MnDOT Guidance for Submitting a Contractor Mix Design

1. At least 21 calendar days before initial placement of the concrete, the Mix Designer will submit a Contractor Mix Design Submittal package directly to the MnDOT Concrete Engineer for review and approval.

2. The Concrete Engineer will provide specific gravity and absorption data using OVEN DRY weights for mix design calculations.
   - Access the MnDOT Concrete Engineering website at http://www.dot.state.mn.us/materials/concrete.html and click on the Concrete aggregate properties to access the aggregate information for designing your concrete mixes.
   - Select the County Name and then choose the Pit Number to access the specific concrete properties for each proposed aggregate source. Contact the Concrete Engineering Unit if you are unable to find the source.

3. Determine whether you are submitting Level 1 or Level 2 Mix Designs. Table 2461-8 defines the differences between Level 1 and Level 2 Mixes.
   - Level 1 mix design submittal – MnDOT does not require additional testing to validate Level 1 mix design. Review MnDOT Spec. 2461.2.F.2.a.
   - Level 2 mix design submittal, MnDOT will accept either a suitable experience record or trial mixing for mix design validation. Review MnDOT Spec. 2461.2.F.2.a(1) to determine what information is needed.
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4. Access the MnDOT Concrete Engineering website at [http://www.dot.state.mn.us/materials/concrete.html](http://www.dot.state.mn.us/materials/concrete.html) and click on the Mix design submittals to access the Contractor Mix Design Submittal spreadsheets.

5. Select the correct submittal form. In most cases you will select General concrete submittal (No JMF).

6. Open the General Concrete Submittal (No JMF) Spreadsheet.

Step 1: You will need to know the following information to complete:

- **Each Sheet is for a specific plant in a specific location for a specific combination of materials**
- Table 2461-6 and Table 2461-7 provide all mix designations and parameters for designing mixes.
- All mix designs use Oven Dry batch weights.
- All mixes are designed with a volume between 27.00 – 27.27 cubic feet.
- All mix designs use ASTM gradations.
- All mix designs for a given combination of materials can be submitted on the same page. High Early mixes can be submitted on the same sheet as general concrete mixes.
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**Step 2: Fill in boxes shaded in blue:**

- Pit 
- Aggregate Source, Class, Specific Gravity, Absorption, F.M (Obtain from Concrete Aggregate Properties Database)
- RM number (Listed on the first page of the Contact Report)
- Mix
  - For general concrete mixes, the first four digits of the mix designation are defined by Table 2461-6, any additional digits are at the submitter’s discretion.
  - For High Early mixes, submit using the mix designations identified in Table 2461-7

- Enter all weight for each mix in pounds per cubic yard
- Define whether each mix is Level 1 or Level 2. It is recommended to submit Level 1 mixes on a separate sheet from Level 2 mixes.

**Step 3: Spreadsheet Warnings:**

- The % fly ash box will turn pink if design is outside of the Level 1 mix design requirements.
- The %Sand/Rock box will turn red if design is outside of the Level 1 %Sand/Rock mix design requirements.
- The Volume box will turn red if design is outside of the acceptable volume requirements.

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**MIX DESIGN SUBMITTAL - 3137**

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Step 4: Additional Level 2 Mix Design Requirements

- Provide additional information in accordance with 2461.2.F.2.a(1):
  - Trial Batching – Provide a report from the AMRL accredited lab that includes all mix design data including sources, and all required test data.
  - Suitable Experience Record – Click on the Strength Test Data tab at the bottom of the spreadsheet and completely fill out. In addition, submit a batch ticket that represents the actual mix design that represents the test data.

7. Once completed, submit the completed Contractor Mix Design Submittal worksheet to the following address: conc1off.dot.state.mn.us
   - Submittal is required to be in a Microsoft Excel Format.
   - We will not accept Adobe Acrobat (pdf) format.

8. MnDOT will review the mix design for approval.
   - If the mix design is approved:
     - MnDOT will create a unique number to identify the sheet of mix designs.
     - All approved mix designs will have an electronic signature.
     - MnDOT will email an Adobe Acrobat (pdf) version of the approved mix design back to the submitter.
     - All approved mix design sheets will be uploaded and posted to the MnDOT Concrete Engineering Unit website. Click on Approved Contractor Mix Designs by Plant
   - If the mix design is not approved:
     - MnDOT will contact the submitter and explain why the mix design is not approved.

9. MnDOT Approved Mix Designs are approved indefinitely provided the concrete meets the requirements of 2461 including strength, aggregate quality/gradation and satisfactory placement and performance in the field.

The mix design submitter is responsible for distributing the electronically signed mix design sheets to contractors and agency personnel as requested.