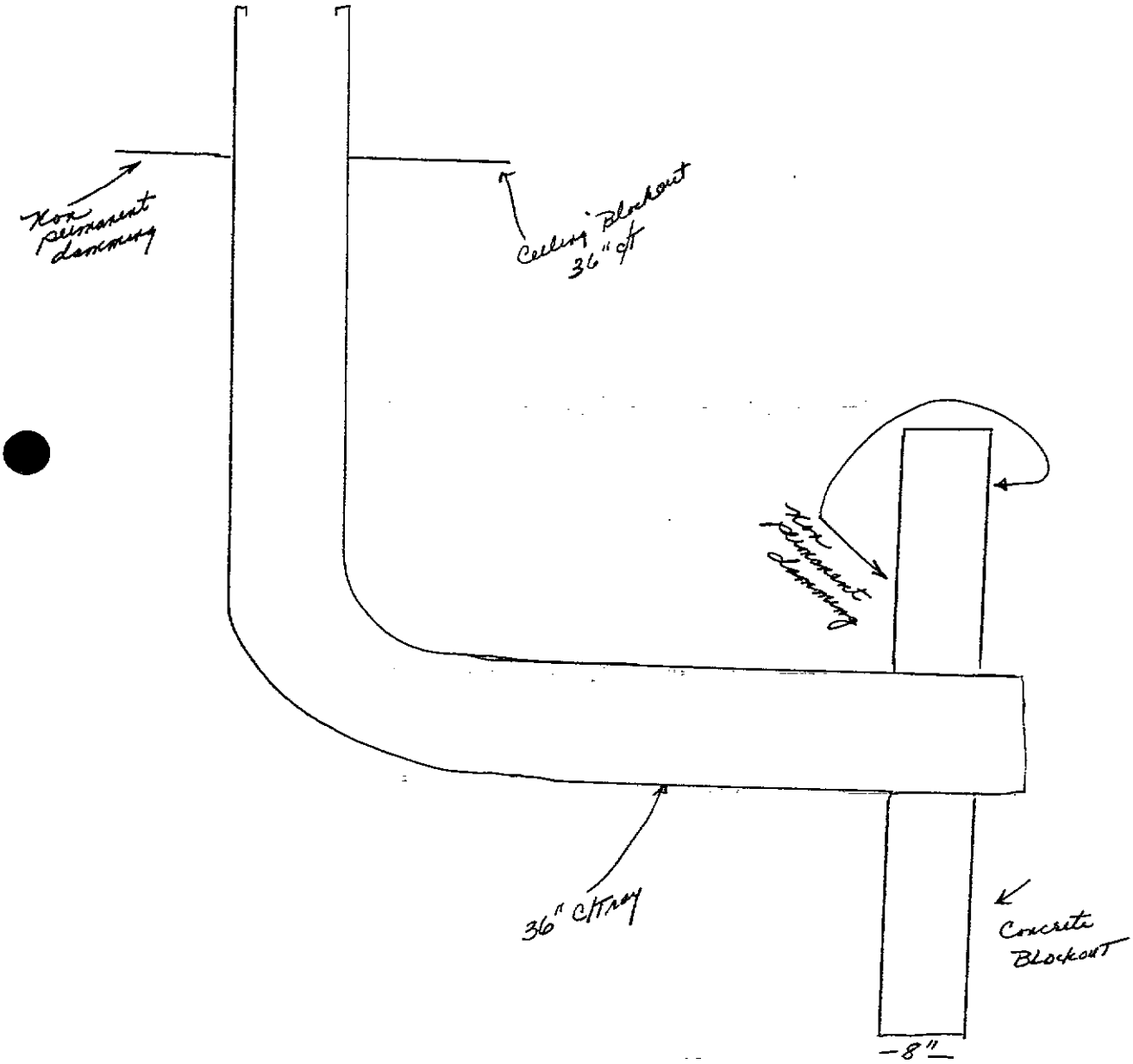
all joints staggered, Metal strip 18 ga installed over 3-1" layers Kaowool over RTV Silicone Foam Seal Fender Washers and nuts installed.
Note Kaowool cover RTV Silicone foam extends out onto concrete by a min of 3". Except Top extends out 4" due to rebar.
Installed 1/2" steel band across face of seal. 2 bands installed.

Clede ~~Patton~~ OPL QA/QC 4/28/99 Gordon Beaufort 12/17/99

TR 400
12/13/99
pg 12 of 18

ITEM #5

Non permanent dam



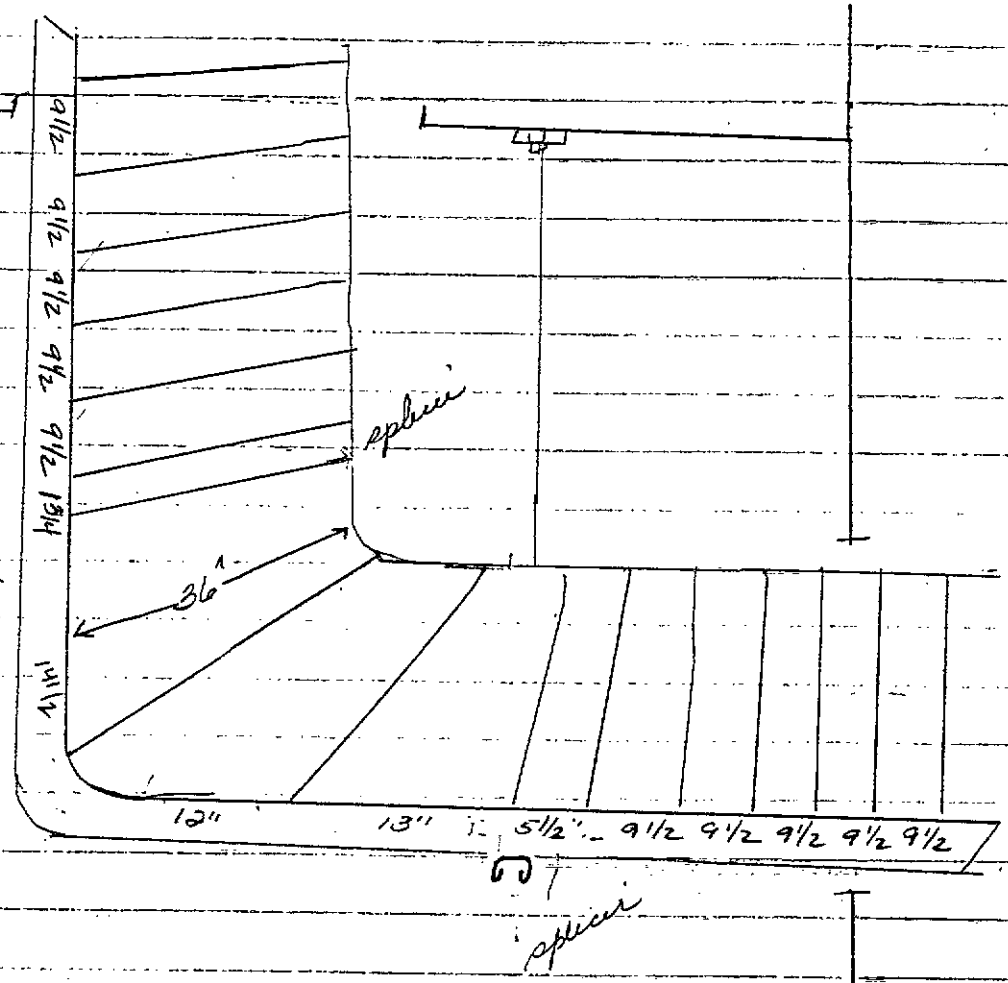
Non permanent damming installed to vertical wall slab east/west sides. At ceiling horizontal slab non permanent dam installed at bottom of blockout. Used blue board. Scrap ceramic blanket installed between cables.

OPL QA/QC 12-13-99

12/13/99

ITEM #5
36 x 36" cable tray.

TR #400
12/6/99
pg 13 of 18



Clida Patton
OPL QA/QC
12-28-99

Sandra J. Bradford
12/6/99

LOOKING EAST — CABLE LOADING — 36" TRAY

TR 400
12/8/99
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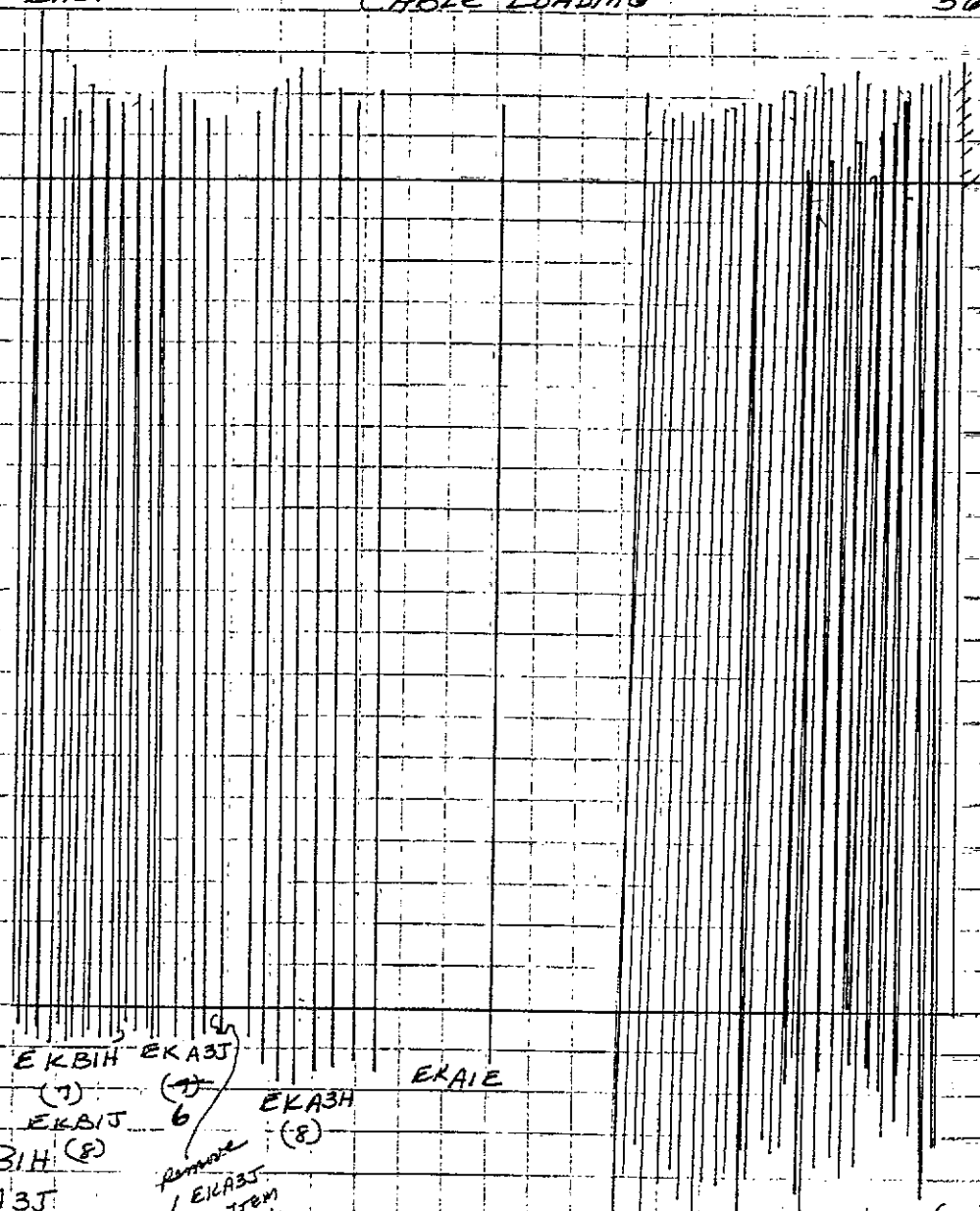


Verify circuit w/ cable 12/14/99 SMB

Gardner Bryant 12/8/99

Approx 4' over lap cable tray outside of furnace.

1 pc B1b-8 in lieu of EKBIH. per ENG M. Kammer

28 pcs - EKCIA - 20' Lengths - Bundled inside furnace 2 together tie wrap

6 ~~12~~ pcs - EKC6B - 20' "

SMB 12/14/99 7 pcs - EKBIH 20' "

6 ~~7~~ EKA3J 20' "

SMB 12/14/99 8 EKA3H 20' "

SMB 12/14/99 7 ~~8~~ pcs EKBIJ 20' "

1 - AIE 20' LAID in MIDDLE of CABLE TRAY

QA/QC 12-8-99

Pg 15 of 18

Test Item Loading Summary

Test Item	Bill of Material	Cut Length	Number of Lengths	Comments
1	EK- A1C	20'	1	
2	EK- A1E	20'	1	4.00" conduit
	EK- B1L	20'	1	1.25 " conduit
3	EK- B1H B8	20'	~~12~~ 12	~~1 length @ 19'~~
	EK- B1J	20'	~~12~~ 11	1 length @ 19'
	EK- A3H	20'	~~3~~ 2	
	EK- A3J	20'	2	
4	EK- B1K	16'	1	
5	EK- A1E	20'	1	20% laid volume
	EK- B1H	20'	8	B1H/ B1J at 25% of laid volume
	EK- B1J	20'	8	
	EK- A3H	20'	8	A3H/ A3J at 30% of laid volume
	EK- A3J	20'	~~8~~ 7	
	EK- C1A	20'	28	C1A at 20% of laid volume
	EK- C6B	20'	~~16~~ 6	C6B at 5% of laid volume
6	EK- A3J	16'	1	
7	EK- B1K	16'	1	

revised 12/9/99 by Kammer
Am Bradford 12/9/99

Sonny—
~~BIL CABLE YOU INDICATED IN TEST ITEM #3 BELOW IS THE 1.25" CONDUIT IN TEST ITEM #2 (SEE ABOVE)~~

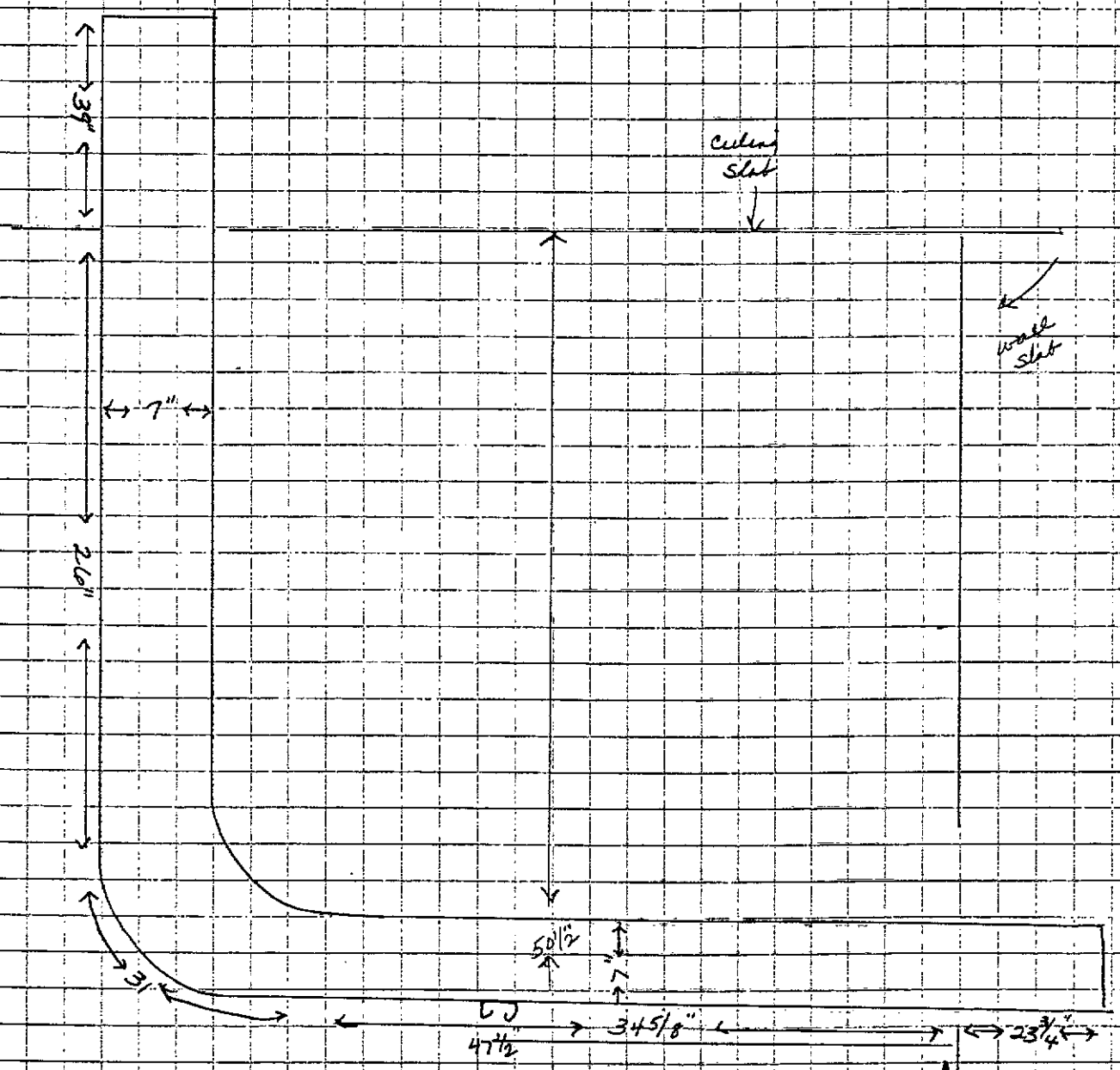
A3J CABLE
- 216' PER WAREHOUSE
- ONLY 150' SHIPPED.

TO: MIKE KAMMER

TR 400
12/7/99
Pg 16 of 18

ITEM #5

36" cable tray.



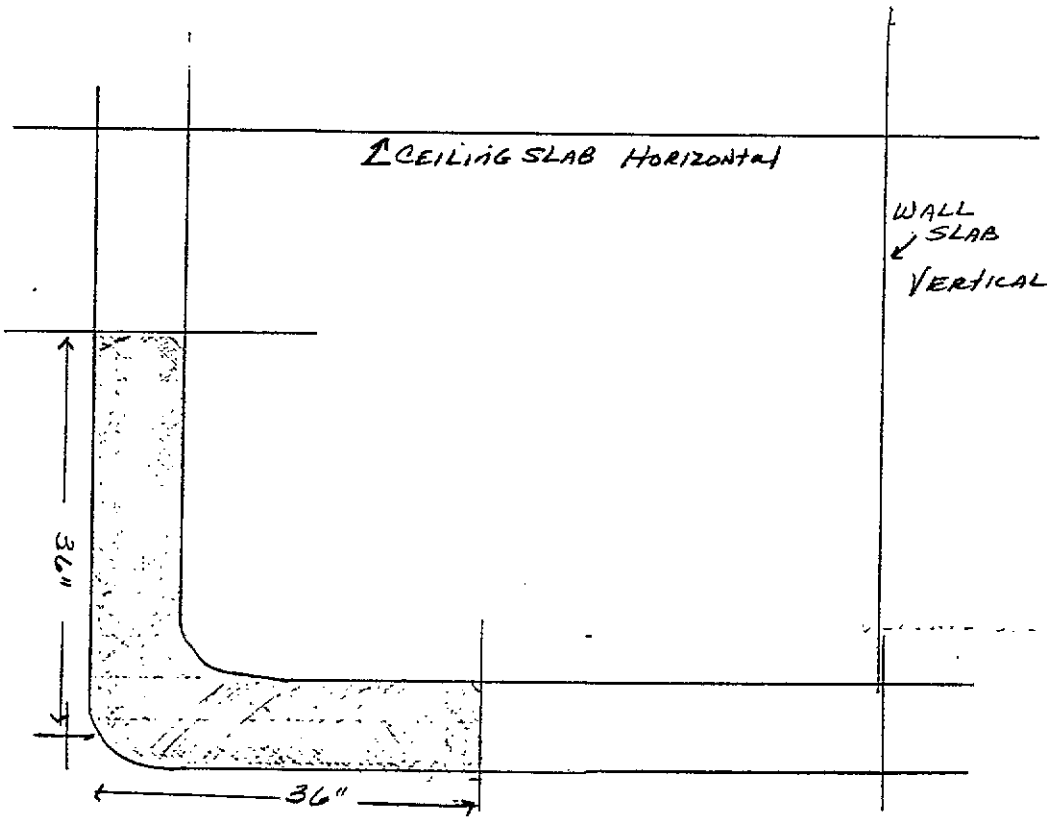
P1000 extends: South side 2" Length of Thread Rod
P1000 extends North side 2 3/4" Length of Thread Rod
Inside deminsions of C/T 36" rails 7"
HANGS FROM CEILING SLAB 50 1/2 to C/L RAILS
40" from Furnace.

OPL QA/QC 12-7-99 ~~Collins~~

ITEM #5

TR 400
12/17/99
pg 17 & 18

FLAMEMASTIC 77
Installation



36" CABLE TRAY
SEE DRAWING FOR ITEM #5

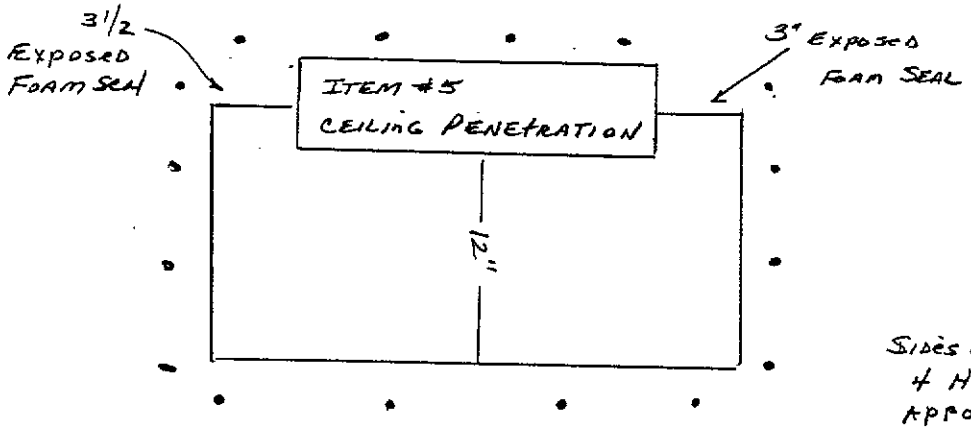
FLAMEMASTIC 77 LOT# 9909024

Clida Patton
OPL QA/QC
12-28-99

Sandy Bedford 12/17/99

ITEM #5
PENETRATION / KAOWOOL Installation

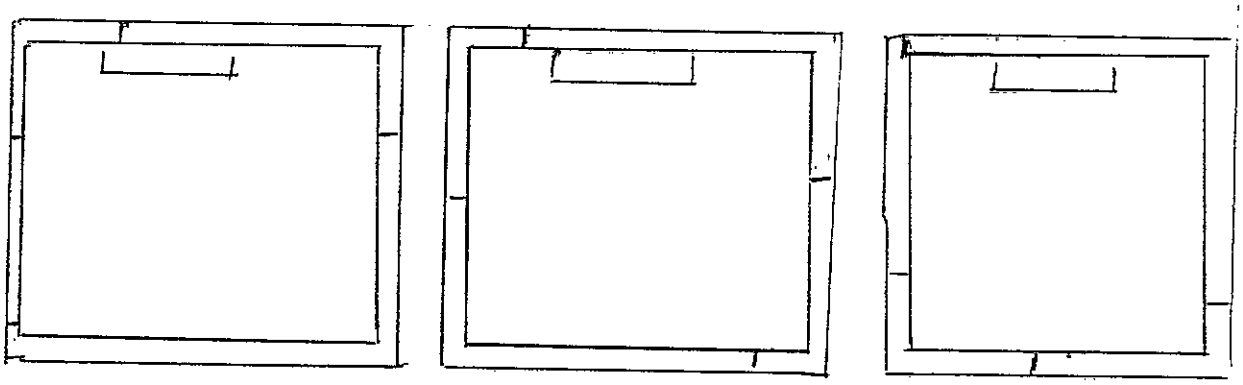
TR 400
12/17/99
pg 18 of 18



Sides of Penetration
4 HILTI KWIK BOLTS II
Approx 7" spaced.
FRONT & BACK 4 EACH
SIDE 12" spacing
1/4 x 4 1/2" HILTI KWIK
BOLT II

18 ga metal Strips LOT #A201 rec'd from VCSNS
KAOWOOL purchased from Thermal Ceramics Houston (*)
1/4" x 4 1/2" HILTI KWIK BOLT II

LOOKING AT FRONT of FURNACE



all layers staggered by a nominal 6". Kaowool extends out onto concrete a nom 7" from primary commodity covering foam seal

LAYER #1 LAYER #2 LAYER #3

Installed 2-1/2" steel bands across face of seal.

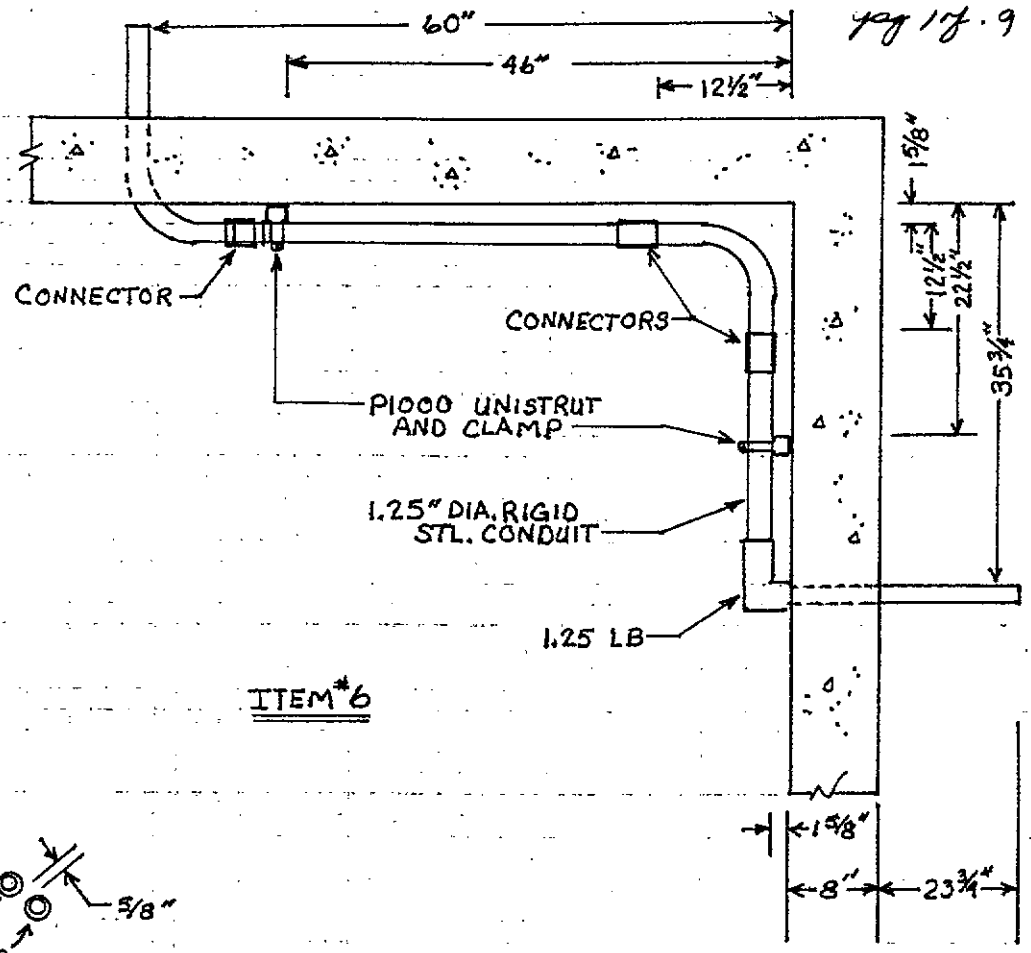
Cleda Patton
OPL QA/QC
12-28-99

Sandra Bradford 12/19/99

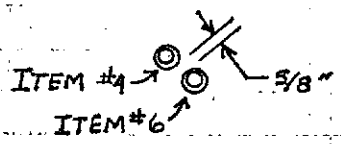
TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #6 CHKD _____

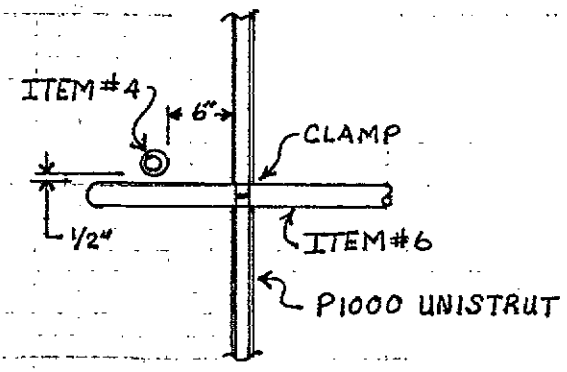
pg 17.9



ITEM #6



~~CEILING~~ WALL VIEW OF SLAB PENETRATION



CEILING VIEW OF CONDUITS PENETRATING SLAB

Verified dimensions
Gordon M Burgess 12/15/99

Clede Patton
OPL QA/QC
12-28-99

Item #6
1.25 rigid steel conduit in Cocoon design

TR 400
12/17/99
pg 289

Hilti Kwik Bolt II installed into vertical slab 3" from bottom of primary commodity with 14" spacing this goes below Pipe support. Above Pipe support 3" with 12" spacing.

Horizontal Hilti Kwik Bolt II 1/4" x 4 1/2"
First hilti 8" from vertical wall. Center hilti at 11 1/2" and end hilti @ 3". a 32" 18 ga metal strip 1 1/2" (nom.) used to secure cocoon. On the 41" 18 ga 1 1/2" nom. metal strip 11" between first hilti Kwik Bolt II and 15" between center hilti 3" from end.

These 18 ga 1 1/2" wide (nom) metal strips run vertical and horizontal to secure cocoon to surface. Fender washer 1/4 x 1 1/4 used under nut except where metal strips bend from vertical to horizontal can not install washer because of bend.

Cocoon consists of 3 - 1" layers of Kaowool over primary with 6" staggered butt joints.

Item #4 is encapsulated at wall in cocoon.

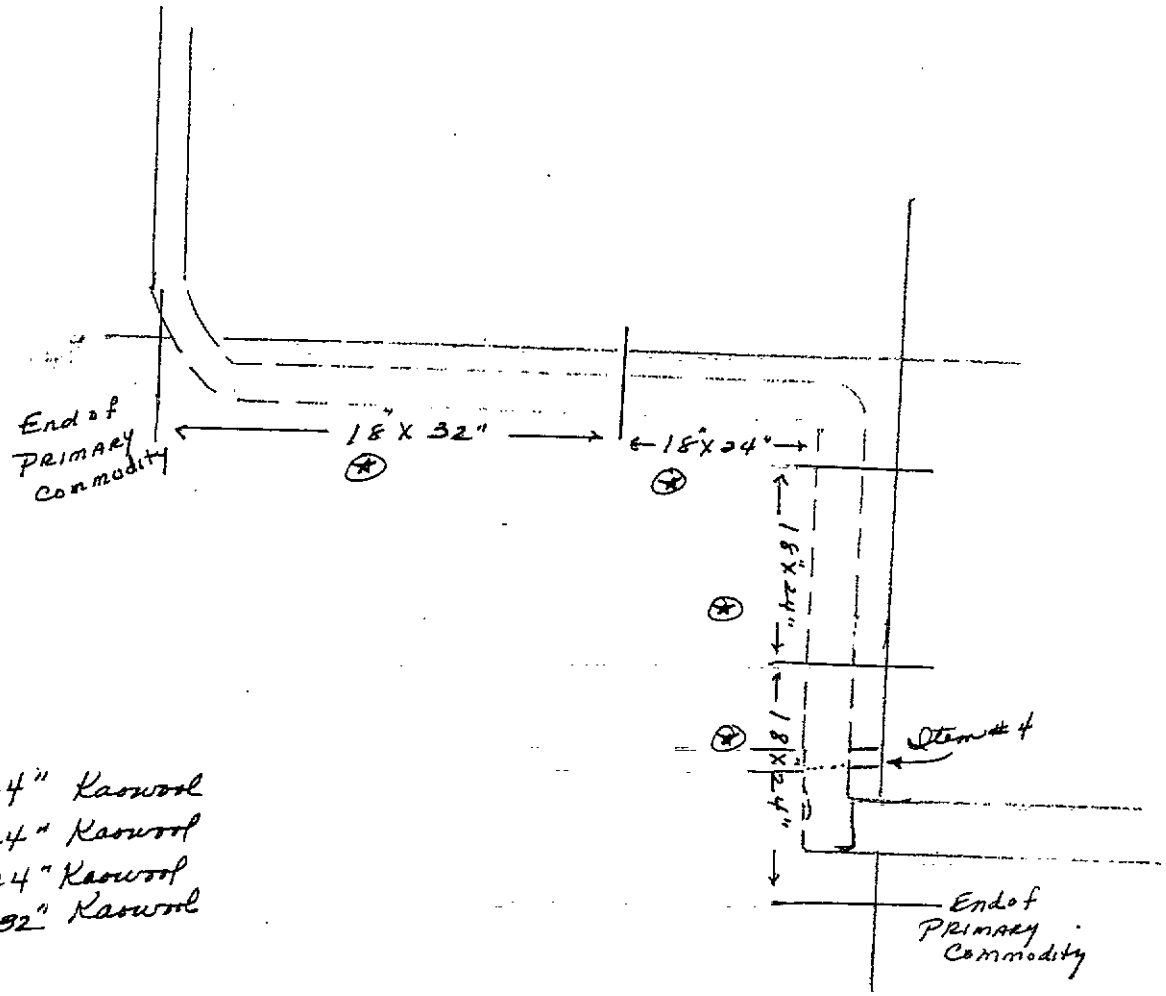
Cleda Patton
OPL QA/QC
12-28-99

Sandra Bradford
12/18/99

ITEM # 6
1.25" rigid steel conduit. Cacon design

12/17/99
TR 400
pg 3 of 9

FIRST LAYER



18"x24" Kaowool
18"x24" Kaowool
18"x24" Kaowool
18"x32" Kaowool

Item # 4 first layer at wall encapsulated in Item # 6 cacon

Kaowool extends out into concrete by 7" from primary commodity and is impaled onto Helte bolts.
Unistrut P1000 support filled with Kaowool 23 1/2" long.

First layer of cacon at end of primary commodity is cut back at seams into collar of Item # 5 ceiling penetration (this will be all layers)

KAOWOOL purchased from Thermal Ceramics Houston (*)
Helte Bolts Kwik II 1/4 X 4 1/2"
18 ga metal straps Lot # A201 rec'd from VCSNS stock
Fender Washer 1/4 x 1 1/4 and nut.

all butt joints are between 6-12" all layers. Horizontal/Vertical slab installation.

Cleda Patton 12-28-99
OPL QA/QC

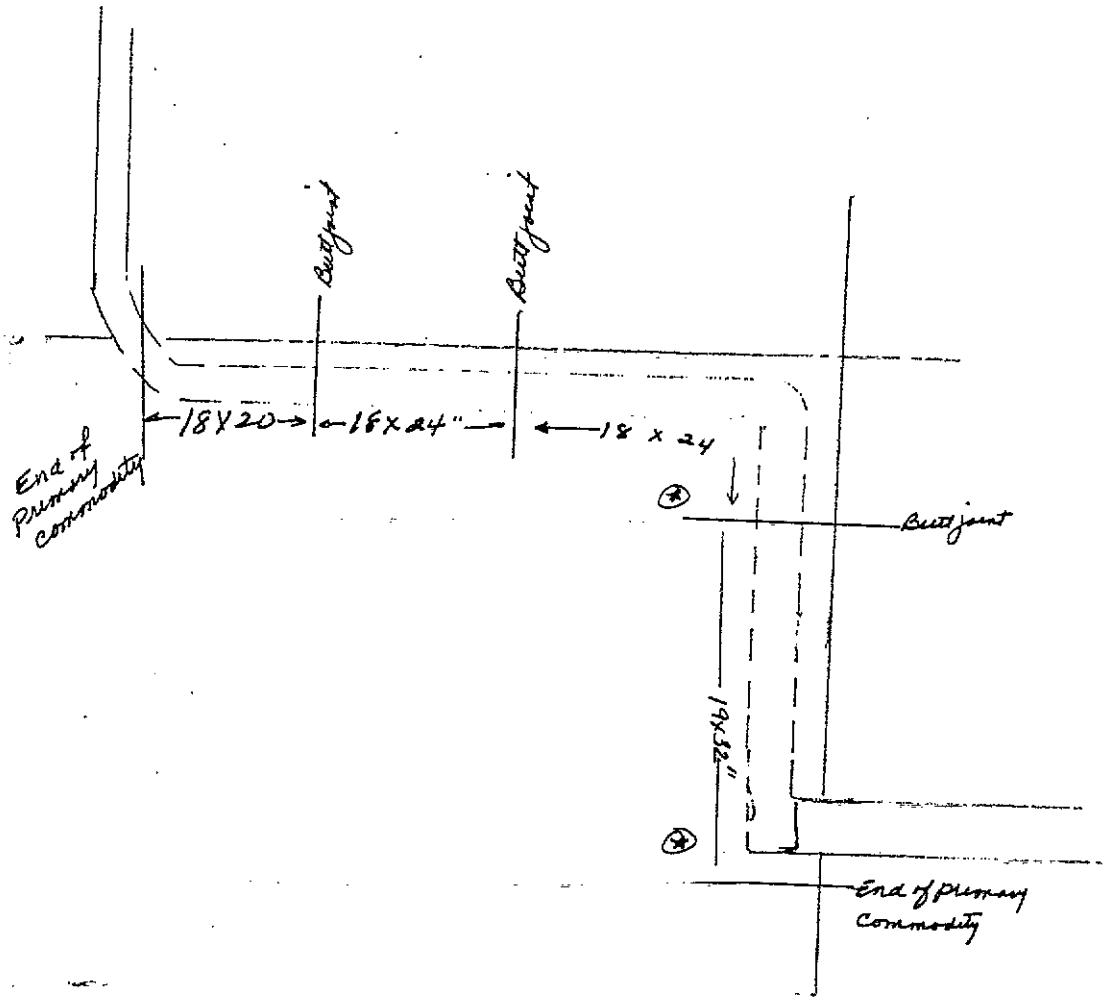
Sandra J Bradford 12/17/99

ITEM # 6

1-25" rigid steel conduit. Cacon design

12/17/99
TR 400
Pg 4 of 9

SECOND LAYER



Kaowool purchased from Thermal Ceramics Houston (*)
Helu Kwik Bolts II 1/4 x 4 1/2"
18 ga sheet metal Lot # A201 rec'd from VCSNS stock
Fender Washer 1/4 x 1 1/4" and nut.

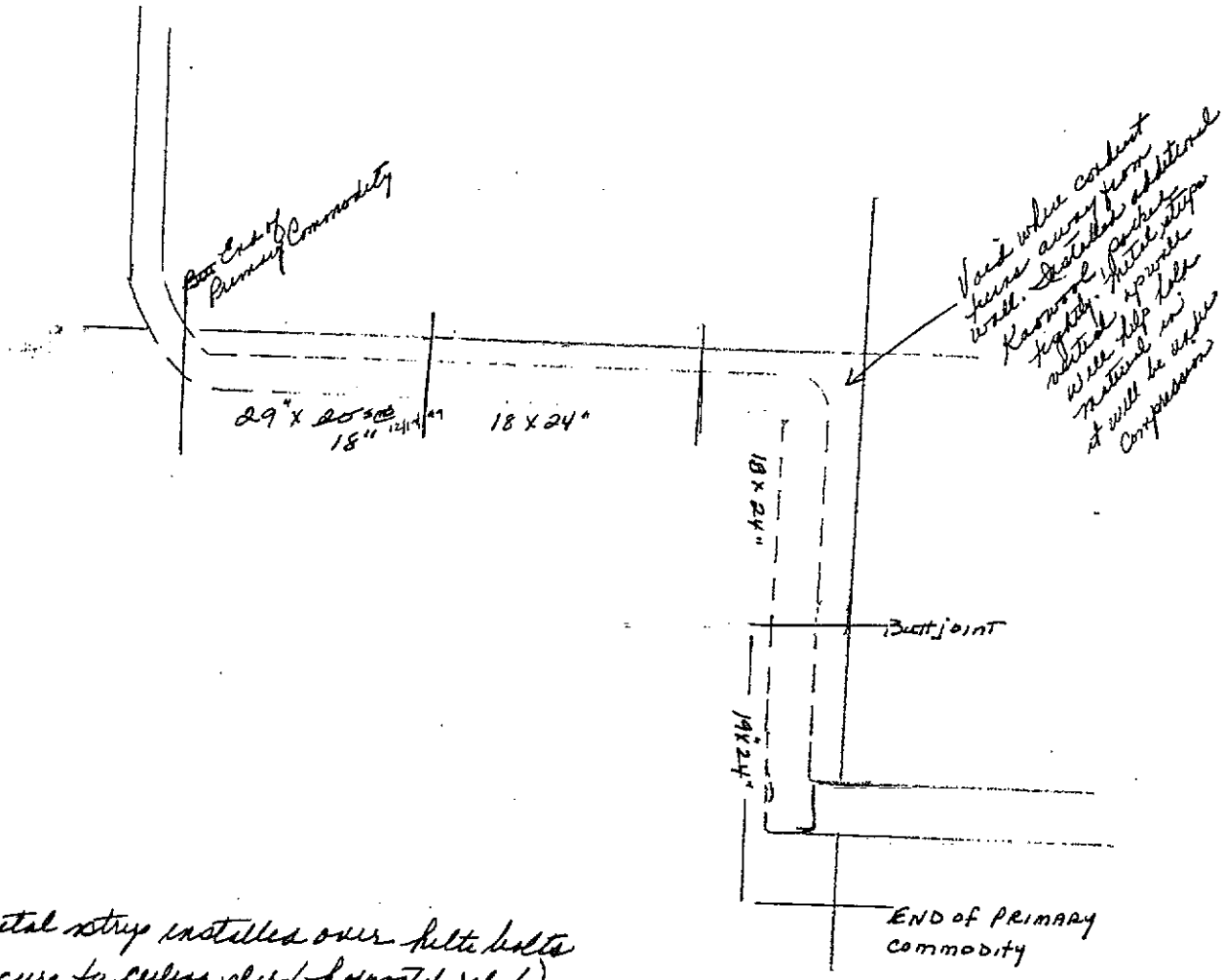
Butt joints are between 6-12" all layers - Horizontal/Vertical slat installation

Cleda Patton
DPL QA/QC
12-28-99

Sandra Bufford 12/12/99

ITEM # 6
1.25" rigid steel conduit. Cacon design
THIRD LAYER

12/17/99
TR 400
pg 5 of 9



18ga metal strip installed over hilti bolts to secure to ceiling slab (horizontal slab)
18 ga metal strips are cut when P1100 attaches to ceiling slab.

Fender washers deleted at 4 hilti Bolts at bend of 18 metal strip. (2 each side of cacon)

KAOWOOL purchased from Thermal Ceramics Houston
18 ga metal strips Lot # A201 rec'd from VCSNS stock
Hilti Bolts 1/4 x 4 1/2"
1/4" Fender Washer/nut.

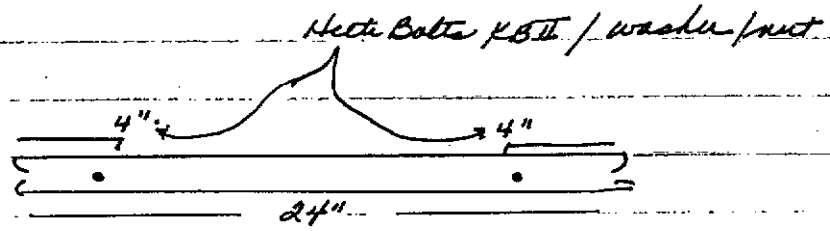
all butt joints are between 6-12" all layers. Horizontal/Vertical installation

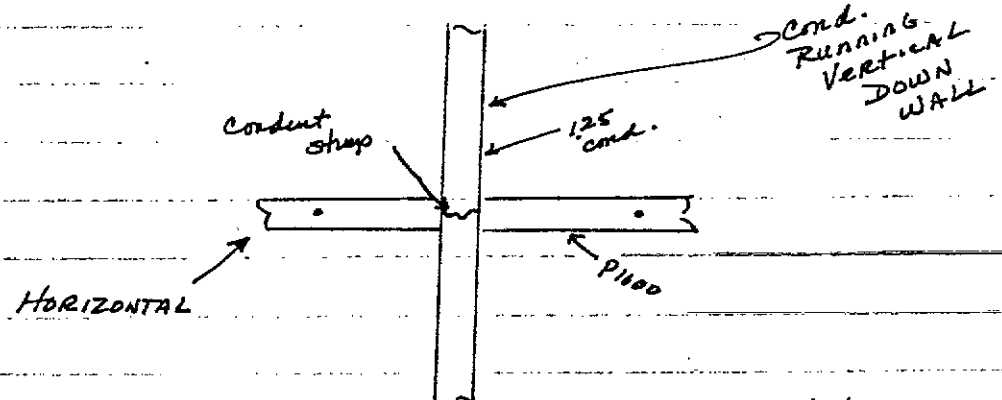
Cleda Patton
OPL QA/QC 12/28/99

Sandra M Bergfeld 12/19/99

Item #6

TR 400
12/4/99
pg 6 of 9





Conduit centered on P1000 Approx 11 1/4" Ea. side of conduit to T-Short P1000 @ 9."

Sandra J. Bedford
12/4/99

OPL QA/QC 12-4-99 [illegible]

pg 7 of 9

C6B - WE HAVE REVISED THE NUMBER OF LENGTHS OF C6B CABLE TO 6 TOTAL IN LIEU OF 28.
IF YOU HAVE INSTALLED 12 already, WE WILL NEED TO ORDER 6 TO GET THE CORRECT FILL.
[TRUE C6B IS USED IN LIEU OF C6C]

ITEM #6

A3J - OPTION #1 - CHECK w/ GREG TO DETERMINE IF HE CAN THERMOCOUPLE AND INSTALL CABLE IN THIS CONDUIT.

⇒ IF NOT, THE No# OF ITEMS IN ITEM 6 GOES TO 0.

⇒ IF SO, STEAL ONE OF THE A3J 20' LENGTHS FROM ITEM #5 AND DOCUMENT ACCORDINGLY.

THIS SHOULD RESOLVE ALL YOUR QUESTIONS.
CALL ME WITH ANY OTHERS.

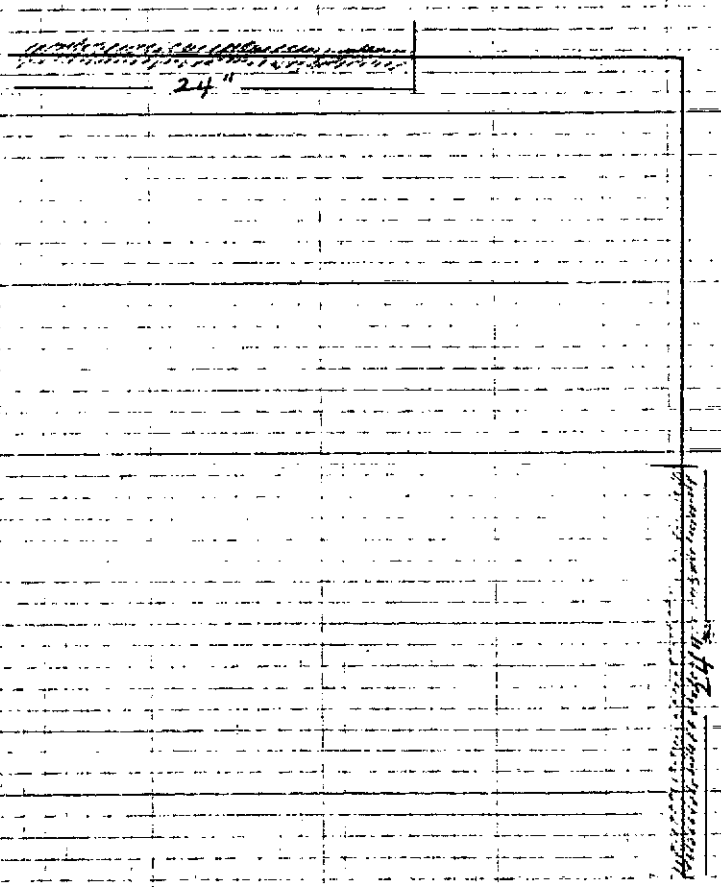
TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

ITEM #6

TR 400
12/19/99
pg 8 of 9

ITEM #6 CACOON - Install 1/8" FLAMEMASTIC 77 to KADWOOL - SEE DRAWING for ITEM #6 from VCSNS ENG.



FLAMEMASTIC 77 installed to THERMAL SHORT P1000 that WAS installed @ 13" from bottom of CACOON

1/8" flamemastic installed - 12/19/99

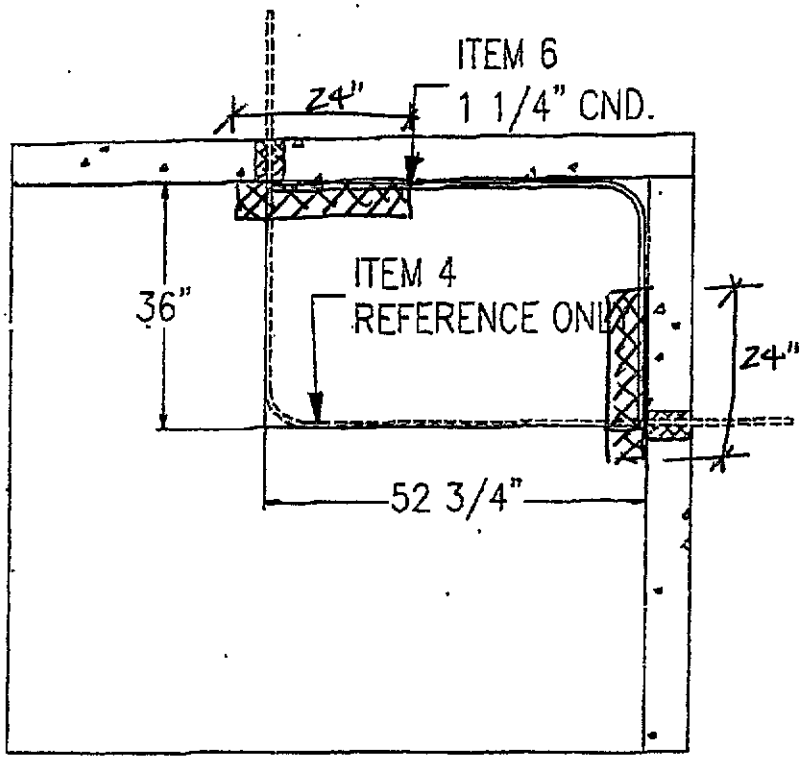
FLAMEMASTIC 77 LOT # 9909024

Cleda Patton
12/28/99 OPLQA/QC

Jordan M. Bedford 12/19/99

KAOWOOL / ZETEX
SKETCHES
MCK
12/17/99

pg. 9 of 9



ELEVATION ITEM 6

XXX - FLAMEMASTIC 77
MCK 12/17/99

Installed 1/8" Flamemastic 77 to Item #6

Clida Patton
OPL QA/QC
12-28-99

Jordan Bufford 12/19/99

0	11/1/99	11/1/99	LFS		
No.	DATE	REVISION NT	BY	CHECKED	APPROVED

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
56 E. JACKSON BLVD (312)427-2818 CHICAGO, IL 60604

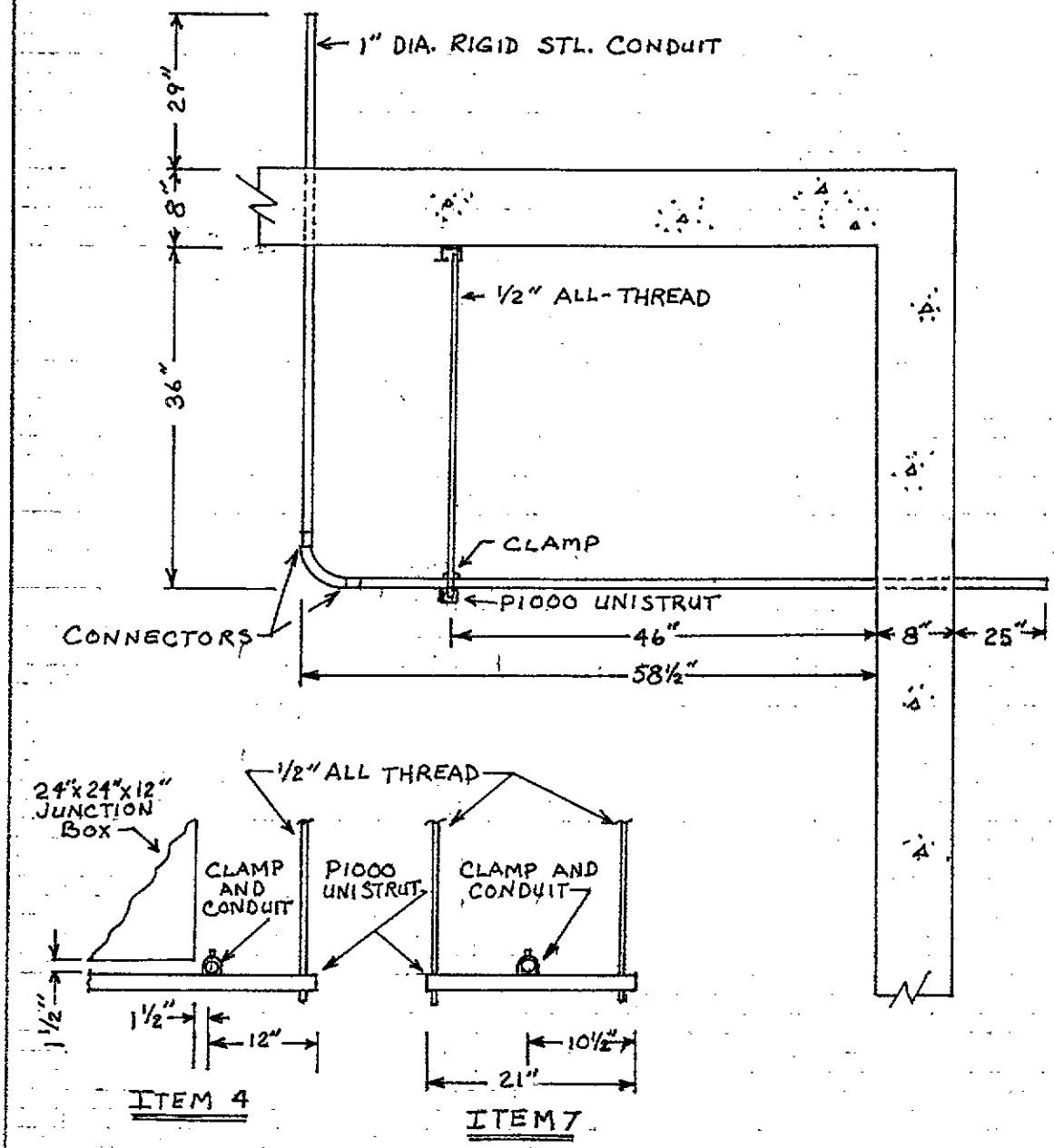
TRANSCO PRODUCTS INC.
TEST

DRAWN L.F.S.	DATE 11/1/99	DWG. TITLE Fire Test ITEM 6	REV. 0
APPROVED	DATE		
SCALE N.T.S.	DIM (L)mils @ 1=10		

PAGE 1 of 11

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #7 CHKD _____



Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions
Gordon Bedford
12/15/99

page ~~1~~ 2 of 11

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

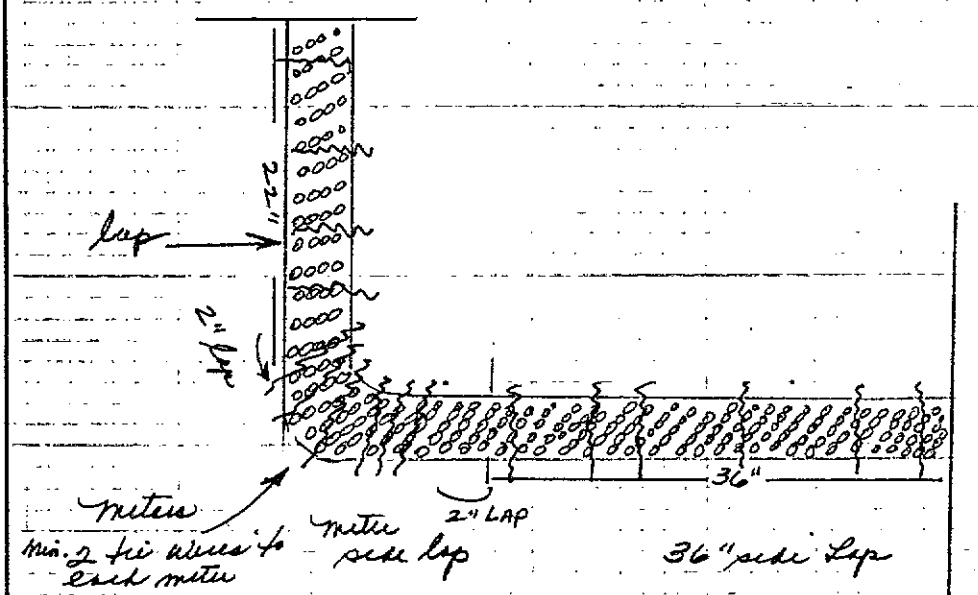
DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

TR 4.10
12/19/99

ITEM # 7

2 LAYERS TCO-704A Intumscent CLOTH (PINK)

FIRST LAYER



SEE DRAWING FOR ITEM # 7 from YCSNS ENG.

2" LAP both Directions

SPAING on 18 ga S.S tie Wire 2" from terminations and 9" max spacing between tie WIRES

Thermal shot 1 layer installed butted up to Cloth on Conduit lap 2" 18 ga. s.s. tie wire. 3-18 ga tie wires installed to approx 9" long T-shot.

Aleda Patton
OPL QA/QC
12-28-99

Sandra Bradford 12/19/99

page 3 of 11
Dms 12/19/99

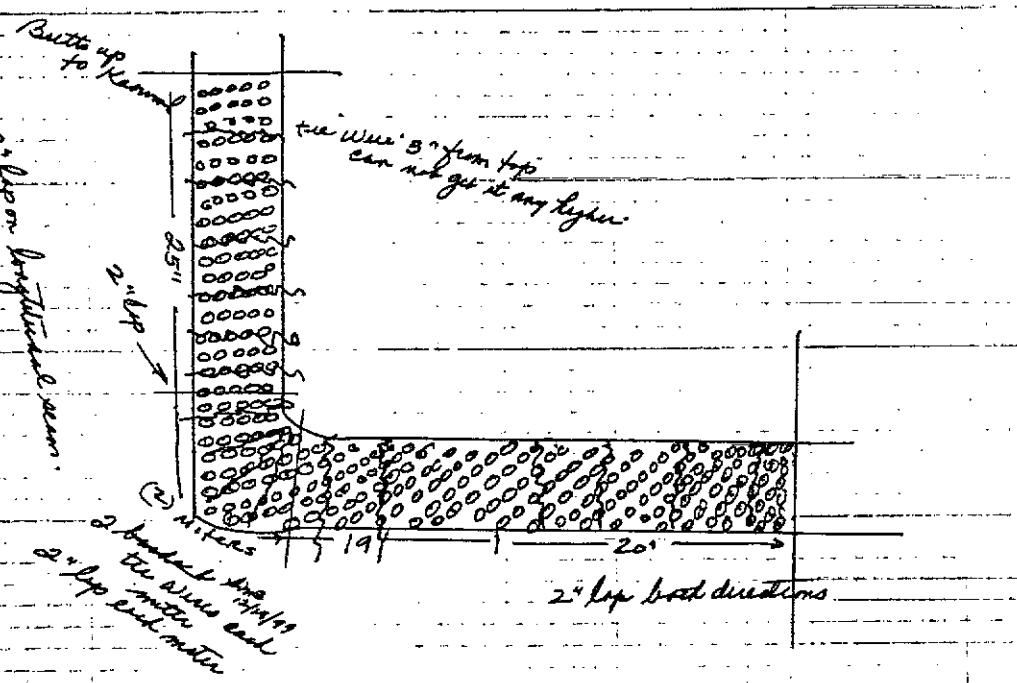
TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

TR 400
12/19/99

ITEM # 7

SECOND LAYER
TCO-704A



Installed second layer of TCO-704A Cloth. Laps at 2" min both directions. Staggered joints. 180° on longitudinal and a variancies in circumf.

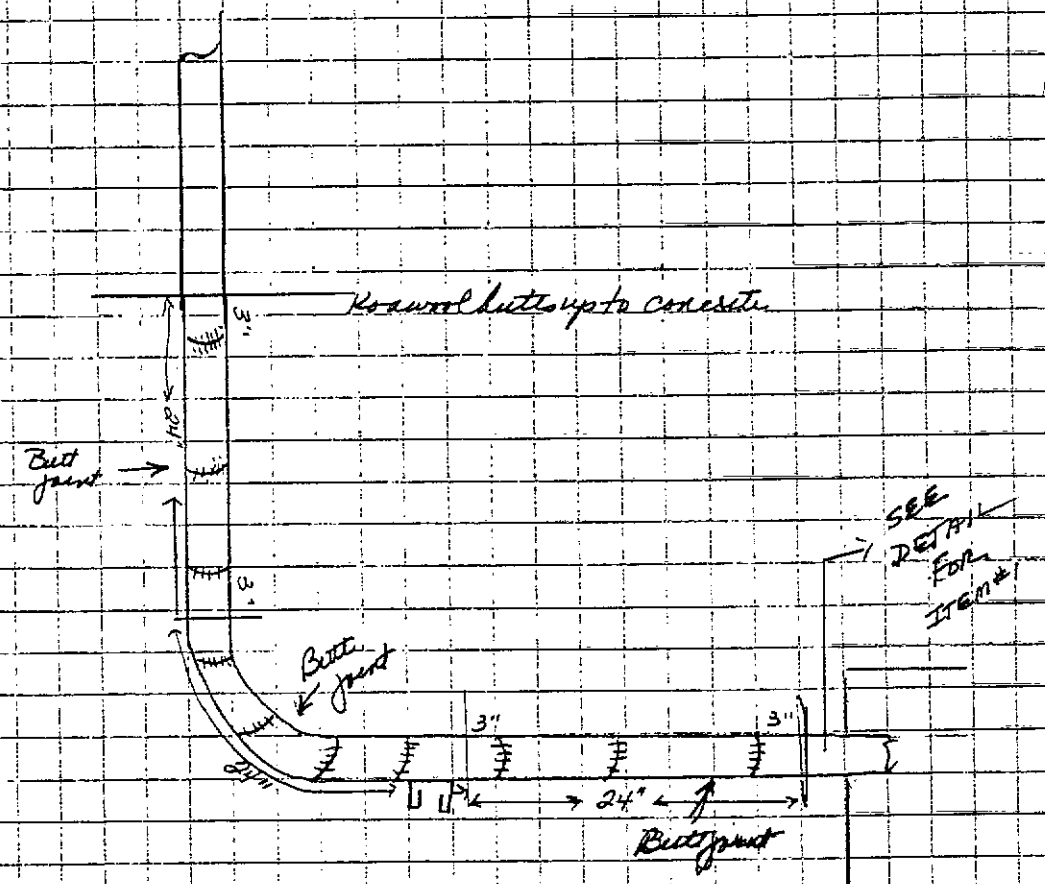
Second layer installed to thermal shrink 2" lap, butts up to conduit. 18ga tie wire installed. 3 tie wires installed.

Cleda Patton
DPL QA/QC
12-28-99

Sandra J. Bunford
12/19/99

TR 400
12/13/99
PAGE 4 of 11

ITEM #7
First Layer



Butt joints on horizontal on bottom, butt joint over top of support
up vertical butt joint inside at throat.

KAOWOOL LOT NO. 990420200748
received from VCSNS stock
24X11" KAOWOOL
24"X11" KAOWOOL
24X11" KAOWOOL

Cleda Patton
OPL QA/QC
12-28-99

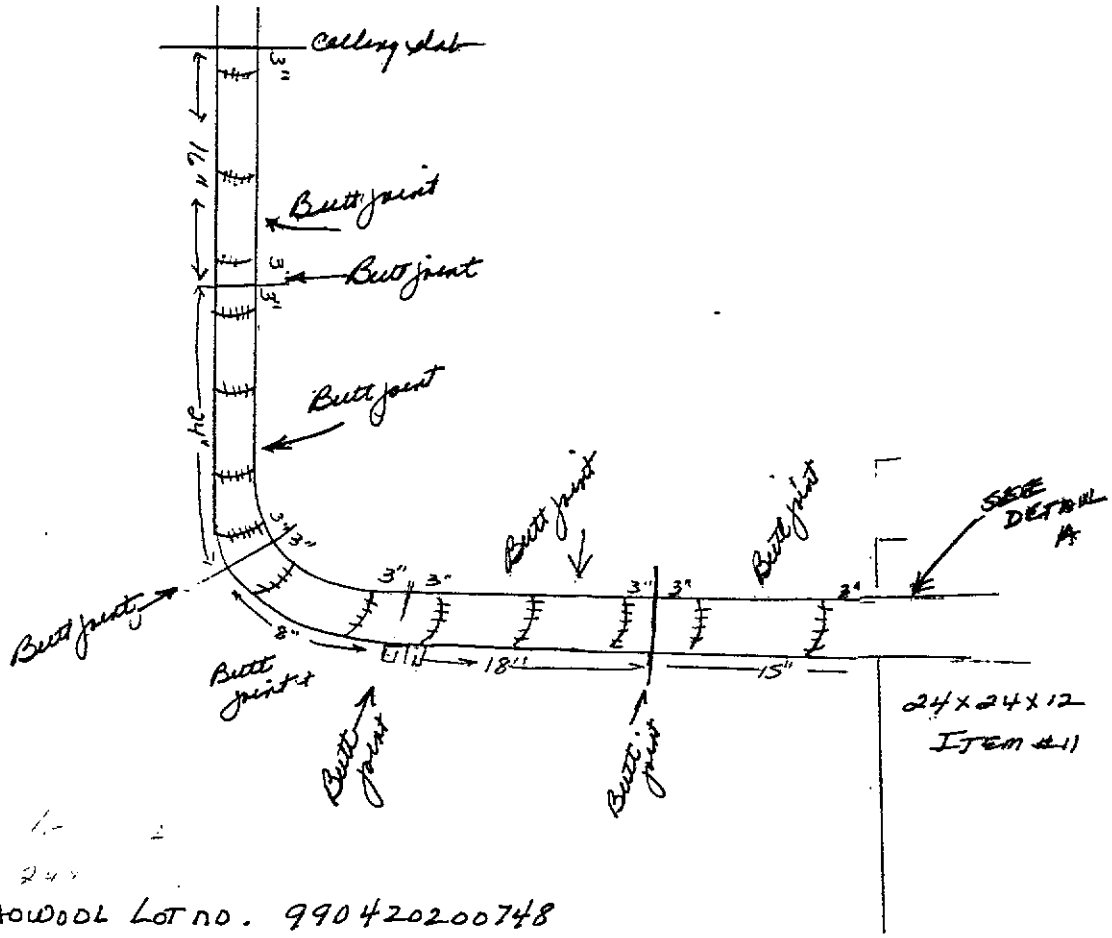
Sandra M Bradford
12/13/99

TR 410
12/13/99
PAGE 5 of 11

ITEM #7

Second Layer

1" rigid steel conduit



KAOWOOL LOT NO. 990420200748
received from Y.C.S.N.S. stock

24" x 18 1/2" KAOWOOL
16" x 11 1/2" KAOWOOL
8" x 11 1/2" KAOWOOL
18" x 11 1/2" KAOWOOL
15" x 13 KAOWOOL

Butt joints are on top of conduit
1/2 x .020 steel bands LOT# BLFPX042NB
supplies from YCSNS stock

All measurements in bandsaw nominal.

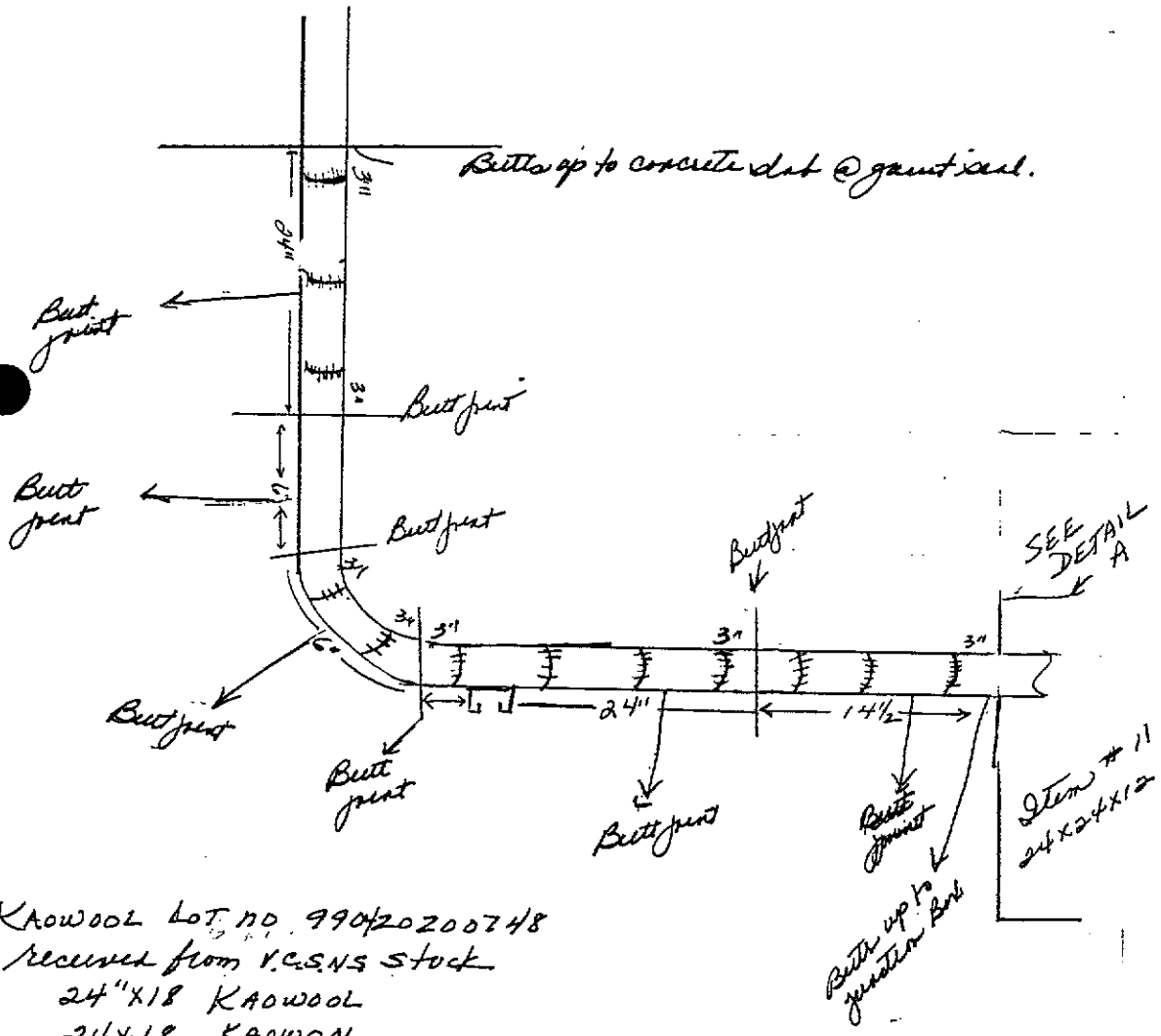
Cleda Patton
OPL QA/QC
12-28-99

Sandra J. Bradford
12/16/99

TR 400
12/13/99
Page 6 of 11

Item #7
Thin Layer

1" rigid steel conduit



KAOWOOL LOT NO. 990420200748
received from V.C.S.N.S stock
24"x18 KAOWOOL
24x18 KAOWOOL
6"x18" miter KAOWOOL
6"x18" miter KAOWOOL
14½" KAOWOOL

Butt joints installed to bottom of conduit

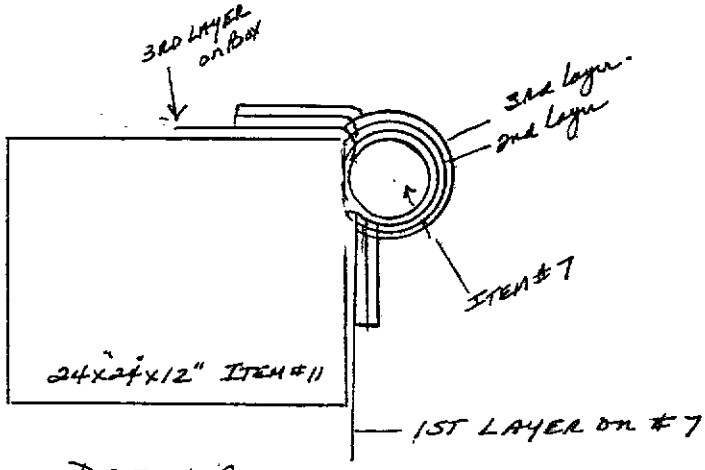
All steel bands 3" min from joints and do not exceed 12" max throughout conduit.

Sandra Bufford
12/14/99

Cleda Patton
OPL QC/QA
12-28-99

TR 400
12/16/99
page 7 of 11

ITEM # 7



DETAIL A

Third Layer on box encapsulates 1" conduit #7
added layer 2 and 3 over corner of box over conduit and
down onto side of box
Second + third layer butt up to Kaowool on wall for Item #11

2nd layer 13" X 19" 13" out from wall to straight section of conduit.
3rd layer. 13" x 19"

All joints are lined up on all 3 layers at box installation

Insulation pins installed 2 at top of box and 2 to the side of box. Washers installed over pins.

KAOWOOL LOT # 990420200748
received from VCSNS stock.

Cleda Patton
OPL QA/QC
12-28-99

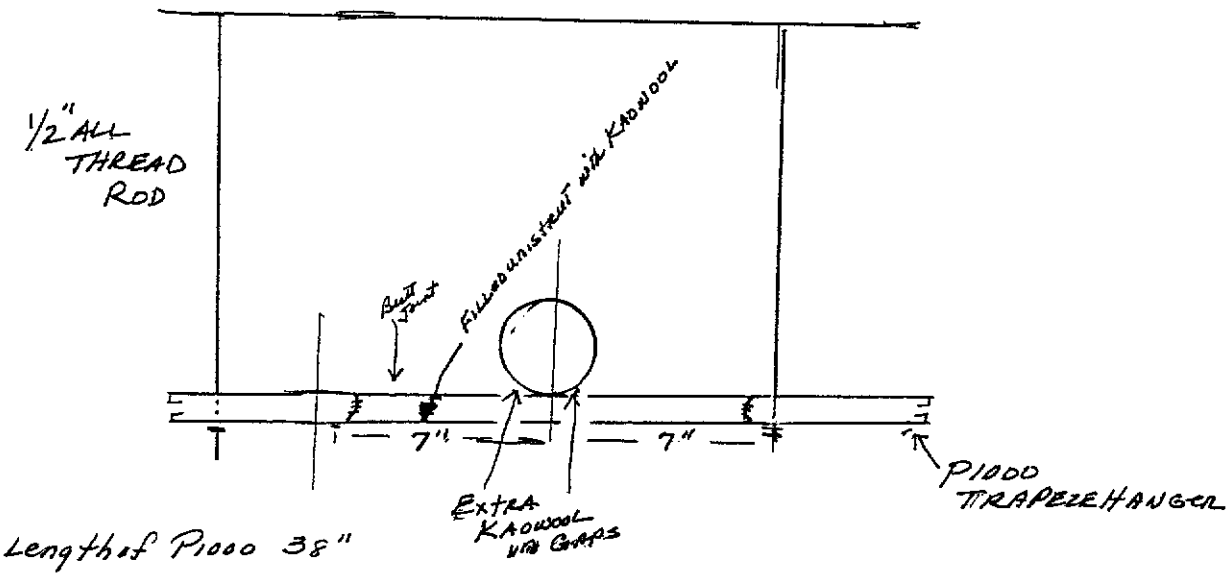
Sandy Bradford 12/16/99

TR 470
12/16/99
page 8 of 11

ITEM # 7

TRAPEZE HANGER P1000

LAYER #1
THERMAL SHORT



TOTAL Length of P1000 38"

Approx 7" cut from wrapped conduit 3-1" layers of Kaowool secured to P1000 with 1/2 X .020 bands.

Butt joint on top of unistrut
unistrut goes around unistrut and cut back to go under conduit. Installed as one piece.
20" in length

LOT#
KAOWOOL 990420200748
1/2 X .020 steel bands.
LOT# BLFPX042NB

received from VCSNS stock

Cleda Patton
OPL QA/QC
12-28-99

Sandra M Burgess
12/16/99

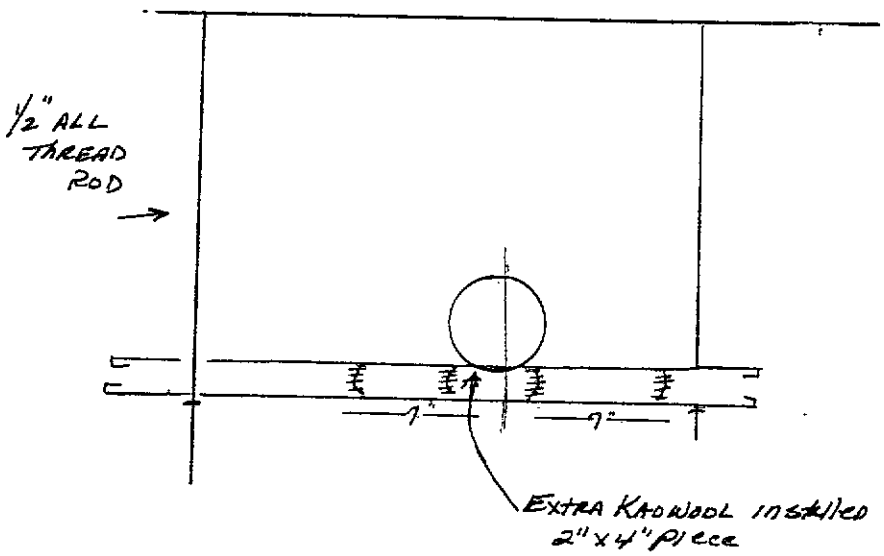
TR 450
12/16/99
page 9 of 11

ITEM # 7

SECOND LAYER

TRAPEZE HANGER P1000

THERMAL SHORT



Kaowool installed as 2 pieces cut into U configuration to butt up to conduit. Laps are not staggered. Butt joints are staggered. Kaowool butted up to conduit.

KAOWOOL LOT# 990420200748
1/2 x .020 bands LOT# BLFPX042NB
received from VCSNS Stock

Cleda Patton
OPL QA/QC
12-28-99

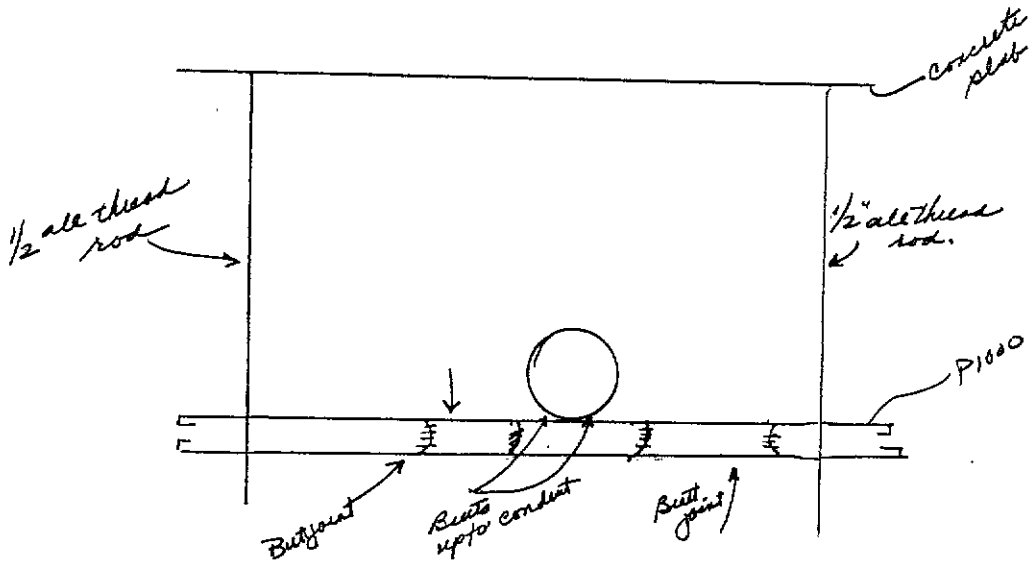
Sandra Bradford 12/16/99

#TR 400
12/16/99
page 10 of 11

LAYER 3

TRAPEZE HANGER P1000

Thermal Short



KAOWOOL installed as 1 piece. 20" x 20"
SMA 12/16/99

KAOWOOL
1/2 x .020 bands. LOT# BLFPX042NB

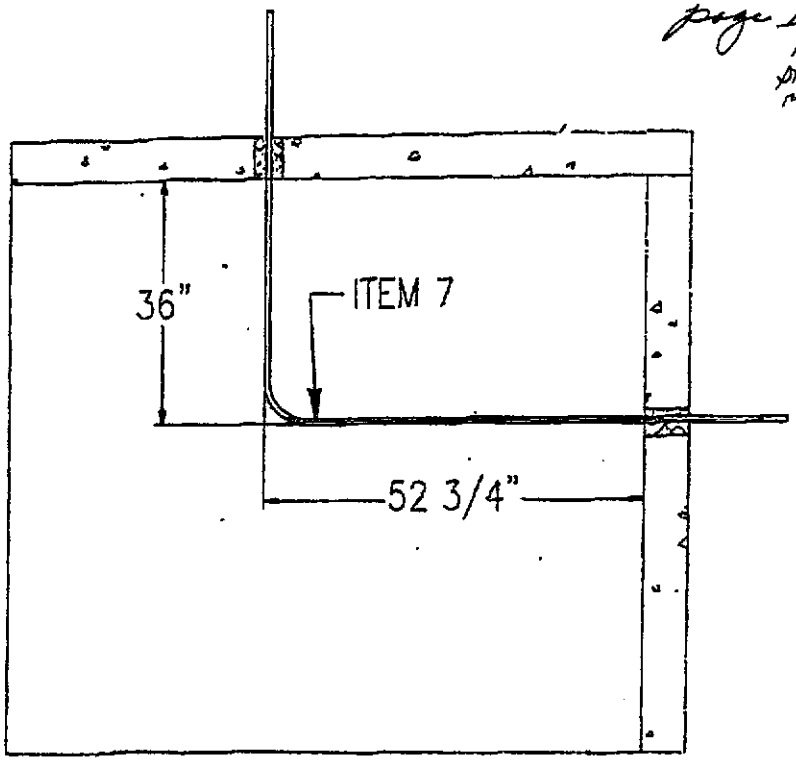
1/2" steel Bands 3" from joints spacing does not exceed more of 12"

Butt joint down on bottom.
Laps not staggered, butt joints staggered.

Oleda Dalton
OPL QA/QC
12-28-99

Sandra J. Bradford
12/16/99

KAOWOOL / BETEX
SKETCHES
MCK
12/17/99
page ~~13~~ of 11
11 of 11



ELEVATION ITEM 7

Installed two (2) layers of TCO-704A Intumescent Cloth to Item #7 Sandy Bradford 12/19/99

THIS ITEM KAOWOOL & 2 LAYERS #TCO-704A INTUMESCENT FABRIC.
MCK 12/17/99

Cleda Patton
DPL QA/QC
12-28-99

No.	DATE	REVISION BY	BY	CHECKED	APPROVED
0	12/18/99	AS BUILT			

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
[illegible] S. JACKSON BLVD (312)[illegible] CHICAGO, IL 60604

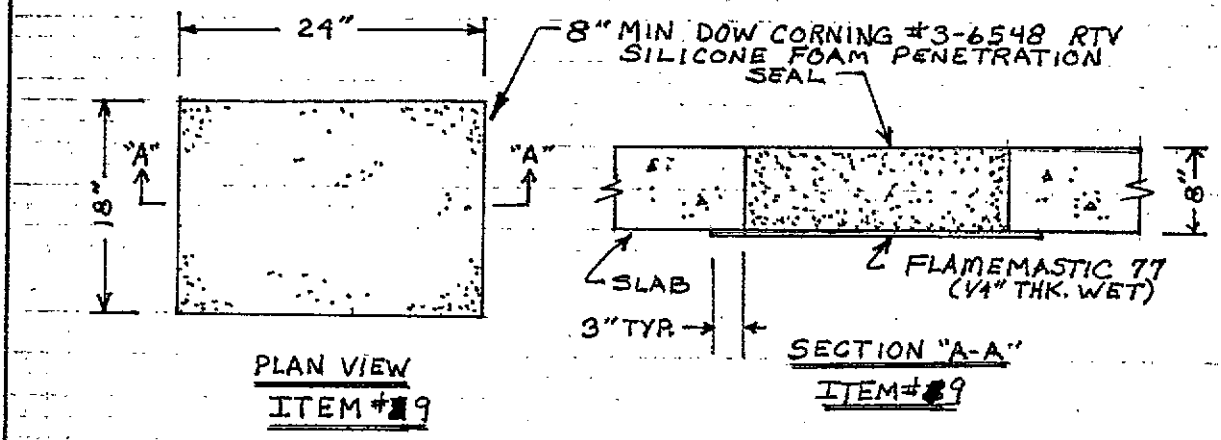
TRANSCO PRODUCTS INC.
TEST

DRAWN L.F.S.	DATE 11/10/99	DWG. NO. Fire Test ITEM 7	REV. 0
APPROVED	DATE		
SCALE N.T.S.	TOL. (1)limits @ 1=10		

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

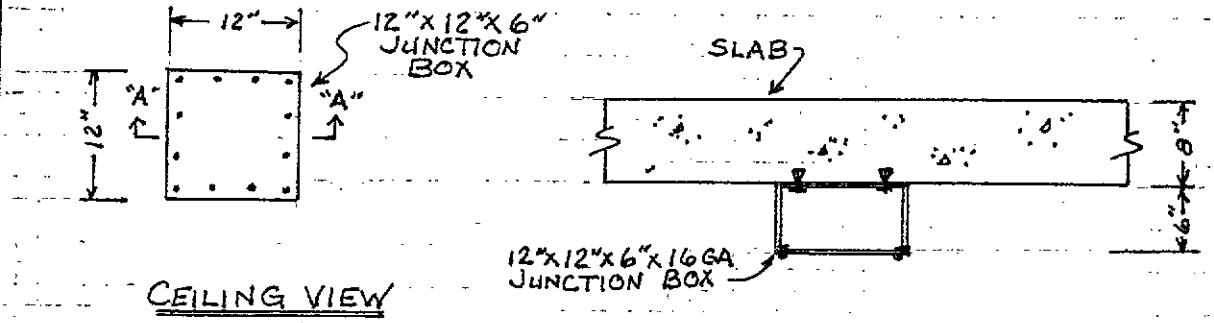
DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #8 ITEM #9 CHKD _____

Pg 1 of 8



PLAN VIEW
ITEM #9

SECTION "A-A"
ITEM #9



CEILING VIEW
ITEM #8

SECTION "A-A"
ITEM #8

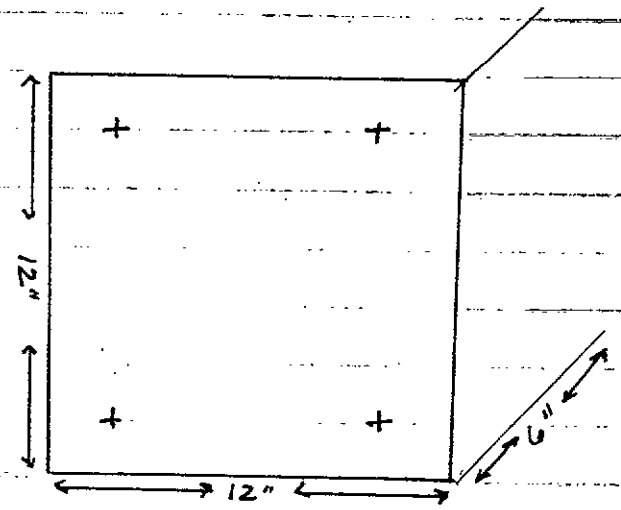
Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions for Item 8/9
Sandra Bufford 12/15/99

Item # 8

TR 400
12/4/99
Pg 2 of 8

12 x 12" x 6" 16ga sheet metal Box



Installed using 4 Hilti Bolts KBII 3" in from corners
(6" hole pattern)

VIEW Looking inside prior to Mounting

Mounted to Horizontal (CEILING SLAB) SLAB

* NOTE + designates Hilti BOLT KBII w/ washer, nut.

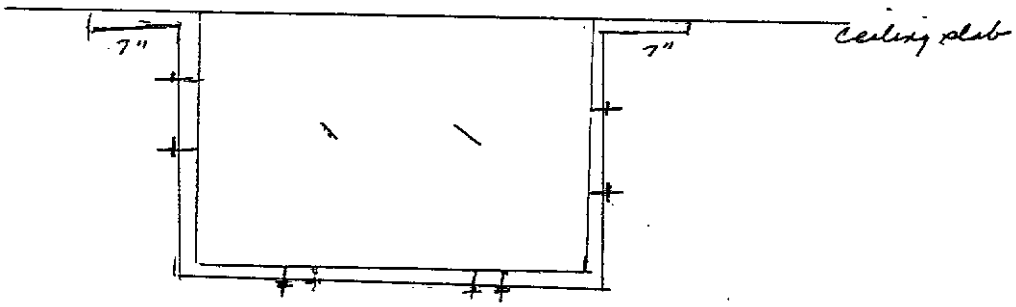
Cleda Patton
OPL QA/QC
12-28-99

Sandy Bradford

TR 400
12/14/99
pg 3 of 8

ITEM #8

12"x 12"x 6" 16 ga ceiling mounted junction box
First Layer



KAOWOOL LOT NO. 9904200748
Received from V.C.S.N.S stock

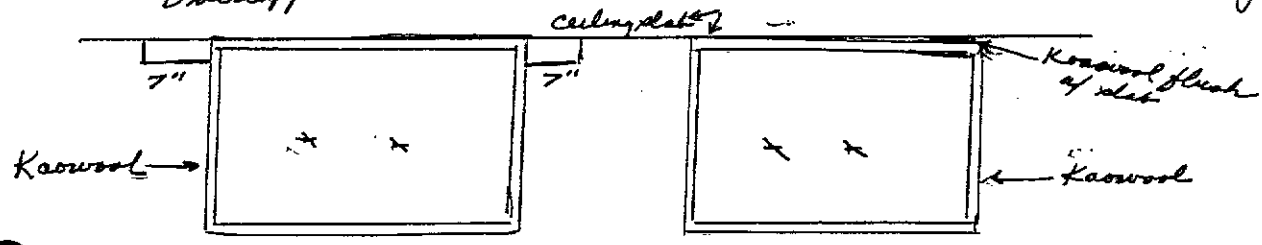
12"x 12"x 6" 16 ga ceiling mounted junction Box.

Insulation pins w/ fastener

2" Insulation pins installed on box four (4) pins installed on cover (bottom) and two (2) to each side. (Typ needs no pins secured to ceiling slab.) Hilti Kwik Bolt II installed 3" from termination with a max spacing of 12"

First layer pins north to south across bottom of box and overlaps out onto concrete slab by a min of 7."

Kaowool impaled on Insulation pins on north/bottom and south side. Insulation pin fasteners installed over pins to secure. Overlapped material has Hilti Kwik II Bolts to be secured to ceiling slab.



Kaowool 15"x 7" piece installed to east and west sides and overlaps onto previously installed Kaowool. which was installed north to south and across bottom.

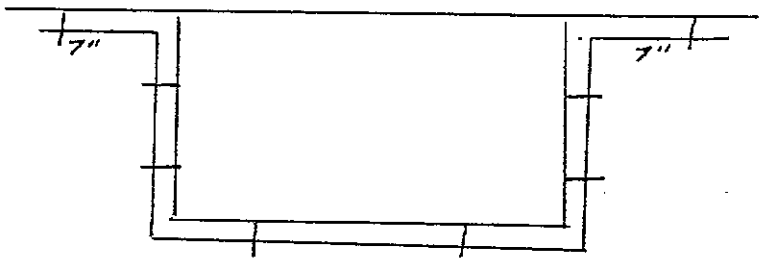
Cleda Patton
OPL QA/QC
12-28-99

Sandra Bradford
12/14/99

ITEM #8

SECOND LAYER / THIRD LAYER

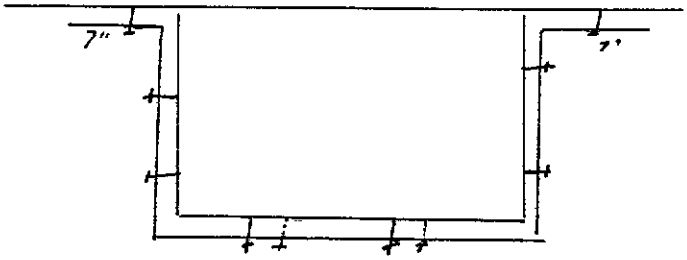
TR 400
12/14/99
Pg 4 of 8



* Looking at front of furnace.

18 ga galv. sheet metal strip nom. 1½" wide

Second Layer. to stagger seams/butt joints Kaowool goes from back to front side of insulation box. Impaling Kaowool onto same insulation pins as first layer. Overlaps by 6" on front and back sides. Installed 6" pieces to left side of box impaled on ceiling pins. Installed 7" pieces to ceiling bolts previously installed (27½ x 6" both sides) Overlaps onto concrete at 7".



Third layer Kaowool goes left to right 40 x 16" impaled on insulation pins. Kaowool installed front to back 16" x 6" impaled on insulation pins. Washers installed over insulation pins. All material installed locks together and all butt joints are staggered. Installed front and back panels at ceiling slab (26" x 6") Impaled on hilti bolts. Bent insulation pins on left side right side and bottom.

Installed 18 ga sheet metal strips over overlapping material around box at ceiling slab. Fender washers 1¼ x 1¼" and nut on hilti Kwik Bolt.

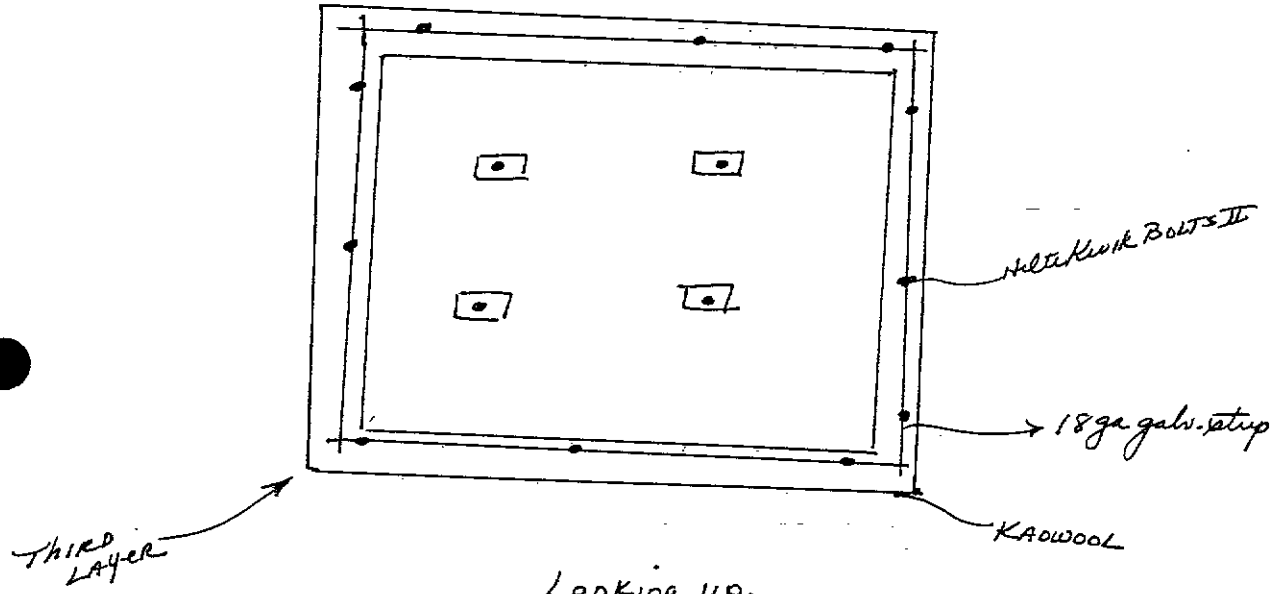
Cleda ~~Dalton~~ OPL QA/QC 12-28-99

Sandra M Bradford 12/14/99

#TR 400
12/14/99
pg 5 of 8

ITEM # 8

metal strip
(18 ga. galv. sheet metal)



Looking up.

12"x12"x6" Box mounted to ceiling.

18 ga galv. sheet metal strip used in lieu of oversized fender washer.

Metal strips drilled to fit over Hilti Kwik Bolt II which also penetrate through Kaowool. Washer and nut installed for Hilti Kwik II Bolt.

Metal strips frame around junction box.

18 ga. galv. sheet metal LOT NO. A201
received from V.C.S.N.S. stock.

Installed 1/2" stainless steel band around middle of box.
1/2 x .020 bands LOT # BLFPX042NB

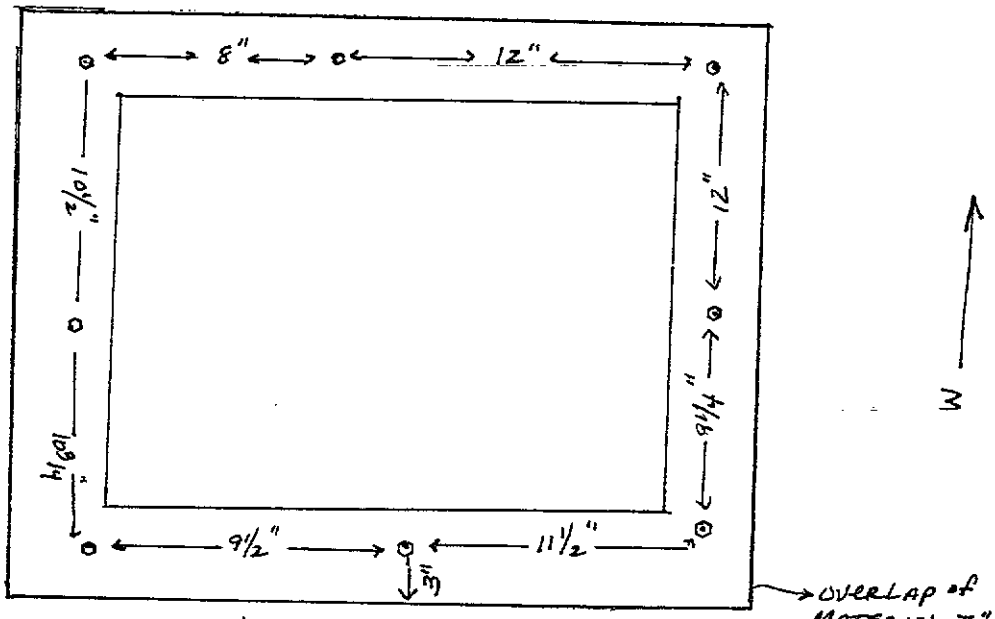
Cleda Patton
OPL QA/QC
12-2-99

Sandra J. Bousfield 12/14/99

ITEM #8

TR 400
12/14/99
pg 6 of 8

Hilti Kwik Bolt II 1/4" x 4 1/2"
Installation



~~Looking WEST~~ SMB 12/27/99
(TOWARDS VERT. WALL)

Installed 1/4" x 4 1/2" Hilti Kwik II Bolts w/ hardware around 12"x12"x6" ceiling mounted junction Box to secure the 7" overlap onto concrete at junction box.

Nominal Max. 3" spacing between "Hilti drop ins and end of blanket layer (typ)

Nominal 12" max spacing between hilti drop ins each layer typ.
(E-201-240 Rev. 6)

Hilti's around 12"x12"x6" meet spec. no more than 12" max spacing and 3" max from end of blanket or overlap.

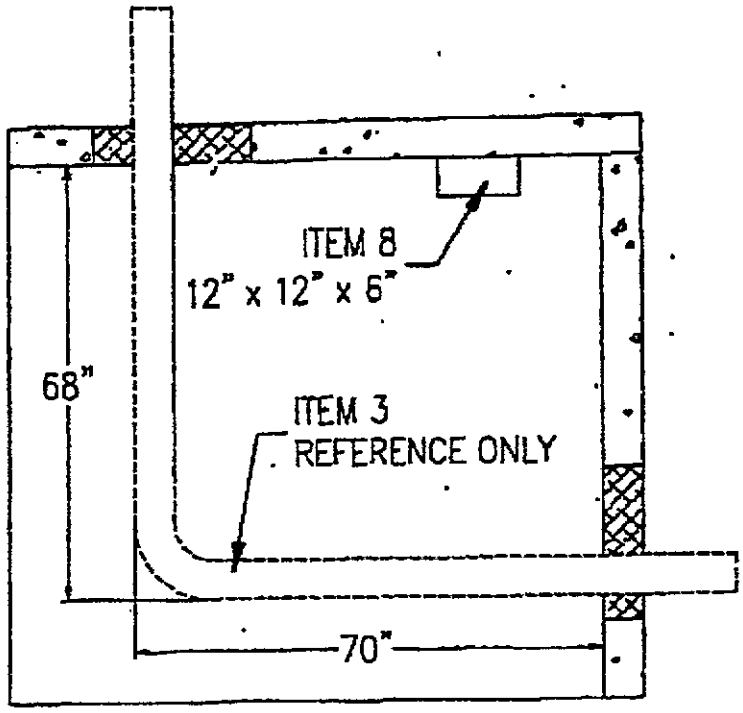
KAOWOOL
LOT# 990420200748
Received from VCSNS. Stock

Cleda Patton
QPL QA/QC
12-28-99

Sandy Burgess
12/14/99

1 - 12" x 12" x 6" JUNCTION BOX
11' - KAOWOOL, 1" THICK, 48" WIDE
20 - 1/4" x 3 1/4" HILTI BOLT
16 - 1/4" DIA. FENDER WASHER

pg 7 of 8



ELEVATION ITEM 8

16 ga sheet metal
62.5
Instrument 20986
Dial Caliper
SN Q623532
cal date 10/5/99
due 10/5/00

Rev. B
11/22/99

CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2518 CHICAGO, IL

No.	DATE	REVISION BY	BY	CHECKED	APPROVED
0	11/1/99	Initial Issue	LFS		

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TRANSCO PRODUCTS INC.
TEST

DRAWN	DATE	SCALE	DWG. NO.	QTY
L.F.S.	11/1/99		Fire Test ITEM 8	0
CHECKED				
N.T.S.		1 Unit = 1:10		

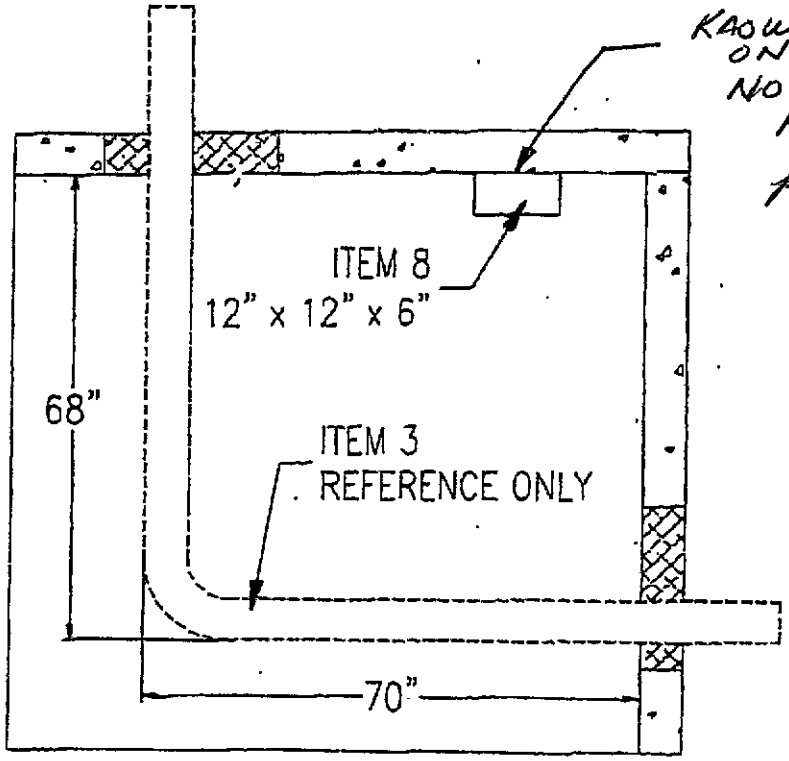
Cleda Patton
OPL QA/QC
12-28-99

Gordon M. Bradford 12/28

KAOWOOL / BETEX SKETCHES MCK 12/17/99

KAOWOOL ONLY — NO FLAMEMASTIC MCK 12/17/99

pg 8 of 8



ELEVATION ITEM 8

No material req'd
Sandra J. Burgess 12/27/99

No.	DATE	REVISION BY	LF.S.	CHECKED	APPROVED
3	[illegible]	[illegible]			

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2818 CHICAGO, IL 60604

TRANSCO PRODUCTS INC.
TEST

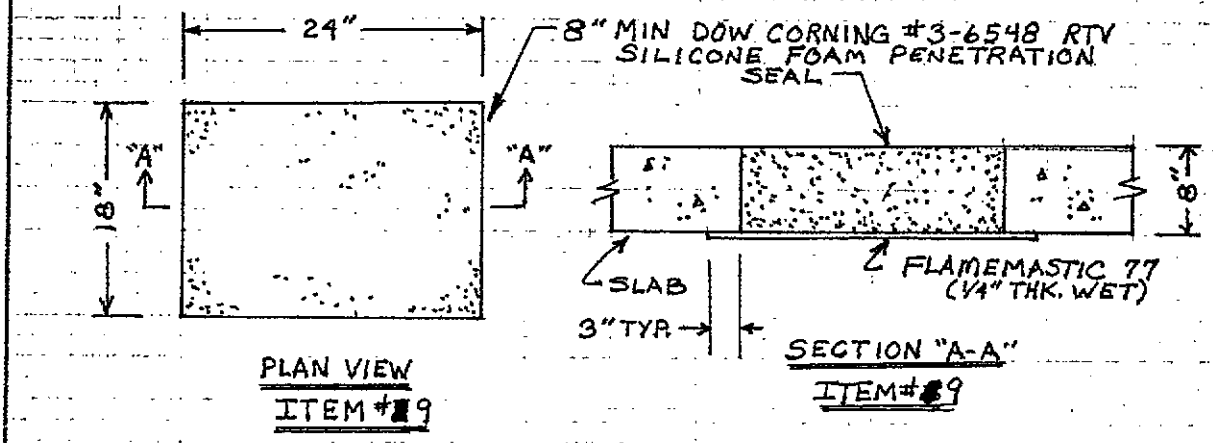
DRAWN L.F.S.	DATE 11/1/99	DWG NO. Fire Test ITEM 8	REV 0
APPROVED	DATE		
SCALE N.T.S.	(L)imits @ 1:10		

Cleda Patton
OPL QA/QC
12-28-99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

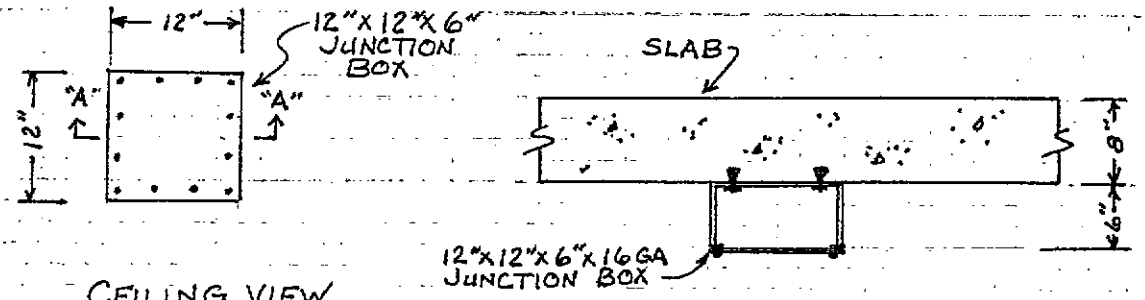
DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #8 ITEM #9 CHKD _____

pg 1 of 5



PLAN VIEW
ITEM #9

SECTION "A-A"
ITEM #9



CEILING VIEW
ITEM #8

SECTION "A-A"
ITEM #8

Cleda Patton
OPL QA/QC
12-28-99

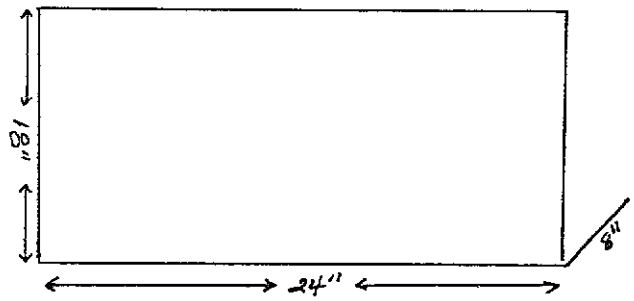
Verified dimensions for Item 8/9
Sandra Bedford 12/15/99

TR 400
12/8/99
pg 2 of 5

Penetration Seal

ITEM # 9

Looking Down from
Top of Slab.



Penetration is 24"x18"x8 is located through ceiling slab.
Penetration is spare blockout no penetrating items.

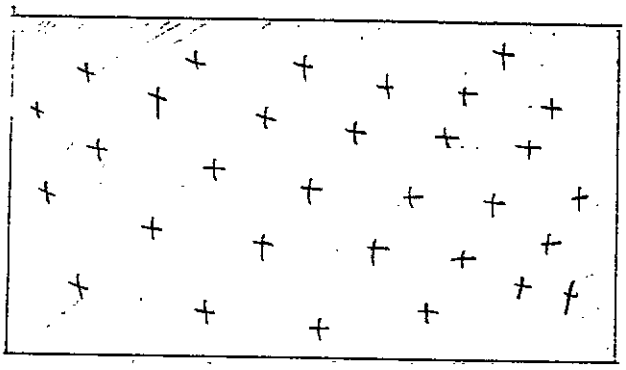
DPL QA/QC
12-8-99

Sandra M Bradford
12/8/99

ITEM #9

TR 400
12/14/99
Pg 3 of 5

PENETRATION SEAL
D.C. 3-6548 RTV Silicone Foam



PENETRATION SEAL - No items penetrating Blockout

SEAL Depth 8"

RTV SILICONE FOAM

		LOT	
D.C. 3-6548	PART A	# 0000406637	
D.C 3-6548	PART B	# 0000410144	12/14/99
D.C. 3-6548	PART A	0000406637	12/15/99
D.C. 3-6548	PART B	~~0000445637~~ 0000415673	Dno 12/16/99

No thermocouples required in surface of seal per D. Jarosz.

First pour of silicone foam (partial) on 12/14/99
Completed pour of silicone foam on 12/15/99

Removed damming board.

Foam found Acceptable
DMB 12/15/99

Sandra M Bradford 12/14/99
Sandra M Bradford 12/15/99

OPL QA/QC
12-14-99 [illegible]

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

TR 400
12/19/99
pg 485

ITEM #9
RTV SILICONE FOAM
Penetration

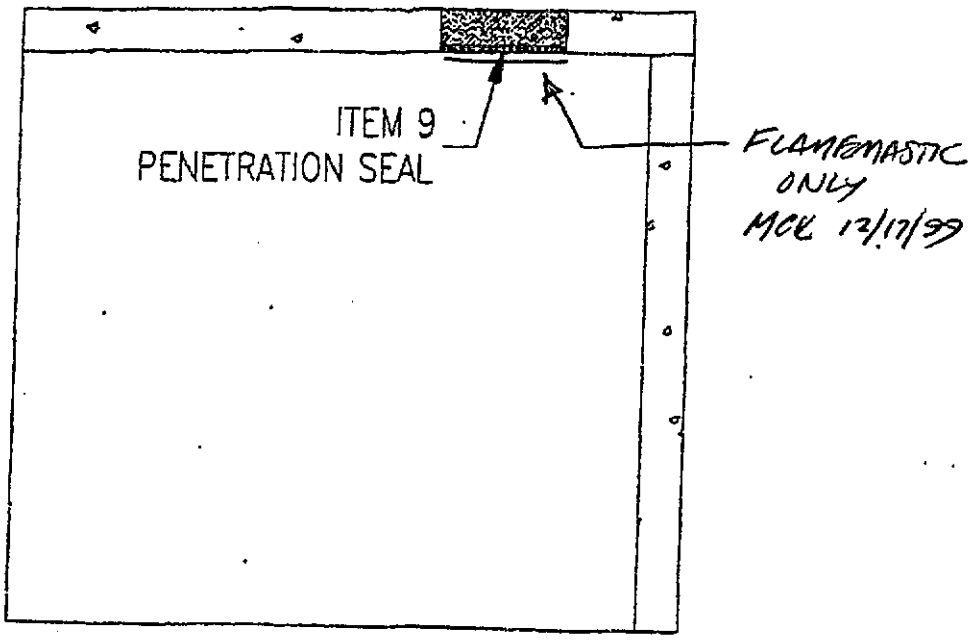
CEILING PENETRATION

Installed 1/8" Flomemastic to bottom side of RTV Silicone Foam Penetration

Sandy Bischoff
12/19/99

Cleda Patton
OPL QA/QC
12-28-99

KAOWOOL/ZETEX
SKETCHES
MCK
12/17/99
pg 5 of 5



ELEVATION ITEM 9

Installed 1/8" of Flamemastic 77 to bottom side (inside furnace) of penetration seal.

Sandra Bradford 12/19/99

Cleda Patton
OPL QA/QC
12-28-99

No.	DATE	REVISION BY			
0	10/99	AS BUILT			

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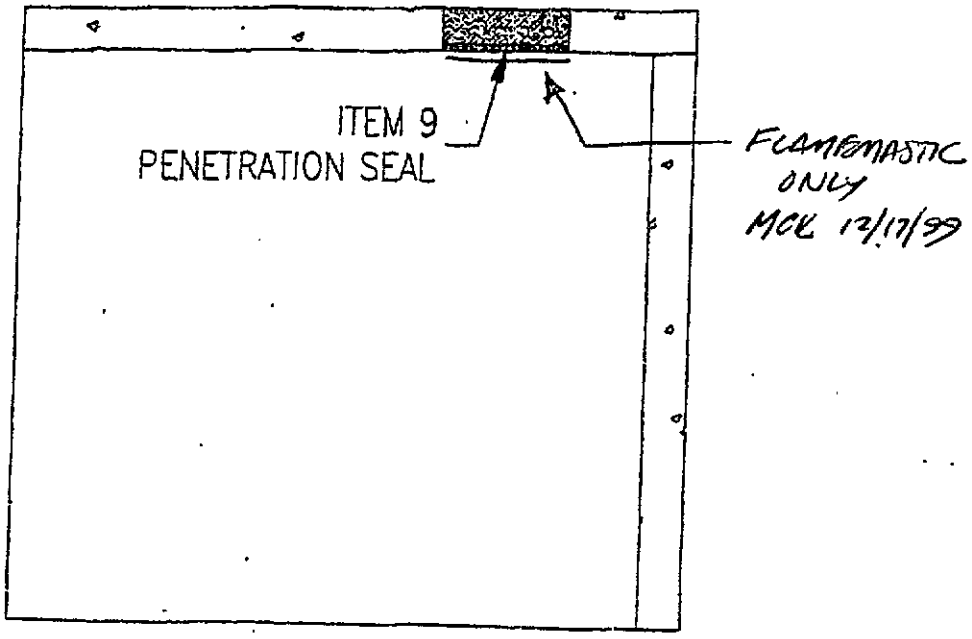
CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
251 JACKSON BLVD (312)922-2815 CHICAGO, IL 60604

TRANSCO PRODUCTS INC.
TEST

DRAWN L.F.S	DATE 11/10/99	Fire Test ITEM 9	REV. 0
CHECKED	DATE		
SCALE N.T.S	TOL (Limits ± 1/16)		

KAOWOOL/ZETEX
SKETCHES
MCK
12/17/99



ELEVATION ITEM 9

Flamemastic #77
1/8" Installed 12/27/99
Sandra M Bradford 12/27/99

No.	DATE	REVISION BY	BY	CHECKED	APPROVED

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CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Sumner
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD. (312)427-2815 CHICAGO, IL 60604

TRANSCO PRODUCTS INC.
TEST

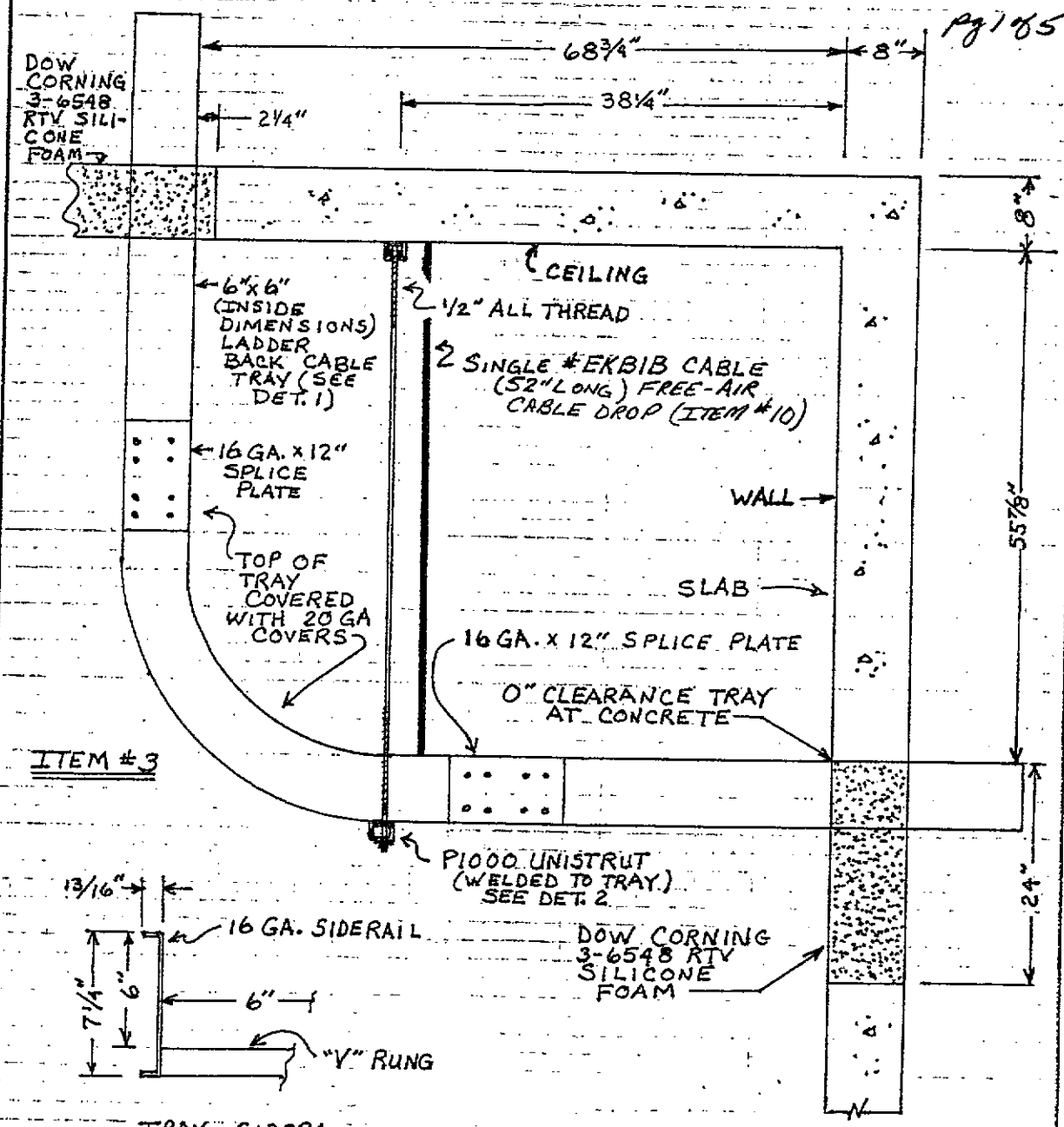
DRAWN L.F.S	DATE 11/10/99	REV TO Fire Test ITEM 9	REV. 0
CHECKED	DATE		
SCALE N.T.S	TOL (Limits ± 1/16)		

Cleda Patton
OPL QA/QC
12-28-99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #10 CHKD _____

Pg 1 of 5

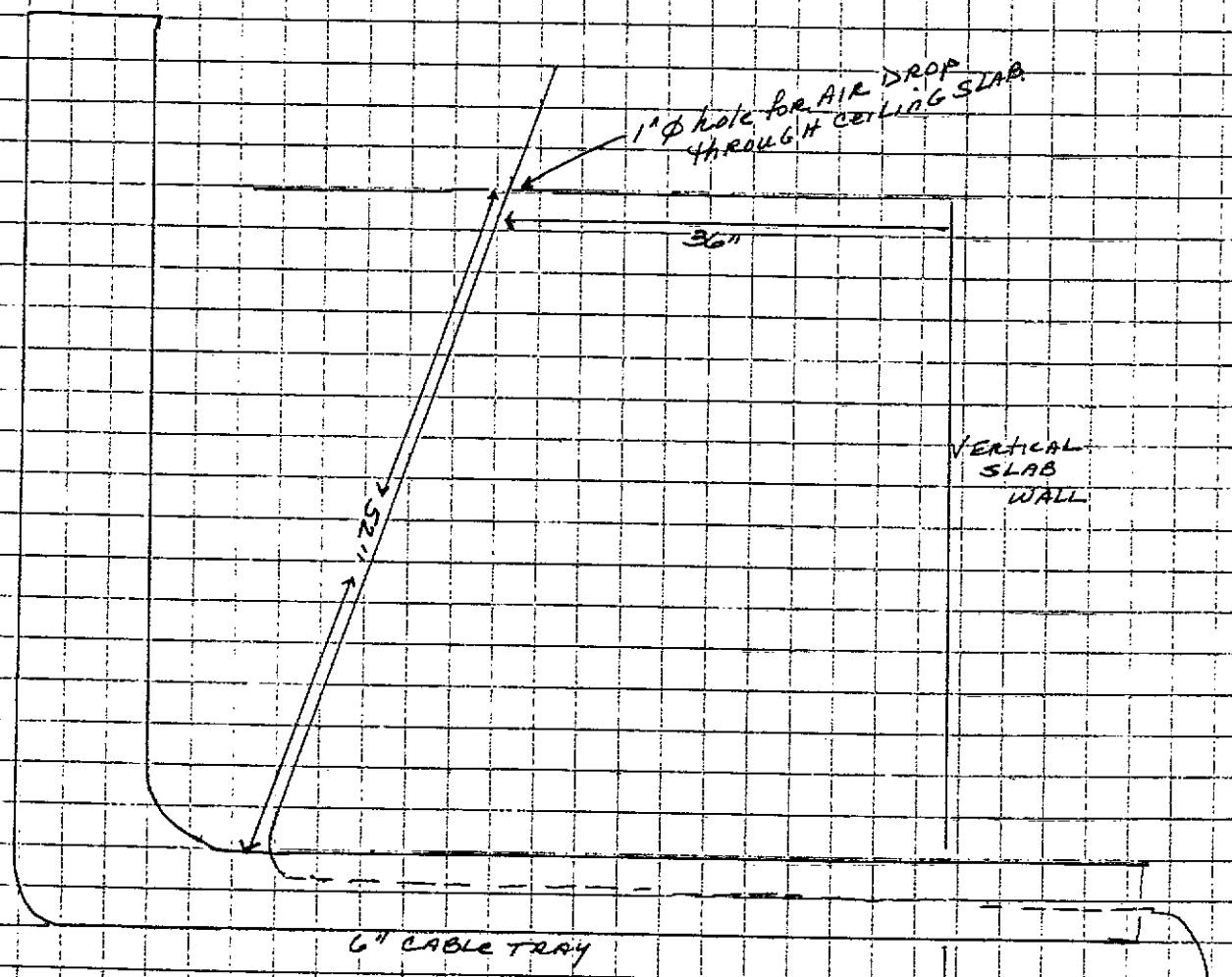


Cleda Patton
OPL QA/QC
12-28-99

Gordon Bergford
12/15/99

TR #400
12/9/99
Pg. 2 of 5

ITEM #10
FREE AIR CABLE



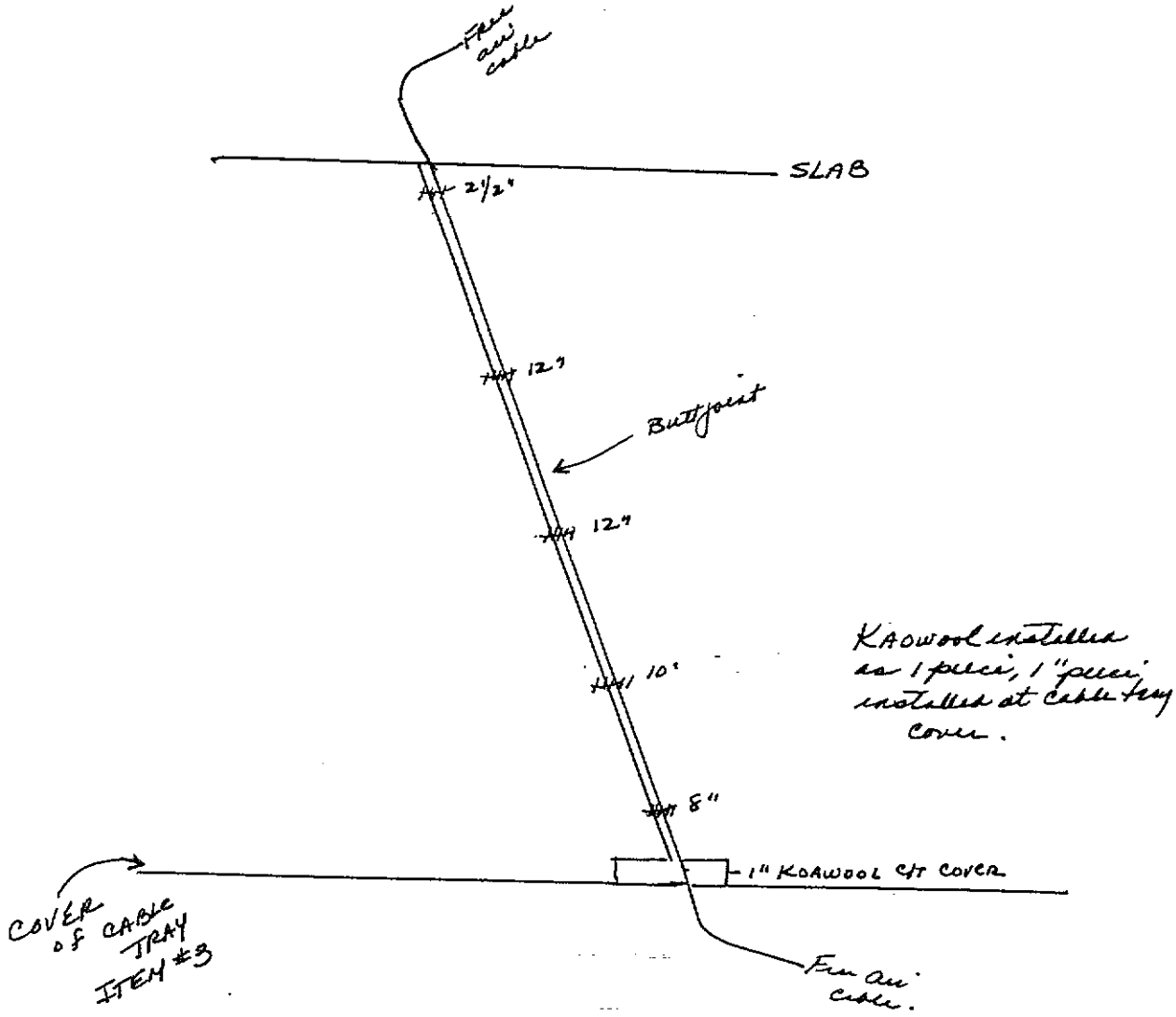
CABLE EKB1b - FREE AIR 52" from SLAB interface to CABLE TRAY, 36" WEST (inside furnace) from Vertical SLAB WALL.

Sandra J. Bradford

ITEM #10

TR 400
12/17/99
Pg 3 of 5

LAYER #1
FREE AIR CABLE.



KAOWOOL installed as 1 piece, 1" piece installed at cable tray cover.

KAOWOOL Purchased from
Omega Point Lab
8# x 24"

½ x .020 Steel band LOT # ~~990120200748~~ 12/17/99
BLFPX042NB

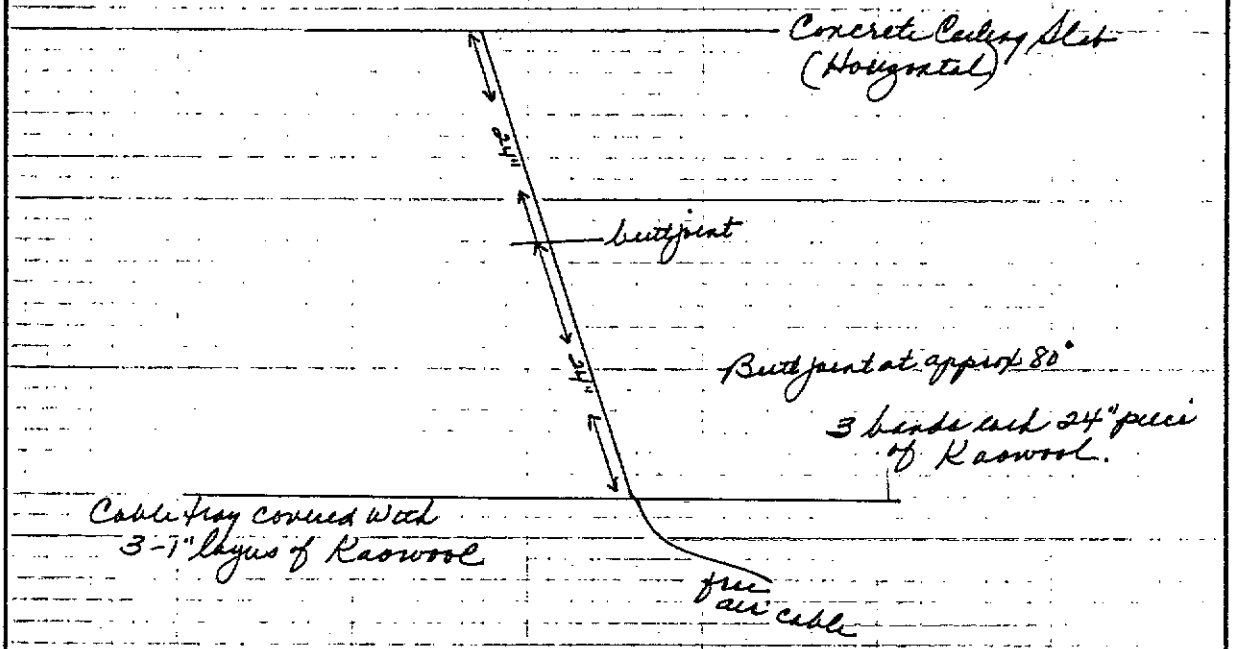
Cleda Patton

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

TR 400
12/19/99
pg 475

ITEM #10
LAYER 2



Cable Tray covered with 3-1" layers of Kaowool
First layer of Kaowool installed to air drop before cable tray was wrapped.

Bands are at a nominal 3" from ends and do not exceed 12" max spacing.

Kaowool purchased from Thermal Ceramics Houston (*)
1/2 x .020 steel bands BLFPX042NB rec'd from VCSNS stock

Cleda Dalton

Sandra Bedford

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
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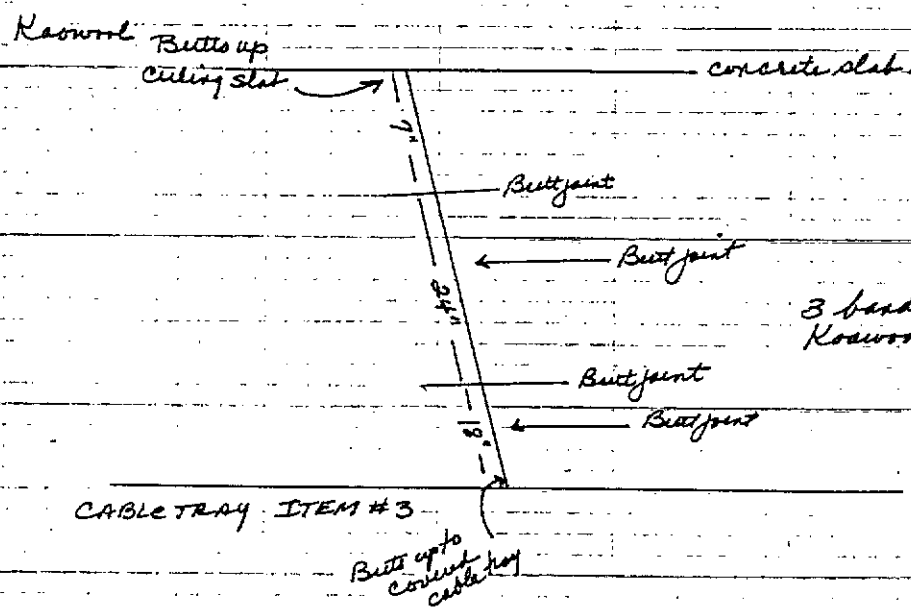
CHKD _____

TR 400
12/19/99
pg 5 of 5

ITEM #10
LAYER 3



Kaowool butts to concrete slab.

Kaowool purchased thermal ceramics Houston
1/2 x .020 steel bands BLFPX042NB rec'd from VCSNS site stock

Cleda Patton
DPL QA/QC 12-28-99

Sandy Bradford
12/19/99

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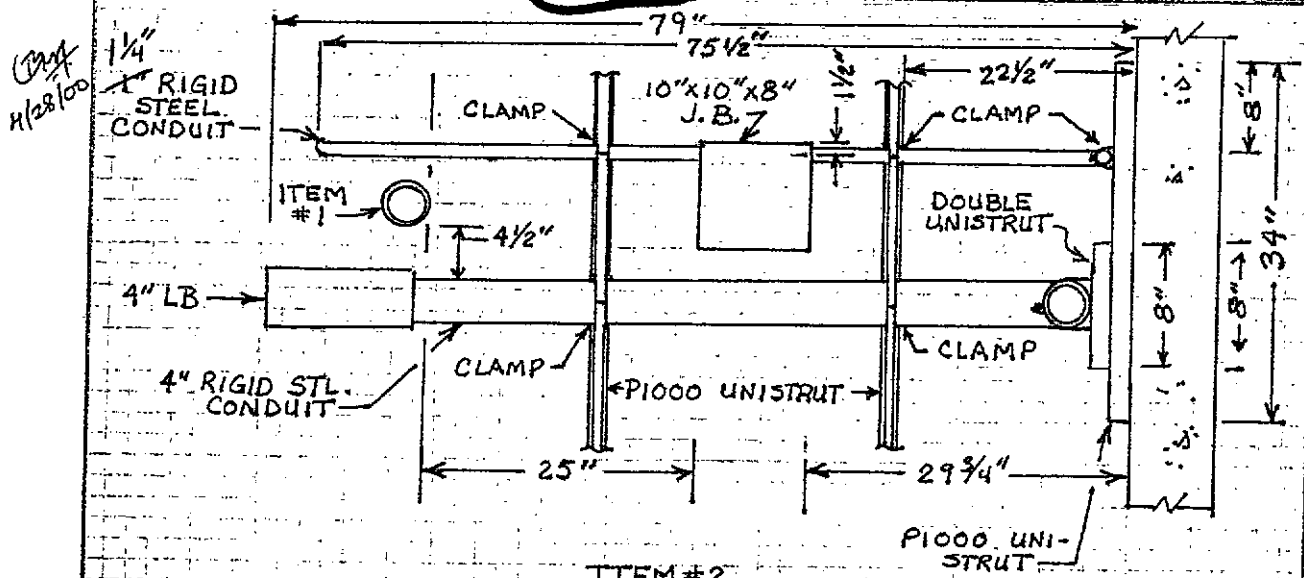
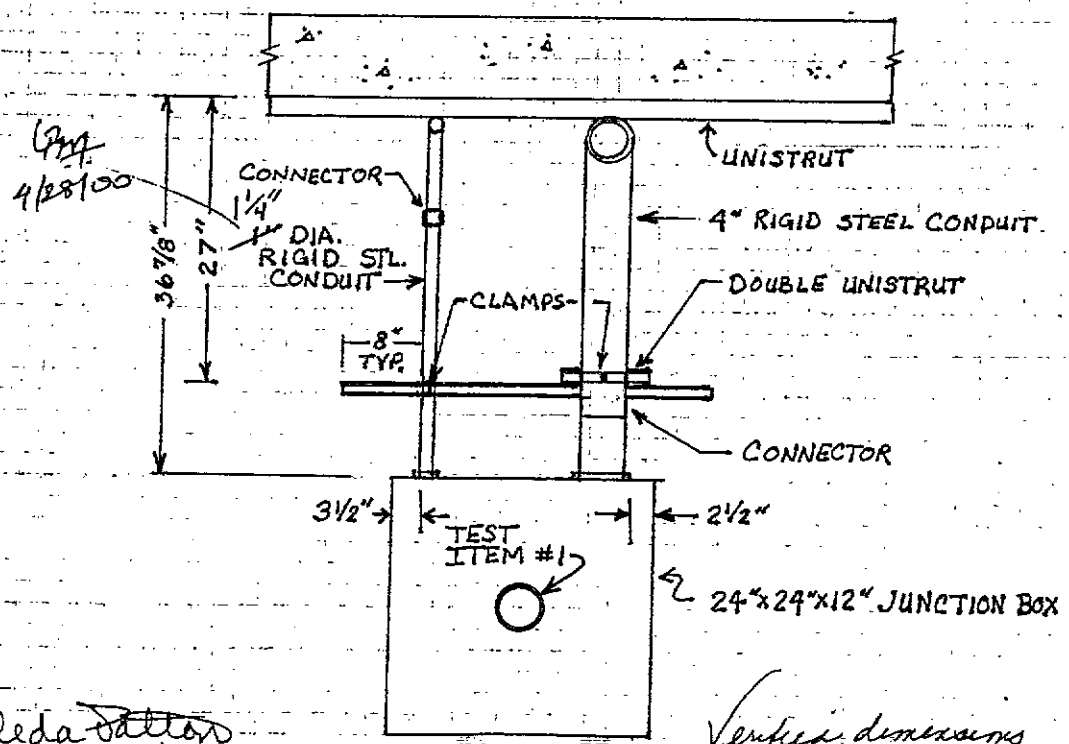
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
ITEM #2 ITEM #11 ITEM #12 CHKD pg 189



ITEM #2
(CEILING VIEW)



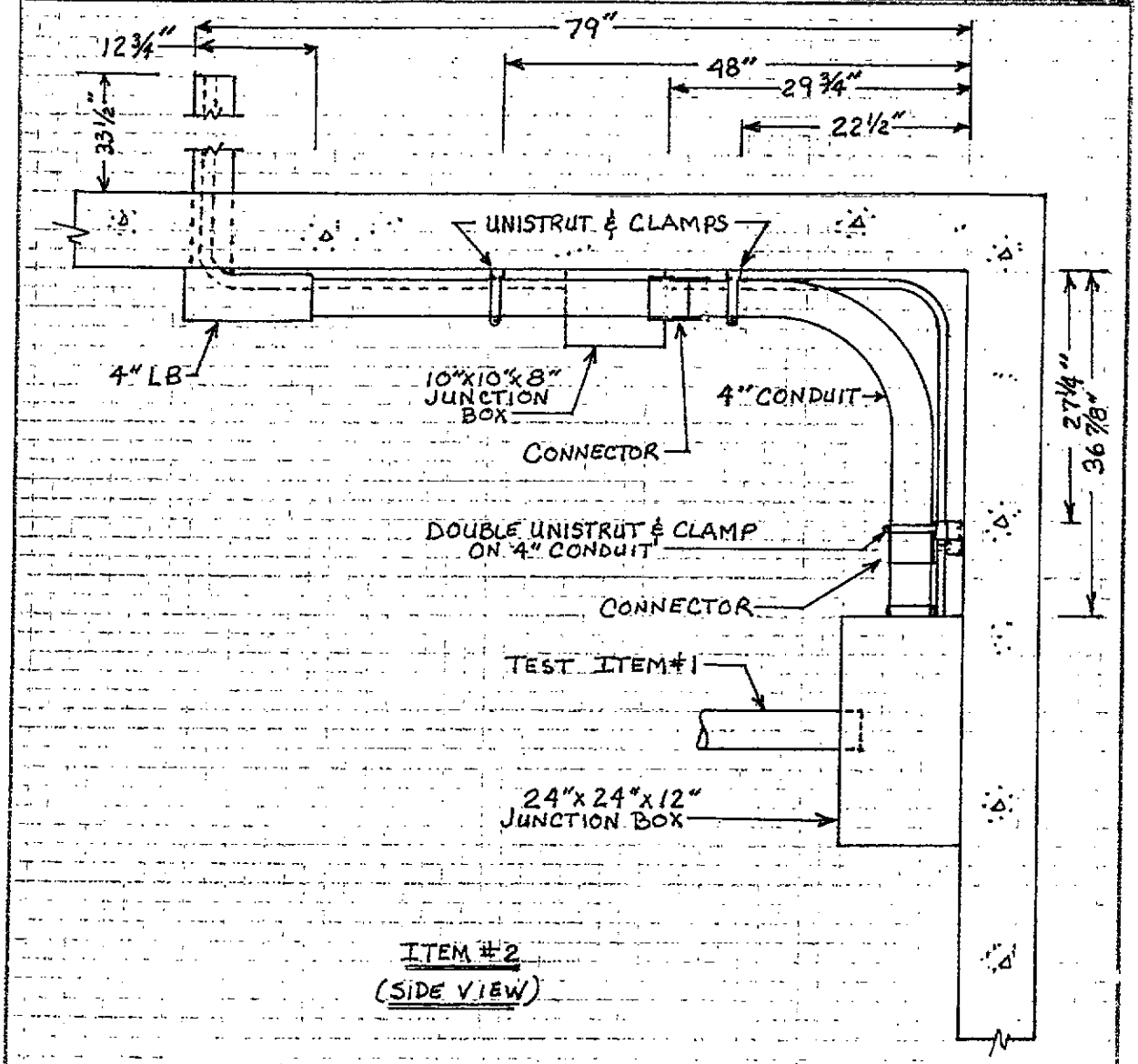
Cleda Patton
OPL QA/QC
12-28-99

ITEM #2
WALL VIEW

Verified dimensions
Gordon M Bradford
12/15/99

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF _____
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD pg 2 of 9



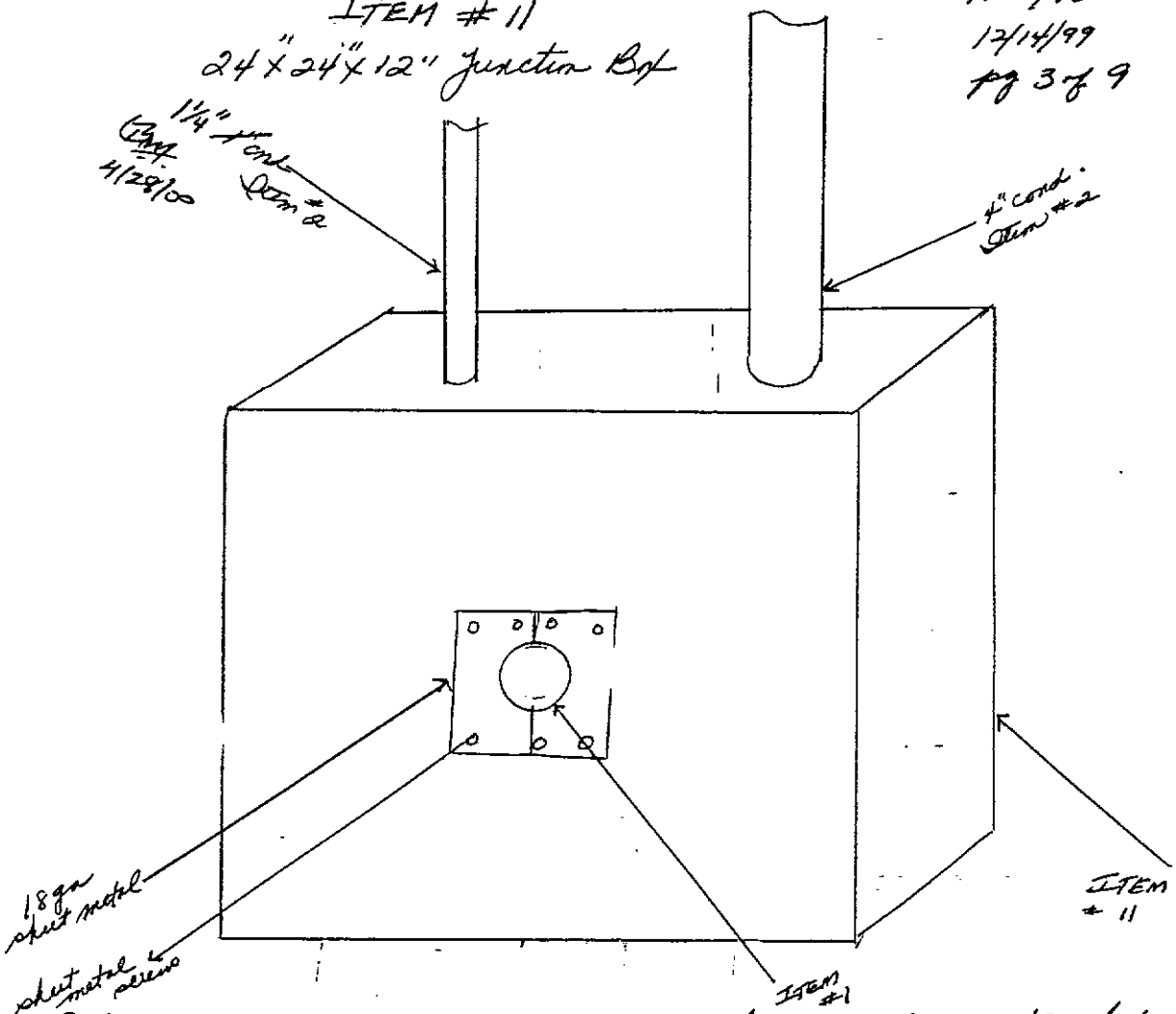
ITEM #2
(SIDE VIEW)

Cleda Patton
OPL QA/QC
12-28-99

Verified dimensions
Sandy Bradford 12/15/99

ITEM #11
24"x24"x12" Junction Box

TR 410
12/14/99
pg 3 of 9



24x24x12" wall mounted 16 ga shut metal junction box

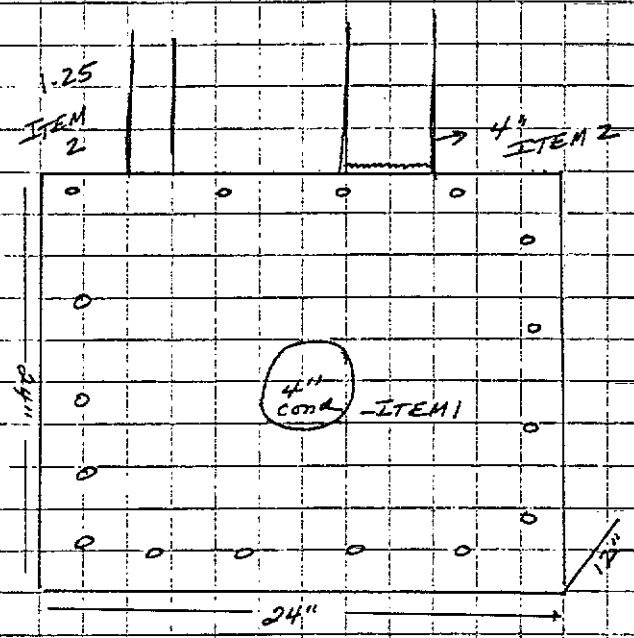
Plate on front. 18 ga galv. metal secured w/ shut metal screws
Plate used to close gap around 4" cnd. on cover of box. Conduit (4") penetrates box cover into box by 2".

Cleda Patton
OPL QA/QC
12-28-99

Sandra J. Bergfeld
12/14/99

ITEM 11

TR 400
12/10/99
pg 4 of 9



Item 11 is a 24 x 24 x 12" wall mounted 16ga steel box

Item 2 - 1.25 and 4.0" rigid steel conduit terminate approx 1" into box. 1.25" conduit has 1 bushing inside of box
4.0" conduit has bushing top and inside of box.
4.0" conduit penetrates through cover of box Item #1 extends into box by 2".

16 screws hold cover onto box

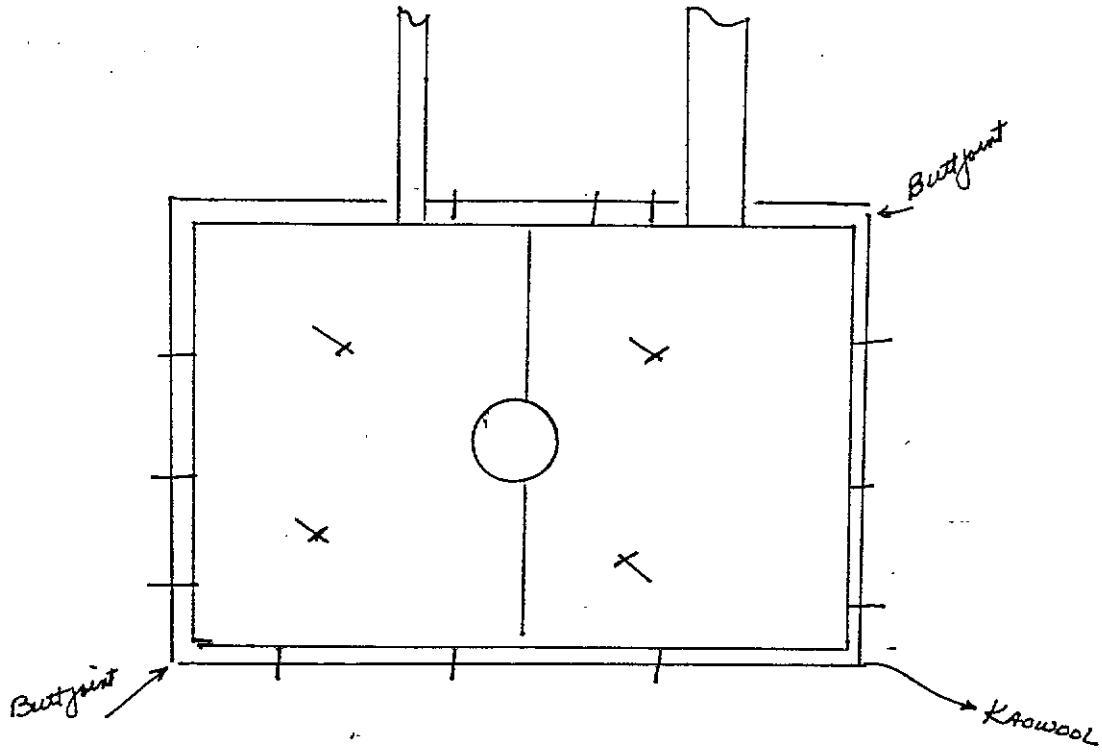
Sandy Bayford
12/10/99

OPL QA/QC 12-10-99

ITEM #11

24x24x12" Junction Box

#TR 400
12/14/99
Pg 5 of 9



24"x24"x12" 16ga Junction Box wall mounted.

2 pieces 48"x12" installed around junction Box, conduits at top Kaowool cut out. Impaled on insulation pins. Washer installed over pins.

Cover/front of junction Box covered with Kaowool impaled on four (4) insulation pins. Washers installed over insulation pins.

Material going around box is butted to wall but does not overlap onto concrete.

* Installed 11" piece to 4" (Item #1) conduit to lock in material. (See Item #1 documentation)

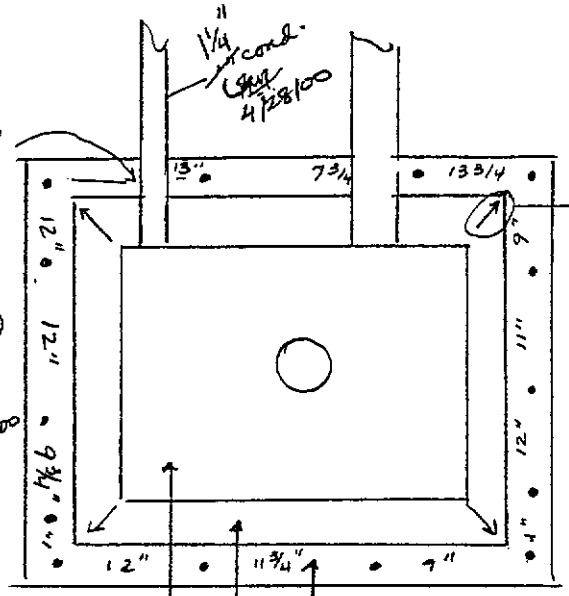
Cleda Patton
OPL QA/QC
12-14-99

Sandra J. Bradford
12/14/99

#TR 400
12/16/99
Pg 6 of 9

ITEM #11

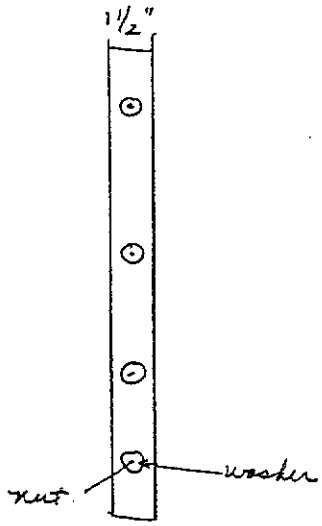
PICTURE FRAME of KAOWOOL
AROUND 24"x24"x12" Box



1¼" CAA 4/28/00
at 1" conduit Kaowool cut to north side placed when it will be on south side placed over Hilti Bolt. Metal strip goes behind conduit (+4") and this secures 4" strip in place. CAA 4/28/00

1¼" CAA 4/28/00

Extra Kaowool pieces installed in corners of box.



18 ga metal strip

24"x24"x12" 16 ga junction Box mounted to Wall

3" (1") Layers of KAOWOOL

4" Picture Frame Around Box

Installed 4" strip of Kaowool around perimeter of box 3" on box + 4" on wall is 7" overlap onto concrete

Exceeded 12" spacing on top side of box 4" conduit positioned so a Hilti could not be inserted into wall.

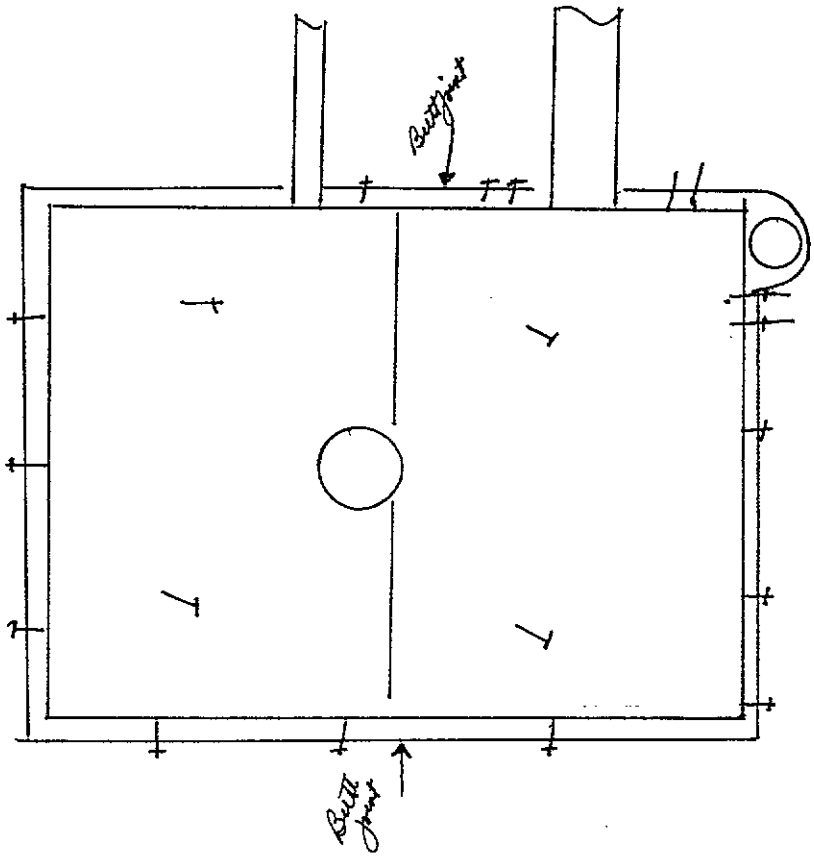
1½" strip 18 ga metal installed over ¼" x 4½" Hilti Kwik II Bolts washers installed over metal strip nut installed at all Hilti's strip installed.

Clida Patton
DPL QA/QC
12-28-99

Sandra M. Bradford
4/11/00

ITEM # 11
24" x 24" x 12" Junction Box
Wall Mounted
Third Layer

TR 400
12/14/99
Pg 7089



Installed third layer around outside of box, incorporated Item # 7 into Kaowool wrap. Impaled on insulation pins Washers installed. Installed 1st layer of Item 7 and insulation pins which were installed at second layer used to impale Kaowool. Installed front of box with Kaowool. Staggered joint. Impaled on insulation pins Washers installed over insulation pins.

Kaowool Lot no. 990420200748
received from VCSNS stock

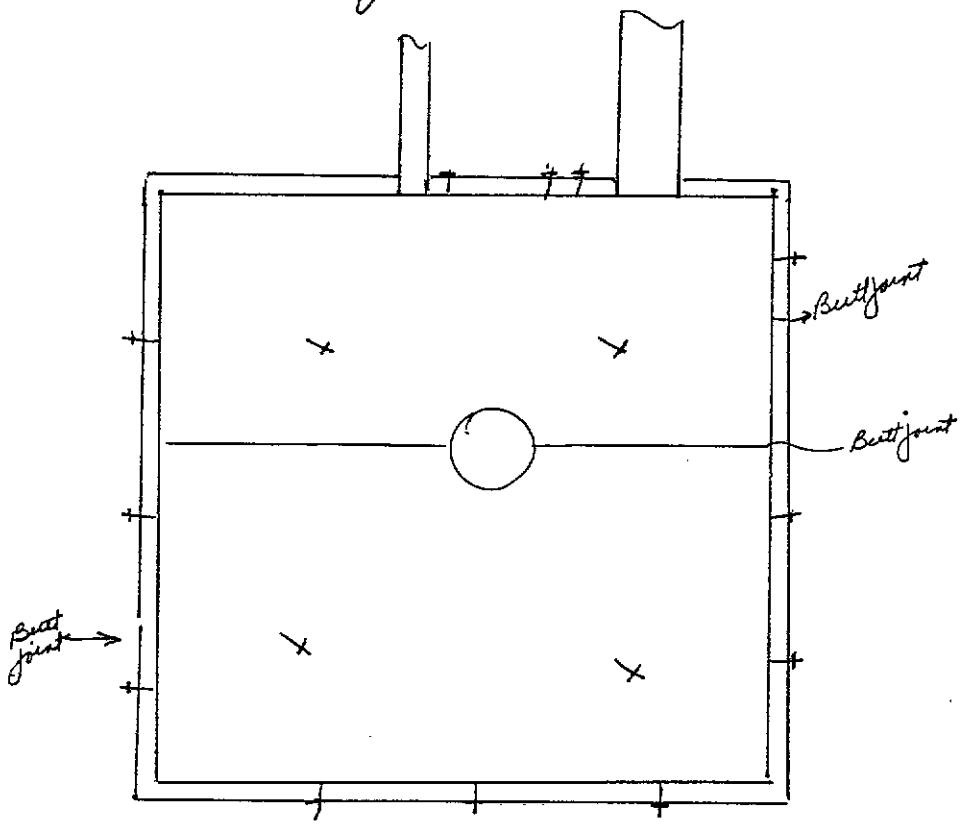
Cleda Patton
OPL QA/QC

Sandra M Bussford
12/14/99

TR 470
12/14/99
pg 8 of 9

ITEM #11
24"x24"x12" Junction Box

Second Layer



Installed Rockwool around outside sides of box butted to wall. Butt joints staggered by a min of 6". Impaled on Insulation pins, Washers installed.

Front of box 14"x28" installed staggering butt joint Impaled on insulation pins. Washers installed over pins to secure blanket to junction box.

(Installed 4 new insulation pins at Item # 7)

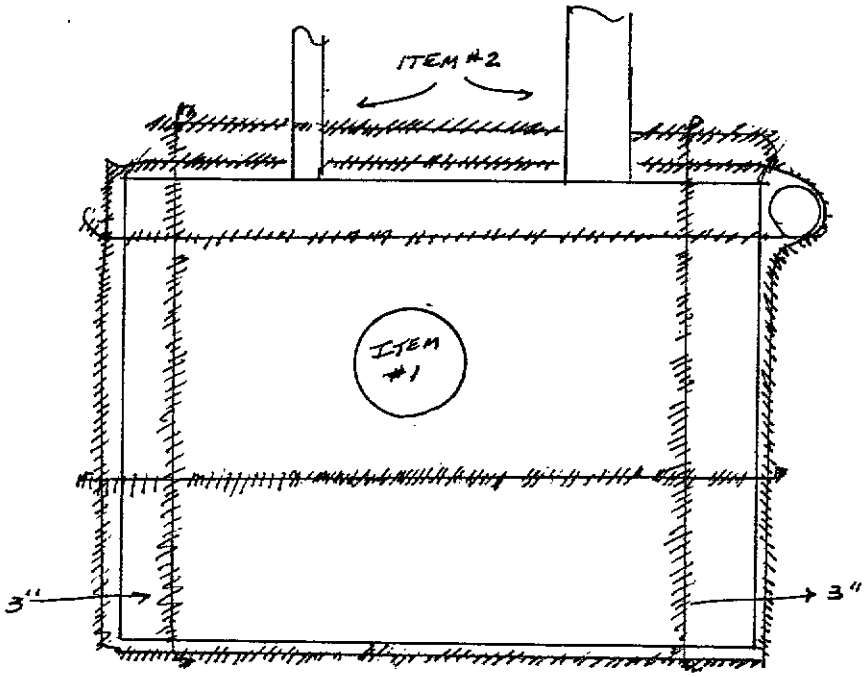
Clida Patton
OPL QA/QC
12-28-99

Gordon M. Bradford
12/14/99

ITEM #11

24"x24"x12" – 1/2"x.020 Band Installation

#TR 400
12/14/99
Pg 9 of 9



Installed two stainless bands installed around perimeter of box, one in front approx 1 1/2" and one in back in front of 1" conduit and behind 4" conduit and around perimeter. Install bands prior to face of box. (Kaowool installation) Install band around 1" and Item #7 1 1/4"
1/2"x.020 steel band mG LOT# BLFPX042NB
(Gary) 4/28/00

Bridled 2 bands vertically from back band going around box 3" from edge.
Bridled 2 bands horizontally from back band going around box 3" from edge. Sandra M Bedford 12/16/99

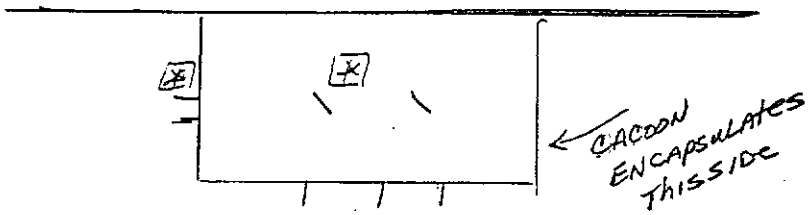
Cleda Patton
DPL QA/QC
12-28-99

Sandra M Bedford 12/14/99

#TR 400
12/17/99
Pg 1 of 3

ITEM #12

10"x10"x8" 16 ga ceiling mounted metal box.



LOOKING @ FRONT of FURNACE

Item #12 10x10x8 Box
3 Insulation pins installed on bottom, 2 pins on sides ☒ and
1 pin on back side.

1ST LAYER left side looking towards furnace is encapsulated
inside of cocoon from Item #2

Bottom is 12"x12" installed on pins
back side + left side 14x6 each side installed on pins
front side small piece (nearly encapsulated by cocoon installed
on one pin.
right side encapsulated in cocoon
Second Layer
Bottom is 14"x14" installed on 3 insulation pins
back side + left side 6"x14" installed to right side on 2 Insulation pins
front side small piece nearly encapsulated in cocoon installed
on 1 Insulation pin
right side encapsulated in cocoon.

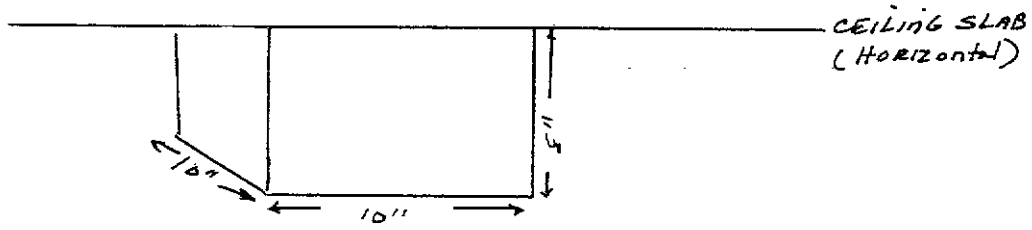
Cleda Dalton
OPL QA/QC

Sandra Bedford
12/17/99

ITEM #12

TR 400
12/15/99
Pg 2 of 3

10"x10"x8" 16ga sheet metal box



10"x10"x8" CEILING Mounted 16ga metal box (16ga)
Removeable cover is @ Bottom.

Clida Patton
OPL QA/QC
12-28-99

Sandra Bedford 12/15/99

ITEM #12

#TR 4-10
12/17/99
Pg 3 of 3

Third Layer
16 x 24" Kaowool installed across bottom to right side installed on insulation pins.
Front and back sides 5½" x 15" installed on insulation pins
Installed washer over pins.

Butt joints are staggered, washer installed over insulation pins to hold material secure. All gaps filled with additional Kaowool.

Cleda Patton
OPL QA/QC
12-28-99

Sandra J. Bradford
12/17/99

Receiving Inspection Log:

R.I.R. 99-12-01	7 pages
R.I.R. 99-12-02	8 pages
R.I.R. 99-12-03	9 pages
R.I.R. 99-12-04	6 pages
R.I.R. 99-12-05	3 pages
R.I.R. 99-12-06	3 pages
R.I.R. 99-12-07	7 pages
R.I.R. 99-12-08	5 pages
R.I.R. 99-12-09	9 pages
R.I.R. 99-12-10	3 pages
R.I.R. 99-12-11	3 pages
R.I.R. 99-12-12	3 pages
R.I.R. 99-12-13	2 pages
R.I.R. 99-12-14	2 pages
R.I.R. 99-12-15	2 pages
R.I.R. 99-12-16	2 pages
R.I.R. 99-12-17	2 pages
R.I.R. 99-12-18	2 pages
R.I.R. 99-12-19	2 pages
R.I.R. 99-12-20	3 pages
R.I.R. 99-12-21	1 page
R.I.R. 99-12-22	1 page
R.I.R. 99-12-23	1 page
R.I.R. 99-12-24	1 page
R.I.R. 99-12-25	5 pages

6/20/00

TRANSCO — **Receiving Inspection Report** — No. 99-12-01

☐ Streator | ☐ ATC | ☐ O.P.L. | ☐ — | ☐ — | ☐ —

Supplier: G.M. Stainless | Purchase Order: 20777

Item: 16 GA. Stainless steel 304-2B | Quantity: SEE BELOW | Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
1 Bxp	12" x 12" x 6" 16ga sht metal bxp	yes	yes	YL110260	GOOD DMB 12/2/99	N/A

Remarks: STREATOR STOCK

ITEM #8 * TR 400
DMB. 12/2/99

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Verified material thickness using 6" dial caliper. S.N.# Q623532 cal date 10/6/99 due 10/5/00 DMB 12/2/99
Verified dimensions 12/2/99 DMB

Receipt Inspection Considered Acceptable

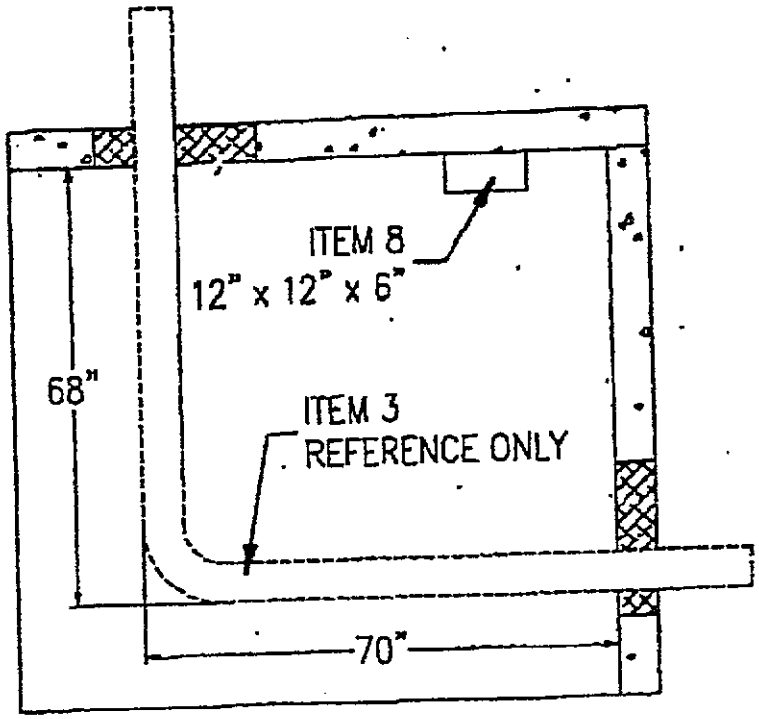
Sandra M. Bradford 12/2/99
Quality Representative / Date

Figure - 1

417

11-22-99; 10:37AM; Jenkinsville ;8033454521 # 11/ 12

1 - 12" x 12" x 6" JUNCTION BOX
11" - KAOWOOL, 1" THICK, 48" WIDE
20 - 1/4" x 3 1/4" HILTI BOLT
16 - 1/4" DIA. FENDER WASHER



ELEVATION ITEM 8

16 ga sheet metal
625
Instrument 20986
Dial Caliper
SN Q623532
cal date 10/5/99
due 10/5/00

Rev. B
11/22/99

CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD (312)427-2518 CHICAGO, IL 60604

No.	DATE	REVISION BY		CHECKED	APPROVED
0	11/1/99	Initial Issue	LFS		

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It is being transmitted and loaned to you in confidence subject to the condition that it is not to be copied or disposed of, or used to aid in making drawings, apparatus or parts thereof. Its contents may not be disclosed in whole or in part to others or used for other than the purpose intended WITHOUT THE EXPRESSED PRIOR WRITTEN PERMISSION OF TRANSCO PRODUCTS INC."

TRANSCO PRODUCTS INC.
TEST

DRAWN LFS	DATE 11/1/99	Fire Test ITEM 8	REV 0
CHECKED	DATE		
APPR. H.T.S.	SCALE (L)inch = 1:10		

Sandra M Bradford 12/2/99

TRANSCO

Receiving Inspection Report

No. 99-08-04

☒ Streator | ☐ ATC | ☐ | ☐ | ☐ | ☐

Supplier: GM Stainless

Purchase Order: 20777

Item: 16ga. SS-304-2B

Quantity: 15,180 lb's

Date: 8-30-99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
150 pc's	16ga. SS-304-2B 48" x 120"	✓	✓	YU110260	OK	N/A

Remarks: Stock

1. CRS No. N/A
2. In-House Test: N/A
3. Independent Test: Date sent N/A Date recd. N/A
4. Equip. Cal Date: N/A

Receipt Inspection Considered Acceptable: Doug Bergeron 8-30-99
Quality Representative / Date

[redacted]

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address

ORDER NO. 20777
DATE 8/26/99
☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

420

PURCHASE ORDER

REQN NO	DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
S-063	99/08/26	DELIVERED	DELIVERED	NET 30

TO: G- M STAINLESS
2222 SOUTH HALSTED STREET
CHICAGO IL 60608

VENDOR NO. 33908

BILL & SHIP TO: Transco Products Inc.
1215 East 12th Street
P.O. Box 537
Streator IL 61364

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	QUANTITY	DESCRIPTION	PER COST	TOTAL
	15000	LBS. 16 GA. 304 SS 48" X 120" 2B FINISH ..NOTE.. SEE ATTACHMENT 'A' FOR QUALITY REQUIREMENTS ..DELIVERY REQ'D AT DESTINATION.. 1 WEEK	.870	13050.00
			TOTAL	13050.00

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A" FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS.
QA APPROVAL DATE

SCALE	CONSUMPTION	ACCOUNT NO.	REQUIRED FOR:	PURCHASING AGENT
X		2100.02		M. Young-Lai

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

P.O. NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
20777		G- M STAINLESS		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

Rec'd 12/3/99 DMB

421

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

"Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 08/25/99
P.O. No.: 20777
Q.A. REVIEW:

VENDOR: GM STAINLESS

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

	Description:	N/A	REQUIRED
1.)	Vendor shall supply Certificate of Conformance signed by an authorized representative stating that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.		X
2.)	Certified Material Mill Test Report per Specifications Listed. (See Item 1)		X
3.)	Identify Lot No.'s and Quantities		X
4.)	10CFR.50 Appx.B applicable	X	
5.)	10CFR.21 Safety Related applicable	X	
6.)	Specific Performance Test Reports		
7.)	Other as specified	X	

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

	Description	N/A	REQUIRED
1.)	Each container shall be clearly labeled to identify it's contents, MFG. Part No, and TPI P.O. No.		X
2.)	The vendor shall supply any special instructions for handling and storage, including shelf life of items.	X	
3.)	Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
	a.) Items shipped free from dirt, oil and moisture		X
	b.) Items packaged with water resistant vinyl barrier		X
	c.) Items must be packaged in containers/crates		X
	d.) Ship in a manner to prevent physical damage to item or packaging		X
	e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		
4.)	Other as specified		

Rec'd 12/2/99

TOTAL P.02

G-M STAINLESS

SHEET • COILS • PLATES • TUBING • BARS

2222 South Halsted Street Chicago, IL 60608 (312) 491-8443
FAX 312-491-8452

422

MATERIAL CERTIFICATION REPORT

SHIPPED TO: TRANSCO PRODUCTS INC.
1215 E. 12TH ST.
STREATOR, ILLINOIS 61364

ORDER NO. 20777

DATE OF SHIPMENT: 8-30-99

HEAT# YU110260

MATERIAL: STAINLESS T304 2B
150 PCS. 16GA X 48 X 120

CHEMICAL ANALYSYS:

C	MN	P	S	SI	NI	CR
.017	1.65	.030	.003	.63	8.01	18.02

TENSILE & HARDNESS

TENSILE	YIELD	ELONGATION	HARDNESS
91,060 KSI	44,660 KSI	50.0%	88.0 RB

MILL: MEXINOX. This material was produced according to ASTM A240 standard and it also complies with the mechanical and chemical properties established in the following stds: ASTM A167-91, ASME SA240-9595, AMS 5513F.

I hereby certify that the above figures are correct as contained in the records of the company

Philip A. Moran

Philip A. Moran MC.

Recd 12/2/99 DMB

D.B

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE No. 4108

1215 E. 12th STREET
STREATOR, IL 61364

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
	GJ-8102	STREATOR, IL	****	

SOLD TO:	SHIP TO:	DATE SHIPPED:	
	OEMGA POINT LABORATORIES 16015 SHADY FALLS ROAD ELMENDORF, TX 78112	12/01/99	
		ROUTE: UPS RED	
		COMP. SHIP ****	PART SHIP NO.

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
1	3		FIRE BOXES	-0-	3

Rec'd 12/2/99 DAB

SHIPPING COPY

423

TRANSCO

Receiving Inspection Report

No. 99-12-02

☐ Streator ☐ ATC ☐ OPL. ☐ – ☐ – ☐ –

Supplier: G.M. Stainless

Item: 16 GA. Stainless Steel 304-2B

Purchase Order: 20777

Quantity: SEE BELOW

Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
1 Bx	10"x10"x8" 16 ga sht metal bx	yes	yes	YU110260	GOOD	n/a
1 Bx	24"x24"x12" 16 ga sht metal bx	yes	yes	YU110260	GOOD	n/a

Remarks: STREATOR, STOCK

ITEM # 2 - TR 400
DMB 12/2/99

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Verified material thickness using "6" dial caliper on QP 235 32. cal date 10/5/99 due 10/5/00
Verified dimensions
DMB 12/2/99
DMB 12/2/99

Receipt Inspection Considered Acceptable

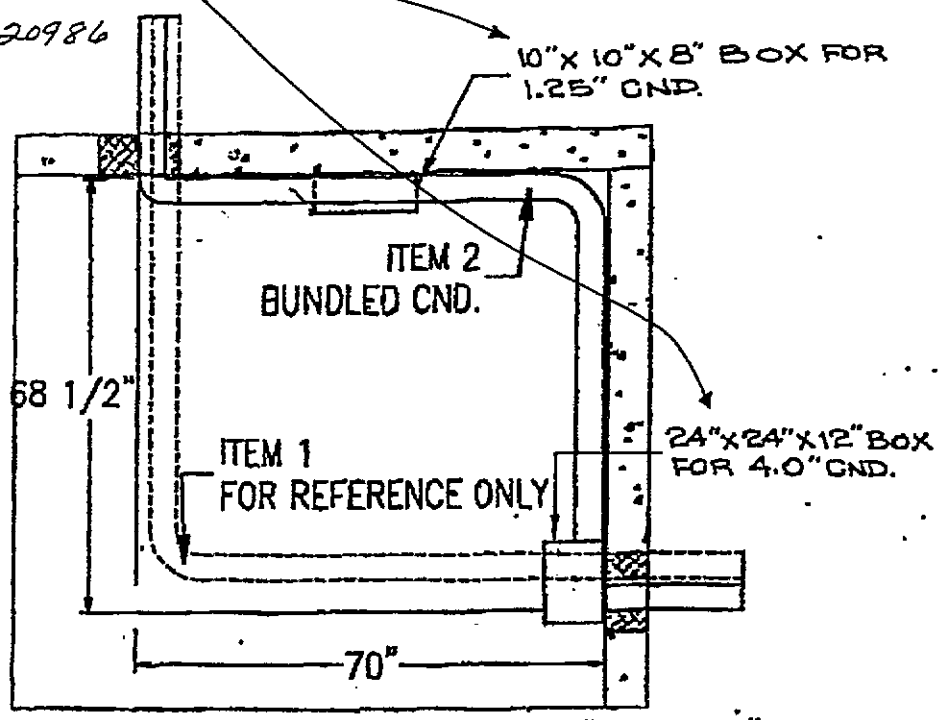
Gordon Bradford 12/2/99
Quality Representative / Date

Figure - 1

424

425

16 ga sheet metal
62.5
Instrument 20986
Dial Caliper
SN Q623532
Cal date 10/5/99
due 10/5/00,



17'-4.0" GALVANIZED CONDUIT
1 - 4.0" " COUPLING
4 - 4.0" CONDUIT LOCKNUT
4 - 4.0" " BUSHING
1 - P19 JUNCTION BOX
18'-1.25" GALVANIZED CONDUIT
1 - 1.25" " COUPLING
4 - 1.25" CONDUIT LOCKNUT
4 - 1.25" " BUSHING
1 - P10 JUNCTION BOX
7'- P1000 UNISTRUT
2 - 4.0" UNISTRUT CND STRAPS
2 - 1.25" " " "
44 - 1/4"Ø x 3" HILTI BOLT

72'- KAOWOOL, 1" THICK - 48" WIDE
6 PCS. - 1 1/2" W x 48" L x 18 GA SHT. METAL

ELEVATION ITEM 2

Rev. B
11/22/99

CUSTOMER: Transco Products Inc.
PROJECT NAME: V. C. Summer
LOCATION: Omega Point Laboratories

TRANSCO PRODUCTS INC.
55 E JACKSON BLVD. (312)427-2817 CHICAGO, IL 60604

NO.	DATE	REVISION BY	CHECKED	APPROVED

"This document is the property of TRANSCO PRODUCTS INC. a Delaware corporation, and contains proprietary information covered by one or more U.S. LETTER PATENTS and/or PATENTS PENDING.
It is being transmitted and loaned to you in confidence, subject to the condition that it is not to be copied or disposed of, or used to aid in making drawings, apparatus or article thereof. Its contents may not be disclosed in whole or in part to others or used for other than the purpose intended WITHOUT THE EXPRESSED PRIOR WRITTEN PERMISSION OF TRANSCO PRODUCTS INC."

TRANSCO PRODUCTS INC.
TEST

DRAWN L.F.S.	DATE 11/1/99	Fire Test ITEM 2	REV. 0
CHECKED	DATE		
SCALE N.T.S.	PLOT (Units # 1=10)		

Gordon Bedford 12/2/99

TRANSCO

Receiving Inspection Report

No. 99-08-04

☒ Streator ☐ ATC ☐ ☐ ☐ ☐

Supplier: GM Stainless

Purchase Order: 20777

Item: 16ga. SS-304-2B

Quantity: 15,180 lb's

Date: 8-30-99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
150 pc's	16ga. SS-304-2B 48" x 120"	✓	✓	YU110260	OK	N/A

Remarks: Stock

1. CRS No. N/A
2. In-House Test: N/A
3. Independent Test: Date sent N/A Date recd. N/A
4. Equip. Cal Date: N/A

Receipt Inspection Considered Acceptable

Doug Bergeron 8-30-99

Quality Representative / Date

[redacted]

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address

PURCHASE ORDER

PO NO.	DATE
20777	8/26/99

☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

427

REQ'N NO	DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
S-063	99/08/26	DELIVERED	DELIVERED	NET 30

TO: G- M STAINLESS
2222 SOUTH HALSTED STREET
CHICAGO IL 60608

VENDOR NO. 33908

BILL Transco Products Inc.
& SHIP TO: 1215 East 12th Street
P.O. Box 537
Streator IL 61364

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE/UNIT	TOTAL
	15000	LBS. 16 GA. 304 SS 48" X 120" 2B FINISH ..NOTE.. SEE ATTACHMENT 'A' FOR QUALITY REQUIREMENTS ..DELIVERY REQ'D AT DESTINATION.. 1 WEEK	.870	13050.00
			TOTAL	13050.00

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A" FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS.
QA APPROVAL [signature] DATE 12/6/99

SALE	CONSUMPTION	ACCOUNT NO.	REQUIRED FOR:	PURCHASING AGENT
X		2100.02		M. Young-Lan

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

PO. NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
20777		G- M STAINLESS		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

428

"Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 08/25/99

P.O. No.: 20777

Q.A. REVIEW:

VENDOR: CM STAINLESS

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

Description:	N/A	REQUIRED
1.) Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order; Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.		X
2.) Certified Material Mill Test Report per Specifications Listed. (See Item 1)		X
3.) Identify Lot No.'s and Quantities		X
4.) 10CFR 50 Appx.-B applicable	X	
5.) 10CFR 21 Safety Related applicable	X	
6.) Specific Performance Test Reports		
7.) Other as specified	X	

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.

ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

Description	N/A	REQUIRED
1.) Each container shall be clearly labeled to identify it's contents, MPG Part No. and TPI P.O. No.		X
2.) The vendor shall supply any special instructions for handling and storage, including shelf life of items.	X	
3.) Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
a.) Items shipped free from dirt, oil and residue		X
b.) Items packaged with water resistant vinyl barriers		X
c.) Items must be packaged in containers/crates		X
d.) Ship in a manner to prevent physical damage to item or packaging		X
e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		
4.) Other as specified		

TOTAL P.02

G-M STAINLESS SHEET • COILS • PLATES • TUBING • BARS
2222 South Halsted Street Chicago, IL 60608 (312) 491-8443
FAX 312-491-8452

429

MATERIAL CERTIFICATION REPORT

SHIPPED TO: TRANSCO PRODUCTS INC.
1215 E. 12TH ST.
STREATOR, ILLINOIS 61364

ORDER NO. 20777

DATE OF SHIPMENT: 8-30-99

HEAT# YU110260

MATERIAL: STAINLESS T304 2B
150 PCS. 16GA X 48 X 120

CHEMICAL ANALYSYS:

C	MN	P	S	SI	NI	CR
.017	1.65	.030	.003	.63	8.01	18.02

TENSILE & HARDNESS

TENSILE	YIELD	ELONGATION	HARDNESS
91,060 KSI	44,660 KSI	50.0%	88.0 RB

MILL: MEXINOX. This material was produced according to ASTM A240 standard and it also complies with the mechanical and chemical properties established in the following stds: ASTM A167-91, ASME SA240-9595, AMS 5513F.

I hereby certify that the above figures are correct as contained in the records of the company

Philip A. Moran

Philip A. Moran
M.C.

D.B.

PAGE LEFT INTENTIONALY BLANK TO CORRECT THIS RECORD

6/20/00

B.C.MACHCHHAR
TRANSCO CORPORATE QUALITY ASSURANCE MANAGER

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE **No.** 4108

1215 E. 12th STREET
STREATOR, IL 61364

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
	GJ-8102	STREATOR, IL	****	

SOLD TO:	SHIP TO:	DATE SHIPPED:	
	OEMGA POINT LABORATORIES 16015 SHADY FALLS ROAD ELMENDORF, TX 78112	12/01/99	
		ROUTE: UPS RED	
		COMP. SHIP ****	PART SHIP NO.

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
1	3		FIRE BOXES	-0-	3

Rec'd 12/2/99 DR

SHIPPING COPY

431

TRANSCO **Receiving Inspection Report** No. 99-12-03

☐ Streator	☐ ATC	☐ QPL.	☐ –	☐ –	☐ –

Supplier: GM Stainless

Purchase Order: 21018, 15000

Item: 36"x36" 14 ga. galv. sheet metal cable tray + 20 ga. s.s. cover

Quantity: 1 cable tray

Date: 12/6/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
1 C/T	36"x36" 14 ga. galv. metal cable tray w/	yes	n/a	n/a	GOOD	n/a
	20 ga. stainless steel cover.	yes	n/a	YU108445	GOOD	n/a

Remarks: TR 400 Fabricated at Streator Shop.
14 ga. galv. sheet metal + 20 ga. stainless steel verified thickness using a Digital Caliper s/n 60-21465-04 by Brown + Sharp.
Cal date 10/5/99 due 10/5/00

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Sandra J. Bradford 12/6/99

Receipt Inspection Considered Acceptable

Sandra J. Bradford 12/6/99
Quality Representative / Date

Figure - 1

TRANSCO **Receiving Inspection Report** No. 99-10-06

☒ Streator ☐ ATC ☐ ☐ ☐ ☐

Supplier: GM Stainless | Purchase Order: 21018

Item: 20ga. 304- 2B S.S. | Quantity: 20 sheets | Date: 10-18-99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat/Lot Identification	Physical Inspection	Indepen. Test Required
20 sheets	20ga. 304 - 2B S.S. 48" x 120" 1216 lbs.	X	X	YU108445	Good	N/A

Remarks: BR-8109

1. CRS No. N/A
2. In-House Test: N/A
3. Independent Test: Date sent N/A Date recd. N/A
4. Equip. Cal Date: N/A

Rec'd Amb 10/6/99

Receipt Inspection Considered Acceptable

Doug Bryant 10-18-99

Quality Representative/Date

PAGE.02
DEC 07 '99 09:22

G-M STAINLESS

SHEET • COILS • PLATES • TUBING • BARS

2222 South Halsted Street Chicago, IL 60608 (312) 491-8443
FAX 312-491-8452

MATERIAL CERTIFICATION REPORT

SHIPPED TO: TRANSCO PRODUCTS
1215 EAST 12TH STREET
STREATOR, ILLINOIS 61364

ORDER NO. VERBAL/RUSS

DATE OF SHIPMENT: 10-18-99

MATERIAL: T-304-2B STAINLESS
20GAX48"X120"
20 SHEETS/1,216#

HEAT # YU 108445

CHEMICAL ANALYSIS:

C	MN	P	S	SI	NI	CR
.058	1.22	.028	.004	.061	8.02	18.17

TENSILE & HARDNESS

TENSILE	YIELD	ELONGATION	HARDNESS
105,415 KSI	42,630 KSI	52.0 %	88.50 RB

This material was produced according to ASTM 240A standard and it also complies with the mechanical and chemical properties established in the following stds: ASTM A167-91, ASME SA 240-9595, AMS 5513F.

I hereby certify that the above figures are correct as contained in the records of the company

Philip A. Moran

Philip A. Moran

(CERTS DOC 134) (PM) 10-19-99 P.O. # 2343) (DAF)(GM INV. 3599)

Rec'd 12/6/99 DMB

D.B.

10-18-99

DEC-07-1999 15:50 TRANSCO PROD STREATOR P.02

TRANSCO PRODUCTS INC.
5 E. Jackson Blvd. Chicago, IL 60604-4166
(312) 427- Telex No. 25-6134

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

ORDER NO. 21018
DATE 10/18/99
☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

PURCHASE ORDER

REQ'N NO. S-082 | DELIVERY REQUIRED AT DESTINATION 99/10/18 | SHIP VIA DELIVERED | F.O.B. YOUR PLANT | TERMS NET 30

TO: G- M STAINLESS
2222 SOUTH HALSTED STREET
CHICAGO IL 60608

VENDOR NO. 33908

& SHIP TO: BILLTransco Products Inc.
1215 East 12th Street
P.O. Box 537
Streator IL 613E

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	QUANTITY ORDERED	DESCRIPTION	PRICE/UNIT	TOTAL
	1200	SHEETS 20 GA. X 48" X 120" 304 STAINLESS STEEL 2B FINISH	1.300	1560
		SEE ATTACHMENT "A" FOR QUALITY REQUIREMENTS		
			TOTAL	1560.

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS...
QA APPROVAL [signature] DATE 10/18/99

RESALE ☒ | CONSUMPTION ☐ | ACCOUNT NO. 2100.02/BR-8109 | REQUIRED FOR: | PURCHASING AGENT ▶ M. Young

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

P.O. NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
21018		G- M STAINLESS		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

Rec'd 12/6/99 DMB

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 10/13/99
P.O. No.: 21018
Q.A. REVIEW:

VENDOR: GM STAINLESS

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

Description	N/A	REQUIRED
1.) Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.		X
2.) Certified Material Mill Test Report per Specifications Listed. (See Item 1)		X
3.) Identify Lot No.'s and Quantities		X
4.) 10CFR 50 Appx.-B applicable	X	
5.) 10CFR 21 Safety Related applicable	X	
6.) Specific Performance Test Reports		
7.) Other as specified	X	

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

Description	N/A	REQUIRED
1.) Each container shall be clearly labeled to identify its contents, MFG. Part No. and TPI P.O. No.		X
2.) The vendor shall supply any special instructions for handling and storage, including shelf life of items.	X	
3.) Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
a.) Items shipped free from dirt, oil and residue		X
b.) Items packaged with water resistant vinyl barriers		X
c.) Items must be packaged in containers/crates		X
d.) Ship in a manner to prevent physical damage to items or packaging		X
e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		
4.) Other as specified		

Rec'd 12/6/99

437

Ryerson No. 01 GO 347656
Territory 1
Load CIX
Item No. 01

JOSEPH T. RYERSON & SON, INC.

Material Certification

To: TRANSCO PRODUCTS INC

55 E JACKSON BLVD
CHICAGO IL 60604

Attn: Steve Headlend

Your Order Number
15000

Item Description
SHT GALVANNEALED 14 GA x 48 x 144

Single/Multiple Heat Number
GALVANNEAL

Slab/Coil Number (if applicable)

Item Instructions
MAIL CERTS TO CUSTOMER
CERTIFIED

A survey of our material sources has indicated that neither mercury nor radioactive substances is introduced into their products, or is used in any of their processes. While we make no independent tests for mercury or radiation, there is nothing in Ryerson's system which could be expected to introduce contamination of either type.

This document certifies that the material described above was shipped on your order and that the attached data is a true copy of the test report furnished by the producer with said material.

August 06 1997

M. Aparicio

Authorized Agent of
Joseph T. Ryerson & Son, Inc.

[redacted]

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

PURCHASE ORDER

PURCHASE ORDER NO. 15000 4 8

DATE 7/14/97

☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

ION NO.	DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
	97/07/22	DELIVERED	OUR PLANT	1/2-10-30

TO: J.T. RYERSON & SON, INC.
P.O. BOX 8000-A
CHICAGO IL 60680
VENDOR NO. 74780

BILL Transco Products Inc.
& SHIP TO: TRANSCO RAILWAY PRODUCTS, INC.
2310 SOUTH CENTER STREET
NEWTON FALLS OH 44444

Please enter the following order which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

QUANTITY ORDERED	DESCRIPTION	PRICE/UNIT	TOTAL
3984	LBS/ 16 GA. GALVANNEALED, A653 SHEETS, 36 X 120 (50 PCS.)	.491	1956.14
3399	LBS/ 16 GA. GALVANNEALED, A653 SHEETS, 48 X 96 (40 PCS.)	.475	1617.58
4250	LBS/ 16 GA. GALVANNEALED, A653 SHEETS, 48 X 120 (40)	.475	2020.03
3308	LBS/ 14 GA. GALVANNEALED, A653 SHEETS, 48 X 144, (21) PC'S	.470	1554.76
	..DELIVERY REQ'D AT DESTINATION... 7/22/97 OR BEFORE		
	..SEE ATTACHMENT 'A'		
	THIS IS A REVISION OF PURCHASE ORDER #15000 TO CHANGE QUANTITY, DESCRIPTION & PRICE OF ITEM #4		
	SPECIAL NOTE: SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS... QA APPROVAL CM DATE 7/24/97	TOTAL	7148.51

CONSUMPTION	ACCOUNT NO.	REQUIRED FOR:	PURCHASING AGENT
☐	2100.02/7566		Margaret Young-La

OTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
5000		J.T. RYERSON & SON, INC.		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN) HEREIN SHALL APPLY.

ES NOT ☐ PERTAIN TO THE

Post-it® Fax Note 7671

Date 12/8/99	# of pages ▶ 2
To Sandy	From Roshanda
Co./Dept.	Co.
Phone #	Phone # CLGD
Fax # (210) 635-8101	Fax #

Revised 12/8/99 DMB

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items requested and to the QA M: at Transco Products Inc. in Chicago for all items applicable to this order.

*DATE: 7/10/9
P.O. No.: 15700
QA REVIEW: 7/24/97

VENDOR: Joseph T Ryerson

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements inc in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirme indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VE agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

	Description	N/A	REQUIRE
1.)	Vendor shall supply a certificate of conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows		✓
2.)	Certified Material Mill Test Report per Specifications Listed. (See Item 1)	✓	
3.)	Identify Lot No.'s and Quantities	✓	
4.)	10CFR 21 Safety Related applicable	✓	
5.)	Specific Performance Test Reports	✓	
6.)	Other as specified	✓	

TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUI

II. PACKAGING, SHIPPING AND IDENTIFICATION

	Description	N/A	REQUIRE
1.)	Each container shall be clearly labeled to identify its contents, MFG. Part No. and TPI P.O. No.		✓
2.)	The vendor shall supply any special instructions for handling and storage, including shelf life of items		✓
3.)	Packaging and Shipping shall beet ANSI N45 2.2 as follows:		
	a.) Items shipped free from dirt, oil and residue		✓
	b.) Items packaged with water resistant vinyl barriers	✓	
	c.) Items must be packaged in container/crates	✓	
	d.) Ship in a manner to prevent physical damage to item or packaging		✓
	e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements. In case of a noncompliance, Transco shall approve the proposed non compliance deposition.		
4.)	Other as specified	✓	✓

Rec'd 12/8/99 DMB

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE

1215 E. 12th STREET
STREATOR, IL 61364

No. 4109

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
	GJ-8102	STREATOR, IL	****	

SOLD TO:

SHIP TO:

OMEGA POINT LABORATORIES
16015 SHADY FALL ROAD
ELMENDORF, TX 78112

DATE SHIPPED: 12/02/99

ROUTE: CF PRIME TIME

COMP. SHIP	PART SHIP NO.
****	

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
			BILL OF LADING 2-6201		
1	1 LOT		CABLE TRAY MATERIAL	-0-	1 LOT

SHIPPING COPY

440

TRANSCO **Receiving Inspection Report** No. 99-12-04

☐ Streator ☐ ATC ☐ OPL ☐ – ☐ – ☐ –

Supplier: GM Stainless Purchase Order: 20777

Item: 6"x6" 16 ga galv. sheet metal cable tray Quantity: 1 Cable tray Date: 12/6/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
1 C/T	7" pp 12/6/99 6"x6" Cable tray 16 ga galv. metal	yes	n/a	YU110260	GOOD	n/a

Remarks: STR 400 Fabricated at Streator facility.

1. CRS No. n/a

2. In-House Test: n/a 16 ga galv metal Verified thickness of metal using digital Calipers S/N 6Q-2465-04 by Brown + Sharp. Cal date 10/5/99 due 10/5/00

3. Independent Test: Date sent n/a Date recd. n/a

4. Equip. Cal Date: n/a

Sandra J. Bradford 12/6/99

Receipt Inspection Considered Acceptable

Sandra J. Bradford 12/6/99
Quality Representative / Date

Figure - 1

TRANSCO

Receiving Inspection Report

No. 99-08-04

☒ Streator ☐ ATC ☐ ☐ ☐ ☐

Supplier: GM Stainless

Purchase Order: 20777

Item: 16ga. SS-304-2B

Quantity: 15,180 lbs

Date: 8-30-99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
150 pc's	16ga. SS-304-2B 48" x 120"	✓	✓	YU110260	OK	N/A

Remarks: Stock

1. CRS No. N/A
2. In-House Test: N/A
3. Independent Test: Date sent N/A Date recd. N/A
4. Equip. Cal Date: N/A

Receipt Inspection Considered Acceptable

Doug Burgess 8-30-99
Quality Representative / Date

443

[redacted]

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address

ORDER NO. 20777
DATE 8/26/99
☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

PURCHASE ORDER

REQ'N NO	DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
S-063	99/08/26	DELIVERED	DELIVERED	NET 30

TO: G- M STAINLESS
2222 SOUTH HALSTED STREET
CHICAGO IL 60608

VENDOR NO. 33908

& SHIP TO: BILLTransco Products Inc.
1215 East 12th Street
P.O. Box 537
Streator IL 61364

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	QUANTITY	DESCRIPTION	PRICE	AMOUNT
	15000	LBS. 16 GA. 304 SS 48" X 120" 2B FINISH ..NOTE.. SEE ATTACHMENT 'A' FOR QUALITY REQUIREMENTS ..DELIVERY REQ'D AT DESTINATION.. 1 WEEK	.870	13050.00
			TOTAL	13050.00

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A" FOR REQUIRED QUALITY INSPECTION REQUIREMENTS.
APPROVAL [signature] DATE 8/26/99

SALE	CONSUMPTION	ACCOUNT NO.	REQUIRED FOR	PURCHASING AGENT
X		2100.02		M. Young

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

P.O. NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
20777		G- M STAINLESS		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

Rec'd 12/3/99 DMB

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

"Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 08/25/99
P.O. No.: 20777
Q.A. REVIEW:

VENDOR: CM STAINLESS

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

	Description:	N/A	REQUIRED
1.)	Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows:		X
2.)	Certified Material Mill Test Report per Specifications Listed. (See Item 1)		X
3.)	Identify Lot No.'s and Quantities		X
4.)	10CFR 50 Appx.-B applicable	X	
5.)	10CFR 21 Safety Related applicable	X	
6.)	Specific Performance Test Reports		
7.)	Other as specified	X	

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

	Description	N/A	REQUIRED
1.)	Each container shall be clearly labeled to identify its contents, MPG. Part No, and TPI P.O. No.		X
2.)	The vendor shall supply any special instructions for handling and storage, including shelf life of items.	X	
3.)	Packaging and Shipping shall meet ANSI N45 2.2 as follows:		
	a.) Items shipped free from dirt, oil and residue		X
	b.) Items packaged with water resistant vinyl bonnets		X
	c.) Items must be packaged in containers/cases		X
	d.) Ship in a manner to prevent physical damage to item or packaging		X
	e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		
4.)	Other as specified		

Recd 12/2/99

G-M STAINLESS

SHEET • COILS • PLATES • TUBING • BARS

2222 South Halsted Street Chicago, IL 60608 (312) 491-8443
FAX 312-491-8452

445

MATERIAL CERTIFICATION REPORT

SHIPPED TO: TRANSCO PRODUCTS INC.
1215 E. 12TH ST.
STREATOR, ILLINOIS 61364

ORDER NO. 20777

DATE OF SHIPMENT: 8-30-99

HEAT# YU110260

MATERIAL: STAINLESS T304 2B
150 PCS. 16GA X 48 X 120

CHEMICAL ANALYSYS:

C	MN	P	S	SI	NI	CR
.017	1.65	.030	.003	.63	8.01	18.02

TENSILE & HARDNESS

TENSILE	YIELD	ELONGATION	HARDNESS
91,060 KSI	44,660 KSI	50.0%	88.0 RB

MILL: MEXINOX. This material was produced according to ASTM A240 standard and it also complies with the mechanical and chemical properties established in the following stds: ASTM A167-91, ASME SA240-9595, AMS 5513F.

I hereby certify that the above figures are correct as contained in the records of the company

Philip A. Moran

Philip A. Moran

M.C.

Rec'd 12/2/99 DMB

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE

1215 E. 12th STREET
STREATOR, IL 61364

No. 4109

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
	GJ-8102	STREATOR, IL	****	

SOLD TO:

SHIP TO:
OMEGA POINT LABORATORIES
16015 SHADY FALL ROAD
ELMENDORF, TX 78112

DATE SHIPPED: 12/02/99

ROUTE: CF PRIME TIME

COMP. SHIP	PART SHIP NO.
****	

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
			BILL OF LADING 2-6201		
1	1 LOT		CABLE TRAY MATERIAL	-0-	1 LOT

SHIPPING COPY

446

TRANSCO **Receiving Inspection Report** No. 99-12-05

☐ Streator	☐ ATC	☐ O.P.L	☐ —	☐ —	☐ —

Supplier: FLAMEMASTER CORP Purchase Order:

Item: FLAMEMASTIC 77 Quantity: SEE BELOW Date: 12/9/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
3 pails	FLAMEMASTIC 77	yes	n/a	9909024	GOOD	n/a

Remarks: EXP DATE: 12/02, MSDS sheet INCLUDED in PACKAGE with other MSDS sheets. DMB 12/10/99 * TR 400 DMB 12/10/99

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable

Sandra M Bertrand 12/10/99
Quality Representative / Date

Figure - 1

447

CUSTOMER ORDER NO. VERBAL/GREG
REL. OR B/O . . . . .
DATE: 12-03-99
FREIGHT: . . . . . PREPAY &ADD
F.O.B. . . . . SUN VALLEY, CA
SHIP VIA: . . . . . UNITED PARCEL / REDII
SHIPPING DATE: . . . 12-08-99
SHIPPING NO.: 30834
TAXABLE: . . . . . OS
CAGE CODE #14439

FLAMEMASTER CORPORATION
CHEM SEAL DIVISION
11120 Sherman Way
Post Office Box 1458
Sun Valley, California 91353-1458
Telephone (818) 982-1650
Fax: (818) 765-5603

SOLD TO:
TRANSCO PRODUCTS INC.
55 E. JACKSON BLVD.
SUITE 2100
CHICAGOL, IL 60604
ATTN: GREG JAROSZ

SHIP TO:
OMEGA POINT LABS
16015 SHADY FALLS RD
ELMENDORF, TX 78112
ATTN: TRANSCO
PROTECT FROM FREEZING

TERMS: ~~NET 30 DAYS~~ VISA

INVOICE DATE _____ INVOICE NO. _____

ORDERED	BACK ORD.	SHIPPED	UNIT	DESCRIPTION	BATCH NO.	UNIT PRICE	AMOUNT
3	-0-	3	EA	5-GAL PAIL, FLAMEMASTIC '77	9909024		
				MASTIC			
				PKG DTE: 12/99 EXP DTE: 12/02			
				SHELF LIFE 3 YEARS			
				STORAGE TEMP.: 40 DEG.F - 90 DEG.F			
				THE PURCHASER OF THIS FIRE PROTECTIVE			
				COMPOSITION IS HEREBY LICENSED UNDER			
				UNITED STATES PATENT 3,642,531 DATED			
				FEBRUARY 15,1972 TO USE THE SAME AS A			
				COATING FOR ELECTRICAL CABLES.!!			
				PROTECT FROM FREEZING			

SPECIAL INSTRUCTIONS: ☒ CERTIFICATIONS ☐ TEST REPORT ☒ MSDS
~~FAX INVOICE TO TRANSCO~~

WE CERTIFY THAT THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND CONFORMS TO THE REQUIREMENTS OF LISTED SPECIFICATIONS. TEST DATA PERTAINING TO THIS MATERIAL IS ON FILE AND AVAILABLE FOR INSPECTION UPON REQUEST. CHLOROFLUROCARBONS (CFCs) AND HALONS ARE NOT USED. PRODUCT(S) FREE FROM MERCURY.

QUALITY CONTROL MANAGER

DATE SHIPPED: 12/8/99 CARRIER: UPS RED NO. PACKAGES: 3-CARTONS GROSS WEIGHT: 216 LBS.

PRIOR APPROVAL MUST BE OBTAINED FOR THE RETURN OF ANY MERCHANDISE. RETURN FREIGHT MUST BE PREPAID.

SELLER HAS COMPLIED WITH THE APPLICABLE PROVISIONS OF THE FAIR LABOR STANDARDS ACT OF 1938 AS AMENDED.

CERTIFICATION/PACKING LIST

TR400

449

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-12-05 DATE RECEIVED 12/10/99

MATERIAL DESCRIPTION FLAMEMASTIC 77

BATCH/LOT # 9909024 DATE SHIPPED 12/09/99

SHELF LIFE EXPIRATION DATE 12/2002

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN-

TRANSCO PROJECT MANAGER-

CUSTOMER REPRESENTATIVE-

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

FINAL SIGNOFF

✓ The above material was used prior to the Expiration Date.

____ The above material was not used prior to the Expiration Date.

NCR # ____

Sandy Bedford 12/17/99
FIELD Q.C. MANAGER/DATE

TRANSCO **Receiving Inspection Report** No. 99-12-06

☐ Streator ☐ ATC ☐ D.P.L. ☐ - ☐ - ☐ -

Supplier: ACS Industries Purchase Order: V15868

Item: 304 L ss .047 Tie Wire (18 gauge) Quantity: 5 lbs Date: 12/10/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
5 lbs	304 Lss .047 tie Wire (18 gauge)	yes	n/a	n/a	Good	n/a

Remarks: n/a

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable

Sandra Bradford 12/10/99
Quality Representative / Date

Figure - 1

450

ACS
INDUSTRIES, INC.
Insulation Products Division
P.O. BOX 99
810 F/M 521 FRESNO, TEXAS 77545 U.S.A.
(281) 437-6000 1 (800) 688-4118 FAX (281) 437-5708

CERTIFICATE OF CONFORMANCE

ACS INDUSTRIES, LP hereby certifies that all material supplied to **ADVANCE THERMAL PRODUCTS, PO #** V15868 **ACS Sales Order No.** N/A, conforms to the material and/or manufacturing specifications and is found to be with the maximum chemical ranges listed below. All parts were manufactured from new materials.

Material : 304Lss .047" Tie Wire

Ni	8.0 – 12.0	Si	1.00
C	0.03	Cr	18.0 – 20.0
Mn	2.00	P	0.045

Roberto Sanchez, QA/QC Manager
ACS INDUSTRIES, LP

Date

Rec'd 12/10/99 JMB

VERBAL PURCHASE ORDER

(Not to exceed $400.00)

No. V 15868 452

- [ ] CHICAGO
- [ ] JACKSONVILLE
- [ ]
- [ ] STREATOR
- [ ] TOLEDO
- [ ]
- [ ] TAFTVILLE
- [ ] WILLIAMSPORT
- [ ]
- [ ] LOGANSPORT
- [ ] BLASDELL
- [ ] BUCYRUS
- [x] BENSENVILLE
- [ ] OELWEIN
- [ ] NEWTON FALLS

DATE ORDERED : 6/11/99

DEL'Y REQUESTED : ASAP

SHIP VIA : Bestway

F.O.B. :

TERMS : N/30

FREIGHT CHARGES: Prepaid or Collect

TO: ACS INDUSTRIES
14211 INDUSTRY ROAD
HOUSTON, TX. 77053

REF. FOR: (JOB NO. OR END USE) STOCK

ACCOUNT NO. 2100-20

RESALE X CONSUMPTION

THE FOLLOWING HAS BEEN ORDERED

ITEM NO.	QUANTITY	DESCRIPTION—INDICATE OUR NUMBER IF KNOWN	UNIT PRICE	EXTENSION
1	100 LBS	S.S. WIRE 18 GA 1047 (H-511)	2.38 LB	238.00

Date Rec'd.: 06/18/99

Received by:

Signed (Req'n By) Marlon Chrisolf

Approved

ABOVE INFORMATION MUST BE FILLED OUT COMPLETELY

PLANT COPY

REV. FORM NO. 108

TRANSCO **Receiving Inspection Report** No. 99-12-07

☐ Streator	☐ ATC	☐ OPL	☐ –	☐ –	☐ –

Supplier: Radian Corp. Purchase Order: 21298

Item: Dow Corning 3-6548 RTV Silicone Foam Part A & B Quantity: 7 Kits Date: 12/10/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
7 pails	D.C. 3-6548 RTV Silicone Foam Part A	Yes	N/a	0000406637	Good	N/a
7 pails	D.C. 3-6548 RTV Silicone Foam Part B	Yes	N/a	0000410144	Good	N/a

Remarks: 7 Kits @ 80# each = 560 #

* TR 400

1. CRS No. N/a Exp Date Part A 06/11/01 Exp Date Part B 11/13/01
2. In-House Test: N/a DMB 12/10/99
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

Receipt Inspection Considered Acceptable

Sandra M Bradford 12/10/99
Quality Representative / Date

Figure - 1

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/10/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548 PART B 80LBS KIT

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000410144

QUANTITY: 7

CUSTOMER P.O.: 21298

MANUFACTURER DATE: 11/24/99

EXPIRATION DATE: 11/13/2001

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase [illegible] requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. [illegible].

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

Rec'd 12/10/99 DMB

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: *12/10/99*

COMPANY: *TRANSCO PRODUCTS*

PRODUCT: *DC-36548* *80LBS KITS*

MANUFACTURER: *DOW CORNING*

LOT NUMBERS: *0000406637*

QUANTITY: *7*

CUSTOMER P.O.: *21298*

MANUFACTURER DATE: *11/17/99*

EXPIRATION DATE: *06/11/01*

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. 2.0.

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

Recd 12/10/99 AMB

456

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

PURCHASE ORDER

PO NO. 21298
DATE 12/07/99
☐ CONFIRMING ORDER ☐ NOT A CONFIRMING ORDER

PO NO. | DELIVERY REQUIRED AT DESTINATION 99/12/07 | SHIP VIA PP&A | F.O.B YOUR PLANT | TERMS NET 30

TO: RADIAN CORPORATION
7831 NORTH NAGLE
MORTON GROVE IL 60053

VENDOR NO. 70400

BILL & SHIP TO: Transco Products Inc.
OMEGA POINT LABS
16015 SHADY FALLS ROAD
ELMENDORF TX 78112-9781

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

QUANTITY ORDERED	DESCRIPTION	PRICE ONE	TOTAL
7	80# KITS DOW CORNING SILICONE FOAM	895.000	6265.00
15	..DELIVERY REQ'D AT DESTINATION.. ASAP		
G1 12/14/99	...NOTE.. SEE ATTACHMENT 'A' FOR QUALITY REQUIREMENTS		
		TOTAL	6265.00

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED
C[illegible] REQUIREMENTS...
C[illegible] DATE 12/7/99

SALE ☐ CONSUMPTION ☐ | ACCOUNT NO. GJ-8102 | REQUIRED FOR | PURCHASING AGENT M. Young

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

P.O. NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
21298		RADIAN CORPORATION		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

Rec'd 12/10/99 DMB

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 12/07/99
P.O. No.: 21298
Q.A. REVIEW: EHS

VENDOR: RADIAN CORP

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

Description	N/A	REQUIRED
1.) Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.		X
2.) Certified Material Mill Test Report per Specifications Listed. (See Item 1)		
3.) Identify Lot No.'s and Quantities		X
4.) 10CFR 50 Appx-B applicable		X
5.) 10CFR 21 Safety Related applicable	X	
6.) Specific Performance Test Reports		
7.) Other as specified: COPY OF DOW CORNING MATERIAL ANALYSIS AND STANDARD RADIAN C. of C.		

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

Description	N/A	REQUIRED
1.) Each container shall be clearly labeled to identify its contents, MFG. Part No. and TPI P.O. No.		X
2.) The vendor shall supply any special instructions for handling and storage, including shelf life of items.		X
3.) Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
a.) Items shipped free from dirt, oil and moisture		X
b.) Items packaged with water resistant vapor barrier		X
c.) Items must be packaged in containers/crates		X
d.) Ship in a manner to prevent physical damage to items or packaging		X
e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.	X	
4.) Other as specified		

Rec'd 12/10/99 DMB

TOTAL P.03

TR 400

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-12-07 DATE RECEIVED 12/10/99

MATERIAL DESCRIPTION D.C. 36548 RTV SILICONE FOAM PART B

BATCH/LOT # 0000 410144 DATE SHIPPED 12/09/99

SHELF LIFE EXPIRATION DATE 11/13/2001

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN- _____

TRANSCO PROJECT MANAGER- _____

CUSTOMER REPRESENTATIVE- _____

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

_____
Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

____ ____ ____ ____ ____ ____ ____

FINAL SIGNOFF

✓ The above material was used prior to the Expiration Date.

_____ The above material was not used prior to the Expiration Date.

NCR # _____

Sandra Bustos 12/14/99
FIELD Q.C. MANAGER/DATE

TR 400

#TR 400

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-12-07 DATE RECEIVED 12/10/99

MATERIAL DESCRIPTION D.C. 3-6548 RTV SILICONE FOAM PART A

BATCH/LOT # 0000406637 DATE SHIPPED 12/9/99

SHELF LIFE EXPIRATION DATE 06/11/2001

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN-

TRANSCO PROJECT MANAGER-

CUSTOMER REPRESENTATIVE-

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

FINAL SIGNOFF

✓ The above material was used prior to the Expiration Date.

____ The above material was not used prior to the Expiration Date.

NCR # ____

Sandra M. Bradford 12/14/99
FIELD Q.C. MANAGER/DATE

#TR 400

TRANSCO **Receiving Inspection Report** No. 99-12-08

☐ Streator	☐ ATC	☐ O.P.L.	☐ —	☐ —	☐ —

Supplier: TRANSCO PRODUCTS INC

Purchase Order: 19022 (4112)

Item: PINK CLOTH

Quantity: 25 yds

Date: 12/10/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
1 roll.	Pink Cloth	yes	n/a	n/a	Good	n/a

Remarks: n/a 1 roll - 25 yds - STREATOR Stock

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable

Sandra J. Bradford 12/10/99
Quality Representative / Date

Figure - 1

sco Products Inc.
Jackson Blvd. Chicago, IL 60604-4166
427-2818 Telex No. 25-6134

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

PURCHASE ORDER

PURCHASE ORDER NO.	19022
DATE	12/03/98
CONFIRMING ORDER	X NOT A CONFIRMING ORDER

DELIVERY REQUIRED AT DESTINATION: 98/12/03
SHIP VIA: BESTWAY PREPD & ADVOUR PLANT
F.O.B:
TERMS: NET 30

IMASCO CORP
O BOX 516
ITRO WV 25143

VENDOR NO. 89890

BILL & SHIP TO: Transco Products Inc.
1215 East 12th Street
P.O. Box 537
Streator IL 61364

e enter the following order, which order expressly limits lance to the terms and conditions stated on this page and on the e side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

QUANTITY ORDERED	DESCRIPTION	PRICE/UNIT	TOTAL
)000	SQ. FT.;TCO-704 "A" INTRUMESCENT CLOTH; (2025 CLOTH WITH VIMASCO 31-R COATING APPLIED @ 50 OZ PER SQUARE YARD +/-5oz) PINK COLOR; FINISHED ROLLS APPROX = 25 YD. X 40"	3.540	70800.00
50	GALLONS; (10) 5 GALLON PAILS; TCO-705 "A" INTUMESCENT COATING; (31-R); PINK	22.840	1142.00
	SEE ATTACHMENT "A"		
	DELIVERY REQ'D AT DESTINATION: ON OR BEFORE 01/08/99		
		TOTAL	71942.00

Erroneously MXED Do NOT DUPLICATE ORDER

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS...
QA APPROVAL [illegible] DATE 12/4/98

CONSUMPTION	ACCOUNT NO	REQUIRED FOR:	PURCHASING AGENT
	KH-7813/PP&L		M. Young [illegible]

CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

'HE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
	VIMASCO CORP		

THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

CHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE ENT OF SERVICES.

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: 12/02/98
P.O. No. 19072
Q.A. REVIEW:

VENDOR: VIMASCO

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

	Description:	N/A	REQUIRED
1.)	Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order: Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.	X	
2.)	Certified Material Mill Test Report per Specifications Listed. (See Item 1)	X	
3.)	Identify Lot No.'s and Quantities		X
4.)	10CFR 50 Appx.-B applicable	X	~~X~~ 12/4/9
5.)	10CFR 21 Safety Related applicable	X	
6.)	Specific Performance Test Reports		
7.)	Other as specified		X

MATERIALS ARE TO BE BATCHED AND MANUFACTURED IN ACCORDANCE WITH YOUR LETTER TO TRANSCO DATED NOVEMBER 17, 1998. TRANSCO MUST PROVIDE PRIOR WRITTEN APPROVAL TO ANY PROCEDURAL OR FORMULA CHANGES.

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

	Description	N/A	REQUIRED
1.)	Each container shall be clearly labeled to identify it's contents, MFG. Part No. and TPI P.O. No.		X
2.)	The vendor shall supply any special instructions for handling and storage, including shelf life of items.		X
3.)	Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
	a.) Items shipped free from dirt, oil and residue		X
	b.) Items packaged with water resistant vinyl barriers		X
	c.) Items must be packaged in container/crates		X
	d.) Ship in a manner to prevent physical damage to item or packaging		X
	e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		X
4.)	Other as specified	X	

P. O. Box 516
Nitro, W.Va. 25143-0516
(304)755-3328
(800) 624-8288
(304) 755-7153 - fax

Vimasco Corporation

December 28, 1998

Transco Products, Inc.
Chicago, IL

Re: P.O. 19022

CERTIFICATION

This is to certify that Vimasco's Cable Coating 3i-R Pink supplied on the above order conforms to all requirements of the order and was manufactured in accordance with our standard specification and does not contain mercury, mercury compounds or asbestos.

Further, the coated fabric was coated in accordance with Specification for Coating Fiberglass Fabric with Vimasco Cable Coating 3i-R Cable Coating and meets all requirements of this specification.

Also, the technical data delivered herewith are complete, accurate, and complies with all requirements of the contract/purchase order. The data provided represents the actual attributes of the items furnished and indicates full compliance with all applicable specifications and contract/purchase order requirements.

Kathie M. Brown

Kathie M. Brown, QSA

Attachment: 1

We're Vimasco and we're your business

D.B.
12-30-98

TRANSCO PRODUCTS INC.

PACKING SLIP NOTICE

1215 E. 12th STREET
STREATOR, IL 61364

No. 4112

CUST. ORDER NO.	OUR JOB NO.	F.O.B.	PREPAID	COLLECT
N/A	GJ-8102	STREATOR, IL	****	

SOLD TO:

SHIP TO:
OMEGA POINT LABORATORIES
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DATE SHIPPED: 12/07/99

ROUTE: UPS BLUE

COMP. SHIP	PART SHIP NO.
****	

ITEM	QUAN. ORDER	DWG PART NO.	DESCRIPTION	BAL. ON ORDER	QUAN. SHIPPED
1	5 LBS.		18 GA. S.S. WIRE	-0-	5 LBS.
2	25 YDS.		INTRUMESCENT CLOTH (PINK/BLUE CLOTH)	-0-	25 YDS.

Rec'd 12/10/99 [illegible]

SHIPPING COPY

464

TRANSCO — **Receiving Inspection Report** — No. 99-12-09

☐ Streator | ☐ ATC | ☐ | ☐ – | ☐ – | ☐ –

Supplier: Radian Corp — Purchase Order: 21298

Item: Dow Corning 3-6548 RTV Silicone Foam Part A & B — Quantity: 8 Kits — Date: 12/14/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
8 pails	D.C. 3-6548 RTV Silicone Foam Part A	Yes	N/a	0000406637	Good	N/a
5 pails	D.C 3-6548 RTV Silicone Foam Part B	Yes	N/a	0000410144	Good	N/a
3 pails	D.C. 3-6548 RTV Silicone Foam Part B	Yes	N/a	0000415673	Good	N/a
			DMB 12/14/99 N/a			

Remarks: 5 pails - Part B - 11/13/01 — 8 Kits @ 80 # per Kit = 640 lbs.
Exp. Date: 3 pails Part B - 11/13/01 — DMB 12/14/99
8 pails Part A - 11/06/01

1. CRS No. N/a
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

TR 400
DMB 12/14/99

Receipt Inspection Considered Acceptable — Sandra L. Bustos 12/15/99 — Quality Representative / Date DMB 12/15/99

Figure - 1

465

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/15/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548-80 PART B

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000410144

QUANTITY: 5

CUSTOMER P.O.: 2/298

MANUFACTURER DATE: 11/24/99

EXPIRATION DATE: 11/13/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. 2.0.

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

Rec'd 12/15/99 DMB

RADIAN CORPORATION

7831 N Nagle Avenue • Morton Grove, IL 60053-2620 Tel: 847-965-4858 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/15/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548-80 PART A

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000406637

QUANTITY: 8

CUSTOMER P.O.: 21298

MANUFACTURER DATE: 11/17/99

EXPIRATION DATE: 12/08/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is [illegible] *Quality Assurance Program Dated April 1, 1993, REV. 2.0.*

Manufacturers Specifications of this material are on file and are available upon written request.

The requirements of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

Rec'd 12/15/99 [illegible]

RADIAN CORPORATION

7831 N. Nagle Avenue • Morton Grove, IL 60053-2760 • 847-965-4850 • Fax: 847-965-7841

CERTIFICATE OF COMPLIANCE

DATE: 12/15/99

COMPANY: TRANSCO PRODUCTS

PRODUCT: DC-36548-80 PART B

MANUFACTURER: DOW CORNING

LOT NUMBERS: 0000415673

QUANTITY: 3

CUSTOMER P.O.: 21298

MANUFACTURER DATE: 11/24/99

EXPIRATION DATE: 11/13/01

CUSTOMER PART NUMBER:

The material meets or exceeds customer purchase order requirements and is new and not refurbished. The order was processed under Radian Corporation Quality Assurance Program Dated April 1, 1993, REV. 2.0.

Manufacturers Specifications of this material are on file and are available upon written request.

The requiramants of the above referenced purchase order have been met.

This material was shipped directly from Radian Corporation

RADIAN CORPORATION

CHRISTOPHER MEDINA
Q. A. Manager

Rec'd 12/15/99 DMB

[redacted]

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

PURCHASE ORDER

ORDER NO. 21298
DATE 12/07/99
☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

REQN NO. | DELIVERY REQUIRED AT DESTINATION 99/12/07 | SHIP VIA PP&A | F.O.B YOUR PLANT | TERMS NET 30

TO: RADIAN CORPORATION
7831 NORTH NAGLE
MORTON GROVE IL 60053

VENDOR NO. 70400

& SHIP TO: BILLTransco Products Inc.
OMEGA POINT LABS
16015 SHADY FALLS ROAD
ELMENDORF TX 78112-978

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	QUANTITY ORDERED	DESCRIPTION	PRICE/UNIT	TOTAL
	15	80# KITS DOW CORNING SILICONE FOAM ..DELIVERY REQ'D AT DESTINATION.. ASAP ...NOTE.. SEE ATTACHMENT 'A' FOR QUALITY REQUIREMENTS	895.000	6265.00
			TOTAL	6265.00

GI 12/14/99

SPECIAL NOTE:
SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED QUALITY REQUIREMENTS...
CONTRACTS ADMIN [illegible] DATE 12/7/99

SALE	CONSUMPTION	ACCOUNT NO.	REQUIRED FOR	PURCHASING AGENT
☒	☐	GJ-8102		M. Young-Lai

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

ORDER NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
21298		RADIAN CORPORATION		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

Rec'd 12/10/99 DMB

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

VENDOR: RADIAN CORP

DATE: 12/07/99
P.O. No.: 21298
Q.A. REVIEW: EJHS

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

Description	N/A	REQUIRED
1.) Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order. Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.		X
2.) Certified Material Mill Test Report per Specifications Listed. (See Item 1)		
3.) Identify Lot No.'s and Quantities		X
4.) 10CFR 50 Appx-B applicable		X
5.) 10CFR 21 Safety Related applicable	X	
6.) Specific Performance Test Reports		
7.) Other as specified: Copy of Dow Corning Material Analysis and Standard Radian C of C.		

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.
ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

Description	N/A	REQUIRED
1.) Each container shall be clearly labeled to identify it's contents, MFG. Part No. and TPI P.O. No.		X
2.) The vendor shall supply any special instructions for handling and storage, including shelf life of items.		X
3.) Packaging and Shipping shall meet ANSI N45.2.2 as follows:		
a.) Items shipped free from dirt, oil and moisture		X
b.) Items packaged with water resistant vinyl barrier		X
c.) Items must be packaged in container/crates		X
d.) Ship in a manner to prevent physical damage to item or packaging		X
e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		X
4.) Other as specified	X	

Rev'd 12/10/99 DMB

TOTAL P.03

DEC 07 '99 10:06 PAGE.03

DEC 10 '99 09:32 13124274975 TOTAL P.04 PAGE.04

~~475~~
471

#TR 400 GJ-620/00

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-1209 DATE RECEIVED 12/14/99

MATERIAL DESCRIPTION 3-6548 RTV SILICONE FOAM (D.C) PART B

BATCH/LOT # 0000410144 DATE SHIPPED 12/14/99

SHELF LIFE EXPIRATION DATE 11/13/01

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN-_____

TRANSCO PROJECT MANAGER-_____

CUSTOMER REPRESENTATIVE-_____

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

_____
Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

____ ____ ____ ____ ____ ____ ____

FINAL SIGNOFF

_____ The above material was used prior to the Expiration Date.

_____ The above material was not used prior to the Expiration Date.

NCR # _____

_____
FIELD Q.C. MANAGER/DATE

~~476~~
472
JR 400 GJ-6/20/00

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-12-09 DATE RECEIVED 12/14/99

MATERIAL DESCRIPTION D.C. 3-6548 RTV SILICONE FOAM · PART B

BATCH/LOT # 0000415673 DATE SHIPPED 12/14/99

SHELF LIFE EXPIRATION DATE 11/13/01

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN- _____

TRANSCO PROJECT MANAGER- _____

CUSTOMER REPRESENTATIVE- _____

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

_____
Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

____ ____ ____ ____ ____ ____ ____

FINAL SIGNOFF

_____ The above material was used prior to the Expiration Date.

_____ The above material was not used prior to the Expiration Date.

NCR # _____

_____
FIELD Q.C. MANAGER/DATE

~~4777~~
473
GJ. 6/20/00

TR 400

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-12-09 DATE RECEIVED 12/14/99

MATERIAL DESCRIPTION D.C. 3-6548 RTV SILICONE FOAM · PART A

BATCH/LOT # 0000406637 DATE SHIPPED 12/14/99

SHELF LIFE EXPIRATION DATE 11/06/01

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN-_____

TRANSCO PROJECT MANAGER-_____

CUSTOMER REPRESENTATIVE-_____

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

_____
Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

____ ____ ____ ____ ____ ____ ____

FINAL SIGNOFF

_____ The above material was used prior to the Expiration Date.

_____ The above material was not used prior to the Expiration Date.

NCR # _____

FIELD Q.C. MANAGER/DATE

TRANSCO — **Receiving Inspection Report** — No. 99-12-10

☐ Streator | ☐ ATC | ☐ OPL | ☐ — | ☐ — | ☐ —

Supplier: FLAME MASTER — Purchase Order: n/a

Item: FLAMEMASTIC 77 — Quantity: 3 pails — Date: 12/17/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
3 PAILS	FLAMEMASTIC® 77	yes	n/a	9909024	GOOD	n/a

Remarks: Exp. Date 12/02

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable

Sandra Bradford 12/17/99
Quality Representative / Date

Figure - 1

GJ-6/20/00

474

A-72

~~474~~

475

GJ-6/20/00

B/O 12-16-99
. . . . . PREPAY & ADD
FREIGHT: . . . . . SUN VALLEY, CA
F.O.B. . . . . UNITED PARCEL/ RED!!!
SHIP VIA: 12-16-99
SHIPPING DATE: . . . 30834 -1
SHIPPING NO.: . . . . OS
TAXABLE: . . . . . .
CAGE CODE #14439

FLAMEMASTER CORPORATION
CHEM SEAL DIVISION
11120 Sherman Way
Post Office Box 1458
Sun Valley, California 91353-1458
Telephone (818) 982-1650
Fax: (818) 765-5603

SOLD TO
TRANSCO PRODUCTS
55 E. JACKSON BLVD.
SUITE 2100
CHICAGO, IL 60604
ATTN: GREG JAROSZ

SHIP TO
OMEGA POINT LAB
16105 SHADY FALLS RD
ELMENDORF, TX 78112
ATTN. TRANSCO
PROTECT FROM FREEZING

TERMS: ~~NET 30 DAYS~~ XXXXXXXXXXVISA

INVOICE DATE _____ INVOICE NO. _____

ORDERED	BACK ORD.	SHIPPED	UNIT	DESCRIPTION	BATCH NO.	UNIT PRICE	AMOUNT
3	-0-	3	EA	5-GAL PAIL. FLAMEMASTIC 77	9909024		
				MASTIC			
				PKG DTE: 12/99 EXP DTE: 12/02			
				SHELF LIFE 3 YEARS			
				STORAGE TEMP. 40 DEG.F -90 DEG.F			
				THE PURCHASER OF THIS FIRE PROTECTIVE			
				COMPOSITION IS HEREBY LICENSED UNDER			
				UNITED STATES PATENT 3,642,531 DATED			
				FEBRUARY 15,1972 TO USE THE SAME AS A			
				COATING FOR ELECTRICAL CABLES			
				PROTECT FROM FREEZING			

SPECIAL INSTRUCTIONS: ☐ CERTIFICATIONS ☐ TEST REPORT ☒ MSDS

WE CERTIFY THAT THIS MATERIAL HAS BEEN MANUFACTURED IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND CONFORMS TO THE REQUIREMENTS OF LISTED SPECIFICATIONS. TEST DATA PERTAINING TO THIS MATERIAL IS ON FILE AND AVAILABLE FOR INSPECTION UPON REQUEST. CHLOROFLUROCARBONS (CFCs) AND HALONS ARE NOT USED. PRODUCT(S) FREE FROM MERCURY.

Rec'd 12/17/99 DMB.

QUALITY CONTROL MANAGER

DATE SHIPPED: 12/16/99 CARRIER: UPS RED NO. PACKAGES: 3-CARTONS GROSS WEIGHT: 210 LBS.

PRIOR APPROVAL MUST BE OBTAINED FOR THE RETURN OF ANY MERCHANDISE. RETURN FREIGHT MUST BE PREPAID.

SELLER HAS COMPLIED WITH THE APPLICABLE PROVISIONS OF THE FAIR LABOR STANDARDS ACT OF 1938 AS AMENDED.

Rec'd 12/17/99 DMB

CERTIFICATION/PACKING LIST

~~474~~
476
GJ-6/20/00

MATERIAL SHELF LIFE TRACKING LOG

RIR NUMBER 99-12-10 DATE RECEIVED 12/17/99

MATERIAL DESCRIPTION Flamemastic 77

BATCH/LOT # 9909024 DATE SHIPPED 12/16/99

SHELF LIFE EXPIRATION DATE 12/2002

LOG/MATERIAL REVIEW & STORAGE INSPECTION (Initial and Date - Monthly)

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

_____ _____ _____ _____ _____

cc/To: TRANSCO FIELD SUPERINTENDENT/GENERAL FOREMAN- _____

TRANSCO PROJECT MANAGER- _____

CUSTOMER REPRESENTATIVE- _____

ATTENTION: The above material is with-in two (2) months of reaching it's SHELF LIFE Expiration Date. Special efforts should be made to use this material on a priority basis before the above noted expiration date.

_____
Field Q.C. Manager/Date

FINAL WEEK REVIEW - & DAYS (INITIAL AND DATE-DAILY BASIS)

_____ _____ _____ _____ _____ _____ _____

FINAL SIGNOFF

_____ The above material was used prior to the Expiration Date.

_____ The above material was not used prior to the Expiration Date.

NCR # _____

_____
FIELD Q.C. MANAGER/DATE

TRANSCO **Receiving Inspection Report** No. 99-12-12

☐ Streator	☐ ATC	☐ OPL	☐ —	☐ —	☐ —

Supplier: V.C. Summer Nuclear Plant — Purchase Order: N/A

Item: Kaowool Refractory Ceramic Fiber — Quantity: SEE BELOW — Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
2 bpcs	Kaowool Blanket 1"x 48"	*	N/A	961568407	GOOD	N/A
4 bpcs	Kaowool Blanket 1"x 24"	*	N/A	990420200-748	GOOD	N/A
—	—	—	—		—	—

Remarks: Kaowool Blanket 1"x 48" stock # 84-0831-0001-00
Kaowool Blanket 1"x 24" stock # 84-0831-0002-00

1. CRS No. N/A
2. In-House Test: N/A
3. Independent Test: Date sent N/A Date recd. N/A
4. Equip. Cal Date: N/A

* Kaowool Blanket (Refractory fiber received from V.C. Summer Nuclear Plant stock sent to Omega Point Lab. for Transco fire test # TR 400. See attachment.
Density 8#

Receipt Inspection Considered Acceptable

Sandra J. Bradford 12/2/99
Quality Representative / Date

Figure - 1

476A
GJ-6/20/0

DATE 12/2/99
OMEGA POINT LAB
TR 400

KAOWOOL Refractory CERAMIC FIBER
1" thick 48" WIDE X 25' 100 sq ft per roll
1 ROLL WEIGHS 71.78 #
SCALE:
MODEL LCC
CAPACITY 1K
SN 343747
CAL. DATE 12/28/98 DUE 12/28/99

KAOWOOL Refractory CERAMIC FIBER
1" thick 24" WIDE X 25' 50 sq ft per roll
1 roll WEIGHS 36.156 #

SCALE SARATORIUS
DIGITAL / CAPACITY —
SN 50902455
CAL DATE 2/27/96 DUE —

Kaowool supplied by V.C. Summer Nuclear Plant from existing stock.
Kaowool 8# density. Used different manufacturing techniques.
24" width denser ~~was~~ than 48" width.
Scales provided by Omega Point Laboratory.

Sandy Bradford 12/2/99

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS (Shipped)	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2	48-2790-0273-00	4" galvanized conduit coupling	NN	2			
2	6	48-2790-0021-00	4" galvanized conduit bushing	NN	6			
3	4	48-2790-0215-00	4" conduit locknut	NN	4			
4	20'	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		
5	33'	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		
6	2	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			
7	6	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			
8	4	48-2790-0209-00	1.25" conduit locknut	NN	4			
9	1	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			
10	30'	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		
11	2	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			
12	4	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			
13	35'	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			
14	3	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			
15	4	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			
16	4	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			
17	200'	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Box	2 Box	RC2C1 & RC4D2	
18	200'	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Box	4 Box	RA3B1	
19	642'	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	

RIR 99-12-12

477A
GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-1211

☐ Streator	☐ ATC	☐ OPL	☐ —	☐ —	☐ —

Supplier: V. C. Summer Nuclear Station Purchase Order: N/a

Item: CABLE SCE+G BM Quantity: SEE BELOW Date: 12/6/99

Qty. Received	Description	Stock #	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
20 ft	EK-AIC	13-1112-0129-13	*	N/a	EK AIC	GOOD	N/a
40 ft	EK-AIE	13-1112-0130-13	*	N/a	EK AIE	GOOD	N/a
200 ft	EK-A3H	13-1112-0041-13	*	N/a	EK A3H	GOOD	N/a
216 ft	EK-A3J	13-1112-0013-13	*	N/a	EK-A3J	GOOD	N/a
430 ft	EK-BIH	13-1112-0078-12	*	N/a	EK-BIH	GOOD	N/a
400 ft	EK-BIJ	13-1112-0079-00	*	N/a	EK-BIJ	GOOD	N/a
32 ft	EK-BIK	13-1112-0080-00	*	N/a	EK-BIK	GOOD	N/a
20 ft	EK-BIL	13-1112-0047-00	*	N/a	EK-BIL	GOOD	N/a
(*)	EK-CIA	13-1112-0014-13	*	N/a	EK CIA	GOOD	N/a
(*)	EK C6-B	—	*	N/a	EK C6B	GOOD	N/a

Remarks: All cable lengths are approximate. Cable used for items associated with V.C. Summer's fire test. (Transco test FR-400) Cable received from V.C. Summer Nuclear Station stock. See attachment for item numbers where cable was used.

1. CRS No. N/a
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

* V.C. Summer received specs or COC at time of purchase
(*) EK C6B in lieu of EK C6C. Undetermined length of cable.

Receipt Inspection Considered Acceptable

Andrew M. Bradford 12/6/99
Quality Representative / Date

Figure - 1

477B
CJ-6/20/

477-C
GJ-6/20/00

RIR 99-12-11

Cable received from V.C. Summer Nuclear Plant for Fire test FR 400

Item #1	EKAK
Item #2	EKBK
Item #3	EKB1B-8
	EKB1J
	EKA3H
Item #4	EKB1K
Item #5	EKB1b-8
	EKA3J
	EKC1A
	EKB1J
	EKA3H
	EKB1H
	EKA1E
	EKC6b
Item #6	EKA3J
Item #7	EKB1K
Item #10	EKB1b-8

Item # 8, 9, 11 and 12 No cable installed.

Sandra Bradford
12/6/99

20	2	70-8155-0007-13	18 gauge galvanized plate, 4'x8' sheet	NN	80 Sq ft		BK24C	
21	72	59-9229-0319-00	1/4" dia. fender washer	NN	40			
22	20	13-1112-0129-13	Cable, SCE&G BM EK- A1C	NN				
23	40	13-1112-0130-13	Cable, SCE&G BM EK- A1E	NN	20FT			
24	200	13-1112-0041-13	Cable, SCE&G BM EK- A3H	NN	40FT			
25	216	13-1112-0013-13	Cable, SCE&G BM EK- A3J	NN	200FT			
26	400	13-1112-0078-12	Cable, SCE&G BM EK- B1H	NN	~~245FT~~ 216			
27	400	13-1112-0079-00	Cable, SCE&G BM EK- B1J	NN	430 FT			
28	32	13-1112-0080-00	Cable, SCE&G BM EK- B1K	NN	~~376FT~~ 400FT			
29	20	13-1112-0047-00	Cable, SCE&G BM EK- B1L	NN	32FT			
30	560	13-1112-0014-13	Cable, SCE&G BM EK- C1A	NN	20FT			
31	560	13-1112-0037-13	Cable, SCE&G BM EK- C6C	NN	600FT			
							Problem: none available, C6A(168') and C6B (100'), HOLD	
Transco fire test # TR-400 VC Summer Nuclear Plant								

Page ___ of ___

ES APPROVAL [signature] 11/21/99
Signature /Date

RIR 99-12-11

477-D
GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-13

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V. C. Summer Nuclear Plant

Purchase Order: N/a

Item: 18 ga galv 4'x8' sheet

Quantity: SEE BELOW

Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
80 sq ft	18 ga galv. 4'X8' sheet	*	N/a	A201	GOOD	N/a
—	Stock # 70-8155-0007-13	—	—	—	—	—

Remarks: Received 18 ga galv. sheet metal for use on Transco fire test TR 470 for V.C Summer. Sheet metal cut into 1½" strips to secure Kaowool to ceiling or wall of furnace. (See Attachment)

1. CRS No.
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

Receipt Inspection Considered Acceptable

Sandra Bradford 12/2/99

Quality Representative / Date

Figure - 1

477-E
GJ-6/20/0

20	2	70-8155-0007-13	18 gauge galvanized plate, 4'x8' sheet	NN	80 sq ft		BK24C	
21	72	59-9229-0319-00	1/4" dia. fender washer	NN	40			
22	20	13-1112-0129-13	Cable, SCE&G BM EK- A1C	NN				
23	40	13-1112-0130-13	Cable, SCE&G BM EK- A1E	NN	20FT			
24	200	13-1112-0041-13	Cable, SCE&G BM EK- A3H	NN	40FT			
25	216	13-1112-0013-13	Cable, SCE&G BM EK- A3J	NN	200FT			
26	400	13-1112-0078-12	Cable, SCE&G BM EK- B1H	NN	~~243FT~~ 216			
27	400	13-1112-0079-00	Cable, SCE&G BM EK- B1J	NN	430FT			
28	32	13-1112-0080-00	Cable, SCE&G BM EK- B1K	NN	~~376FT~~ 400FT			
29	20	13-1112-0047-00	Cable, SCE&G BM EK- B1L	NN	32FT			
30	560	13-1112-0014-13	Cable, SCE&G BM EK- C1A	NN	20FT			
31	560	13-1112-0037-13	Cable, SCE&G BM EK- C6C	NN	600FT			
							Problem: none available. C6A(168') and C6B (100'), HOLD	

Page ___ of ___

ES APPROVAL [signature] 11/21/99
Signature /Date

RIR 99-12-13

477-F
GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-14

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V. C. Summer Nuclear Plant. Purchase Order: n/a

Item: 1/4" diameter fender washer Quantity: SEE BELOW Date:

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
40 pcs	1/4" Ø fender washer 59-9229-039-00	n/a	n/a	n/a	GOOD	n/a

Remarks: Received 1/4" Ø fender washer for V.C Summer fire test from V.C Summer Nuclear Plant

1. CRS No.

2. In-House Test: n/a

3. Independent Test: Date sent n/a Date recd. n/a

4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable Andrew Bushore 12/2/99

Quality Representative / Date

Figure - 1

477-G

GJ-4/pole

20	2	70-8155-0007-13	18 gauge galvanized plate, 4'x8' sheet	NN	80 Sheets		BK24C	
21	72	59-9229-0319-00	1/4" dia. fender washer	NN	40			
22	20	13-1112-0129-13	Cable, SCE&G BM EK- A1C	NN				
23	40	13-1112-0130-13	Cable, SCE&G BM EK- A1E	NN	20FT			
24	200	13-1112-0041-13	Cable, SCE&G BM EK- A3H	NN	40FT			
25	216	13-1112-0013-13	Cable, SCE&G BM EK- A3J	NN	200FT			
26	400	13-1112-0078-12	Cable, SCE&G BM EK- B1H	NN	~~215FT~~ 216			
27	400	13-1112-0079-00	Cable, SCE&G BM EK- B1J	NN	430FT			
28	32	13-1112-0080-00	Cable, SCE&G BM EK- B1K	NN	~~376FT~~ 400FT			
29	20	13-1112-0047-00	Cable, SCE&G BM EK- B1L	NN	32FT			
30	560	13-1112-0014-13	Cable, SCE&G BM EK- C1A	NN	20FT			
31	560	13-1112-0037-13	Cable, SCE&G BM EK- C6C	NN	600FT			
							Problem: none available. C6A(168') and C6B (100'), HOLD	

Page ___ of ___

ES APPROVAL [signature] 11/21/99
Signature /Date

RIR 99-12-14

477-H
GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-15

☐ Streator ☐ ATC ☒ OPL ☐ – ☐ – ☐ –

Supplier: V. C. Summer Nuclear Plant Purchase Order: N/a

Item: Various sizes Coupling Bushing & Locknuts Quantity: SEE BELOW Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
2 pcs	4" galv. conduit coupling 48-2790-0273-00	*	N/a	N/a	GOOD	N/a
2 pcs	1 1/4" galv conduit coupling 48-2790-0267-00	*	N/a	N/a	GOOD	N/a
2 pcs	1" galv Conduit Coupling 48-2790-0014-00	*	N/a	N/a	GOOD	N/a
6 pcs	4" galv conduit bushing 48-2790-0021-00	*	N/a	N/a	GOOD	N/a
6 pcs	1 1/4" galv. Conduit bushing 48-2790-0015-00	*	N/a	N/a	GOOD	N/a
4 pcs	1" galv conduit bushing 48-2790-0014-00	*	N/a	N/a	GOOD	N/a
4 pcs	4" Conduit locknut 48-2790-0215-00	*	N/a	N/a	GOOD	N/a
4 pcs	1 1/4" Conduit locknut 48-2790-0209-00	*	N/a	N/a	GOOD	N/a

Remarks: Received galv. hardware for various size conduit to be used for V.C Summer fire test. (Transco TR 400) See V.C. Summer original documentation. Rec'd from V.C. Summer Nuclear Plant.

1. CRS No. N/a
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

Receipt Inspection Considered Acceptable

Jordan Bradford 12/2/99
Quality Representative / Date

Figure - 1

477-I
AJ-
6/20/00

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS Shipped	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2	48-2790-0273-00	4" galvanized conduit coupling	NN	2			
2	6	48-2790-0021-00	4" galvanized conduit bushing	NN	6			
3	4	48-2790-0215-00	4" conduit locknut	NN	4			
4	20'	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		
5	33'	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		
6	2	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			
7	6	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			
8	4	48-2790-0209-00	1.25" conduit locknut	NN	4			
9	1	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			
10	30'	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		
11	2	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			
12	4	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			
13	35'	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			
14	3	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			
15	4	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			
16	4	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			
17	200'	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Box	2 Box	RC2C1 & RC4D2	
18	200'	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Box	4 Box	RA3B1	
19	642'	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	

RIR 99-12-15

477-J
GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-16

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V.C Summer Nuclear PLANT

Purchase Order: n/a

Item: VARIOUS SIZE GALV. CONDUIT

Quantity: SEE BELOW

Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
20ft	4" galv Conduit 48-1658-0035-00	*	n/a	n/a	GOOD	n/a
40ft	1 1/4" galv Conduit 48-1658-0029-00	*	n/a	n/a	GOOD	n/a
30ft	1" galv. Conduit 48-1658-0028-00	*	n/a	n/a	GOOD	n/a

Remarks: Received conduit for fire test Transco TR#400 from V C Summer Nuclear Plant.

1. CRS No. n/a Footage is approx.

2. In-House Test: n/a * See V.C Summer's documentation for spec on original purchase.

3. Independent Test: Date sent n/a Date recd. n/a

4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable

Andrew M Brosfore 12/2/99

Quality Representative / Date

Figure - 1

477-K
GJ-
6/20/00

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS Shipped	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2	48-2790-0273-00	4" galvanized conduit coupling	NN	2			
2	6	48-2790-0021-00	4" galvanized conduit bushing	NN	6			
3	4	48-2790-0215-00	4" conduit locknut	NN	4			
4	20'	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		
5	33'	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		
6	2	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			
7	6	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			
8	4	48-2790-0209-00	1.25" conduit locknut	NN	4			
9	1	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			
10	30'	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		
11	2	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			
12	4	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			
13	35'	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			
14	3	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			
15	4	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			
16	4	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			
17	200'	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Bxs	2 Bxs	RC2C1 & RC4D2	
18	200'	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Bxs	4 Bxs	RA3B1	
19	642'	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	

RIR 99-12-16

477-L
GJ-6/24/

TRANSCO **Receiving Inspection Report** No. 99-12-17

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V. C. Summer Nuclear Plant. Purchase Order: n/a

Item: LB Conduit & Conduit Strips VARIOUS SIZES. Quantity: SEE BELOW Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
1 pc.	1 1/4" galv. LB conduit 48-2790-0313-00	*	n/a	n/a	GOOD	n/a
2 pcs	4" unistrut conduit strap 54-8408-0009-13	*	n/a	n/a	GOOD	n/a
4 pcs	1 1/4" unistrut conduit strap 54-8408-0012-13	*	n/a	n/a	GOOD	n/a
4 pcs	1" unistrut conduit strap 54-8408-0013-13	*	n/a	n/a	GOOD	n/a

Remarks: Received hardware from VC Summer Nuclear Plant for fire test Transco TR # 400

1. CRS No. n/a * See V.C. Summer's documentation for specs on original purchase.
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable Jordan Bradford 12/2/99
Quality Representative / Date

Figure - 1

477-M
GJ-
6/20/00

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS Shipped	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2	48-2790-0273-00	4" galvanized conduit coupling	NN	2			
2	6	48-2790-0021-00	4" galvanized conduit bushing	NN	6			
3	4	48-2790-0215-00	4" conduit locknut	NN	4			
4	20'	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		
5	33'	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		
6	2	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			
7	6	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			
8	4	48-2790-0209-00	1.25" conduit locknut	NN	4			
9	1	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			
10	30'	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		
11	2	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			
12	4	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			
13	35'	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			
14	3	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			
15	4	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			
16	4	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			
17	200'	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Box	2 Box	RC2C1 & RC4D2	
18	200'	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Box	4 Box	RA3B1	
19	642'	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	

RIR 99-12-17

477-N
GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-18

☐ Streator ☐ ATC ☒ DPL ☐ — ☐ — ☐ —

Supplier: V. C. Summer Nuclear Plant. Purchase Order: N/a

Item: 15/8" x 15/8" Unistrut (P1000) Quantity: SEE BELOW Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
35 ft	15/8 x 15/8" unistrut 54-1251-0002-13 (P1000)	*	N/a	N/a	GOOD	N/a

Remarks: Received 15/8" x 15/8" Unistrut from V. C Summer Nuclear Power Plant for use in fire test. (Transco #TR 400)

1. CRS No. N/a
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

*(See V. C. Summer documentation for specs on original purchase.)

Receipt Inspection Considered Acceptable

[signature] 12/2/99
Quality Representative / Date

Figure - 1

477-0
GJ-6/20/

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS Shipped	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2	48-2790-0273-00	4" galvanized conduit coupling	NN	2			
2	6	48-2790-0021-00	4" galvanized conduit bushing	NN	6			
3	4	48-2790-0215-00	4" conduit locknut	NN	4			
4	20'	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		
5	33'	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		
6	2	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			
7	6	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			
8	4	48-2790-0209-00	1.25" conduit locknut	NN	4			
9	1	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			
10	30'	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		
11	2	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			
12	4	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			
13	35'	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			
14	3	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			
15	4	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			
16	4	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			
17	200'	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Box	2 Box	RC2C1 & RC4D2	
18	200'	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Box	4 Box	RA3B1	
19	642'	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	

RIR 99-12-18

477-I
GJ-6/20/0

TRANSCO **Receiving Inspection Report** No. 99-12-19

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V.C. Summer Nuclear PLANT Purchase Order: N/a

Item: 1/2" stainless steel BAND. Quantity: SEE BELOW Date: 12/2/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
2 rls	1/2" 20ga SST steel banding	*	N/a	BLFPX042NB	GOOD	N/a

Remarks: Received 2 rls (approx 600') stainless steel bands 1/2" from VC Summer Nuclear Plant for fire test (TRANSCO TR 400)

1. CRS No. N/a

2. In-House Test: N/a

3. Independent Test: Date sent N/a Date recd. N/a

4. Equip. Cal Date: N/a

* See V.C. Summer documentation for specs on original purchase.

Receipt Inspection Considered Acceptable Jackie M Bradford 12/2/99
Quality Representative / Date

Figure - 1

477-Q
GJ-6tal

ENGINEERING CHANGE MATERIAL REQUEST

ECR # NA Responsible Engineer: Mike Kammer Ext. 4000 Date: 11-19-99

Is this a revision to previously submitted request? Y N M&P Contact Dave Bishop

ITEM#	QUANTITY	PART/STOCK NUMBER	PART DESCRIPTION/ STOCK NO.	SR/NN QR CLASS	CODE CLASS Shipped	DATE RESERVED	WAREHOUSE LOCATION OR PO/REQUISITION	DELIVERY DATE
1	2	48-2790-0273-00	4" galvanized conduit coupling	NN	2			
2	6	48-2790-0021-00	4" galvanized conduit bushing	NN	6			
3	4	48-2790-0215-00	4" conduit locknut	NN	4			
4	20'	48-1658-0035-00	4" galvanized conduit	NN	20FT	X		
5	33'	48-1658-0029-00	1.25" galvanized conduit	NN	40FT	X		
6	2	48-2790-0267-00	1.25" galvanized conduit coupling	NN	2			
7	6	48-2790-0015-00	1.25" galvanized conduit bushing	NN	6			
8	4	48-2790-0209-00	1.25" conduit locknut	NN	4			
9	1	48-2790-0313-00	1.25" galvanized "LB" condulet	NN	4			
10	30'	48-1658-0028-00	1.0" galvanized conduit	NN	30FT	X		
11	2	48-2790-0266-00	1.0" galvanized conduit coupling	NN	2			
12	4	48-2790-0014-00	1.0" galvanized conduit bushing	NN	4			
13	35'	54-1251-0002-13	1 5/8" x 1 5/8" unistrut (P1000)	NN	35FT			
14	3	54-8408-0009-13	4.0" unistrut conduit strap	NN	2			
15	4	54-8408-0012-13	1.25" unistrut conduit strap	NN	4			
16	4	54-8408-0013-13	1.0" unistrut conduit strap	NN	4			
17	200'	84-0831-0001-00	Kaowool Blanket, 1" thick x 48" wide	NN	2 Box	2 Box	RC2C1 & RC4D2	
18	200'	84-0831-0002-00	Kaowool Blanket, 1" thick x 24" wide	NN	4 Box	4 Box	RA3B1	
19	642'	64-0624-0003-23	½" 20 gauge SST steel banding	NN	2 Rolls		RA1B2	

RIR 99-12-19

477-R
GJ-6/20/0

TRANSCO **Receiving Inspection Report** No. 99-12-20

☐ Streator ☐ ATC ☒ SPL ☐ — ☐ — ☐ —

Supplier: VC Summer Nuclear Plant Purchase Order: N/A

Item: Zetex Quantity: Date: 12/17/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
5 ft	Zetex 800 ALUMINIZED	N/A	N/A	N/A	GOOD	N/A

Remarks: Received Approx 5' 800 ALUMINIZED Zetex from V.C Summer Nuclear Plant For FireTest. (TRANSCO #TR400) ITEM #3 to be partially covered with FABRIC MATERIAL. (See Attachments)

1. CRS No. N/A
2. In-House Test: N/A
3. Independent Test: Date sent N/A Date recd. N/A
4. Equip. Cal Date: N/A

Receipt Inspection Considered Acceptable

Quality Representative / Date 12/17/99

Figure - 1

477-S

GJ-6/20/0

477-T
GJ-6/20/00

Notes

*TR 400
12/17/99
~~pg. 4 of 11~~
Pg. 5/5/00

Verified width on 18 ga. 1½" metal strips.
Cut with plasma cutter 1½ ± ⅛" Found Acceptable.
20 strips.

Pg. 1B of 15

Sandra M Bradford 12/17/99

Item #3 Installed cable tray cover
20 ga. stainless steel Cut out hole for air drop installation

Item #3 will have a portion of cable tray wrapped with Zetex Cloth
The purpose is for physical protection. This Zetex is installed over
the 3-1" layers of Kaowool. The banding requirements are 3" ~~max~~ min
from termination of cloth and 12" max between bands. SMB 12/17/99

Zetex supplied by VCSNS delivered to Omega on 12/17/99

Installed cable tray covers. 20 ga stainless steel to 36". Installed ½ X 0.20
steel bands cut to length. Secured with wrap seals.

Received 5 boxes of 1" X 24" 8# Thermal Ceramic Kaowool.

Cleda Patton
OPL QA/QC
12-28-99

SOUTH CAROLINA ELECTRIC AND GAS COMPANY
V. C. Summer Nuclear Station
STORES REQUISITION

№ 4754

WORK DOCUMENT 764372 SAFETY RELATED
EQUIPMENT NO QUALITY RELATED NNS
WO / MBJO 28 ACCT# 6611 DIST# 0388 COST# 9998 CO.# 01 NOE# 472 DEPT# 7557

PART NUMBER	DESCRIPTION	P.O.	REQUIRED	ISSUED	LOCATION	IR TAG NO.
6420620001.00	Wafers, Fiberglass 2ctr	PO 234246	50	50 rd	Warehouse	7820235
	28					

A.L. Sindler 11-12-96 Date Issued
D. Bailey 11-12-96 Date Received
Approved Date

ZETEX 800
STORES REQ

OMEGA POINT LABS.
(210) 635-8101
ATTN: SANDY BRADFORD

477-4
BJ-6/20/00

12-21-99;10:48AM; ;803 345 4258 # 1/ 1

TRANSCO

Receiving Inspection Report

No. 99-12-21

☐ Streator ☐ ATC ☐ OPL ☐ — ☐ — ☐ —

Supplier: HILTI

Purchase Order: 21271

Item: HILTI KWIK BOLT II

Quantity: 2 Boxes

Date: 12/14/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
2 Boxes	HILTI KWIK BOLT II 1/4" x 3 3/4"	n/a	n/a	n/a	GOOD	n/a

Remarks: Purchased as commercial grade. DMB 12/14/99

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable

Jordan Bradford 12/14/99

Quality Representative / Date

Figure - 1

477-V
QJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-22

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V. C. Summer Nuclear PLANT

Purchase Order: n/a

Item: Insulation Pins + Insulation Clips

Quantity: See Below

Date: 12/14/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
60 pcs	Insulation Pins 18 ga	n/a	n/a	n/a	GOOD	n/a
58 pcs	Insulation Clips 18 ga	n/a	n/a	n/a	GOOD	n/a

Remarks: Received Insulation Pins and Clips from V.C Summer for free test. (Transco # TR 400) SMB. 12/14/99

1. CRS No. n/a
2. In-House Test: n/a
3. Independent Test: Date sent n/a Date recd. n/a
4. Equip. Cal Date: n/a

Receipt Inspection Considered Acceptable Gordon Bradford 12/14/99

Quality Representative / Date

Figure - 1

477-W
GJ.
6/20/00

TRANSCO

Receiving Inspection Report

No. 99-12-23

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: V. C. Summers Nuclear Plant

Purchase Order: N/a

Item: Wing Seals

Quantity: 292 pcs

Date: 12/4/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
292 pcs	Wing Seals 1/2" x 20ga.	*	N/a	N/a	GOOD	N/a

Remarks: Received from V.C Summer's Nuclear Plant. Wing seals to be used with N/a 1/2" x .020 ga stainless steel bands.

1. CRS No. N/a
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

Receipt Inspection Considered Acceptable

Sandra J. Bousfield 12/4/99

Quality Representative / Date

Figure - 1

477-X

GJ-
6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-24

☐ Streator ☐ ATC ☒ OPL ☐ – ☐ – ☐ –

Supplier: OMEGA POINT LABORATORIES Purchase Order: N/a

Item: INSULATION CLIPS & WING SEALS Quantity: SEE BELOW Date: 12/14/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
*100 pcs	INSULATION CLIPS 18 ga.	N/a	N/a	N/a	GOOD	N/a
*100 pcs	WING SEALS 1/2 X .020	N/a	N/a	N/a	GOOD	N/a

Remarks: Received additional insulation clips and wing seals from Omega Point Lab.
1. CRS No. N/a * The amount of pcs is approx 100. Sandra M Bradford 12/14/99
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

Receipt Inspection Considered Acceptable Sandra M Bradford 12/14/99
Quality Representative / Date

Figure - 1

477-Y GJ-6/20/00

TRANSCO **Receiving Inspection Report** No. 99-12-25

☐ Streator ☐ ATC ☒ OPL ☐ — ☐ — ☐ —

Supplier: Thermal Ceramics

Purchase Order: 21369

Item: Thermal Ceramic Refractory Ceramic Blanket

Quantity: See Below

Date: 12/17/99

Qty. Received	Description	Certification of Conformance	Mill Test Report	Heat Lot Identification	Physical Inspection	Indepen. Test Required
11 Boxes	8# Kaowool 24" x 1"	N/a	N/a	N/a	N/a	N/a

Remarks: 550 sq ft Commercial grade 8# density.

1. CRS No. N/a
2. In-House Test: N/a
3. Independent Test: Date sent N/a Date recd. N/a
4. Equip. Cal Date: N/a

Receipt Inspection Considered Acceptable

Sandra Bradford 12/17/99

Quality Representative / Date

Figure - 1

477-2

GJ-
6/20/00

Transco Products Inc.
55 E. Jackson Blvd. Chicago, IL 60604-4166
(312) 427-2618 Telex No. 25-6134

Render all invoices in TRIPLICATE, with all shipping papers attached, and mail to this address.

PURCHASE ORDER NO. 21369
DATE 1/07/00
☐ CONFIRMING ORDER ☒ NOT A CONFIRMING ORDER

PURCHASE ORDER

REQ. NO.	DELIVERY REQUIRED AT DESTINATION	SHIP VIA	F.O.B	TERMS
J-8402-02	0/01/07	RUSH PP&A	HOUSTON, TX	NET 30

477-AA

TO THERMAL CERAMICS
1520 WALL STREET
NAPERVILLE IL 60563

VENDOR NO. 83815

& BILL Transco Products Inc. GJ-6/20/00
SHIP TO: SEE BELOW

Please enter the following order, which order expressly limits acceptance to the terms and conditions stated on this page and on the reverse side hereof. Such terms and conditions may not be amended, supplemented, modified, superseded or otherwise altered without the prior written consent of an authorized representative of Purchaser and delivery thereof by Purchaser to Seller.

ITEM NO.	QUANTITY ORDERED	DESCRIPTION	PRICE/UNIT	TOTAL
		********** *** THIS IS CONFIRMATION OF A PRIOR PURCHASE ORDER *** **********		
	550	S.F. KAOWOOL 8# "S" CERAMIC BLANKET	2.210	1215.50
		DELIVERY REQ'D AT DESTINATION..ASAP		
		SEE ATTACHMENT "A"		
		SHIP DIRECT TO: OMEGA POINT LABORATORIES 16015 SHADY FALLS ROAD ELMENDORF, TX 78112 ATTN: TRANSCO		
		SPECIAL NOTE: SEE PURCHASE ORDER ATTACHMENT "A", FOR REQUIRED QUALITY DOCUMENTATION REQUIREMENTS... QA APPROVAL DATE 01/07/00	TOTAL	1215.50

☐ SALE ☐ CONSUMPTION | ACCOUNT NO. GJ-8102 | REQUIRED FOR: | PURCHASING AGENT

NOTE CAREFULLY: Show purchase order no. on all invoices and shipments. This order IS ONLY for the material named, and no other charges will be accepted. We will not allow or be responsible for expense of tools for turning our work unless previously agreed upon in writing. Forward shipping receipts in triplicate the day this shipment is made.

THE ATTACHED ACKNOWLEDGEMENT COPY OF THIS PURCHASE ORDER MUST BE SIGNED AND RETURNED.

O. NO.	WE WILL SHIP	VENDOR NAME	AUTHORIZED SIGNATURE	DATE
1369		THERMAL CERAMICS		

IF THIS PURCHASE ORDER PERTAINS TO THE PROCUREMENT OF SERVICES THEN THE PROVISIONS OF EXHIBIT A ATTACHED HERETO SHALL APPLY.

THIS PURCHASE ORDER DOES ☐ DOES NOT ☐ PERTAIN TO THE PROCUREMENT OF SERVICES.

PURCHASE ORDER QUALITY REQUIREMENTS

Attachment "A"

477-AB
GJ- 6/20/00

*Please forward the Quality Assurance Documentation indicated on this form to the recipient of the items required and to the QA Manager at Transco Products Inc. in Chicago for all items applicable to this order.

DATE: ~~12/17/99~~ 01/07/00

P.O. No.: 21369

Q.A. REVIEW: 01/07/00

VENDOR: Thermal Ceramics

The items included on the accompanying purchase order shall be furnished by the VENDOR in accordance with the requirements included in the Purchase Order, this document, and any attachments thereto. In addition, the specific applicability of certain requirements is indicated by reference to purchase order line items in blocks adjacent to the requirement. Upon acceptance of this order the VENDOR agrees to supply all items in accordance with the regulations, codes, standards and specifications referenced.

I. "QUALITY/TECHNICAL REQUIREMENTS"

Description:	N/A	REQUIRED
1.) Vendor shall supply Certificate of Conformance signed by an authorized representative attesting that the items supplied are as identified on the Purchase Order; Specifically identify the Specification, National Standard, or Catalog Number referenced. ASTM/MIL SPEC as follows.	X	
2.) Certified Material Mill Test Report per Specifications Listed. (See Item 1)	X	
3.) Identify Lot No.'s and Quantities	X	
4.) 10CFR 50 Appx.-B applicable	X	
5.) 10CFR 21 Safety Related applicable	X	
6.) Specific Performance Test Reports		
7.) Other as specified	X	

NOTES: i. TRANSCO PRODUCTS INC. RESERVES THE RIGHT OF ACCESS TO SUPPLIERS FACILITIES FOR INSPECTION AND AUDIT.

ii. IN CASE OF NONCOMPLIANCE, TRANSCO SHALL REVIEW AND APPROVE THE PROPOSED NONCOMPLIANCE DISPOSITION.

II. PACKAGING, SHIPPING AND IDENTIFICATION

Description	N/A	REQUIRED
1.) Each container shall be clearly labeled to identify it's contents, MFG. Part No. and TPI P.O. No.		X
2.) The vendor shall supply any special instructions for handling and storage, including shelf life of items.		X
3.) Packaging and Shipping shall meet ANSI N45 2.2 as follows:		
a.) Items shipped free from dirt, oil and residue		X
b.) Items packaged with water resistant vinyl barriers	X	
c.) Items must be packaged in container/crates		X
d.) Ship in a manner to prevent physical damage to item or packaging		X
e.) Transco Products Inc. reserves the right to refuse delivery of items not in compliance with these packaging requirements.		X
Other as specified		

NA

PAYMENT DATE: 01-27-00

MAIL REMITTANCE TO:
P.O. BOX 920047 ATLANTA, GA 30392

Thermal Ceramics
P.O. Box 923
Augusta, Georgia 30903

TERMS: NET 30 DAYS FROM DATE OF SHIPMENT. A FINANCE CHARGE EQUAL TO 1.50% PER MONTH (18.00% PER ANNUM) WILL BE ADDED TO ALL DELINQUENT ACCOUNTS.

ORDER NO.	RELEASE NUMBER	ORDER DATE	CUSTOMER ORDER NUMBER	CUSTOMER ORDER DATE	ORDER TYPE	INVOICED BY	INVOICE NUMBER
[illegible]-9-2976-0	000	12-17-99	21369	12-17-99	S	VO	99-12-5145

CUSTOMER CODE	INVOICE DATE
20315400	12-28-99

SOLD TO:
TRANSCO PRODUCTS INC
55 E JACKSON
CHICAGO IL 60604

TAX EXEMPT. # W/A

CUSTOMER CODE	BILL OF LADING NUMBER	PAGE NUMBER
43301800	340738	1

SHIP TO:
OMEGA POINT LAB
16015 SHADY FALLS ROAD
ELMENDORF TX 78112
ATTN: TRANSCO

477-AC
GJ-6/20/00

ADDRESS CORRESPONDENCE TO:
1520 WALL STREET, NAPERVILLE, IL 60563, (630)527-0808

TAX CODE	SLM CODE	SLM CODE	SPLIT %	SLM CODE	SPLIT %	F.O.B. SHIPPING POINT		COMPLETE	PARTIAL	FREIGHT	DATE SHIPPED
1	19	21	25			033	HOUSTON, TX	C		PREPAID & CHARGED	12-17-99

CARRIER	WEIGHT	RATE	CREDIT REASON	IWB	A.B.
DCH	188				

ITEM NUMBER	C/P	QUANTITY SHIPPED	U/M	PRODUCT CODE / DESCRIPTION	UNIT PRICE	U/M	DISCOUNT	AMOUNT
001	C	250	SF	82188060040000 KAWL BLKT S 300 X 24 X 1 B#	2.210	SF		552.50
					SUB TOTAL			552.50
					FREIGHT TO FOLLOW			

Vendor No.
Invoice No.
Invoice Date
Due Date
Acct. No.
Acct. No.
Acct. No.
P.O. No. 21369
Job No. GF 8402 Co. No.
Price OK Rec'd OK

GROSS
1031-01
NET

RECEIVED
JAN 03 1999
By

APPROVED
Gary
NAME
01/06/00
DATE

INVOICE

CLAIMS
Products must not be returned except by written permission of seller. Seller shall not be liable for any claims, losses, labor, expenses or damages, direct or consequential, resulting directly or indirectly from the use of, or inability to use, the products sold hereunder, including, without limitations, loss of profits because of increased operating costs, loss of production or shutdown of operation or otherwise and liabilities, claims and expenses in respect of third parties. There are no express or implied warranties, including without limitation any implied warranty of merchantability or fitness, which extend beyond the description on the face hereof. In lieu of any warranty whether expressed or implied by operation of law or otherwise, products proving defective in material and/or workmanship in the hands of buyer will be replaced, or, at seller's option, credit will be allowed for the original price thereof, provided written claim in respect of such products is made by buyer with reasonable promptness after delivery thereof, use of such products is promptly discontinued and such products are returned to seller with reasonable promptness after delivery.
The seller represents that goods covered by this invoice were produced in accordance with the requirements of the Fair Labor Standards Act of 1938 as amended.

PAY THIS AMOUNT U.S.D. 552.50

PAYMENT DATE: 01-27-00

ORIGINAL

PAYMENT DATE: 01-27-00

MAIL REMITTANCE TO:
P.O. BOX 920047 ATLANTA, GA 30392

Thermal Ceramics

P.O. Box 923
Augusta, Georgia 30903

TERMS: NET 30 DAYS FROM DATE OF SHIPMENT. A FINANCE CHARGE EQUAL TO 1.50% PER MONTH (18.00% PER ANNUM) WILL BE ADDED TO ALL DELINQUENT ACCOUNTS.

ORDER NO.	RELEASE NUMBER	ORDER DATE	CUSTOMER ORDER NUMBER	CUSTOMER ORDER DATE	ORDER TYPE	INVOICED BY	INVOICE NUMBER
9-2976-1	000	12-17-99	21369	12-17-99	S	VO	99-12-5146

CUSTOMER CODE	INVOICE DATE
20315400	12-28-99

SOLD TO:
TRANSCO PRODUCTS INC
55 E JACKSON
CHICAGO IL 60604

TAX EXEMPT. # W/A

CUSTOMER CODE	BILL OF LADING NUMBER	PAGE NUMBER
43301800	340864	1

SHIP TO:
OMEGA POINT LAB
16015 SHADY FALLS ROAD
ELMENDORF TX 78112
ATTN: TRANSCO

477-AD
GJ-6/20/00

ADDRESS CORRESPONDENCE TO:
1520 WALL STREET, NAPERVILLE, IL 60563, (630)527-0808

TAX CODE	SLM CODE	SLM CODE	SPLIT %	SLM CODE	SPLIT %	F.O.B. SHIPPING POINT		COMPLETE	PARTIAL	FREIGHT	DATE SHIPPED
1	19	21	25			033	HOUSTON, TX	C		PREPAID & CHARGED	12-17-99

CARRIER	WEIGHT	RATE	CREDIT REASON	IWB	A.B.
DCH	225				

ITEM NUMBER	C/P	QUANTITY SHIPPED	U/M	PRODUCT CODE / DESCRIPTION	UNIT PRICE	U/M	DISCOUNT	AMOUNT
001	C	300	SF	82188060040000 KAWL BLKT S 300 X 24 X 1 8#	2.210	SF		663.00
					SUB TOTAL			663.00
					FREIGHT TO FOLLOW			

Vendor No. _____ GROSS _____
Invoice No. _____ 1031-01 _____
Invoice Date _____ NET _____
Due Date _____
Acct. No. _____
Acct. No. _____
Acct. No. _____
P.O. No. 21369 APPROVED
Job No. GL-8402 Co. No. _____ NAME
Price OK _____ Rec'd OK _____ 6/26/00 DATE

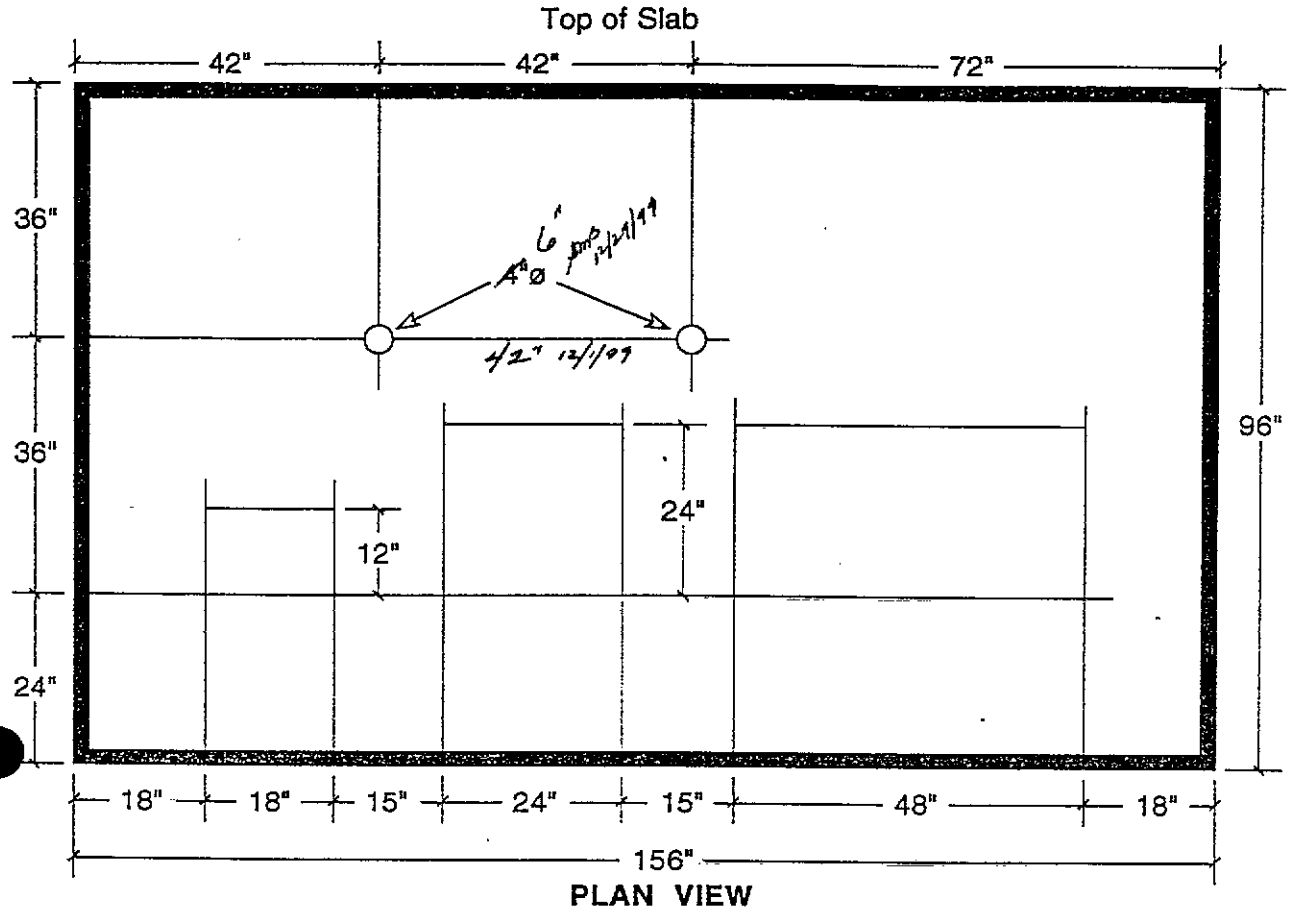
RECEIVED
JAN 03 1999
By

INVOICE

CLAIMS
Products must not be returned except by written permission of seller. Seller shall not be liable for any claims, losses, labor, expenses or damages, direct or consequential, resulting directly or indirectly from the use of, or inability to use, the products sold hereunder, including, without limitations, loss of profits because of increased operating costs, loss of production or shutdown of operation or otherwise and liabilities, claims and expenses in respect of third parties. There are no express or implied warranties, including without limitation any implied warranty of merchantability or fitness, which extend beyond the description on the face hereof. In lieu of any warranty whether expressed or implied by operation of law or otherwise, products proving defective in material and/or workmanship in the hands of buyer will be replaced, or, at seller's option, credit will be allowed for the original price thereof, provided written claim in respect of such products is made by buyer with reasonable promptness after delivery thereof, use of such products is promptly discontinued and such products are returned to seller with reasonable promptness after delivery.
The seller represents that goods covered by this invoice were produced in accordance with the requirements of the Fair Labor Standards Act of 1938 as amended.

PAY THIS AMOUNT U.S.D. 663.00

PAYMENT DATE: 01-27-00



PLAN VIEW

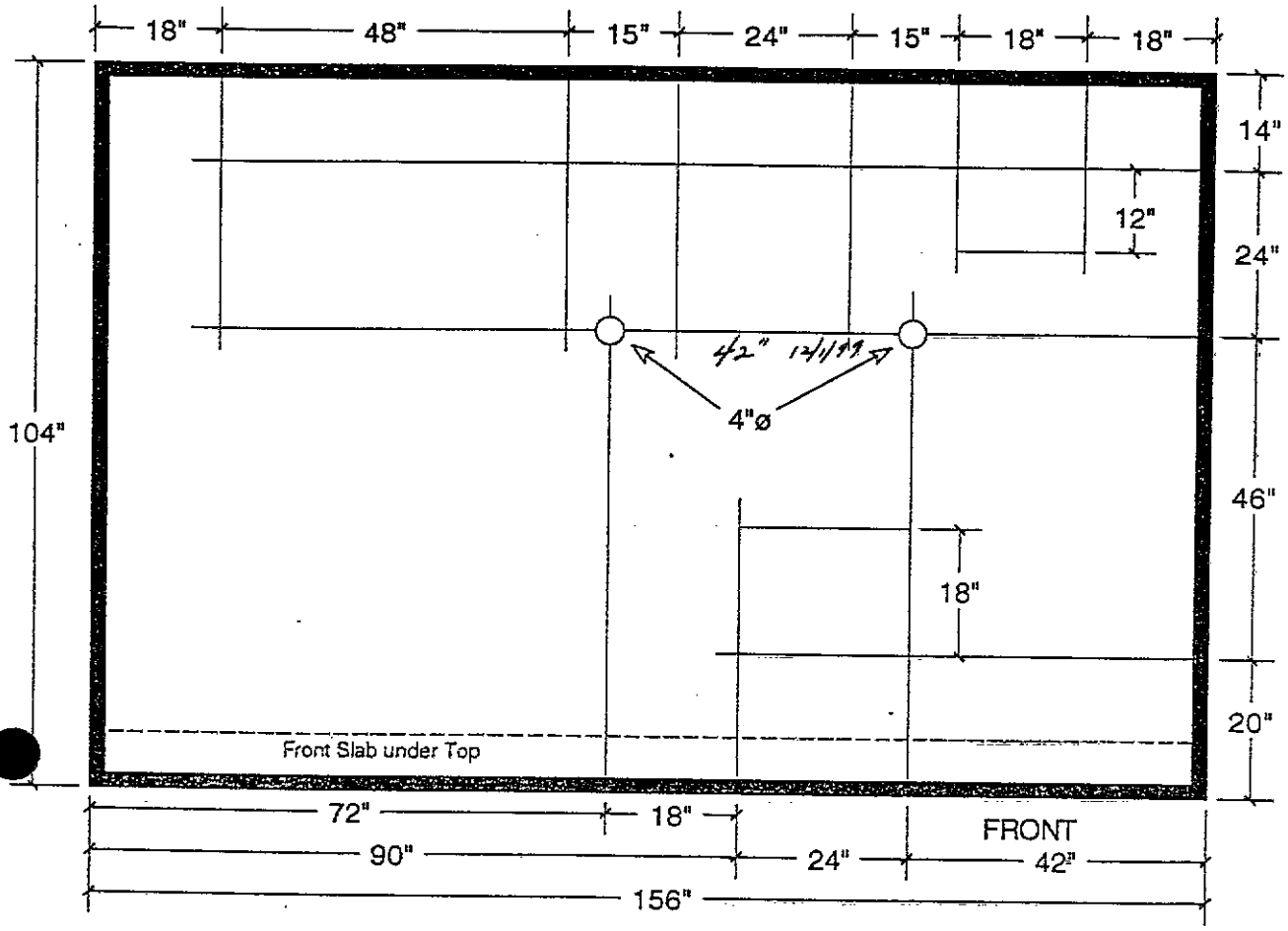
Note:
The vertical slab of 8" thick, normal-weight concrete, contained three rectangular and two cylindrical blockouts of sizes and position as indicated.

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900	
TRANSCO PRODUCTS INC.	
Fig. 3 Vertical Slab Layout	
Drwn by: D.N.Priest OPL Approval: C Humphrey TPI Approval:	Date: 11/15/99 Date: 11/16/99 Date:

Scale: 1/2"=1'

OMEGA POINT LABORATORIES

Sandy Bradford 11/30/99
Except 4" holes.



Note:
The top slab of 8" thick, normal-weight concrete, contained four rectangular and two cylindrical blockouts of sizes and position as indicated.

PLAN VIEW

OMEGA POINT LABORATORIES, INC. Project No. 12000-105900	
TRANSCO PRODUCTS INC.	
Fig. 1 Top Slab Layout	
Drwn by: D.N.Priest OPL Approval: C Humphrey TPI Approval:	Date: 11/15/99 Date: 11/16/99 Date:

Scale: 1/2"=1'

Sandy Bedford 11/30/99

Except 4" holes

OMEGA POINT LABORATORIES

CERTIFICATION of PERSONNEL

GRUBB ENG. Inc.
ROBERT D. GRUBB JR. FIELD SERVICES TECH.

Transco PRODUCTS Inc.

SANDRA M BRADFORD QUALITY CONTROL
WAYNE FIELDS INSTALLER @ 6/20/00
JIMMY FIELDS INSTALLER @ 6/20/00

Robert D. Grubb Jr., Field Services Technician
Grubb Engineering, Inc.

Graduated Judson High School, Converse, Texas. Continued education in Electrical Engineering at University of Texas @ San Antonio, San Antonio, Texas.

Experience:

Employed by City Public Service, San Antonio, Tx, 08/95 thru 03/96 - Construction of new substations and additions to existing stations. Constructed slabs, bus supports, dead end towers, and installation of ground grid systems and substation equipment.

Employed by Grubb Engineering, Inc., Converse, Tx., 05/92 thru Present part time while attending school. Responsibilities include both technical services and engineering services. Engineering services include design, CAD Operations, and field inspection.

- *Brooke Army Medical Center,* Ft. Sam Houston, Tx. - Provided third party acceptance testing for General Electric E.D. & C. Performed acceptance testing of 13.8kV/480V transformers, 15kV cables, contactors, instrumentation, 15kV and 600V switchgear and breakers.

- *New Braunfels Utilities* , New Braunfels, Tx - Marion and Sheriff's Posse Substations Pilot Wire Replacement provide acceptance testing.

- *Magma Operating Company,* California. - Provided maintenance testing of Hoch, Elmore, Vulcan and Elmore geothermal power plants. Work consisted of the maintenance and testing of 15kV switchgear, 480V Motor Control Centers (MCC), generators, and 92kV/13.8kV step up transformer.

- *CitiCorp,* San Antonio, Tx - Provide annual testing of switchgear and UPS system.

- *Falcon Dam Generation* - Cable replacement and testing under instruction and supervision of the International Boundary Commission.

- *City of Converse,* Converse, Tx. - Design, CAD Drawings and Acceptance Testing of new and existing well sites.

- *San Antonio Water System,* San Antonio, Tx. - Design, CAD Drawings, Acceptance Testing and Maintenance Testing of new and existing well sites.

Continuing Education, Conferences, Seminars:

- Still attending college to achieve degree as Electric Power Engineer

TRANSCO PRODUCTS INC.
TRAINING RECORD / ATTENDANCE SHEET

PAGE 1 OF 1

TRAINING SUBJECT: Transco & PP&L Procedures & drawings DATE: 5-11-99
TRAINER'S NAME(s): [illegible] S. S. #: 330-62-7363
S. S. #:

DOCUMENT DESCRIPTION/REVISION No.: F-1000-REV 6, 9.01 REV 5 Isometric Drawings

NAME (PRINT)	NAME (SIGN)	S.S. NUMBER	CRAFT / DEPARTMENT	PASS / FAIL (P/F)
SANDRA M. BRADFORD	Sandra M Bradford	012-40-9741	Q.C.	-

P.08/09
DEC-15-1999 09:41
85421419 DEC 15 '99 08:28 PAGE.08
TRANSCO INC DEC 15 '99 09:49 PAGE 03
482

QUALIFICATION OF INSPECTION PERSONNEL

TRANSCO INC.

Employee Bradford SANDRA M. Age 49
Last Name First Initial

Address 1218 Lowell ST Two Rivers, WI
Street City State

Distant Vision
Uncorrected: Right Eye 20/20
Left Eye 20/30

Corrected: Right Eye 20/20
Left Eye 20/20

Near Vision
Uncorrected: Right Eye 20/60
"Jaeger" Left Eye 20/60
(J-1)
Corrected: Right Eye 20/20
Left Eye 20/20

Color Discrimination
Limitations None 15/15 correct

Remarks

Applicant has sucessfully passed examination with natural or corrected vision in at least one eye for:

Distant Vision (20/30 by Linear Snellen Scale)	Yes (X)	No ( )
Near Vision (J-1 Letters on standard Jaeger test)	Yes (X)	No ( )
Color Vision (Ishihara or AOC color plates)	Yes (X)	No ( )

Signature of Examiner [signature] Date 4-27-99

Signature of Employee [signature] Date 4/27/99

FIGURE 2

QUALIFICATION FORM
INSPECTION PERSONNEL

TRANSCO INC. hereby certifies:

Mr./Ms. SANDRA BRADFORD

Social Security No.: 012-40-9741

as a Level III Quality Control Inspector, in accordance with the requirements of ANSI/ASME NQA-1 - 1989 Edition to perform inspections and testing as prescribed and delineated by Transco Inc. Quality Assurance Manual (TIQAM-1Rev.2) and the following Quality Assurance Procedures, Drawings, and Instructions:

TRANSCO INC. QUALITY ASSURANCE PROCEDURES (TIQAP's) INDEX DATED 2/23/99

This certification is based upon the subject personnel's:

✓ Graduation from High School or GED equivalent.
N/A Associate Degree in —.
N/A Four (4) Year BA/BS College Degree.
17 - Years or related experience in equivalent inspection or testing activities; with 7 of these years as a Level III Inspector, and ALL of these years associated with nuclear facilities.
N/A Capability Demonstration Test Score —
N/A Written Examination Score —
✓ Capabilities, as demonstrated by the following additional factors: EYE EXAM: 4/27/99

PAST PERFORMANCE OF QUALITY RELATED ACTIVITIES ASSOCIATED WITH NUCLEAR POWER PLANTS, LEVEL III Q.C. INSPECTOR AT WEPCO-POINT BEACH NPS AND TPI-STREATOR.

QUALITY ASSURANCE MANAGER APPROVAL

05/17/99
CERTIFICATION DATE

05/17/02
CERTIFICATION EXPIRATION

CONTROLLED COPY

QUALITY ASSURANCE PROGRAM MANUAL INDEX

CRITERION	DESCRIPTION	PAGE
	QUALITY ASSURANCE MANUAL COVERSHEET	–
	QUALITY ASSURANCE PROGRAM MANUAL INDEX	i-ii
	POLICY STATEMENT	1
1.0	ORGANIZATION	2-4
	EXHIBIT I	5
	EXHIBIT II	6
	EXHIBIT III	7
2.0	QUALITY ASSURANCE PROGRAM	8
3.0	DESIGN CONTROL	9-13
4.0	PROCUREMENT DOCUMENT CONTROL	14-15
5.0	INSTRUCTIONS, PROCEDURES AND DRAWINGS	16
6.0	DOCUMENT CONTROL	17
7.0	CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	18-23
8.0	IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS	24
9.0	CONTROL OF SPECIAL PROCESSES	25-26

CONTROLLED COPY

QUALITY ASSURANCE PROGRAM MANUAL INDEX

CRITERION	DESCRIPTION	PAGE
10.0	INSPECTION	27-28
11.0	TEST CONTROL	29
12.0	CONTROL OF MEASURING AND TEST EQUIPMENT	30
13.0	HANDLING, STORAGE, AND SHIPPING	31
14.0	INSPECTION, TEST AND OPERATING STATUS	32
15.0	NON-CONFORMING ITEMS	33-34
16.0	CORRECTIVE ACTION	35
17.0	QUALITY ASSURANCE RECORDS	36-38
18.0	AUDITS	39-40
I.	TERMS AND DEFINITIONS	41-44

TRANSCO INC.

DATE: 02-23-99

INDEX

TRANSCO INC.
QUALITY ASSURANCE PROCEDURE INDEX

TIQAP Manual No._____

TITLE	TIQAP	REV.
QUALITY ASSURANCE REPORTS	1.0	0
QUALIFICATION OF INSPECTION PERSONNEL	2.0	2
QUALIFICATION OF SITE CRAFT/PRODUCTION PERSONNEL	2.1	0
DESIGN CONTROL	3.0	3
PREPARATION, REVIEW AND APPROVAL OF CALCULATIONS AND TECHNICAL REPORTS	3.1	0
PREPARATION, REVIEW AND APPROVAL OF DESIGN DRAWING	3.2	0
PROCUREMENT DOCUMENT CONTROL	4.0	2
ORDER ENTRY (CONTRACT REVIEW)	4.1	2
INSTRUCTIONS, PROCEDURES AND DRAWINGS	5.0	2
DOCUMENT CONTROL	6.0	2
CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES	7.0	0
COMMERCIAL GRADE DEDICATION	7.1	2
SAMPLING PLAN PROCEDURE	7.2	0
IDENTIFICATION AND CONTROL OF MATERIALS PARTS AND COMPONENTS	8.0	0
SPECIAL PROCESSES (REFERENCE ONLY)	9.0	1
RECEIVING INSPECTION	10.0	3

NOTE: PLEASE CHECK IDENTIFICATION AND REVISION NUMBERS OF DOCUMENTS TRANSMITTED AGAINST ABOVE INDEX TO ASSURE THAT THEY ARE CORRECT, COMPLETE AND THAT THE CORRECT QUANTITY HAS BEEN RECEIVED.

TRANSCO INC.

DATE: 02-23-99

TIQAP Manual No._____

TITLE	TIQAP	REV.
TEST CONTROL	11.0	2
CONTROL OF MEASURING AND TEST EQUIPMENT	12.0	1
HANDLING AND STORAGE	13.0	0
INSPECTION STATUS TAGGING	14.0	0
NONCONFORMING ITEMS	15.0	2
REPORTING OF DEFECTS AND NONCOMPLIANCE	15.1	1
CORRECTIVE ACTION	16.0	2
QUALITY ASSURANCE RECORDS	17.0	1
QUALITY ASSURANCE RECORD REVIEW AND TURNOVER PROCEDURE	17.1	1
QUALITY ASSURANCE AUDITS	18.0	3

NOTE: PLEASE CHECK IDENTIFICATION AND REVISION NUMBERS OF DOCUMENTS TRANSMITTED AGAINST ABOVE INDEX TO ASSURE THAT THEY ARE CORRECT, COMPLETE AND THAT THE CORRECT QUANTITY HAS BEEN RECEIVED.

TRANSCO PRODUCTS INC.

TRANSCO PRODUCTS INC.
TRAINING RECORD / ATTENDANCE SHEET

TRAINING SUBJECT: Transco Products Inc.
TRAINER'S NAME(s): Steve Lefler
DATE: 6/14/99
S.S. #: 330-62-7363
PAGE 1 OF 1
DOCUMENT DESCRIPTION/REVISION No.: Transco TIQAM's & TIQAP's Manual 52
S.S. #:

NAME (PRINT)	NAME (SIGN)	S.S. NUMBER	CRAFT / DEPARTMENT	PASS / FAIL (P/F)
SANDRA M BRADFORD	Sandra M Bradford	612-40-9741	QC	–

489-A
G 6/20/00

INDOCTRINATION/TRAINING RECORD

INDOCTRINATION/TRAINING SESSION HELD AT Omega Point Lab.

ON 11/30/99 UTILIZING PROCEDURE/DRAWING

TR-400 Revision 0

ADMINISTERED BY Sandra Bradford / self study

THE FOLLOWING PERSONNEL WERE PRESENT AND UNDERSTOOD THE REQUIREMENTS OF THE PROCEDURE OR DRAWINGS LISTED ABOVE.

PRINTED NAME	SIGNATURE
WAYNE FIELDS	Wayne Fields
JIMMY G FIELDS	Jimmy G Fields
SANDRA M BRADFORD	Sandra M Bradford

489-B
B 6/20/00

INDOCTRINATION/TRAINING RECORD

INDOCTRINATION/TRAINING SESSION HELD AT OMEGA PAINT LAB

ON 12/2/99 UTILIZING PROCEDURE/DRAWING

Fire, Pressure and Radiation Details, Wall + Floor Openings

Drawing number: 04-4461-E-201-240 Rev. 6

ADMINISTERED BY Sandra Bradford / self study

THE FOLLOWING PERSONNEL WERE PRESENT AND UNDERSTOOD THE REQUIREMENTS OF THE PROCEDURE OR DRAWINGS LISTED ABOVE.

PRINTED NAME	SIGNATURE
JIMMY G FIELDS	Jimmy G Fields
SANDRA M BRADFORD	Sandra M Bradford
GREGORY JAROSZ	Gregory Jarosz
WAYNE FIELDS	Wayne Fields

CERTIFICATE of CALIBRATION

VARIABLE VOLTAGE MEG CHER		CALB. DUE 8/27/00
DIGital CALiper	6Q-2473-04	CALB DUE. 5/13/00
TEFLON TC Wire	KK-TA/TA-24	CALB. DUE N/a
STRANDED BARE #8	BASTR73D8	CALB. DUE N/a - G 6/20/00
6" DIAL CALiper	Q623532	CALB DUE 10/05/2000
0-15 DRY PRESSURE GAUGE	92LE005	CALB. DUE 10/05/2000 G 6/20/00
100 Ch. DATA Acquisition System	99LE004	CALB Due 5/26/00
300 Ch. DATA Acquisition System	48JF0082	CALB Due 3/23/00
0-100 psi PRESSURE GAGE	99LE002	CALB Due 4/27/00
DATA Aquistion UNIT	99LE003	CALB Due 10/8/00

CERT. NUMBER: 59771

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Grube Engineering, Inc.
P.O.Box 65
Converse, TX 78109
210-658-7250

MFG: Assoc Res
MODEL: 2950A
NOMEN: Variable Voltage Reg Chek
S/N: 720
CUST. ID:

CAL DATE: 08/27/1999
DUE DATE: 08/27/2000

CONTROL NO.: 290 - 21592
TECHNICIAN: 4
SPECIFICATIONS: MFG
PROCEDURE: MFG
WORK ORDER: 72855
CUSTOMER P.O.:
RECEIVED CONDITION: OUT OF TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 73 °F
RELATIVE HUMIDITY: 40 %

DATE RECEIVED: 08/17/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
173	FLUKE	8050A	3775382	08/02/2000
262	ROTHE	150	001	03/11/2000

APPROVED BY: Peter J. Steinmann ☑ CMS ☐ QCO DATE: 08/30/1999

RDMSD 1001
08/97

This certificate may not be reproduced, except in full, without written approval of Rothe Development, Inc. Metrology Services Division.

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: ASSOCIATED REASEARCH MODEL 2956A MEG-CHECK

CUSTOMER: Grubb Engineering
WO NUMBER: 73855
SERIAL: 720
CUST ID:

DATE: 27 Aug 99
TECH: AJS
INST NO: 24592

CALIBRATION DATA TAKEN

INCOMING ✓
OUTGOING

CONDITION OF EQUIPMENT

IN TOLERANCE
OUT OF TOLERANCE ✓ *

VOLTAGE METER ACCURACY

METER INDICATION	MIN	READING	MAX
1000	900	1014	1100 V
2000	1900	2043	2100
3000	2900	3059	3100
4000	3900	3982	4100
5000	4900	4938	5100

MEGOHMS METER ACCURACY

RANGE	METER INDICATION	MIN	READING	MAX	
0.1	2.0	2.45	3.131	2.55 mA	*
	2.8	1.735	2.249	1.835	
	4.0	1.20	1.612	1.30	
	8.0	.575	.838	.675	
	20.0	.200	.353	.300	
1	2.0	245	313	255 uA	
10	2.0	24.5	31.2	25.5	
100	2.0	2.45	3.12	2.55	*

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: ASSOCIATED REASEARCH MODEL 2956A MEG-CHECK

CUSTOMER: Grubb Engineering
WO NUMBER: 73855
SERIAL: 720
CUST ID:

DATE: 27 Aug 99
TECH: PJS
INST NO: 24592

CALIBRATION DATA TAKEN

INCOMING
OUTGOING ✓

CONDITION OF EQUIPMENT

IN TOLERANCE ✓
OUT OF TOLERANCE

VOLTAGE METER ACCURACY

METER INDICATION	MIN	READING	MAX
1000	900	1016	1100 V
2000	1900	2043	2100
3000	2900	3041	3100
4000	3900	3984	4100
5000	4900	4934	5100

MEGOHMS METER ACCURACY

RANGE	METER INDICATION	MIN	READING	MAX
0.1	2.0	2.45	2.49	2.55 mA
	2.8	1.735	1.76	1.835
	4.0	1.20	1.26	1.30
	8.0	.575	.635	.675
	20.0	.200	.251	.300
1	2.0	245	249	255 uA
10	2.0	24.5	24.9	25.5
100	2.0	2.45	2.49	2.55

Channel Verification for Fluke Hydras 40 Channel

Serial No.: 98LE003

Calibrator Used: Tegam T-297318

Temperature Setting (°F): 0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
1	0	0	11	0	0	21	0	0	31	1	1
2	0	0	12	0	0	22	0	0	32	1	1
3	0	0	13	0	0	23	0	0	33	1	1
4	0	0	14	0	0	24	0	0	34	0	0
5	0	0	15	0	0	25	0	0	35	0	0
6	-1	-1	16	0	0	26	0	0	36	0	0
7	0	0	17	0	0	27	0	0	37	0	0
8	0	0	18	0	0	28	1	1	38	-1	-1
9	0	0	19	0	0	29	0	0	39	1	1
10	0	0	20	-1	-1	30	0	0	40	1	1

Temperature Setting (°F): 1000

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
1	1000	0	11	1000	0	21	1000	0	31	1000	0
2	1000	0	12	1000	0	22	1000	0	32	1000	0
3	1000	0	13	1000	0	23	1000	0	33	1000	0
4	1000	0	14	1000	0	24	1000	0	34	1000	0
5	1000	0	15	1000	-1	25	1000	0	35	1000	0
6	1000	0	16	999	-1	26	1000	0	36	1000	0
7	1000	0	17	999	-1	27	1000	0	37	1000	0
8	1000	0	18	999	-1	28	1000	0	38	1000	0
9	1000	-1	19	1001	1	29	1000	0	39	999	-1
10	1000	0	20	1001	1	30	1000	0	40	1000	0

Overall Tolerance (°F): +1/-1

Performed by:

James Bundick — Systems Eng. (Title) — 10/8/99 (Date)

Approved by:

James R. Bundick — Systems Eng (Title) — 10/08/99 (Date)

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME Omega Point Labs
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM Rothe
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1894 . OPL
DATE RECEIVED 5-14-99
DATE INSPECTED 5-14-99
INSPECTED BY: C Bolton

	ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
	Digital Caliper	11903Q	1	1	Ø	SN: 60-2465-04	Y	Y	Good	None	X			Calibration Service
*	Digital Caliper	11903Q	1	1	Ø	SN: 60-2473-04	Y	Y	Good	None	X			

FORM 1/29/93

* Used for measure cable trays 36" x 6" MB 12/6/99

16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11903Q

Date: 5/12/1999
Page: 1 of 1

Order From: Rothe Development Inc.
4614 Sinclair Road
San Antonio
TX 78222
210-648-3131

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112
(210) 635-8100

/endor No: 0161

/our Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Digital Caliper SN: 6Q-2473-04 Rec'd 5/14/99 gp RR# 1894	001	1.00	Each	$40.00	$40.00
Digital Caliper SN: 6Q-2465-04 Rec'd 5/14/99 RR# 1894	002	1.00	Each	$40.00	$40.00
Digital Multimeter SN: 5700109	003	1.00	Each	$75.00	$75.00

CALIBRATION CERT. REQUIREMENTS1.
Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements
QA Approval [signature]
Date 5-12-99

Please Quote Purchase Order Number on all correspondence.

Special Instructions:
Please provide calibration services per attached Vendor Purchasing Specification and QA Requirements

Subtotal:	$155.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$155.00

VENDOR PURCHASING SPECIFICATION AND QUALITY ASSURANCE REQUIREMENTS

Vendor Rutho

Purchase Order No. 119030

Any or all of the following Quality Assurance requirements shall be incorporated as conditions to this procurement when corresponding box is marked. Failure to comply with any requirement specified herein may result in rejection and/or return of shipment at seller's expense.

1.0 QUALITY PROGRAM

☒ Seller shall furnish all items on this Purchase Order in accordance with Quality Program approved by Buyer.

2.0 QUALITY VERIFICATION

When additional quality verification activities are required as a condition to this procurement, invoices will not be paid until satisfactory completion of such activities. Excessive rejection rates may result in removal from buyer's Approved Vendors List.

☒ Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

☐ Independent Laboratory Tests - Samples of materials furnished shall be tested independently for conformance to specification requirements proir to final acceptance. Rejected materials shall be returned at seller's expense.

☒ Document Review - Final acceptance shall be based on satisfactory review of required certifications and other supporting documents.

3.0 CERTIFICATIONS

When certifications are required as a condition to this procurement, the seller shall furnish one reproducible copy either with or prior to each shipment. Shipments will not be accepted and invoices will not be paid until certifications are in buyer's possession.

PURCHASING SPECIFICATIONS
PAGE 2 OF 3

VENDOR Rothe
PURCHASE ORDER NO. 119030

☐ Certificate of Compliance/Conformance Required - Certification that materials and/or services comply with purchase order requirements. Certification shall reference purchase order number and traceability numbers (when applicable).

☐ Certified Test Report Required - Certification that material complies with applicable material specification(s) and the purchase order. Include actual results of required tests.

☒ Certificate of Calibration Required - Certification shall be traceable to National Bureau of Standards. (Renamed NIST, Nat. Institute of Science & Technology)

4.0 AUDITS/RIGHT OF ACCESS

☒ The buyer reserves the right to audit your facility to verify compliance with purchase order, code and specification requirements with minimum of ten (10) days notice.

☒ Shipments shall only originate from facilities approved by the buyer.

☐ Buyer reserves the right to inspect any or all work included in this order at seller's facility with as early notice as practicable.

5.0 IDENTIFICATION

☐ Seller shall identify each item with a unique traceability number by physical marking or tagging. Traceability numbers shall be traceable to certifications and packing lists.

☒ Seller shall identify each container with a unique identification number. The identification number shall be traceable to certifications and packing lists.

6.0 10 CFR, PART 21

☐ The material, equipment and/or services to be furnished under the provisions of this purchase order are involved in the testing of basic components of a Nuclear Regulatory Commission (NCR) licensed facility. Accordingly, the seller is subject to the provisions of 10 CFR, Part 21 (Reporting of Defects and Non-compliance)

PURCHASING SPECIFICATIONS
PAGE 3 OF 3

VENDOR Rothe
PURCHASE ORDER NO. 119030

7.0 PACKING/SHIPPING

[X] All materials shall be packaged in air tight, moisture free containers and shall be free from all foreign substances such as dirt, oil, grease or other deleterious material.

[ ] All materials and equipment shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping. Wherever practical, equipment shall be palletized for ease of unloading and storage at destination. each container shall be clearly marked with buyer's purchase order number.

QUALITY ASSURANCE APPROVAL C Patton DATE 5/12/99

METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210/646-2151 Fax (210/646-4631

CHARGE # 107 CONTROL # 556 - 28179 WORK ORDER # 72153

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9724
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 119038

DATE: 05/13/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM

MFG: BrownSharp
MODEL: 599-571-4
NOMEN: Digital Caliper
S/N: 50 2465 04
CUST ID:
ACCESS
RCVD:

***** Need Manual *****

TOMER COMMENTS/REQUIREMENTS:
A: BEFORE & AFTER DATA REQUIRED

OUR PO:

IVED:	RETURNED:	CALIBRATION INTERVAL: 12mos.	CAL'D AT:
IN TOLERANCE	(✓) IN TOLERANCE		(✓) RDMSD
OUT OF TOLERANCE	( ) LIMITED CALIBRATION	CAL DATE: 13-Mar-99	( ) ON-SITE
INOPERATIVE	( ) REPAIR ONLY	DUE DATE: 13-Mar-00	( ) SUB
	( ) NO ACTION DATA		

IRONMENTAL DITIONS:	SPECIFICATIONS:	PROCEDURE:	RDMSD TECH:	SERVICE CODE:
2 °F	(✓) MFG	( ) MFG	SEB	J
4 %RH	( ) RDMSD:	( ) RDMSD:		
	( ) OTHER:	(✓) OTHER: 3241.4-552-1		

LT[illegible]PTOM:

K PERFORMED: CALD

S: 104

TED CALIBRATION:

IMENTS:

QTY	PART #	DESCRIPTION	COST	REPAIR LABOR HOURS:		
				PARTS TOTAL		
				REPAIR LABOR		
				SHIPPING		
				TEAR DOWN CHARGE		
				CALIBRATION	44.00	
				TAX 7.7500	3	41
				TOTAL	47	41

P VIA: DATE:

SD 2002 RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: [illegible]

ROTHE DEVELOPMENT, INC.
METROLOGY SERVICES DIVISION
4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: BrownSharp
MODEL: 599-571-4
NOMEN: Digital Caliper
S/N: 60 2465 04
CUST. ID:

CAL DATE: 05/13/1999
DUE DATE: 05/13/2000

CONTROL NO.: 556 - 26179
TECHNICIAN: 3
SPECIFICATIONS: MFG
PROCEDURE: 33K6-4-552-1
WORK ORDER: 72155
CUSTOMER P.O.: 119038
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 46 %

DATE RECEIVED: 05/13/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
104	MITUTOYO	BE1-35A	763827	03/15/2000

Calibration Certificate Acceptance

Item Digital Caliper
SN 60-2465-04

	Q/A	Eng.
NIST Traceability Adequate	[illegible]	ES
As Found/As Left Values	[illegible]	ES
Calibration Data Sufficient	[illegible]	ES
Tolerance Range Adequate	[illegible]	ES
Date of Review:	5-14-99	5/14

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: [signature] ☒ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001
08/97

This certificate may not be reproduced, except in full, without written approval of Rothe Development, Inc. Metrology Services Division.

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: DIGITAL CALIPER

CUSTOMER: Omega Point Laboratories
WO NUMBER: 72155
SERIAL: 6Q 2465 04
CUST ID:

DATE: 13 May 99
TECH: SEB
INST NO: 26179

CALIBRATION DATA TAKEN

INCOMING ✓
OUTGOING ✓

CONDITION OF EQUIPMENT

IN TOLERANCE ✓
OUT OF TOLERANCE

MANUFACTURER Brown + Sharpe

MODEL 599-571-4

ACCURACY +/- .001"

RESOLUTION 0.0005"

JAW PARALLELISM
READINGS BETWEEN TOP AND BOTTOM OF JAWS
WITHIN ±0.001"

(PASS) / FAIL

CALIPER ACCURACY

BLOCK SIZE (")	READING (")	BLOCK SIZE (")	READING (")
0.100	0.1000	0.190	0.1905
0.110	0.1100	0.200	0.2000
0.120	0.1200	0.500	0.5000
0.130	0.1300	1.000	1.0000
0.140	0.1405	2.000	2.0000
0.150	0.1500	3.000	3.0000
0.160	0.1600	4.000	4.0000
0.170	0.1700	5.000	5.0000
0.180	0.1805	6.000	6.0000

INSIDE JAW ACCURACY ±0.001"	NA / PASS / FAIL
DEPTH GAGE ACCURACY ±0.001"	NA / PASS / FAIL
STEP MEASUREMENT ACCURACY ±0.001"	NA / PASS / FAIL

INCOMING
OUTGOING

CHARGE # 107 CONTROL #556 - 26180 WORK ORDER #72156

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9754

DATE: 05/13/1999
PHONE #: 625-8100
FAX #: 625-8101

CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 119008

ITEM
MFG: BrownSharp
MODEL: 599-571-4
NOMEN: Digital Caliper
S/N: 60 2473 04
CUST ID:
ACCESS
RCVD:

Need Manual

CUSTOMER COMMENTS/REQUIREMENTS:
BEFORE & AFTER DATA REQUIRED

OUR PO:

RECEIVED:	RETURNED:	CALIBRATION INTERVAL: 12 mos.	CAL'D AT:
IN TOLERANCE	(✓) IN TOLERANCE		(✓) RDMSD
OUT OF TOLERANCE	( ) LIMITED CALIBRATION	CAL DATE: 13 Mar 99	( ) ON-SITE
INOPERATIVE	( ) REPAIR ONLY DATA	DUE DATE: 13 Mar 00	( ) SUB
	( ) NO ACTION		

ENVIRONMENTAL CONDITIONS:	SPECIFICATIONS:	PROCEDURE:	RDMSD TECH:	SERVICE CODE:
72 °F	(✓) MFG	( ) MFG	SEB	J
45 %RH	( ) RDMSD:	( ) RDMSD:		
	( ) OTHER:	(✓) OTHER: 3241-4-552-1		

PROBLEM/SYMPTOM:

WORK PERFORMED: CALD

CODE: 1C4

REQUESTED CALIBRATION:

COMMENTS:

QTY	PART #	DESCRIPTION	COST	REPAIR LABOR HOURS:	
				PARTS TOTAL	
				REPAIR LABOR	
				SHIPPING	
				TEAR DOWN CHARGE	
				CALIBRATION	14.00
				TAX 7.500	3 41
				TOTAL	47 41

SHIPPED VIA: DATE:

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER 5577

ROTHE DEVELOPMENT, INC.
METROLOGY SERVICES DIVISION
4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: BrownSharp
MODEL: 599-571-4
NOMEN: Digital Caliper
S/N: 60 2473 04
CUST. ID:

CAL DATE: 05/13/1999
DUE DATE: 05/13/2000

CONTROL NO.: 556 - 26180
TECHNICIAN: 3
SPECIFICATIONS: MFG
PROCEDURE: 33K6-4-552-1
WORK ORDER: 72156
CUSTOMER P.O.: 119030
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 46 %
DATE RECEIVED: 05/13/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
104	MITUTOYO	BE1-35A	763827	03/15/2000

Calibration Certificate Acceptance

Item Digital Caliper
SN 60-2473-04

	Q/A	Eng.
NIST Traceability Adequate	✓	ES
As Found/As Left Values	✓	ES
Calibration Data Sufficient	✓	ES
Tolerance Range Adequate	✓	ES
Date of Review	5-14-99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: Peter J. Hammer ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001
08/97

This certificate may not be reproduced, except in full, without written approval of Rothe Development, Inc. Metrology Services Division.

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: DIGITAL CALIPER

CUSTOMER: Omega Point Laboratories
WO NUMBER: 72156
SERIAL: 6Q 2473 04
CUST ID:

DATE: 13 May 99
TECH: SEB
INST NO: 26180

CALIBRATION DATA TAKEN — INCOMING ✓ OUTGOING ✓

CONDITION OF EQUIPMENT — IN TOLERANCE ✓ OUT OF TOLERANCE

MANUFACTURER Brown + Sharpe
MODEL 599-571-4
ACCURACY ±.001"
RESOLUTION 0.0005"

JAW PARALLELISM
READINGS BETWEEN TOP AND BOTTOM OF JAWS
WITHIN ±0.001" — PASS / FAIL

CALIPER ACCURACY

BLOCK SIZE (")	READING (")	BLOCK SIZE (")	READING (")
0.100	0.1000	0.190	0.1905
0.110	0.1100	0.200	0.2000
0.120	0.1200	0.500	0.5000
0.130	0.1305	1.000	1.0000
0.140	0.1405	2.000	2.0000
0.150	0.1500	3.000	3.0000
0.160	0.1600	4.000	4.0000
0.170	0.1700	5.000	5.0000
0.180	0.1800	6.000	6.0000

INSIDE JAW ACCURACY ±0.001"	NA /	PASS /	FAIL
DEPTH GAGE ACCURACY ±0.001"	NA /	PASS /	FAIL
STEP MEASUREMENT ACCURACY ±0.001"	NA /	PASS /	FAIL

✓ INCOMING
✓ OUTGOING

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME Omega Point Lab
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM PMC
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1831 .OPL
DATE RECEIVED 10-1-98
DATE INSPECTED 10-5-98
INSPECTED BY: [illegible]

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	CONTD MATL Y/N	CERT. REC'D Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Teflon TCWire	11383Q	10	5255'	0	KK-TA/TA-24	Y	Y	Good	None	K			Original RR # 1824 for 5,500' Teflon Spool # 245542 for this 5255' OK' left.

FORM
1/29/93

508

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11383 Q

Date:7/30/98
Page: 1 of 1

Order From: PMC
680 Hayward Street
Manchester
NH 03103
603-622-3500

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112-9784
(210) 635-8100

Vendor No: 0024

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Teflon TC Wire KK-TA/TA-24	001	20.00	Thousand	$350.00	$7,000.00
Calibration Services	002	1.00	Each	105.00	105.00
Fiberglass TC Wire KK-FB/FB-24	003	20.00	Thousand	182.00	3,640.00
Calibration Services	004	1.00	Each	207.00	207.00

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval C Sutton
Date 7-30-98

9/15/98
Received 5,500' teflon TC Wire
Receiving Report #1824

10/1/98
Received 5,255' teflon TC wire
Receiving Report #1831

CALIBRATION CERT. REQUIREMENTS
1. Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Subtotal:	$10,952.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$10,952.00

Special Instructions:
Please provide calibration services per attached Material Purchasing Specification and QA Requirements.

OMEGA POINT LABORATORIES
MATERIAL PURCHASING SPECIFICATIONS

SPECIFICATION NUMBER: MS-113830-OPL

VENDOR: PMC

VENDOR PRODUCT NUMBER: KK-TA/TA-24

PRODUCT DESCRIPTION: Teflon Coated Thermocouple Wire

Material as defined above shall be provided in accordance with the Critical Characteristics as listed below:

TEST	DESCRIPTION	SPECIFICATION RANGES MINIMUM	MAXIMUM
ASTM E230-93	Std. Temperature-EMF Tables for Standardized Thermocouples	Temp. Range +32°F to +545°F Special Limits of Error ±2°F Temp. Range +545°F to 2300°F Special Limits of Error ±.4%	

QUALITY ASSURANCE REQUIREMENTS

1.0 QUALITY PROGRAM
Seller shall furnish this item in accordance with Quality Program approved by Omega Point Laboratories. Material specified herein is to be produced and tested in accordance with vendor quality standards, methods, guidelines and manufacturing instructions as defined in that Quality Program.

2.0 QUALITY VERIFICATION
Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.
Document Review - Final acceptance shall be based on satisfactory review of required certifications and/or supporting documents.

3.0 CERTIFICATIONS
3.1 Certification that supplied materials comply with this material specification and listing Critical Characteristics shall be provided. This certificates shall reference Omega Point Labs purchase order number and specification number for all material furnished under this specification. This Certification shall be signed by the appropriate vendor representative.
3.2 The material furnished under this specification shall be a product that complies with the following:
3.2.1 Has been tested and passed all tests specified herein.

3.2.2 Manufacturing methods for this material have not changed. Vendor will advise Omega Point in writing of any changes in the manufacturing prior to material manufacture.

3.2.3 Raw materials used in the manufacture of this material meet Vendor specifications.

4.0 AUDITS/RIGHTS OF ACCESS

Omega Point Labs reserves the right to audit your facility to verify compliance with the purchase order and specification requirements with a minimum ten (10) day notice.

5.0 IDENTIFICATION

Seller shall identify each item with a unique traceability number by physical marking or tagging. These identification numbers shall be traceable to certifications and packing lists.

6.0 PACKING/SHIPPING

All materials shall be packaged in air tight, moisture free containers and shall be free of foreign substances such as dirt, oil, grease or other deleterious materials.

All materials shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping.

QUALITY ASSURANCE APPROVAL

C. Patton

Title Quality Assurance Mgr. Assistant

Date 7-30-98

AVL Verification

Class: B

OMEGA POINT LABORATORIES

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #245542

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/24/98
Cust PO#: 11383Q
Job #: 38725-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5255'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	+0.4	-0.1
600	-1.5	-1.9
800	-2.7	-3.0
1000	-2.3	-2.7

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525S
SERIAL #:306172
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306179
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

QUALITY ASSURANCE TECHNICIAN 9/24/98 DATE

QUALITY ASSURANCE MANAGER 9/24/98 DATE

PFA Insulated Thermocouple Wire

DATA SHEET 120

PRODUCT CODE: TA/TA

Our customers have grown to expect only the highest quality products from PMC. We are continuously committed to meet the specific needs of industry and our customers. This construction includes Teflon* PFA insulataion extruded on the single conductors which are then laid parallel and jacketed with Teflon PFA.

Teflon PFA (perfluoroalkoxy) was released in 1972 by Dupont. It possesses similar properties of the other Teflon products such as outstanding electrical characteristics, resistance to virtually all chemicals and excellent flame resistance.

PFA is a true thermoplastic material extrudable by conventional means, and available in long continuous lengths. This construction provides flexibility and toughness with stress crack resistance, resistance to weather, non-aging characterisics, and low coefficient of friction for ease of pulling through conduit.

Like TFE, suggested upper continuous temperature is 500°F (260°C), however, it does not have TFE's solder iron resistance.

The thermocouple grade products shown are used to form temperature sensors and the extension grade products become the interconnecting link in the temperature sensing system.

You will find our qualified sales and engineering staff eager to assist in selecting a design to meet the requirements of your specific application. Variations of this construction are available upon request, including aluminum Mylar* to reduce noise problems found in so many of today's plants.

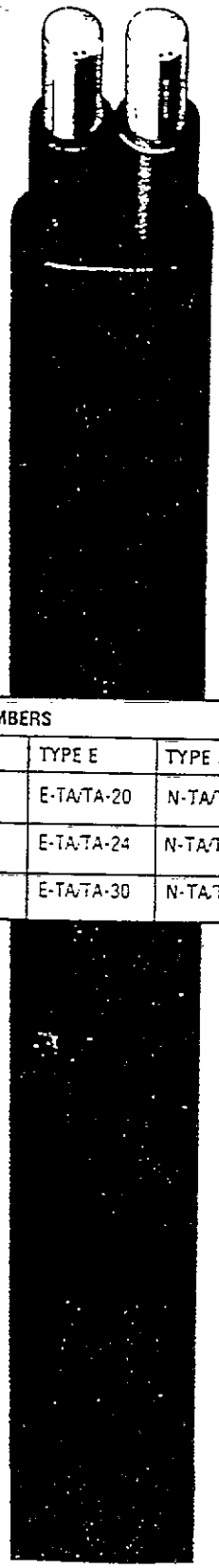
Typical applications include aircraft and automotive engine testing, rapid transit cables, and down hole cable in the oil industry.

*Registered trademark of E.I. DuPont Inc.

Calibrated conductors for high system accuracy

500°F (260°C) PFA insulation for improved electrical properties and high temperature applications

500°F (260°C) PFA jacket for chemical inertness to solvents, acids and oils



GRADE OF WIRE	GAUGE SIZE	WIRE TYPE	PART NUMBERS				
			TYPE J	TYPE K	TYPE T	TYPE E	TYPE N
THERMOCOUPLE	20	SOLID	J-TA/TA-20	K-TA/TA-20	T-TA/TA-20	E-TA/TA-20	N-TA/TA-20
THERMOCOUPLE	24	SOLID	J-TA/TA-24	K-TA/TA-24	T-TA/TA-24	E-TA/TA-24	N-TA/TA-24
THERMOCOUPLE	30	SOLID	J-TA/TA-30	K-TA/TA-30	T-TA/TA-30	E-TA/TA-30	N-TA/TA-30

The above part numbers represent the more popular constructions. However, other designs are available upon request.

PMC CORPORATION
57 Harvey Road
Londonderry, NH
03053

Tel. (603) 432-9473
FAX (603) 432-0435

© 1990 PMC Corporation

Color code > & initial calibration tolerances for thermocouple wire

THERMOCOUPLE TYPE		COLOR CODE		INITIAL CALIBRATION TOLERANCES		
WIRE ALLOYS	ANSI SYMBOL	+/- INDIVIDUAL	JACKET	TEMPERATURE RANGE	STANDARD LIMITS	SPECIAL LIMITS
*Iron (+) vs. Constantan™ (-)	J	WHITE/RED	BROWN	+ 32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +1400°F (+750°C)	±4°F (2.2°C) ±.75%	±2°F (1.1°C) ±.4%
Chromel™ (+) vs. *Alumel™ (-)	K	YELLOW/RED	BROWN	-330°F (-200°C) to -165°F (-110°C) -165°F (-110°C) to +32°F (0°C) +32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	±2% ±4°F (2.2°C) ±4°F (2.2°C) ±.75%	±2°F (1.1°C) ±.4%
Copper (+) vs. Constantan™ (-)	T	BLUE/RED	BROWN	- 330°F (-200°C) to -85°F (-65°C) -85°F (-65°C) to +270°F (+130°C) +270°F (+130°C) to +660°F (+350°C)	±1.5% ±1.8°F (1°C) ±.75%	±.8% ±.9°F (.5°C) ±.4%
Chromel™ (+) vs. Constantan™ (-)	E	PURPLE/RED	BROWN	-330°F (-200°C) to -270°F (-170°C) -270°F (-170°C) to +480°F (+250°C) +480°F (+250°C) to +640°F (+340°C) +640°F (+340°C) to +1600°F (+900°C)	±1% ±3°F (1.7°C) ±3°F (1.7°C) ±.5%	±1.8°F (1°C) ±1.8°F (1°C) ±.4% ±.4%
Nicrosil™ (+) vs. Nisil™ (-)	N	ORANGE/RED	BROWN	+32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	±4°F (2.2°C) ±.75%	±2°F (1.1°C) ±.4%

Color code > and initial calibration tolerances for extension wire

*Iron vs. Constantan™	JX	WHITE/RED	BLACK	+32°F (0°C) to +400°F (+200°C)	±4°F (2.2°C)	±2°F (1.1°C)
Chromel™ vs. *Alumel™	KX	YELLOW/RED	YELLOW	+32°F (0°C) to +400°F (+200°C)	±4°F (2.2°C)	±2°F (1.1°C)
Copper vs. Constantan™	TX	BLUE/RED	BLUE	-75°F (-60°C) to +210°F (+100°C)	±2°F (1.1° C)	±1°F (.5°C)
Chromel™ vs. Constantan™	EX	PURPLE/RED	PURPLE	+32°F (0°C) to +400°F (+200°C)	±3°F (1.7°C)	±2°F (1.1°C)
Nicrosil™ vs. Nisil™	NX	ORANGE/RED	ORANGE	+32°F (0°C) to +400°F (+200°C)	±4°F (2.2°C)	±2°F (1.1°C)
Copper vs. Copper Alloy	SX RX	BLACK/RED	GREEN	+75°F (+25°C) to +400°F (+200°C)	±12°F (7°C)	

* Magnetic
™Trade Mark, Hoskins Mfg. Co.

NOTE – Percent limits apply directly to temperatures in °C units, but for °F equivalents are applied to the numbers of °F above or below the ice point (+32°F).
(i.e. Limit (°F) = (Temp. °F – 32°F) X Percentage)

Thermocouple wire cannot be expected to meet the limits of error at temperatures below the ice point unless specified at time of purchase.

TA/TA > physical properties

INSULATION CHARACTERISTICS	INSULATION	JACKET	GAUGE SIZE	NOMINAL INSULATION WALL (INCHES)	NOMINAL JACKET WALL (INCHES)	NOMINAL DIAMETER (INCHES)	APPROX. SHIP. WEIGHT LBS. PER 1000 FT
SPECIFIC GRAVITY	2.15	2.15	20	.008	.010	.068 X .116	12
DUROMETER HARDNESS	55	55					
TENSILE STRENGTH p.s.i. (min.)	4000 p.s.i.	4000 p.s.i.	24	.008	.010	.056 X .092	7
ELONGATION %(min.)	300%	300%					
MINIMUM BEND RADIUS	5 X O.D.	10 X O.D.					
ABRASION RESISTANCE	VERY GOOD	VERY GOOD	30	.004	.006	.030 X .048	2
CUT THROUGH RESISTANCE	GOOD	GOOD					
MOISTURE RESISTANCE	EXCELLENT	EXCELLENT					
SOLDER IRON RESISTANCE	VERY GOOD	VERY GOOD					
SERVICE TEMPERATURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE					
FLAME TEST	NON-FLAMMABLE	NON-FLAMMABLE					

PRICING POLICY > Shipments will be invoiced at PMC's prices in effect at time of shipment. Quotations are given with an escalation clause and prices, terms, and conditions are subject to change without prior notice. PMC will, however, make every attempt to hold to current quoted prices. All prices quoted are in United States currency, and shall be subject to correction for errors. Unless otherwise stated in writing to PMC.

RE[illegible]SPOOLS & COILS > All shipments, unless specified otherwise by PMC, are made on non-returnable reels, spools or coils in one continuous length.

SHORTAGES & RETURNS > All claims for shortage or incorrect material must be made within 10 days after receipt of the goods to which such claim pertains. Goods may only be returned for credit within 1 month of the date of authorization. Goods that are special in any way shall not be returned to PMC. Material returned for any reason, without written authorization will be refused and returned at shipper's expense. A return request must be processed through our Londonderry, N.H. sales office.

TOLERANCES > Due to allowances in manufacturing processes for wire, cable and similar products, PMC reserves the right to ship a variation of ±10% from the quantity of such goods ordered. Physical tolerances shown are nominal. Shipping weights are an average of all types of conductors and are listed for estimating only. These weights can vary substantially due to different types of spools, reels and/or conductors.

The material contained in this document is presented in good faith and believed to be reliable and accurate. However, because testing conditions may vary and material quality or information that may be provided in whole or part by others may be beyond our control, no warranty, expressed or implied, is given and PMC Corporation can assume no liability for results obtained or damages incurred through the application of the data tests presented. NOTE. PMC reserves the right to substitute an equal product on all registered trademark items

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

WEST POINT LOGG, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

78230

SHIP TO

WEST POINT LOGG, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX [illegible]

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/31/98	DMSC001	06	30	70	98765

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
113630			

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

1. MFT
2. CFT
3. POUNDS
4. EACH NET
5. METERS
6. FEET
7. LOT
8. OTHER

IT.	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
	14300.00	KM-TA/TA-24	5255
	1.00	CALIBRATION AT 500, 400, 300, 100MHZ I/O	1
	20000.00	HK FB/FB-24 SCHED. SHIP 9/10/98	
	1.00	CALIBRATION AT 300, 200, 100, 10MHZ I/O	

Thank you!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-24-98		1	33	✓		✓		JC

PACKING SLIP

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME Omega Point Labs
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM PMC
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1824 - OPL
DATE RECEIVED 9-14-98 & 9-15-98
DATE INSPECTED 9-14-98 & 9-15-98
INSPECTED BY: C Patton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Teflon TC Wire	11330Q	15K'	10800'	4,200'	KK-TA/TA-24	Y	Y	GOOD	None	X			Spool #'s 243823, 243825
Teflon TC Wire	11330Q	15K	5.2K'	0	KK-TA/TA-24	Y	Y	GOOD	None	X			Spool # 243822 ; Spool 243824 is folb 11383
Teflon TC Wire	11383Q	20K'	5.5K'	15K'	KK-TA/TA-24	Y	Y	GOOD	None	X			

09-016-9/97

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11330 Q

Date:7/08/98
Page: 1 of 1

Order From: PMC
680 Hayward Street
Manchester
NH 03103
603-622-3500

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112-9784
(210) 635-8100

Vendor No: 0024

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Teflon TC Wire KK-TA/TA-24	001	15.00	Thousand	$350.00	$5,250.00
Calibration Services	002	1.00	Each	105.00	105.00
Fiberglass TC Wire KK-FB/FB-24	003	10.00	Thousand	182.00	1,820.00
Calibration Services	004	1.00	Each	207.00	207.00

9/10/98 Change Order #1 - addition
Teflon TC Wire KK/TA/TA-24
005 4.00 Thousand 350.00 1,400.00

8 Received 4K' Teflon on 9/11/98 - RR 182
Received 10,800' " on 9/14/98 - RR#182
Received 5,200' " on 9/15/98 - RR#182
Teflon TC order complete
Received 3,500' Fiberglass on 10/5/98 RR# 1833

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval [signature]
Date 7/8/98

Special Instructions:
Please provide calibration services per attached Vendor Purchasing Specification and QA Requirements.

Please Quote Purchase Order Number on all correspondence.

Subtotal:	~~8,782.00~~ ~~$7,982.00~~ 8
Freight:	0.00
Tax Amount:	0.00
Total Value:	~~$7,982.00~~ 8 8,782.00

CALIBRATION CERT. REQUIREMENTS
1. Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

080625/11-E

OMEGA POINT LABORATORIES
MATERIAL PURCHASING SPECIFICATIONS

SPECIFICATION NUMBER: MS-- 113300-OPL

VENDOR: PMC

VENDOR PRODUCT NUMBER: KK-TA/TA-24

PRODUCT DESCRIPTION: Teflon Coated Thermocouple Wire

Material as defined above shall be provided in accordance with the Critical Characteristics as listed below:

TEST	DESCRIPTION	SPECIFICATION RANGES MINIMUM	MAXIMUM
ASTM E230-93	Std. Temperature-EMF Tables for Standardized Thermocouples	Temp. Range +32°F to +545°F Special Limits of Error ±2°F	

QUALITY ASSURANCE REQUIREMENTS

1.0 QUALITY PROGRAM
Seller shall furnish this item in accordance with Quality Program approved by Omega Point Laboratories. Material specified herein is to be produced and tested in accordance with vendor quality standards, methods, guidelines and manufacturing instructions as defined in that Quality Program.

2.0 QUALITY VERIFICATION
Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.
Document Review - Final acceptance shall be based on satisfactory review of required certifications and/or supporting documents.

3.0 CERTIFICATIONS
3.1 Certification that supplied materials comply with this material specification and listing Critical Characteristics shall be provided. This certificates shall reference Omega Point Labs purchase order number and specification number for all material furnished under this specification. This Certification shall be signed by the appropriate vendor representative.
3.2 The material furnished under this specification shall be a product that complies with the following:
3.2.1 Has been tested and passed all tests specified herein.

3.2.2 Manufacturing methods for this material have not changed. Vendor will advise Omega Point in writing of any changes in the manufacturing prior to material manufacture.

3.2.3 Raw materials used in the manufacture of this material meet Vendor specifications.

4.0 AUDITS/RIGHTS OF ACCESS

Omega Point Labs reserves the right to audit your facility to verify compliance with the purchase order and specification requirements with a minimum ten (10) day notice.

5.0 IDENTIFICATION

Seller shall identify each item with a unique traceability number by physical marking or tagging. These identification numbers shall be traceable to certifications and packing lists.

6.0 PACKING/SHIPPING

All materials shall be packaged in air tight, moisture free containers and shall be free of foreign substances such as dirt, oil, grease or other deleterious materials.

All materials shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping.

QUALITY ASSURANCE APPROVAL

Title Quality Assurance Mgr.

Date 7/8/98

AVL Verification

Class: B

OMEGA POINT LABORATORIES

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243822

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/8/98
Cust PO#: 11330Q
Job #: 38417-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5200'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.7	-1.8
600	-2.3	-1.2
800	-2.1	-0.4
1000	-0.1	+1.4

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #:110208
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306177
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

John Robinson 9/8/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valdez 9/8/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243823

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/4/98
Cust PO#: 11330Q
Job #: 38417-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5300'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.9	-1.3
600	-2.3	-1.4
800	-3.1	-2.3
1000	-0.8	-0.2

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #: 306171
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306178
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

John Robinson 9/4/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyer 9/4/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243825

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/4/98
Cust PO#: 11330Q
Job #: 38417-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5500'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.2	-0.4
600	-1.2	-1.3
800	-1.0	-1.3
1000	+1.5	+0.9

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #: 306171
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306178
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

Mike Robinson 9/4/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valyer 9/4/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

OMEGA POINT LABS. INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

SHIP TO

OMEGA POINT LABS. INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

75238

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/19/98	OMEG001	96	36	35	38417

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
113700			1. MFT 5. METERS 2. CFT 6. FEET 3. POUNDS 7. LOT 4. EACH NET 8. OTHER

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

M	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
1	15000.00	KK-TA/TA-24 SCHED. SHIP 8/28/98 OR SOONER	10,800
2	1.00	CALIBRATION AT 200, 600, 800, 1000°F I/O	1
3	10000.00	KK-FB/FB-24 SCHED. SHIP 9/11/98 OR SOONER	—
4	1.00	CALIBRATION AT 200, 400, 600, 800, 1000°F I/O	—

Thank you!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASE ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-4-98		2	67	✓		✓		[illegible]

PACKING SLIP

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

[illegible] POINT LABS, INC.
[illegible] SHADY FALLS ROAD
ELMENDORF, TX 78112

SHIP TO

[illegible] POINT LABS, [illegible]
[illegible] SHADY FALLS ROAD
ELMENDORF, TX 78112

78238

DATE RECEIVED	CUSTOMER NO.	[illegible]	[illegible]	[illegible]	PMC JOB NO.
7/12/00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
[illegible]			1. MFT 2. CFT 3. POUNDS 4. EACH NET 5. METERS 6. FEET 7. LOT 8. OTHER

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

IT	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
	5,[illegible]000.00	KK-TR/TS-[illegible] SCHED. SHIP 8/28/00 OR SHORTER	5200
	~~1.00~~	~~CALIBRATION AT~~ ~~200, 600, 800, 1000F 1/0~~	
	1000.00	KK-FB/F 3-2[illegible] SCHED. SHIP [illegible]	
	1.00	CALIBRATION AT 200, 400, 600, 800, 1000F 1/0	

Thank you!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
7.12.00		1	31	✓		✓		[illegible]

PACKING SLIP

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11383 Q

Date:7/30/98
Page: 1 of 1

Order From: PMC
680 Hayward Street
Manchester
NH 03103
603-622-3500

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112-9784
(210) 635-8100

Vendor No: 0024

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Teflon TC Wire KK-TA/TA-24	001	20.00	Thousand	$350.00	$7,000.00
Calibration Services	002	1.00	Each	105.00	105.00
Fiberglass TC Wire KK-FB/FB-24	003	20.00	Thousand	182.00	3,640.00
alibration Services	004	1.00	Each	207.00	207.00

9/15/98 -
Received 5,500' teflon TC Wire
Receiving Report #1824

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval C Sutton
Date 7-30-98

CALIBRATION CERT. REQUIREMENTS
1. Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Subtotal:	$10,952.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$10,952.00

Special Instructions:
Please provide calibration services per attached Material Purchasing Specification and QA Requirements.

080625/11-89

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243824

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/8/98
Cust PO#: 11383Q
Job #: 38725-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5500'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.9	-0.9
600	-2.7	-2.9
800	-2.9	-3.1
1000	-0.7	-1.0

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #:110208
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306177
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

* 600° reading ok per Cleda at Omega Point Labs.

John Robinson 9/8/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valaho 9/8/98
QUALITY ASSURANCE MANAGER DATE

OMEGA POINT LABORATORIES
MATERIAL PURCHASING SPECIFICATIONS

SPECIFICATION NUMBER: MS-- 113830-OPL

VENDOR: PMC

VENDOR PRODUCT NUMBER: KK-TA/TA-24

PRODUCT DESCRIPTION: Teflon Coated Thermocouple Wire

Material as defined above shall be provided in accordance with the Critical Characteristics as listed below:

TEST	DESCRIPTION	SPECIFICATION RANGES MINIMUM	MAXIMUM
ASTM E230-93	Std. Temperature-EMF Tables for Standardized Thermocouples	Temp. Range +32°F to +545°F Special Limits of Error ±2°F Temp. Range +545°F to 2300°F Special Limits of Error ±.4%	

QUALITY ASSURANCE REQUIREMENTS

1.0 QUALITY PROGRAM
Seller shall furnish this item in accordance with Quality Program approved by Omega Point Laboratories. Material specified herein is to be produced and tested in accordance with vendor quality standards, methods, guidelines and manufacturing instructions as defined in that Quality Program.

2.0 QUALITY VERIFICATION
Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.
Document Review - Final acceptance shall be based on satisfactory review of required certifications and/or supporting documents.

3.0 CERTIFICATIONS
3.1 Certification that supplied materials comply with this material specification and listing Critical Characteristics shall be provided. This certificates shall reference Omega Point Labs purchase order number and specification number for all material furnished under this specification. This Certification shall be signed by the appropriate vendor representative.
3.2 The material furnished under this specification shall be a product that complies with the following:
3.2.1 Has been tested and passed all tests specified herein.

3.2.2 Manufacturing methods for this material have not changed. Vendor will advise Omega Point in writing of any changes in the manufacturing prior to material manufacture.

3.2.3 Raw materials used in the manufacture of this material meet Vendor specifications.

4.0 AUDITS/RIGHTS OF ACCESS

Omega Point Labs reserves the right to audit your facility to verify compliance with the purchase order and specification requirements with a minimum ten (10) day notice.

5.0 IDENTIFICATION

Seller shall identify each item with a unique traceability number by physical marking or tagging. These identification numbers shall be traceable to certifications and packing lists.

6.0 PACKING/SHIPPING

All materials shall be packaged in air tight, moisture free containers and shall be free of foreign substances such as dirt, oil, grease or other deleterious materials.

All materials shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping.

QUALITY ASSURANCE APPROVAL

C. Patton

Title Quality Assurance Mgr. Assistant

Date 7-30-98

AVL Verification

Class: B

OMEGA POINT LABORATORIES

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (800) 639-5701

CERTIFICATE OF CALIBRATION

SPOOL #243824

TO: OMEGA POINT LABS, INC.
16015 SHADY FALLS ROAD
ELMENDORF, TX 78112

Date: 9/8/98
Cust PO#: 11383Q
Job #: 38725-1

CALIBRATION RESULTS ARE TRACEABLE TO THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) AND MEET SPECIAL LIMITS DEVIATION TOLERANCES AS DEFINED IN ISA MC96.1 (FORMERLY ANSI) AND ASTM E 230.

TEST RESULTS FOR: PMC P/N: KK-TA/TA-24 Amount: 5500'
OMEGA SPECIFICATION: MS-11330Q-OPL

Test Temperature (°F)	Inside End	Outside End
200	-0.9	-0.9
600	-2.7	-2.9
800	-2.9	-3.1
1000	-0.7	-1.0

REPORTED RESULTS ARE DEVIATIONS FROM TEST TEMPERATURES. FOR CORRECTION FACTORS REVERSE THE SIGNS.

THE MATERIAL REFERENCED ABOVE HAS BEEN CALIBRATED UTILIZING TECHNIQUES CONSISTENT WITH THE GUIDELINES SET FORTH IN ANSI Z540-1 AND ASTM E-220. THIS IS TO CERTIFY THE MATERIAL FURNISHED ON THIS SHIPMENT ARE IN CONFORMANCE WITH THE REQUIREMENTS, SPECIFICATIONS, AND DRAWINGS OF THE ABOVE REFERENCED CUSTOMER PURCHASE ORDER. INSPECTION AND TEST RECORDS ARE ON FILE AND AVAILABLE FOR CUSTOMER REVIEW.

SECONDARY STANDARD THERMOCOUPLE: TYPE K
REEL # POS LEG: 28560
REEL # NEG LEG: 28561
CALIBRATION DATE: 01/22/98

NIST #:259439A
259439D
(SINGLE USE THERMOCOUPLE FROM CALIBRATED REEL)

DIGITAL VOLT METER
MODEL: KAYE INSTRUMENTS: X1525C
SERIAL #:110208
CALIBRATION DUE DATE: 01/09/99

NIST #:811/257595-97

ICE POINT THERMOCOUPLE REFERENCE
MODEL, KAYE INSTRUMENTS: K-170-SP
SERIAL #: 306177
CALIBRATION DUE DATE: 01/09/99

NIST #: 811/250891
257680

* 600° reading ok per Cleda at Omega Point Labs.

John Robinson 9/8/98
QUALITY ASSURANCE TECHNICIAN DATE

Edward Valaika 9/8/98
QUALITY ASSURANCE MANAGER DATE

PMC CORPORATION
680 HAYWARD STREET, MANCHESTER, NH 03103 • (603) 622-3500
SPECIALIZING IN WIRE & CABLE FOR THE SENSOR INDUSTRY • FAX (603) 622-7023

SOLD TO

ONEIDA POINT LABS, INC.
10015 SHADY FALLS ROAD
ELMENDORF, TX 78112

SHIP TO

ONEIDA POINT LABS, INC.
10015 SHADY FALLS ROAD
ELMENDORF, TX 78112

DATE RECEIVED	CUSTOMER NO.	E	O	T	PMC JOB NO.
7/31/98	ONEI001	06	98	06	38725

CUSTOMER P.O. NUMBER	REQUESTED SHIP	SCHEDULED SHIP	CODE
115830			

SHIP VIA	F.O.B.	TERMS
UPS	MANCHESTER, NH	NET 15

1. MFT
2. CFT
3. POUNDS
4. EACH NET
5. METERS
6. FEET
7. LOT
8. OTHER

	QUANTITY ORDERED	PART NUMBER / DESCRIPTION	QUANTITY SHIPPED
1	20000.00	KK-TR/TG-24 BOXED. SHIP 8/11/98 OR SOONER	5500
2	1.00	CALIBRATION AT ECG, COC, ROA, 100115 T/O	
3	20000.00	KK-TR/TG-24 BOXED SHIP 8/18/98 OR SOONER	
4	1.00	CALIBRATION AT ECG, COC, ROA, 100115 T/O	

Thank you!

UNIT PRICES ARE BASED ON COPPER AT $ /lb., SILVER AT $ /TROY OZ. HOWEVER UNIT PRICES INVOICED WILL BE BASED ON MATERIAL COST ON DATE OF SHIPMENT.

SPECIAL INSTRUCTIONS:

UPS

DATE SHIPPED	BILL OF LADING NO.	NO. OF PACKAGES	WEIGHT	PPD	COL.	PARTIAL	COMPLETE	PACKED BY
9-8-98		1	34	✓		✓		

PACKING SLIP

PFA Insulated Thermocouple Wire

DATA SHEET 12

PRODUCT CODE: TA/TA

Our customers have grown to expect only the highest quality products from PMC. We are continuously committed to meet the specific needs of industry and our customers. This construction includes Teflon* PFA insulataion extruded on the single conductors which are then laid parallel and jacketed with Teflon PFA.

Teflon PFA (perfluoroalkoxy) was released in 1972 by Dupont. It possesses similar properties of the other Teflon products such as outstanding electrical characteristics, resistance to virtually all chemicals and excellent flame resistance.

PFA is a true thermoplastic material extrudable by conventional means, and available in long continuous lengths. This construction provides flexibility and toughness with stress crack resistance, resistance to weather, non-aging characterisics, and low coefficient of friction for ease of pulling through conduit.

Like TFE, suggested upper continuous temperature is 500°F (260°C), however, it does not have TFE's solder iron resistance.

The thermocouple grade products shown are used to form temperature sensors and the extension grade products become the interconnecting link in the temperature sensing system.

You will find our qualified sales and engineering staff eager to assist in selecting a design to meet the requirements of your specific application. Variations of this construction are available upon request, including aluminum Mylar* to reduce noise problems found in so many of today's plants.

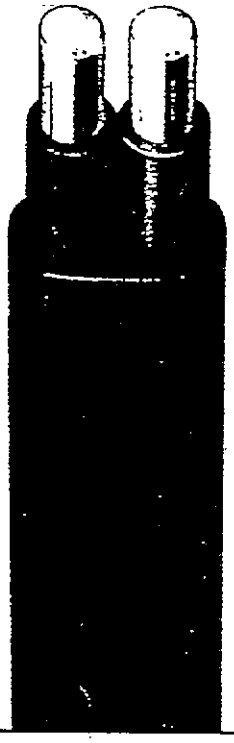
Typical applications include aircraft and automotive engine testing, rapid transit cables, and down hole cable in the oil industry.

*Registered trademark of E.I. DuPont Inc.

Calibrated conductors for high system accuracy

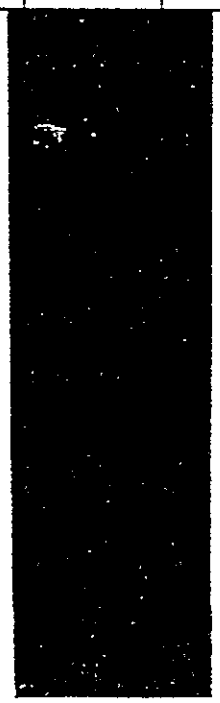
500°F (260°C) PFA insulation for improved electrical properties and high temperature applications

500°F (260°C) PFA jacket for chemical inertness to solvents, acids and oils



GRADE OF WIRE	GAUGE SIZE	WIRE TYPE	PART NUMBERS				
			TYPE J	TYPE K	TYPE T	TYPE E	TYPE N
THERMOCOUPLE	20	SOLID	J-TA/TA-20	K-TA/TA-20	T-TA/TA-20	E-TA/TA-20	N-TA/TA-20
THERMOCOUPLE	24	SOLID	J-TA/TA-24	K-TA/TA-24	T-TA/TA-24	E-TA/TA-24	N-TA/TA-24
THERMOCOUPLE	30	SOLID	J-TA/TA-30	K-TA/TA-30	T-TA/TA-30	E-TA/TA-30	N-TA/TA-30

The above part numbers represent the more popular constructions. However, other designs are available upon request.



PMC CORPORATION
57 Harvey Road
Londonderry, NH
03053

Tel. (603) 432-9473
FAX (603) 432-0435

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Color code & initial calibration tolerances for thermocouple wire >

THERMOCOUPLE TYPE		COLOR CODE		INITIAL CALIBRATION TOLERANCES		
WIRE ALLOYS	ANSI SYMBOL	+/- INDIVIDUAL	JACKET	TEMPERATURE RANGE	STANDARD LIMITS	SPECIAL LIMITS
*Iron (+) vs. Constantan™ (-)	J	WHITE/RED	BROWN	+ 32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +1400°F (+750°C)	± 4°F (2.2°C) ± .75%	± 2°F (1.1°C) ± .4%
Chromel™ (+) vs. *Alumel™ (-)	K	YELLOW/RED	BROWN	-330°F (-200°C) to -165°F (-110°C) -165°F (-110°C) to +32°F (0°C) +32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	± 2% ± 4°F (2.2°C) ± 4°F (2.2°C) ± .75%	± 2°F (1.1°C) ± .4%
Copper (+) vs. Constantan™ (-)	T	BLUE/RED	BROWN	- 330°F (-200°C) to -85°F (-65°C) -85°F (-65°C) to +270°F (+130°C) +270°F (+130°C) to +660°F (+350°C)	± 1.5% ±1.8°F (1°C) ± .75%	± .8% ± .9°F (.5°C) ± .4%
Chromel ™ (+) vs. Constantan ™ (-)	E	PURPLE/RED	BROWN	-330°F (-200°C) to -270°F (-170°C) -270°F (-170°C) to +480°F (+250°C) +480°F (+250°C) to +640°F (+340°C) +640°F (+340°C) to +1600°F (+900°C)	±1% ±3°F (1.7°C) ±3°F (1.7°C) ± .5%	± 1.8°F (1°C) ± 1.8°F (1°C) ± .4% ± .4%
Nicrosil™ (+) vs. Nisil™ (-)	N	ORANGE/RED	BROWN	+ 32°F (0°C) to +545°F (+285°C) +545°F (+285°C) to +2300°F (+1250°C)	± 4°F (2.2°C) ± .75%	± 2° F(1.1°C) ± .4%

Color code and initial calibration tolerances for extension wire >

*Iron vs. Constantan™	JX	WHITE/RED	BLACK	+ 32°F (0°C) to +400°F (+200°C)	± 4°F (2.2°C)	± 2°F (1.1°C)
Chromel™ vs. *Alumel™	KX	YELLOW/RED	YELLOW	+32°F (0°C) to +400°F (+200°C)	± 4°F (2.2°C)	± 2°F (1.1°C)
Copper vs. Constantan™	TX	BLUE/RED	BLUE	-75°F (-60°C) to +210°F (+100°C)	± 2°F (1.1° C)	± 1°F (.5°C)
Chromel™ vs. Constantan™	EX	PURPLE/RED	PURPLE	+32°F (0°C) to +400°F (+200°C)	± 3°F (1.7°C)	± 2°F (1.1°C)
Nicrosil™ vs. Nisil™	NX	ORANGE/RED	ORANGE	+32°F (0°C) to +400°F (+200°C)	± 4°F (2.2°C)	± 2°F (1.1°C)
Copper vs. Copper Alloy	SX RX	BLACK/RED	GREEN	+75°F (+25°C) to +400°F (+200°C)	± 12°F (7°C)	

* Magnetic
™Trade Mark, Hoskins Mfg. Co.

NOTE – Percent limits apply directly to temperatures in °C units, but for °F equivalents are applied to the numbers of °F above or below the ice point (+32°F). I.e. Limit (°F) = (Temp. °F – 32°F) X Percentage)

Thermocouple wire cannot be expected to meet the limits of error at temperatures below the ice point unless specified at time of purchase.

TA/TA physical properties >

INSULATION CHARACTERISTICS	INSULATION	JACKET	GAUGE SIZE	NOMINAL INSULATION WALL (INCHES)	NOMINAL JACKET WALL (INCHES)	NOMINAL DIAMETER (INCHES)	APPROX. SHIP. WEIGHT LBS. PER 1000 FT
SPECIFIC GRAVITY	2.15	2.15	20	.008	.010	.068 X .116	12
DUROMETER HARDNESS	55	55					
TENSILE STRENGTH p.s.i. (min.)	4000 p.s.i.	4000 p.s.i.	24	.008	.010	.056 X .092	7
ELONGATION %(min.)	300%	300%					
MINIMUM BEND RADIUS	5 X O.D.	10 X O.D.					
ABRASION RESISTANCE	VERY GOOD	VERY GOOD	30	.004	.006	.030 X .048	2
CUT THROUGH RESISTANCE	GOOD	GOOD					
MOISTURE RESISTANCE	EXCELLENT	EXCELLENT					
SOLDER IRON RESISTANCE	VERY GOOD	VERY GOOD					
SERVICE TEMPERATURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE	500°F(260°C) CONTINUOUS 550°F(288°C) SINGLE EXPOSURE					
FLAME TEST	NON-FLAMMABLE	NON-FLAMMABLE					

PRICING POLICY > Shipments will be invoiced at PMC's prices in effect at time of shipment. Quotations are given with an escalation clause and prices, terms, and conditions are subject to change without prior notice. PMC will, however, make every attempt to hold to current quoted prices. All prices quoted are in United States currency, and shall be subject to correction for errors. Unless otherwise stated in writing to PMC.

EE[illegible]POOLS & COILS > All shipments, unless specified otherwise by PMC, are made on non-returnable reels, spools or coils in one continuous length.

HORTAGES & RETURNS > All claims for shortage or incorrect material must be made within 10 days after receipt of the goods to which such claim pertains. Goods may only be returned for credit within 1 month of the date of authorization. Goods that are special in any way shall not be returned to PMC. Material returned for any reason, without written authorization will be refused and returned at shipper's expense. A return request must be processed through our Londonderry, N.H. sales office.

TOLERANCES > Due to allowances in manufacturing processes for wire, cable and similar products, PMC reserves the right to ship a variation of ±10% from the quantity of such goods ordered. Physical tolerances shown are nominal. Shipping weights are an average of all types of conductors and are listed for estimating only. These weights can vary substantially due to different types of spools, reels and/or conductors.

The material contained in this document is presented in good faith and believed to be reliable and accurate. However, because testing conditions may vary and material quality or information that may be provided in whole or part by others may be beyond our control, no warranty, expressed or implied, is given and PMC Corporation can assume no liability for results obtained or damages incurred through the application of the data tests presented. NOTE. PMC reserves the right to substitute an equal product on all registered trademark items

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME Omega Point Lab
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM Graybar
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1799 . OPL
DATE RECEIVED 8-4-98
DATE INSPECTED 8-4-98
INSPECTED BY: [illegible]

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	CONFO MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
Stranded Bare #8	11377Q	1 roll	1 roll	0	8AW67str	Y		GOOD	None	X			

09-016-9/97

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER

11377Q

Date 7/28/98

Project #

Page: 1

Order From: Graybar Electric Co
P.O. Box 8258
San Antonio TX 78208
(210) 227-9241 Ext. 0000
~~Fax # (000) 000-0000 Ext. 0000~~

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmedorf
TX 78112-9784

Vendor ID: 0166 7/28/98

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
Bare #8	001	1.00	Roll	$0.00	

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval C Patton
Date 7-28-98

Please Quote Purchase Order Number on all correspondence.

Special instructions:
Please include Certificate of Compliance to Catalog Specs.

Subtotal:	$0.00
Freight:	$0.00
Tax amount:	$0.00
Total Value:	$0.00

080625/11-89

SERVICE WIRE CO.

MANUFACTURER

CULLODEN, WV (304)743-8600 PITTSBURGH, PA (724)325-1658 HOUSTON, TX (713)674-8686

SHIP TO:
GRAYBAR-SAN ANT-5554506
1223 N HACKBERRY ST

SAN ANTONIO TX 78208

ORDER NO: 393643

SAIA

SAIA

SHIP/SPECIAL INSTRUCTIONS:
PP/ADD FOB ORIGIN

12798224

66287011695

MFG DATE

HST-625806

HST-625806

BASTR7SD8
8 AWG 7STR BARE CU STRAND
SD

GROSS

TARE

NET

1058
FEET

THIS MATERIAL IS MADE TO APPROPRIATE UL, ASTM, OR CUSTOMER STANDARDS AS SPECIFIED BY THE ORDER.
MADE BY:

CUTTING

DRAWING

STRANDING

CABLING

ARMOR

JACKET

INSULATION

TESTING

Q/A RECEIVING REPORT

OMEGA POINT LABORATORIES

CLIENT/PROJECT NAME Omega Point Labs
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM Rothe
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1929 - OPL
DATE RECEIVED 10-15-99
DATE INSPECTED 10-16-99
INSPECTED BY: O Dalton

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COMM MATL YN	CERT. RECD YN	CONTAINER INTEGRITY	EXCEPTION	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
0-15 dry Pressure Gage	121530	1	1	0	92LE005	Y	Y	Good	None	X			
Moisture Detector	121530	1	1	0	5855	Y	Y	Good	None	X			
* 6" Dial Caliper	121530	1	1	0	Q623532	Y	Y	Good	None	X			

FORM
1/29/93

OMEGA POINT LABORATORIES
16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER

12153Q

Date: 9/21/1999
Page: 1 of 1

Order From: Rothe Development Inc.
4614 Sinclair Road
San Antonio
TX 78222
210-648-3131

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112
(210) 635-8100

Vendor No: 0161

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
6" Dial Caliper SN: Q623532	001	1.00	Each	$42.00	$42.00
0-15psi Dry Pressure Gage SN: 92LE005	002	1.00	Each	$42.00	$42.00
Moisture Meter SN:5855	003	1.00	Each	$42.00	$42.00

See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements.

QA Approval [signature]

Date 9-21-99

CALIBRATION CERT. REQUIREMENTS1.
Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Special Instructions:: Please provide calibration services per attached Vendor Purchasing Specification and QA Requirements

Subtotal:	$126.00
Freight:	0.00
Tax Amount:	9.77
Total Value:	$135.77

08092

VENDOR PURCHASING SPECIFICATION AND QUALITY ASSURANCE REQUIREMENTS

Vendor Rotche

Purchase Order No. 121530

Any or all of the following Quality Assurance requirements shall be incorporated as conditions to this procurement when corresponding box is marked. Failure to comply with any requirement specified herein may result in rejection and/or return of shipment at seller's expense.

1.0 QUALITY PROGRAM

☒ Seller shall furnish all items on this Purchase Order in accordance with Quality Program approved by Buyer.

2.0 QUALITY VERIFICATION

When additional quality verification activities are required as a condition to this procurement, invoices will not be paid until satisfactory completion of such activities. Excessive rejection rates may result in removal from buyer's Approved Vendors List.

☒ Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

☐ Independent Laboratory Tests - Samples of materials furnished shall be tested independently for conformance to specification requirements prior to final acceptance. Rejected materials shall be returned at seller's expense.

☒ Document Review - Final acceptance shall be based on satisfactory review of required certifications and other supporting documents.

3.0 CERTIFICATIONS

When certifications are required as a condition to this procurement, the seller shall furnish one reproducible copy either with or prior to each shipment. Shipments will not be accepted and invoices will not be paid until certifications are in buyer's possession.

PURCHASING SPECIFICATIONS
PAGE 2 OF 3

VENDOR Rothe
PURCHASE ORDER NO. 121530

☐ Certificate of Compliance/Conformance Required - Certification that materials and/or services comply with purchase order requirements. Certification shall reference purchase order number and traceability numbers (when applicable).

☐ Certified Test Report Required - Certification that material complies with applicable material specification(s) and the purchase order. Include actual results of required tests.

☒ Certificate of Calibration Required - Certification shall be traceable to National Bureau of Standards. (Renamed NIST, Nat. Institute of Science & Technology)

4.0 AUDITS/RIGHT OF ACCESS

☒ The buyer reserves the right to audit your facility to verify compliance with purchase order, code and specification requirements with minimum of ten (10) days notice.

☒ Shipments shall only originate from facilities approved by the buyer.

☐ Buyer reserves the right to inspect any or all work included in this order at seller's facility with as early notice as practicable.

5.0 IDENTIFICATION

☐ Seller shall identify each item with a unique traceability number by physical marking or tagging. Traceability numbers shall be traceable to certifications and packing lists.

☒ Seller shall identify each container with a unique identification number. The identification number shall be traceable to certifications and packing lists.

6.0 10 CFR, PART 21

☐ The material, equipment and/or services to be furnished under the provisions of this purchase order are involved in the testing of basic components of a Nuclear Regulatory Commission (NCR) licensed facility. Accordingly, the seller is subject to the provisions of 10 CFR, Part 21 (Reporting of Defects and Non-compliance)

PURCHASING SPECIFICATIONS
PAGE 3 OF 3

VENDOR Rothe
PURCHASE ORDER NO. 121530

7.0 PACKING/SHIPPING

[X] All materials shall be packaged in air tight, moisture free containers and shall be free from all foreign substances such as dirt, oil, grease or other deleterious material.

[ ] All materials and equipment shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping. Wherever practical, equipment shall be palletized for ease of unloading and storage at destination. each container shall be clearly marked with buyer's purchase order number.

QUALITY ASSURANCE APPROVAL [signature] DATE 9-21-99

FORM
3/93

EQUIPMENT DELIVERY RECEIPT

Date: 10/05/1999
Rothe Development, Inc.
Metrology Services Division
4614 Sinclair Rd.
San Antonio, TX 78222-2099
(210)648-3131

Control: 556
Company: Omega Point Laboratories
Contact: Ms. Cleda Patton
Address: 16015 Shady Falls Road
City: Elmendorf, TX 78112-9784
Phone: 635-8100

Item	W.O. #	Customer P.O.	Mfgr.	Model	Serial No.	Description
1	74505	121530	Fowler	52-008-006	Q623532	Caliper

1 ITEMS RECEIVED BY:
Name (Please Print):_____ Date:_____
Signature:_____

RDI 3003

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 20936 WORK ORDER # 74505

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9784
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 121530

DATE: 09/23/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM
MFG: Fowler
MODEL: 52-008-006
NOMEN: Caliper
S/N: 0626532
CUST ID:
ACCESS
RCVD:

***** Need Manual *****

STOMER COMMENTS/REQUIREMENTS:
TA: BEFORE & AFTER DATA REQUIRED

OUR PO:

CEIVED:
( ) IN TOLERANCE
( ) OUT OF TOLERANCE
( ) INOPERATIVE

RETURNED:
(✓) IN TOLERANCE
( ) LIMITED CALIBRATION
( ) REPAIR ONLY
( ) NO ACTION
DATA

CALIBRATION INTERVAL: 12mos.
CAL DATE: 5 Oct 99
DUE DATE: 5 Oct 00

CAL'D AT:
(✓) RDMSD
( ) ON-SITE
( ) SUB

VIRONMENTAL
NDITIONS:
68 °F
45 %RH

SPECIFICATIONS:
(✓) MFG
( ) RDMSD:
( ) OTHER:

PROCEDURE:
( ) MFG
( ) RDMSD:
(✓) OTHER: 33K6-4-552-1

RDMSD TECH: SFB

SERVICE CODE: J

UL MPTOM:

ORK PERFORMED: CAL'D

#'S: 104

MITED CALIBRATION:

OMMENTS:

T F	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS:		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	44.00	
						TAX 7.75%	3	41
						TOTAL	47	41

HIP VIA: DATE:

MSD 2002
97

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: 60257

ROTHE DEVELOPMENT, INC.
METROLOGY SERVICES DIVISION
4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: Fowler
MODEL: 52-008-006
NOMEN: Caliper
S/N: Q623532
CUST. ID:

CAL DATE: 10/05/1999
DUE DATE: 10/05/2000

CONTROL NO.: 556 - 20986
TECHNICIAN: 3
SPECIFICATIONS: MFG
PROCEDURE: 33K6-4-552-1
WORK ORDER: 74505
CUSTOMER P.O.: 121539
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 45 %

DATE RECEIVED: 09/23/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
104	MITUTOYO	BE1-35A	763827	03/15/2000

Calibration Certificate Acceptance

Item 6" Dial Caliper
SN Q623532

	Q/A	Eng.
NIST Traceability Adequate		ES
As Found/As Left Values		ES
Calibration Data Sufficient		ES
Tolerance Range Adequate		ES
Date of Review:	10-6-99	10/6/99

OPL. QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: Will R Wright ☐ CMS ☑ QCO DATE: 10/05/1999

RDMSD 1001
08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: DIAL CALIPER

CUSTOMER: Omega Point Laboratories
WO NUMBER: 74505
SERIAL: Q623532
CUST ID:

DATE: 5 Oct 99
TECH: SEB
INST NO: 20986

CALIBRATION DATA TAKEN

INCOMING ✓
OUTGOING ✓

CONDITION OF EQUIPMENT

IN TOLERANCE ✓
OUT OF TOLERANCE

MANUFACTURER Fowler

MODEL 52-008-006

ACCURACY +/-.001"

RESOLUTION .001"

JAW PARALLELISM
READINGS BETWEEN TOP AND BOTTOM OF JAWS
WITHIN ±0.001"

(PASS) / FAIL

DIAL CALIPER ACCURACY

BLOCK SIZE (")	READING (")	BLOCK SIZE (")	READING (")
0.100	0.100	0.190	0.190
0.110	0.110	0.200	0.200
0.120	0.120	0.500	0.500
0.130	0.130	1.000	1.000
0.140	0.140	2.000	2.000
0.150	0.150	3.000	3.000
0.160	0.160	4.000	4.000
0.170	0.170	5.000	5.000
0.180	0.180	6.000	6.000

INSIDE JAW ACCURACY ±0.001"	NA / PASS / FAIL
DEPTH GAGE ACCURACY ±0.001"	NA / PASS / FAIL
STEP MEASUREMENT ACCURACY ±0.001"	NA / PASS / FAIL

INCOMING
OUTGOING

EQUIPMENT DELIVERY RECEIPT

: 10/04/1999
e Development, Inc.
ology Services Division
Sinclair Rd.
Antonio, TX 78222-2099
)648-3131

Control: 556
Company: Omega Point Laboratories
Contact: Ms. Cleda Patton
Address: 16015 Shady Falls Road
City: Elmendorf, TX 78112-9784
Phone: 635-8100

m	W.O. #	Customer P.O.	Mfgr.	Model	Serial No.	Description
.	74506	121530	McDaniel	0-15	92LE005	Gage PSI

ITEMS RECEIVED BY:
Name (Please Print): _____ Date: _____

Signature: _____

I 3003

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 20536 WORK ORDER #74506

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elsendorf, TX 78112-9784
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 121530

DATE: 09/23/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM
MFG: McDaniel
MODEL: 0-15
NOMEN: Gage PSI
S/N: 92LE005
CUST ID:
ACCESS
RCVD:

***** Need Manual *****

TOMER COMMENTS/REQUIREMENTS:
A: BEFORE & AFTER DATA REQUIRED

OUR PO:

RECEIVED:	RETURNED:	CALIBRATION INTERVAL: 12mos.	CAL'D AT:
IN TOLERANCE	(X) IN TOLERANCE		(X) RDMSD
OUT OF TOLERANCE	( ) LIMITED CALIBRATION	CAL DATE: 30 Oct 99	( ) ON-SITE
INOPERATIVE	( ) REPAIR ONLY	DUE DATE: 30 Oct 00	( ) SUB
	( ) NO ACTION DATA		

IRONMENTAL IDITIONS:	SPECIFICATIONS:	PROCEDURE:	RDMSD TECH:	SERVICE CODE:
68 °F	(X) MFG	( ) MFG	PJS	J
%RH	( ) RDMSD:	( ) RDMSD:		
	( ) OTHER:	(X) OTHER: 17-20MP-41		

MPTOM:

RK PERFORMED: Cal Data Taken -
CHL

S: 213

ITED CALIBRATION:

MMENTS:

T	QTY	PART #	DESCRIPTION	COST	REPAIR LABOR HOURS:		
					PARTS TOTAL		
					REPAIR LABOR		
					SHIPPING		
					TEAR DOWN CHARGE		
					CALIBRATION	44.00	
					TAX 7.7500	3	41
					TOTAL	47	41

HIP VIA: DATE:

MSD 2002
97

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: 60214

ROTHE DEVELOPMENT, INC.
METROLOGY SERVICES DIVISION
4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elsendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-15
NOMEN: Gage PSI
S/N: 92LE005
CUST. ID:

CAL DATE: 10/03/1999
DUE DATE: 10/03/2000

CONTROL NO.: 556 - 20536
TECHNICIAN: 4
SPECIFICATIONS: MFG
PROCEDURE: 17-20MP-41
WORK ORDER: 74506
CUSTOMER P.O.: 121530
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 44 %
DATE RECEIVED: 09/23/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR>4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
213	MERIAM	DP2000I	D0205F18	03/01/2000

Calibration Certificate Acceptance

Item 0-15 psi Dry Pressure Gage
SN 92LE005

	Q/A	Eng.
NIST Traceability Adequate	[illegible]	[illegible]
As Found/As Left Values	[illegible]	[illegible]
Calibration Data Sufficient	[illegible]	[illegible]
Tolerance Range Adequate	[illegible]	[illegible]
Date of Review	10-6-99	10/6/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: [signature] ☒ CMS ☐ QCO DATE: 10/04/1999

RDMSD 1000
08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Laboratories
WO NUMBER: 74506
SERIAL: 92LE005
CUST ID:

DATE: 30c499
TECH: PJS
INST NO: 20536

CALIBRATION DATA TAKEN

INCOMING ✓
OUTGOING ✓

CONDITION OF EQUIPMENT

IN TOLERANCE ✓
OUT OF TOLERANCE

MANUFACTURER McDaniel

RANGE 0-15 PSI

ACCURACY .5% FS

GAUGE PRESSURE	STANDARD READING
3	3.01
6	6.04
9	9.05
12	12.04
15	15.00

EQUIPMENT DELIVERY RECEIPT

Date: 10/05/1999
Rothe Development, Inc.
Metrology Services Division
4614 Sinclair Rd.
San Antonio, TX 78222-2099
(210)648-3131

Control: 556
Company: Omega Point Laboratories
Contact: Ms. Cleda Patton
Address: 16015 Shady Falls Road
City: Elmendorf, TX 78112-9784
Phone: 635-8100

Item	W.O. #	Customer P.O.	Mfgr.	Model	Serial No.	Description
1	74505	121530	Fowler	52-008-006	Q623532	Caliper

1 ITEMS RECEIVED BY:
Name (Please Print): _____ Date: _____

Signature: _____

RDI 3003

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 20936 WORK ORDER # 74505

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9784

DATE: 09/23/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM
MFG: Fowler
MODEL: 52-008-006
NOMEN: Caliper
S/N: 0623532
CUST ID:
ACCESS
RCVD:

CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 121530

***** Need Manual *****

TOMER COMMENTS/REQUIREMENTS:

OUR PO:

A: BEFORE & AFTER DATA REQUIRED

EIVED:	RETURNED:	CALIBRATION INTERVAL: 12mos.	CAL'D AT:
IN TOLERANCE	(✓) IN TOLERANCE		(✓) RDMSD
OUT OF TOLERANCE	( ) LIMITED CALIBRATION	CAL DATE: 5 Oct 99	( ) ON-SITE
INOPERATIVE	( ) REPAIR ONLY DATA	DUE DATE: 5 Oct 00	( ) SUB
	( ) NO ACTION		

IRONMENTAL NDITIONS:	SPECIFICATIONS:	PROCEDURE:	RDMSD TECH:	SERVICE CODE:
8 °F	(✓) MFG	( ) MFG	SEB	J
75 %RH	( ) RDMSD:	( ) RDMSD:		
	( ) OTHER:	(✓) OTHER: 33K6-4-352-1		

MPTOM:

RK PERFORMED: CALD

S: 104

ITED CALIBRATION:

MMENTS:

T	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS:		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	44.00	
						TAX 7.7500	3	41
						TOTAL	47	41

IP VIA: DATE:

ISD 2002

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: 60257

ROTHE DEVELOPMENT, INC.
METROLOGY SERVICES DIVISION
4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: Fowler
MODEL: 52-008-006
NOMEN: Caliper
S/N: 0623532
CUST. ID:

CAL DATE: 10/05/1999
DUE DATE: 10/05/2000

CONTROL NO.: 556 - 20986
TECHNICIAN: 3
SPECIFICATIONS: MFG
PROCEDURE: 33K5-4-552-1
WORK ORDER: 74505
CUSTOMER P.O.: 121530
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 45 %

DATE RECEIVED: 09/23/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR>4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
104	MITUTOYO	BE1-35A	763827	03/15/2000

Calibration Certificate Acceptance

Item: 6" Dial Caliper
SN: 0623532

	Q/A	Eng.
NIST Traceability Adequate		
As Found/As Left Values		
Calibration Data Sufficient		
Tolerance Range Adequate		
Date of Review:	10-6-99	10/6/99

OPL QA/QC Dept. — Eng./Dept. Mgr.

APPROVED BY: Will R Wright ☐ CMS ☑ QCO DATE: 10/05/1999

RDMSD 1001
08/97

This certificate may not be reproduced, except in full, without written approval of Rothe Development, Inc. Metrology Services Division.

PAGE LEFT INTENTIONALY BLANK TO CORRECT THIS RECORD

6/20/00

B.C.MACHCHHAR
TRANSCO CORPORATE QUALITY ASSURANCE MANAGER

PAGE LEFT INTENTIONALY BLANK TO CORRECT THIS RECORD

6/20/00

B.C.MACHCHHAR
TRANSCO CORPORATE QUALITY ASSURANCE MANAGER

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92058
Calibration Date:	5/26/99
Recalibration Date:	5/26/2000
Manufacturer:	Yokogawa
Model No.:	100 Channel DAU
Serial No.:	99LE004
Equipment Description:	100 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	FLUKE Digital Multimeter, Model 8062-A, Serial # 4405

PERFORMANCE:

Equal to ± 0.1 mV

Calibration Performed by:

James R. Bundick
James R. Bundick
Fire Test Engineer

OMEGA POINT LABORATORIES

556

Verification Sheet

Channels checked at 10.0 mV using the Fluke Digital Multimeter Serial #4405 to verify the mV signal from the DC voltage generator

Channels checked at 70 °F using the Tegam T-207318

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
mV Reading	10.0	10.1	10.1	10.1	9.9	10.0	9.9	9.9	10.0	10.0	9.9	10.0	9.9	10.1	10.1	10.1	10.1	9.9	9.9	10.0	9.9	10.0	10.0	10.0	9.9	9.9	10.0	9.9	9.9	9.9	9.9	9.9	9.9	9.9	9.9	10.0	10.0	9.9	9.9	10.0	10.0	10.0	9.9	10.0	10.0	10.0	9.9	10.0	10.0	10.0
Temperature (°F)	69	69	71	71	70	69	69	69	70	69	70	71	69	70	70	71	70	71	70	70	69	69	71	71	70	69	69	69	71	71	69	71	69	71	70	69	69	70	71	70	70	69	69	71	70	71	69	69	69	71

Channel	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
mV Reading	9.9	10.0	9.9	10.0	10.0	10.0	9.9	9.9	10.0	10.0	10.0	10.0	10.0	10.0	9.9	9.9	10.0	9.9	10.0	9.9	10.0	10.0	10.0	10.0	9.9	9.9	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.9	10.0	9.9	9.9	10.0	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.9	9.9	10.0	9.9	10.0
Temperature (°F)	71	69	70	70	71	71	71	71	69	70	70	71	70	69	69	71	70	71	71	70	70	69	69	69	71	71	70	70	70	69	71	71	70	70	70	70	69	71	70	70	71	71	71	70	70	70	70	71	71	71

05/26/99 James Burdick

7.1 Calibration Preparation

We recommend that the DA100 is calibrated at least once a year to assure measurement accuracy. Make the following preparations before calibrating.

Required Equipment

up to 10V

Name	Measurement Range	Accuracy	Recommended
DC Voltage Generator	0V to 50V	0.005% of setting + 1μV	Yokogawa 9000*, 4808
DMM	0V to 50V	0.005% of setting + 1μV	HP3458A
Decade Resistance Box	0.1Ω to 1000Ω	0.01%	Yokogawa 2793
Reference Junction Compensator			Yokogawa Type T-MJ

* When the measurement range is 0V short, the input terminals to achieve accuracy.

Input Modules that Need Calibrating

Universal input module.
DCV/TC/DI input module.
mA input module.
Strain input module.

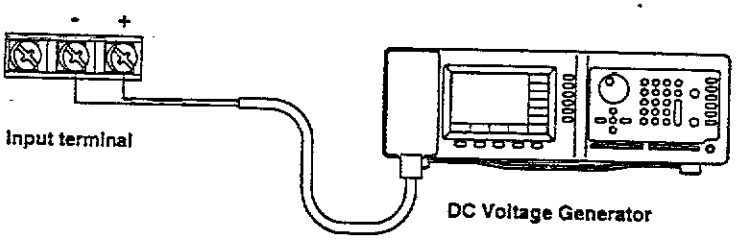
Calibrating Environment and Conditions

Ambient temperature : 23°C±2°C.
Ambient humidity : 55±10%RH.
Power supply voltage : 100 to 240 VDC.
Power supply frequency : 50/60 Hz±1%.
Warm-up time : At least 30 minutes for the DA100, and the necessary warm-up time needed for the used equipment.

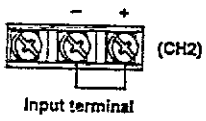
Connection (Following figure is for a screw type terminal)

- **For DC Voltage Measurement**

  Input the rated value of the voltage range to calibrate in CH3.



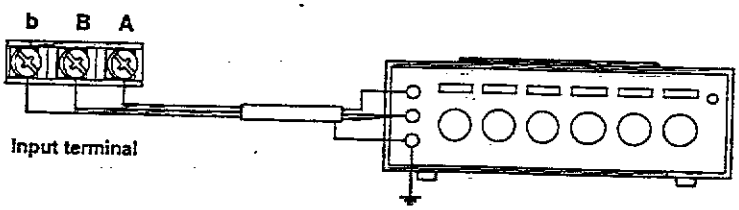
Short the + and - terminals on CH2.



7 Calibration

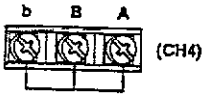
- **For Temperature Measurement Using RTD**

  Input 100 Ω to CH5



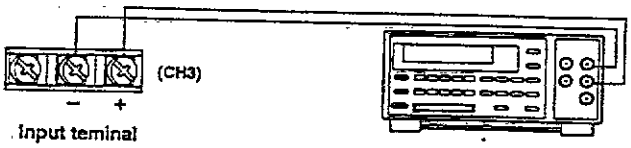
Decade Resistance Box

Short A, B and b terminals on CH4



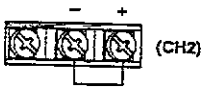
- **For DC Current Measurement**

  Input the rated value of the current range to calibrate in CH3.



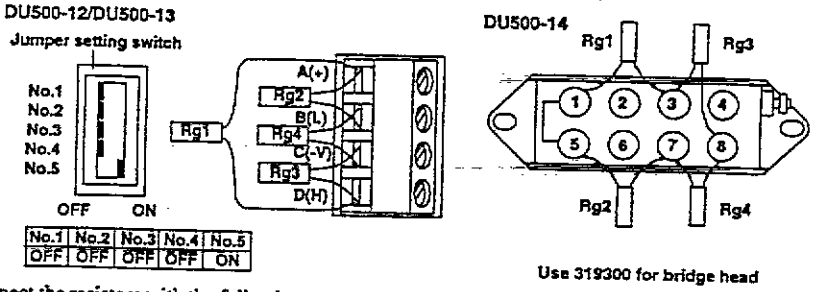
DC Current Generator

Short the + and - terminals on CH2.



Strain Measurement

Measure using the 4-gauge method. Use 319300 for the DU500-14 bridge box.



No.1	No.2	No.3	No.4	No.5
OFF	OFF	OFF	OFF	ON

Connect the resistors with the following specifications to R1 to R4 according to the calibrated value

Calibrated value	Resistor 1 to 3	Resistor 4	Accuracy of the resistor value
ZERO	120.000	120.000	±0.005%, 0.3ppm/°C
+2000με	120.000	119.521	±0.005%, 0.3ppm/°C
+20000με	120.000	115.294	±0.005%, 0.3ppm/°C
+200000με	120.000	80.000	±0.005%, 0.3ppm/°C

Notes on the Thermocouple and the RTD (Resistance Thermometer Device)

- When calibrating a highly sensitive RTD, calibrating 60 mV and 200 mV ranges first results in a more accurate calibration.
- Calibration of the thermocouple is substituted by the DC voltage calibration and is not performed.

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92061
Calibration Date:	9/23/99
Recalibration Date:	3/23/2000
Manufacturer:	Yokogawa
Model No.:	300 Channel DAU
Serial No.:	48JF0082
Equipment Description:	300 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	Tegam Calibrator/Themometer, Model 840A, Serial # T-207318

PERFORMANCE:

Overall Tolerance (°F) +1/-0.6

Calibration Performed by:

James R. Bundick
James R. Bundick
Systems Engineer

OMEGA POINT LABORATORIES

Channel Verification for Yokogawa 300 Channel

Serial No.: ~~981-E004~~ 9/23/99 48JF0082

Calibrator Used: Tegam T-207318

Temperature Setting (°F): 32.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	31.8	-0.2	105	31.6	-0.4	205	31.8	-0.2
15	31.6	-0.4	115	31.8	-0.2	215	31.8	-0.2
25	32.2	0.2	125	32.2	0.2	225	32.0	0.0
35	32.2	0.2	135	31.8	-0.2	235	31.8	-0.2
45	31.8	-0.2	145	32.2	0.2	245	32.2	0.2
55	31.5	-0.5	155	32.2	0.2	255	31.6	-0.4
65	31.8	-0.2	165	31.6	-0.4	265	32.2	0.2
75	31.8	-0.2	175	32.2	0.2	275	32.5	0.5
85	32.0	0.0	185	32.0	0.0	285	31.8	-0.2
95	31.6	-0.4	195	31.5	-0.5	295	32.2	0.2

Temperature Setting (°F): 1500.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	1499.9	-0.1	105	1499.9	-0.1	205	1500.4	0.4
15	1499.7	-0.3	115	1500.1	0.1	215	1499.7	-0.3
25	1499.9	-0.1	125	1499.9	-0.1	225	1499.9	-0.1
35	1500.4	0.4	135	1499.7	-0.3	235	1500.1	0.1
45	1500.1	0.1	145	1499.5	-0.5	245	1500.4	0.4
55	1499.9	-0.1	155	1499.4	-0.6	255	1500.1	0.1
65	1499.9	-0.1	165	1499.4	-0.6	265	1500.4	0.4
75	1499.7	-0.3	175	1499.4	-0.6	275	1500.4	0.4
85	1499.5	-0.5	185	1500.6	0.6	285	1499.9	-0.1
95	1499.9	-0.1	195	1500.6	0.6	295	1499.9	-0.1

Temperature Setting (°F): 1999.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	1999.8	0.8	105	1999.8	0.8	205	2000.0	1.0
15	1999.2	0.2	115	1999.9	0.9	215	1999.8	0.8
25	1999.4	0.4	125	1999.9	0.9	225	1999.8	0.8
35	2000.0	1.0	135	1999.4	0.4	235	1999.9	0.9
45	1999.9	0.9	145	1999.4	0.4	245	2000.0	1.0
55	1999.9	0.9	155	1998.9	-0.1	255	1999.9	0.9
65	1999.0	0.0	165	1998.7	-0.3	265	2000.0	1.0
75	1999.9	0.9	175	1998.5	-0.5	275	1999.8	0.8
85	1999.8	0.8	185	2000.0	1.0	285	1999.4	0.4
95	1999.9	0.9	195	2000.0	1.0	295	1999.8	0.8

Overall Tolerance (°F): +1/-0.6

Performed by:

James Burdick Systems Engineer 9/23/99
Title Date

Approved by:

James Burdick Systems Engineer 9/23/99
Title Date

OMEGA LABORATORIES

NOCCLL

Q/A RECEIVING REPORT

CLIENT/PROJECT NAME Omega Point Labs
CLIENT/PROJECT NUMBER OPL Equipment
RECEIVED FROM Rothe
PROJECT LOCATION Omega Point Labs

REPORT NUMBER 1895 - OPL
DATE RECEIVED 5-14-99
DATE INSPECTED 5-14-99
INSPECTED BY: D Ballisto

ITEM DESCRIPTION	P.O. NO.	QUANTITY Order	QUANTITY Rec'd	QUANTITY B.O.	I.D. NO.	COND MATL Y/N	CERT. RECD Y/N	CONTAINER INTEGRITY	EXCEPTIONS	ACCEPTANCE Accept	ACCEPTANCE Hold	ACCEPTANCE Reject	REMARKS
0-100psi Pressure Gage	118640	1	1	0	SN: 99LE001	Y	Y	GOOD	None	X			Calibration Service
0-100psi Pressure Gage	118640	1	1	0	SN: 99LE002	Y	Y	GOOD	None	X			
0-100psi Pressure Gage	118640	1	1	0	SN: 98LE001	Y	Y	GOOD	None	X			

FORM
1/29/93

561

16015 SHADY FALLS RD.
ELMENDORF, TEXAS 78112
PH. (210) 635-8100
FAX (210) 635-8101

PURCHASE ORDER
11864Q

Date: 4/15/99
Page: 1 of 1

Order From: Rothe Develoment Inc.
4614 Sinclair Road
San Antonio
TX 78222
210-648-3131

Deliver to: Omega Point Laboratories, Inc
16015 Shady Falls Road
Elmendorf
TX 78112
(210) 635-8100

Vendor No: 0161

Your Item Number / Item Description	Our Reference	Qty Ordered	Units	Unit Cost	Extension
0-100 psi Pressure Gage SN: 99LE001	001	1.00	Each	$44.00	$44.00
0-100 psi Pressure Gage SN: 99LE002	002	1.00	Each	$44.00	$44.00
0-100 psi Pressure Gage SN: 98LE001	003	1.00	Each	$44.00	$44.00

"See Special Instructions Regarding Purchasing Specifications for Quality Assurance Requirements."
QA Approval [illegible]
Date 4-15-99

CALIBRATION CERT. REQUIREMENTS1.
Statement of NIST traceability
2. NIST test or I.D. number
3. As Found
4. As Left Values
5. Uncertainties of calibration measurements
6. Calibration data

Please Quote Purchase Order Number on all correspondence.

Special Instructions:
Please provide calibration services per attached Vendor Purchasing Specification and QA Requirements

Subtotal:	$132.00
Freight:	0.00
Tax Amount:	0.00
Total Value:	$132.00

080625

VENDOR PURCHASING SPECIFICATION AND QUALITY ASSURANCE REQUIREMENTS

Vendor Rotche

Purchase Order No. 118640

Any or all of the following Quality Assurance requirements shall be incorporated as conditions to this procurement when corresponding box is marked. Failure to comply with any requirement specified herein may result in rejection and/or return of shipment at seller's expense.

1.0 QUALITY PROGRAM

☒ Seller shall furnish all items on this Purchase Order in accordance with Quality Program approved by Buyer.

2.0 QUALITY VERIFICATION

When additional quality verification activities are required as a condition to this procurement, invoices will not be paid until satisfactory completion of such activities. Excessive rejection rates may result in removal from buyer's Approved Vendors List.

☒ Receiving Inspection - Buyer shall inspect items upon receipt to verify compliance with purchase order requirements. Rejected items shall be returned at seller's expense.

☐ Independent Laboratory Tests - Samples of materials furnished shall be tested independently for conformance to specification requirements prior to final acceptance. Rejected materials shall be returned at seller's expense.

☒ Document Review - Final acceptance shall be based on satisfactory review of required certifications and other supporting documents.

3.0 CERTIFICATIONS

When certifications are required as a condition to this procurement, the seller shall furnish one reproducible copy either with or prior to each shipment. Shipments will not be accepted and invoices will not be paid until certifications are in buyer's possession.

PURCHASING SPECIFICATIONS
PAGE 2 OF 3

VENDOR Rothe
PURCHASE ORDER NO. 118640

☐ Certificate of Compliance/Conformance Required - Certification that materials and/or services comply with purchase order requirements. Certification shall reference purchase order number and traceability numbers (when applicable).

☐ Certified Test Report Required - Certification that material complies with applicable material specification(s) and the purchase order. Include actual results of required tests.

☒ Certificate of Calibration Required - Certification shall be traceable to National Bureau of Standards. (Renamed NIST, Nat. Institute of Science & Technology)

4.0 AUDITS/RIGHT OF ACCESS

☒ The buyer reserves the right to audit your facility to verify compliance with purchase order, code and specification requirements with minimum of ten (10) days notice.

☒ Shipments shall only originate from facilities approved by the buyer.

☐ Buyer reserves the right to inspect any or all work included in this order at seller's facility with as early notice as practicable.

5.0 IDENTIFICATION

☐ Seller shall identify each item with a unique traceability number by physical marking or tagging. Traceability numbers shall be traceable to certifications and packing lists.

☒ Seller shall identify each container with a unique identification number. The identification number shall be traceable to certifications and packing lists.

6.0 10 CFR, PART 21

☐ The material, equipment and/or services to be furnished under the provisions of this purchase order are involved in the testing of basic components of a Nuclear Regulatory Commission (NCR) licensed facility. Accordingly, the seller is subject to the provisions of 10 CFR, Part 21 (Reporting of Defects and Non-compliance)

PURCHASING SPECIFICATIONS
PAGE 3 OF 3

VENDOR Rothe
PURCHASE ORDER NO. 118640

7.0 PACKING/SHIPPING

☒ All materials shall be packaged in air tight, moisture free containers and shall be free from all foreign substances such as dirt, oil, grease or other deleterious material.

☐ All materials and equipment shall be suitably crated, boxed or otherwise prepared for shipment to prevent damage during handling and shipping. Wherever practical, equipment shall be palletized for ease of unloading and storage at destination. each container shall be clearly marked with buyer's purchase order number.

QUALITY ASSURANCE APPROVAL [signature] DATE 4-15-99

FORM
3/93

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL #555 - 28921 WORK ORDER #71659

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elmendorf, TX 78112-9784
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 118640

DATE: 04/20/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE002
CUST ID: 99LE002
ACCESS
RCVD:
***** Need Manual *****

CUSTOMER COMMENTS/REQUIREMENTS:

OUR PO:

DATA: DESIRE 1 SETP DATA REQUIRED

RECEIVED:
(X) IN TOLERANCE
( ) OUT OF TOLERANCE
( ) INOPERATIVE

RETURNED:
(X) IN TOLERANCE
( ) LIMITED CALIBRATION
( ) REPAIR ONLY
( ) NO ACTION DATA

CALIBRATION INTERVAL: 12 mos.
CAL DATE: 4/27/99
DUE DATE: 4/27/00

CAL'D AT:
(X) RDMSD
( ) ON-SITE
( ) SUB

ENVIRONMENTAL CONDITIONS:
68 °F
[illegible] %RH

SPECIFICATIONS:
( ) MFG
( ) RDMSD:
(X) OTHER: Dmany +/- 3 PSI

PROCEDURE:
( ) MFG
( ) RDMSD:
(X) OTHER: NAVAIR 17-20MP-41

RDMSD TECH: Sam

SERVICE CODE: 3

PROBLEM/SYMPTOM:

WORK PERFORMED:

Calibrated

THIS IS NOT

R#'S:
261

LIMITED CALIBRATION:

COMMENTS:

PART KIT REF	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS: _____		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	14	00
						TAX 7.75%	3	41
						TOTAL	47	41

SHIP VIA: DATE:

RDMSD 2002
9/97

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: 58174

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE002
CUST. ID: 99LE002

CAL DATE: 04/27/1999
DUE DATE: 04/27/2000

CONTROL NO.: 556 - 28921
TECHNICIAN: 2
SPECIFICATIONS: OMEGA +/-3PSI
PROCEDURE: NAVAIR 17-20MP-41
WORK ORDER: 71669
CUSTOMER P.O.: 118640
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 47 %

DATE RECEIVED: 04/20/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
261	HEISE	ATS2000	ATS-10521	04/28/1999

Calibration Certificate Acceptance

Item Pressure Gage 0-100psi
SN 99LE002

	Q/A	Eng.
NIST Traceability Adequate	[illegible]	[illegible]
As Found/As Left Values	[illegible]	[illegible]
Calibration Data Sufficient	[illegible]	[illegible]
Tolerance Range Adequate	[illegible]	[illegible]
Date of Review:	5-14-99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: Peter J. Stemmer ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001
08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Lab
WO NUMBER: 71669
SERIAL:
CUST ID: 99LE002

DATE: 4/23/99
TECH: Jam
INST NO: 28821

CALIBRATION DATA TAKEN

INCOMING X
OUTGOING X

CONDITION OF EQUIPMENT

IN TOLERANCE X
OUT OF TOLERANCE

MANUFACTURER McDaniel

RANGE 0-100 PSI

ACCURACY +/- 3PSI

GAUGE PRESSURE	STANDARD READING
10	10.40
30	30.25
50	50.04
70	70.29
95	95.35

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 28820 WORK ORDER # 71668

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 16015 Shady Falls Road
Elpendorf, TX 78112-9794
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 118610

DATE: 04/20/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE001
CUST ID: 99LE001
ACCESS
RCVD:

***** Need Manual *****

STOMER COMMENTS/REQUIREMENTS:

TA: BEFORE & AFTER DATA REQUIRED

OUR PO:

CEIVED:
) IN TOLERANCE
) OUT OF TOLERANCE
) INOPERATIVE

RETURNED:
(X) IN TOLERANCE
( ) LIMITED CALIBRATION
( ) REPAIR ONLY
( ) NO ACTION Data

CALIBRATION INTERVAL: 12 mos.
CAL DATE: 4/27/99
DUE DATE: 4/27/00

CAL'D AT:
(X) RDMSD
( ) ON-SITE
( ) SUB

VIRONMENTAL
NDITIONS:
68 °F
47 %RH

SPECIFICATIONS:
(X) MFG
( ) RDMSD:
(X) OTHER: ~~[illegible]~~ +/- 3PSI

PROCEDURE:
( ) MFG
( ) RDMSD:
(X) OTHER: NAVAIR 17-20MF-41

RDMSD TECH: JAM

SERVICE CODE: J

SYMPTOM: Omega

THIS IS NOT Calibrated

ORK PERFORMED:

#'S:
261

MITED CALIBRATION:

OMMENTS:

T F	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS: _____		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	44	10
						TAX 7.250%	3	31
						TOTAL	47	41

HIP VIA: DATE:

MSD 2002
97

RCVD BY
(SIGNED): _____ (PRINTED): _____

CERT. NUMBER: 58173

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 99LE001
CUST. ID: 99LE001

CAL DATE: 04/27/1999
DUE DATE: 04/27/2000

CONTROL NO.: 556 - 26820
TECHNICIAN: Z
SPECIFICATIONS: OMEGA +/-3PSI
PROCEDURE: NAVAIR 17-20MP-41
WORK ORDER: 71668
CUSTOMER P.O.: 11864Q
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 47 %

DATE RECEIVED: 04/20/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
261	HEISE	AT52000	AT5-10521	04/28/1999

Calibration Certificate Acceptance

Item 0-100 Pressure gage
SN 99LE001

	Q/A	Reg.
NIST Traceability Adequate	CS	CS
As Found/As Left Values	CS	CS
Calibration Data Sufficient	CS	CS
Tolerance Range Adequate	CS	CS
Date of Review:	5-11-99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgt.

APPROVED BY: Peter J. Stemmer ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001
08/97

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ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Lab
WO NUMBER: 71668
SERIAL:
CUST ID: 99LE001

DATE: 4/27/99
TECH: JAM
INST NO: 28820

CALIBRATION DATA TAKEN

INCOMING X
OUTGOING X

CONDITION OF EQUIPMENT

IN TOLERANCE X
OUT OF TOLERANCE

MANUFACTURER McDaniel

RANGE 0-100 PSI

ACCURACY +/-3 PSI

GAUGE PRESSURE	STANDARD READING
10	9.65
30	29.91
50	50.17
70	70.55
95	95.50

Rothe Development, Inc. 4614 Sinclair Road San Antonio, Texas 78222
METROLOGY SERVICES DIVISION TRACEABLE TO NIST (210)648-3131 Fax (210)648-4091

CHARGE # 107 CONTROL # 556 - 26672 WORK ORDER # 71570

RECEIVED FROM: Omega Point Laboratories
ADDRESS: 15015 Shady Falls Road
Elmendorf, TX 78112-9794
CONTACT NAME: Ms. Cleda Patton
PURCHASE ORDER #: 119640

DATE: 04/20/1999
PHONE #: 635-8100
FAX #: 635-8101

ITEM

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 98LE001
CUST ID: 98LE001
ACCESS
RCVD:
***** Need Manual *****

STOMER COMMENTS/REQUIREMENTS:

OUR PO:

TA: PRIOR & AFTER DATA REQUIRED

CEIVED:
) IN TOLERANCE
) OUT OF TOLERANCE
) INOPERATIVE

RETURNED:
(X) IN TOLERANCE
( ) LIMITED CALIBRATION
( ) REPAIR ONLY
( ) NO ACTION

DATA

CALIBRATION INTERVAL: 12mos.
CAL DATE: 4/27/99
DUE DATE: 4/27/00

CAL'D AT:
(X) RDMSD
( ) ON-SITE
( ) SUB

VIRONMENTAL ONDITIONS:
68 °F
47 %RH

SPECIFICATIONS:
( ) MFG
( ) RDMSD:
(X) OTHER: 0 mega +/- 3PSI

PROCEDURE:
( ) MFG:
( ) RDMSD:
(X) OTHER: NAVAIR 17-20MP-41

RDMSD TECH: SAR

SERVICE CODE: 3

T/SYMPTOM:

ORK PERFORMED:

Calibrated

R#'S:
261

MITED CALIBRATION:

OMMENTS:

KT EF	QTY	PART #	DESCRIPTION	COST		REPAIR LABOR HOURS: _____		
						PARTS TOTAL		
						REPAIR LABOR		
						SHIPPING		
						TEAR DOWN CHARGE		
						CALIBRATION	44	00
						TAX 7.75%	3	41
						TOTAL	47	41

HIP VIA: DATE:

DMSD 2002
/97

RCVD BY
(SIGNED): (PRINTED):

CERT. NUMBER: 58175

ROTHE DEVELOPMENT, INC.

METROLOGY SERVICES DIVISION

4614 SINCLAIR RD., SAN ANTONIO, TEXAS 78222 PH:210-648-3131

CERTIFICATE OF CALIBRATION

ISSUED TO: Omega Point Laboratories
16015 Shady Falls Road
Elmendorf, TX 78112-9784
635-8100

MFG: McDaniel
MODEL: 0-100 PSI
NOMEN: Gauge
S/N: 98LE001
CUST. ID: 98LE001

CAL DATE: 04/27/1999
DUE DATE: 04/27/2000

CONTROL NO.: 556 - 26672
TECHNICIAN: Z
SPECIFICATIONS: OMEGA +/-3PSI
PROCEDURE: NAVAIR 17-20MP-41
WORK ORDER: 71670
CUSTOMER P.O.: 118640
RECEIVED CONDITION: IN TOLERANCE
RETURNED CONDITION: IN TOLERANCE

CALIBRATION PERFORMED AT: RDMSD
CALIBRATION INTERVAL: 12mos.
TEMPERATURE: 68 °F
RELATIVE HUMIDITY: 47 %
DATE RECEIVED: 04/20/1999

COMMENTS:

ATTACHMENTS: CALIBRATION DATA

All Calibrations performed at Rothe Development, Inc. Metrology Services Division meet the requirements of ANSI/NCSL Z540-1-1994, ISO/IEC GUIDE 25, and ISO 10012-1, and are traceable to the National Institute of Standards and Technology. The collective uncertainty of the measurement(s) does not exceed 25% (TUR≥4:1) of the instrument specification(s) unless noted in the COMMENTS section.

TR#	MFG	MODEL	SERIAL NO.	DUE DATE
261	HEISE	ATS2000	ATS-10521	04/28/1999

Calibration Certificate Acceptance

Item 0-100psi Pressure Gage
SN 98-LE001

	Q/A	Eng.
NIST Traceability Adequate	[illegible]	ES
As Found/As Left Values	[illegible]	ES
Calibration Data Sufficient	[illegible]	ES
Tolerance Range Adequate	[illegible]	ES
Date of Review:	5/14/99	5/14/99

OPL QA/QC Dept. Eng./Dept. Mgr.

APPROVED BY: [signature] ☑ CMS ☐ QCO DATE: 05/13/1999

RDMSD 1001
08/97

This certificate may not be reproduced, except in full, without written approval of Rothe Development, Inc. Metrology Services Division.

ROTHE DEVELOPMENT METROLOGY SERVICES

CALIBRATION DATA: PRESSURE GAUGE

CUSTOMER: Omega Point Lab
WO NUMBER: 71670
SERIAL:
CUST ID: 98LE001

DATE: 4/27/98
TECH: Sam
INST NO: 26672

CALIBRATION DATA TAKEN

INCOMING X
OUTGOING X

CONDITION OF EQUIPMENT

IN TOLERANCE X
OUT OF TOLERANCE

MANUFACTURER McDaniel

RANGE 0-100 PSI

ACCURACY +/- 3 PSI

GAUGE PRESSURE	STANDARD READING
10	9.89
30	30.09
50	50.30
70	70.63
95	95.86

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92061
Calibration Date:	9/23/99
Recalibration Date:	3/23/2000
Manufacturer:	Yokogawa
Model No.:	300 Channel DAU
Serial No.:	48JF0082
Equipment Description:	300 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	Tegam Calibrator/Themometer, Model 840A, Serial # T-207318

PERFORMANCE:

Overall Tolerance (°F) +1/-0.6

Calibration Performed by:

James R. Bundick
Systems Engineer

OMEGA POINT LABORATORIES

Channel Verification for Yokogawa 300 Channel

Serial No.: ~~98U0004~~ 9/23/99 48F0082

Calibrator Used: Tegam T-207318

Temperature Setting (°F): 32.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	31.8	-0.2	105	31.6	-0.4	205	31.8	-0.2
15	31.6	-0.4	115	31.8	-0.2	215	31.8	-0.2
25	32.2	0.2	125	32.2	0.2	225	32.0	0.0
35	32.2	0.2	135	31.8	-0.2	235	31.8	-0.2
45	31.8	-0.2	145	32.2	0.2	245	32.2	0.2
55	31.5	-0.5	155	32.2	0.2	255	31.6	-0.4
65	31.8	-0.2	165	31.6	-0.4	265	32.2	0.2
75	31.8	-0.2	175	32.2	0.2	275	32.5	0.5
85	32.0	0.0	185	32.0	0.0	285	31.8	-0.2
95	31.6	-0.4	195	31.5	-0.5	295	32.2	0.2

Temperature Setting (°F): 1500.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	1499.9	-0.1	105	1499.9	-0.1	205	1500.4	0.4
15	1499.7	-0.3	115	1500.1	0.1	215	1499.7	-0.3
25	1499.9	-0.1	125	1499.9	-0.1	225	1499.9	-0.1
35	1500.4	0.4	135	1499.7	-0.3	235	1500.1	0.1
45	1500.1	0.1	145	1499.5	-0.5	245	1500.4	0.4
55	1499.9	-0.1	155	1499.4	-0.6	255	1500.1	0.1
65	1499.9	-0.1	165	1499.4	-0.6	265	1500.4	0.4
75	1499.7	-0.3	175	1499.4	-0.6	275	1500.4	0.4
85	1499.5	-0.5	185	1500.6	0.6	285	1499.9	-0.1
95	1499.9	-0.1	195	1500.6	0.6	295	1499.9	-0.1

Temperature Setting (°F): 1999.0

Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-	Channel No.	Reading (°F)	+/-
5	1999.8	0.8	105	1999.8	0.8	205	2000.0	1.0
15	1999.2	0.2	115	1999.9	0.9	215	1999.8	0.8
25	1999.4	0.4	125	1999.9	0.9	225	1999.8	0.8
35	2000.0	1.0	135	1999.4	0.4	235	1999.9	0.9
45	1999.9	0.9	145	1999.4	0.4	245	2000.0	1.0
55	1999.9	0.9	155	1998.9	-0.1	255	1999.9	0.9
65	1999.0	0.0	165	1998.7	-0.3	265	2000.0	1.0
75	1999.9	0.9	175	1998.5	-0.5	275	1999.8	0.8
85	1999.8	0.8	185	2000.0	1.0	285	1999.4	0.4
95	1999.9	0.9	195	2000.0	1.0	295	1999.8	0.8

Overall Tolerance (°F): +1/-0.8

Performed by:

James Bundick Systems Engineer 9/23/99
Title Date

Approved by:

James Bundick Systems Engineer 9/23/99
Title Date

OMEGA POINT LABORATORIES

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92058
Calibration Date:	5/26/99
Recalibration Date:	5/26/2000
Manufacturer:	Yokogawa
Model No.:	100 Channel DAU
Serial No.:	99LE004
Equipment Description:	100 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	FLUKE Digital Multimeter, Model 8062-A, Serial # 4405

PERFORMANCE:

Equal to ± 0.1 mV

Calibration Performed by:

James R. Bundick
James R. Bundick
Fire Test Engineer

OMEGA POINT LABORATORIES

Verification Sheet

Channels checked at 10.0 mV using the Fluke Digital Multimeter Serial #4405 to verify the mV signal from the DC voltage generator

Channels checked at 70 °F using the Tegam T-207318

Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
mV Reading	10.0	10.1	10.1	10.1	9.9	10.0	9.9	9.9	10.0	10.0	9.9	10.0	9.9	10.1	10.1	10.1	10.1	9.9	9.9	10.0	9.9	10.0	10.0	10.0	9.9	9.9	10.0	9.9	9.9	9.9	9.9	9.9	9.9	9.9	10.0	10.0	9.9	9.9	10.0	10.0	10.0	9.9	10.0	10.0	10.0	9.9	10.0	10.0	10.0	10.0
Temperature (°F)	69	69	71	71	70	69	68	68	70	68	70	71	69	70	70	71	70	71	70	70	69	68	71	71	70	69	69	69	71	71	69	71	69	71	70	69	69	70	71	70	70	69	69	71	70	71	69	69	69	71

Channel	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
mV Reading	9.9	10.0	9.9	10.0	10.0	10.0	9.9	9.9	10.0	10.0	10.0	10.0	10.0	10.0	9.9	9.9	10.0	9.9	10.0	9.9	10.0	10.0	10.0	10.0	9.9	9.9	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.9	10.0	9.9	9.9	10.0	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.9	10.0	9.9	10.0	
Temperature (°F)	71	69	70	70	71	71	71	71	69	70	70	71	70	69	69	71	70	71	71	70	70	69	69	69	69	71	71	70	70	70	69	71	71	70	70	70	69	71	70	70	69	71	71	71	70	70	71	71	71	71

05/26/99 James Burdick

578

Omega Point Laboratories, Inc.
16015 Shady Falls Road
Elmendorf, Texas 78112
800-966-5253 FAX 210-635-8101

Certificate of Calibration

Certification No.:	92059
Calibration Date:	4/27/99
Recalibration Date:	4/27/2000
Manufacturer:	Yokogawa
Model No.:	10 Channel DAU
Serial No.:	99LE003
Equipment Description:	10 Channel Data Acquisition System with YOKOGAWA Darwin Series
Calibration Sources:	FLUKE Digital Multimeter, Model 8062-A, Serial # 4405

PERFORMANCE:

Equal to ± 0.1 mV

Calibration Performed by:

James R. Bundick
James R. Bundick
Fire Test Engineer

OMEGA POINT LABORATORIES

Tunnel DAU

Yokogawa Darwin Series DAU

Model	Serial No.		Description
DA100-13-1D	7700HB664	913	Main Stand Alone Unit
DU200-11	7701HB284	908	10 channel Input Module
DT300-21	7702HA531	909	RS-232C Input/Output Module

YOKOGAWA

Yokogawa Corporation of America
2 Dart Rd., Shenandoah Industrial Park
Newnan, Ga. 30265
Telephone (770) 253-7000

9904004023 **PACKING LIST**

REV. # 00 PAGE:

SHIPMENT NO. TX01450 01

DATE SHIPPED (02) 4-20-99

SHIPPED VIA UPS

PRINTED: 04/19/99 TIME: 15:07 BILL TO ID: (4711007)

SHIP TO:
OMEGA POINT LABORATORIES, INC.
16015 SHADY FALLS ROAD
ELMENDORF TX 78112-9784

SOLD TO:
OMEGA POINT LABORATORIES, INC.
16015 SHADY FALLS ROAD
ELMENDORF TX 78112-9784

CONTAINER & W 1

FREIGHT CHAR

PURCHASE ORDER NO. 11846

ORD. NOTE:

YCA ORDER NO.	DATE ENTERED	SCHEDULED SHIP
TX01450	04/12/99	04/29/99

PACKED BY D. B.

	ITEM NO.	MODEL/DESCRIPTION	QTY. ORDERED	QTY. TO SHIP	QTY. SHIPPED	SCHEDULE	DATE WANTED
DA	01	DA100-15-1D DATA ACQUISITION UNIT	1	1	1	042999	(042999)
DX	02	DU200-11 10 CHANNEL mV/TC/DI INPUT-	1	1	1	042999	(042999)
DS	03	DT300-21 RS-232C MODULE	1	1	1	042999	(042999)

Yokogawa Corporation of America does hereby certify that the products on this packing list have been tested and were found to meet or exceed all published specifications.

SPECIAL MARKS:

SHIPPED FROM NEWNAN, GA.

SIGNED BY:

(T) Y 0.0

** TOTAL PAGE.08 **

OMEGA POINT LABORATORIES

Client Name: TRANSCO

Client #: 12000 Project #: 105900

Description: TC's

Page: 1 of 2

Date: 12-28-99

Name: [illegible]

Item 5	outside of tray 6"x36" tray (right side) inside tray (left side) Bare #8						1-19 20-38 39-57
Item 3	inside 6"x6" tray (right) outside (left) Bare #8						58-76 77-95 96-114
Item 7	1" conduit						115-~~114~~ 130
Item 4	1" conduit						131-146
Item 3	Bare # 8 1" from slab						147
Item 4	extra TC Between layers						148-150
Item 6	1¼" conduit Bare #8's						151-166 167-182
Item 2	4" conduit Bare #8's						183-200 201-218
Item 1	4" Conduit					12/28/99	219-235
Item L	Bare #8					~~236-252~~	236-252
Item 2	1¼" conduit						253-269
	Bare #8's						270-287
Item 12	10"x 10"x 8" junction box						288-292
Item 11	24"x24"x12" junction box						293-304
Item 8	12"x 12"x6" junction box						305-309
Item 4	Bare #8's						310-325
Item 7	Bare #8						326-341

OMEGA POINT LABORATORIES

Client Name: Transco

Client #: 12000 Project #: 105900

Description: TC's

Page: 2 of 2

Date: 12-28-99

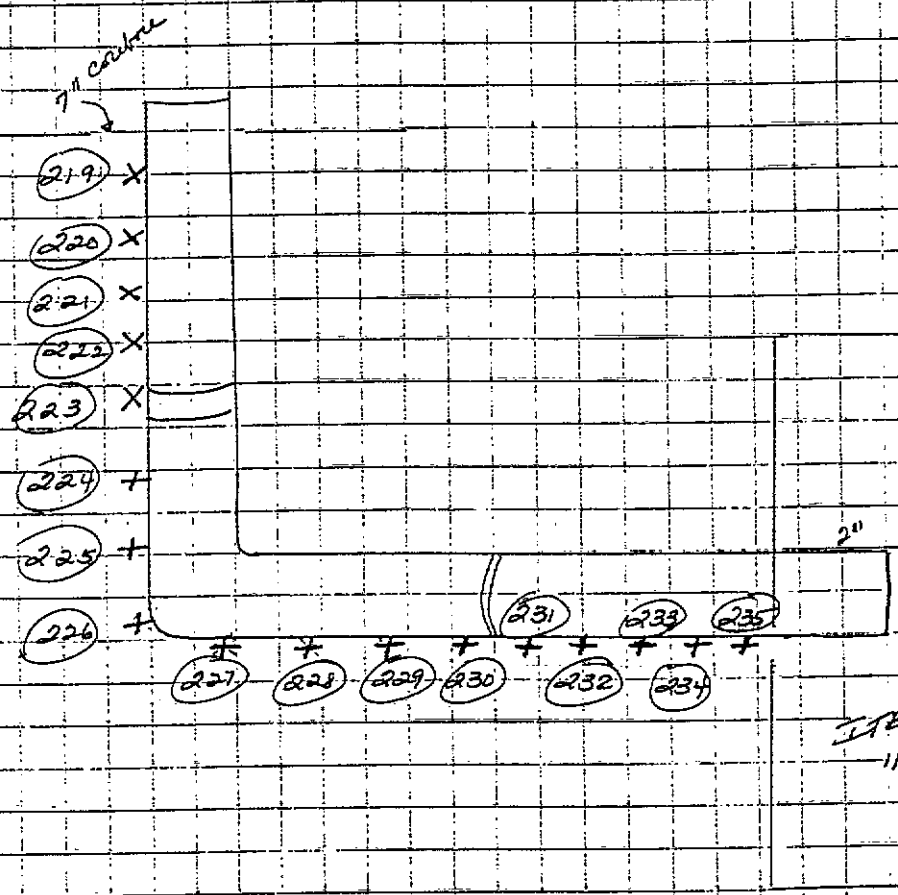
Name: C Patton

Item 5 = extra TC's						342 -	350
Item 3 - vertical seal						351 -	353
Item 3 - bottom of seal on top slap						354 -	356
Item 10 - Air drop						357 -	366

TR400
12/10/99

ITEM #1

4" rigid steel conduit



Thermocouples run outside of conduit down conduit around lip and into bottom to with 1" of 24x24x12 metal box

T/C #219-#235

T/C #219 - 1" from SLAB
T/C #219-#220 - 6" SPACING
T/C #220-235 - 6" SPACING
T/C #235 - 1" from 24"x24"x12" (ITEM #11) Box

Thermocouple #223 is on coupling
#231 is 1/2" (towards back club) east of coupling

Cleda Patton OPL QA/QC
12/28/99

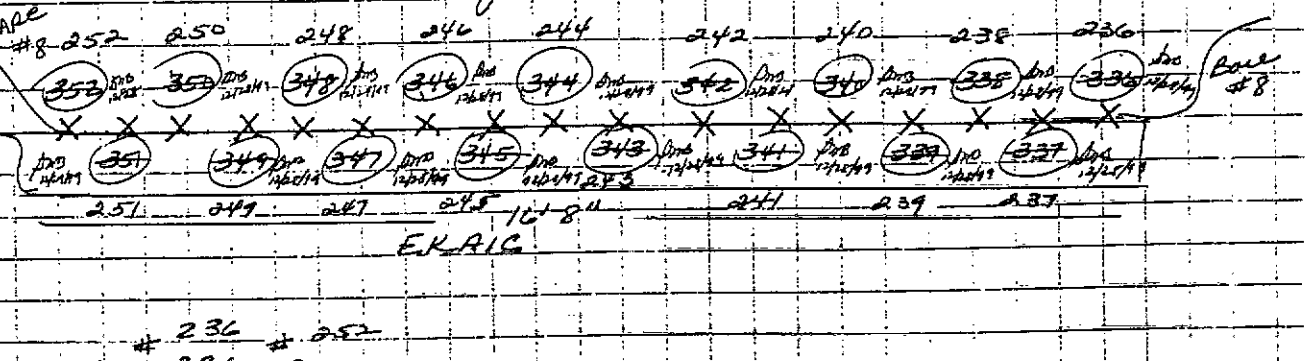
Sandra Bragford 12/10/99

OPL QA/QC 12/10/99 C Patton

TR 400
12/10/99

ITEM #1

4" rigid Steel Conduit



T/C # 336 - 352
236 252
Pro 12/21/99 Pro 12/21/99

Thermocouples verified on Bare #8 copper prior to installation into cable. before installation into 4" conduit.
Verified that T/C #336 is 1" from top of conduit (out of furnace)
T/C #352 is near 24x24x12" box. cannot verify exact location.
Thermo couples run along top of cable EKAIC
Cable runs from top of conduit out of furnace to 24x24x12" wall mounted box. Enters through cover of box.

T/C # 336 (236) at top of conduit 1" from conduit termination
T/C # 336 - 352 (236 - 252) - 6" spacing.
T/C # 352 (252) at end of conduit at box. cannot verify exact location

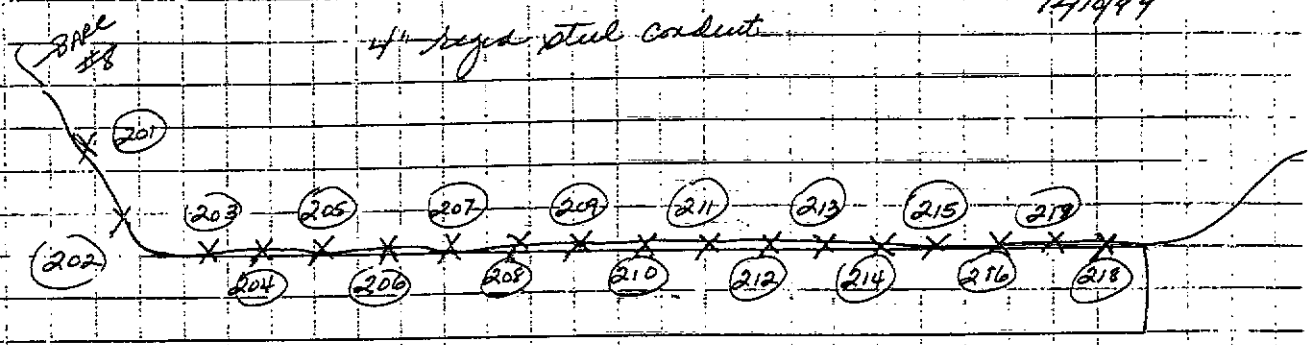
EKAIC 3/C #350 MCM - 37 Strands tinned copper, extruded semi-conducting strand screen .175" OKOGUARD insulation, extruded semi-conducting insulation .005 flat tinned copper tape helically applied, cables with fire and moisture resistant fibrous filler .012 neoprene filler binder tape, double wrap .015 Kylar bedding tape. .140 OKOlon outer jacket .005 corrugated bronze tape sequentially marked per the above reference spec. GAI SR-551-044461-000

Gardner Bushfield
12/10/99

OPL QA/QC 12-10-99 [illegible]
12/28/99 [illegible]

ITEM #2 TR 4/10 12/10/99

4" Rigid steel conduit



EKAIE 7'7" Length

Thermocouples seen on Bare #8 installed to cable prior to installation of cable into jb and terminated at 24"x24"x12" box. The cable is 1½" from termination of 4" conduit in metal box T/C # 218.
T/C # 201 and # 202 are installed on bare #8 and are not installed on cable. Are located inside of LB going up east of furnace.
All thermo couples are Tenfeet at 6" apart.

EKAIE 3/c # 4/0. 19 strands tinned copper, extruded semi-conducting strand screen .175" OKOGUARD insul. extruded semi-conducting insul. screen .005 FLAT Tinned Copper tape helically applied. CABLED with fire and moisture resistant fiberous fillers .012" neoprene filled binder tape, double wrap .015 hypalon bedding tape. .005 corrugated bronze tape applied helically .012 neoprene filled binder tape. ~~(OH 6)~~ AMA 11/12/99 .140 OKOZON outer jacket. CABLE sequentially marked per above ref. GAI Spec. SP-551-044461-000.

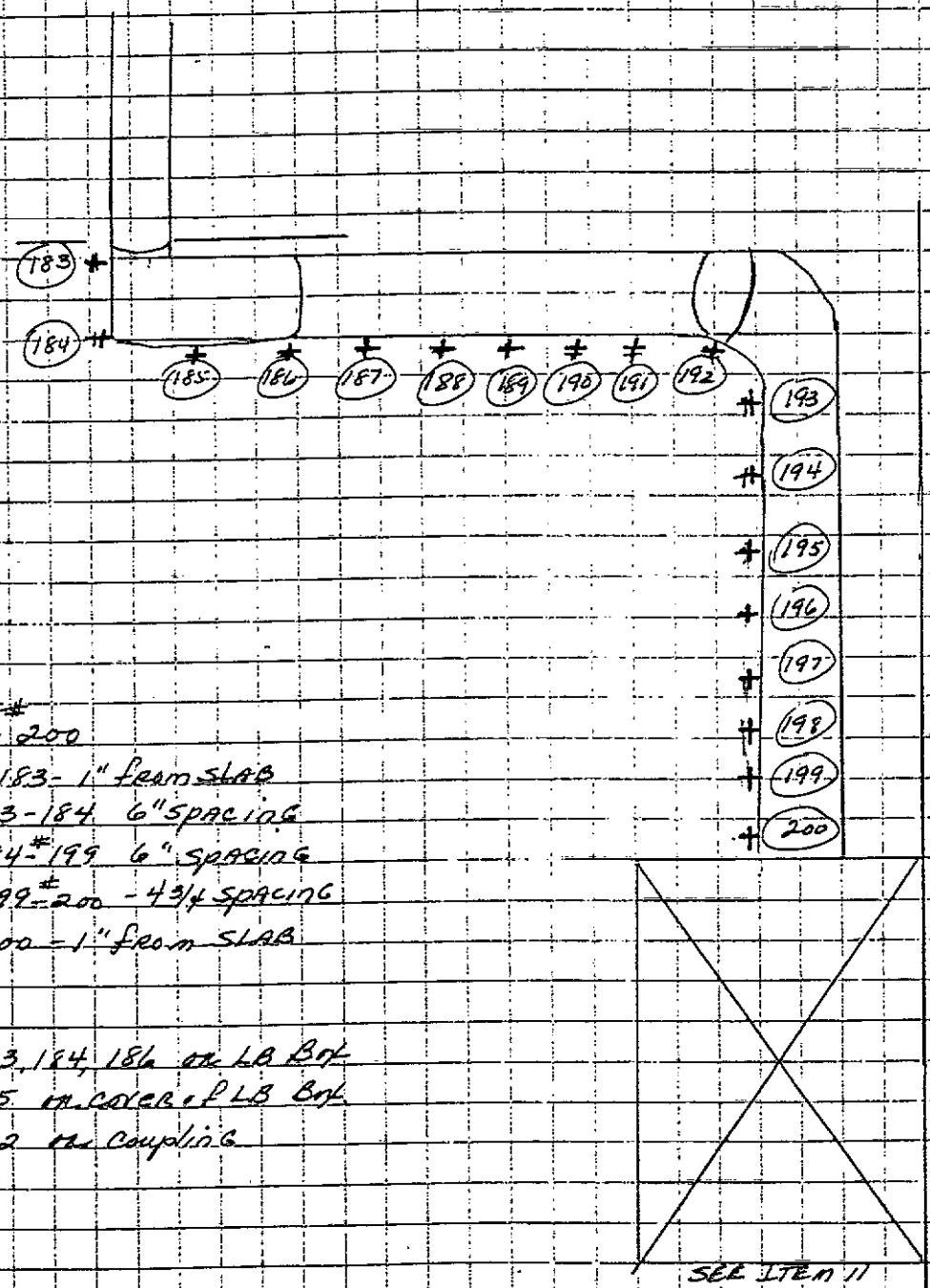
Gordon Bamford
12/10/99
OPL QA/QC 12-10-99
12-28-99

TR-470
12/9/99

ITEM #2

4" rigid steel conduit

Thermocouples outside of conduit



T/C #183 - #200
T/C #183 - 1" from slab
T/C #183-184 6" spacing
T/C #184-#199 6" spacing
T/C #199-#200 - 4 3/4 spacing
T/C #200 - 1" from slab

T/C #183, 184, 186 on LB Bot
T/C #185 on cover of LB Bot
T/C #192 on coupling

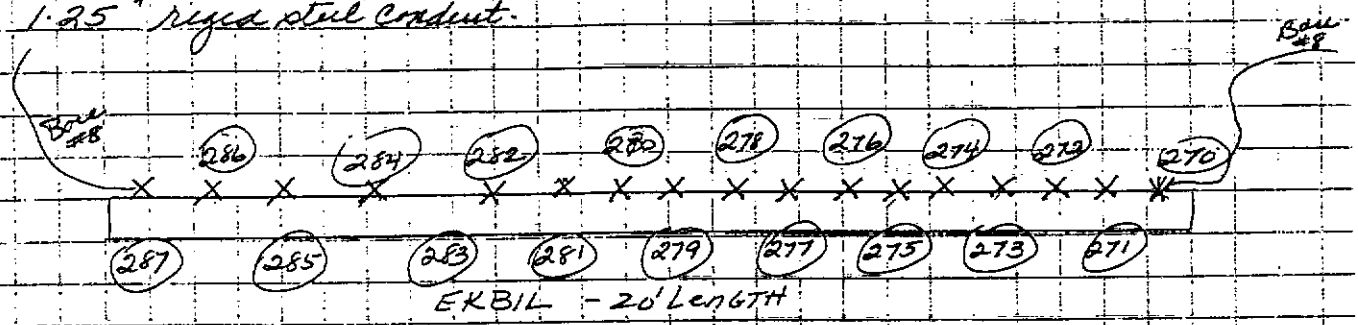
Gordon Bickford
12/9/99

OPL QA/QC 12-9-99 12/28/99

#TR 400
12/10/99

ITEM #2

1.25" rigid steel conduit.



Thermocouple attached to cable prior to installation into conduit.
Thermocouples on a bare #8 cable.
T/C #270 is at top out of furnace.

Verified thermocouples 6" spacing throughout excluding first #270 and T/C #287. Sandra J. Bradford 12/10/99

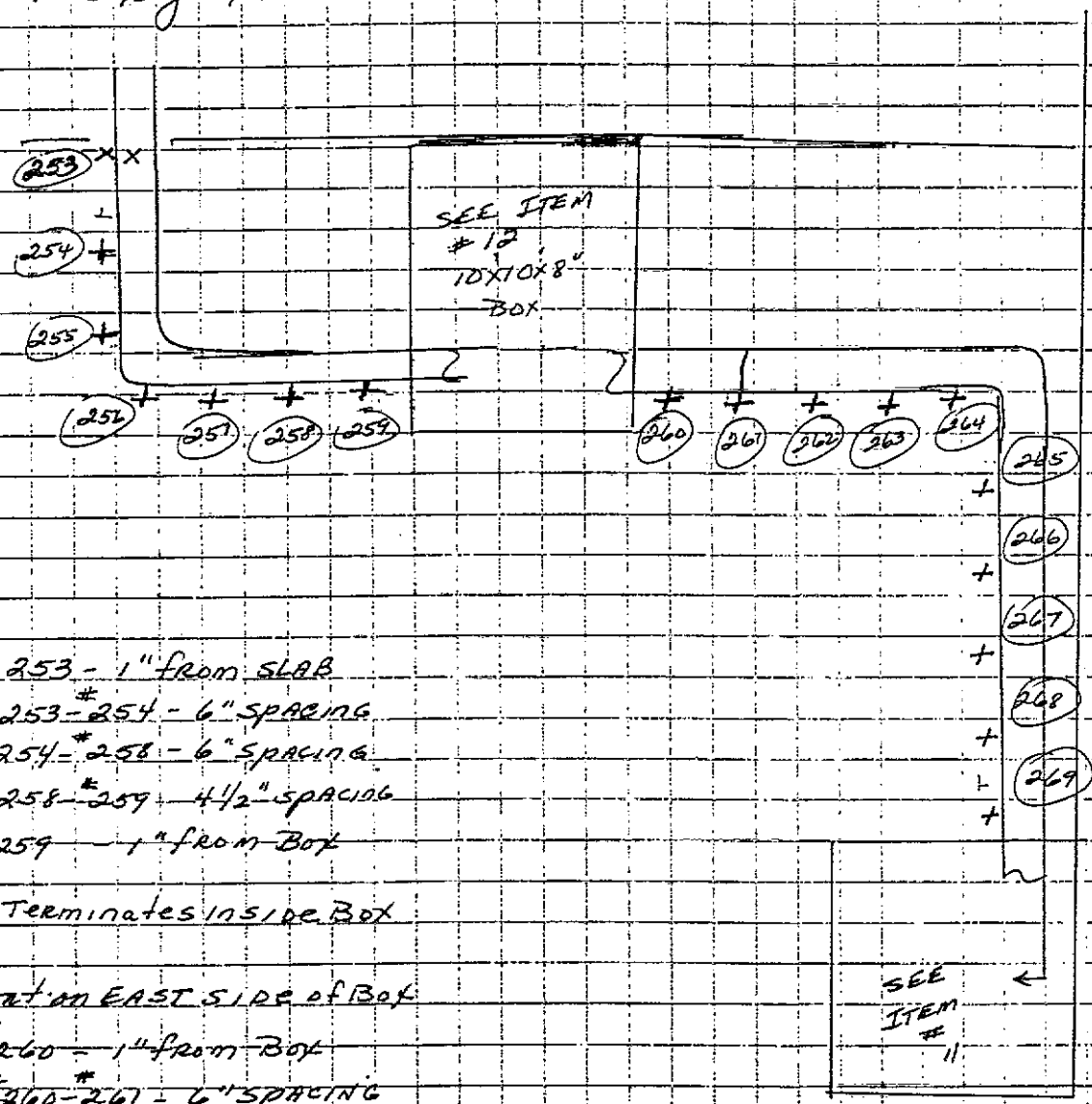
T/C #270-287

OPL QA/QC 12-10-99
C Dalton
12/28/99 C Dalton

#TR 400
12/9/99

ITEM #2

1.25" rigid steel Conduit.



T/C #253 - 1" from SLAB
T/C #253-#254 - 6" SPACING
T/C #254-#258 - 6" SPACING
T/C #258-#259 - 4 1/2" SPACING
T/C #259 - 1" from Box

COND. Terminates inside Box

Cond Cont on EAST SIDE of Box
T/C #260 - 1" from Box
T/C #260-#261 - 6" SPACING
T/C #261-#268 - 6" SPACING
T/C #268-#269 - 4 1/2" SPACING
T/C #269 - 1" from Box

Note
T/C #261 is installed at Conduit Support HANGER

Thermo couples run on outside of Conduit on Bottom Down THROAT of conduit to 1" ABOVE 24x24x12" Box

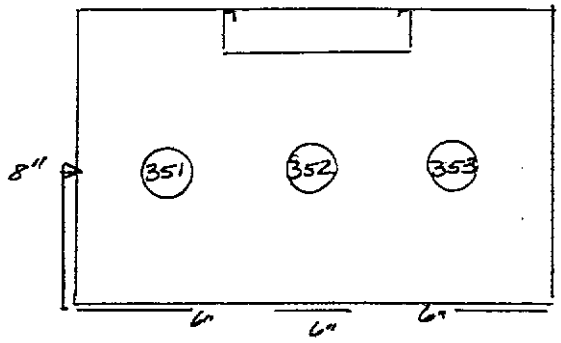
Sandy Bufford
12/9/99

OPL QA/QC 12-9-99 12/28/99

TR 400
12/16/99

Thermo Couples

ITEM # 3
PENETRATION SEALS WALL/CEILING SLABS

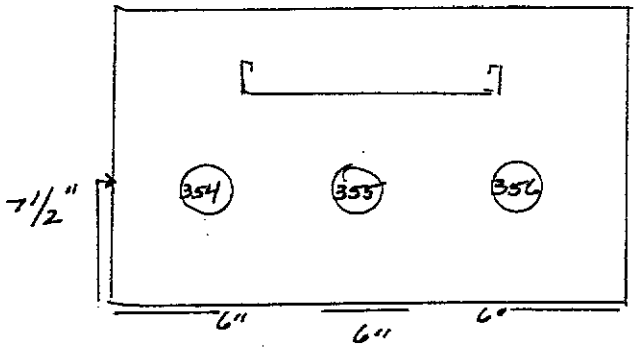


VERTICAL SLAB WALL PENETRATION

Installed thermo couples into RTV Silicone foam seal embedded 1/4" into seal
6" from edges and at center. 8" from bottom of seal

(S) →

T/C # 351 - # 353



T/C # 354 - # 356 HORIZONTAL SLAB CEILING PENETRATION

Installed thermo couples into silicone foam seal embedded 1/4" into seal.
6" from edges and at center 7 1/2" from edge of seal.

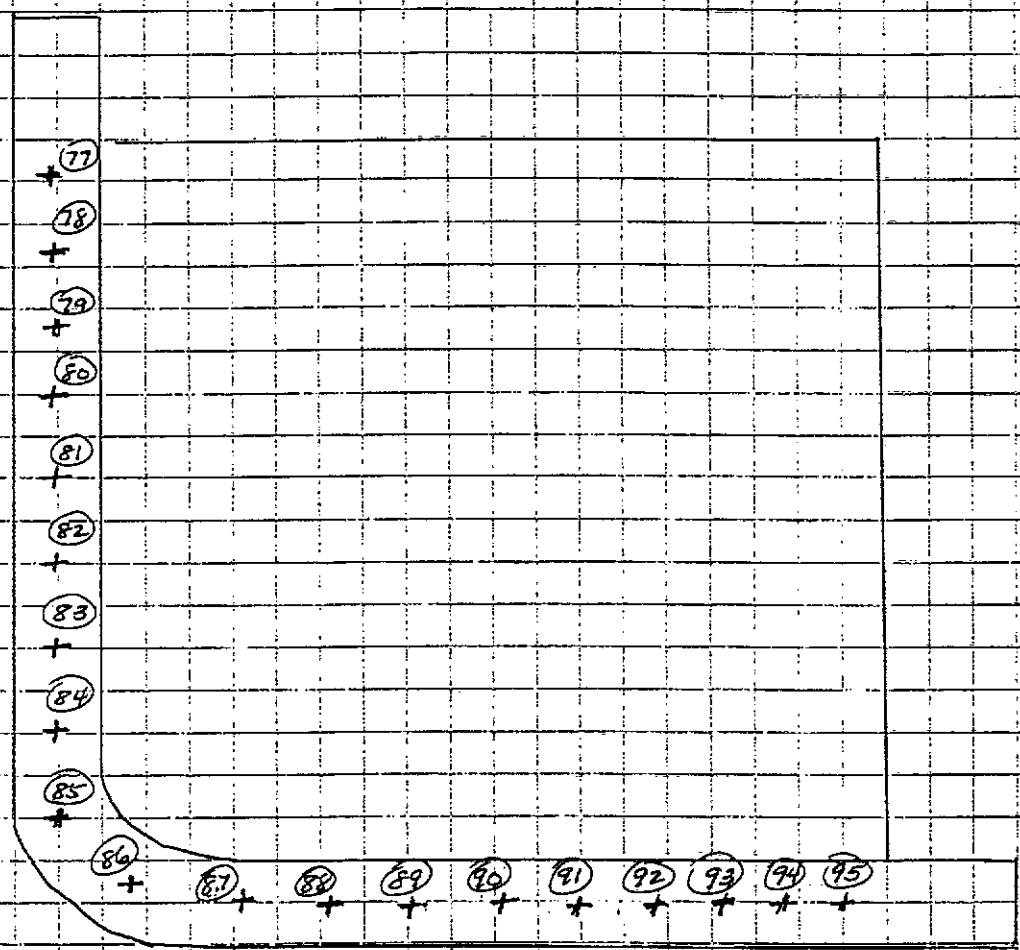
~~[illegible]~~ OPL QA/QC
12/28/99

Sandra M Bedford 12/16/99

E →

ITEM #3
Thermocouples

TR 440
12/8/99
LEFT SIDE RAILS
6" CABLE TRAY
(NORTH) 12/29/99
outside rail



T/C # 77 - # 95
T/C # 77 - 1" from SLAB
T/C # 77-78" 6" spacing
T/C # 78-94 - 6" spacing
T/C # 94-95 - 3" spacing
T/C # 95 - 1" from SLAB

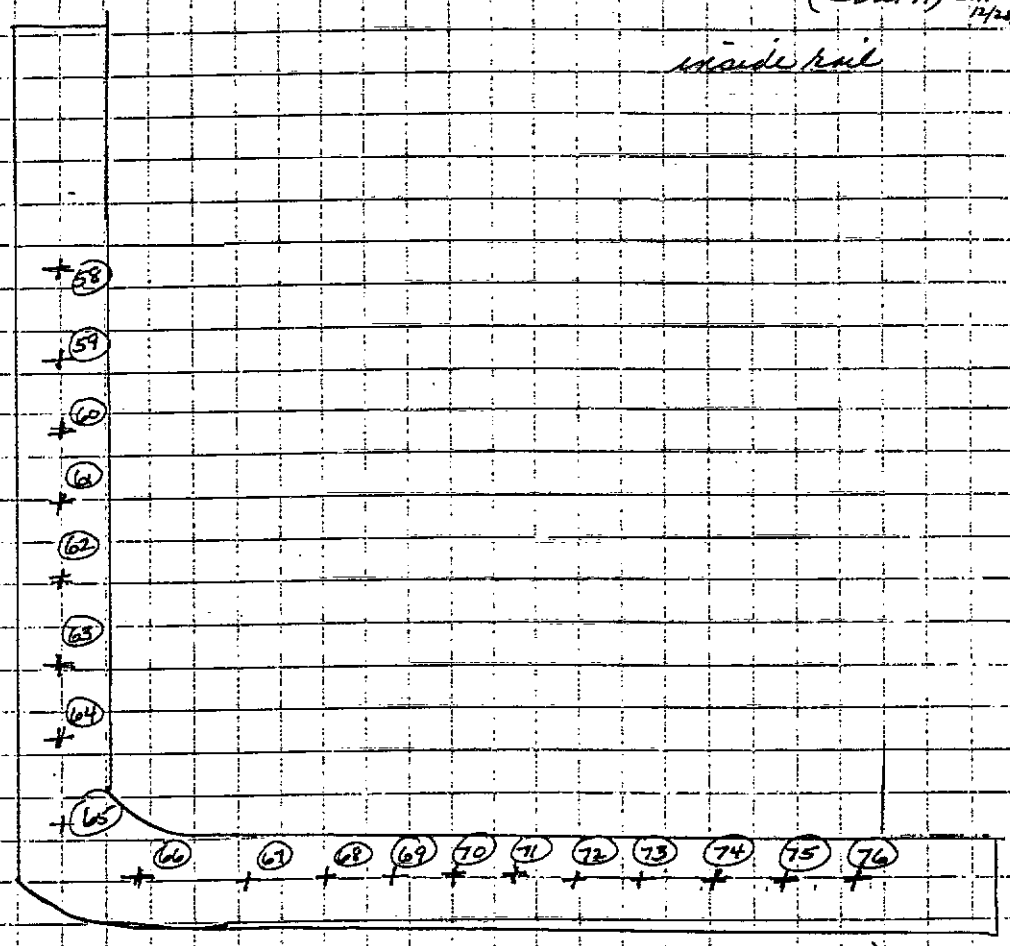
12/8/99

DPL QA/QC 12-8-99 12/28/99

ITEM #3 #TR 400
Thermo Couples 12/8/99

6" CABLE TRAY
RIGHT SIDE RAIL
(~~South~~) SMS 12/28/99

inside rail



T/C # 58 - # 76

T/C # 58 - 1" from SLAB
T/C # 58 - # 59 6" SPACING
T/C # 59 - # 75 6" SPACING
T/C # 75 - # 76 - 3" SPACING
T/C # 76 - 1" from SLAB

Gordon J Burghart 12/8/99

OPL QA/QC 12-8-99 C Ballou 12/28/99 C Ballou

TR 400
12/8/99

ITEM # 3

STRANDED Copper
BARE # 8

147
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114

T/C #147 ADDED to BARE #8
T/C #96 - #114

T/C #147 - 1" from SLAB
T/C 147-96 - 6" SPACING
T/C #96 - #113 6" SPACING
T/C #113 - #114 3" SPACING
T/C #114 DIRECTLY AT SLAB interface

12/8/99

OPL QA/DC 12-8-99 4/28/00

ITEM #4 TR 400
12/10/99

#148 T/C Installed on top of first layer of Kaowool installed to 1" Conduit

#149 T/C Installed on top of second layer of Kaowool installed to 1" conduit.

#150 T/C Installed on top of second layer of Kaowool installed to 1" Conduit.

T/C #148, #149, #150

Extra thermocouples to be used between layers of Kaowool at Item # 4 – 1" rigid steel conduit.

12/28/99
OPL QA/QC

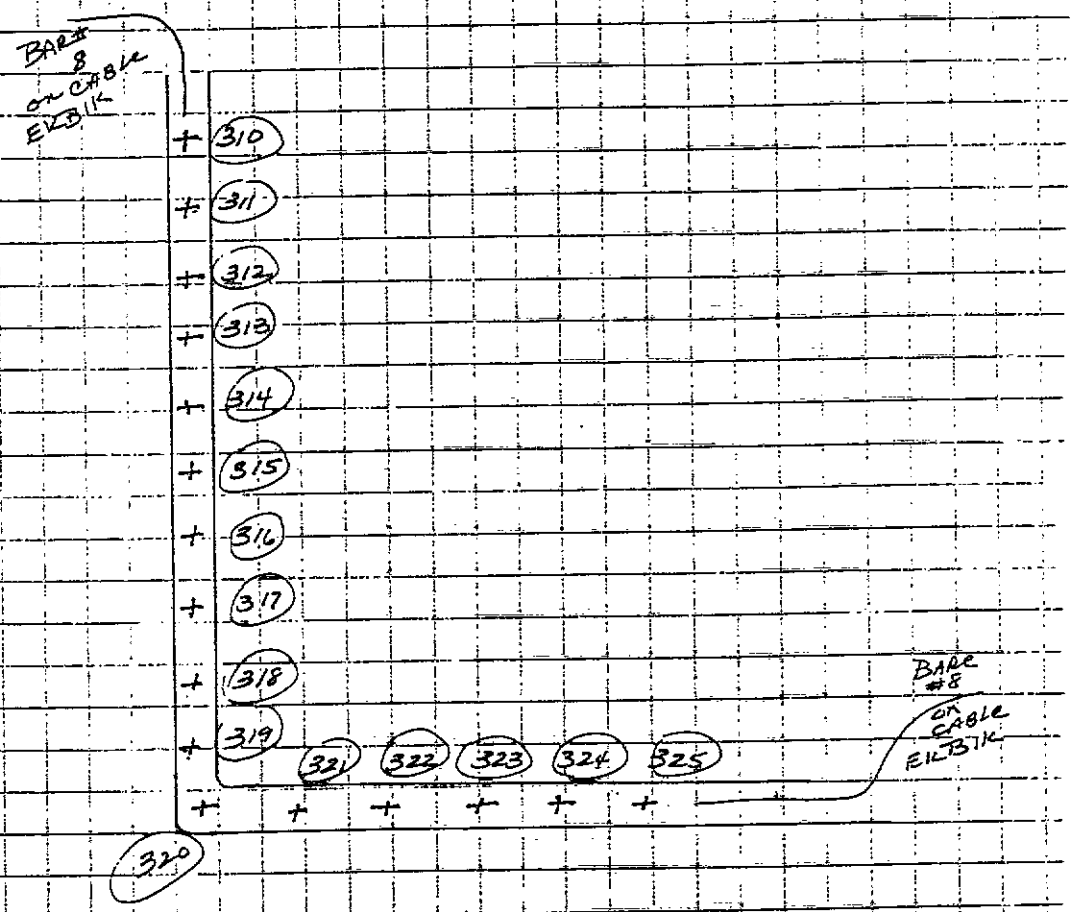
12/14/99

ITEM # 4

TR 400
12/11/99

Copper BARE #8 w/ Thermocouples on CABLE EKBIK

Installed Copper BARE #8 with Thermocouples to interior of 1.0" rigid Steel Conduit



T/C #310-325

T/C #310 - 1" from SLAB
T/C #310-#311 - 6" SPACING
T/C #311-#324 - 6" SPACING
T/C #324-#325 - 2" SPACING
T/C #325 - 1" from SLAB

EKBIK 5/C 12 AWG (7 STRANDS) 40 mils FR INSULATION, CABLED, ZINC tape 65 mils FR jacket, CLASS B STRANDING, COPPER tin-coated conductor SIZE 0.74 MAX

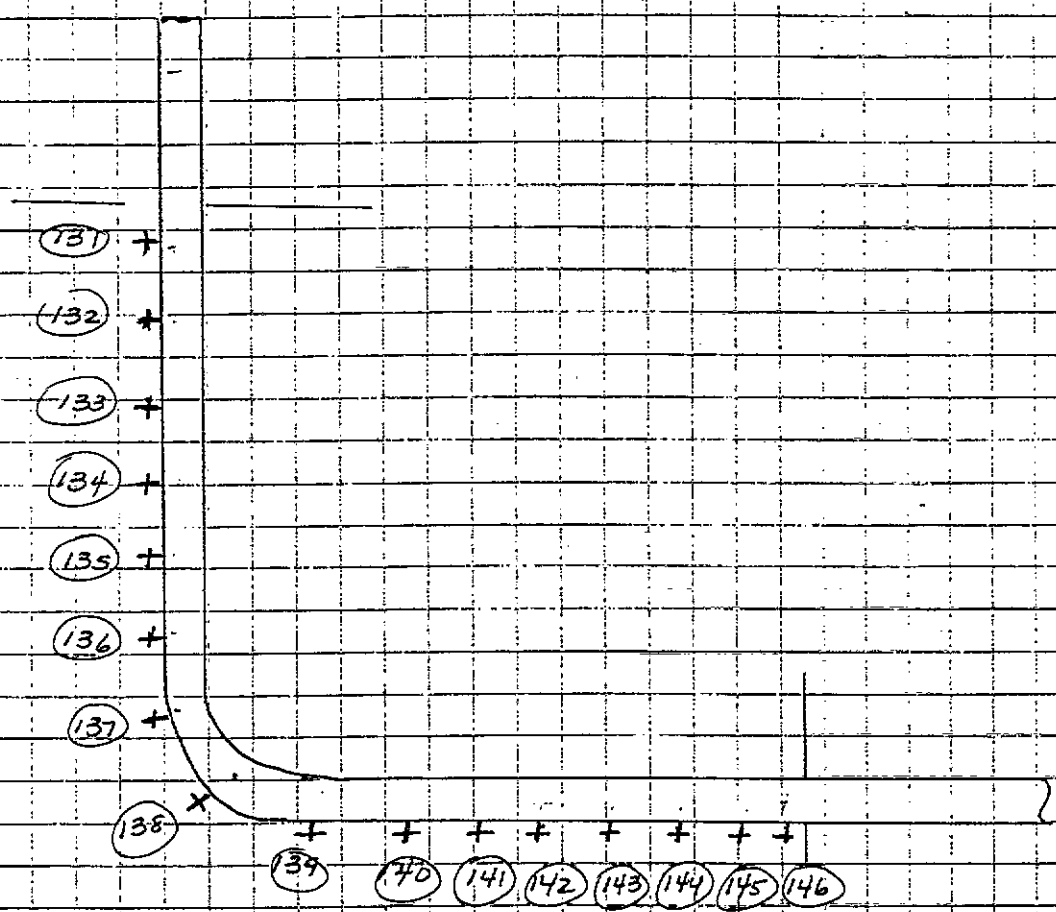
12/28/99 GP

Sandie M Bierfeld 12/11/99

ITEM 4 TR 410

1" Conduit rigid steel 12/8/99

Thermocouples are installed at back of conduit around bend and across bottom on outside of conduit.



T/C #131 - #146

T/C #131 - 1" from SLAB
T/C #131 - #132 - 6" spacing
T/C #132 - #145 - 6" spacing
T/C #145 - #146 - 3" spacing
T/C #146 1" from SLAB.

Gordon M Bradford
12/8/99

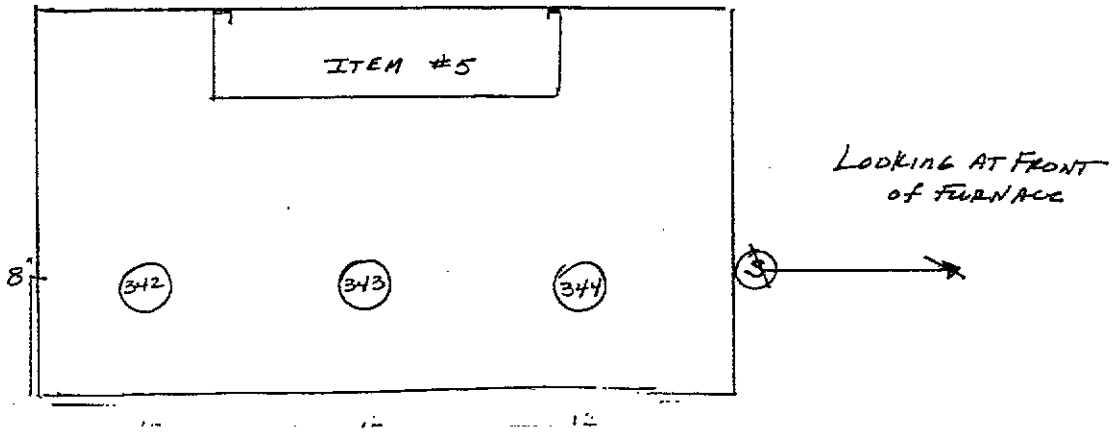
12/28/99

TR 400
12/16/99

Thermo Couples

ITEM #5

PENETRATION SEALS



VERTICAL SLAB WALL PENETRATION

RTV SILICONE FOAM

Each thermocouple is 12" from ends and center
8" up from bottom of seal penetration

Installed approx 1/4" into foam seal.

T/C 342, 343, and 344

QPL QA/QC
12-28-99

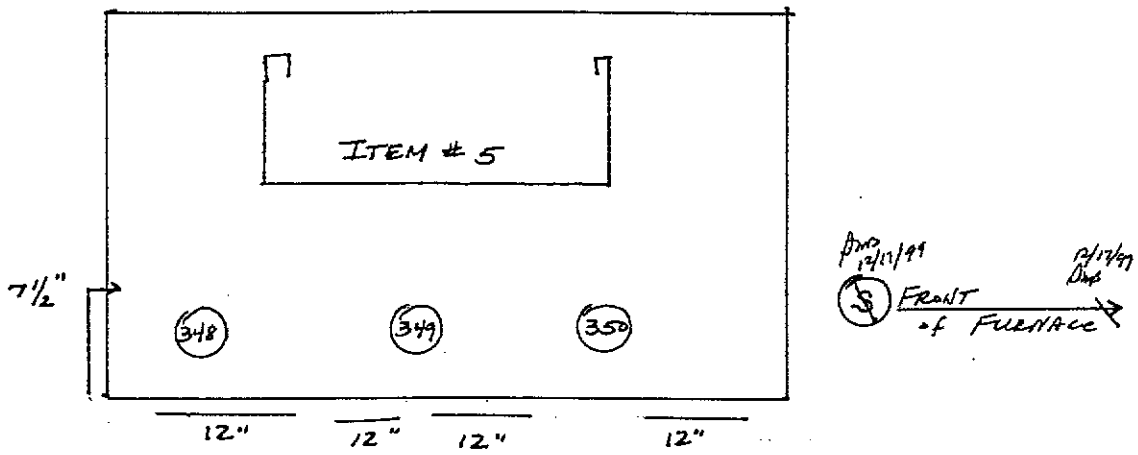
Sandra J Bedford
12/16/99

TR 400
12/16/99

Thermo Couples

ITEM # 5

PENETRATION SEALS



HORIZONTAL SLAB CEILING PENETRATION

Each thermo couple is 12" from each end at center.
7 1/2" from edge of foam seal

Installed approx 1/4" into foam seal.

ODL QA/QC
12-15-99

12/16/99

OMEGA POINT LABORATORIES

Client Name: _____ Page: _____ of _____

Client #: _____ Project #: _____ Date: _____

Description: _____ Name: _____

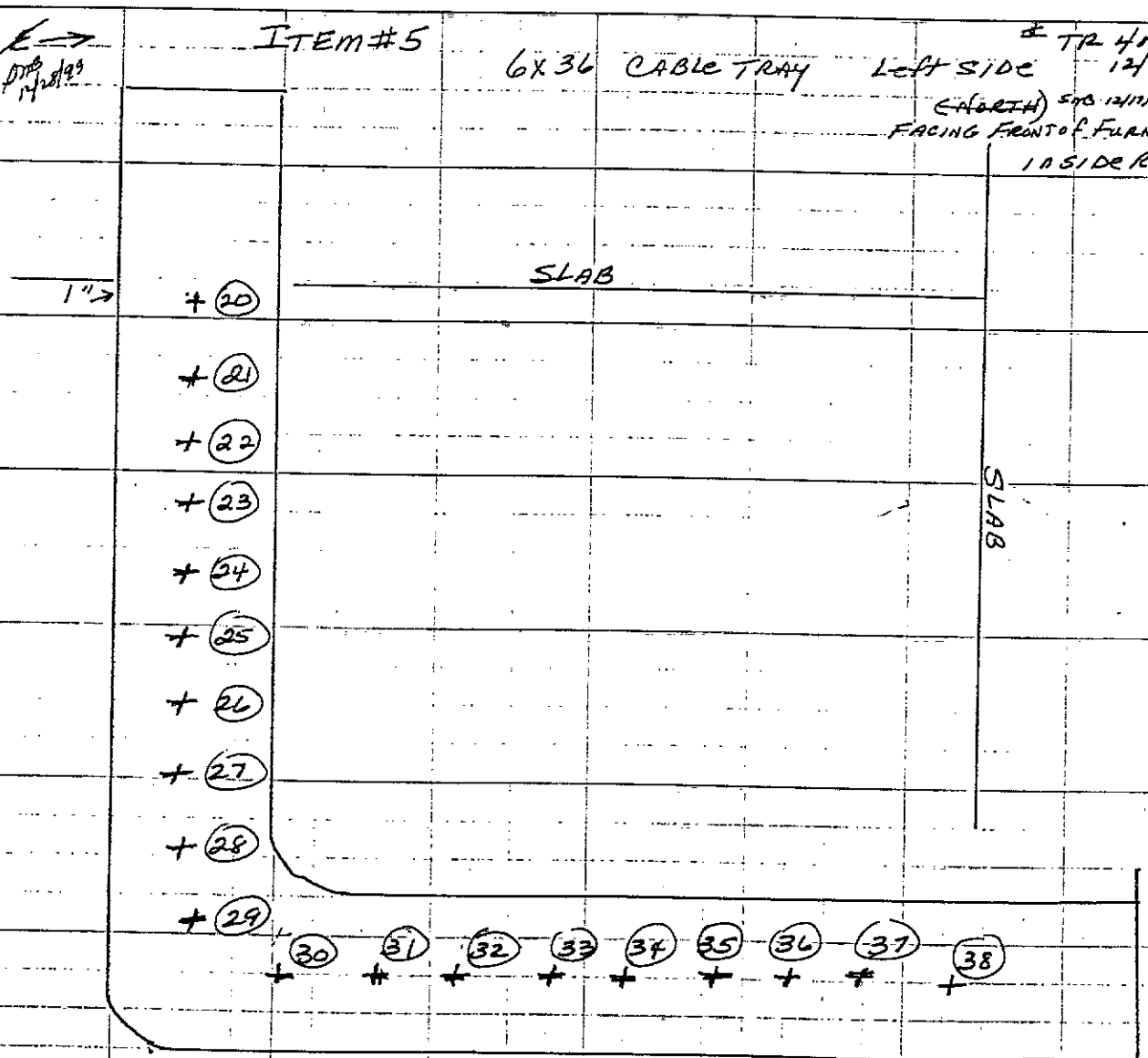
E → DPB 12/28/99

ITEM #5 6X36 CABLE TRAY Left SIDE # TR 4/00 12/7/99

~~E (NORTH)~~ SPB 12/17/99

FACING FRONT of FURNACE

INSIDE RAIL



#20 – 1" from SLAB

20 – # 21 6" SPACING

21 – # 37 6" SPACING

37 – # 38 3" SPACING

38 1" from SLAB

Sandy Bufford 12/7/99

T/C 20-38

DPL QA/QC 12-7-99

12-28-99

OMEGA POINT LABORATORIES

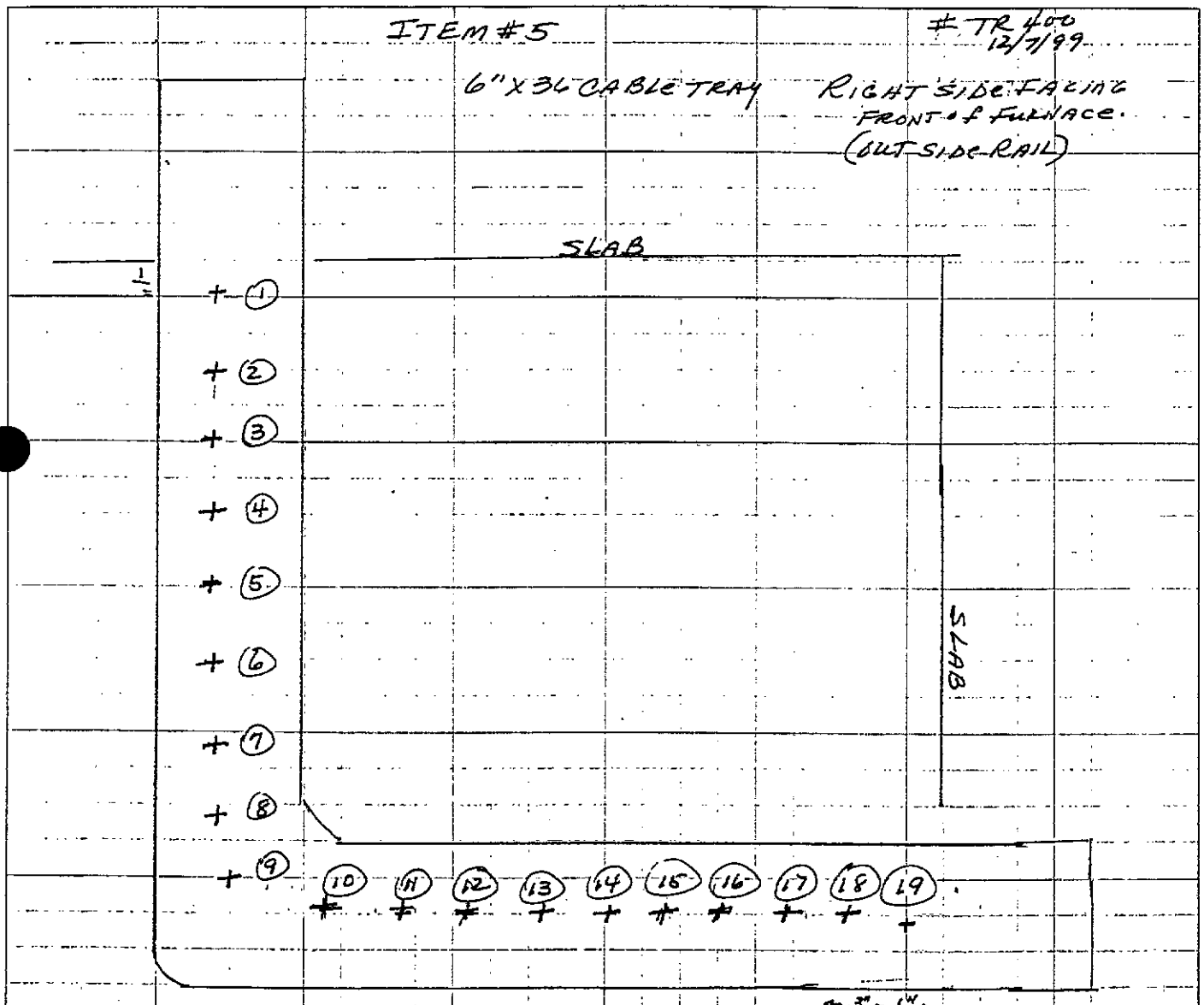
Client Name: _____ Page: _____ of _____

Client #: _____ Project #: _____ Date: _____

Description: _____ Name: _____

ITEM #5 # TR 400 12/7/99

6"X36 CABLE TRAY RIGHT SIDE FACING FRONT of FURNACE. (OUT SIDE RAIL)



#1 - 1" from SLAB 19 - 1" from SLAB

#1-#2 - 6" SPACING

#2-#18 - 6" SPACING

#18-#19 - 3" SPACING

TC 1-19

12/28/99

OPL QA/QC 12-7-99

Sandra Bradford 12/7/99

OMEGA POINT LABORATORIES

Client Name: _____ Page: _____ of _____

Client #: _____ Project #: _____ Date: _____

Description: _____ Name: _____

~~3~~ 36" CABLE TRAY SMB 12/8/99

TR 400 12/7/99

CABLE TRAY rungs TOTAL - 16 SMB 12/8/99

ITEM # 5

Copper ~~Groundwire~~ ~~AWG~~ # 8 12/8/99 BARE # 8

39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57

T/C 39 1" from SLAB
T/C # 39 - # 40 - 6" SPACING
T/C # 41 - # 56 - 6" SPACING
T/C # 56 - # 57 - 3" SPACING
T/C # 57 - 1" from SLAB

Thermocouples ATTACHED to # 8 STRANDED Copper

N.T.S.

12/7/99

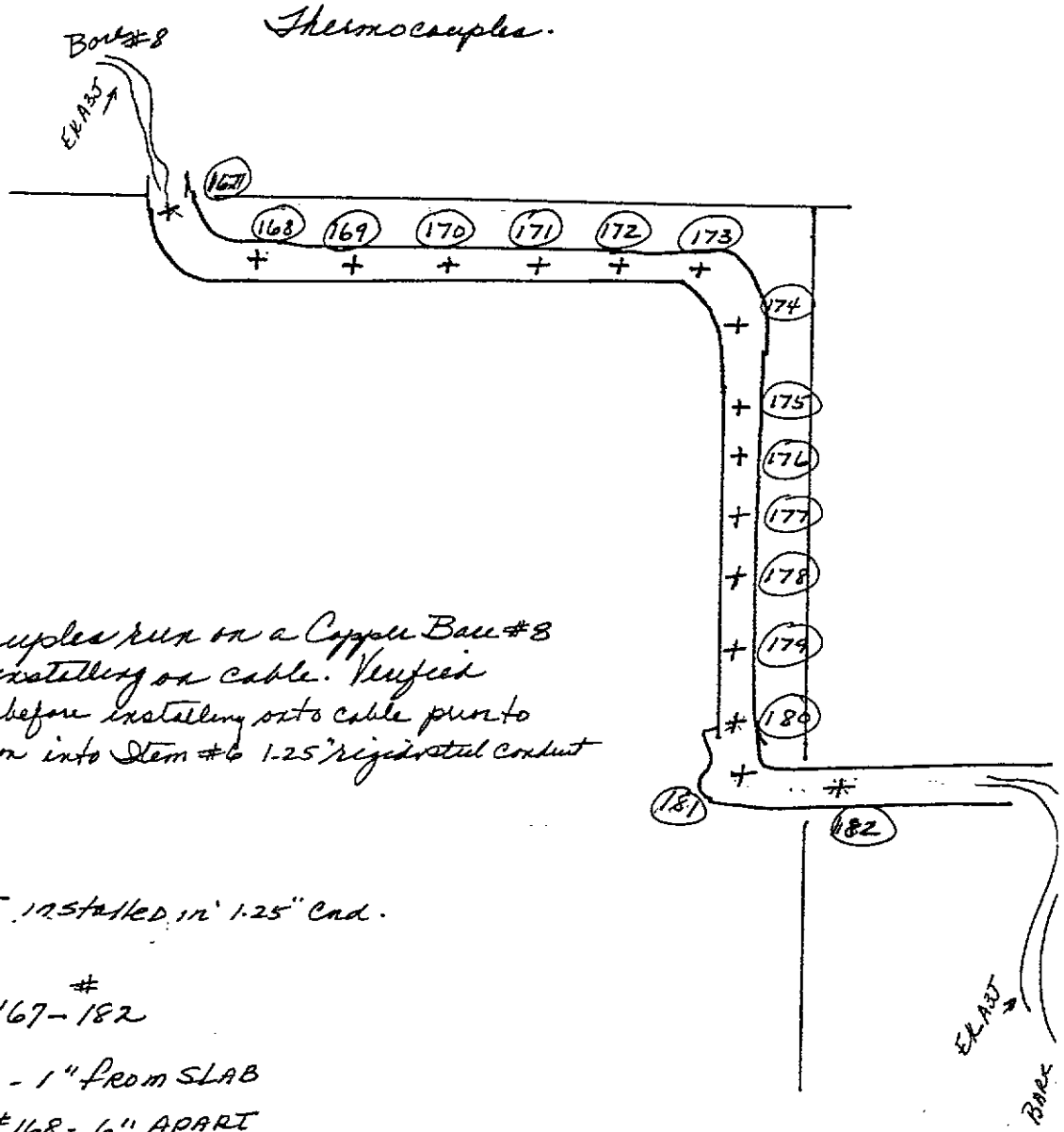
DPL QA/QC 12-7-99 12/8/99

ITEM # 6

1.25" rigid steel conduit

TR 400
12/9/99

Thermocouples.



Thermocouples run on a Copper Bare #8 prior to installing on cable. Verify spacing before installing onto cable prior to installation into Item #6 1.25" rigid steel conduit

EKA3J installed in 1.25" Cnd.

T/C #167 - #182

T/C 167 - 1" from SLAB

T/C #167 - #168 - 6" APART

T/C #168 - #181 6" SPACING

T/C #181 - #182 - 6" SPACING

T/C #181 inside LB

T/C #182 inside 6" from T/C #181

EKA3J.- 3/C 10AWG STRANDED 40 mils UT Kerite insul. CABLED 65 MIL FR JACKET CLASS B STRANDING copper insul.

12/28/99 [signature]

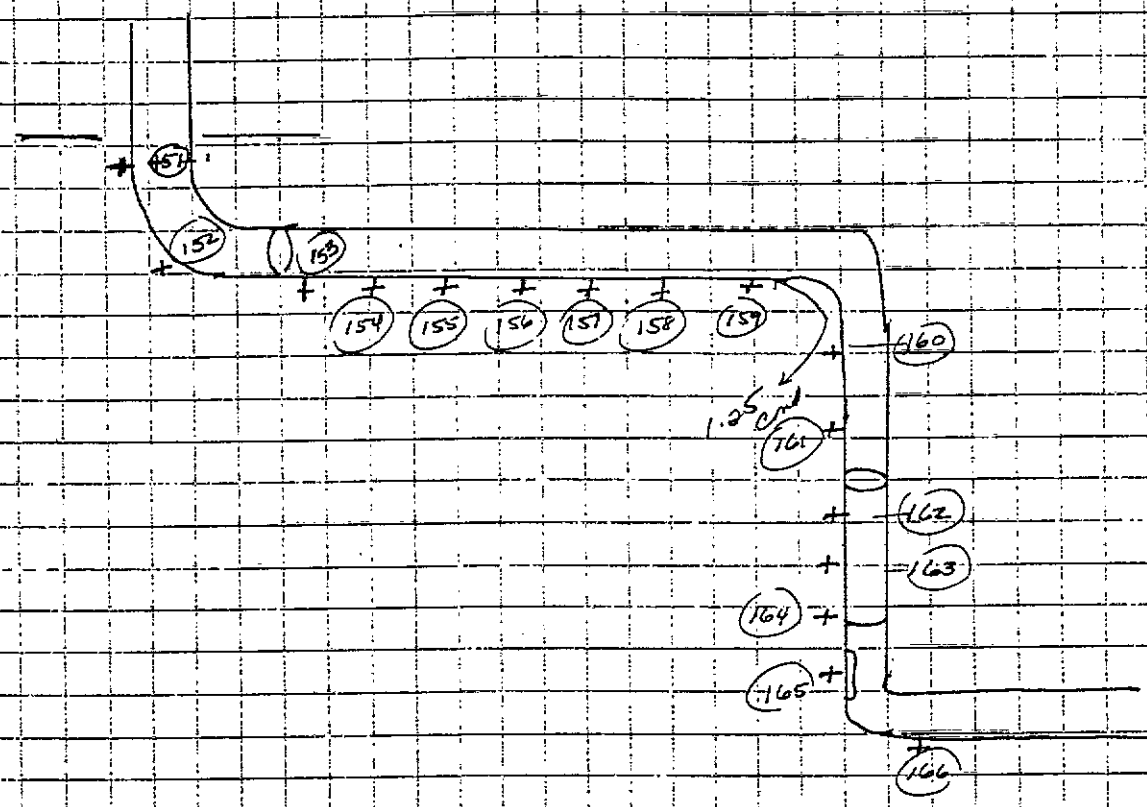
Gordon Bradford 12/10/99

OPL QA/QC 12-10-99 [signature]

ITEM 6

#TR 4/00
12/9/99

1.25 Conduit — Thermocouples on outside of conduit



T/C # 151 - #165
T/C # 151 - 1" from SLAB
T/C # 152 - 151 - 6" SPACING
T/C # 152 - 166 - 6" SPACING
T/C # 166 - 1" from SLAB

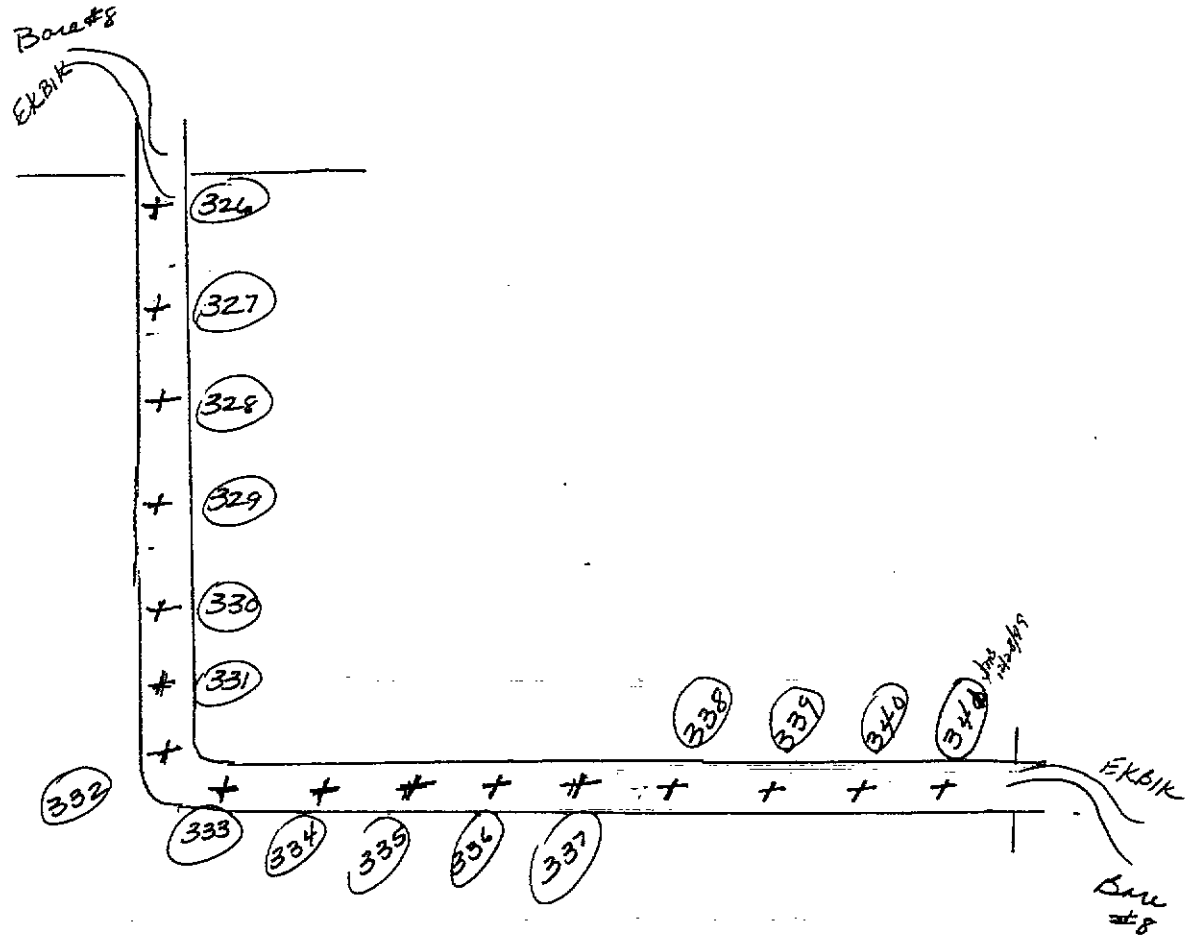
Notes: T/C #153 AT support Run
T/C #163 1/2" above Support
T/C #165 on LB cover

Sandra M. Burford
12/9/99

DPL QA/QC 12-9-99 [illegible] 12/28/99

TR 400
12/13/99

ITEM #7
1" Conduit rigid steel,
Thermocouples on Bore #8 Interior of Conduit



T/C # 326 - # 341
T/C # 326 from slab by 1"
T/C # 326 - # 332 - 6" spacing
T/C # 332 - # 333 6½ spacing
T/C # 333 - 341 - 6" spacing
T/C # 341 - 1" from slab

T/C # 332 - # 333 6½" spacing with Acceptable range ± ½"

DPLQA-100 12/28/99

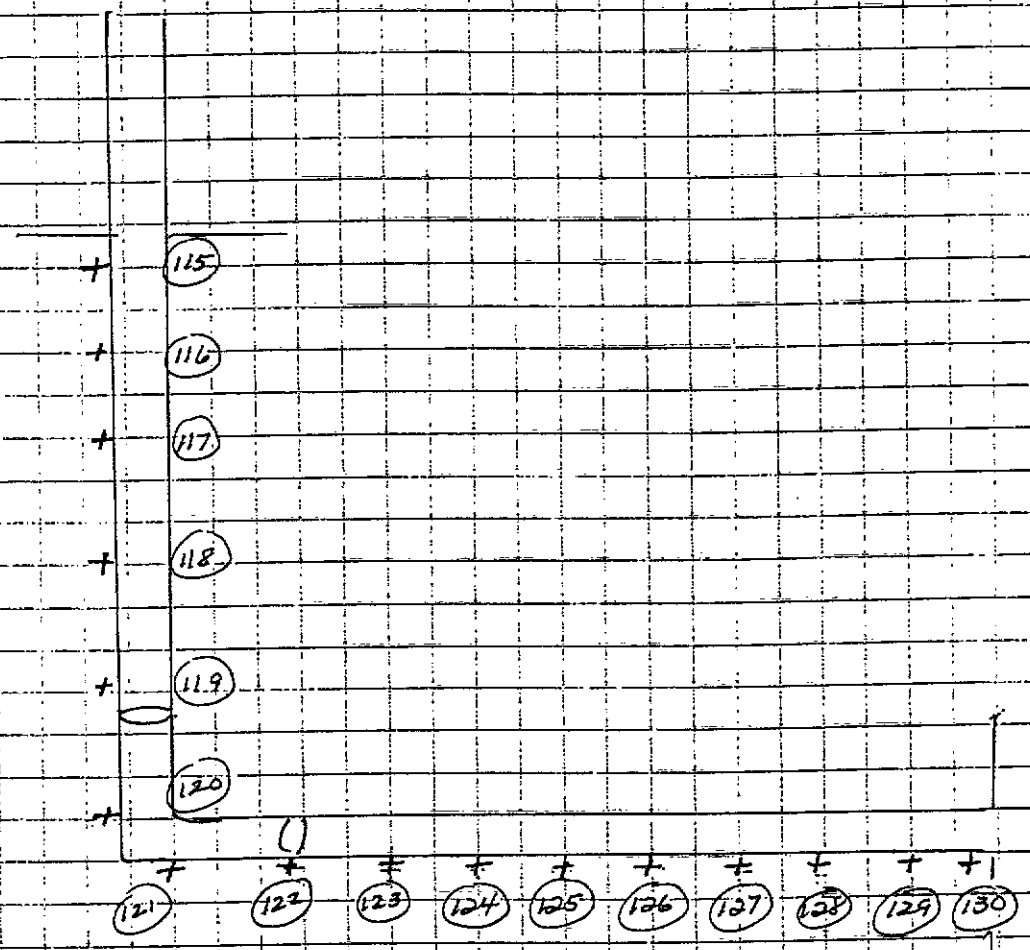
Sandra Burford 12/13/99

ITEM #7

#TR 400
12/9/99
PAGE 2 of

1.0" Cnd.

Thermocouples on outside of conduit.



T/C #115 - #130

T/C #115 - 1" from SLAB

T/C #115 - #116 - 2" spacing

T/C #116 - #129 - 6" spacing

T/C #129 - #130 - 3" spacing

T/C #130 - 1" from SLAB

Note

T/C 119 - 1/2" Above Coupling

T/C 122 - Installed on Coupling

12/28/99 C Patton

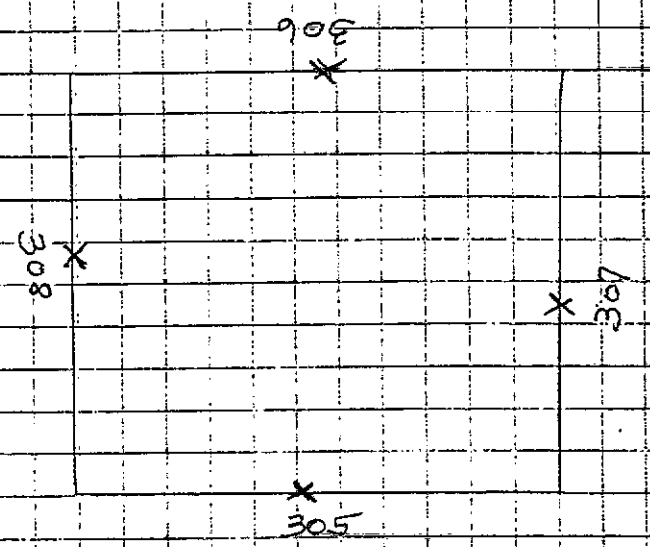
Andrew M Bergford 12/9/99

OPL QA/QC 12-9-99 C Patton

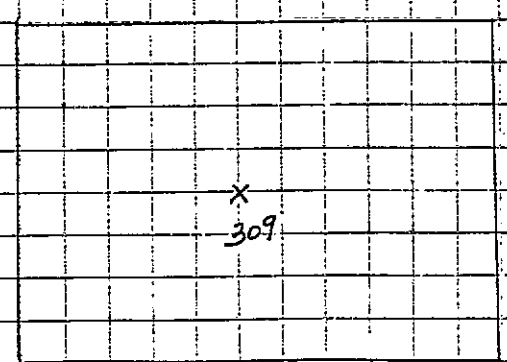
~~607~~
606
G 6/20/00

TR400
12/9/99

ITEM #8
Thermocouples
12x12x6 16ga. Sheet metal Box



Opening on Bottom Looking up into METAL BOX
12"x12"x6"



12" x 12" COVER to 12"x12"x6" Box

TOTAL 5 T/c's 4-inside Box + 1 on Cover

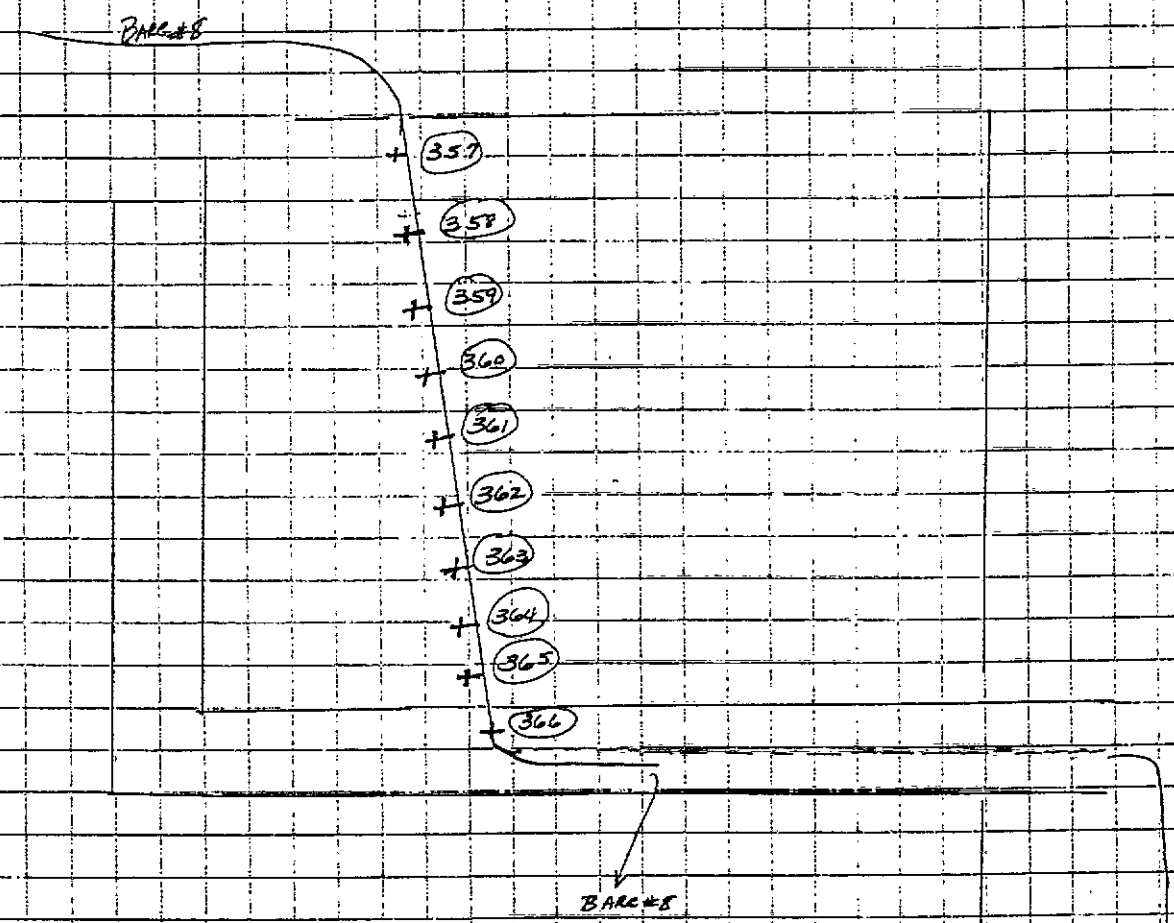
12/28/99
OPL QA/QC 12-9-99
12/9/99

~~606~~
607
G-6/20/00

ITEM #10

TR 400
12/14/99

EXHIB- FREE AIR CABLE
FROM CEILING SLAB free AIR into 6" CABLE TRAY (ITEM 3)



Thermocouples run on a bare Copper #8 attached to free air cable.

T/C #357 - #366

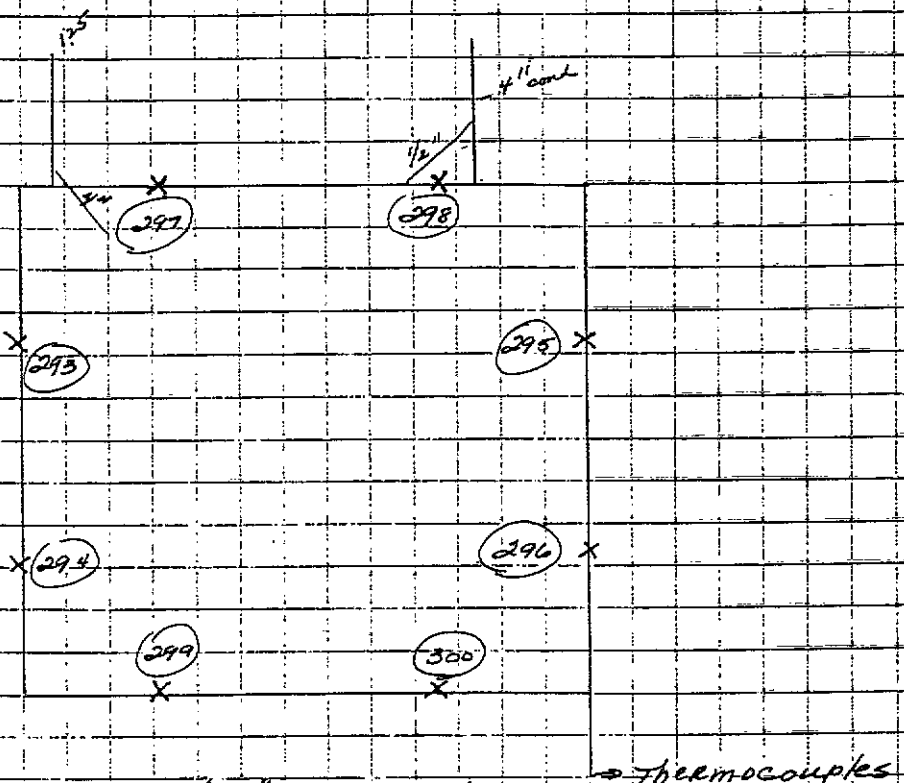
T/C #357 - 1" from SLAB
T/C #357 - #358 - 6" SPACING
T/C #358 - #366 6" SPACING
T/C #366 - 1" into CABLE TRAY

12/28/99 Sandra Burgess 12/14/99
OPL QA/QC 12-10-99

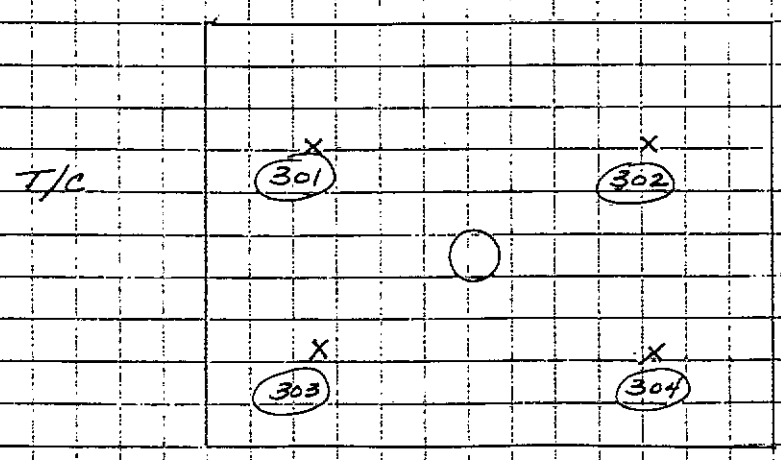
TR# 400
12/10/99

ITEM # 11

24"x24"x12" Metal Bx Wall Mounted.



Looking into 24"x24"x12" Box (Wall Mounted)



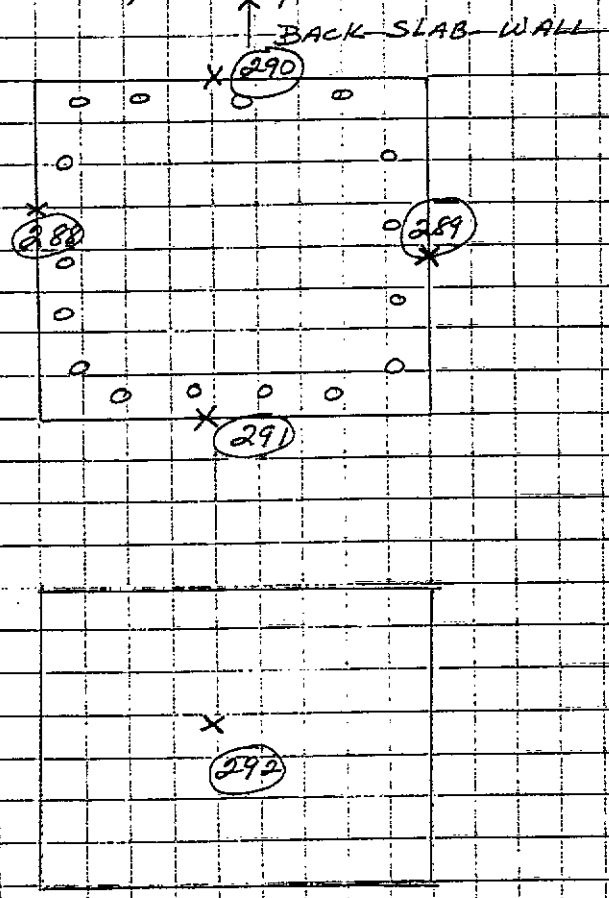
Thermocouples 6" from edges of box and cover and 12" apart.
Top 1.25" rigid steel conduit 4" from T/C #297 40" rigid steel conduit is 1/2" from T/C #298

12/08/99 C Patton
DPL QA/QC 12-10-99 C Patton

Sandra M Burgess 12/10/99

ITEM 12 TR 410
Thermocouples 12/10/99

10"x10"x8" metal box ceiling mounted



Installed Thermocouples to each side of 10"x10"x8" metal box 6" from edges and 1 Thermocouple to center of metal cover

Thermocouples #288-#292

Sandra J. Bradford
12/10/99

OPL QA/QC 12-10-99
C Bolton 12/28/99 C Bolton

General Notes

TR 400
12/28/99

Prior to moving specimen into furnace an inspection was performed to ensure all gaps were filled and all bands were intact.
The flamemastic was in place as well as pins, cloth and gitex.

Items 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 all found to be Acceptable.

This inspection was performed at approx 11:30 Am.
Moved into furnace soon after inspection.

Sandra J Bradford
12/28/99

Remegge Cables per Mike Kammer

Item # 3
EK B1B-8
EK B1J
EK A3H
EK B1B-8 (Item 10)
Item 4
EK B1K

65° F humidity 28% 1:16pm

TR400 will run for a min. of 1 hour.

Started test at 1:26 pm
Ended test at 2:26 pm
Positive pressure on furnace.

Move furnace.

75 psi 15° 5 minutes @ 10 ft.

spray from left to right up and down.

7½ minutes to megger cables.

TR 400
12/12/99

ITEMS extensions out of CEILING SLAB

ITEM #				
1	4" cnd	28 1/2"		
2	4" cnd	33 1/2"	1" cnd	34"
3	6" C/T	33"		
4	1" cnd	37"		
6	1.25 cnd	36"		
7	1" cnd	37"		
5	36" C/T	39"		

ITEMS # 8, 9, 11, 12 Do Not penetrate CEILING SLAB
ITEMS 8, 9, 11, 12, DO NOT PENETRATE CEILING of furnace.

10	AIRDROP	ATTACHED to #7 - 1" cnd.

Items extensions out of WALL SLAB

ITEM #		
3	6" C/T	21" ~~24"~~ DMB 12/14/99
5	36" C/T	23 1/2"
4	1" cnd	29"
6	1.25 cnd	24"
7	1" cnd	25 1/4"

ITEMS # 1, 2, 8, 9, 10, 11, 12, Do Not penetrate WALL SLAB

Cleda Patton
OPL QA/QC 12/28/99

Sandy Bufford
12/12/99

TR 40613
12/19/99

LEGEND

1/2 x .020 stainless steel bands

insulation pin (junction box only)

insulation pin (junction box only)

insulation pin with fastener

Hilti Kwik Bolt

Flamemastic 77

Zetex Cloth.

TCO-704A Intumescent Cloth.

18 ga stainless steel Wire.

RTV Silicone Foam

Cleda Patton
OPL QA/QC
12-28-99

Sandra M Bufford 12/19/99

TEST REPORT #400 GENERAL NOTES

Items #3, #5. Required foam seals in both ceiling and wall penetrations

(2) Items #1, #2, #10 Required grout seals in ceiling penetrations

(3) Items #4, #6, #7 Required grout seals in ceiling and wall penetrations

(4) Item #9 Required foam seal in ceiling penetration

(5) Items #8, #11, #12, Required no seal wall or seal mounted boxes

(6) Items #3, #5, Required 3 sets of thermocouples 1 set for each side and base copper 8 of thermocouples inside of cable trays.

(7) Items 1, 2, 4, 6, 7, Have 2 sets of thermocouples 1 outside of conduit and 1 set on Base #8 inside of conduit

(8) Items #8, #11, #12, Have 1 set of thermocouples inside of junction box

(9) Item #10 Has 1 set of thermocouples on Base #8 on air drop cable

(10) Thermocouples can be ± 1/2" The only case is this assembly is in Item 7 where T/C 333 and 332 are 6 1/2" spaced.
Item #9 No thermocouples required.

(11) All P1000 (1 5/8 x 1 5/8") received from VCSNS - 12 ga. SST A167/R240
LOT# 930123826

(12) 6"x7" cable tray - 16 ga. galvanized sheet metal LOT# YU110260
36"x7" cable tray 14 ga. galvanized sheet metal LOT# 4a
Covers for cable trays 20 ga. s.s. metal LOT# YU108445

(13.) Extra Thermocouples:
Item 5 T/C 342, 343, 344 west side of foam seal T/C 345, 346, 347, between layers of Kaowool T/C 348, 349, 350 inserted in bottom of ceiling penet.
Item 3 T/C 351, 352, 353 inserted in vertical wall seal T/C 354, 355, 356 inserted in bottom of ceiling penetration.
Item 4 T/C 148, 149, 150 placed between layers of Kaowool.

(14) Item # 8 12"x12"x6" junction Box 16ga galv. metal LOT# YU110260
Item # 11 10"x10"x8" Junction Box 16ga galv. metal LOT# YU110260
Item # 12 24"x24"x12" junction Box 16ga galv. metal LOT# YU110260

(15) Flamemastic 77 LOT# 9909024
Item 3, 5, 1 require flamestic on sweeps and 1/2 way on vertical and horizontal run of items.

(16) Flamemastic 77 used on face of foam seals items 3, 5, 9
Flamemastic dry time 4 hrs to touch Cure time 72 hrs min for 1/4" wet thickness

(17) Kaowool 8# density (Refractory Ceramic Fiber
1"x 48"x 25' LOT# 961568407
1"x 24"x 25' LOT# 9904202 00748

(18) Hilti' used to secure overlap onto concrete are (1/4"x 4 1/2") Kwik Bolt II
spacing on hilti' 3" from termination 12" max spacing.
1/4"x 4 1/2" amount purchase 100 w/ Hardware. -1 for sample

(19) Or LB or 1.25 conduit cover manufactured out of 18 ga galv. sheet metal
Lot# A201 received from VCSNS Stock

(20) 1/2 x .020 stainless steel banding Lot# BLFPX042NB

(21) P1000 1 5/8"x 1 5/8" 12ga. SST. A 167/R240 LOT# 930123826 received from VCSNS St

(22) all significant gaps filled with Kaowool.

Cleda Patton
OPL QA/QC
12-28-99

Sandra Bradford 12/19/99

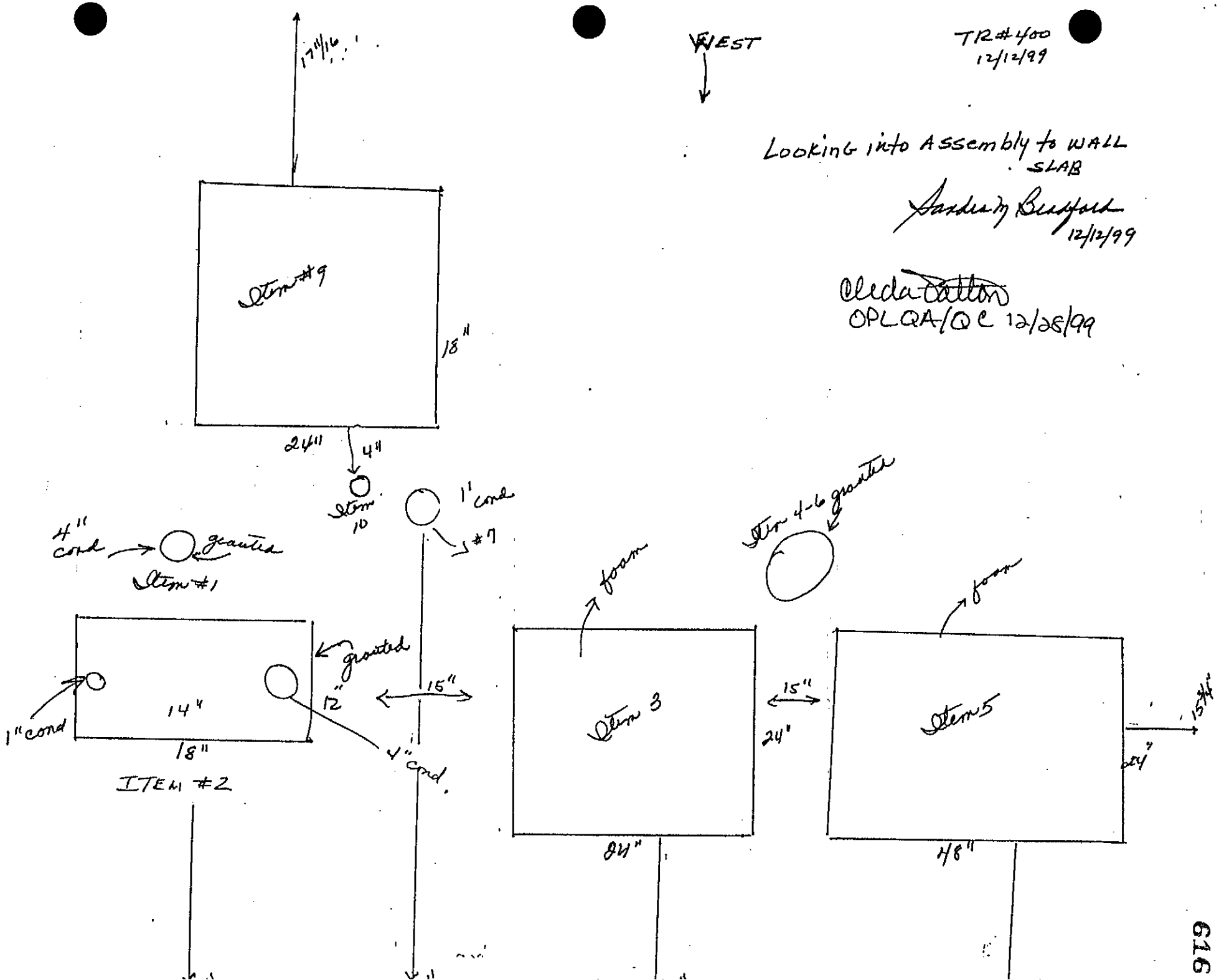
TR#400
12/12/99

WEST

Looking into Assembly to WALL SLAB

Sandra M Bradford 12/12/99

Cleda Cotton
OPLQA/QC 12/28/99



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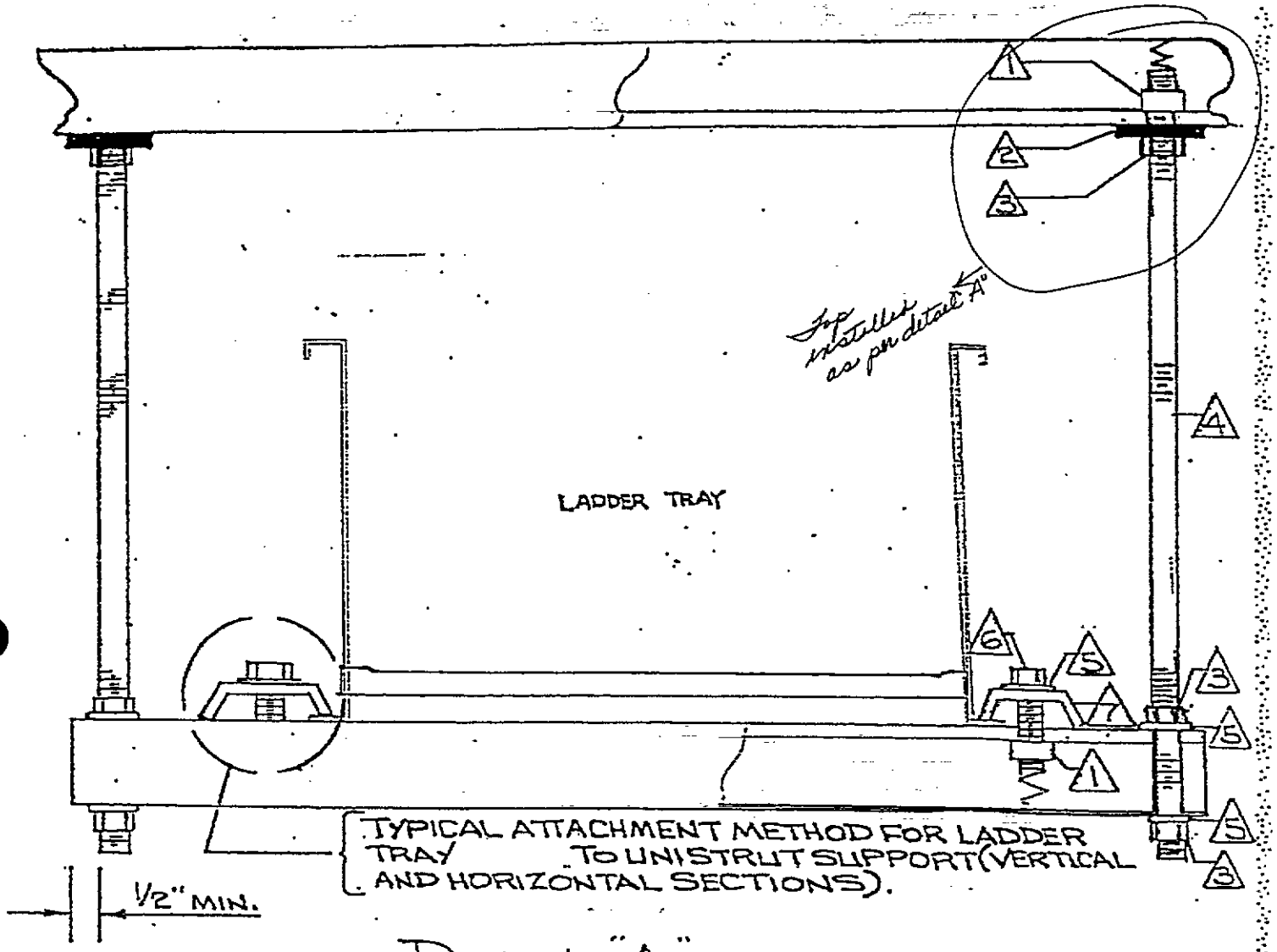


DETAIL "A"

1. 1/2" DIAMETER UNISTRUT SPRINGNUT
2. 1 1/2" SQUARE WASHER WITH 9/16" DIAMETER HOLE
3. 1/2" X 13 HEX NUT
4. 1/2" DIA. ALL THREAD HANGER ROD
5. 1/2" DIAMETER FLAT WASHER
6. 1/2" X 13 X 1 1/2" BOLT
7. SINGLE HOLD DOWN CLIP

NOTE: DRILL 9/16" HOLES IN THE UNISTRUT FOR THE 1/2" ALL THREAD ROD.

Per Mike Kammer welded tray to hanger relayed to G. Jarvis.

Clida ~~[illegible]~~ 00L 00/00

Andrew M Bradford 12/10/99

ENGINEERS

TECHNICAL WORK RECORD

Serial

Engineer MCKAMMER

Date ~~16 DEC 99~~ 17 DEC 99 | MCK 12-17

Project Title TAG FOR MEGGERING SP-836 Tab Page of

			STRIP FOR MEGGER	
ITEM #1 OK	A1C ✓		NO	AIR OVEN
#2 OK	A1E ✓		NO	AIR OVEN
	B1L ✓	(1)	YES	
#3	B1B8	(1)	YES	TRAY-2
	~~B1J~~	(1)	YES	
	~~A3H~~	(1)	YES	
	A3J	(1)	YES	
OK #4	B1K ✓ OK	(1)	YES	
#5	A1E ✓		NO	TRAY - AIR OVEN
	~~B1B8~~	(1)	YES	
	~~B1J~~	(1)	YES	
	~~A3H~~	(1)	YES	
	A3J ✓	(1)	YES	
	~~C1A~~	~~(1)~~ (1)	~~NO~~ YES	~~AIR OVEN~~
	~~C6B~~		NO	AIR OVEN
#6 OK	A3J ✓	(1)	YES	
#7 OK	B1K ✓	(1)	~~YES~~ NO	DUPLICATES #4

POST TEST MEGGAR

TC #		
#2	B1L	
* #3 or #5	B1B8, B1J, A3H, A3J	C1A (#5)
#4	B1K	
#6	A3J (IF NOT #3 or #5 SELECTED)	

*SEEK, SELECTS TRAY

Verification

Type of Verification	Verifier Signature/Date

Approval

Signature/Date

TRANSCO PRODUCTS INC.
55 East Jackson
Chicago, IL 60604

DEPT. _____ JOB NO. _____ SHEET ___ OF ___
BID NO. _____ DATE _____
SUBJECT: _____ BY _____
CHKD _____

12/19/99

Item #2

EKB1L
1 Red
2 Green
3 white
4 Black
5 orange
6 Black white
7 Blue

ITEM #6

EKA3J
1. Red
2. white
3. BLACK

ITEM #3
EKB1B-8
1. white
2. BLACK

EKB1J
1. Red
2. Green
3. White
4. BLACK

EKA3H
1. Red
2. BLACK
3. white

EKA3J SAB
1. ~~red~~
2. ~~white~~ None
3. BLACK

ITEM #5
EKB1B-8
1. White
2. BLACK

EKA3J
1. red
2. white
3. BLACK

EKC1A
1. BLACK
2. White
3. Ground

EKB1J
1. Red
2. Green
3. White
4. BLACK

EKA3H
1. Red
2. BLACK
3. White

ITEM #4
EKB1K
1. White
2. BLACK
3. Red
4. Green
5. ORANGE

Cleda Patton
DPL QA/QC

Sandy Bradford 12/19/99

TR 400
12/09/99
12/11/99

ITEM 4 & 6, 7

Grouted in ITEM #4 AND #6 CEILING SLAB- penetration using QuikRete Ready to Use Concrete Mix (4" CoreBore) + DRILLED OUT FOR #6.)

Grouted in Item #4 + #6 WALL SLAB penetration using QuikRete Ready to Use Concrete mix (4" CoreBore)

Grouted in ITEM #7 CEILING SLAB penetration using QuikRete Ready to Use Concrete mix (4" CoreBore)

Sandy Burfoot 12/9/99

Grouted in ITEM #7 wall slot penetration (4" CoreBore)

Grouted 4 & 6 on west side touchup

Used Quikrete Concrete Mix ready to use.

Sandy Burfoot 12/11/99

OPL QA/QC 12-11-99
C Batton

TR 408 621
12/16/99

Installed a min. of 2" Kaowool into Items # 1, 2, 4, 6 and 7 on top of slab (horizontal slab) extensions of conduits.

Installed a min of 2" Kaowool in Items # 4, 6 and 7 that extend out of wall slab. (Vertical slab)

This is to prevent air convection.

Verified installation 12/16/99

Cleda Patton
OPL QA/QC
12-28-99

Sandra Bradford 12/16/99

P1000 Hanger.

TR 400 622
12/15/99

P1000 1 5/8" x 1 5/8" - 12 gauge unistrut runs across bottom of horizontal slab (inside furnace) it holds Item #5, 4, 7 on suspended P1000 using 1/2" all thread rod. Also holds Item #2, (2 pieces), 6 using conduit straps. 48" from Vertical Slab.

P1000 across horizontal slab is 11'0"
anchor, hilti bolts 1/4" x 3 1/4"
Hilti Bolts are 4" from each end of P1000 and 4'0" through out length of 12ga unistrut.

Placed predrilled P1000 over hilti bolts and secured with hardware (washer and nut) Tightened nut with socket wrench.
Concrete Slab 8"
P1000 installed 48" from Vertical Slab. (wall)

P1000 - received from VCSNS stock.

Cleda Dalton
QPL QA/QC
12-28-99

Sandra M Bedford
12/15/99

TR 400 623
12/28/99

Item 10

Kaowool on Air drop intact, all three layers. Stainless steel bands intact no stretching of bands.

Entire 52" of cable completely gone.

Burnt through where cable tray slot was made at cover

Jacketing completely burned away.

Oleda Patton
OPL QA/QC 12/28/99

Sandra J. Bussford
12/28/99

TR 400
12/28/99

Item # 11

Insulation pans glued away from box.

First layer, white intact
Second layer white intact.
Third layer some amount of damage.

Even though glue was burned/melted off insulation pans still intact through material.

1/2" Bands held box together.
18 ga strips stayed intact to overlapped Kaowool onto concrete.

Inside 24"x 24"x 12" Junction box

Thermo couple wire inside of box undamaged with numbers still being able to be read.

Sandra Brafford
12/28/99

Cleda Dalton
OPL QA/QC 12/28/99

Item 3

Kaowool first layer still white partly gone.

Second layer intact white
Third layer looks undamaged

all stainless steel bands intact no stretching tight to Kaowool

Cable tray tie wraps melted off range
Cables look good but hot to touch.

Thermal short All 3 layers undamaged on thermal short
stainless steel bands all layers intact.

Unprotected all threes

Cables horizontal run

Zetex, brittle when taking off Item 3 was brittle.

Kaowool First layer under Zetex white good
Kaowool Second layer was good

Wall penetration in envelope no damage.

Oleda Bolton
OPL QA/QC 12/28/99

Sandra J. Bedford
12/28/99

TR 400
12/28/99

First layer removed from Item # 5
Bands cut Kaowool fell off in chunks.
Unistrut pulled away from ceiling

Second layer tinged brown but intact on Vertical section

Third layer tinged slightly fell off in large pieces.

Cables look good but are hot to touch.
Melted tie wraps on most of runs.

Horizontal portion of cable tray
no swelling in cable jacketing
Bare copper wire discolored

48" Kaowool tinged
Tray discolored

Wall penetration under Kaowool are not damaged.
Wall penetration inside envelope no damage

Cables in horizontal section look good but hot to touch.

Sandy Bedford 12/28/99

Cleda Dalton
OPL QA/QC 12/28/99

ATTENDANCE SHEET

TR 400
12/28/99

MARK SALLEY	NRC
MIKE KAMMER	SCE&G
TOM KECKIESEN	SCE&G
ANDY ROBOSKY	SCE&G
WOODY WALKER	ENTERGY
MIKE CUMBSET	GRAND GULF
GREG JAROSZ	TRANSCO
SANDRA BRADFORD	TRANSCO
MARK SOLLIE	TRANSCO
WAYNE FIELDS	TRANSCO
JIM FIELDS	TRANSCO
BOB GRUBB	GRUBB ENG.
CLEDA PATTON	OMEGA POINT
CONNIE HUMPHREY	OMEGA POINT
DEG PRIEST	OMEGA POINT

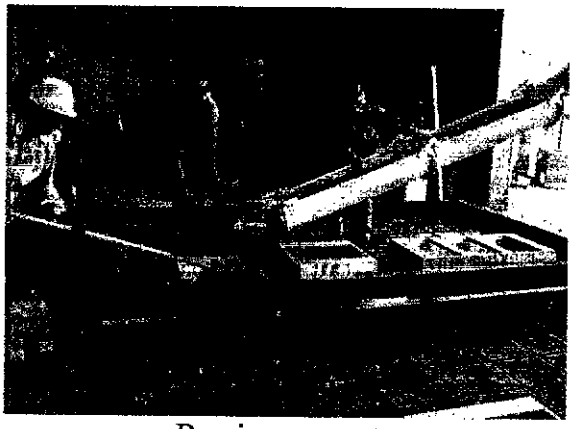
Appendix G

PHOTOGRAPHS

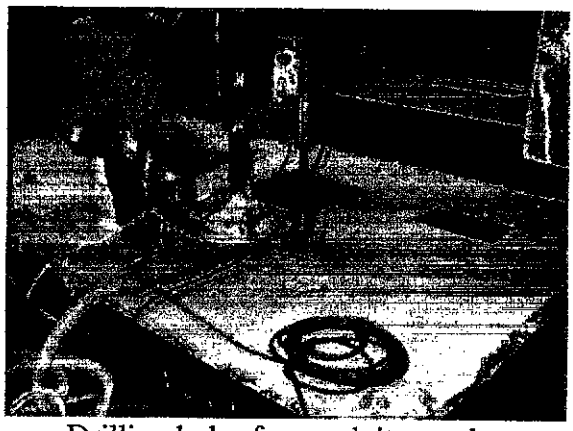
OMEGA POINT LABORATORIES

Preparing framework for slab

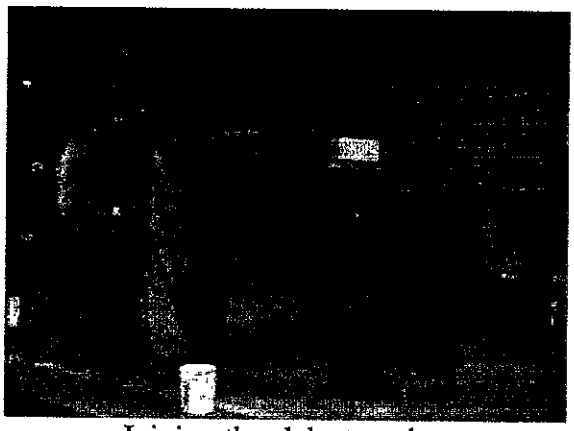
Preparing framework for slab



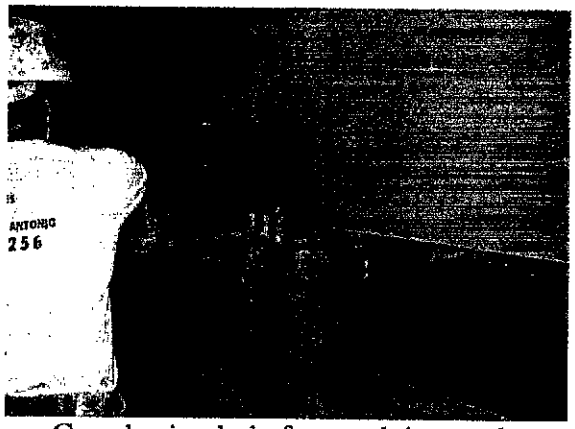
Pouring concrete



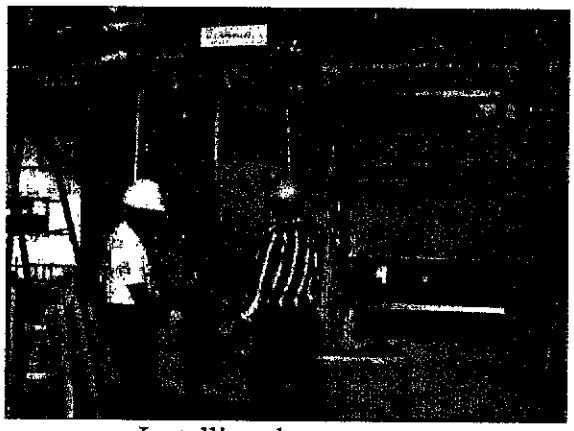
Drilling holes for conduit samples



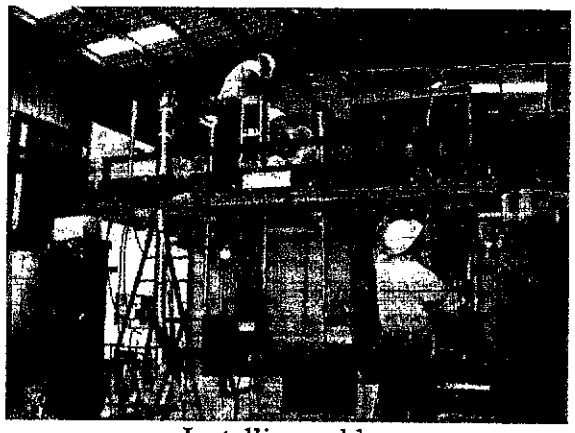
Joining the slabs together



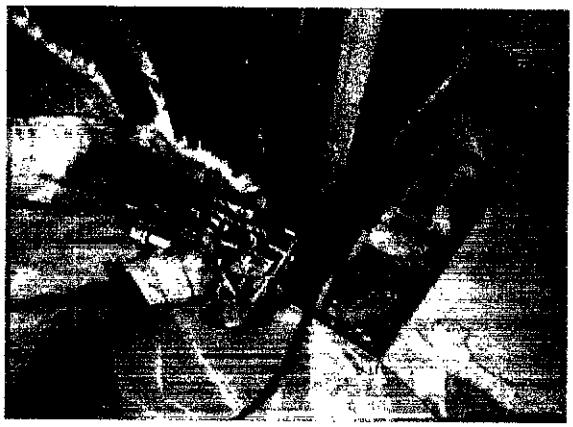
Core-boring hole for conduit sample



Installing the raceways

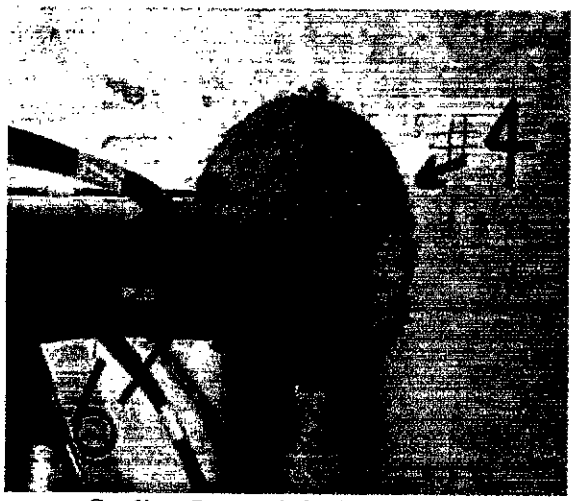


Installing cables

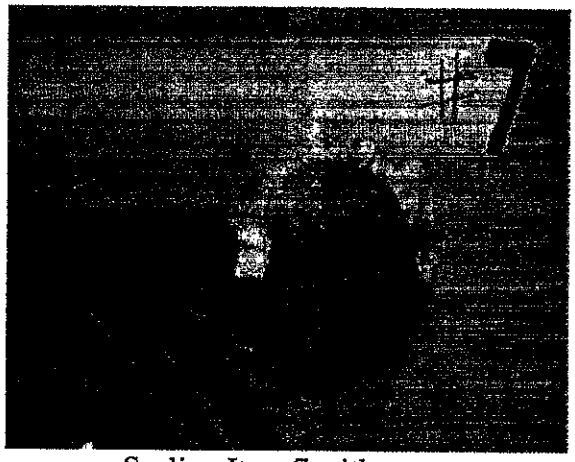


Installing the foam seal

Foam seal at tray/slab interface on Item 3



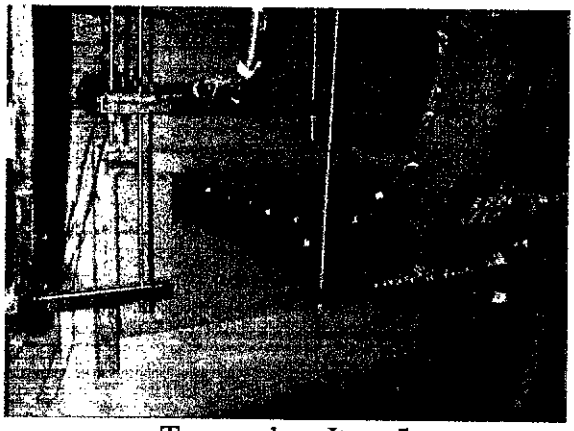
Sealing Items 4 & 6 with grout



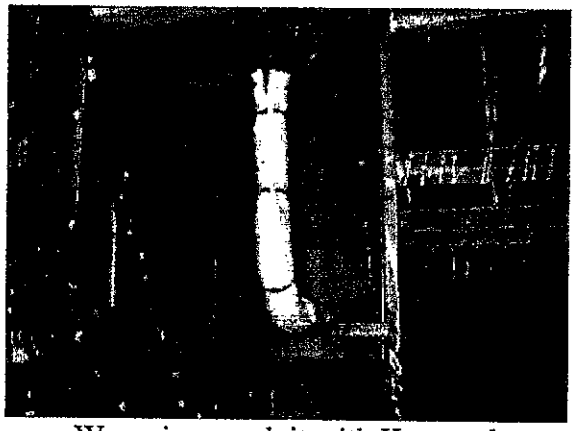
Sealing Item 7 with grout

Item 3 tray seal at the ceiling

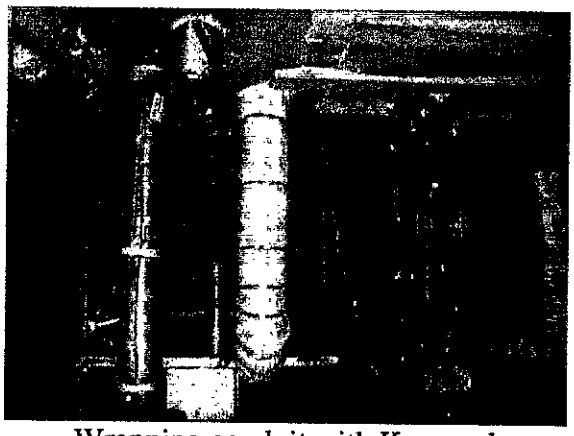
Item 5 tray through blockout in ceiling



Tray seal on Item 5



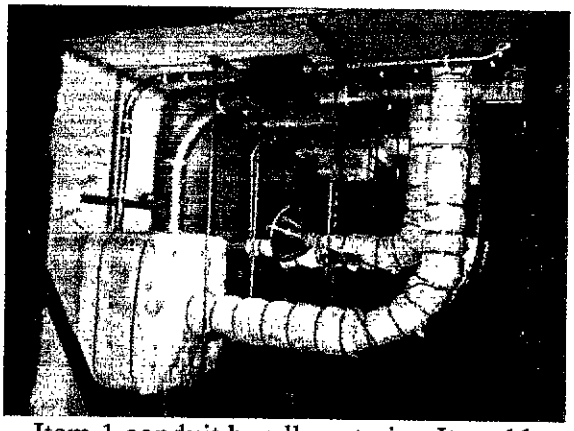
Wrapping conduit with Kaowool



Wrapping conduit with Kaowool

Wrapping Item 8

Item 8

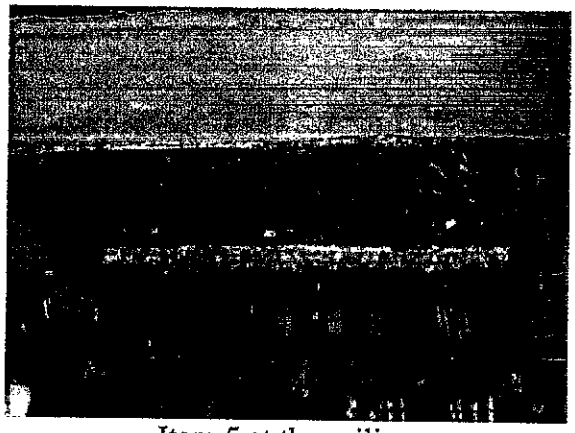


Item 1 conduit bundle entering Item 11

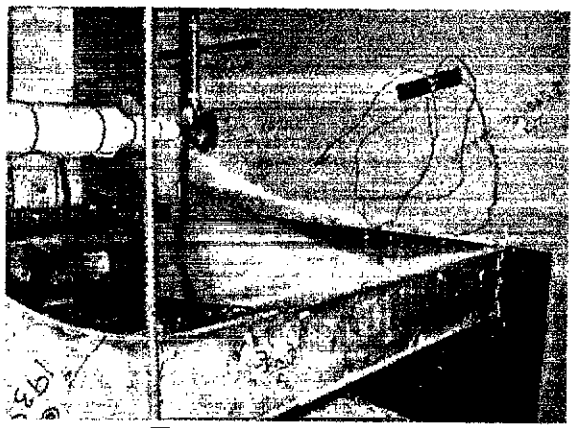
Sealing tray on Item 5 at the ceiling

Sealing tray on Item 5 at the wall

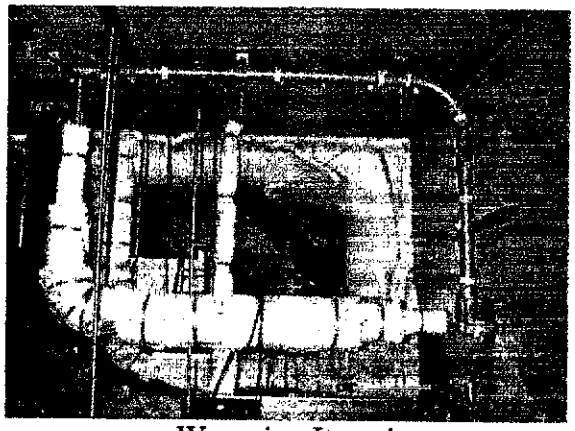
Finishing Item 5



Item 5 at the ceiling



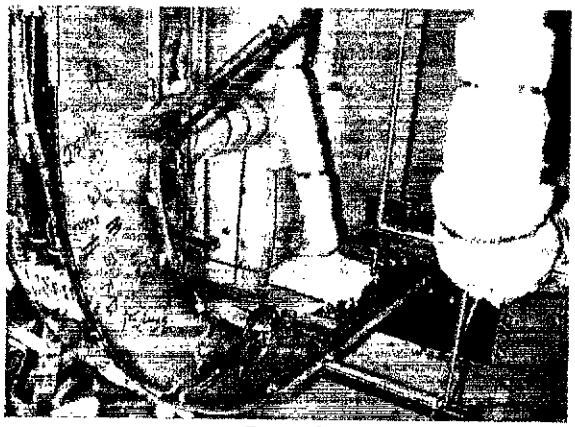
Tray cover on Item 5



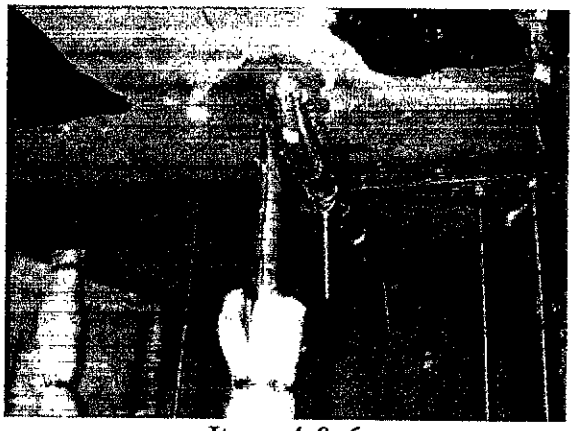
Wrapping Item 4

Wrapping Item 2 (Item 12 at ceiling)

Wrapping Item 2 (Item 12 at ceiling)

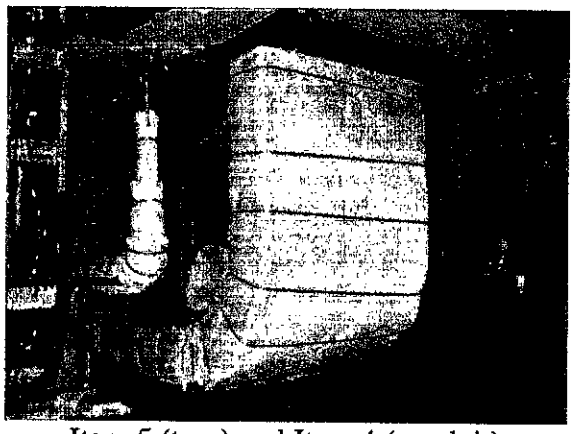


Item 3

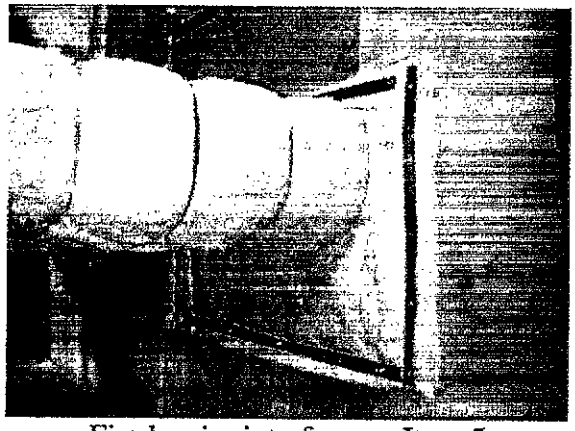


Items 4 & 6

Item 2 at the ceiling



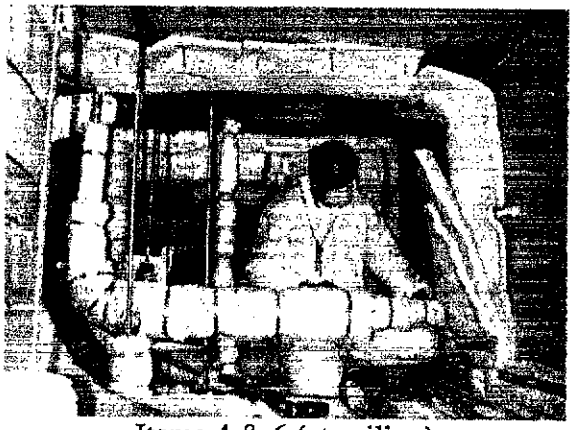
Item 5 (tray) and Item 4 (conduit)



Fire barrier interface on Item 5

Installing third layer on Item 1

Drilling for expansion anchors on Item 3

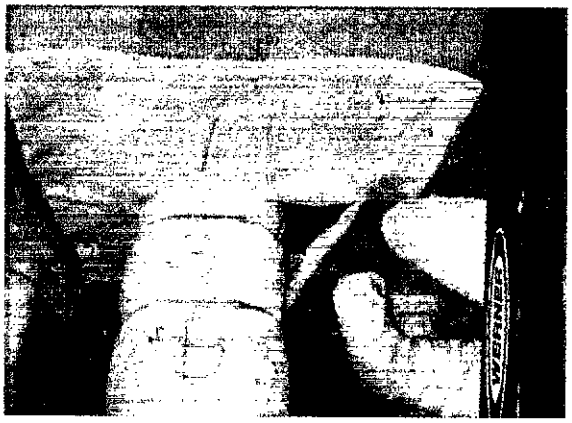


Items 4 & 6 (at ceiling)

Flamemastic 77 on Item 1

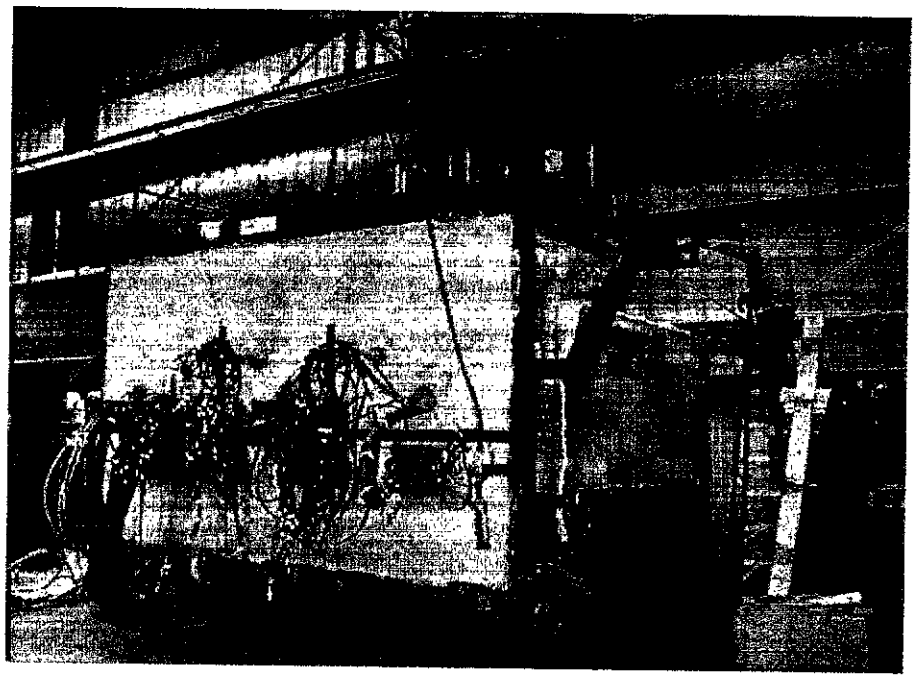
Zetex cloth on Item 3

Item 6

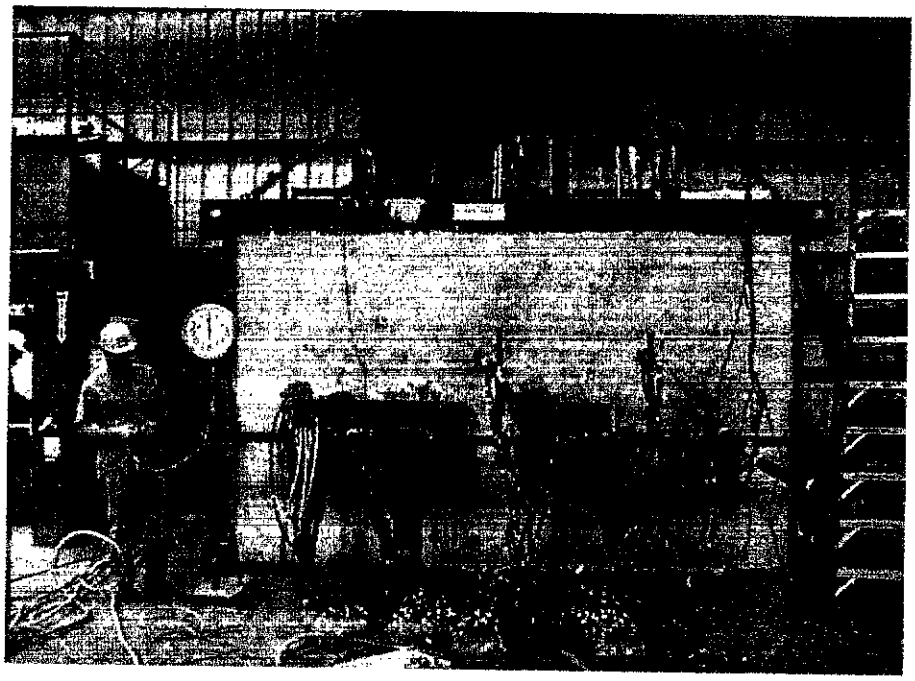


Item 3

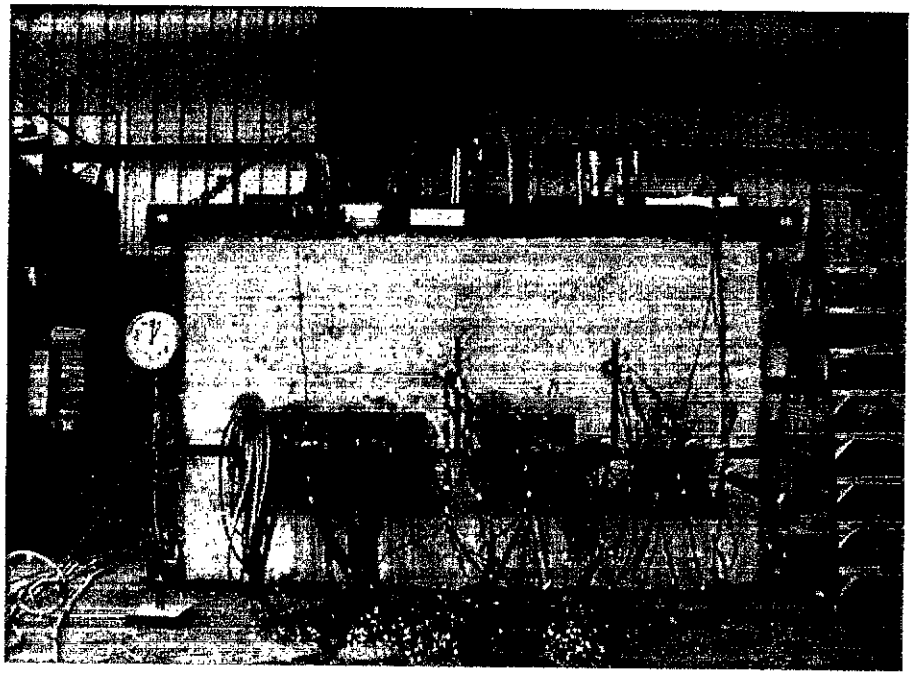
Item 7



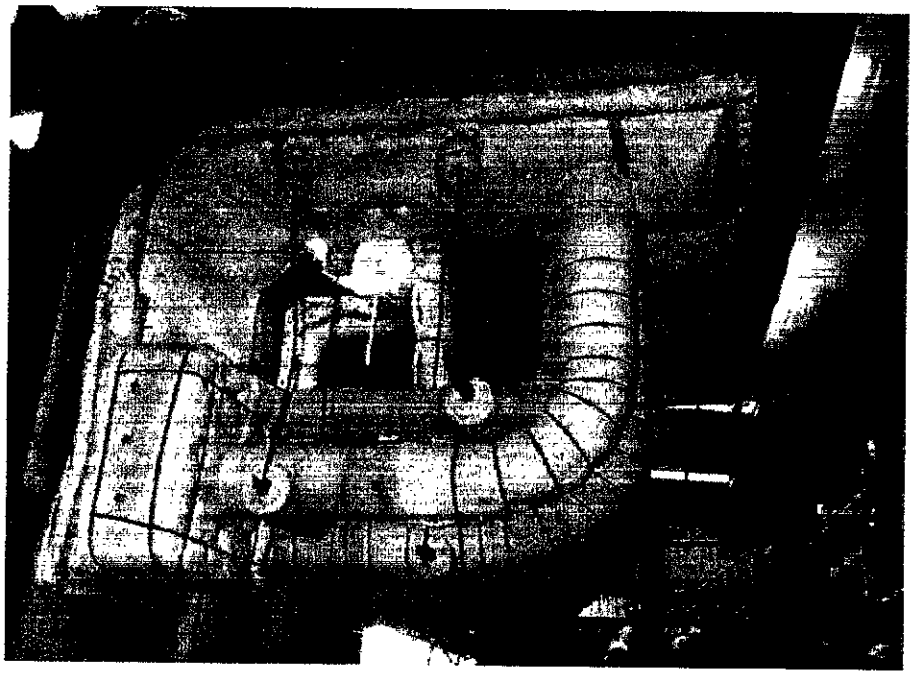
Mounting the slab on the furnace



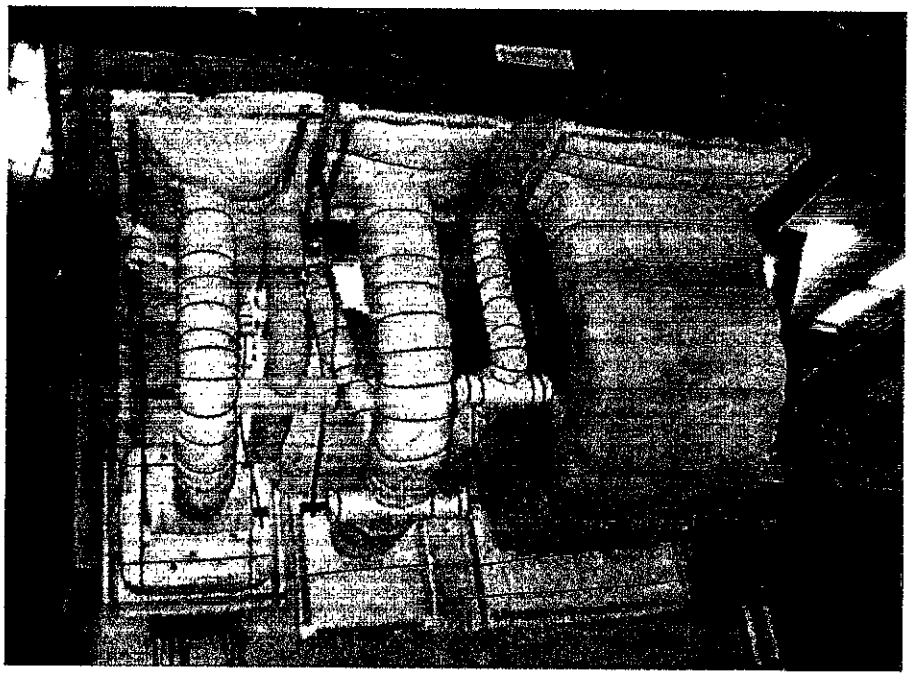
Start of test



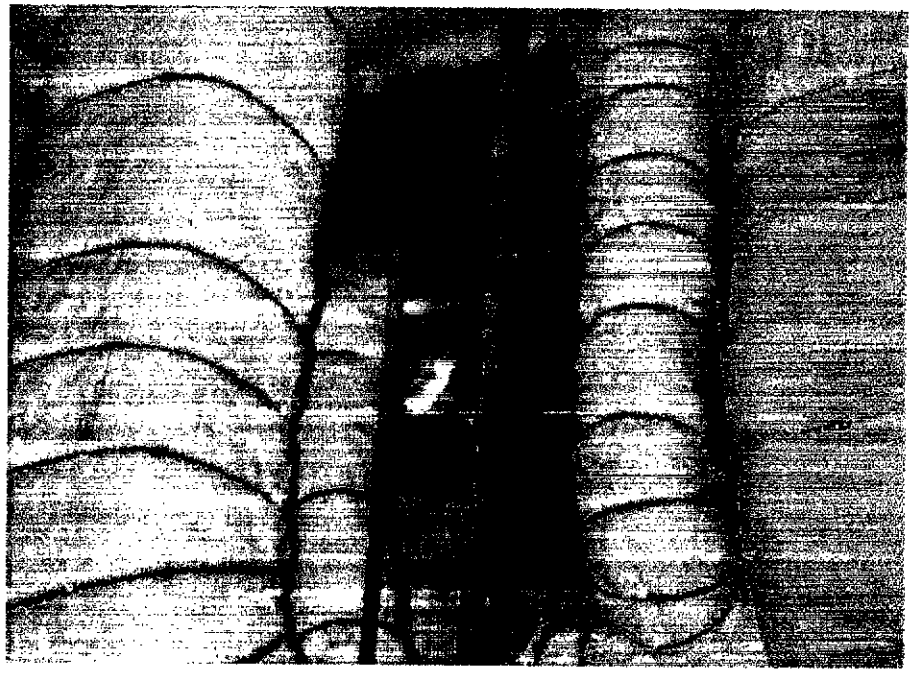
Furnace extinguished after 60 minutes of exposure



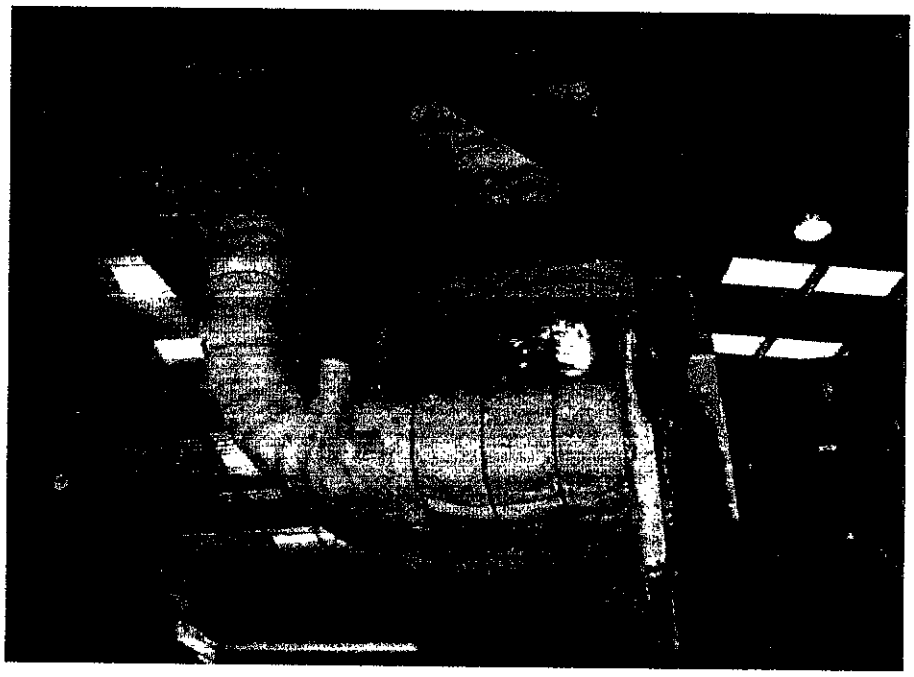
Removing the test article from the furnace



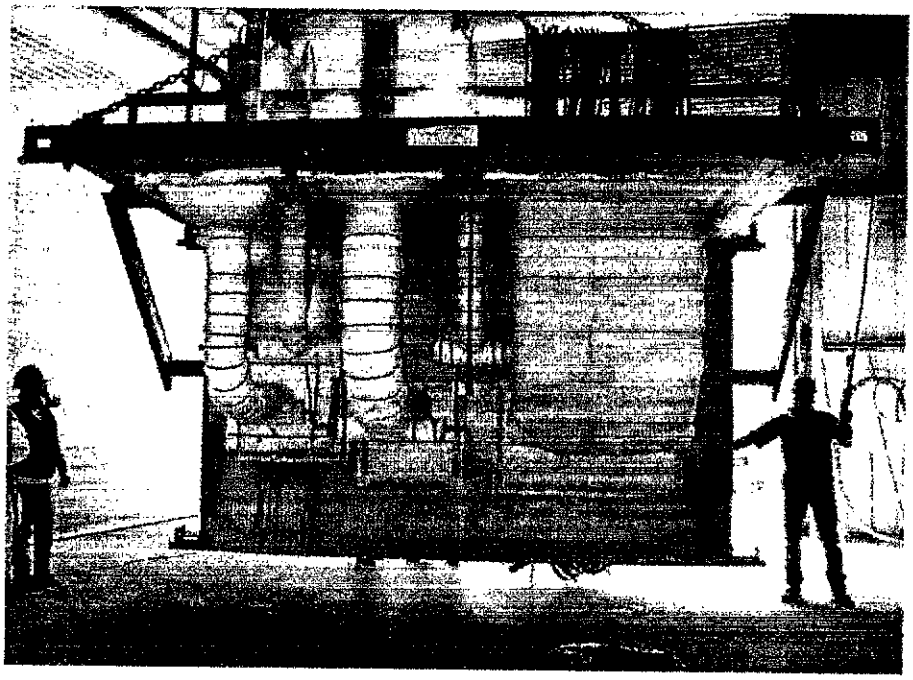
Test article removed from furnace



Flaming from Item 9



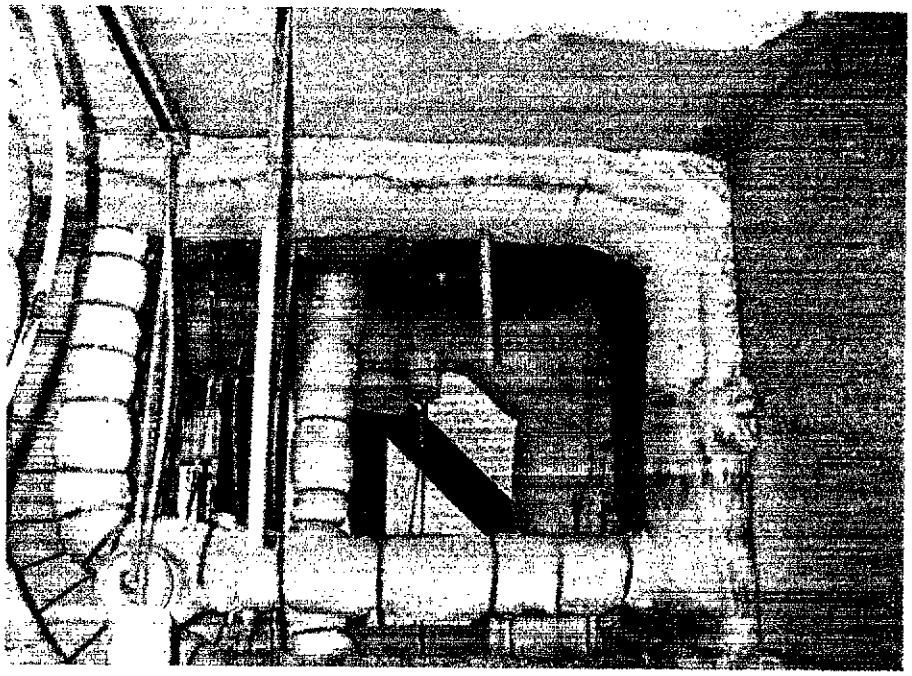
Test article removed from furnace (Item 5 in foreground)



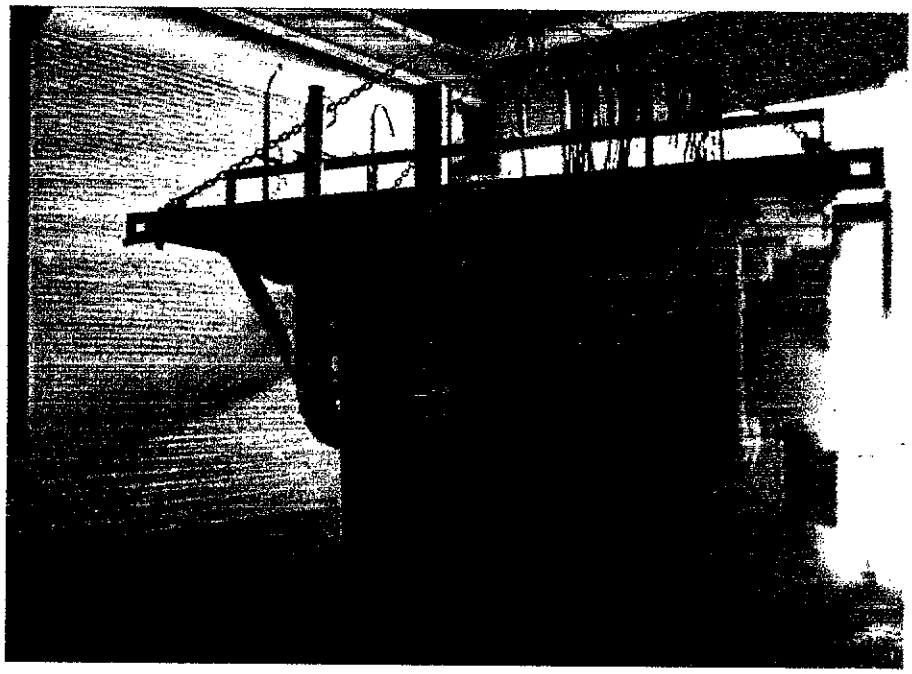
Positioning test article for the hose stream test

Meggering prior to the hose stream test

Item 9 (at ceiling)

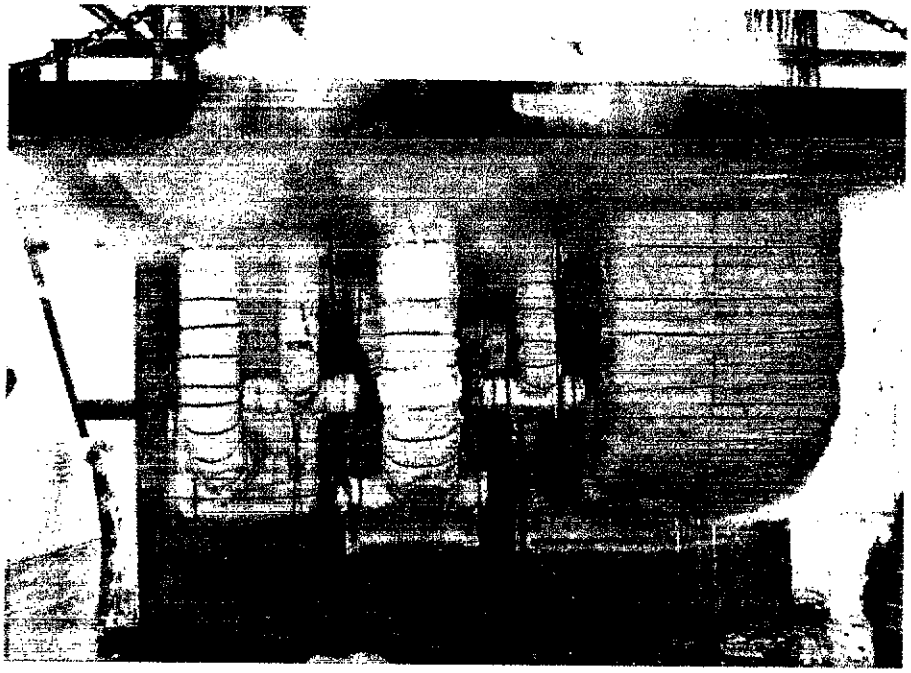


Items 4 & 6

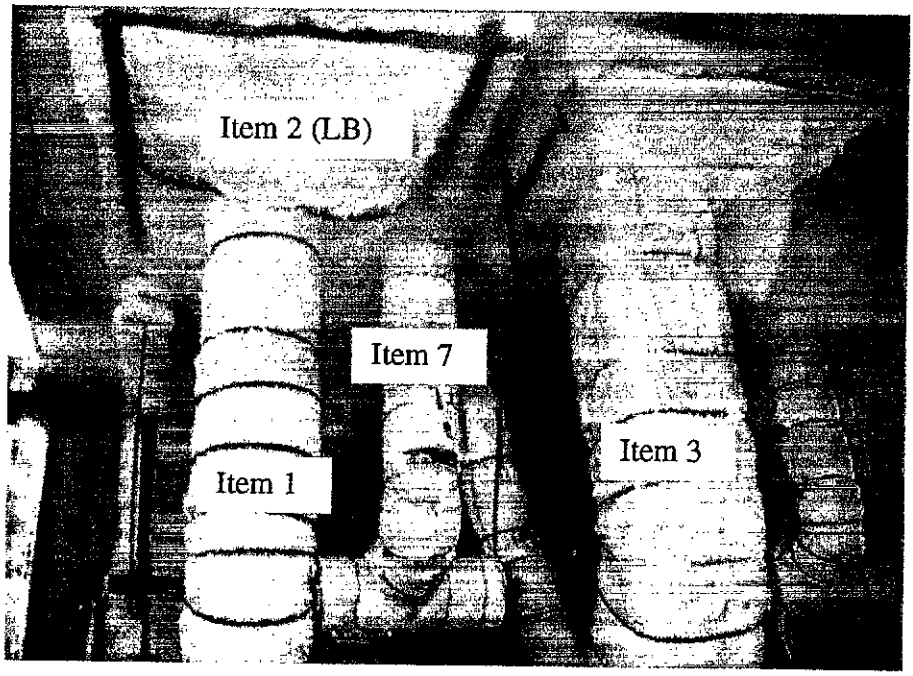


Hose stream test

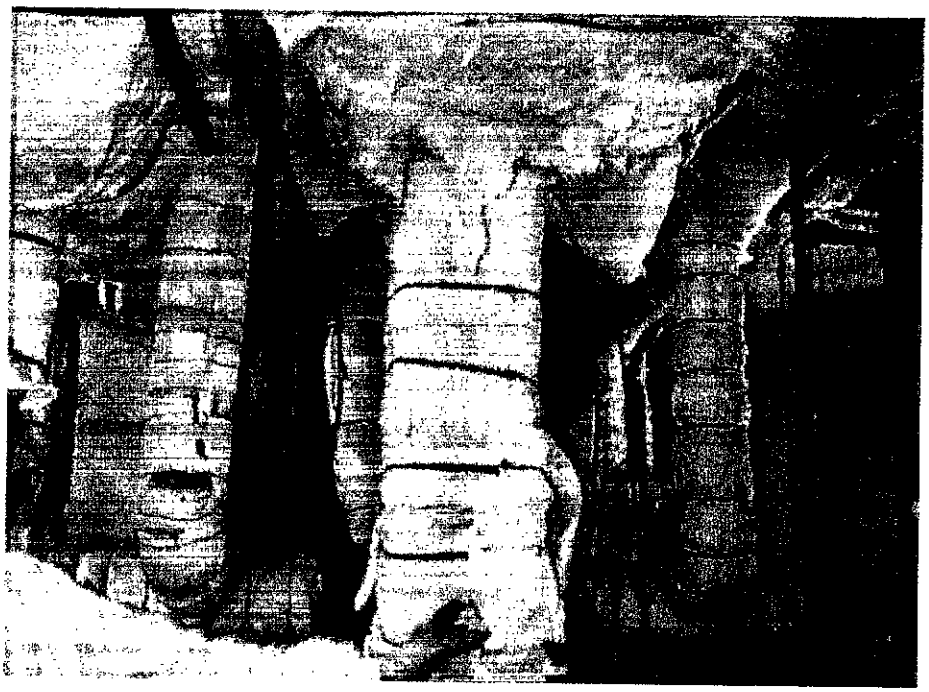
Hose stream test



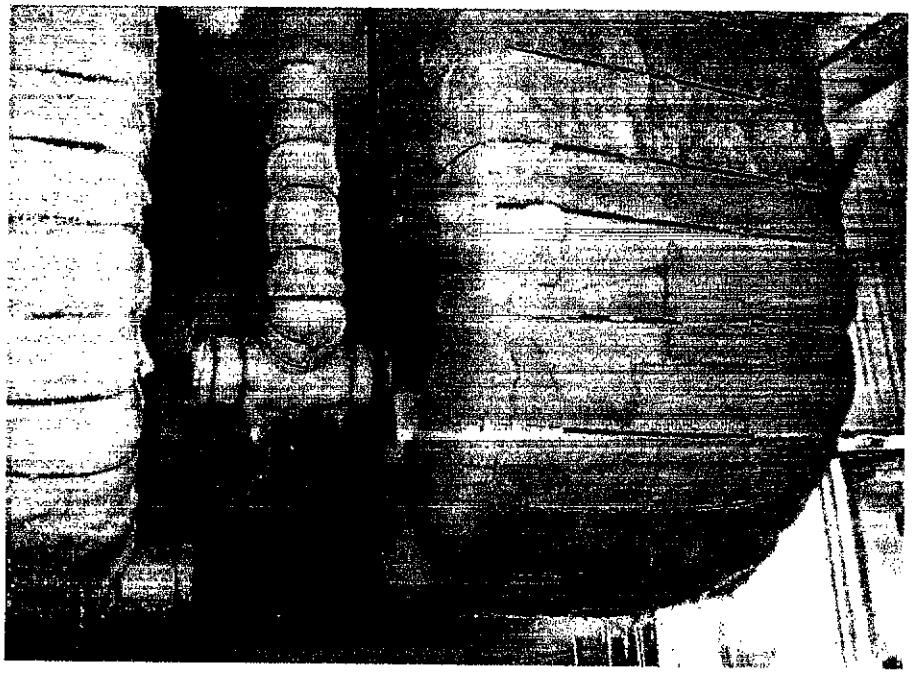
Test assembly after the hose stream test



Test articles after the hose stream test

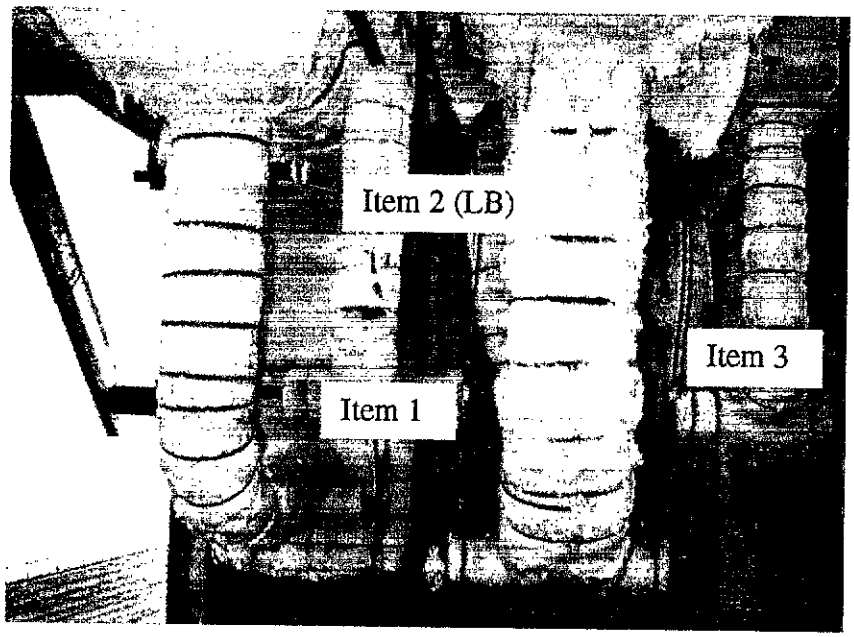


Test articles after the hose stream test



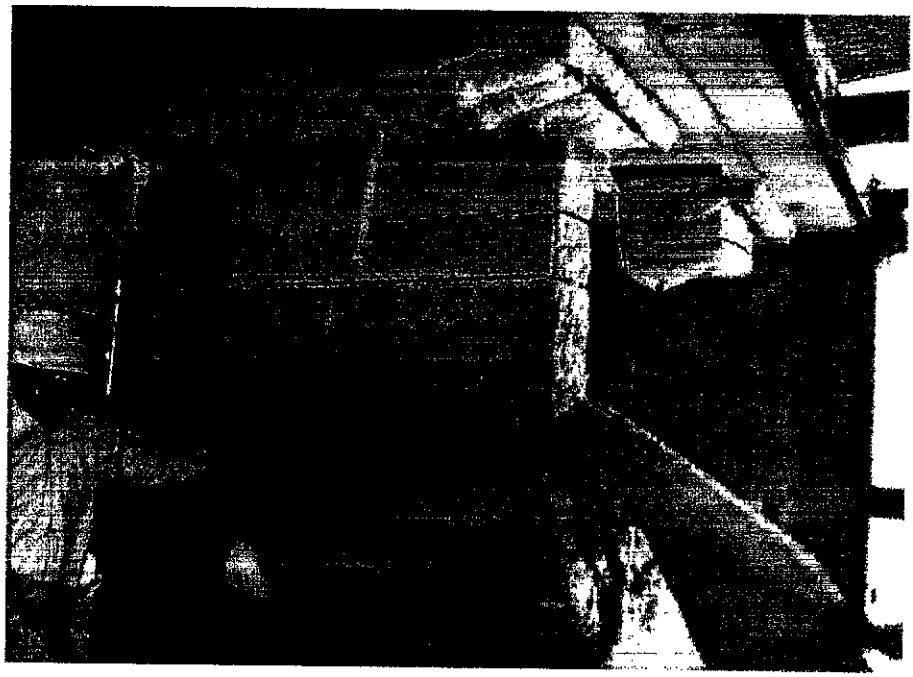
(left-right): Items 3, 4, & 5

Item 5 after the hose stream test

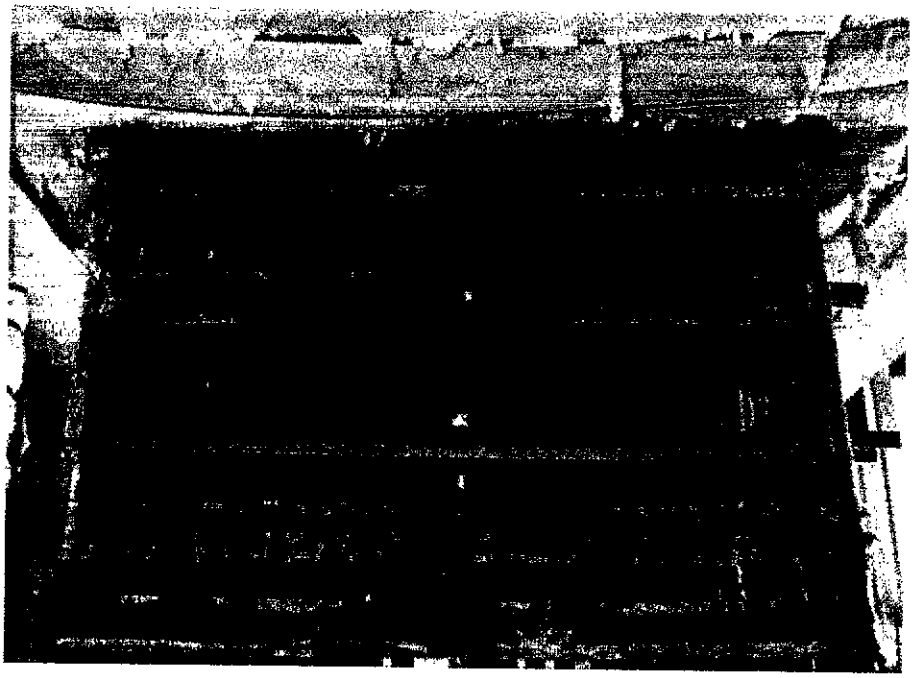


Post hose photo

Removing the outer layer on Item 5



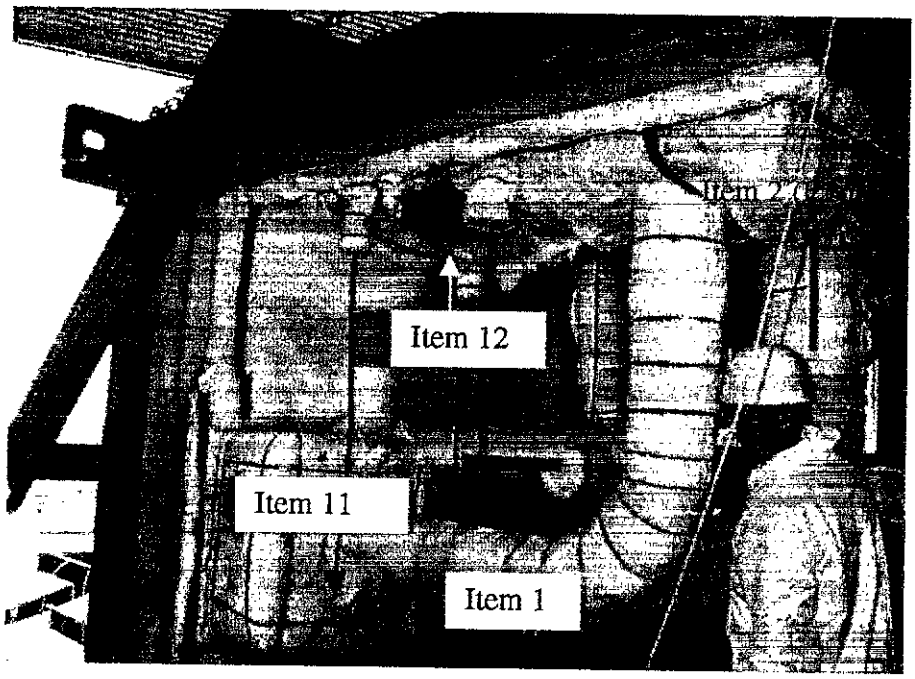
Removing the outer layer from Item 5



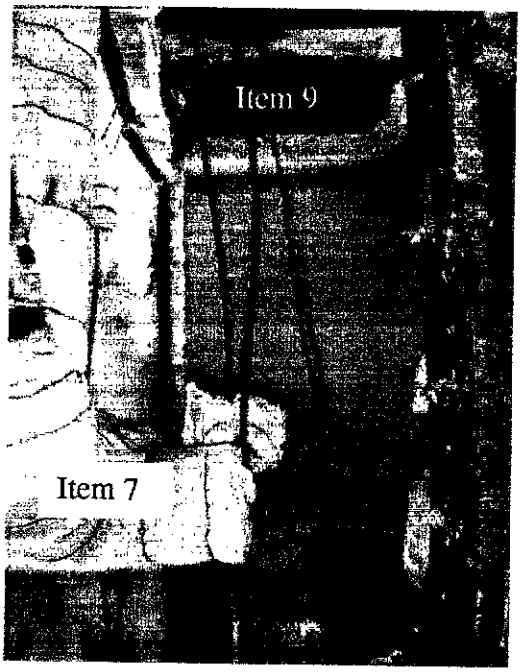
Cables in the vertical run on Item 5

Fire barrier interface at the wall on Item 5

Radial bend section of Item 5



Post hose photo



Post hose photo

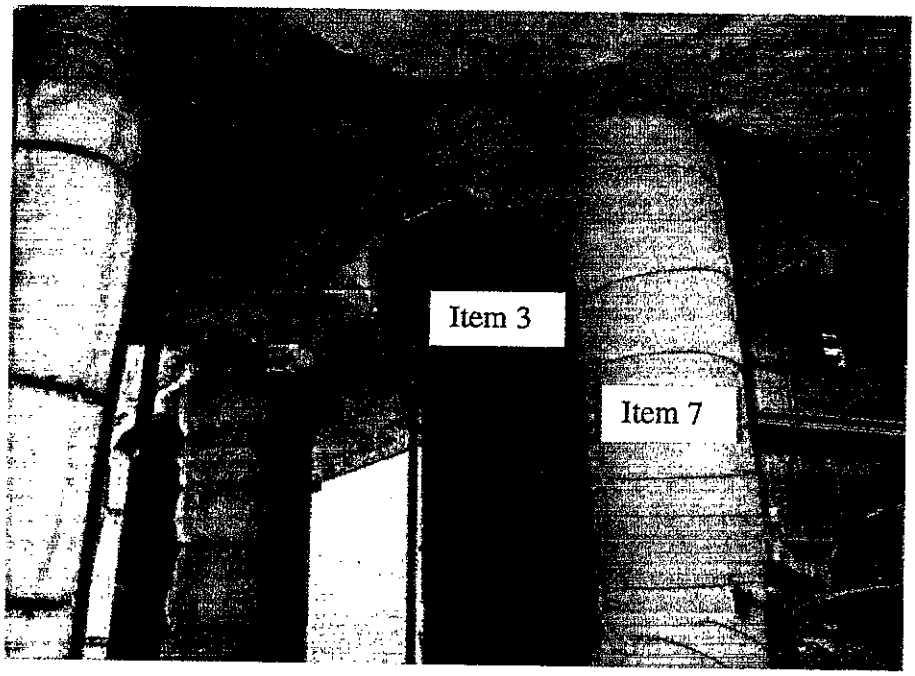
Kaowool removed from Item 11

Item 7 at the ceiling interface

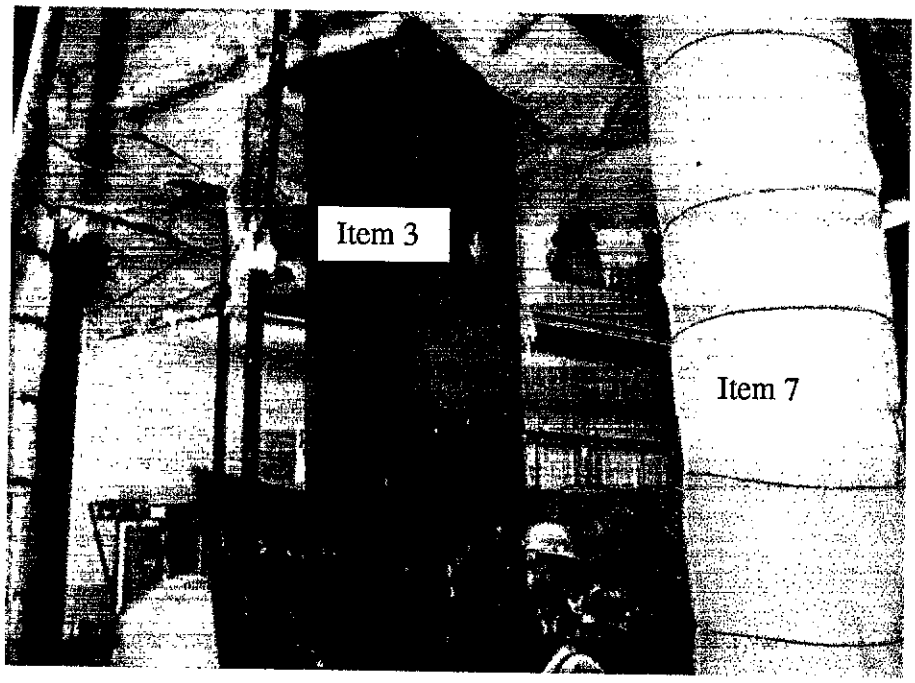
OMEGA POINT LABORATORIES

Removing the outer layer of Kaowool from Item 3

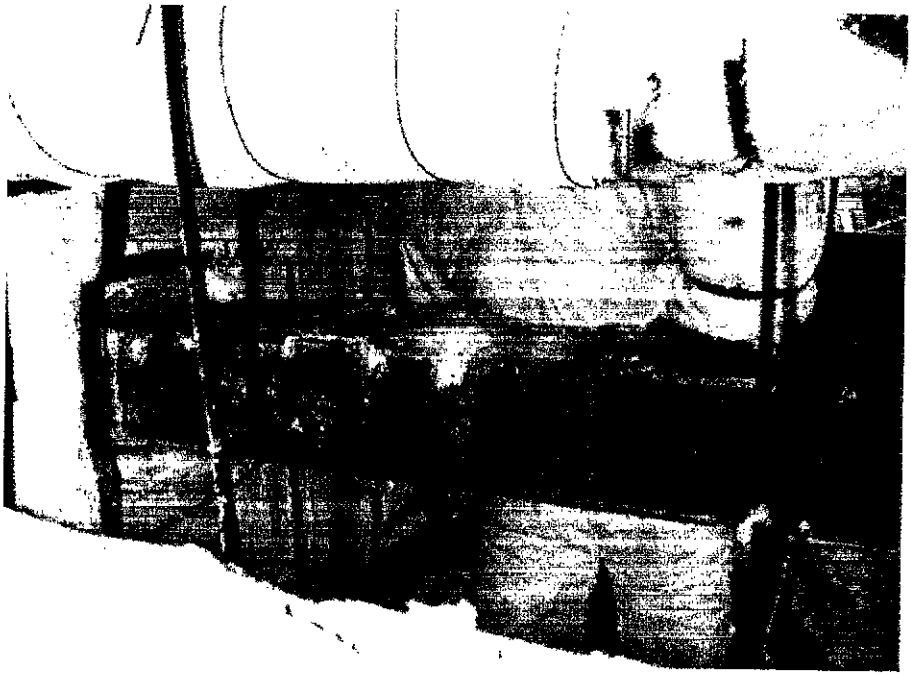
Removing the protection from the vertical run on Item 3



Tear down photo



Tear down photo



Horizontal run on Item 3

Appendix H

ADDITIONAL PAGES

The following pages were omitted from the test report

39A
247A through 247I
255A through 255AG
476A
477A through 477AD
489 A & B

OMEGA POINT LABORATORIES

TRANSCO® PRODUCTS INC.
EXECUTIVE OFFICES
Fifty Five East Jackson Boulevard
Suite 2100
Chicago, Illinois 60604-4166
312-427-2818
Facsimile 312-427-4975

Gregory J. Jarosz
Product Manager - Fire Protection Services

Celebrating Our 64th Year (1936-2000)!

Mr. Andy Robosky
SCE&G
V.C. Summer Nuclear Station
P.O. Box 88
Jenkinsville, South Carolina 29065

May 24, 2000

Sent via facsimile to #803-345-4765
with the original copy via next day air courier

Subject: V.C. Summers Nuclear Station
Permission to Reprint Kaowool Raceway Fire Barrier Test

Dear Mr. Robosky,

This letter authorizes South Carolina Electric and Gas Company to reprint or electronically copy Test Report No. 12000-105900 (fire test for triple-layer Kaowool raceway fire barriers) as necessary. This test was performed on our behalf last December by OmegaPoint Laboratories.

Please contact us at your convenience if we can be of any further assistance.

Sincerely,
TRANSCO PRODUCTS INC.

Gregory J. Jarosz
Product Manager