

# Memorandum

To: DAN McELHINNEY, Program  
Toll Bridge Program

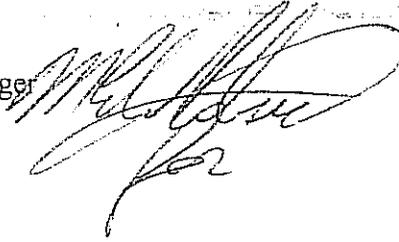
-Elect Air

Date: January  
File: 04-ALA/SF-80  
04-0120F1  
SFOBB East Spans

RECEIVED  
FEB 2 2004

*J. Adams*  
*B. Maroney*  
*D. McElhinney*

From: BRIAN MARONEY, Project Manager  
San Francisco-Oakland Bay Bridge  
East Span Safety Project



Subject: Request to Use Trade Name

Your approval is requested to advertise the above-referenced project with a trade name used in the special provisions.

For the Traveler Scaffold Trolley system, it is proposed to use the Ingersoll Rand series ATE Air Motor Trolley and the Ingersoll Rand model BTP-MR 316 Passive Trolley, manufactured by Ingersoll Rand, Woodell, New Jersey.

The State employs only air-powered equipment on all travelers for safety reasons (lack of sparks and shock hazard). This eliminates the possibility of using an electric powered system.

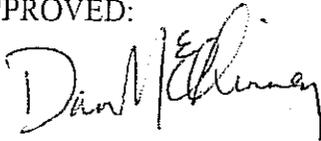
The State has considered issuing performance specifications for traveler motors. However, manufacturers will only guarantee the performance of their products under very controlled conditions such as a dry, level rail, under a specific load, and with a specific rail material and finish. The travelers required for this project will not fall within these conditions. Performance specifications were employed on the Vincent Thomas retrofit project, but the results were unsatisfactory, and the motors were replaced by the Ingersoll Rand units requested above.

Ingersoll Rand is the only manufacturer of radial piston air motors. These are reliable, require a minimum of maintenance, and have more positive starting, better speed control at low speeds, and slightly better stopping characteristics than the typical tractor vane motor. In addition, these motors are certified man-rated, as required by Cal-OSHA. Given this, these have become the standard on State Toll Bridges and are currently being used on all the exiting toll crossings.

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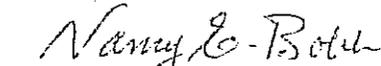
The BTP passive trolley is required for compatibility with the ATE motors. Therefore, it is in the best interest of the public to use this product for this project. A memo from the Division of Maintenance Toll Bridge Investigations explaining the need for the ATE motors is attached. Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.

APPROVED:



DAN McELHINNEY, Program Manager  
Toll Bridge Program

FHWA APPROVAL:



for DAVID NICHOL  
Acting Division Administrator

Attachment

c: MWhiteside  
AAkinsanya  
file

# Memorandum

To: Rachel Falsetti  
Office Chief  
District 4 Toll Program -  
Specs and Estimating

Date: December 26, 2000

File: 04-SF-80  
04-012001  
New SFOBB East Span

From: DEPARTMENT OF TRANSPORTATION  
ENGINEERING SERVICE CENTER  
DIVISION OF STRUCTURE MAINTENANCE AND  
INVESTIGATIONS - Toll Bridge Investigations (North)

Subject: Traveler Scaffold Air Motor Trolleys

The Ingersoll Rand Series ATE air motors have been the standard for the State's Toll Bridges for several years. Not so much because of the "Ingersoll Rand" name but more for the type of motor - that being a radial piston motor. These radial piston motors are well suited to the needs of the bridge painters, are reliable and require a minimum of maintenance. Further, the piston motors have more positive starting, better speed control at slow speeds, and slightly better stopping characteristics than the typical tractor vane motor.

Because of the inherent advantages of the Ingersoll Rand Series ATE air motors, we are requesting that the plans incorporate this type of trolley motor on all motorized travelers and scaffolds. Ingersoll Rand air motors have been specially called for in the other retrofit/rehab projects on the "Toll Bridges" (Richmond/San Rafael, San Diego-Corranado, and Carquinez Bridges to name a few). At this time no other manufacturer other than Ingersoll Rand makes piston-motor-driven trolleys.



Kenneth Brown, Office Chief  
DSM&I - Toll Bridge Investigations (North)

cc: Tom Rut  
Bart Desai  
John Hemiup



**U.S. DEPARTMENT OF TRANSPORTATION**  
 FEDERAL HIGHWAY ADMINISTRATION  
 CALIFORNIA DIVISION  
 980 Ninth Street, Suite 400  
 Sacramento, CA 95814-2724  
 April 8, 2004

IN REPLY REFER TO  
 HDA-CA  
 File #: 04-SF-80  
 KP 13.2/13.9  
 Document #: P48799

*Bolt Coating*  
**NOT SOLE SOURCE**  
*- Dacromet*

Mr. Bijan Sartipi, District Director  
 California Department of Transportation  
 District 4  
 P. O. Box 23660  
 Oakland, CA 94623-0660

Attention: Dan McElhinney, Chief Deputy District Director, Toll Bridge Program

Dear Mr. Sartipi:

SUBJECT: Request to Use Trade Name

Your letter dated March 29, 2004, requested our approval of a public interest finding to use a trade name in the Special Provisions of the subject project. The purpose of your request is to utilize a product called Dacromet to ensure the best corrosion protection possible for the A490 high strength bolts being installed on the Self-Anchored Suspension Span of the San Francisco-Oakland Bay Bridge. Since A490 bolts are susceptible to hydrogen embrittlement when galvanized or coated with products containing zinc, we are somewhat concerned of the potential for this problem to arise when using Dacromet, which also contains zinc. However, due to the nature of the Dacromet chemistry, coupled with the fact that these bolts will be top-coated with the same paint utilized on the rest of the bridge, our concerns are alleviated. Nevertheless, we note that further research is in progress and, should it be determined that Dacromet will not perform as anticipated, we would expect that the reference to this product would be removed from the special provisions and alternative systems explored.

The documentation included with your letter demonstrates that Dacromet is the only product that will fulfill the needs of the project; therefore, we are in concurrence with your request that it is in the public interest to pre-coat the A490 bolts with Dacromet and refer to this product in the special provisions. In accordance with 23 CFR 635.411 (a)(2), you certify that there is no suitable alternative to this system.

If you have any questions, please contact Nancy Bobb at (916) 498-5033.

Sincerely,

*Nancy E. Bobb*

For  
 Gene K. Fong  
 Division Administrator

EXECUTIVE OFFICE  
 04 APR - 9 AM 8:13

**DEPARTMENT OF TRANSPORTATION**

111 GRAND AVENUE  
P. O. BOX 23660  
OAKLAND, CA 94623-0660  
PHONE (510) 286-5906  
FAX (510) 286-6301  
TTY (800) 735-2929



*Flex your power!  
Be energy efficient!*

March 29, 2004

Mr. Gene K. Fong  
California Division Administrator  
Federal Highway Administration  
650 Capitol Mall, Suite 4-100  
Sacramento, CA 95814

Dear Mr. Fong:

**Request to Use Trade Name**

Your approval is requested to use a trade name in the special provisions for a corrosion protection coating for high strength bolts in the currently advertised aforementioned project. The bid-open date for this contract is May 26, 2004.

For the ASTM designation A490 bolts, it is proposed to use Dacromet coating manufactured by Metal Coatings International (MCI) of Chardon, Ohio. This product provides the best corrosion protection option while meeting the project requirements. There are no equally suitable alternatives.

MCI is the patent holder and manufacturer of the Dacromet product. MCI has license agreements with 21 companies throughout the United States and Canada. These companies are licensed to purchase and apply the product. While MCI does control pricing at the wholesale level it does not control pricing at the retail or application level. Consequently, price competition among the licensed applicators is expected and should result in a reasonable price.

Please find the following enclosures in support of this request: (1) a letter from the joint venture of T.Y. Lin International/Moffatt & Nichol Engineers explaining the need for using Dacromet (2) two lists of structures built in Japan and Korea which utilized the Dacromet coating on A490 comparable bolts (3) a summary of email correspondence from Japanese and Korean contacts with knowledge of the product's performance.

Based on the foregoing, the Department believes that it is in the best interest of the public to specify the above-described product by trade name.

Sincerely,

A handwritten signature in cursive script that reads "Dan McElhinney".

DAN McELHINNEY, P. E.  
Chief Deputy District Director  
Toll Bridge Program

Enclosures

Mr. Gene K. Fong

March 29, 2004

Page 2

bc: BBuckley, BSartipi, AFremier, JMikeLeonardo, LCulik-Caro  
BMaroney, JAdams, MWhiteside, SMargaris, AAkinsanya, File

BM:JA:MW/la

59A0040

04-Ala-SF 80

San Francisco-Oakland Bay Bridge

04-0120F1

MODE = MEMORY TRANSMISSION

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FILE NO. = 214

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-TOLL

\*\*\*\*\* -15102865547 - \*\*\*\*\*

111 Grand Avenue  
Oakland, CA 94612  
FAX #510-286-6301



# Fax

To: Nancy Bobb  
FHWA

From: DAN McELHINNEY

Fax: 916-498-5008

Pages: cover + 7 = eight

Phone: \_\_\_\_\_

Date: March 29, 2004

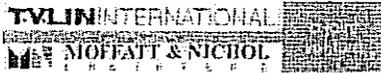
Re: Request to Use Trade Name

**NOTICE OF CONFIDENTIALITY**

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Please call if you did not receive all copies

~~C. Original will not follow~~ C. Original will follow by:



March 19, 2004

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 – 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

**Reference: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project  
Self-Anchored Suspension Span  
Corrosion Protection for A490M High-Strength Bolts  
04-SF/Ala-80  
EA 04-0120F1**

Dear Dr. Maroney:

T.Y.Lin International / Moffatt & Nichol, a Joint Venture (JV) is recommending the use of a trade name for the corrosion protection coating of A490M high-strength bolts for the New San Francisco – Oakland Bay Bridge Self-Anchored Suspension bridge (SFOBB-SAS). The justifications for the use of trade name request are described below.

After a design competition during the preliminary phase of the project, in which public involvement was a major element, the SFOBB-SAS was selected by the Engineering Design Advisory Panel (EDAP) as the Signature Span of the bridge to replace the seismically vulnerable existing East Spans of the San Francisco Oakland Bay Bridge (SFOBB). EDAP was comprised of international and domestic experts on long span bridges, seismologists, architects, landscape architects, geologists and structural engineers. The committee was appointed by the Metropolitan Transportation Committee (MTC) of the Bay Area. The criteria for the bridge selection were aesthetics, seismic safety, constructibility and economy.

Based on the performance criteria stipulated by the Governor of California after the 1989 Loma Prieta earthquake, the SFOBB was identified as a "Life Line Structure". This meant that the SFOBB-SAS has to meet the "Life Line Structure" performance criteria set by the Seismic Advisory Panel for the State of California. This implied that the SFOBB-SAS shall be designed for a 150 year design life and shall be operational shortly after a major seismic event. The SFOBB-SAS is located within a few miles of the San Andreas and Hayward faults which can produce magnitude 8.1 and 7.4 earthquakes on the Richter scale, respectively. In addition, the SFOBB-SAS is located in a marine corrosive environment, and carries over 280,000 vehicles per day which makes its corrosion protection and proper maintenance extremely important given the required design life of 150 years.

During the design of the SFOBB-SAS the use of A490M bolts was minimized to the extent possible. However, due to significant architectural influence (which largely impacted the cross-sectional shape of the tower thus making the detailing difficult and complex), the large seismic demands and the seismic design criteria requirement to have connections be stronger than the

members being connected, the use of A490M bolts was implemented in several critical locations (example: bolted splice of the tower for tower shaft splices, saddle grillage and shear links). The use of A325M bolts was not feasible in these locations.

Bolts are typically galvanized for corrosion protection. Currently, the Research Council on Structural Connections, based on ASTM specifications, permits the galvanizing (either hot-dip or mechanical) of A325M bolts but not A490M bolts. The reason for this is the phenomenon of hydrogen embrittlement, where delayed brittle fracture failure may occur in A490M bolts due to the infusion of hydrogen into the steel. The two main causes of hydrogen embrittlement are acid pickling and cathodic hydrogen absorption.

Various options were considered for corrosion protection of A490M bolts by the JV and Caltrans. These options included:

Organic/Inorganic Zinc Coating - There are two potential problems with using this type of coating. First, the thickness of the coating cannot be controlled as closely as in the galvanizing process especially on the threads of the bolts and within the threads of the nuts. Over-tapping of the nuts may be necessary if the coating is too thick. Second, because of the variation in the thickness and the compressibility of the zinc coating, the "snug tight" condition for the Turn-of-the-Nut method may be inconsistent, which could result in inconsistent tension in the tightened bolts.

Installing black then paint exposed ends - There are two potential problems with this option. First, since the bolts are unprotected before installation, handling and storage becomes critical to ensure no corrosion occurs on the bolts before they are installed. Second, preparing the bolt ends for painting will be very problematic. Sandblasting the bolt ends will inevitably remove the shop-applied paint on the steel plates in the localized region around the bolt ends. This issue becomes more critical at the tower where access is very tight. At some corners, bolt installation will have to be made with a special spud wrench through a gap less than 50 mm wide. If the bolt ends are left unprotected in these tight corners, they may be susceptible to corrosion because the inside of the tower is not completely sealed and watertight. About 30 percent of the A490M bolts are in these tight corner areas of the tower.

Dacromet Coating - The Dacromet coating is comprised of overlapping zinc and aluminum flakes held in place by a water-based inorganic binder, and the product is a proprietary material of Metal Coatings International, Chardon, Ohio. The following data is known about Dacromet and its application:

- Conforms to ASTM F1136, which requires that the coating process not induce hydrogen embrittlement.
- Does not use acid pickling in the pretreating process, thus eliminating the most significant source for hydrogen embrittlement.
- Dacromet-coated F10T high-strength bolts (equivalent to A490M) have been approved and used in bridges in Japan and Korea (see attached).
- ASTM does not recommend coating of A490M bolts due to lack of research on hydrogen embrittlement. However, Metal Coatings International is conducting their own test for hydrogen embrittlement of Dacromet-coated A490M bolts in accordance with IFI 144, and test results are expected to be available within 6 months.

- Caltrans Material Engineering and Testing Services conducted a salt test on Dacromet about five years ago and found its barrier type of protection worked very well against corrosion in comparison with other tested coatings.
- No special surface preparation (sandblasting) is required for painting the exposed ends of the installed bolts. Dacromet coated bolts are ready for painting anytime.
- According to Dacromet literature, dacromet coated bolts treated with a sealer coating provides a consistent torque-tension relationship during the bolt tightening operation. Note that this will be demonstrated during the calibration of the turn-of-the-nut installation procedure per the SFOBB-SAS specification requirements for Metric size bolts.
- The sealer coating acts as quasi-lubricant and no other lubricant is required.
- Zinc oxides and carbonates migrate to damaged area of coating.
- Dacromet is produced by one manufacturer but has numerous licensed applicators within the United States.
- There is no other product available in the market with similar properties.

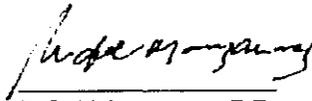
In addition to the application of dacromet to the A490M bolts, a final paint coat will be applied to the exposed areas to provide additional corrosion protection.

Based on the above information, the JV recommends that Dacromet coated bolts treated with a sealer coating be considered for coating all A490M bolts for this contract.

Approval of this request will be in the best interest of the public, hastening completion of this project.

Your consideration and approval of this request will be appreciated. If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,



Rafael Manzanarez, P.E.  
Design Manager  
T.Y. Lin International/Moffatt & Nichol (JV)

cc: Ade Akinsanya, Rachel Falsetti, Vong Toan – Caltrans  
Al Ely, Marwan Nader, Jim Rucker - JV

Sept.20, 2002

Nippon Dacrosamrock Co., Ltd.  
296 Shimokurata-cho, Totsuka-ku  
Yokohama 244, Japan

**Example of DACROMET® Coating  
for Civil Engineering and Construction (2)**

No.	Name of Work (Category/Location)	Object Parts	Specification	Date
1	Mikawa-wan Ohashi (Bridge/Aichi)	High-tension Bolt/Nut	Nut / Special Treatment	6,'81
2	JNR / Tohoku Bullet Train (Bridge/Saitama)	High-tension Bolt/Nut	Nut / Special Treatment	5,'83
3	JNR / Tohoku Bullet Train - Kan 8 (Bridge/Tokyo)	High-tension Bolt/Nut	Nut / Special Treatment	6,'83
4	JNR / Kamaishi Gaido Kado-kyo (Bridge/Iwate)	High-tension Bolt/Nut	Nut / Special Treatment	7,'83
5	Tekken Kodan / Keiyo-sen Arakawa Hosuiro-Kyo (Bridge/Tokyo)	High-tension Bolt/Nut	Nut / Special Treatment	11,'83
6	Tekken Kodan / Ohmiya Senro-Kyo (Bridge/Saitama)	High-tension Bolt/Nut	Nut / Special Treatment	6,'84
7	Tokyo Denryoku Tunnel (Sealed Tunnel) (Civil Engineering/Tokyo)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	8,'89
8	Kan 7 Minami-Tokiwadai Tubing Channel (Civil Engineering/Tokyo)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	'89
9	Kiyosu-bashi Rd. Tubing Channel (Civil Engineering/Tokyo)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	'89-'90
10	Parking Tower (Building/Tokyo)	High-tension Bolt, L-Shaped Metal Parts	DACROMET®	'90
11	Harumi Rd. Tubing Channel (Civil Engineering/Tokyo)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	'91
12	Kanda-gawa Underground Water Retainer (Civil Engineering/Tokyo)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	8,'92
13	Yokosuka Sewage Equipment (Civil Engineering/Tokyo)	Segment Bolt, Embedded Metal Parts	Embedded Metal Prts only (LTX)	11,'92
14	Underground Wiring Channel-Higashi Funabashi (Civil Engineering/Chiba)	Segment Bolt, Nut, Washer	Nut/ DMT + PLUS® 50W	'92
15	Underground Wiring Channel-Futawa-Jinbo (Civil Engineering/Tokyo)	Segment Bolt, Nut, Washer	Nut/ DMT + PLUS® 50W	'92-'93
16	Sapporo Beer Office Building (Building/Tokyo?)	Segment Bolt, Embedded Metal Parts	Embedded Metal Prts only (LTX)	6,'93
17	Asahi Bank Office Building (Building/Tokyo?)	Segment Bolt, Embedded Metal Parts	Embedded Metal Prts only (LTX)	6,'93
18	Anegasaki Power-Chiba Power/Gas Pipe Line Channel (Civil Engineering/Chiba)	Segment Bolt, Nut, Washer, Reinforcement	Nut, Washer / DMT + PLUS® 55S	'93
19	Tokyo Metropolitan Subway #12 (Civil Engineering/Chiba)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	'93
20	Tokyo Bay Bridge / Sealed Tunnel (Bridge/Civil Engineering/Chiba)	Segment Bolt, Nut, Washer	Nut / DMT + PLUS® 50W	'94
21	No.2 Tomei Highway - Meiko Chuo Ohashi (Bridge/Aichi)	High-tension Bolt/Nut	Nut / DMT + PLUS® 50W	5,'96
22	Nagoya Highway - Komaki Line (Bridge/Aichi)	High-tension Bolt	DACROMET®	7,'98

# MAJOR RECORDS OF DELIVERY OF DACROTIZING® BOLTS FOR STEEL BRIDGES AND BOXES

As of Nov. 25, 2003

No.	Name of Construction	Length (m)	Construction Period	Bolt Quantity (EA)	Bolt Size	Enforcement Office
1	Uiamgyo (Overpass Bridge)	150	1995. 3~1996.10	28,000	M22	KNRC
2	Mapo Grand Bridge (Expansion, #2)		1999. 1~	500,000	M22	SEOUL
3	Hannam Grand Bridge (Expansion, #2)		1999. 1~	600,000	M22	SEOUL
4	Dangsan Subway Bridge		1997. 1~1999.10	1,000,000	M22	SEOUL
5	West Coast Expressway	495	1995. 3~1996.10	100,000	M22	KNRC
6	Wonju Grand Bridge	1,250	1995. 4~1997.8	53,550	M22	KNRC
7	Sudokwon Circulation Road		1995. 3~1996.10	40,000	M22	KNRC
8	Kangrungru Hongje I.C.		1995. 3~1996.10	12,000	M22	KNRC
9	West Sunchun Bridge (overpass)	50	1995. 3~1996.10	11,000	M22	KNRC
10	Gwangsan Grand Bridge	1,620	1994.12~2003.2	1,000,000	M22, M24	KNRC
11	Yongjong Grand Bridge	4,420	1997. 1~2000.11	2,000,000	M24, M30	KNRC
12	Kumho Bridge (overpass)	250	2001. 1~2001.12	40,000	M22	KNRC
13	Songsu Grand Bridge (Expansion #2)	1,161	1999. 1~	600,000	M22	SEOUL
14	National Road (Yongju-Gamchon)	250	2002. 4~	50,000	M22	KNRC
15	Banghwa Grand Bridge	2,559	1998. 1~2000.1	500,000	M22	SEOUL
16	Kuma Expressway (Kwangryochun 1.2 gyo: Bridge)	200	1995. 9~1997.10	25,000	M22	KNRC
17	Kuma Expressway (Hokye 1.2 gyo)	350	1995. 11~1997.12	56,000	M22	KNRC
18	Kuma Expressway (Kwangryochun SangHa)		1995. 9~1997.10	17,000	M22	KNRC
19	Shinyulgyo (Bridge)	200	1995. 9~1997.10	28,000	M22	KNRC
20	West Coast Expressway #7	200	1995. 9~1997.10	25,000	M22	KNRC
21	Anjung I.C.	150	1995. 9~1997.10	18,000	M22	KNRC
22	Seoul Outer-Circulation Road		2002. 5~	350,000	M22	KNRC
23	East Kwangyang I.C.		1995. 3~1996.10	65,000	M22	KNRC
24	Chungdam Grand Bridge	1,211	1999. 12~2000.1	1,500,000	M22(TS)	SEOUL
25	Shinho Grand Bridge	840	1996. 6~1998.12	800,000	M22	KNRC
26	West Coast Expressway		1995. 3~1996.10	32,000	M22	KNRC
27	Yangpyong Grand Bridge	970	1997. 1~1999.10	250,000	M22	KNRC
28	Okchon Grand Bridge	808	1998. 10~2000.9	200,000	M22	KNRC
29	Bokgol gyo (Bridge)	500	2002. 11~2003.1	240,000	M22	KNRC
30	In gyo (Bridge)	500	2002. 11~2003.1	240,000	M22	KNRC
31	Namdong Railway Bridge	1,300	2003. 1~	300,000	M22	KNRC
32	Chongdo #1 gyo (Bridge)	600	2003. 5~	450,000	M22	KNRC
33	Yuchon gyo (Bridge)	560	2003. 10~	400,000	M22	KNRC
34	Pungryu gyo (Bridge)	850	2003. 3~2003.5	400,000	M22	KNRC
35	Nagok Railway Bridge	1,500	2003. 11~	450,000	M22	KNRC

Note: KNRC – Korea National Road Corporation  
 SEOUL – Seoul Metropolitan Government

**Summary of email comments on Dacromet coating from Japanese and Korean contacts**

Name	Organization	Contact Info	Comments/Information
Satoshi Kashima	Executive Director Bridge and Offshore Engineering Association Japan	kashima@boea.or.jp	Good durability for salt.
Toshio Iwasaki	President Civil Engineering research laboratory Non-profit organization Japan	iwasaki@crl.or.jp	Dacromet coating is superior against salt damage:
Mr. Ushida	Aichi-prefecture, Road construction section, Bridge subsection Japan	81-52-961-2111	Relates to Mikawa-wan Bridge: The bridge condition is good. There are no reports of troubles.
Chan Min Park	Sao-Hae Bridge Maintenance Office Korea		Yes, Korea Highway Corporation has used dacrotized for 3 to 4 years. We have not heard of any problems yet.



U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

CALIFORNIA DIVISION

980 Ninth Street, Suite 400

Sacramento, CA. 95814-2724

January 13, 2003

IN REPLY REFER TO

HDA-CA

File # 04-SF-80

KP 13.2/13.9

Document # P43211

Mr. Jeff Morales, Director  
California Department of Transportation  
1120 N Street  
Sacramento, California 95814

Attention: Federal Resources Branch, Room 3500  
For Dr. Brian Maroney, Engineering Services

Dear Mr. Morales:

**SUBJECT: Request to Use Sole Source**

Your three letters dated December 20, 2002 and December 29, 2002 requested our approval of a public interest finding to use three sole source items on contract 04-0120F1 of the San Francisco-Oakland Bay Bridge:

- Noxyde paint system distributed by Advanced Coating Technology in New York. Due to its unique flexibility properties, this paint is the only protective coating for the main cable that can meet the 150-year design life of the structure.
- GriKote Z-Complex 2C zinc paste. This waterproofing system is the primary component of the cable corrosion protection system and is the only zinc paste that meets the required properties of the project.
- Whemco Group of Companies, Homestead, Pennsylvania. Your letter certified that Whemco is the only U.S. foundry with the capacity to cast the components of the shear key at Pier E2 (54 tons for the upper housing and 49 tons for the key stub).

We have independently verified most of the above information and are therefore in concurrence with your request that it is in the public interest to utilize the above products/companies and there are no suitable alternates, per 23 CFR 635.411 (a) (2). If you have any questions, please contact Nancy Bobb at (916) 498-5033.

Sincerely,

For

Gary N. Hamby

Division Administrator

*Cable Corrosion  
Paint*  

---

*NOT SOLE  
SOURCE*  
*- Noxyde*



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
CALIFORNIA DIVISION  
980 Ninth Street, Suite 400  
Sacramento, CA. 95814-2724  
January 13, 2003

IN REPLY REFER TO  
HDA-CA  
File # 04-SF-80  
KP 13.2/13.9  
Document # P43211

*Cable Corrosion  
Protection (zinc  
paste)*

*-GriKote Z*

Mr. Jeff Morales, Director  
California Department of Transportation  
1120 N Street  
Sacramento, California 95814

Attention: Federal Resources Branch, Room 3500  
For Dr. Brian Maroney, Engineering Services

Dear Mr. Morales:

SUBJECT: Request to Use Sole Source

Your three letters dated December 20, 2002 and December 29, 2002 requested our approval of a public interest finding to use three sole source items on contract 04-0120F1 of the San Francisco-Oakland Bay Bridge:

- Noxyde paint system distributed by Advanced Coating Technology in New York. Due to its unique flexibility properties, this paint is the only protective coating for the main cable that can meet the 150-year design life of the structure.
- GriKote Z-Complex 2C zinc paste. This waterproofing system is the primary component of the cable corrosion protection system and is the only zinc paste that meets the required properties of the project.
- Whemco Group of Companies, Homestead, Pennsylvania. Your letter certified that Whemco is the only U.S. foundry with the capacity to cast the components of the shear key at Pier E2 (54 tons for the upper housing and 49 tons for the key stub).

We have independently verified most of the above information and are therefore in concurrence with your request that it is in the public interest to utilize the above products/companies and there are no suitable alternates, per 23 CFR 635.411 (a) (2). If you have any questions, please contact Nancy Bobb at (916) 498-5033.

Sincerely,

For  
Gary N. Hamby  
Division Administrator

# Memorandum

To: DAN McELHINNEY, Program Manager  
Toll Bridge Program

Date: December 29, 2002

File: 04-ALA/SF-80  
04-0120F1  
SFOBB East Spans

From: DEPARTMENT OF TRANSPORTATION  
DISTRICT 4  
TOLL BRIDGE PROGRAM

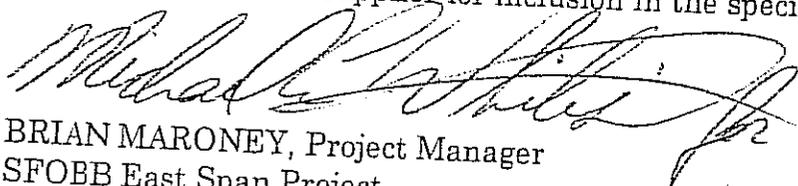
Subject: Request to Use Sole Source

Your approval is requested to advertise the above-mentioned project with a sole source used in the special provisions.

For the suspension cable waterproofing system, it is proposed to use GriKote Z-Complex 2C zinc paste manufactured by Grinard Company, Port Reading, New Jersey. GriKote Z-Complex 2C zinc paste is the only product that meets the project requirements. Therefore, it is in the best interest of the public to use this sole source for this project.

A memo from the joint venture of T.Y. Lin International/Moffatt & Nichol Engineers explaining the need for using GriKote Z-Complex 2C is attached.

Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.

  
BRIAN MARONEY, Project Manager  
SFOBB East Span Project

APPROVED:

  
DAN McELHINNEY, Program Manager  
Toll Bridge Program

FHWA APPROVAL:

GARY N. HAMBY  
Division Administrator

Attachment

c: Whiteside  
Akinsanya  
file

January 2, 2003

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 - 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

Reference: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project  
Self-Anchored Suspension Span  
Cable Corrosion Protection - Zinc paste waterproof system  
04-SF/Ala-80  
EA 04-0120F1

Dear Dr. Maroney:

T.Y.Lin International / Moffatt & Nichol, a Joint Venture (JV), is seeking approval to use sole source for the GriKote Z-Complex 2C system. The GriKote Z-Complex 2C system is a Zinc paste waterproof system and is the primary component of the cable corrosion protection system of the Self-Anchored Suspension Bridge. The justifications for the sole source request are described below.

The cable of the Self-Anchored Suspension Bridge can not be replaced unless the bridge is closed to traffic. Moreover, the replacement procedure is very difficult and may take several months. After extensive research, the JV identified the GriKote Z-Complex 2C system to be the only superior corrosion protection system for the cable which meets the requirements of the 150-year design life. Detailed discussions of the cable corrosion protective systems that were evaluated can be found in the document titled Self-Anchored Suspension Span "Cable Report" issued by T.Y. Lin / Moffatt & Nichol (JV) in April 2000. Furthermore, the GriKote Z-Complex 2C system was tested at Translab and was also found to be the only zinc oxide paste treatment that exhibited the required properties for the cable corrosion protection and allow for easy future inspection (see "Evaluation of Main Cable Corrosion Protection Coatings for the SFOBB East Span Seismic Safety Bridge project and the New Carquinez Bridge" issued by Translab in February 2002).

The GriKote Z-Complex 2C system is a proprietary product manufactured by the following company:

GRIGNARD COMPANY  
PORT READING AVENUE  
P.O. BOX 221  
PORT READING, NJ 07064  
Contact Person: Etienne Grignard  
Telephone: (732) 541-6661

TYLIN INTERNATIONAL

MOFFATT & NICHOL  
ENGINEERS

Allowance of this request will be in the best interest of the public, hastening completion of this project.

Your consideration and approval of this request will be appreciated. If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,



Rafael Manzanarez, P.E.

Design Manager

T.Y. Lin International/Moffatt & Nichol (JV)

cc: Ade Akinsanya, Mike Whiteside, Reza Valizadeh, Steve Maragaris - Caltrans  
Al Ely, Marwan Nader, Jim Rucker - JV

Cable - Wrapping

Memorandum

S-wire

-Nippon

To: PAUL HENSLEY, Program Manager  
Toll Bridge Program

Date: September 17, 2001

File: 04-ALA/SF-80  
04-012011  
SFOBB  
East Spans  
SAS/YBI  
Contract

From: DEPARTMENT OF TRANSPORTATION  
DISTRICT 04  
TOLL BRIDGE PROGRAM

Subject: Request to Use Trade Name

Your approval is requested to advertise the San Francisco Oakland Bay Bridge East Span Seismic Safety Project with a trade name used in the special provisions.

For the suspension cable, it is proposed to use an interlocking S-wire wrapping which is a proprietary product of Nippon Steel Company, Tokyo, Japan. The S-wire wrapping is the only corrosion protection system that meets the corrosion requirements for the 150-year design life of the bridge. Therefore, it is in the public's interest to use this product for this project.

A memo from the joint venture of T.Y.Lin International/Moffatt & Nichol engineers explaining the need for S-wire wrapping is attached.

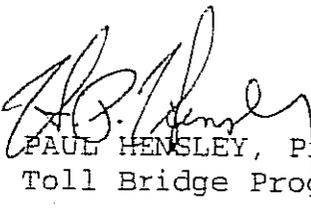
Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.



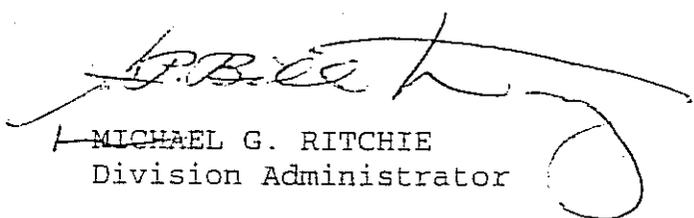
BRIAN MARONEY, Project Manager  
SFOBB ESSSP

APPROVED:

FHWA APPROVAL:



PAUL HENSLEY, Program Manager  
Toll Bridge Program



MICHAEL G. RITCHIE  
Division Administrator

Attachment

c: Akinsanya  
RFalsetti  
File



September 17, 2001

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 - 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

Reference: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project  
Self-Anchored Suspension Span  
Cable Wrapping S-Wire  
04-SF/Ala-80  
EA 04-012011

Dear Dr. Maroney:

T.Y.Lin International / Moffatt & Nichol, a Joint Venture (JV) is seeking approval to use a sole source S-wire wrapping as part of the corrosion protection system for the cables used on the Self-Anchored Suspension Spans. The justification for the sole source request is described below.

The zinc galvanized interlocking S-Wire wrapping is a superior corrosion protection system for the cable, and meets the corrosion protection requirement for the 150-year design life of the bridge. The S-wire offers superior water and air proofing capabilities compared to the typical round wire wrapping as the edges of the S-wire interlock during the wrapping process thus nullifying outside water intrusion into the main cable and air exit when the cable dehumidification system is implemented. In addition, the S-wire provides a smoother and flatter surface than the typical round wire thus greatly improving paint adherence and durability.

The following corrosion protection systems were considered and were found to be inadequate:

- Traditional Wire Wrapping System
- Composite Wrapping System

Detailed discussions of the cable corrosion protective systems including the two types of wrapping wire that were evaluated can be found in the document titled Self-Anchored Suspension Span "Cable Report" issued by T.Y. Lin / Moffatt & Nichol (JV) in April 2000. A copy of the Cable Report is enclosed for your use.

The design team contacted the following manufacturers. None of the manufacturers can currently manufacture the S-wire wrapping or equivalent product:

- Williamsport Wire, P.O. Box 3188, Williamsport PA 17701, (800) 541-7673
- Sumiden Wire Products Corp. 1412 El Pinal Drive, Stockton CA 95205, (209) 466-8924

**TYLIN INTERNATIONAL**

a joint  
venture



**MOFFATT & NICHOL**  
ENGINEERS

*The East Span Bridge Design Team*

The interlocking cable wrapping S-Wire is a proprietary product licensed to the Nippon Steel Company, Tokyo, Japan. The contact person at Nippon Steel is Mr. Hajime Hosokawa at (011) 81-332-75-8384.

Approval of this request will be in the best interest of the public, hastening completion of this important project.

If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,

Rafael Manzanarez, P.E.

Design Manager

T.Y. Lin International/Moffatt & Nichol (JV)

cc: Ade Akinsanya, Rachel Falsetti, Vong Toan - Caltrans  
Al Ely, Marwan Nader, Jim Rucker - JV

## Memorandum

To: MICHAEL G. RITCHIE,  
Division Administrator  
FHWA

Date: September 14, 2001

File: 04-Ala/SF-80  
04-012011  
SFOBB East Spans  
SAS/YBI Contract

From: DEPARTMENT OF TRANSPORTATION  
ENGINEERING SERVICE CENTER - MS9-2-2H  
SFOBB EAST SPAN SEISMIC SAFETY PROJECT

Subject: Request for Buy America Waiver

Your approval is requested to advertise the above-mentioned project with a Buy America waiver to be used in the special provisions.

It is proposed to use S-Wire for wrapping the main suspension cable at the Self-Anchored Suspension contract. The only manufacturer of S-Wrap wire is the Nippon Steel Company, Tokyo, Japan.

A memo from Rafael Manzanarez of T.Y. LIN INTERNATIONAL/MOFFATT & NICHOL (JV), explaining the need for the S-wire wrap is attached for your information.

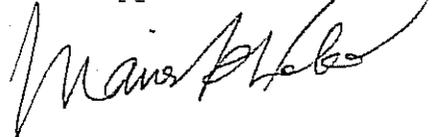
Please note that sole source approval is also sought for this product under separate cover.



BRIAN MARONEY, Project Manager  
SFOBB East Spans Seismic Safety Project

Attachment

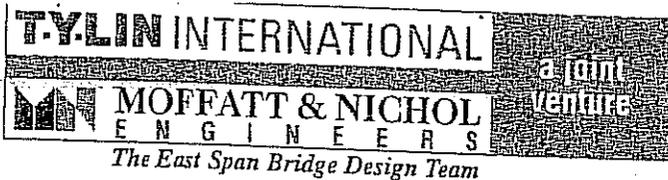
FHWA Approval:



for Michael G. Ritchie, Division Administrator  
FHWA

Attachment

c: Akinsanya  
RFalsetti  
File



September 17 2001

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 - 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

Reference: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project  
Self-Anchored Suspension Span  
Cable Wrapping S-Wire  
04-SF/Ala-80  
EA 04-012011

Dear Dr. Maroney:

Your approval is requested in granting an exception to the "Buy America" requirement for the S-wire for wrapping the main suspension cable in the above referenced contract.

The zinc galvanized interlocking S-Wire wrapping is a superior corrosion protection system for the cable, and meets the corrosion protection requirement for the 150-year design life of the bridge. The S-wire offers superior water and air proofing capabilities compared to the typical round wire wrapping as the edges of the S-wire interlock during the wrapping process thus nullifying outside water intrusion into the main cable and air exit when the cable dehumidification system is implemented. In addition, the S-wire provides a smoother and flatter surface than the typical round wire thus greatly improving paint adherence and durability.

The following corrosion protection systems were considered and were found to be inadequate:

- Traditional Wire Wrapping System
- Composite Wrapping System

Detailed discussions of the cable corrosion protective systems including the two types of wrapping wire evaluated can be found in the document titled Self-Anchored Suspension Span "Cable Report" issued by T.Y. Lin / Moffatt & Nichol (JV) in April 2000. A copy of the Cable Report is enclosed for your use.

The design team contacted the following domestic manufacturers. None of the manufacturers can currently manufacture an equivalent product:

- Williamsport Wire, P.O. Box 3188, Williamsport PA 17701, (800) 541-7673
- Sumiden Wire Products Corp. 1412 El Pinal Drive, Stockton CA 95205, (209) 466-8924

**T.Y. LIN INTERNATIONAL**



**MOFFATT & NICHOL**  
ENGINEERS

a joint  
venture

*The East Span Bridge Design Team*

The interlocking cable wrapping S-Wire is a proprietary product licensed to the Nippon Steel Company, Tokyo, Japan. The contact person at Nippon Steel is Mr. Hajime Hosokawa at (011) 81-332-75-8384.

Your consideration and approval of this request will be appreciated. If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,

Rafael Manzanarez, P.E.

Design Manager

T.Y. Lin International/Moffatt & Nichol (JV)

cc: Ade Akinsanya, Rachel Falsetti, Vong Toan - Caltrans  
Al Ely, Marwan Nader, Jim Rucker - JV

Epoxy AC

State of California

Transportation and Housing Agency

# Memorandum

To: PAUL HENSLEY, Program Manager <sup>- ChemCo</sup>  
Toll Bridge Program

Date: September 17, 2001

File: 04-ALA/SF-80  
04-012011  
SFOBB  
East Spans  
SAS/YBI  
contract

From: DEPARTMENT OF TRANSPORTATION  
DISTRICT 04  
TOLL BRIDGE PROGRAM

Subject: Request to Use Trade Name

Your approval is requested to advertise the San Francisco Oakland Bay Bridge East Span Seismic Safety Project with a trade name used in the special provisions.

For the riding surface of the steel box spans, it is proposed to list epoxy asphalt concrete which is a proprietary product licensed to ChemCo Systems, Redwood City, California. The Epoxy Asphalt Concrete is the only product that meets the project requirements. Therefore, it is in the public's interest to use this product for this project.

A memo from the joint venture of T.Y.Lin International/Moffatt & Nichol engineers explaining the need for this type of deck surfacing on the steel deck is attached.

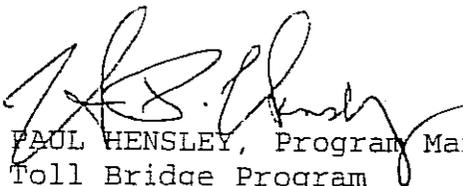
Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.



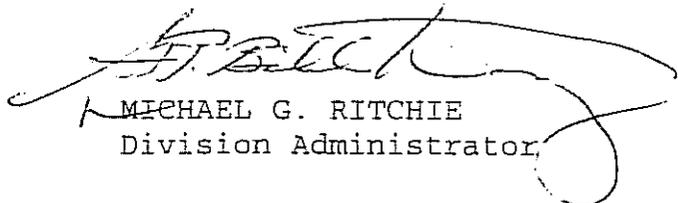
BRIAN MARONEY, Project Manager  
SFOBB ESSSP

APPROVED:

FHWA APPROVAL:



PAUL HENSLEY, Program Manager  
Toll Bridge Program



MICHAEL G. RITCHIE  
Division Administrator

Attachment

c: AAKinsanya  
RFalsetti  
File



September 17, 2001

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 - 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

Reference: **San Francisco-Oakland Bay Bridge East Span Seismic Safety Project**  
**Self-Anchored Suspension Span**  
**Deck Surfacing - Epoxy Asphalt**  
**04-SF/Ala-80**  
**EA 04-012011**

Dear Dr. Maroney:

T.Y.Lin International / Moffatt & Nichol, a Joint Venture (JV) is seeking approval to use Epoxy Asphalt Concrete for the Self-Anchored Suspension Bridge and the transition span in the Skyway Structures. The justifications for the sole source request are described below.

After consideration of various overlay systems and materials, the Joint Venture recommends the use of Epoxy Asphalt Concrete (Epoxy AC) for the riding surface of the new east span of the San Francisco-Oakland Bay Bridge. Epoxy AC is a proprietary product licensed to ChemCo Systems, Inc., 2800 Bay Road, Redwood City, CA 94063. The contact person at ChemCo Systems is Robert Gaul at (650) 261-3790.

The East Bay Replacement Spans of the San Francisco-Oakland Bay Bridge contains a self-anchored suspension bridge with an orthotropic steel deck. The orthotropic steel deck provides a much lighter weight deck than a conventional concrete deck, but the smooth steel requires the application of a surfacing to provide skid resistance. The surfacing also participates with the steel deck in composite action with each passage of the wheels of vehicles using the bridge.

Few materials can meet the demands imposed on the surfacing by the millions of vehicles using the bridge each year and continue to maintain adequate service requirements during its design life. These service requirements are:

- Fatigue resistance against millions of wheel passages
- Bond strength of the surfacing material to the steel to resist delaminating
- Skid resistance and resistance against aggregate polishing
- Resistance to shoving and rutting under temperature extremes
- Composite action between the surfacing and the steel deck to reduce fatigue stresses in the steel deck and in the surfacing

- 50 mm thickness to provide light weight, wheel load distribution, and some mass for damping of vibrations from wheel loads
- A 25-year design life with little or no maintenance

The steel deck plate of the new suspension span will be deflected by each passage of a loaded truck wheel producing over eight million cycles of stress in the surfacing material within the 25-year design life. Ordinary asphalt pavements cannot withstand this number of repetitive loading when placed on the flexible steel deck. Materials that were considered are:

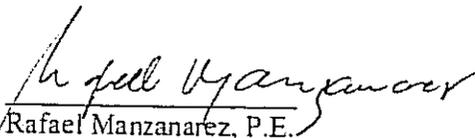
- *Gussasphalt*: Given good performance in Europe and Japan with thickness of 75 to 100 mm. Most expensive of all surfacing material, is several times thicker and heavier than other materials, requires two to three times longer to apply than other materials, there are no known suppliers or applicators in the US, and has never been used on any bridge in the U S.
- *Polymer-modified asphalt*: Has not performed well on bridge decks with high truck traffic volumes showing delaminations and fatigue cracking.
- *Epoxy Asphalt*: Has performed well on many bridges in Canada and the U S when properly applied, has shown excellent performance in laboratory test, and can be laid quickly with ordinary paving machines.
- *Polyester concrete*: Has never been tested or used in the U S on orthotropic steel decks.

Epoxy AC is the only surfacing material currently used for orthotropic decks in California that can withstand the millions of cycles of truck loading during the 25 year design life of the surfacing. The California Department of Transportation (Caltrans) has used Epoxy AC successfully on the San Mateo-Hayward Bridge, the San Diego-Coronado Bay Bridge, and the Cypress Horseshoe Bridge. The Epoxy AC on the Golden Gate Bridge has 15 years of service with some crumbing at the open joints. The joint crumbing was predicted when the bridge was first surfaced but the deck was already constructed with the open joint. The surfacing is otherwise holding up well to heavy traffic.

Allowance of this request will be in the best interest of the public, hastening completion of this project. The design team has identified no other alternative.

Your consideration and approval of this request will be appreciated. If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,



Rafael Manzanarez, P.E.

Design Manager

T.Y. Lin International/Moffatt & Nichol (JV)

cc: Ade Akinsanya, Rachel Falsetti, Vong Toan, Paul Bagha - Caltrans  
Al Ely, Marwan Nader, Sajid Abbas, Jim Rucker - JV

## Memorandum

High-Strength  
Rods

- Macalloy

To: PAUL HENSLEY, Program Manager  
Toll Bridge Program

Date: September 17, 2001

File: 04-ALA/SF-80  
04-012011SFOBB  
East Spans  
SAS/YBI  
ContractFrom: DEPARTMENT OF TRANSPORTATION  
DISTRICT 04  
TOLL BRIDGE PROGRAM

Subject: Request to Use Trade Name

Your approval is requested to advertise the San Francisco Oakland Bay Bridge East Span Seismic Safety Project with a trade name used in the special provisions.

It is proposed to use 75-mm diameter high strength prestressing bars conforming to ASTM Designation: A722 which is a proprietary product of Macalloy, Sheffield, U.K. The 75-mm diameter high strength bar is the only product that meets the project requirements. Therefore, it is in the public's interest to use this product for this project.

A memo from the joint venture of T.Y.Lin International/Moffatt & Nichol engineers explaining the need for this type of high strength bar is attached.

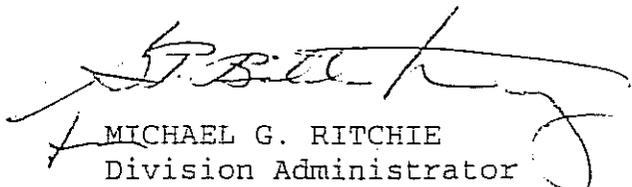
Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.

  
BRIAN MARONEY, Project Manager  
SFOBB ESSSP

APPROVED:

FHWA APPROVAL:

  
PAUL HENSLEY, Program Manager  
Toll Bridge Program

  
MICHAEL G. RITCHIE  
Division Administrator

Attachment

c: Akinsanya  
RFalsetti  
File

**T.Y.LIN INTERNATIONAL**

a joint  
venture

**MOFFATT & NICHOL**  
ENGINEERS

*The East Span Bridge Design Team*

September 21, 2001

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 - 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

Reference: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project  
Self-Anchored Suspension Span  
Macalloy High-Strength Prestressing Bars  
04-SF/Ala-80  
EA 04-012011

Dear Dr. Maroney:

T.Y.Lin International / Moffatt & Nichol, a Joint Venture (JV) is seeking approval to use sole source 75-mm diameter high-strength prestressing rods conforming to ASTM Designation: A722 at one location on the Self-Anchored Suspension Bridge. The justification for the sole source request is described below.

Due to jack size requirements and space limitations at the hinge K beam anchorage, and at the base of Pier W2 Tie-down, 75-mm diameter High Strength prestressing bars conforming to ASTM Designation: A722 are required. The 75-mm diameter quenched and tempered alloy steel bolts conforming to ASTM Designation: A354, Grade BD are used at all other locations for this project where clearance is adequate.

The design team contacted the following manufacturers, and none of them manufactured a 75-mm diameter steel bar conforming to ASTM Designation: A722 or equivalent:

DYSON, Cleveland  
(440) 946-3500, Contact person: John Hockvar  
BBC Manufacturing, Chicago  
(800) 323-1347, Contact Person: Chuck Mriska  
DYWIDAG Systems International, California  
(562) 531-6161, Contact Person: Lucian Bogdan  
WILLIAMS Form Engineering Corporation, Oregon  
(503) 285-4548

A 75-mm diameter bar conforming to ASTM Designation: A722 is made by the following manufacturer:

MACALLOY, PO Box 71 Hawke Street, Sheffield S9 2LN, UK  
Contact Person: Cliff Beevers  
Phone: +44(0) 114 242 6704

**T.Y. LIN INTERNATIONAL**

a joint  
venture



**MOFFATT & NICHOL  
ENGINEERS**

*The East Span Bridge Design Team*

This is the only manufacturer of this product Allowance of this request will be in the best interest of the public, hastening completion of this project.

Your consideration and approval of this request will be appreciated. If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,

Rafael Manzanarez, P.E.

Design Manager

T.Y. Lin International/Moffatt & Nichol (JV)

cc: Ade Akinsanya, Rachel Falsetti, Vong Toan, - Caltrans  
Al Ely, Marwan Nader, Jim Rucker - JV

Memorandum

To: PAUL HENSLEY, Program Manager  
Toll Bridge Program - D.S. Brown  
Date: September 18, 2001

File: 04-ALA/SF-Var  
04-012011  
04-012031  
SFOBB  
East Spans  
SAS/YBI/OTD

From: DEPARTMENT OF TRANSPORTATION  
DISTRICT 04  
TOLL BRIDGE PROGRAM

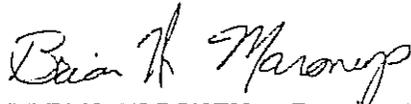
Subject: Request to Use Trade Name

Your approval is requested to advertise the San Francisco Oakland Bay Bridge East Span Seismic Safety Project with a trade name used in the special provisions.

For the joint seal assembly, it is proposed to list a swivel joint which is a proprietary product of Maurer & Son, Munich, Germany, licensed in the United States to the D.S. Brown Company, in Ohio. This joint is the only joint seal assembly that meets the project need. Therefore, it is in the public's interest to use this product for this project.

A memo from the joint venture of T.Y.Lin International/Moffatt & Nichol engineers explaining the need for this type of joint seal assembly is attached.

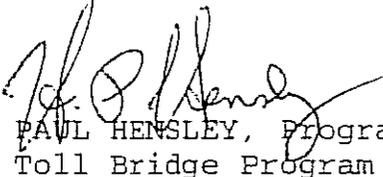
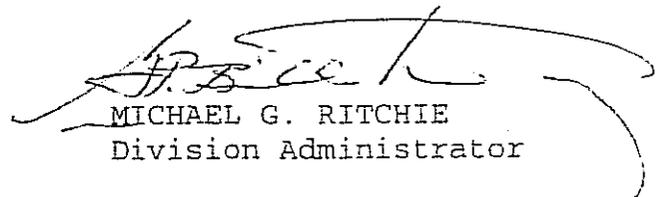
Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.



BRIAN MARONEY, Project Manager  
SFOBB ESSSP

APPROVED:

FHWA APPROVAL:

  
PAUL HENSLEY, Program Manager  
Toll Bridge Program  
MICHAEL G. RITCHIE  
Division Administrator

Attachment

c: AAKinsanya  
RFalsetti  
File

# T.Y. LIN INTERNATIONAL

February 22, 2001

Dr. Brian Maroney, Project Mgr.  
CALTRANS

Department of Transportation  
1801 - 30<sup>th</sup> St. MS 12  
Sacramento, CA 95816

SFOBB East Span Seismic Safety Project  
Contract No. 59A0040

Attention: Mr. Ade Akinsanya, Contract Manager

Subject: Use of Proprietary Item "Swivel Expansion Joint"

Dear Dr. Maroney:

T.Y. Lin International/Moffatt & Nichol, a Joint Venture (JV), is seeking approval to use Swivel Joint Expansion Joints at the Skyway and Self-Anchored Suspension Sections of the new San Francisco-Oakland Bay Bridge East Spans (SFOBB). The justifications for the sole source request are described below.

Prior to about 1960, the typical roadway expansion joint mechanism for suspension bridges was the "finger joint." These joint types are capable of accommodating the large longitudinal movements needed for long-span structures but not the transverse seismic movements nor seismic-induced rotations. After 1960, shutter joints and modular joints with neoprene compression seals were introduced as an improvement over the traditional finger joint for longitudinal moments. Shutter and modular joints have also provided fairly reliable service, but are not able to meet dynamic, translational (transverse) and rotational seismic response demands for long-span suspension and viaduct type structures such as the new east span of the San Francisco-Oakland Bay Bridge. The Joint Venture does not recommend the use of the finger nor shutter nor regular modular joints for this bridge based on the reasons stated below.

After consideration of various expansion joint systems for this project, the Joint Venture recommends the use of the single support bar swivel system (swivel joint) for the expansion joints of this bridge. This is the only known expansion joint system today that will meet the project specific service and seismic design criteria. The evaluation is based on our extensive research on these joints and meetings held with the Department of Transportation (Washington State DOT), owners and representatives of the industries, which led us to the conclusion that no other expansion joint will meet our design criteria. The swivel joint is a proprietary product of Maurer & Son, Munich, Germany, licensed in the United States to the D.S. Brown Company, 300 East Cherry Avenue, North

# TYLINT INTERNATIONAL

Page No. 2

Brian Maroney

Feb. 22nd, 2001

Baltimore, OH 45872. The contact person at D.S. Brown is Mr. Tag Goodwin at (419) 257-3561.

The new east span of the San Francisco-Oakland Bay Bridge has been designated as a lifeline bridge and must meet seismic performance and design criteria established by Caltrans. In order to allow emergency vehicles on the bridge and to minimize regular traffic disruption after a major event, the new structure is designed to incur only small and repairable damage at predetermined locations during any of the six (6) Seismic Safety Evaluation Earthquakes (SEE) evaluated in the design. In addition, the joints must provide full service for the heavy traffic across and the traffic-induced high-cycle fatigue demands. The proposed swivel joint is the only one available that will incur minimal service and dynamic damage at these locations; thus, facilitating traffic across. Locations of these joints include some of the following critical elements:

- Expansion joints between the Skyway frames
- Expansion joint between the Self-Anchored Suspension (SAS) Span and the Skyway
- Expansion joint between the SAS Span and the Yerba Buena Transition Spans

The new east span of the San Francisco-Oakland Bay Bridge will experience very large, rapid velocity, multi-directional displacements and rotations across these expansion joints during the SEE earthquakes. Anticipated SEE displacements and rotations in the Skyway Joints are shown on the attached table.

In order to accommodate the predicted large multi-directional displacements and rotations from the bridge seismic response, the Joint Venture selected the swivel joint for this project. This joint system has been successfully tested for dynamic seismic loading (manufactured by Maurer) and fatigue requirements (manufactured by Maurer/D.S. Brown) specified by NCHRP for other projects. Dynamic and fatigue performance history of the Swivel Joint will be required for the SFOBB Project.

The swivel joint has been used on several long-span bridges, including the recently completed Storebælt Bridge in Denmark, and is currently specified for the seismic retrofit of the Golden Gate Bridge Project, the Interstate I-40 Bridge across the Mississippi River in Tennessee and the New Carquinez Strait Suspension Bridge in California. It has also been the design of choice for other demanding applications such as the new Lacey Murrow Floating Bridge in Lake Washington, Washington.

Since there are no other commercially available expansion joint devices that meet the required seismic and fatigue performance for this project, we recommend that the swivel

**TYLIN** INTERNATIONAL

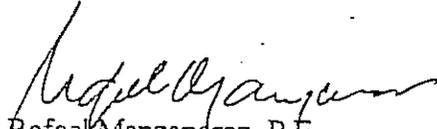
Page No. 3  
Brian Maroney  
February 22<sup>nd</sup>, 2001

expansion joint be specified as a proprietary product, and request approval from the State for its use on the new east span of the San Francisco-Oakland Bay Bridge.

Please contact me if you have any questions or comments.

Very truly yours,

T.Y. LIN INTERNATIONAL /MOFFAT & NICHOL, a Joint Venture



Rafael Manzanarez, P.E.  
Design Manager

cc: Rachel Falsetti, Paul Bagha, Vong Toan - Caltrans  
Al Ely, Sajid Abbas, Marwan Nader, Jim Rucker - JV

Attachment



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
CALIFORNIA DIVISION  
650 Capitol Mall, Suite 4-100  
Sacramento, CA. 95814  
May 4, 2004

IN REPLY REFER TO  
HDA-CA  
File #: 04-SF-80  
Document #: P49087

Shear Key  
NOT SOLE  
SOURCE  
- Whemco

Mr. Bijan Sartipi, District Director  
California Department of Transportation  
District 4  
P. O. Box 23660  
Oakland, CA 94623-0660

Attention: Mr. Dan McElhinney, Chief Deputy District Director, Toll Bridge Program

Dear Mr. Sartipi:

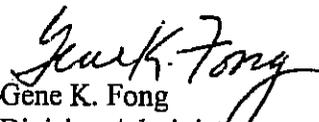
SUBJECT: Buy America Waiver Request for Shear Key

Your letter, dated March 29, 2004, and the supplemental letter dated April 22, 2004, requested a Buy America waiver for the casting and assembly of the Pier E2 shear keys required in the construction of the San Francisco – Oakland Bay Bridge, East Span Seismic Safety Project (SFOBB, ESSSP). Due to the size of these shear key components, only one domestic manufacturer, Whemco, was initially identified as having the capacity to cast, assemble and test the system. On January 13, 2003, we issued a sole source approval for the State to incorporate Whemco's name in the Special Provisions for the Self-Anchored Suspension bridge superstructure contract. Subsequently, Whemco declined to provide the completed shear key assemblies, which necessitated the request for a Buy America waiver to obtain the assemblies from foreign manufacturers.

The Federal Highway Administration has reviewed your request and consulted with four industry sources. We have concluded that your request is justifiable due to the lack of domestic manufacturers for this component. Your Buy America waiver request for obtaining the Pier E2 shear keys from foreign manufacturers is therefore approved.

If you have any questions, please contact Nancy Bobb at (916) 498-5033.

Sincerely,

  
Gene K. Fong  
Division Administrator

Nbobb/at



U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

CALIFORNIA DIVISION

980 Ninth Street, Suite 400

Sacramento, CA. 95814-2724

January 13, 2003

IN REPLY REFER TO

HDA-CA

File # 04-SF-80

KP 13.2/13.9

Document # P43211

Mr. Jeff Morales, Director  
California Department of Transportation  
1120 N Street  
Sacramento, California 95814

Attention: Federal Resources Branch, Room 3500  
For Dr. Brian Maroney, Engineering Services

Dear Mr. Morales:

**SUBJECT: Request to Use Sole Source**

Your three letters dated December 20, 2002 and December 29, 2002 requested our approval of a public interest finding to use three sole source items on contract 04-0120F1 of the San Francisco-Oakland Bay Bridge:

- Noxyde paint system distributed by Advanced Coating Technology in New York. Due to its unique flexibility properties, this paint is the only protective coating for the main cable that can meet the 150-year design life of the structure.
- GriKote Z-Complex 2C zinc paste. This waterproofing system is the primary component of the cable corrosion protection system and is the only zinc paste that meets the required properties of the project.
- Whemco Group of Companies, Homestead, Pennsylvania. Your letter certified that Whemco is the only U.S. foundry with the capacity to cast the components of the shear key at Pier E2 (54 tons for the upper housing and 49 tons for the key stub).

We have independently verified most of the above information and are therefore in concurrence with your request that it is in the public interest to utilize the above products/companies and there are no suitable alternates, per 23 CFR 635.411 (a) (2). If you have any questions, please contact Nancy Bobb at (916) 498-5033.

Sincerely,

For  
Gary N. Hamby  
Division Administrator

# Memorandum

To: DAN McELHINNEY, Program Manager  
Toll Bridge Program

Date: December 20, 2002

File: 04-ALA/SF-80  
04-0120F1  
SFOBB East Spans

From: DEPARTMENT OF TRANSPORTATION  
DISTRICT 4  
TOLL BRIDGE PROGRAM

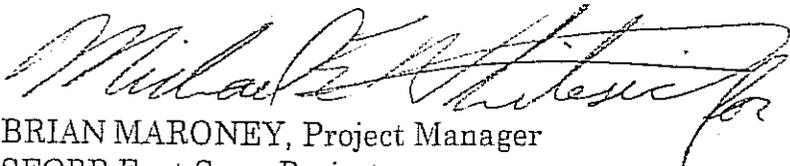
Subject: Request to Use Sole Source

Your approval is requested to advertise the above-mentioned project with a sole source used in the special provisions.

For the shear key at Pier E2, it is proposed to use Whemco Group of Companies, Homestead, Pennsylvania to cast the upper housing (54 tons) and key stub (49 tons). Whemco is the only foundry with the capacity to cast these shear key components. Therefore, it is in the best interest of the public to use this sole source for this project.

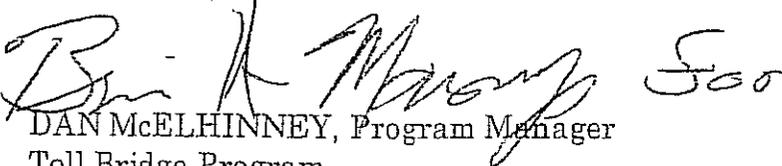
A memo from the joint venture of T.Y. Lin International/Moffatt & Nichol Engineers explaining the need for casting the shear key components is attached.

Confirmed price quotations for equipment, materials, and technical advice will be obtained from the supplier for inclusion in the special provisions.

  
BRIAN MARONEY, Project Manager  
SFOBB East Span Project

APPROVED:

FHWA APPROVAL:

  
DAN McELHINNEY, Program Manager  
Toll Bridge Program

GARY N. HAMBY  
Division Administrator

Attachment

c: Whiteside  
Akinsanya  
file



December, 12, 2003

Dr. Brian Maroney, Project Manager  
CALTRANS  
Engineering Service Center  
1801 - 30<sup>th</sup> Street, MS 9-2-2H  
Sacramento, CA 95816

Reference: San Francisco-Oakland Bay Bridge East Span Seismic Safety Project  
Self-Anchored Suspension Span  
Pier E2 Shear Key Casting  
04-SF/A1a-30  
EA 04-012011

Dear Dr. Maroney:

Your approval is requested in granting an exception to the "Buy America" requirement for the casting of the Pier E2 Shear Keys in the above referenced contract.

The superstructure support system at Pier E2 consists of the bearings and shear keys. The two components function independently in transferring loads from the superstructure to the pier. Vertical loads are carried by the bearings and horizontal loads are resisted by the shear keys. As the only horizontal load transfer mechanism, the shear keys are extremely important elements for service conditions, and their function becomes even more critical in the seismic performance of the bridge. Each shear key was designed to resist a maximum horizontal seismic load of 85 MN, and proper transfer of this load will allow a ductile response of Pier E2 thus complying with the seismic performance criteria. For these reasons, the shear key components should be fabricated as monolithic cast pieces to ensure strength and performance. Smaller cast pieces welded together are not recommended because the quality of the weld may compromise its structural integrity of the components and the proper response of the bridge under seismic loading. Furthermore, the shear keys are not isolated elements. The design was optimized not just for the design loads but also took into careful consideration the connectivity of the shear key components to the steel box girder above and the concrete pier crossbeam below to avoid interference with stiffeners and prestressing ducts.

The JV contacted the following major domestic foundries, all of whom indicated that they can not furnish the shear keys, these are:

- ATCHISON CASTINGS  
(913)-567-2121, Contact Person: Wolf Reinmann
- ATLAS FOUNDRY  
(253)-475-4600, Contact Person: Ken Sandell
- FALK CORPORATION  
(414)-342-3131, Contact Person: Gordon Podolski
- JOHNSTOWN CORPORATION  
(814)-535-9000, Contact Person: John Swick

The only domestic foundry that indicated that they can furnish the shear key was:

- WHEMCO GROUP OF COMPANIES  
(412)-464-4400, Contact Person: Gene Krenicki

A sole-source was requested in December 2002 and was later granted by Caltrans and FHWA. After announcing the closing of their machining facility in January 2003, WHEMCO indicated that they plan to sub-contract the machining to another machining company and that WHEMCO will remain the entity responsible for furnishing the final product of the shear key. During the course of these events, and upon Caltrans request, the JV worked very closely with WHEMCO to address all their concerns and comments. Consequently, revisions to the specifications and plans were made to accommodate their casting capability. However, in September 2003, WHEMCO withdrew their offer thus jeopardizing the bidding for this critical item.

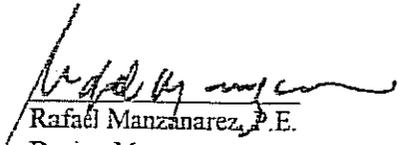
Based on this development, the JV contacted the following international foundries (some with representatives in the US) all of whom have indicated that they can and are willing to furnish the shear keys, these are:

- SHEFFIELD FORGEMASTERS  
(913)-367-2121, Contact Person: Robert Swordy
- JAPAN STEEL WORKS  
(713)-651-7876, Contact Person: Tim McGregor
- QUALICAST  
(610)-358-9390, Contact Person: Chris Law
- KINGSA INDUSTRIES  
(713)-466-4733, Contact Person: Roland Huai
- JAPAN CASTING AND FORGING  
Phone: 81-3-5281-8001, Contact Person: Nagisa Wada

Allowance of this request is paramount and will be in the best interest of the public, hastening completion of this project, provide better quality and possibly lower cost.

Your consideration and approval of this request will be appreciated. If you have any questions, or require further information, I may be contacted at (415) 291-3750.

Sincerely,



Rafael Manzanarez, P.E.

Design Manager

T.Y. Lin International/Moffatt & Nichol (JV)

cc: Janet Adams, Ade Akinsanya, Mike Whiteside, Steve Margaris, Reza Valizadeh - Caltrans  
Al Ely, Marwan Nader, Jim Rucker, James Duxbury, Nhan Vo - JV

**PROPRIETARY (SOLE SOURCE) ITEMS**

Item	Sole Source?	Buy America Waiver?	Contract	Components	Supplier	Location	Unit	Price Information			Negotiated Date	Comments	Status
								Price	QTY	Total			
High Strength Prestressing Rods	Y	Y	SAS Super & W2	Macealloy 75mm high strength rods	Macealloy Limited	Sheffield, UK	set	\$780	304	\$237,120	12/09/03	Price dependent on exchange rate of 1 GBP=\$1.724/- 5% at time of order. Testing included. Installation, stressing, and inspection not included.	7/14/05: Whiteside received a call from Nick Hampton of Macealloy confirming pricing from 12/09/03 letter is valid for re-ad; will send written confirmation.
Cable Wrapping Wire	Y	Y	SAS Super	S-shaped cable wrapping wire	Nippon Steel	Tokyo, Japan	kg	\$6.20	0	\$0	12/04/03	Prices listed are for wire only, not inspection or supervision.	2/20/05: Sent them a letter notifying them of the re-advertisement, and asking for confirmation that that product is still available at the prices we have on the 7/18. \$230 response

NOT BUY AMERICA

Epoxy AC	Y	N	SAS, all & Skyway	Epoxy AC bond coat and binder	ChemCo Systems	Redwood City, CA	kg	\$5.82	288,000	1,558,760	11/11/03	Delivery must be within 12 months after order is placed. Price applies to binder and bond coat separately. Includes equipment rental for 80 days	7/11/05: sent them the letter form, asking for a new price quotation, as suggested by Chemco (see Whiteside's 7/11 generally). 7/18: Gnu replied letter
Cable Corrosion Protection (Zinc Paste)	Y	N	SAS Super	Gikole Z-Complex 20 zinc paste	Gingard Co.	Newark, NJ	kg	\$11.89	0	\$0	12/01/03	Phone technical support provided without charge during normal working hours	7/12/05: Whiteside emailed with Gingard Co., confirming pricing from 12/1/03 letter is valid for re-advertisement of SAS
Traveler Trolley	Y	N	SAS Super & Skyway	MotORIZED trolley, brake trolley, plain trolley	Elect Air	Ontario, CA	LS	\$22,092	1	\$22,092	01/12/04	Originally, it was determined not to consider this a sole source item (multiple distributors, etc). Subsequently, however, Elect Air has become the sole supplier of the Inkelis-brand motor that Maintenance requests, and so a price guarantee is in order.	7/15/05: Fleming to determine whether Elect Air's specs are suitable for our design. 7/18: Fleming says O.K.; breaking trolley to be added
SCADA RTU system	Y	N	?	SCADA RTU system (various)	Inkelis Associates	Pasadena, CA	ea	\$971,280	1	\$971,280	01/08/03	Supervisory Control and Data Acquisition Remote Terminal Unit System (SCADA RTU)- see details	6/16/05: B. Zandipour confirmed that the prices from Inkelis are good until 2008 NTP.
Joint Seal Assembly	Y	N	SAS, YBI, OTD	seismic joint	D.S. Brown	North Ballinora, Ohio		\$20	?	\$?	?	Sole Source approval was obtained in Sept. 2001. It was subsequently decided to use CT seismic joints, but later again the DS Brown Joint. Change made by CCC.	

\* Info not contained in this packet because they are Roadway (District) items.

REMOVED FROM THIS LIST

Cable Corrosion Protection (Paint)	N	N	SAS Super	Noxyde Plus cable paint system	Martin Malrys S.A.	Belgium	LS				-	No sole source price guarantee is necessary since there are several suppliers of this paint.	7/18/05: Whiteside asked JV for a list of distributors/suppliers.
Shear Link	N	N	SAS Super	Shear Link Grade 345								It was determined that the 345 grade of steel is not proprietary and could be manufactured by any number of companies.	
Bolt Coating	N	N	SAS Super	Corrosion protection on high strength bolts	Dacromet Coating by MCI		kg					Trade Name "sole source" only - multiple licensed suppliers available - no price guarantee. 4/20/04: FHWA approves sole source, however notes that ongoing testing could prove Dacromet ineffective.	Need a list of distributors (from JV?)
PMIV *	N	N	Skyway, SAS, and air?	PMIV Document Control System	Integral Vision	Lafayette, CA	LS					4/19/05: SAS spec reads "or equivalent". As such, it is not considered to be sole source	
E2 Shear Key	Y	Y	E2	Shear key casting and assembly	Whemco	Homestead, PA	?					2004: Whemco declined to provide complete shear key assemblies, which necessitated the request for Buy America waiver to obtain foreign manufacturer.	