COURTESY TRANSLATION

ANNEX C

ANAS Directorate-General (*ANAS Direzione Generale*)

Motorway Concession Supervisory Inspectorate (*Ispettorato Vigilanza Concessioni Autostradali*)

Master Agreement

ANAS S.p.A.

AUTOSTRADE PER L'ITALIA S.p.A.

ANNEX: C

QUALITY INDICATORS

Quality indicators

In accordance with Article 3(a) of the Master Agreement, the Concessionaire must ascertain and notify to the Grantor the following quality indicators:

Safety indicator I_S that measures the overall results of the infrastructure and its management in terms of safety: it is determined in relation to the Accident Rate (AR) as measured on motorway routes.

Indicator of structural state of the paving I_{PAV} that takes into account the Roughness (lA1) and the Regularity (lA2) of the same, as being representative of the superstructure of greater road wear chiefly related to its technical safety and to the comfort of the journey.

The two indicators I_S and I_{PAV} are assessed on the motorway routes listed hereunder, divided between lowland routes and mountain routes.

Based on the safety indicator or the indicator of structural state of the paving, the Q factor, i.e., the synthetic quality indicator for the entire network operated under concession, is determined.

ANNEX C

Routes defined as lowland routes	
A1 Milano - Bologna	192.1 km
A1 Firenze – Roma Diramazione Roma Sud	273 km
A1 Bretella Fiano – S. Cesareo	45.3 km
A1 Roma – Napoli Diramazione Roma Sud	202.0 km
A4 Milano – Brescia	93.5 km
A8-9 Milano– Varese – Lainate Como – Chiasso	77.7 km
A8-26 Diramazione A8/A26	24.0 km
A10 Genova – Savona	45.5 km
A11 Firenze – Pisa Nord	81.7 km
A12 Genova – Sestri Levante	48.7 km
A12 Roma – Civitavecchia	65.4 km
A13 Bologna – Padova	127.3 km
A14 Bologna – Ancona	236.0 km
A14 Ancona – Pescara	133.8 km
A14 Canosa – Bari – Taranto	143.0 km
A14 Raccordo di Ravenna	29.3 km
A26 Tratto Alessandria Gravellona Diramazione Santhià (A4)	161.2 km
A27 Mestre – Pian di Vedoia	82.2 km
A30 Caserta – Salerno	55.3 km
Total routes defined as lowland routes	**2356.3 km**

Routes defined as mountain routes	
A1 Bologna – Firenze	91.0 km
A7 Genova – Serravalle	50.0 km
A16 Napoli – Canosa	172.3 km
A23 Udine – Tarvisio	101.2 km
A26 Genova –Voltri– Alessandria Diramazione Predosa (A7)	83.7 km
Total routes defined as mountain routes	**498.2 km**

The findings on quality indicators Is and IPAV are made, pursuant to the methods described hereunder, throughout the length of the motorways covered by Concession, with the exclusion, to be notified by apposite note to the Granting Authority ANAS – Supervisory Inspectorate on Motorway Concessions, of the routes where enlargement and extraordinary maintenance interventions are underway, and throughout the duration of the works, including the routes made viable on a connection layer or something other than a wear layer.

Extraordinary maintenance works are understood as including all those interventions that do not fall under ordinary maintenance as set out in annex F to this Master Agreement.

The Is and IPAV values of each year refer to the twelve months preceding 30 June of the same year (for instance: with regard to the year 2007, the period under examination is from 1 July 2006 to 30 June 2007).

Calculation of the Is indicator

The AR, in each route, is measured by the number of accidents occurred out of one hundred million kilometres travelled. The examined accidents are registered by the Traffic Police (*Polizia Stradale*) on the motorway routes and on the junctions – to the exclusion therefore of those that occurred in services and operational outbuildings. The traffic data used in calculating the AR are the official ones, even those gathered through tools other than highway tolls, and inclusive of all transits (both paying and non-paying). As to the routes the data of which have been acquired through tools other than highway tolls, the Concessionaire must produce a specific report on the methodology adopted for calculating the traffic, which methodology will continue to apply for entire term of application.

The AR values thus calculated fall under six classes of road accident rates, the maximum values of which are separately defined for “lowland” and “mountain” routes, as per the following:

Class	“lowland”	“mountain”
A	AR≤ 50	AR ≤ 60
B	50 < AR ≤ 65	60 < AR ≤ 80
C	65 < AR ≤ 78	80 < AR ≤ 100
D	78 < AR ≤ 95	100 < AR ≤ 120
E	95 < AR ≤ 115	120 < AR ≤ 140
F	115 < AR	140 < AR

The difference, in maximum values of the classes, between “lowland” and “mountain”, is motivated by the different road accident rate between the two types of routes, owing to the climate, the tortuosity, and the planimetry /altimetry.

Having set the total kilometres of "lowland" highways at one hundred, we calculate the percentage distribution of the said total into the six classes of road accident rates, and we thus determine:

$$I_{sp} = A*\%km + 0.75*B*\%km + 0.50*C*\%km + 0.25*D*\%km$$

The same procedure is applied to calculate the I_{sm} indicator, after setting the total kilometres of "mountain" highways at one hundred. From the weighted average of the two indicators, I_{sp} and I_{sm}, with weights respectively represented by the lowland and mountain shares of the network, we proceed to calculate the safety indicator I_s:

$I_s = I_{sp}$*(lowland routes share) + I_{sm}*(mountain routes share)

The L_s indicator ranges from a maximum value of 100 (all the routes in class A) to a minimum value of zero (all the routes in classes E and F).

The average of I_s indicators referred to the last five years of the five-year period ended on the last 30 June, calculated as per the above, determines the average-I_s

Calculation of the I_{pav} indicator

Each indicator stems from the percentage distribution across the highway of surfaces or lengths endowed with special characteristics, assessed through a reference parameter which:

- is measurable with high-performance machines (standardised and repeatable measurements)
- is inferable from data and documents surveyed or certified by bodies external to the company.

The measurements must be done by the Concessionaire and may be subject to verification by the Grantor.

All the Concessionaires must survey the paving with high-performance machines, along the driving lane or the slow lane.

The indicators to be measured are the following:

I_{a1} – Surface roughness index (ranging from 0 to 100)

Measured along the driving lane, that has the most deteriorations, with a UMMS (or SCRIM) machine, in the form of the TSC (Transverse Strain Coefficient) parameter.

The speed of the measuring vehicle must be constant and amount to 60 km/h; allowance will be made for measurements done at a lower or higher speed within a ± 3 km/h leeway only, so long as it is done for short stretches.

The measuring step is 10 m.

The measurements to be paid regard to when calculating the I_{a1} indicator are those relating to the right wheel path.

The relevant data must be provided in digital form on optical and/or magnetic supports in text format in accordance with what is stipulated in Anas note No. 657 of 17 February 1999 and note No. 3958 of 4 August 2002.

All the values measured from 1 July of a given year to 30 June of the next one (assuming the lack of appreciable variation, during the period, of the values measured at different times) must be apportioned between the classes from A to F, each one as defined by the following data:

Class	***A***	70 ≤	TSC	
"	***B***	60 ≤	TSC	< 70
"	***C***	50 ≤	TSC	< 60
"	***D***	40 ≤	TSC	< 50
"	***E***	30 ≤	TSC	< 40
"	***F***		TSC	< 30

The surface paving termed draining wears, which remove aquaplaning and spray, are characterised by special superficial geometric textures, always measured by the SUMMS (SCRIM), with the “height in sand” (HS) parameter. Provided that the said parameter is ≥0.80, the corresponding measured value of the TSC will be increased by 10 points.

We then proceed to calculate the A%, B% … … F% percentages of the values falling under each class compared to the aggregate recorded figures.

By lending a gradually decreasing weight to the less valid classes, the I_{a1} indicator is the result of the following formula:

$$I_{a1} = A\% + 0.75\ B\% + 0.5\ C\% + 0.25\ D\% + 0.00\ E\% + 0.00\ F\%$$

I_{a2} – <u>Surface regularity index</u> (ranging from 0 to 100)

Measured along the driving lane, which show the most deteriorations, with an ARAN machine, in the form of the IRI (International Roughness Index) in the aforementioned classes, according to their percentage of diffusion in the measurement year, according to the same considerations set out in respect of roughness.

The measuring speed depends on the technologies that have been used on a case-by-case basis to do the measurement. The Concessionaire must inform the Grantor, i.e., ANAS Directorate-General (*ANAS Direzione Generale*), of the means and methods of measurement which it intends to adopt before implementing each measuring campaign.

The IRI (International Roughness Index) that is taken into account for purposes of calculating the I_{a2} indicator must be the average value of IRI data relating to the right and left wheel paths.

In any event, the IRI must be calculated and returned on a length basis set at 20 m.

The data must be provided in digital form on optical and/or magnetic supports in text format (separators: tabs or spaces); they must be organised in columns setting out the essential data for each measurement (stretch/lot identification name, sequential number, measurement basis, right IRI, left IRI, average IRI, etc.). The heading must also include such general data as: name of the Concessionaire, name of the stretch/lot, direction, lane, date of measurement, vehicle used, etc.

Class	***A***		IRI	≤ 1.3
"	***B***	1.3 <	IRI	≤ 2.0
"	***C***	2.0 <	IRI	≤ 2.5
"	***D***	2.5 <	IRI	≤ 3.0
"	***E***	3.0 <	IRI	

By lending a gradually decreasing weight to the less valid classes, the I_{a2} indicator is of the following formula:

$$I_{a2} = A\% + 0.75\ B\% + 0.5\ C\% + 0.25\ D\% + 0.00\ E\%$$

The I_{a1} and I_{a2} indicators combine with each other with weighted averages, weights 0.6 and 0.4 respectively, in such a manner as to obtain an I_{PAV} index called Indicator of Structural State of paving

$$I_{PAV} = 0.6\ I_{a1} + 0.4\ I_{a2}$$

The start of measurement operations, inclusive of schedule, are notified by FAX/e-mail/letter to the Grantor, i.e., ANAS Directorate-General (*ANAS Direzione Generale*), 30 days before.

The measurements relating to the calculation of indicators, for each year, are carried out over the preceding 12 months ended on 30 June of the year; the results are delivered to the Grantor, i.e., ANAS Directorate-General (*ANAS Direzione Generale*), Motorway Concession Supervisory Inspectorate, by the next 31 July (for example: measurements carried out during the period from 1 July 2006 to 30 June 2007 are delivered by 31 July 2007 and determine the $I_{PAV}2007$).

Together with the aforementioned measurements, all the interventions carried out on paving during the period between the two measurements, setting out the type of intervention and the progressive implementation totals, are transmitted to the same Grantor, i.e., ANAS Directorate-General (*ANAS Direzione Generale*).

The measurements, correctly done, must cover at least 90% of the network under Concession not subject to the abovementioned exclusion.

If one is in possession of such partial measurements as grip only – regularity only – mixed or in any event incomplete ones, they may not be used.

Whenever the Concessionaire does not carry out the measurement, the I_{PAV} value for the year under examination is the one from the previous year minus 15% for the I_{a1} and I_{a2} values: even in respect of the years following the one in which the measurement has not been carried out, and until the end of the five-year period of application of the price-cap formula, the measured I_{a1} and I_{a2} values will be decreased by 15%.

Calculation of the Quality Index Q

The quality index Q stems from the weighted average of the I_{PAV} indicator, relating to the year ended on the last 30 June, with the average of the I_S indicators relating to the last five years and calculated as per the above, in accordance with the following formula:

$$Q = 0.6 * I_{PAV} + 0.4 * {}_{average}I_S$$

Where: ${}_{average}I_S$ = arithmetical average of annual I_S of the five-year period ended on the last 30 June.

The average Q as at 30 June of each year is the average of Q values, calculated as per the above, over the last 5 (five) years.