GOBIERNO DE EL SALVADOR

MINISTERIO DE OBRAS PÚBLICAS Y DE TRANSPORTE

Ministerio de Obras Públicas, Transporte y Desarrollo Urbano
Viceministerio de Obras Públicas

Memorándum

Ref. : MOP - DPPA - 0144/2021

Para : Lic. Liz Aguirre
Oficial de Información Institucional

De : Ing. Nelson Maldonado Rodríguez
Director de Pavimentos y Plantas Asfálticas

Con copia a : Archivo

ASUNTO : Remitiendo información solicitada

FECHA : 18 de noviembre de 2021

MINISTERIO DE OBRAS PÚBLICAS Y DE TRANSPORTE
DIRECCIÓN DE PAVIMENTOS Y PLANTAS ASFÁLTICAS
DIRECTOR
GOBIERNO DE EL SALVADOR

Atentamente remito a usted, según memorándum Ref.; UAIP-MOP/118-2021 de fecha 17 de noviembre de 2021, en la cual solicita apoyo para responder solicitud 134-2021, se anexa fotocopia de las especificaciones técnicas del betún, de la última pipa recibida en la Dirección de Pavimentos y Plantas Asfálticas

Remitimos así la información porque actualmente está fallando el scanner.

Atentamente

18 NOV 2021

UAIP
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Unidad de Acceso a la Información Pública

2:55pm

Perenco Guatemala Limited

RESULTADO DE ANALISIS DE LABORATORIO

Certificado No. 45567541098

PRODUCTO:		**ASFALTO**
ESPECIFICACIÓN:	AC-30	**AC-30 [ASTM D 3381]**
FECHA:		**Agosto 19 de 2,021**
HORA:		**18:03**
TANQUE:		**6**
LOTE:		**170–2021**

ANALISIS	RESULTADO	ESPECIFICACION ASTM D 3381 TABLA 2	METODO ASTM
GRAVEDAD ESPECIFICA, 60°F,	1.064	N.E.	D 70
PESO (Lbs/Gal)	8.746	N.E.	D 70
PENETRACION, 77°F, 100g, 5 seg.	68	50 min.	D 5
VISCOSIDAD, 140°F, POISES	3,056	3,000 ± 600	D 2171
VISCOSIDAD, 275°F, cSt.	541	350 min.	D 2170
FLASH POINT, COC, °F	530	450 min.	D 92
PUNTO DE ABLANDAMIENTO, °F	121	N.E.	D 36
SOLUBILIDAD EN TCE, %	99.9	99.0 min.	D 2042
ENSAYOS AL RESIDUO TFOT			D 1754
VISCOSIDAD, 140°F, POISES	8,169	15,000 máx.	D 2171
DUCTILIDAD, 77°F, 5 cm/minuto	>100	40 min.	D 113

* min. = mínimo
max. = máximo
N.E. = No especifica

Firma del representante de Perenco:
Nombre:

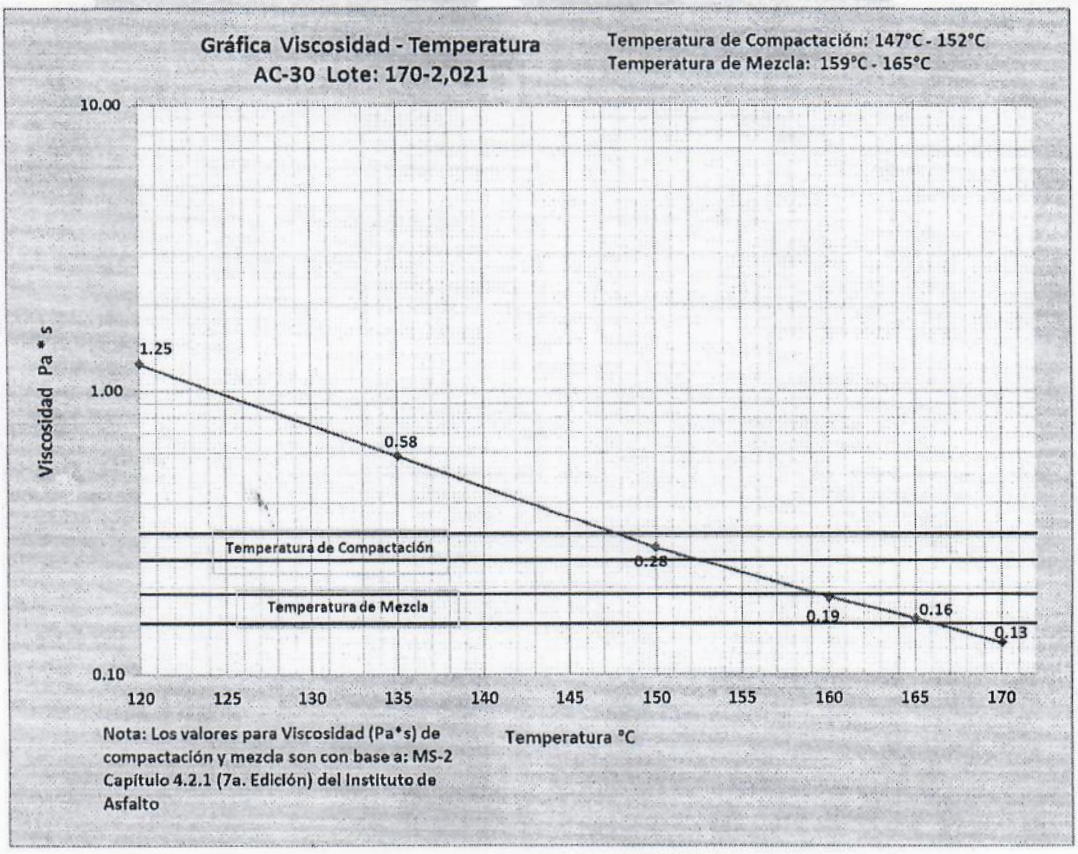
Fecha: 24-08-2021 Hora: 12:00 Pm

Perenco Guatemala Limited

CURVA REOLOGICA

Certificado No. 45567541098

PRODUCTO:	**ASFALTO**
ESPECIFICACION:	**AC-30 [ASTM D 3381]**
METODO DE ENSAYO:	**AASHTO T-316**
VISCOSIMETRO:	**Evo/Expert**
VASTAGO	**TR-9**
RPM	**20**
FECHA:	**Agosto 19 de 2,021**
HORA:	**18:03**
TANQUE:	**6**
LOTE:	**170–2021**



Firma del representante de Perenco:

Nombre:

VICEMINISTERIO DE OBRAS PÚBLICAS
DIRECCIÓN DE PLANIFICACIÓN DE LA OBRA PÚBLICA
SUBDIRECCIÓN TECNICA

INFORME DE SOLICITUD No. 134-2021

En relación a solicitud No. 134-2021 presentada en la oficina de información y respuesta (OIR) de este Ministerio, en la cual solicita conocer los requerimientos de calidad para construcción de carreteras, materiales betún, cuya investigación es para proporcionar a inversionistas extranjeros que tienen la idea de invertir en el país en este mercado, conociendo con esto si cumplen con los estándares requeridos para proyectos de esta Institución.

Al respecto, la Subdirección Técnica de esta Dirección proporciona las especificaciones técnicas que utiliza o requiere en los proyectos de pavimentación con betún.

Lo que se informa para los fines consiguientes.

Téc. Miguel Ángel González
Enlace DPOP-OIR

Standard Specification for

Performance-Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test

AASHTO Designation: M 332-14[1]

AASHTO
THE VOICE OF TRANSPORTATION

Standard Specification for

Performance-Graded Asphalt Binder Using Multiple Stress Creep Recovery (MSCR) Test

AASHTO Designation: M 332-14[1]

AASHTO
THE VOICE OF TRANSPORTATION

1. SCOPE

1.1. This specification covers asphalt binders graded by performance using the multiple stress creep recovery (MSCR) test. Grading designations are related to the average seven-day maximum pavement design temperature, minimum pavement design temperature, and traffic loading.

1.2. This specification incorporates T 350 for determining non-recoverable creep compliance, J_{nr}. "S," "H," "V," or "E" designations must be specified for standard, high, very high, or extremely high traffic loading, respectively.

Note 1—For asphalt cements graded by viscosity at 60°C, see M 226.

Note 2—For performance-graded asphalt binder, see M 320.

1.3. To ensure that the asphalt binder exhibits elastic response, the specifying agency may require compliance with Appendix X1.

2. REFERENCED DOCUMENTS

2.1. *AASHTO Standards*:

- M 226, Viscosity-Graded Asphalt Cement
- M 320, Performance-Graded Asphalt Binder
- M 323, Superpave Volumetric Mix Design
- R 28, Accelerated Aging of Asphalt Binder Using a Pressurized Aging Vessel (PAV)
- R 29, Grading or Verifying the Performance Grade (PG) of an Asphalt Binder
- R 35, Superpave Volumetric Design for Hot Mix Asphalt (HMA)
- T 40, Sampling Bituminous Materials
- T 44, Solubility of Bituminous Materials
- T 48, Flash and Fire Points by Cleveland Open Cup
- T 240, Effect of Heat and Air on a Moving Film of Asphalt Binder (Rolling Thin-Film Oven Test)
- T 313, Determining the Flexural Creep Stiffness of Asphalt Binder Using the Bending Beam Rheometer (BBR)
- T 314, Determining the Fracture Properties of Asphalt Binder in Direct Tension (DT)
- T 315, Determining the Rheological Properties of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

- T 316, Viscosity Determination of Asphalt Binder Using Rotational Viscometer
- T 350, Multiple Stress Creep Recovery (MSCR) Test of Asphalt Binder Using a Dynamic Shear Rheometer (DSR)

2.2. *ASTM Standards*:

- D 8, Standard Terminology Relating to Materials for Roads and Pavements
- D 5546, Standard Test Method for Solubility of Asphalt Binders in Toluene by Centrifuge

3. TERMINOLOGY

3.1. *Definitions*:

3.1.1. Definitions for many terms common to asphalt binder are found in ASTM D 8.

3.1.2. *asphalt binder*—an asphalt-based cement that is produced from petroleum residue either with or without the addition of nonparticulate organic modifiers.

4. ORDERING INFORMATION

4.1. When ordering under this specification, include in the purchase order the performance grade (PG) of asphalt binder required including the designation for traffic loading (e.g., M 332, PG 64V-22).

4.1.1. If required to comply with the elastic response requirements in Appendix X1, include reference to Appendix X1 in the purchase order (e.g., M 332, PG 64V-22, Appendix X1).

4.2. The required environmental asphalt binder grades may be selected by following the procedures described in M 323 and R 35, except do not use the "grade bumping" procedure in M 323. Select the environmentally appropriate high- and low-temperature grades and the appropriate "S," "H," "V," or "E" grade for the expected traffic level and traffic load rate.

4.2.1. Standard Designation "S" in most typical situations will be for traffic levels fewer than 10 million Equivalent Single Axle Loads (ESALs) and more than the standard traffic speed (>70 km/h).

4.2.2. High Designation "H" in most situations will be for traffic levels of 10 to 30 million ESALs or slow-moving traffic (20 to 70 km/h).

4.2.3. Very High Designation "V" in most situations will be for traffic levels of greater than 30 million ESALs or standing traffic (< 20 km/h).

4.2.4. Extremely High Designation "E" in most situations will be for traffic levels of greater than 30 million ESALs and standing traffic (< 20 km/h) such as toll plazas or port facilities

Note 3—"Grade bumping" is accomplished by using "H," "V," or "E" designations and not by increasing the PG high-temperature grade as recommended in M 323.

5. MATERIALS AND MANUFACTURE

5.1. Asphalt binder shall be prepared by the refining of crude petroleum by suitable methods, with or without the addition of modifiers.

5.2. Modifiers may be any organic material of suitable manufacture that is used in virgin or recycled condition and that is dissolved, dispersed, or reacted in asphalt binder to enhance its performance.

5.3. The asphalt binder shall be homogeneous, free from water and deleterious materials, and shall not foam when heated to 175°C.

5.4. The asphalt binder shall be at least 99.0 percent soluble as determined by T 44 or ASTM D 5546.

5.5. This specification is not applicable for asphalt binders in which fibers or other discrete particles are larger than 250 μm in size.

5.6. The grades of asphalt binder shall conform to the requirements given in Table 1.

5.7. If required to exhibit an elastic response, the asphalt binder shall conform to the requirements of Appendix X1.

6. SAMPLING

6.1. The material shall be sampled in accordance with T 40.

7. TEST METHODS

7.1. The properties outlined in Sections 5.3, 5.4, and 5.6 shall be determined in accordance with R 28, T 44 or ASTM D 5546, T 48, T 240, T 313, T 314, T 315, T 316, and T 350.

8. INSPECTION AND CERTIFICATION

8.1. Inspection and certification of the material shall be agreed upon between the purchaser and the seller. Specific requirements shall be part of the purchase contract. The seller shall provide material handling and storage procedures to the purchaser for each asphalt binder grade certified.

9. REJECTION AND RETESTING

9.1. If the results of any test do not conform to the requirements of this specification, retesting to determine conformity is performed as indicated in the purchase order or as otherwise agreed upon between the purchaser and the seller.

10. KEYWORDS

10.1. Asphalt binder; asphalt cement; direct tension; flash point; modifier; multiple stress creep recovery (MSCR); performance specifications; pressure aging; rheology.

Table 1—Performance-Graded Asphalt Binder Specification[a]

Performance Grade	PG 46			PG 52							PG 58				
	34	40	46	10	16	22	28	34	40	46	16	22	28	34	40
Average 7-day max pavement design temp, °C[b]	<46			<52							<58				
Min pavement design temp, °C[b]	>–34	>–40	>–46	>–10	>–16	>–22	>–28	>–34	>–40	>–46	>–16	>–22	>–28	>–34	>–40
Original Binder															
Flash point temp, T 48, min °C	230														
Viscosity, T 316:[c] max 3 Pa•s, test temp, °C	135														
Dynamic shear, T 315:[d] G*/sinδ, min 1.00 kPa[e] test temp @ 10 rad/s, °C	46			52							58				
Rolling Thin-Film Oven Residue (T 240)															
Mass change, max, percent[f]	1.00														
MSCR, T 350: Standard Traffic "S" $J_{nr3.2}$, max 4.5 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	46			52							58				
MSCR, T 350: Heavy Traffic "H" $J_{nr3.2}$, max 2.0 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	46			52							58				
MSCR, T 350: Very Heavy Traffic "V" $J_{nr3.2}$, max 1.0 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	46			52							58				
MSCR, T 350: Extremely Heavy Traffic "E" $J_{nr3.2}$, max 0.5 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	46			52							58				
Pressurized Aging Vessel Residue (R 28)															
PAV aging temp, °C[g]	90			90							100				
Dynamic shear, T 315: "S" G* sinδ, max 5000 kPa[e] test temp @ 10 rad/s, °C	10	7	4	25	22	19	16	13	10	7	25	22	19	16	13
Dynamic shear, T 315: "H," "V," "E" G* sinδ, max 6000 kPa[e] test temp @ 10 rad/s, °C	10	7	4	25	22	19	16	13	10	7	25	22	19	16	13
Creep stiffness, T 313:[h] S, max 300 MPa m-value, min 0 300 test temp @ 60 s, °C	–24	–30	–36	0	–6	–12	–18	–24	–30	–36	–6	–12	–18	–24	–30
Direct tension, T 314:[h] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	–24	–30	–36	0	–6	–12	–18	–24	–30	–36	–6	–12	–18	–24	–30

[a] MSCR testing on RTFO residue should be performed at the PG grade based on the environmental high pavement temperature. Grade bumping is accomplished by requiring a lower J_{nr} value while testing at the environmental temperature.

[b] Pavement temperatures are estimated from air temperatures using an algorithm contained in the LTPP Bind program, may be provided by the specifying agency, or by following the procedures as outlined in M 323 and R 35, excluding the provisions for "grade bumping."

[c] This requirement may be waived at the discretion of the specifying agency if the supplier warrants that the asphalt binder can be adequately pumped and mixed at temperatures that meet all applicable safety standards.

[d] For quality control of unmodified asphalt binder production, measurement of the viscosity of the original asphalt binder may be used to supplement dynamic shear measurements of G*/sinδ at test temperatures where the asphalt is a Newtonian fluid.

[e] G*/sinδ = high temperature stiffness and G* sinδ = intermediate temperature stiffness.

[f] The mass change shall be less than 1.00 percent for either a positive (mass gain) or a negative (mass loss) change.

[g] The PAV aging temperature is based on simulated climatic conditions and is one of three temperatures, 90°C, 100°C, or 110°C. Normally the PAV aging temperature is 100°C for PG 58-xx and above. However, in desert climates, the PAV aging temperature for PG 70-xx and above may be specified as 110°C.

[h] If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used in lieu of the creep stiffness requirement. The *m*-value requirement must be satisfied in both cases.

Table 1—Performance-Graded Asphalt Binder Specification[a] *(continued)*

Performance Grade	PG 64						PG 70					
	10	16	22	28	34	40	10	16	22	28	34	40
Average 7-day max pavement design temp, °C[b]	<64						<70					
Min pavement design temp, °C[b]	>–10	>–16	>–22	>–28	>–34	>–40	>–10	>–16	>–22	>–28	>–34	>–40
Original Binder												
Flash point temp, T 48, min °C	230											
Viscosity, T 316:[c] max 3 Pa•s, test temp, °C	135											
Dynamic shear, T 315:[d] G*/sinδ, min 1.00 kPa[e] test temp @ 10 rad/s, °C	64						70					
Rolling Thin-Film Oven Residue (T 240)												
Mass change, max, percent[f]	1.00											
MSCR, T 350: Standard Traffic "S" $J_{nr3.2}$, max 4.5 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	64						70					
MSCR, T 350: Heavy Traffic "H" $J_{nr3.2}$, max 2.0 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	64						70					
MSCR, T 350: Very Heavy Traffic "V" $J_{nr3.2}$, max 1.0 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	64						70					
MSCR, T 350: Extremely Heavy Traffic "E" $J_{nr3.2}$, max 0.5 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	64						70					
Pressurized Aging Vessel Residue (R 28)												
PAV aging temp, °C[g]	100						100 (110)					
Dynamic shear, T 315: "S" G* sinδ, max 5000 kPa[g] test temp @ 10 rad/s, °C	31	28	25	22	19	16	34	31	28	25	22	19
Dynamic shear, T 315: "H," "V," "E" G* sinδ, max 6000 kPa[g] test temp @ 10 rad/s, °C	31	28	25	22	19	16	34	31	28	25	22	19
Creep stiffness, T 313:[h] *S*, max 300 MPa *m*-value, min 0.300 test temp @ 60 s, °C	0	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	–30
Direct tension, T 314:[h] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	0	–6	–12	–18	–24	–30	0	–6	–12	–18	–24	–30

[a] MSCR test on RTFO residue should be performed at the PG grade based on the environmental high pavement temperature. Grade bumping is accomplished by requiring a lower J_{nr} value while testing at the environmental temperature.

[b] Pavement temperatures are estimated from air temperatures using an algorithm contained in the LTPP Bind program, may be provided by the specifying agency, or by following the procedures as outlined in M 323 and R 35, excluding the provisions for "grade bumping."

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[g] The PAV aging temperature is based on simulated climatic conditions and is one of three temperatures, 90°C, 100°C, or 110°C. Normally the PAV aging temperature is 100°C for PG 58-xx and above. However, in desert climates, the PAV aging temperature for PG 70-xx and above may be specified as 110°C.

[h] If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used in lieu of the creep stiffness requirement. The *m*-value requirement must be satisfied in both cases.

Table 1—Performance-Graded Asphalt Binder Specification[a] *(continued)*

Performance Grade	PG 76					PG 82				
	10	16	22	28	34	10	16	22	28	34
Average 7-day max pavement design temp, °C[b]	<76					<82				
Min pavement design temp, °C[b]	>–10	>–16	>–22	>–28	>–34	>–10	>–16	>–22	>–28	>–34
Original Binder										
Flash point temp, T 48, min°C	230									
Viscosity, T 316:[c] max 3 Pa•s, test temp, °C	135									
Dynamic shear, T 315:[d] G*/sin δ, min 1.00 kPa[e] test temp @ 10 rad/s, °C	76					82				
Rolling Thin-Film Oven Residue (T 240)										
Mass change, max, percent[f]	1.00									
MSCR, T 350: Standard Traffic "S" $J_{nr3.2}$, max 4.5 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	76					82				
MSCR, T 350: Heavy Traffic "H" $J_{nr3.2}$, max 2.0 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	76					82				
MSCR, T 350: Very Heavy Traffic "V" $J_{nr3.2}$, max 1.0 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	76					82				
MSCR, T 350: Extremely Heavy Traffic "E" $J_{nr3.2}$, max 0.5 kPa^{-1} J_{nrdiff}, max 75% test temp, °C	76					82				
Pressurized Aging Vessel Residue (R 28)										
PAV aging temp, °C[g]	100 (110)					100 (110)				
Dynamic shear, T 315: "S" G* sinδ, max 5000 kPa[e] test temp @ 10 rad/s, °C	37	34	31	28	25	40	37	34	31	28
Dynamic shear, T 315: "H," "V," "E" G* sinδ, max 6000 kPa[e] test temp @ 10 rad/s, °C	37	34	31	28	25	40	37	34	31	28
Creep stiffness, T 313:[h] *S*, max 300 MPa *m*-value, min 0.300 test temp @ 60 s, °C	0	–6	–12	–18	–24	0	–6	–12	–18	–24
Direct tension, T 314:[h] Failure strain, min 1.0% test temp @ 1.0 mm/min, °C	0	–6	–12	–18	–24	0	–6	–12	–18	–24

[a] MSCR test on RTFO residue should be performed at the PG grade based on the environmental high pavement temperature. Grade bumping is accomplished by requiring a lower J_{nr} value while testing at the environmental temperature.

[b] Pavement temperatures are estimated from air temperatures using an algorithm contained in the LTPP Bind program, may be provided by the specifying agency, or by following the procedures as outlined in M 323 and R 35, excluding the provisions for "grade bumping."

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[d] For quality control of unmodified asphalt binder production, measurement of the viscosity of the original asphalt binder may be used to supplement dynamic shear measurements of G*/sinδ at test temperatures where the asphalt is a Newtonian fluid.

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[h] If the creep stiffness is below 300 MPa, the direct tension test is not required. If the creep stiffness is between 300 and 600 MPa, the direct tension failure strain requirement can be used in lieu of the creep stiffness requirement. The *m*-value requirement must be satisfied in both cases.

APPENDIX

(Nonmandatory Information)

X1. INDICATIONS OF ELASTIC RESPONSE

X1.1. For an asphalt binder tested according to T 350, the percent recovery is intended to provide a means for determining the presence of elastic response and stress dependence of polymer modified and unmodified asphalt binders. Figure X1.1 may be used as an indicator of the presence of an elastomeric polymer.

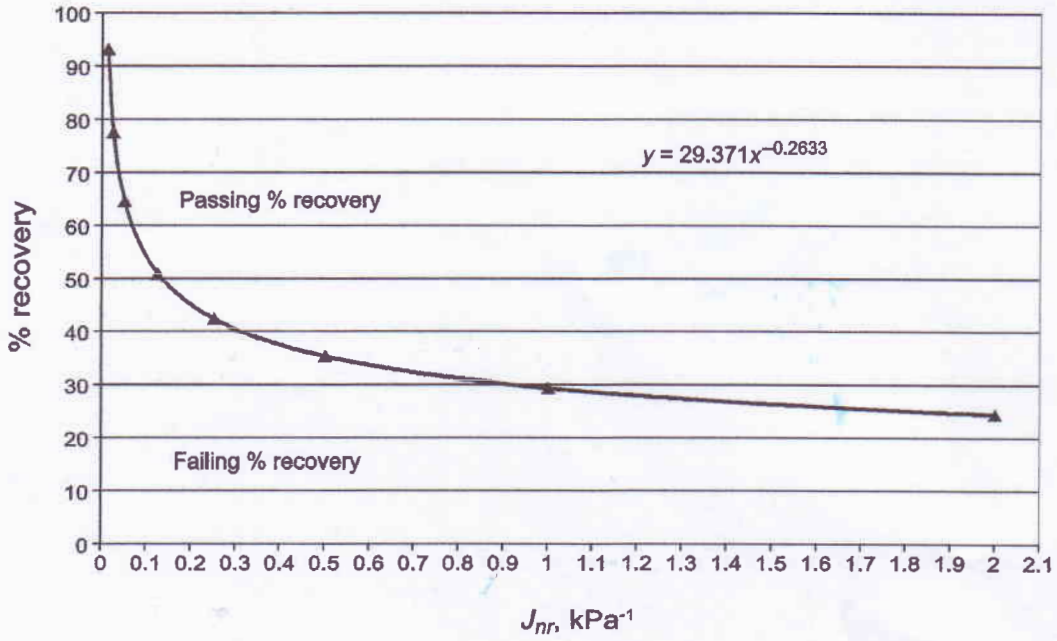

Figure X1.1—Nonrecoverable Creep Compliance Versus Percent Recovery

X1.2. On the graph in Figure X1.1, plot the average percent recovery at 3.2 kPa, $R_{3.2}$, versus the average nonrecoverable creep compliance at 3.2 kPa, $J_{nr3.2}$, measured at the same temperature.

X1.3. If the plotted point falls on or above the line on the graph, the indication is that the asphalt binder is modified with an acceptable elastomeric polymer. If the plotted point falls below the line on the graph, the indication is that the asphalt binder is not modified with an elastomeric polymer.

[1] Formerly AASHTO Provisional Standard MP 19. First published as a full standard in 2014.

MEMORANDUM

Ref. MOPT-VMOP-DIDOP-D-314/11/2021

Para : Licda. Liz Aguirre
Oficial de Información
Oficina de Información y Respuesta MOPT

De : Ing. Julio Alfredo Rivera Alonzo
Director de Ivestigación y Desarrollo de la Obra Pública

Asunto: Respuesta a solicitud de OIR, referencias MOP 133-2021 y MOP 134-2021

c.c. digital: Ing. William Alachán
Subdirector de Aseguramiento Independiente de la Calidad-DIDOP

Ing. Edwin Ricardo Alvarenga Salguero
Subdirector de Investigaciones Aplicadas-DIDOP
Enlace de la Unidad de acceso a la Información Pública

Fecha : 24 de noviembre de 2021

En relación con las solicitudes de información referencia MOP 133-2021 y MOP 134-2021, recibidas a través de correos electrónicos en fechas 18/11/2021 y 17/11/2021, respectivamente, a través de los cuales se solicita información sobre aspectos relacionados con el proporcionamiento de mezclas asfálticas y sobre requerimientos de calidad de cemento asfáltico para uso en carreteras.

Al respecto, por medio de la presente se remite de manera adjunta nuestros aportes técnicos a cada una de las solicitudes de información antes mencionadas.

Atentamente,

Se anexa:

- Ref. MOPT-VMOP-DIDOP-IA-OT 05/11/2021 de fecha 24/11/2021 en atención a solicitud de información Ref. MOP 133-2021 (1 página).
- Ref. MOPT-VMOP-DIDOP-AIC-24/11/2021 de fecha 24/11/2021 en atención a solicitud de información Ref. MOP 134-2021 (1 página).

25 NOV 2021
UAIP
RECIBIDO
Unidad de Acceso a la Información Pública
9:25am

GOBIERNO DE EL SALVADOR

MINISTERIO DE OBRAS PÚBLICAS Y DE TRANSPORTE

Dirección de Investigación y Desarrollo de la Obra Pública

San Salvador, 24 de noviembre de 2021.
Ref. MOPT-VMOP-DIDOP-AIC-24/11/2021

DIRECCION DE INVESTIGACION Y DESARROLLO DE LA OBRA PUBLICA
SOLICITUD DE OFICINA DE INFORMACIÓN Y RESPUESTA Ref. MOP 134-2021

- **INFORMACION SOLICITADA SEGÚN Ref. MOP 134-2021**

"REQUERIMIENTOS DE CALIDAD PARA CONSTRUCCION DE CARRETERAS, MATERIALES BETUN, LA INVESTIGACIÓN ES PARA PROPORCIONAR A INVERSIONISTAS EXTRANJEROS QUE TIENEN LA IDEA DE INVERTIR EN EL PAIS EN ESTE MERCADO, PARA ELLO NECESITAN CONOCER SI CUMPLEN CON LOS ESTANDARES REQUERIDOS PARA SUS PROYECTOS."

- **RESPUESTA**

En el marco de las actividades de Aseguramiento Independiente de la Calidad en los proyectos que ejecuta el Ministerio de Obras Públicas y de Transporte (MOPT), a través del Viceministerio de Obras Públicas (VMOP), se ha identificado en los Documentos Contractuales, específicamente en las **Condiciones Generales de Contratación** (CG-20 LEYES, NORMAS Y REGLAMENTOS) que se indica textualmente: "2) Las normas y estándares generalmente aceptados localmente para este tipo de obras, como son el Reglamento para la Seguridad Estructural de las Construcciones dela República de El Salvador, el Manual Centroamericano de la SIECA, incluyendo el Manual Ambiental, normas y manuales de la AASHTO, ASTM, ACI, FP, de edición vigente; y para el caso de las normas de ensayo se emplearán los estándares ASTM y AASHTO vigentes… "; así mismo, en las **Condiciones Técnicas** sección Requisitos de los Materiales se indica textualmente: "cemento asfáltico: será tipo AC-30 y deberá cumplir con la norma ASTM D 3381 y subsección 702.01 de las ETG SIECA 2004"; por tanto, para el cemento asfáltico a incorporar en los proyectos de carreteras que ejecuta el MOPT, se especifica un cemento asfáltico clasificado por viscosidad como AC 30 según lo requerido en **ASTM D 3381 "Standard Specification for Viscosity-Graded Asphalt Binder for Use in Pavement Construction".**

Cabe indicar que el tipo de cemento asfáltico antes referido (AC 30), fue determinado a partir de una investigación aplicada desarrollada en el año 2011 por la Dirección de Investigación y Desarrollo de la Obra Pública (DIDOP) [en ese momento denominada Unidad de Investigación y Desarrollo Vial (UIDV)], en donde se determinó el tipo de cemento asfáltico idóneo para uso en carreteras en el país, por lo cual fue incorporado en los documentos contractuales de los proyectos de infraestructura que desarrolla el MOPT.

No obstante lo anterior, se sugiere consultar a la Dirección de Planificación de la Obra Pública (DPOP), entidad responsable de elaborar las Especificaciones Técnicas de los materiales que se incorporan en los Documentos Contractuales de los proyectos que ejecuta el MOPT.

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