Attachment No. 2 – V1.0

خط أساس دبي للخرسانة المستدامة

Dubai Sustainable Concrete Baseline

المُقَدِمَة

يعتبر خط أساس دبي للخرسانة المستدامة بمثابة حل بديل لمتطلبات الخرسانة الخضراء المنصوص عليها في تعميم رقم 202) والمرفقة في هذا التعميم (المرفق رقم واحد).

يمثل خط أساس دبي للخرسانة المستدامة الحد الأقصى المسموح به للأثر البيئي للخلطات الخرسانية بالاعتماد على دراسة تقييم الأثر البيئي (EPD) التي تمت بالاستناد إلى بيانات تم جمعها من بعض مصانع الخرسانة العاملة في إمارة دبي.

وفي هذا الصدد، تم استحداث خدمات جديدة تمكّن المتعاملين من تقييم خلطاتهم الخرسانية باستخدام (خط أساس دبي للخرسانة المستدامة) واعتمادها من قبل ادارة المباني، وفيما يلي ملخّص عن هذه الخدمات.

الخدمات المُقَدَّمَة

1. عضوية موقع بيانات فنية متخصصة لإدارة المباني
Membership in Specialized Technical Database

- اشتراك في الحاسبة الذكية للخرسانة (Membership in DM Concrete Calculator)

2. إجراء دراسة تخصصية
Conduct Specialized Study

- اعتماد خلطات خرسانية (Standard Concrete Mixes)
- اعتماد مواد مستدامة جديدة (New Sustainable Materials)
- اعتماد خلطات خرسانية لمشروع معين (Concrete Mixes for a Specific Project)

مرفق تفاصيل الخدمات. لمزيد من المعلومات، يرجى التواصل مع قسم البحوث وأنظمة البناء في بلدية دبي على البريد الالكتروني dscb@dm.gov.ae

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Services Details – تفاصيل الخدمات

1. **Membership in Specialized Technical Data Base**

   a. **Membership in DM Concrete Calculator**

   DM Concrete Calculator serves as a tool to help members assess their concrete mixes against Dubai Sustainable Concrete Baseline (DSCB) by changing different parameters and prior to submitting for DM approval.

   DM Concrete Calculator is a web-based application and includes all the Baseline mixes in its data base.

   For subscribing to DM Concrete Calculator; kindly contact Research & Building Systems Section on dscb@dm.gov.ae.

2. **Conduct Specialized Study**

   a. **Standard Concrete Mixes**

   Ready mixed concrete company operating in Dubai may get their **standard concrete mixes** approved to be used instead of those specified in attachment no. 1. For any standard mix to be approved, it needs to have a weighted average impact less than that of a corresponding Baseline mix of the same grade. Preliminary comparisons may be carried out by the client using DM Concrete Calculator. Final approval for every mix will be issued by Research & Building Systems Section of the Building Department.

   For submitting applications to approve a standard mix; kindly contact Research & Building Systems Section on dscb@dm.gov.ae.

   b. **New Sustainable Materials**

   The Dubai Sustainable Concrete Baseline mixes are proportioned using the materials specified in attachment no. 1 including GGBS, Fly Ash and Silica Fume. This new service allows the use of other sustainable materials provided that:

   - The material performance is compliant with a standard specifications and it is verified against that specification.
   - The material has an LCA report and data set submitted to DM for evaluation and approval.

Once the material is approved, it will be added to DSCB environmental impacts model and DM Concrete Calculator. Accordingly it may be used in concrete mixes provided that those mixes have lower weighted average impacts than those of the corresponding baseline mixes.

For more information or submitting applications; kindly contact Research & Building Systems Section on dscb@dm.gov.ae.

c. Concrete Mixes for a Specific Project

This service permits, for a specific project, the use of mixes different than those specified in attachment no. 1 and some of the mixes may even exceed the weighted average impact (WAI) for the corresponding baseline ones provided that the total weighted average impact for all the concrete quantity of proposed mixes used in the project is less than that of the baseline mixes.

That is,

$\sum$ (WAI of proposed mix * quantity of mix) $\leq \sum$(WAI of baseline mix * quantity of mix)

For more information or submitting applications; kindly contact Research & Building Systems Section on dscb@dm.gov.ae.

General Notes:

- ***Durability*** – DSCB does not take into account the durability aspects for any one of the concrete mixes listed above. Design engineers shall be consulted for the right durability specification for every project based on the prevailing conditions of the structure (service life, exposure conditions, concrete grade, concrete cover...).
- ***Concrete Cover*** – The minimum recommended clear concrete cover to reinforcement for substructures is 50mm/75mm *(50mm for concrete cast against blinding; 75 mm for concrete cast directly against soil)* and 30mm for superstructures. The final concrete cover shall be specified by the design engineer based on the structural and durability considerations of the element.
- ***Sustainability*** – The aim of this circular is to encourage the industry to produce more sustainable concrete that will eventually result in lowering the impact of concrete construction on the environment. It is essential to balance the specification of concrete for sustainability while ensuring other performance parameters are optimized. Engineers are urged not to over-specify concrete strength and/or durability parameters and to permit flexibility in designing the concrete mixes in a way that encourages the production of more sustainable concrete.

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Dubai Municipality – Building Department

Researches and Building Systems Section

Dubai Sustainable Concrete Baseline	Circular No. 225	July 2018

Baseline Mixes

Mix Grade, MPa	Mix Description	Total Cement/Cm Content, kg/m³	Cement (OPC), kg/m³	GGBS (Slag), kg/m³	Silica Fume, kg/m³	W/C Ratio
C15/20/25 (Blinding)	OPC+36%GGBS	280	179	101	0	0.55
C30	OPC+36%GGBS	360	230	130	0	0.44
C35	OPC+36%GGBS	380	243	137	0	0.42
C40	OPC+36%GGBS	400	256	144	0	0.38
C45	OPC+36%GGBS	410	262	148	0	0.37
C50	OPC+36%GGBS	420	269	151	0	0.36
C55	OPC+26%GGBS+5%SF	430	297	112	21	0.35
C60	OPC+26%GGBS+5%SF	440	303	115	22	0.34
C65	OPC+26%GGBS+6%SF	450	306	117	27	0.33
C70	OPC+26%GGBS+6%SF	460	312	120	28	0.33
C75	OPC+26%GGBS+7%SF	470	315	122	33	0.32
C80	OPC+26%GGBS+7%SF	490	329	127	34	0.31
C85	OPC+26%GGBS+8%SF	500	330	130	40	0.30
C90	OPC+26%GGBS+8%SF	510	336	133	41	0.29

Notes:

1- Mix grade refers to concrete cube compressive strength.

2- Proposed mixes will be compared to the Weighted Average Impact (WAI) of the baseline mixes of equivalent grade. The WAI is calculated from the **normalized** LCA indicators/factors for each mix. Those indicators/ factors are *GWP= Global Warming Potential; AP= Acidification Potential; EP= Eutrophication Potential; ADPF= Abiotic Depletion Potential Fossil; FW= Blue Water Consumption; Reused Water for Washing; Water for Washing.*

3- Full details about the concrete mixes proportions and environmental impacts, and weighted average impact can be accessed through DM Concrete Calculator.