

QUALITY CONTROL PROCEDURES:

- JACOB HALL OF CPM CONSTRUCTORS SHALL BE THE ONSITE QC MANAGER DURING THE PBU FABRICATION PROCESS. AUBURN CONCRETE'S RANDY BLACK WILL BE THE BATCH TECHNICIAN RESPONSIBLE FOR THE QUALITY CONTROL DURING CONCRETE BATCHING. AUBURN CONCRETE'S WARRING CUTLER OR JUSTIN ROUILLARD WILL BE THE ONSITE QC TECHNICIAN RESPONSIBLE FOR MONITORING EACH CONCRETE LOAD. AUBURN CONCRETE'S ONSITE TECHNICIAN SHALL BE RESPONSIBLE FOR MAKING ANY ADJUSTMENTS TO THE CONCRETE THAT ARE REQUIRED FOR THE LOAD TO MEET SPECIFICATIONS. JOHN TURNER CONSULTING WILL PROVIDE AN ONSITE QC TECHNICIAN THAT SHALL BE RESPONSIBLE FOR THE ONSITE TESTING AND DOCUMENTATION OF THE CONCRETE AIR CONTENT, WATER CEMENT RATIOS, TEMPERATURE AND SLUMP. THIS QC TECHNICIAN SHALL ALL BE RESPONSIBLE FOR CASTING OF CONCRETE CYLINDERS FOR 7,14, & 28 DAY COMPRESSIVE STRENGTH TESTS. THIS TECHNICIAN WILL BE CONTRACTED BY CPM CONSTRUCTORS TO PERFORM THIS WORK BUT IS OPERATING AS AN INDEPENDENT TESTING ENTITY. DOCUMENTATION FOR THE CALIBRATION AND TYPE OF EQUIPMENT USED FOR EARLY BREAKS ALONG WITH QUALIFICATIONS FOR THE TECHNICIANS PERFORMING THE TESTS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL. EARLY BREAK TEST CYLINDERS SHALL NOT BE TRANSPORTED UNTIL A MINIMUM OF 24 HOURS AFTER CASTING.
- A PRE-PRODUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR AND THE RESIDENT ENGINEER NO LESS THAT 7 CALENDAR DAYS PRIOR TO THE PLACEMENT OF CONCRETE. THE PRE-PRODUCTION MEETING SHALL BE ATTENDED BY THE CREW SUPERVISOR, CONTRACTOR PROJECT MANAGER, CONCRETE PRODUCER, RESIDENT ENGINEER, CONSTRUCTION STRUCTURES ENGINEER AND DESIGN PROJECT MANAGER AND OR/DESIGNER.
- VERMONT AGENCY OF TRANSPORTATION WILL RETAIN THEIR RESPONSIBILITIES FOR QUALITY ACCEPTANCE TESTING.
- A MINIMUM OF FOUR EXTRA CYLINDER SETS PER CONCRETE PLACEMENT SHALL BE CAST FOR EARLY COMPRESSIVE STRENGTH TESTS. A MINIMUM OF 16 SETS OF TEST CYLINDERS SHALL BE MADE PER BRIDGE.
- ALL INSIDE FORM DIMENSIONS AND REINFORCING BAR (REBAR) SPACING AND CLEARANCES SHALL BE REVIEWED AND DOCUMENTED ON THE QC PRE-PLACEMENT INSPECTION SHEET PRIOR TO THE PLACEMENT OF CONCRETE. THE RESIDENT ENGINEER OR HIS DESIGNEE SHALL REVIEW ~~AND APPROVE~~ THE QC PRE-PLACEMENT INSPECTION SHEET PRIOR TOP THE PLACEMENT OF CONCRETE. ANY DISCREPANCIES SHALL BE CORRECTED TO MEET THE TOLERANCES BELOW.
- BEFORE FORMS ARE ERECTED THE CONTRACTOR SHALL PROFILE THE THE GIRDERS AT THE CASTING SITE. THIS INFORMATION WILL BE USED TO DETERMINE THE BLOCKING DISTANCES AS DIRECTED BY THE ENGINEER.
- NON-CLOSURE PLACEMENT FORMS SHALL HAVE A COATING OF FORM OIL APPLIED. CLOSURE PLACEMENT FORMS SHALL A COATING OF EUCLID FORMULA "F" CONCRETE SURFACE RETARDER APPLIED. CARE SHALL BE TAKEN NOT TO HAVE PONDING OF FORM OIL IN THE BASE OF THE FORM OR ON ANY REBAR. FORMULA F SHALL BE PAINTED ON FORMS WITHOUT THINNING IN A CONTINUOUS UNBROKEN FILM. IMMEDIATELY AFTER STRIPPING FORMS, REMOVE THE RETARDED SURFACE MORTOR BY FLUSHING WITH A STREAM OF WATER AND/OR BY SCRUBBING WITH A STIFF BRUSH. AS SOON AS THE RETARDER HAS BEEN REMOVED, 2 LAYERS OF WET BURLAP SHALL BE PLACED OVER THE EXPOSED SURFACES TO MAINTAIN CURING REQUIREMENTS PER SECTION 501.12(2) AND NOTE 9. BELOW.
- ALL PRE-CAST CONCRETE SHALL BE INSPECTED BY THE CONTRACTOR AND THE RESIDENT ENGINEER. THIS INFORMATION SHALL BE DOCUMENTED ON THE POST POUR INSPECTION SHEET.
- CURING SHALL MEET THE REQUIREMENTS OF SECTION 501.17 (2). BURLAP CURE. PLACEMENT OF TWO LAYERS OF BURLAP AND POLY WILL FOLLOW THE PROGRESS OF THE SCREED MACHINE FROM A WORK PLATFORM WITH A LAG TIME NOT TO EXCEED 10 MIN. A POWER WASHER SHALL BE ONSITE FOR THE PURPOSE OF FOGGING AS NECESSARY. THE ONSITE SUPERINTENDENT SHALL BE RESPONSIBLE FOR MONITORING THE CURING PROCESS. ANY ADJUSTMENTS REQUIRED OR REQUESTED BY THE RESIDENT ENGINEER SHALL BE MADE TO MAINTAIN THE PROPER CURING OF THE PBU'S. CURING SHALL BE INSPECTED DAILY, INCLUDING WEEKENDS AND NON WORKING DAYS. ALL CURING ACTIVITIES SHALL BE DOCUMENTED IN THE CONTRACTOR'S DAILY REPORT. CONCRETE SHALL CURE FOR 10 DAYS ~~OR UNTIL DESIGN STRENGTH HAS BEEN MET~~ PRIOR TO SHIPMENT.
- IF AMBIENT TEMPERATURES REQUIRE, CONCRETE TEMPERATURES WILL BE MONITORED DURING CURING USING THERMAL PROBES AND AN OCITTEM DATA LOGGER SYSTEM OR A BY A SIMILAR METHOD.
- DIMENSIONAL TOLERANCES ARE AS FOLLOWS:

GEOMETRY OF PBU

- LENGTH (EACH UNIT) - $\pm \frac{3}{4}$ " (ADJACENT UNIT LENGTHS SHALL NOR VARY MORE THAN $\frac{3}{4}$ ".
- WIDTH - $\pm \frac{3}{8}$ ".
- DECK THICKNESS - $\pm \frac{3}{8}$ " , - $\frac{1}{4}$ ".
- DEVIATION FROM DIAGONALS - $\pm \frac{3}{8}$ " (HORIZONTAL)
- DEVIATION FROM END SQUARENESS OR SKEW - $\pm \frac{3}{8}$ ".
- GIRDER SPACING - $\pm \frac{1}{4}$ ".
- HORIZONTAL ALIGNMENT - $\pm \frac{3}{8}$ " (DEVIATION FROM A STRAIGHT LINE PARALLEL TO THE CENTERLINE OF THE UNIT).
- INSERT LOCATION - $\pm \frac{3}{8}$ ".

REINFORCING

- SPACING - ± 1 " (NON-CUMULATIVE)
- COVER - $\pm \frac{1}{4}$ " (TOP AND BOTTOM MAT)

FIELD INSTALLATION TOLERANCES

- VERTICAL DEVIATION BETWEEN UNITS PRIOR TO CLOSURE POUR CONCRETE PLACEMENT SHALL NOT EXCEED $\frac{1}{4}$ "
- DEVIATION IN JOINT WIDTH BETWEEN UNITS SHALL BE $\pm \frac{1}{4}$ ".
- (VERTICAL DEVIATIONS EXCEEDING THE TOLERANCES ABOVE SHALL BE GROUND WITH DIAMOND CUP WHEELS OR OTHER MECHANICAL METHODS. THE CASTING OF ALL PBU SEGMENTS WILL OCCUR SIMULTANEOUSLY WITH A SINGLE SCREED MACHINE SPANNING THE ENTIRE WIDTH OF PBU 1 THRU 4. THIS SHOULD MINIMIZE AN IRREGULARITIES IN THE JOINTS.

- EACH PIECE OF PRE-CAST SHALL BE MARKED WITH ITS UNIT NUMBER AND CASTING DATE.

13. CONCRETE FINISHING & METHOD OF SUPPORTING THE SCREED -

PBU FINISH WILL BE A VIBRATORY SCREED FINISH. THE SCREED SHALL SPAN THE ENTIRE WIDTH OF THE PBU'S LESS THE WIDTH OF THE OVERHANGS. THE SCREED SHALL BE SUPPORTED ON EXTRA SHEAR STUDS INSTALLED ALONG THE TOP FLANGE OF THE OUTSIDE GIRDERS. THESE STUDS SHALL BE PLACED AT NO MORE THAN 2'-0" O.C. THE SCREED RAIL SHALL BE A MINIMUM OD 2" DIAMETER EXTRA STRONG PIPE WITH A LENGTH OF 20'-0". THIS PIPE WILL BE SUPPORTED BY METAL SCREED RAIL SUPPORT CRADLES SET ON TOP OF PIPE THAT WILL BE THREADED OVER THE EXTRA SHEAR STUDS. DRY RUNS SHALL BE PERFORMED AND ADJUSTMENTS SHALL BE MADE TO THE SCREED TO THE SATISFACTION OF THE ENGINEER. TOLERANCE FOR THE SCREED MACHINE IS $\frac{1}{4}$ ". HAND FINISHING SHALL ONLY BE ALLOWED WERE IT IS NOT POSSIBLE TO USE THE SCREED MACHINE. MAGNESIUM BULL FLOATS WILL BE USED FOR HAND FINISHING. CEMENT FINISHERS WILL FOLLOW THE SCREED MACHINE AND PULL THE SCREED RAIL AND SCREED SUPPORT COMPONENTS. THESE FINISHERS SHALL FILL THE HOLES LEFT BY THE SCREED RAIL SUPPORTS WITH FRESH CONCRETE AND FINISH THE AREAS TO MEET THE FINISH REQUIREMENTS. THIS PROCESS SHALL NOT TAKE MORE THAN 10 MINUTES AFTER THE SCREED MACHINE HAS FINISHED THE AREA. SCREED RAILS SHALL EXTEND PAST THE ENDS OF THE BEAMS FAR ENOUGH TO ENABLE THE SCREED MACHINE TO BE ALIGNED PERPENDICULAR TO THE $\frac{1}{4}$ " OF THE ROADWAY. THE SCREED SHALL BE PROPELLED WITH A GAS OR DIESEL POWERED ENGINE.

CPM CONSTRUCTORS

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PROJECT INFORMATION

JOB NUMBER:	PROJECT NUMBER:
DATE:	DATE:
BY:	BY:
DATE:	DATE:
BY:	BY:
DATE:	DATE:

QC PROCEDURE & PLAN

**BHF 0169(9)
 CHELSEA, VERMONT**

SHEET NUMBER

10
 of 11

Vermont Agency of Transportation
RECEIVED
 CK'D BY TYLin OK'D BY TYin
 April 5, 2017
 RESUBMIT No Approved AsNoted
 BY Kristin Higgins DATE 4/7/2017

T.Y. LIN INTERNATIONAL
 THE STAMPED DOCUMENTS ARE HEREBY:
 APPROVED
 APPROVED AS NOTED
 REVISE AND RESUBMIT
 SEE TRANSMITTAL FOR ADDITIONAL INFORMATION AS APPLICABLE.
 THIS REVIEW IS FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT ONLY. ANY DEVIATION FROM THE PLANS OR SPECIFICATIONS NOT CLEARLY NOTED BY THE CONTRACTOR HAS NOT BEEN REVIEWED. REVIEW BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF THE CONTRACTUAL RESPONSIBILITY FOR ANY ERRORS OR DEVIATION FROM THE CONTRACT REQUIREMENTS.
 JOSH OLUND REVIEWER April 5, 2017 DATE