

**GENERAL NOTES:**

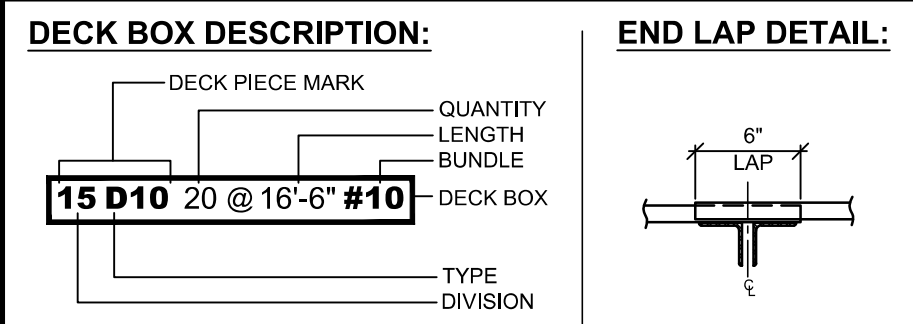
- WHEN THE STEEL DECK IS WELDED, STRUCTURAL SUPPORTS MUST HAVE A MINIMUM THICKNESS EQUAL TO 2.5 TIMES THE TOTAL THICKNESS OF THE STEEL DECK TO BE WELDED AND A MINIMUM WIDTH OF 38mm (1 1/2") WHERE THE WELD WILL BE ACHIEVED. OTHERWISE, THE STEEL DECK MUST BE MECHANICALLY ATTACHED USING AN APPROPRIATE CONNECTOR. (E.G. NAILS OR SCREWS)
- THE STEEL DECK SHEETS ARE MADE OF STRUCTURAL GRADE STEEL WITH ZINC COATING ACCORDING TO THE REQUIREMENTS OF ASTM A653M. THE STEEL DECK SHEETS ARE DESIGNED ACCORDING TO THE REQUIREMENTS OF CAN / CSA S106-12, CAN / CSA S100-12, CSSBI-10M-13, 12M-15 AND 20M-15.
- FOR OPENINGS OF 150mm (6") OR LESS ACROSS THE FLUTES, NO REINFORCEMENT IS NECESSARY PROVIDED THAT NO MORE THAN TWO VERTICAL WEBS ARE REMOVED. FOR OPENINGS OF MORE THAN 150mm (6") ACROSS THE FLUTES, PROVIDE SUITABLE REINFORCEMENT BASED ON STRUCTURAL ANALYSIS OF THE LOADS INVOLVED BY THE STRUCTURAL ENGINEER OF THE PROJECT.
- ALL WELDS TO BE PAINTED WITH GALVA-CO. (NOT PROVIDED BY CANAM GROUP Inc.)
- CANAM GROUP Inc. INCLUDES THE SERVICE OF CHECKING THE STEEL DECK GAUGE ONLY UNDER GRAVITY LOADS SHOWN ON THE STRUCTURAL DRAWINGS. ACCORDING TO STANDARD CAN / CSA S16-14 CLAUSE 4.2.2(i) AND CSSBI SSF-26, THE STRUCTURAL ENGINEER OF THE PROJECT IS RESPONSIBLE FOR THE STEEL DECK DIAPHRAGM DESIGN. THE STEEL DECK FASTENING PATTERNS SHOWN ON PLANS WERE PROVIDED BY THE STRUCTURAL ENGINEER OF PROJECT STRUCTURE REMAIN ITS RESPONSIBILITY.

**CONTRACTOR NOTES:**

CANAM GROUP Inc. STEEL DECK IS PRODUCED FROM PRIME MATERIAL AS PER APPROVED DRAWINGS. THE DECK IS SHIPPED TO THE JOB SITE IN DRY AND CLEAN CONDITION, READY FOR INSTALLATION.  
 GENERAL CONTRACTOR IS RESPONSIBLE FOR DECK STORAGE ON THE JOBSITE AS PER CSSBI 10M-13 AND 12M-15 STANDARDS.  
 WARNING: ZF75 GALVANNEAL COATING CAN DISCOLOR DUE TO HIGH HUMIDITY, TEMPERATURE CYCLING, OR SITE STORAGE. DISCOLORATION DOES NOT AFFECT THE STRUCTURAL INTEGRITY OF THE PRODUCT AND CAN BE PRIMED OR PAINTED IF NECESSARY FOR AESTHETIC PURPOSES. GREEN BUILDING / LEED CERTIFICATION REQUIREMENTS MAY RESTRICT CERTAIN TYPES OF PAINTS TO BE APPLIED ON SITE. GENERAL CONTRACTOR IS TO MAKE SURE THE DECK PROPERLY PROTECTED AS PER CANAM GROUP Inc. WARNING LABEL. REFER TO CSSBI 10M-13 (SECTION 8.10) AND 12M-15 (SECTION 7.11) STANDARDS FOR CONFIRMATION OF THE ABOVE NOTES.  
 CANAM GROUP Inc. IS NOT RESPONSIBLE AND WILL NOT ACCEPT ANY CHARGES FOR PRIMING OR PAINTING ON SITE.

**APPROVAL NOTES: (IF APPLICABLE)**

- PLEASE REVIEW THESE DRAWINGS CAREFULLY. IT REPRESENTS OUR INTERPRETATION OF THE CONTRACT DOCUMENTS.
- SUBSEQUENT CHANGES TO INFORMATION SHOWN ON THESE DRAWINGS AFTER FIRST SUBMISSION COULD BE CONSIDERED AS CONTRACT CHANGES. IF CONSIDERED A CONTRACT CHANGE THE ARCHITECT / ENGINEER SHOULD BE INFORMED IN WRITING.
- UNLESS NOTED TO THE CONTRARY ON THESE DRAWINGS WHEN RETURNED FROM APPROVAL, IT WILL BE CONSIDERED THAT THE INFORMATION SHOWN HEREIN HAS BEEN ACCEPTED BY ALL PARTIES.
- ACCORDING TO STANDARD CAN / CSA S16-14 CLAUSE 4.2.2(i) AND CSSBI SSF-26 THE STEEL DECK DIAPHRAGM AND FASTENING PATTERN NEED TO BE DESIGNED AND PROVIDED BY THE STRUCTURAL ENGINEER OF THE PROJECT.
- TO MEET DELIVERY REQUIREMENTS THIS PROJECT WILL BE ISSUED FOR FABRICATION WITH THIS RETURNED APPROVAL. DECK REINFORCING OR ADDITIONAL MATERIAL REQUIRED DUE TO MISSING LOADS SUCH AS SNOW LOADING RECEIVED AFTER ISSUE FOR FABRICATION WILL BE CONSIDERED AT OWNERS EXPENSE.
- APPROVER TO CONFIRM OR SUPPLY ALL CLOUDED INFORMATION WHERE SHOWN ON PLAN.



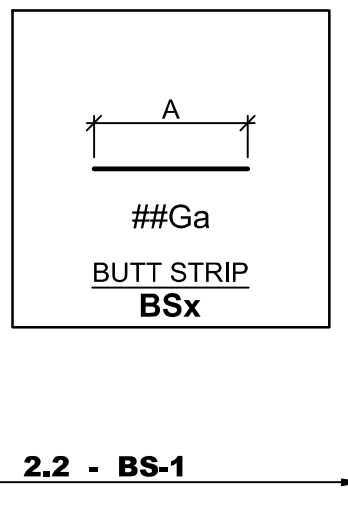
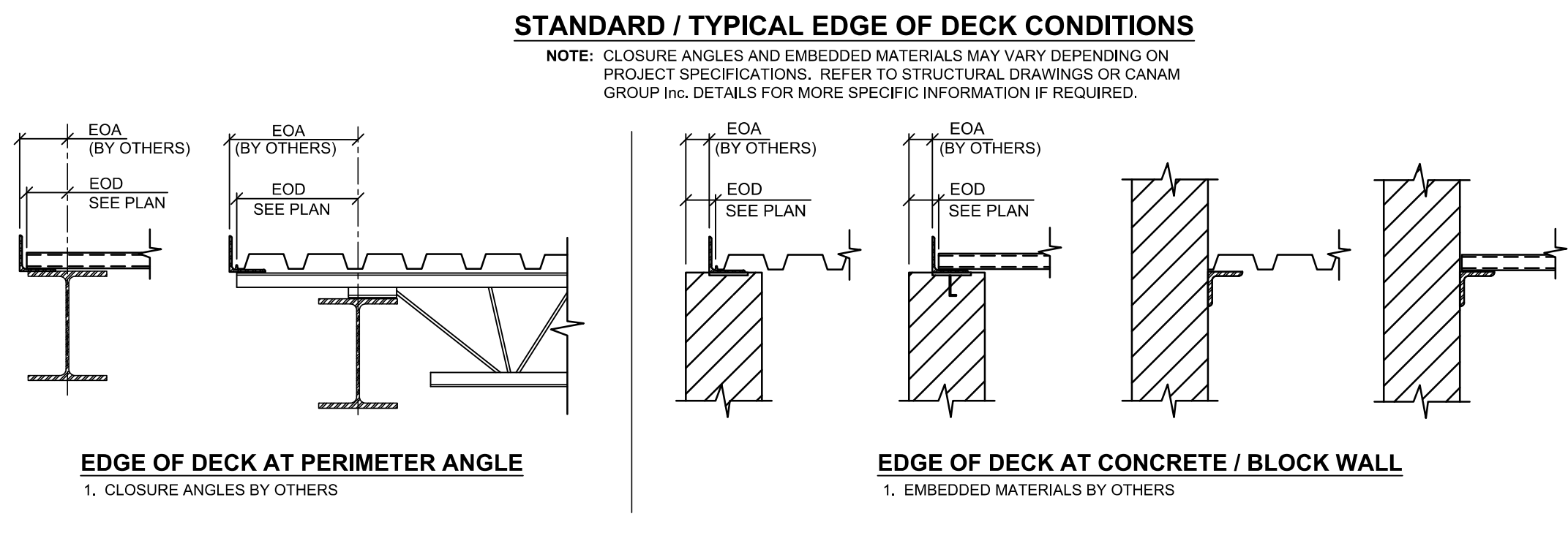
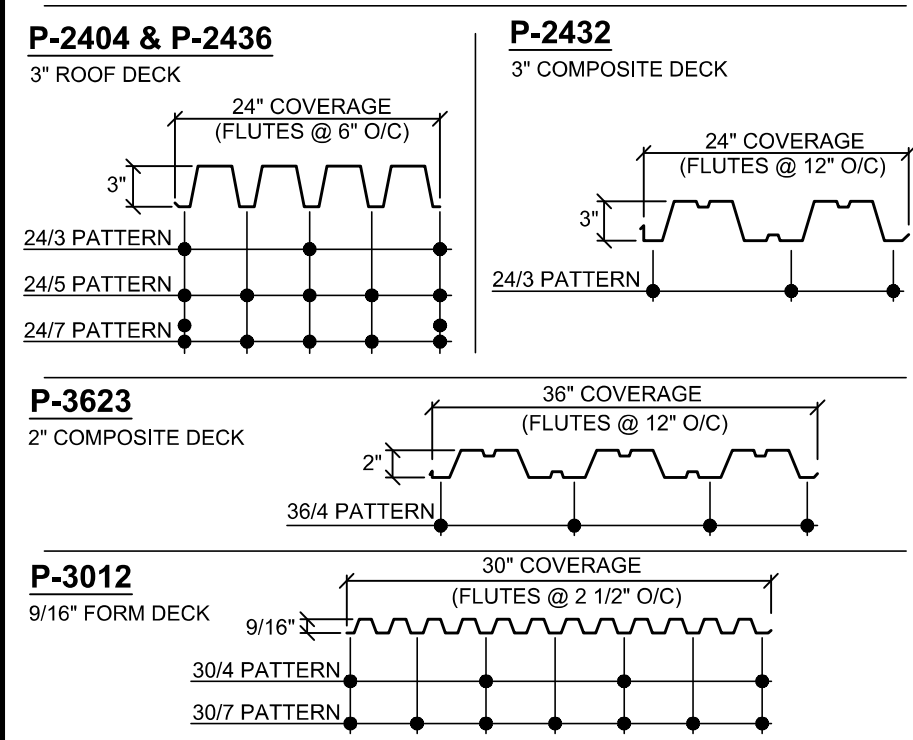
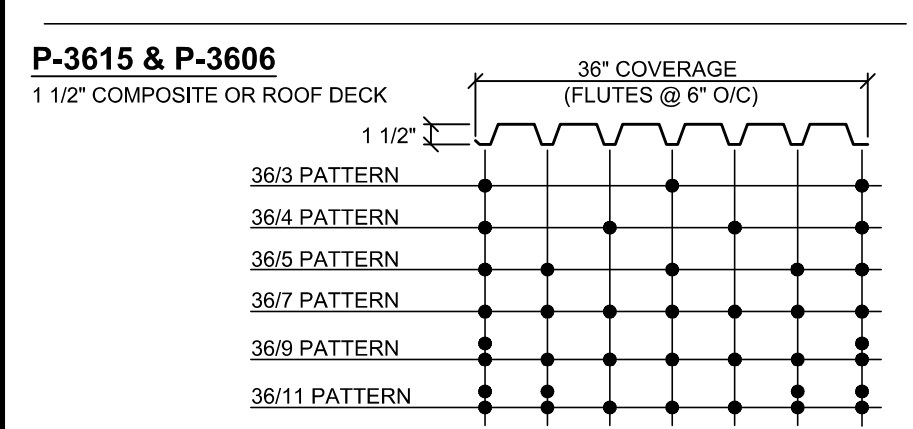
**SIDE LAP CONNECTIONS:**

TYPE OF JOINT	PROFILE	CONNECTOR AT SIDE LAP	CONNECTOR AT SUPPORT
INTERLOCK JOINT	<ul style="list-style-type: none"> <li>P-3615</li> <li>P-2436</li> <li>P-3623</li> <li>P-2432</li> </ul>	<ul style="list-style-type: none"> <li>BUTTON PUNCH</li> <li>WELD</li> </ul>	<ul style="list-style-type: none"> <li>WELD*</li> <li>POWER DRIVEN FASTENER</li> </ul>
OVERLAPPING JOINT	<ul style="list-style-type: none"> <li>P-3606</li> <li>P-2404</li> <li>P-3612</li> </ul>	<ul style="list-style-type: none"> <li>SCREW</li> <li>WELD**</li> </ul>	<ul style="list-style-type: none"> <li>SCREW</li> </ul>

\* WELDS AT SUPPORT REQ. WELDING WASHERS WHEN DECK THICKNESS IS < 0.71mm  
 \*\* WELDING OF SIDE-LAPS IS NOT RECOMMENDED FOR MATERIAL ≤ 0.71mm  
 \*\*\* AT SUPPORTS, STEEL DECK TO BE CONNECTED EACH SIDE OF THE INTERLOCKING JOINT. IF WELDED, 1 x 20mm(3/4") DIAMETER SPOT WELD IS REQUIRED ON THE MALE END AND 2 x 16mm(5/8") DIAMETER SPOT WELDS ON THE FEMALE END.

**DECK FASTENING PATTERN AT SUPPORT:**

IN CASE OF MECHANICAL FASTENERS TO SUPPORTS, THE ERECTOR IS TO FOLLOW THE MANUFACTURERS SPECIFICATION. IN THE CASE OF WELDED FASTENERS, THE ERECTOR SHALL TAKE CARE IN THE SELECTION OF ELECTRODES AND AMPERAGE TO PROVIDE POSITIVE TIE TO THE SUPPORT WITHOUT CAUSING ANY HIGH AMPERAGE BLOW HOLES.



**DECK FASTENING PATTERN**

PATTERN @ INTERMEDIATE SUPPORT	PATTERN @ PERIMETER SUPPORT	FASTENER TYPE @ SUPPORT	SIDELAP FASTENER
36/4	36/7	PUDDLE WELD	BUTTON PUNCH @ 230 c/c

LONGITUDINAL PERIMETER CONNECTION @ 150 o/c

**Beirsto & Associates**  
ENGINEERING LTD

REVIEWED  
 REVIEWED AS NOTED  
 REVISE AND RESUBMIT  
 REJECTED  
 FOR INFORMATION ONLY

This review is for the sole purpose of ascertaining conformance with the general design. This review does not relieve the Contractor of the responsibility of errors or omissions in the shop drawings or of the responsibility to meet all requirements of the contract documents. The contractor shall confirm all dimensions and coordinate all construction and the work of all sub-trades.

BY **JCM** DATE **2020-04-09**

**FOR APPROVAL ONLY**  
**DON'T USE FOR CONSTRUCTION**  
**OR FOR ERECTION**

CLARK BUILDERS SUBMITTAL REVIEW

REVIEWED	DATE	BY
<input type="checkbox"/>		
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**DECK GAUGE & FINISH**  
(DECK TYPES FOR ENTIRE PROJECT SHOWN)

MARK	CANAM DECK TYPE	GAUGE	FINISH	COVER
A	P3615 - 38mm	22GA	GALVD	914
B	P3615 - 38mm - COMP.	20GA	GALVD	914

**LEGEND**

BS	--- BUTT STRIP
C/C	--- CENTER TO CENTER
CL	--- COLUMN CLOSURE
(EA)	--- CHANGE IN ELEVATION
CS	--- CLOSURE STRIP
EOA	--- EDGE OF ANGLE
EOD	--- EDGE OF DECK
EOS	--- EDGE OF SLAB
FOW	--- FACE OF WALL
GALVD	--- G90 / Z-275
LZC	--- AZ5 / ZF75
MCS	--- METAL CLOSURE SMALL
MCL	--- METAL CLOSURE LARGE
O/A	--- OVER ALL
PS	--- POUR STOP
RTU	--- ROOF TOP UNIT
RCL	--- RIDGE CLOSURE LARGE
RCS	--- RIDGE CLOSURE SMALL
RV	--- RIDGE & VALLEY
SC	--- SUPPORT CHANNEL
SIM	--- SIMILAR
TOS	--- TOP OF STEEL
TYP.	--- TYPICAL
UIS	--- UNDER SIDE UNLESS NOTED OTHERWISE
UNO	--- UNLESS NOTED OTHERWISE
V/F	--- VERIFY IN FIELD
ZS	--- Z - CLOSURE
ZES	--- Z - EDGE STRIP

REVISION NO.	DATE	DESCRIPTION
A	Apr-01-2020	ISSUED FOR APPROVAL ONLY

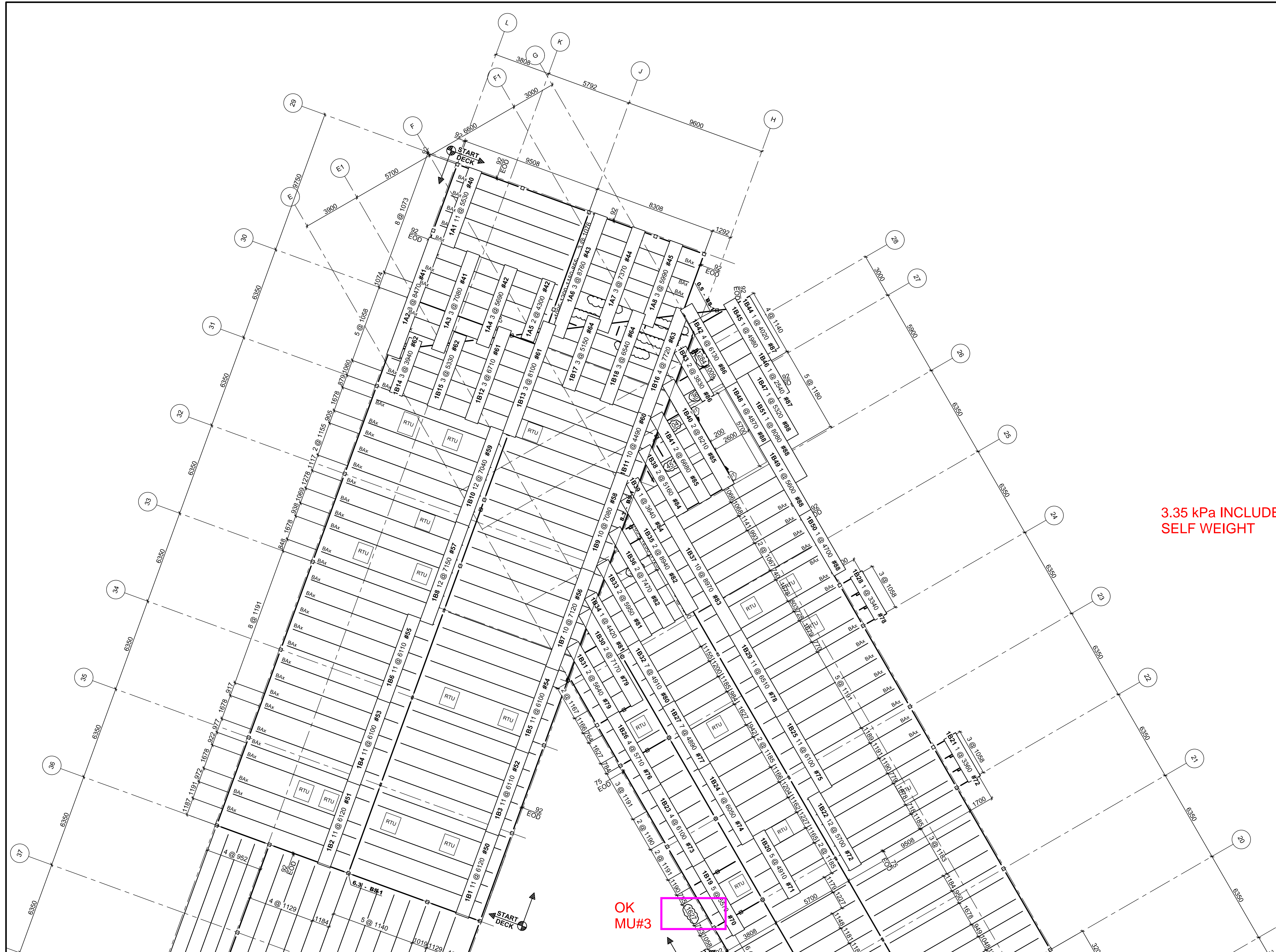
CANAM GROUP Inc. ENGINEER SEAL(S):

This drawing is to be used for the erection of steel deck and related Accessories supplied by Canam Group Inc. Engineer's stamp is for steel deck only.

ST. GEDDON (QC) 1-888-849-5910 - email: gdedon.draw@canamgroupinc.com  
 MISSISSAUGA (ON) 1-800-446-8897 - email: toronto.drafting@canamgroupinc.com  
 MONCTON (NB) 1-800-210-7833 - email: moncton.draw@canamgroupinc.com  
 CALGARY (AB) 1-866-203-2001 - email: calgary.drafting@canamgroupinc.com

PROJECT NAME: **SEVEN GENER.ENERGY COMM. BLDG**  
 LOCATION: **GRANDE PRAIRIE, AB**  
 TITLE: **GENERAL NOTES & SECTIONS**  
 CUSTOMER: **RAMPART STEEL LTD.**  
 ENGINEER: **BEIRSTO & ASSOCIATES**

DATE	PROJECT	DRAWING NO.
Mar-31-2020	W01868	DE1



**DECK FASTENING PATTERN**

PATTERN @ INTERMEDIATE SUPPORT	PATTERN @ PERIMETER SUPPORT	FASTENER TYPE @ SUPPORT	SIDELAP FASTENER
36/4	36/7	PUDDLE WELD	BUTTON PUNCH @ 230 c/c

LONGITUDINAL PERIMETER CONNECTION @ 150 c/c

**PARTIAL SECOND FLOOR DECK FRAMING PLAN (DIV. 01D)**

- REFERENCE DWG: E-100 & E-101 REV. A
- U/S DECK ELEVATION: DATUM 0" TYP..
  - UNIFORM FLOOR LOADS:
    - DEAD = 3.35 kPa + 1.86 kPa (Self)
    - LIVE = 4.8 kPa (corridors, meeting room, stairs, lounge patio, light storage)
    - 3.6 kPa (equipment & IT room)
    - 2.4 kPa (all other)
    - SLAB THICKNESS = 100
    - DEFLECTION = L/360
  - UNIFORM ROOF LOADS:
    - DEAD = 1.85 kPa + 0.25 (Self) other roof
    - SNOW = 1.86 kPa
    - GROSS WIND UPLIFT = 0.81 kPa
  - REFER TO DE1 FOR STANDARD NOTES & SECTIONS

3.35 kPa INCLUDES SELF WEIGHT

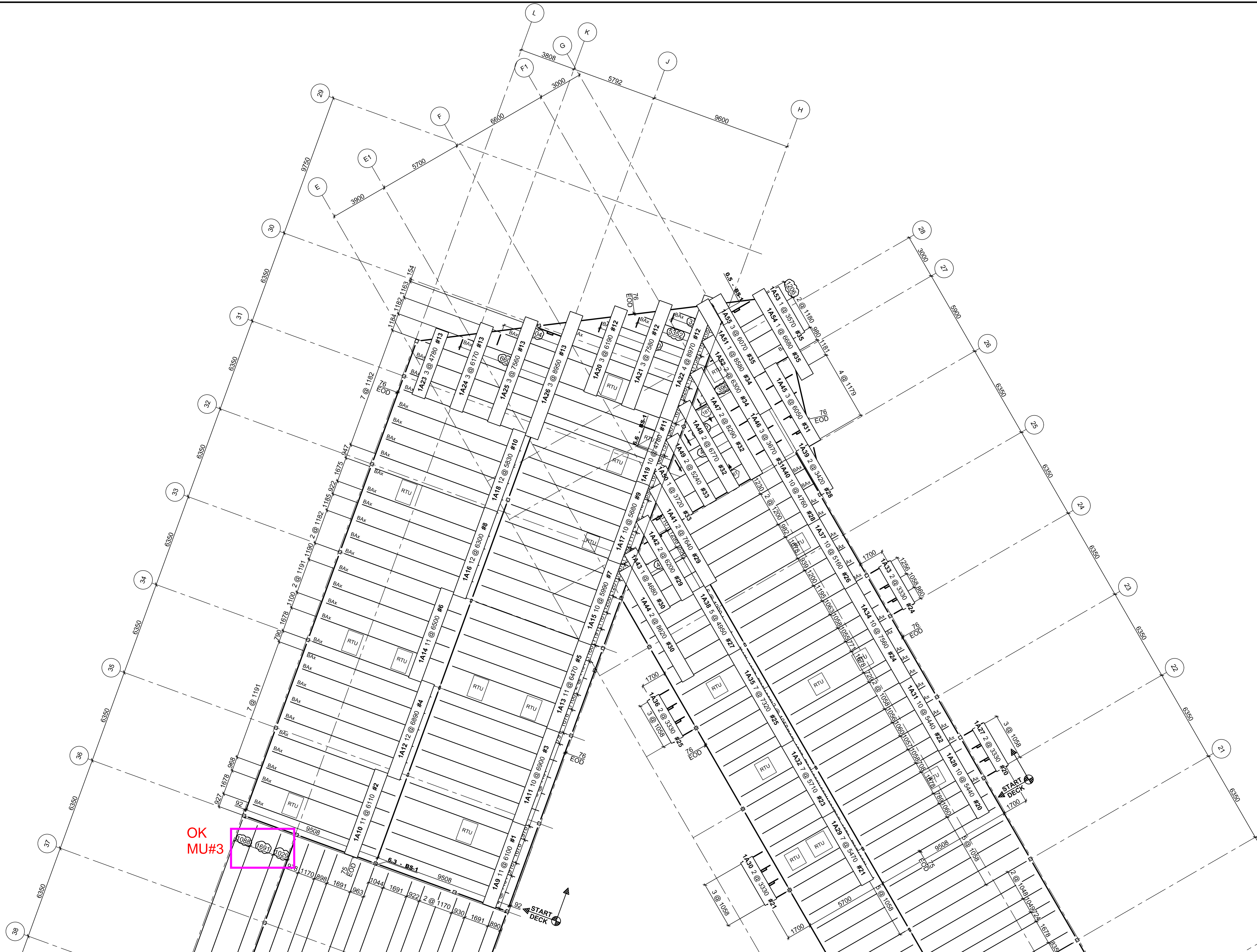
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DON'T USE FOR CONSTRUCTION OR FOR ERECTION

DECK GAUGE & FINISH				REVISION NO.			DATE			DESCRIPTION			
(DECK TYPES FOR ENTIRE PROJECT SHOWN)													
MARK	CANAM DECK TYPE	GAUGE	FINISH	COVER									
A	P3615 - 38mm	22GA	GALVD	914	A			Apr-01-2020			ISSUED FOR APPROVAL ONLY		
B	P3615 - 38mm - COMP.	20GA	GALVD	914									

ST. GEORGE (QC) 1-888-849-5910 - email: geodon.draw@canamgroupinc.com  
 MISSISSAUGA (ON) 1-800-446-8897 - email: toronto.drafting@canamgroupinc.com  
 MONCTON (NB) 1-800-210-7833 - email: moncton.draw@canamgroupinc.com  
 CALGARY (AB) 1-866-203-2001 - email: calgary.drafting@canamgroupinc.com

PROJECT NAME: SEVEN GENER ENERGY COMM. BLDG		
LOCATION: GRANDE PRAIRIE, AB		
TITLE: 2ND FLOOR NORTH		
CUSTOMER: RAMPART STEEL LTD.		
ENGINEER: BEARSTO & ASSOCIATES		
DRAWN BY: RO/CSz	PLANT: CALGARY	DRAWING NO: DE2
DATE: Mar-31-2020	PROJECT: W01868	

This drawing is to be used for the erection of steel deck and related Accessories supplied by Canam Group Inc. Engineer's stamp is for steel deck only.



**DECK FASTENING PATTERN**

PATTERN @ INTERMEDIATE SUPPORT	PATTERN @ PERIMETER SUPPORT	FASTENER TYPE @ SUPPORT	SIDLAP FASTENER
36/4	36/7	PUDDLE WELD	BUTTON PUNCH @ 230 c/c

LONGITUDINAL PERIMETER CONNECTION @ 150 c/c

**PARTIAL ROOF DECK FRAMING PLAN (DIV. 01D)**

REFERENCE DWG: E-104 & E-105 REV. A

- U/S DECK ELEVATION: DATUM 0" TYP..
- UNIFORM ROOF LOADS:
  - DEAD = 1.85 kPa + 0.25 kPa (Self) other roof
  - SNOW = 1.86 kPa
  - GROSS WIND UPLIFT = 0.81 kPa
  - DEFLECTION = L/360
- REFER TO DE1 FOR STANDARD NOTES & SECTIONS

**FOR APPROVAL ONLY**  
 DON'T USE FOR CONSTRUCTION  
 OR FOR ERECTION

DECK GAUGE & FINISH						
(DECK TYPES FOR ENTIRE PROJECT SHOWN)						
MARK	CANAM DECK TYPE	GAUGE	FINISH	COVER		
A	P3615 - 38mm	22GA	GALVD	914		
B	P3615 - 38mm - COMP.	20GA	GALVD	914		
				A	Apr-01-2020	ISSUED FOR APPROVAL ONLY
				REVISION NO.	DATE:	DESCRIPTION
				CANAM GROUP Inc. ENGINEER SEAL(S):		
				This drawing is to be used for the erection of steel deck and related Accessories supplied by Canam Group Inc.. Engineer's stamp is for steel deck only.		



ST. GEORGE (QC) 1-888-849-5910 - email: gordon.draw@canamgroupinc.com  
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 MONCTON (NB) 1-800-210-7833 - email: moncton.draw@canamgroupinc.com  
 CALGARY (AB) 1-866-203-2001 - email: calgary.drafting@canamgroupinc.com

PROJECT NAME: SEVEN GENER.ENERGY COMM. BLDG  
 LOCATION: GRANDE PRAIRIE, AB  
 TITLE: ROOF NORTH  
 CUSTOMER: RAMPART STEEL LTD.  
 ENGINEER: BEIRSTO & ASSOCIATES  
 DRAWN BY: R/O/CSz  
 DATE: Mar-31-2020  
 PROJECT: CALGARY  
 PRODUCT: W01868  
 DRAWING NO.: DE3

**GENERAL NOTES:**

- ALL PRODUCTS PROVIDED BY CANAM GROUP Inc. IN CONNECTION WITH THIS DRAWING ARE SUBJECT TO CANAM GROUP Inc. STANDARD TERMS AND CONDITIONS FOR JOIST SALES. BY ACCEPTING THE PRODUCT, THE PURCHASER ACKNOWLEDGES THAT THEY HAVE RECEIVED AND REVIEWED THESE TERMS AND CONDITIONS.
- MINIMUM DESIGN REQUIREMENTS TO BE PER CAN/CSA S16.0 STANDARD (AND CSSSI SPECIFICATION WHEN DECK IS SUPPLIED BY CANAM GROUP Inc.) LATEST EDITION, UNLESS OTHERWISE NOTED HEREIN.
- PAINT: GREY PRIMER U.N.O. ON PLAN (SPECIFICATIONS PROVIDED UPON REQUEST)
- THE ISSUANCE OF THIS DRAWING DOES NOT CONSTITUTE THE ACCEPTANCE OF A CUSTOMER'S ORDER.
- THE DESIGN IS BASED UPON LOAD INFORMATION SPECIFICALLY SUBMITTED TO CANAM GROUP Inc. NO SPECIAL LOADS OR OTHER FORCES HAVE BEEN PROVIDED FOR UNLESS PURCHASER HAS REQUESTED THEM IN WRITING. SUCH SPECIAL LOADS OR OTHER FORCES SHALL INCLUDE, WITHOUT LIMITATION: UPLIFT, CONCENTRATED LOADS FROM ROOF TOP UNITS, AXIAL LOADS FROM KICKER ANGLES, ETC.
- CANAM GROUP Inc. ERECTION DRAWINGS HEREIN WERE PREPARED USING THE STRUCTURAL PORTION OF THE CONNECTION DRAWINGS AS ITS PRIMARY GUIDE USING THE ARCHITECTURAL DRAWINGS (WHEN PROVIDED) ONLY FOR MISSING INFORMATION OR FOR CLARIFICATION. CANAM GROUP Inc. DOES NOT ACCEPT ANY RESPONSIBILITY FOR DISCREPANCIES BETWEEN THE STRUCTURAL AND ARCHITECTURAL DRAWINGS.

**CONTRACTOR NOTES:**

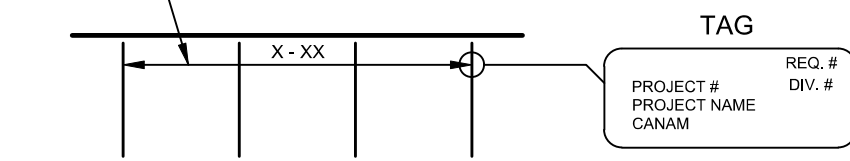
- OWSJ TOP CHORDS AND SEAT WIDTHS MAY VARY.
- FOR A COMPLETE PACKAGE OF CANAM GROUP Inc. STANDARDS & CONNECTION DETAILS GO TO "www.canamgroupinc.com" OR CONTACT YOUR CANAM GROUP Inc. OFFICE.
- CONFIRM ALL JOIST SHOE DEPTHS WITH CANAM GROUP Inc. PRIOR TO DETAILING OF SUPPORTING STEEL.
- REVIEW ENCLOSED LAYOUT FOR CONFORMANCE AND CONNECTION METHODS. INFORM CANAM GROUP Inc. OF ANY MISINTERPRETED CONNECTION DETAILS OR DIMENSIONAL DISCREPANCIES TO ENSURE AS BUILT CONDITIONS ARE SATISFIED.
- CONTRACTOR TO CONFIRM OR SUPPLY ALL CLOUDED INFORMATION WHERE SHOWN ON PLAN.

**APPROVAL NOTES: (IF APPLICABLE)**

- PLEASE REVIEW THESE DRAWINGS CAREFULLY, IT REPRESENTS OUR INTERPRETATION OF THE CONTRACT DOCUMENTS.
- THE GENERAL CONTRACTOR IS TO INFORM CANAM GROUP Inc. OF ANY INTERFERENCE BETWEEN MECHANICAL UNITS, DUCTWORK AND JOIST/BRIDGING.
- SUBSEQUENT CHANGES TO INFORMATION SHOWN ON THESE DRAWINGS AFTER FIRST SUBMISSION COULD BE CONSIDERED AS CONTRACT CHANGES. IF CONSIDERED A CONTRACT CHANGE THE ARCHITECT / ENGINEER SHOULD BE INFORMED IN WRITING.
- UNLESS NOTED TO THE CONTRARY ON THESE DRAWINGS WHEN RETURNED FROM APPROVAL, IT WILL BE CONSIDERED THAT THE INFORMATION SHOWN HEREIN HAS BEEN ACCEPTED BY ALL PARTIES.
- TO MEET DELIVERY REQUIREMENTS THIS PROJECT WILL BE ISSUED FOR FABRICATION WITH THIS RETURNED APPROVAL. JOIST REINFORCING OR ADDITIONAL MATERIAL REQUIRED DUE TO MISSING LOADS SUCH AS MECHANICAL UNITS AND SPRINKLER INFORMATION RECEIVED AFTER ISSUE FOR FABRICATIONS WILL BE CONSIDERED AT OWNERS EXPENSE.
- APPROVER TO CONFIRM OR SUPPLY ALL CLOUDED INFORMATION WHERE SHOWN ON PLAN.
- ESFR SPRINKLER SYSTEMS - DOCUMENTS INCLUDING DIMENSIONED LOCATIONS OF ALL SPRINKLERS TO BE PROVIDED TO CANAM GROUP Inc. TO ENSURE INTERFERENCE REQUIREMENTS ARE RESPECTED. IF THIS CANNOT BE PROVIDED WHEN FABRICATION COMMENCES, CANAM GROUP Inc. WILL PROVIDE THE REQUIRED DOCUMENTS SHOWING THE EXACT LOCATIONS OF ALL MEMBERS INCLUDED.

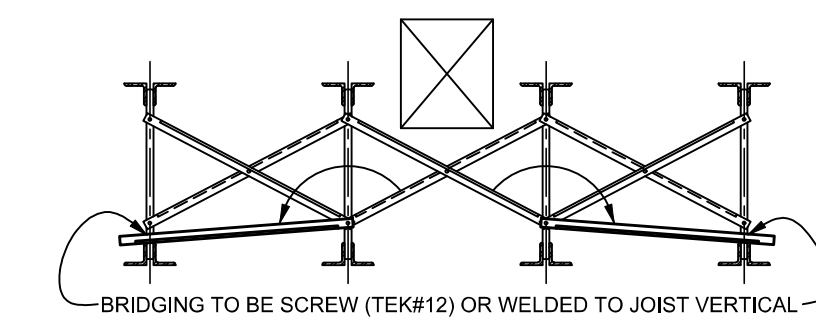
**ERECTOR NOTES:**

- THIS DRAWING IS TO BE USED ONLY FOR THE ERECTION OF PRODUCTS SUPPLIED BY CANAM GROUP Inc. AS INDICATED BY AN ERECTION MARK ON THE PLANS AND/OR SECTIONS.
- CANAM GROUP Inc. IS NOT RESPONSIBLE FOR THE HANDLING AND ERECTION OF MATERIALS IT SUPPLIES. THE DESIGN AND MANUFACTURE OF THE MATERIALS ASSUMES THAT THEY ARE HANDLED IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS. CANAM GROUP Inc. IS NOT RESPONSIBLE FOR ANY MISHANDLING OR FAILURE TO PROPERLY ERECT THE MATERIALS.
- CANAM GROUP Inc. HAS NOT EXAMINED ANY FIELD CONDITIONS AND ASSUMES NO RESPONSIBILITY FOR ANY SITE CONDITIONS. THE PURCHASER MUST NOTIFY CANAM GROUP Inc. OF ANY DISCREPANCIES BETWEEN THE FIELD CONDITIONS AND CANAM GROUP Inc. FILE AND FIELD USE DRAWINGS.
- ANY MODIFICATION OF MATERIAL SUPPLIED BY CANAM GROUP Inc. WITHOUT PRIOR WRITTEN CONSENT WILL AUTOMATICALLY RELEASE CANAM GROUP Inc. FROM ALL LIABILITY WITH RESPECT TO SUCH MATERIAL.
- OWSJ MUST BE PERMANENTLY FASTENED IN PLACE AND BRIDGING ATTACHED BY WELDING OR BOLTING AS SHOWN BEFORE ANY CONSTRUCTION LOADS ARE APPLIED. ALL FIELD WELDING TO BE CARRIED OUT BY WELDERS APPROVED BY C.W.B. TO THE REQUIREMENTS OF C.S.A. -W47 AND W59
- BOLTED CONNECTIONS (BRIDGING AND JOISTS) SHALL BE "SNUG TIGHT". THE 2004 RCSC SPECIFICATION DEFINES IT AS A JOINT IN WHICH THE BOLTS HAVE BEEN INSTALLED IN ACCORDANCE WITH SECTION 8.1. NOTE THAT NO SPECIFIC LEVEL OF INSTALLED TENSION IS REQUIRED TO ACHIEVE THIS CONDITION, WHICH IS COMMONLY ATTAINED AFTER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH. THE PLIES SHOULD BE IN FIRM CONTACT, A CONDITION THAT MEANS THE PLIES ARE SOLIDLY SEATED AGAINST EACH OTHER, BUT NOT NECESSARILY IN CONTINUOUS CONTACT.
- BACK CHARGES FOR REPAIRS OR ALTERATION TO CANAM GROUP Inc. PRODUCTS WILL NOT BE ACCEPTED UNLESS APPROVED PRIOR BY CANAM GROUP Inc.
- JOISTS TO BE ERECTED SO THAT THE METAL TAG AT ONE END CORRESPONDS WITH THE END OF THE JOIST WHERE THE MARK IS LOCATED ON THE PLAN THUS:



**BRIDGING INTERFERENCE/REMOVAL**

- REMOVE BRIDGING FROM LOCATION OF DESIRED OPENING.
- RELOCATE REMOVED BRIDGING MEMBERS AS SHOWN BELOW.
- BOLT BRIDGINGS @ JOIST BOTTOM CHORD NEAR OPENINGS AND FIX THE OTHER END TO ADJACENT JOIST AS PER PICTURE BELOW.



MAX. JOIST SPACING	MIN. HORIZ. BRIDGING SIZE
≤ 1720 / 5' - 7"	L 1 1/2" x 1 1/2"
≤ 2240 / 7' - 4"	L 1 1/2" x 1 1/2"
≤ 2620 / 8' - 7"	L 1 3/4" x 1 3/4"
≤ 2970 / 9' - 9"	L 2" x 2"

- IF SPACING IS GREATER THAN SHOWN, CONTACT CANAM GROUP Inc.  
- SIMILAR CONCEPT TO BE APPLIED FOR WELDED BRIDGING

**GENERAL JOIST/GIRDER SHOE INFORMATION:**

**NOTE:** ALL ENCLOSED DETAILS AND INFORMATION MUST BE VERIFIED ON PLAN IF NOTED OTHERWISE. DETAILS ARE INTENDED AS STANDARD BUT MAY VARY WITH SPECIFIC CONTRACTOR, PROJECTS AND/OR CONDITIONS. ANY DISCREPANCIES BETWEEN GENERAL INFORMATION AND THE PLAN, THE PLAN WILL BE CONSIDERED AS CORRECT.

**CANAM STANDARD CONNECTION DETAILS**

TO ACCESS THE CANAM STANDARD CONNECTION DETAILS, CLICK ON THE FOLLOWING INTERNET LINK OR SCAN THE QR CODE

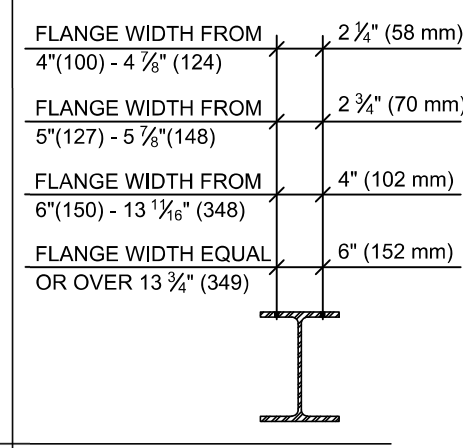
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<https://www.canam-construction.com/wp-content/uploads/2014/12/en-jois-tgirder-details-pdf.dwg>



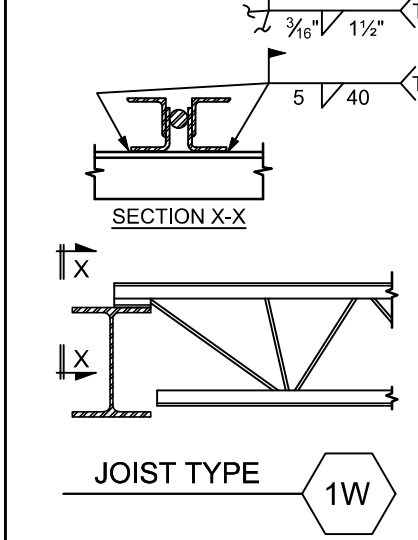
**STANDARD GAUGES - CANAM**

- WHEN ONE JOIST BEARS AT THE JUNCTION OF TWO DIFFERENT BEAMS, THE SMALLER GAUGE IS TO BE USED.
- DESIGN CONDITIONS CAN DICTATE VARIANCES FOR THESE CONNECTIONS. FOR COORDINATION CONTACT CANAM GROUP Inc.
- USE A325 3/4" Ø BOLTS TYP. U.N.O.



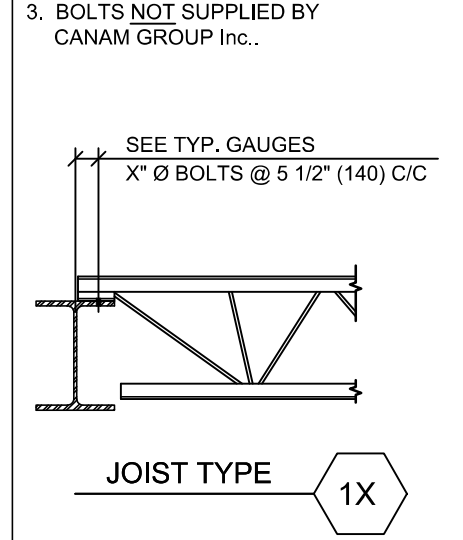
**STANDARD WELDED SHOE**

- ONLY IF APPLICABLE - SEE PLAN
- U.N.O. ON PLAN



**STANDARD BOLTED SHOE**

- ONLY IF APPLICABLE - SEE PLAN
- U.N.O. ON PLAN
- BOLTS NOT SUPPLIED BY CANAM GROUP Inc.

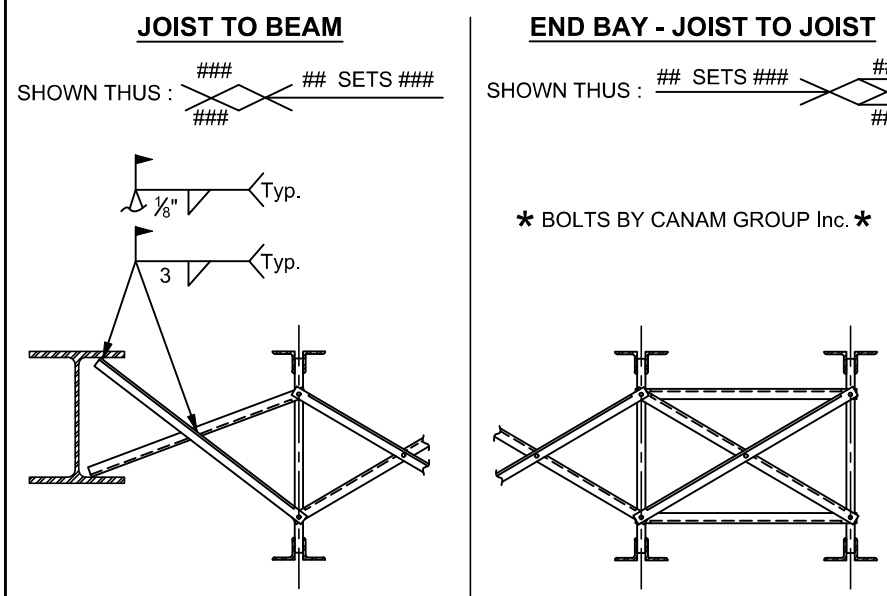


**STANDARD BRIDGING DETAILS:**

**IMPORTANT NOTE:** SEE PLAN FOR ADDITIONAL BRIDGING/BRACING DETAILS AND INSTRUCTIONS IF APPLICABLE.

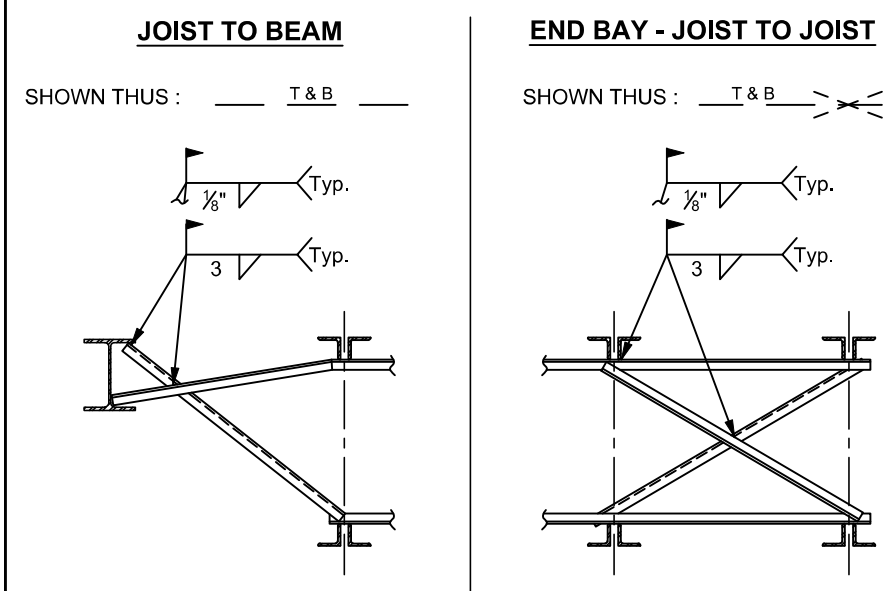
**TYP. BOLTED BRIDGING**

- ONLY IF APPLICABLE - SEE PLAN
- CANAM GROUP Inc. WILL PROVIDE MATERIAL SPECIFICATIONS UPON REQUEST.
- LOCATIONS OF X-BRIDGING NOT TO BE SCALED ON PLAN, EXACT LOCATIONS CAN BE REQUESTED IF REQUIRED.



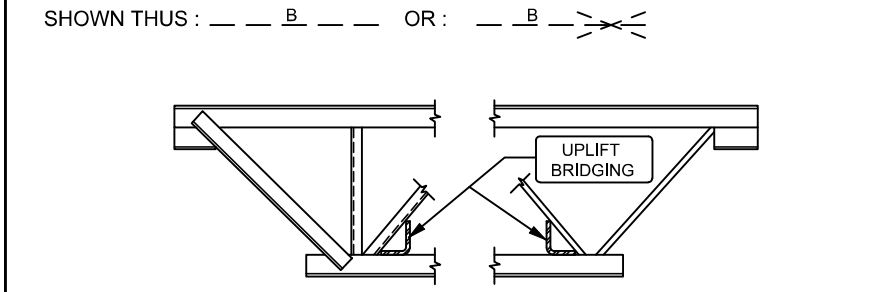
**TYP. WELDED HORIZONTAL BRIDGING**

- SEE PLAN FOR MATERIAL SIZES AND SPECIFICATIONS.
- SEE PLAN FOR LOCATIONS OF WELDED HORIZONTAL BRIDGING. DO NOT SCALE THE PLAN.
- HORIZONTAL BRIDGING CAN BE REQUIRED ON THE TOP AND/OR BOTTOM CHORDS. SEE PLAN SHOWN THUS: T & B
- BRIDGING SPLICE/LAP TO BE MAXIMUM 100 mm (4").
- QUANTITIES OF HORIZONTAL BRIDGING DETERMINED USING (O/A LENGTH (x) # ROWS) (+) 4%



**TYP. WELDED HORIZONTAL UPLIFT BRIDGING**

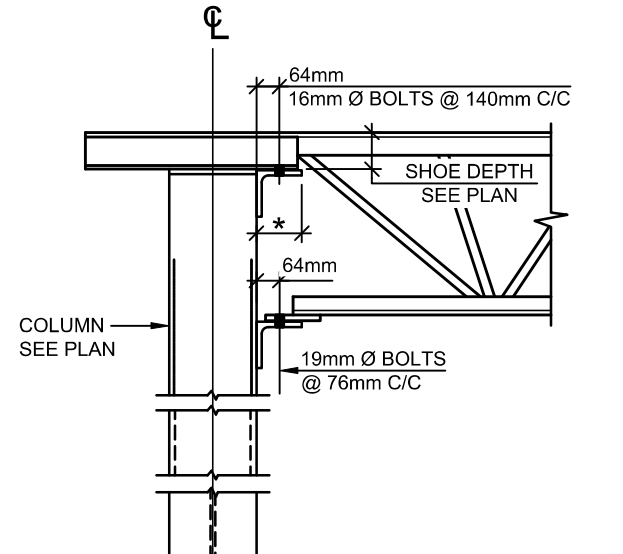
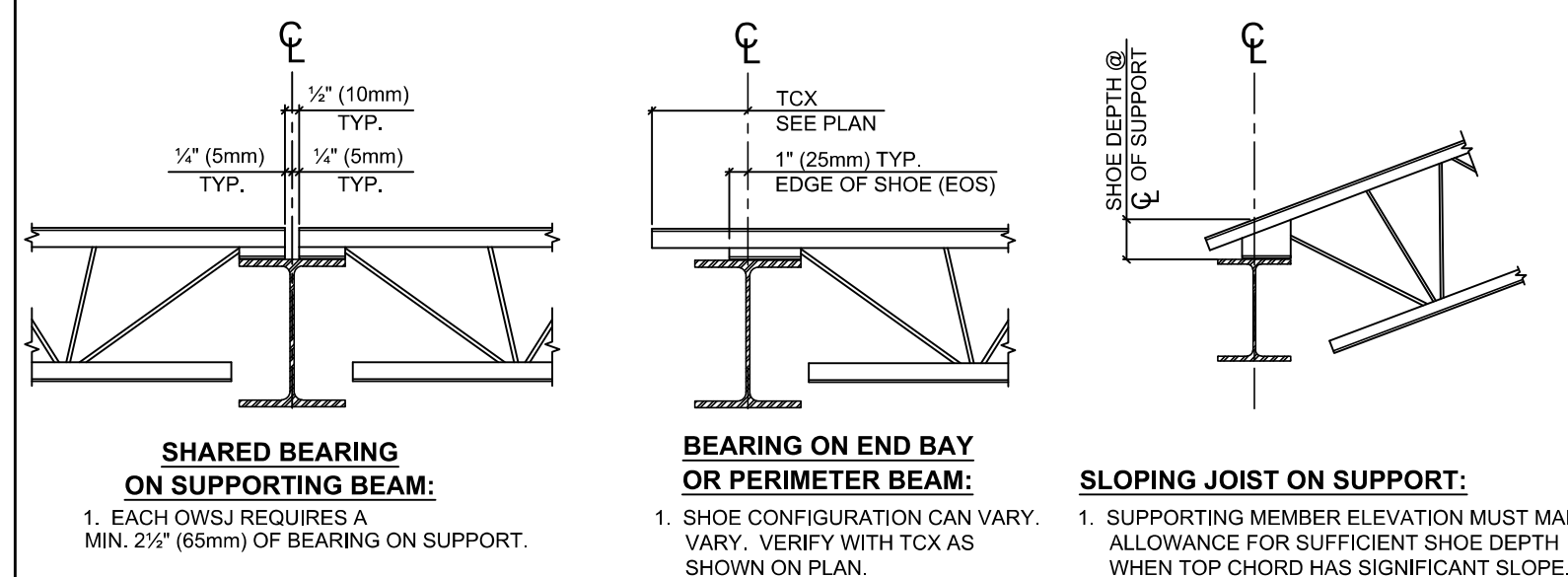
- SEE PLAN FOR MATERIAL SIZES AND SPECIFICATIONS.
- SEE PLAN FOR LOCATIONS OF WELDED HORIZONTAL UPLIFT BRIDGING. LOCATED AT FIRST AND LAST PANEL POINTS TYP. U.N.O. ON PLAN.
- FOR INSTALLATION PROCEDURE SEE "TYP. WELDED HORIZONTAL BRIDGING" DETAILS ABOVE AND SUBTRACT TOP ROW EXCEPT AT JOIST TO JOIST END BAYS.



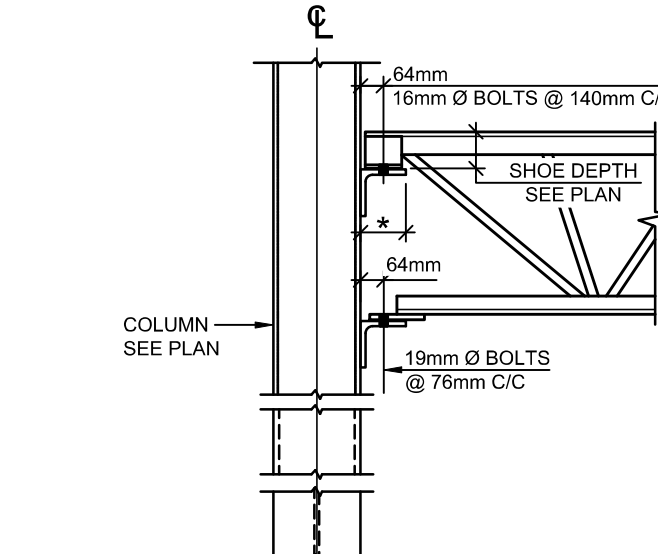
**BRIDGING BUNDLING**  
X = REPRESENT BRIDGING BUNDLES

**STANDARD TYPICAL OWSJ BEARING CONDITIONS**

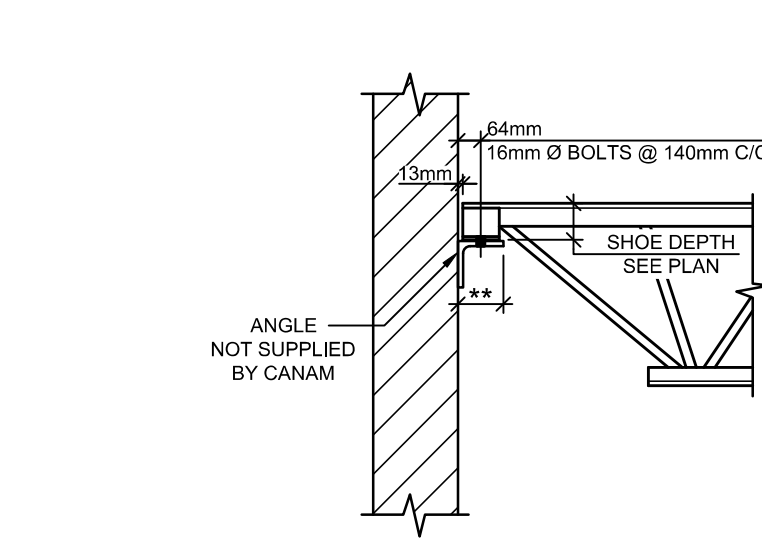
**NOTE:** TYPICAL UNLESS NOTED OTHERWISE ON PLAN OR SECTION DETAILS.



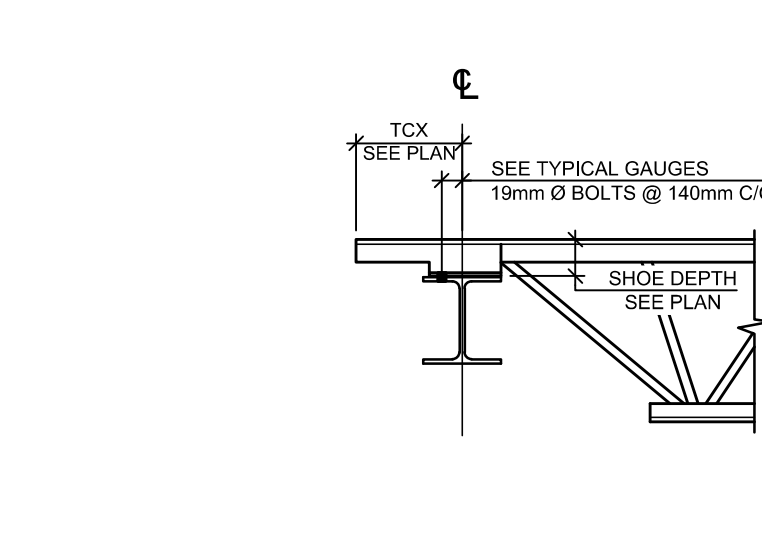
**JOIST TYPE A**  
BOLTS NOT SUPPLIED BY CANAM  
\* IF SEAT ANGLE IS GREATER THAN L102 X 102 ADVISE CANAM



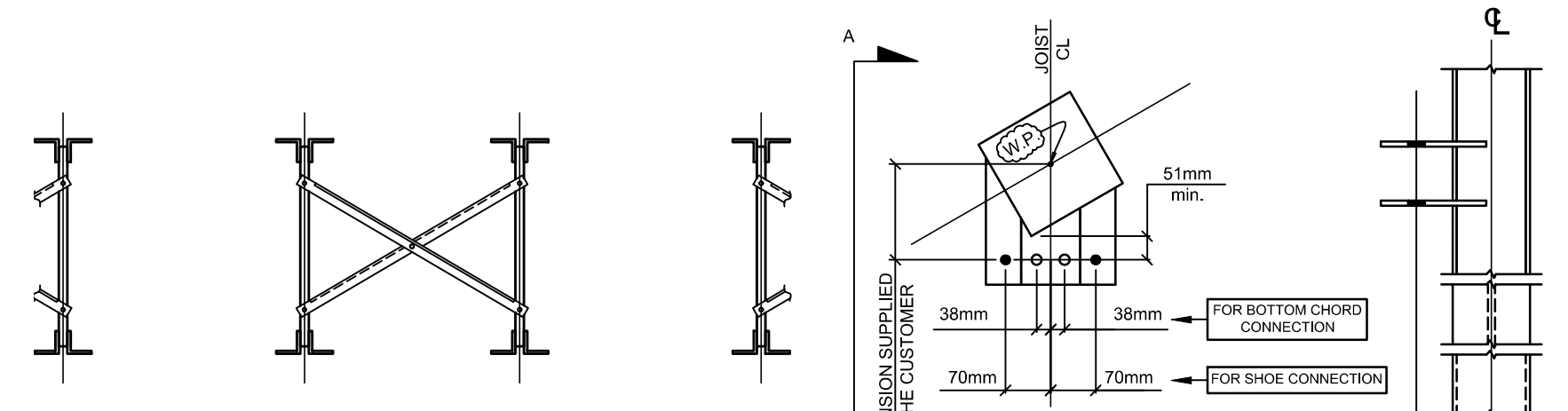
**JOIST TYPE 8Y**  
BOLTS NOT SUPPLIED BY CANAM  
\* IF SEAT ANGLE IS GREATER THAN L102 X 102 ADVISE CANAM



**JOIST TYPE 18T**  
BOLTS NOT SUPPLIED BY CANAM  
\* IF SEAT ANGLE IS GREATER THAN L102 X 102 ADVISE CANAM

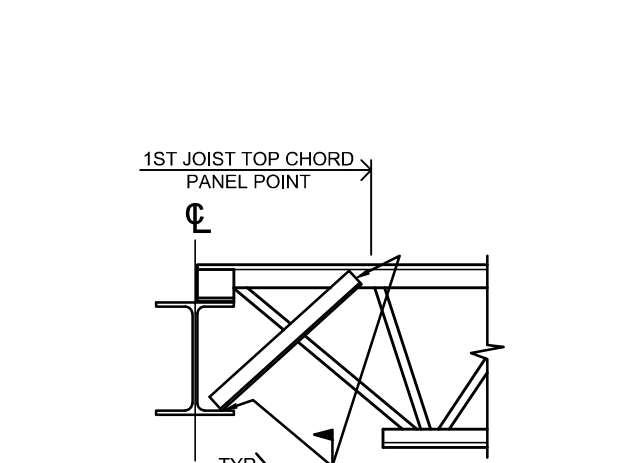


**JOIST TYPE B**  
BOLTS NOT SUPPLIED BY CANAM



**UPLIFT BOLTED CROSS BRIDGING**  
OWSJ TO OWSJ CONNECTION  
SHOWN: ### ##

**JOIST TYPE 20X**  
BOLTS NOT SUPPLIED BY CANAM



**TYPICAL BRACE ANGLE**  
ANGLE SUPPLIED BY CANAM  
COPE ANGLE IF REQUIRED

**Beirsto & Associates**  
ENGINEERING LTD

REVIEWED  
 REVIEWED AS NOTED  
 REVISE AND RESUBMIT  
 REJECTED  
 FOR INFORMATION ONLY

This review is for the sole purpose of ascertaining conformance with the general design. This review does not relieve the Contractor of the responsibility of errors or omissions in the shop drawings or of the responsibility to meet all requirements of the contract documents. The contractor shall confirm all dimensions and coordinate all construction and the work of all sub-trades.

BY **JCM** DATE **2020-04-09**

**FOR APPROVAL ONLY**  
**DON'T USE FOR CONSTRUCTION**  
**OR FOR ERECTION**

REVISION NO.	DATE	DESCRIPTION
A	Apr-01-2020	ISSUED FOR APPROVAL ONLY

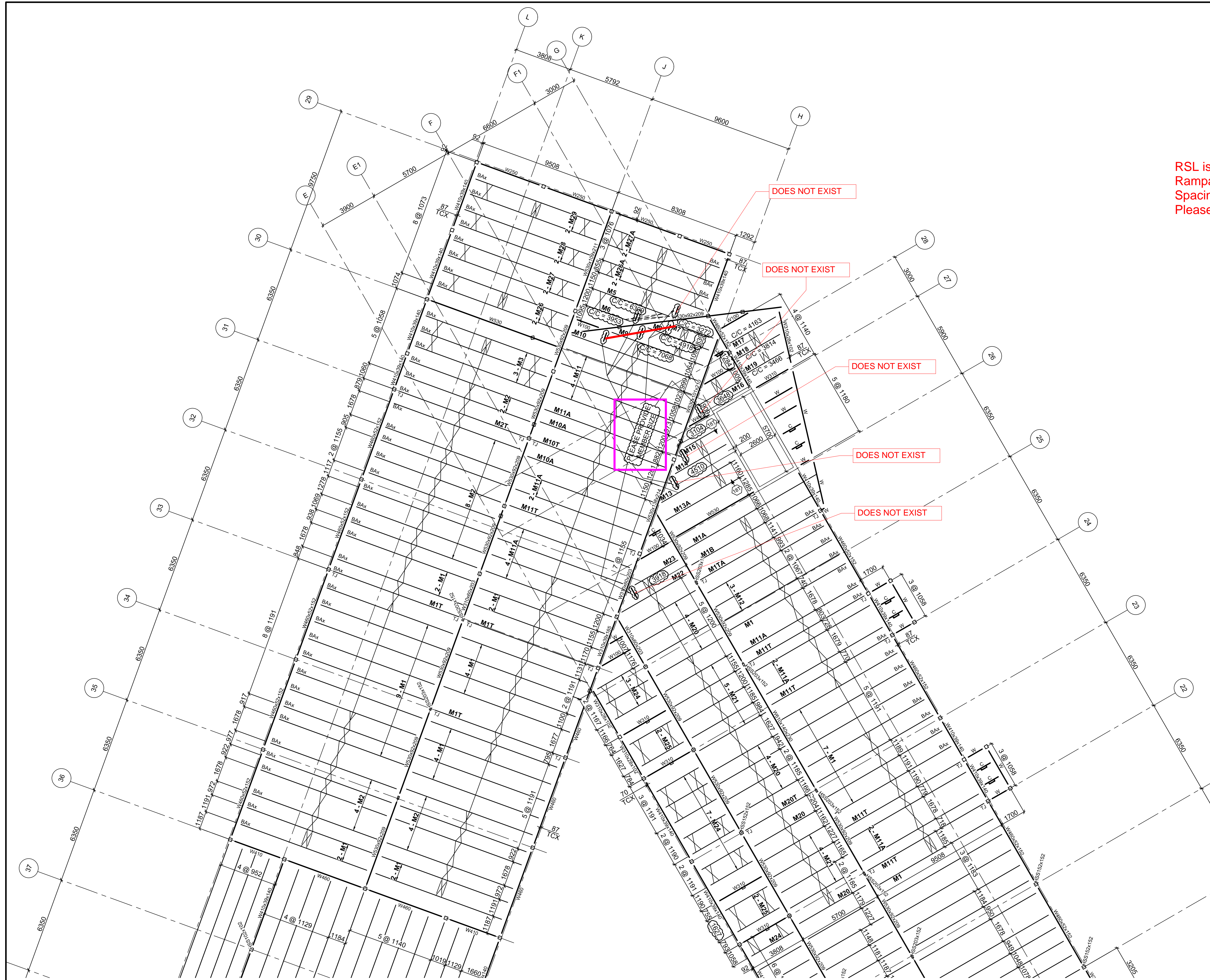
DESCRIPTION: CANAM GROUP Inc. ENGINEER SEAL(S):

PROJECT: SEVEN GENER.ENERGY COMM. BLDG  
LOCATION: GRANDE PRAIRIE, AB  
TITLE: GENERAL NOTES & SECTIONS  
CUSTOMER: RAMPART STEEL LTD.  
ENGINEER: BEIRSTO & ASSOCIATES

ST. GEORGE (QC) 1-888-849-5910 - email: geodon.draw@canamgroupinc.com  
MISSISSAUGA (ON) 1-800-446-8897 - email: tvonits.drafting@canamgroupinc.com  
MONCTON (NB) 1-800-210-7833 - email: moncton.draw@canamgroupinc.com  
CALGARY (AB) 1-866-203-2011 - email: calgary.drafting@canamgroupinc.com

These Joists hereon are designed and fabricated to: CAN/CSA S16-14, S136-12 & CNB 2010

This drawing is to be used for the erection of steel joist, deck and related Accessories supplied by Canam Group Inc. Engineer's stamp is for joist design only.



RSL is Aware that Joist Spacing Do not at this time Match with Rampart latest information for Joist. Canam will adjust Joist Spacings to suit Rampart and Project required Spacings. Please review for Design Conformance.

**PARTIAL SECOND FLOOR JOIST FRAMING PLAN (DIV. 01A)**

REFERENCE DWG: E-100 & E-101 REV. A

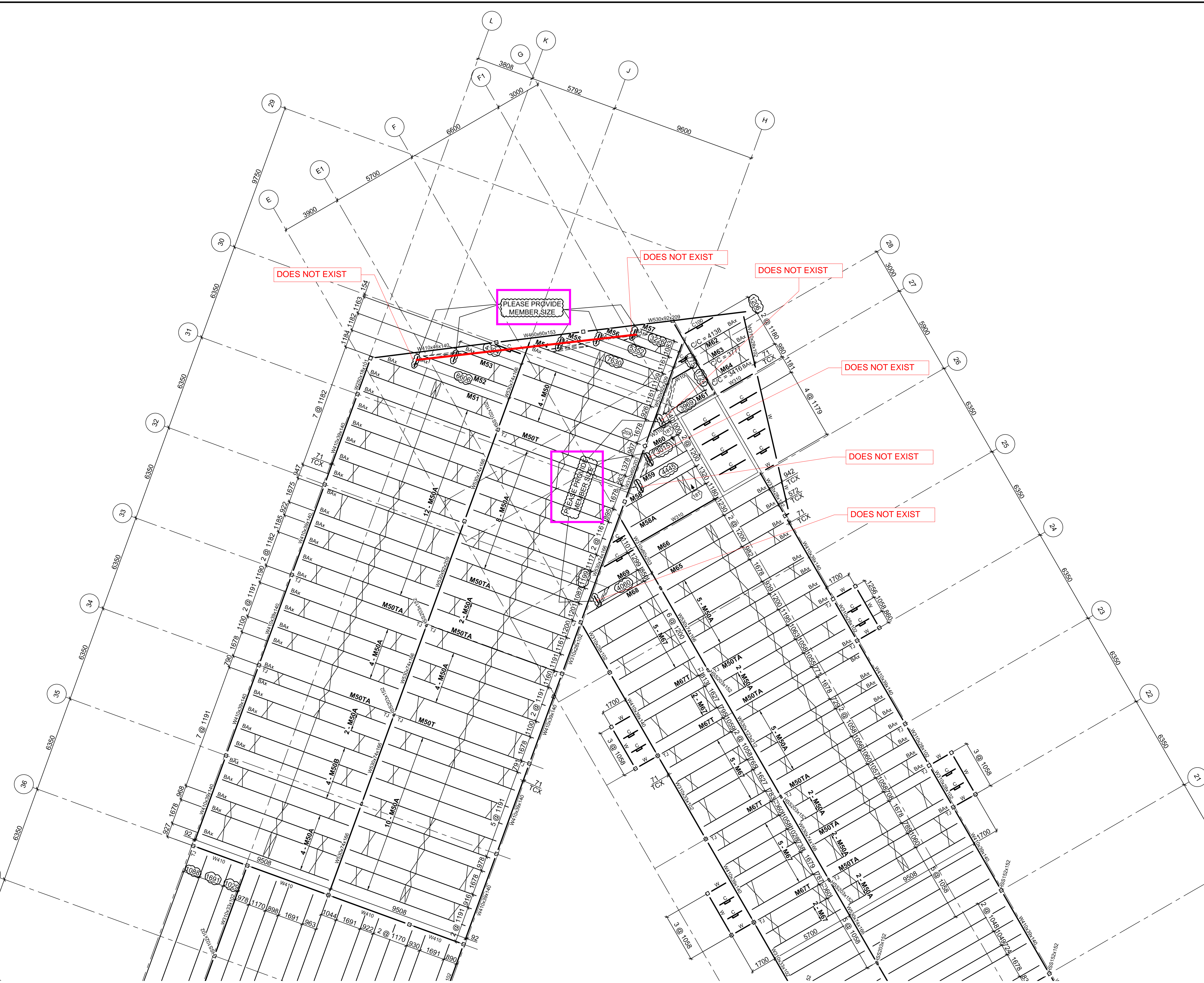
1. U/S DECK ELEVATION: DATUM 0" TYP..
2. STANDARD SHOE DEPTH IS 100 TYP..
3. 650 DEEP O.W.S.J. TYP..
4. JOIST BEARING AT WALL IS TYPE (8T) TYP..
5. JOIST BEARING AT COLUMN IS TYPE (8Y) TYP..
6. STANDARD JOIST CONNECTION IS TYPE (1X) AT INTERIOR AND (B) AT PERIMETER
7. JOIST CONNECTIONS SHOWN ARE CANAM GROUP Inc. STANDARDS TYP. U.N.O..
8. REGULAR BRIDGING TO BE - CROSS BOLTED
9. UPLIFT BRIDGING TO BE - CROSS BOLTED
10. ALL COLUMNS SUPPORTING JOISTS/GIRDERS ARE HSS152x152 TYP. U.N.O..
11. A325 5/8" Ø BOLTS TO BE USED FOR JOIST SEAT CONNECTIONS
12. REFER TO JE1 FOR STANDARD NOTES & SECTIONS.

PAINT: GREY-DOUBLE DIP

**FOR APPROVAL ONLY**  
**DON'T USE FOR CONSTRUCTION**  
**OR FOR ERECTION**

		ST. GEDEON (QC) 1-888-849-5810 - email: gedeon.draw@canamgroupinc.com MISSISSAUGA (ON) 1-800-446-8997 - email: toronto.drafting@canamgroupinc.com MONCTON (NB) 1-800-210-7833 - email: moncton.draw@canamgroupinc.com CALGARY (AB) 1-866-203-2001 - email: calgary.drafting@canamgroupinc.com	
A REVISION NO:	Apr-01-2020 DATE:	ISSUED FOR APPROVAL ONLY DESCRIPTION:	CANAM GROUP Inc. ENGINEER SEAL(S):
PROJECT NAME: SEVEN GENER.ENERGY COMM. BLDG LOCATION: GRANDE PRAIRIE, AB TITLE: 2ND FLOOR NORTH CUSTOMER: RAMPART STEEL LTD. ENGINEER: BEARSTO & ASSOCIATES		DRAWN BY: RO/CSz CHECKED BY: CALGARY DATE: Mar-31-2020 PROJECT: W01868 DRAWING NO: JE2	
These Joists herein are designed and fabricated to CAN/CSA S16-14, S136-12 & CNB 2010		This drawing is to be used for the erection of steel joist, deck and related Accessories supplied by Canam Group Inc. Engineer's stamp is for joist design only.	

RSL is Aware that Joist Spacing Do not at this time Match with Rampart latest information for Joist. Canam will adjust Joist Spacings to suit Rampart and Project required Spacings. Please review for Design Conformance.




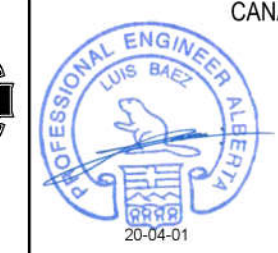



**PARTIAL ROOF JOIST FRAMING PLAN  
(DIV. 01A)**

REFERENCE DWG: E-104 & E-105 REV. A

1. U/S DECK ELEVATION: DATUM 0" TYP..
2. STANDARD SHOE DEPTH IS 100 TYP. U.N.O..
3. 650 DEEP O.W.S.J. TYP..
4. JOIST BEARING AT WALL IS TYPE (8T) TYP..
5. JOIST BEARING AT COLUMN IS TYPE (A) TYP. U.N.O..
6. STANDARD JOIST CONNECTION IS TYPE (1X) AT INTERIOR AND (B) AT PERIMETER
7. JOIST CONNECTIONS SHOWN ARE CANAM GROUP Inc. STANDARDS TYP. U.N.O..
8. REGULAR BRIDGING TO BE - CROSS BOLTED
9. UPLIFT BRIDGING TO BE - CROSS BOLTED
10. ALL COLUMNS SUPPORTING JOISTS/GIRDERS ARE HSS152x152 TYP. U.N.O..
11. A325 5/8" Ø BOLTS TO BE USED FOR JOIST SEAT CONNECTIONS
12. REFER TO JE1 FOR STANDARD NOTES & SECTIONS.

PAINT: GREY-DOUBLE DIP

**FOR APPROVAL ONLY  
DON'T USE FOR CONSTRUCTION  
OR FOR ERECTION**

A		Apr-01-2020	ISSUED FOR APPROVAL ONLY	 ST. GEDEON (QC) 1-888-849-5810 - email: gedeon.draw@canamgroupinc.com MISSISSAUGA (ON) 1-800-446-8997 - email: toronto.drafting@canamgroupinc.com MONCTON (NB) 1-800-210-7833 - email: moncton.draw@canamgroupinc.com CALGARY (AB) 1-866-203-2001 - email: calgary.drafting@canamgroupinc.com
REVISION NO:	DATE:	DESCRIPTION		
CANAM GROUP Inc. ENGINEER SEAL(S):				
 PROJECT NAME: SEVEN GENER.ENERGY COMM. BLDG LOCATION: GRANDE PRAIRIE, AB TITLE: ROOF NORTH CUSTOMER: RAMPART STEEL LTD. ENGINEER: BEARSTO & ASSOCIATES				
  		These Joists herein are designed and fabricated to CAN/CSA S16-14, S136-12 & CNB 2010 This drawing is to be used for the erection of steel joist, deck and related Accessories supplied by Canam Group Inc. Engineer's stamp is for joist design only.		
DRAWN BY:	RO/CSz	PLANT:	CALGARY	
DATE:	Mar-31-2020	PROJECT:	W01868	
			DRAWING NO: JE3	



**Job Number :** W01868

**Job Name :** SEVEN GENER.ENERGY COMM.  
BLDC

**Project Comments :**

There is no comment.

**Design Enclosed :**

M1, M2, M3, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, M17, M18, M19, M20, M21, M22, M23, M24, M25, M26, M27, M28, M29, M50, M51, M52, M53, M54, M55, M56, M57, M58, M59, M60, M61, M62, M63, M64, M65, M66, M67, M68, M69

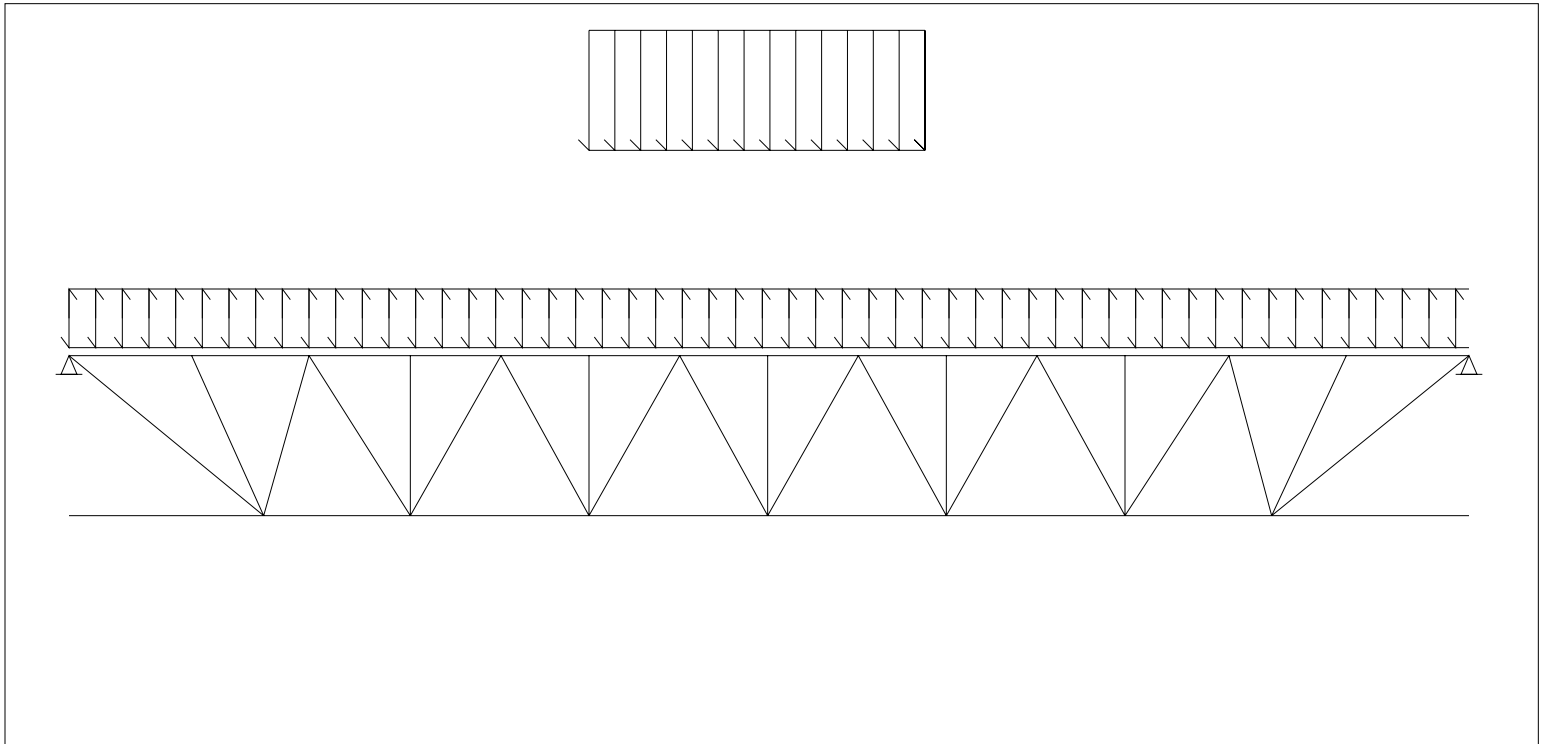
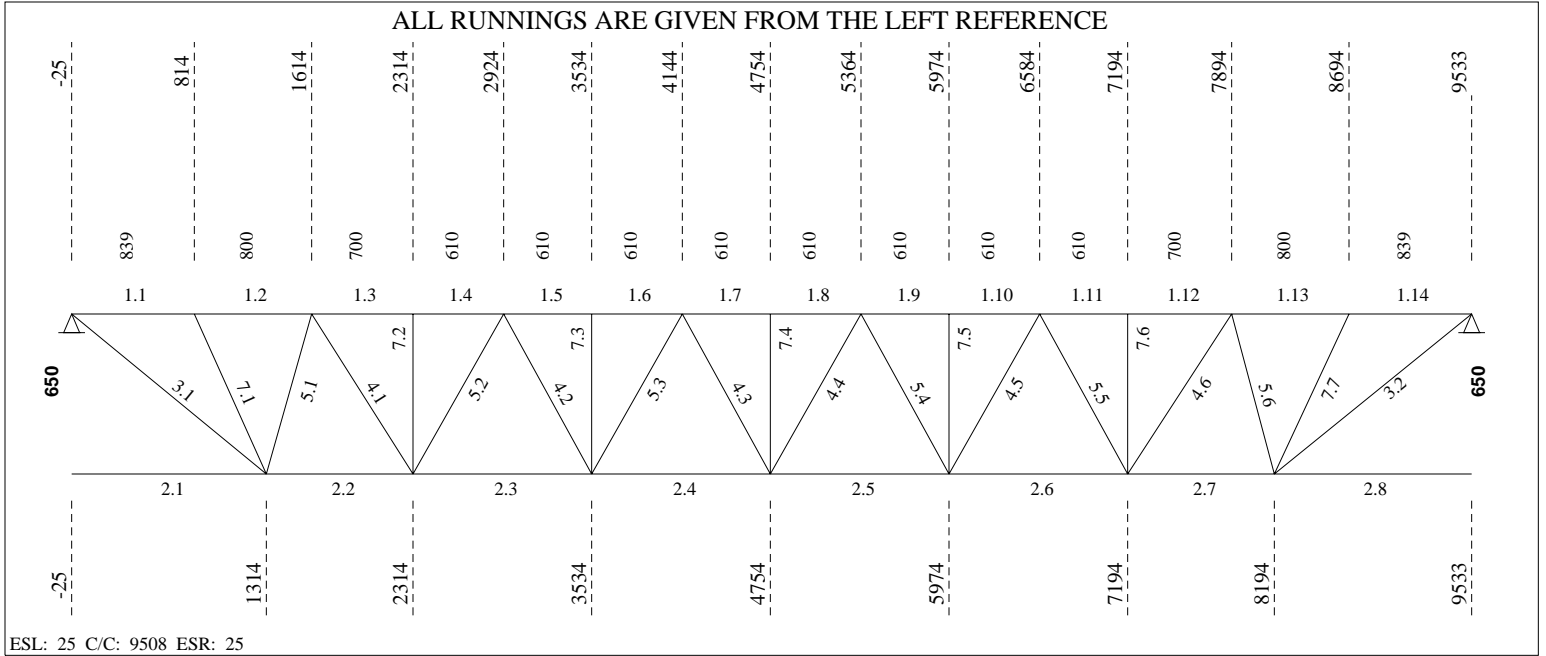
**Design Comments :**

There is no comment.

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M1 (Hybrid Mid Span, Symmetrical,, Free ends)





----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord	Cat.
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.40	3.05	2.40	3.05	3500	2300	1	2

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 14.76 mm (L/ 641)  
 Allowed deflection under total load..... = 39.41 mm (L/ 240)  
 Calculated deflection under service total load..... = 37.87 mm (L/ 250)  
 Gross joist inertia..... = 167.74 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 30.82 mm  
 Required joist inertia..... = 160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 622.06 mm)

Left Reaction = 66.11/ 0.00 kN Right Reaction = 65.88/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-126.49	LLV 2 x 2 x .197 (55 ksi)	z 73 0.79	839		
1.2	0.00	-118.28	do	z 74 0.86	800		
1.3	0.00	-189.17	do	z 64 0.95	700		
1.4	0.00	-189.17	do	z 56 0.80	610		
1.5	0.00	-245.80 x	do	xx 35 0.85	do		
1.6	0.00	-245.80 x	do	xx 35 0.85	do		
1.7	0.00	-265.92 x	do	xx 35 0.92	do		
1.8	0.00	-265.92 x	do	xx 35 0.92	do		
1.9	0.00	-244.50 x	do	xx 35 0.85	do		
1.10	0.00	-244.50 x	do	xx 35 0.85	do		
1.11	0.00	-188.32	do	z 56 0.80	610		
1.12	0.00	-188.32	do	z 64 0.94	700		
1.13	0.00	-117.80	do	z 74 0.85	800		
1.14	0.00	-126.01	LLV 2 x 2 x .197 (55 ksi)	z 73 0.79	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 3/4 x 3/16	yy164 0.52	1339		
2.2	142.80	0.00	do	yy164 0.81	1000		
2.3	221.33	0.00	do	yy164 0.95	1220		
2.4	261.07	0.00	do	yy164 0.97	do		
2.5	260.36	0.00	do	yy164 0.97	do		
2.6	220.25	0.00	do	yy164 0.95	1220		
2.7	142.21	0.00	do	yy164 0.80	1000		
2.8	0.00	0.00	LL 1 3/4 x 3/16	yy164 0.52	1339		
<b>End Diagonal</b>							
3.1	135.57	0.00	BR 15/16 (50W)	z 242 0.98	1444	5.00 - 63	
3.2	135.05	0.00	BR 15/16 (50W)	z 242 0.98	1444	5.00 - 62	

**Diagonal Towards End**

4.1	61.85	0.00	d	U 1 3/8 x 0.136	z 87	0.56	955	3.45 - 59
4.2	37.60	0.00		U 1 x 1 1/8 x 0.118	z 101	0.52	891	3.00 - 41
4.3	15.70	-6.42		U 1 x 7/8 x 0.091	z 121	0.49	do	2.30 - 38
4.4	16.19	-5.93		U 1 x 7/8 x 0.091	z 121	0.45	do	2.30 - 38
4.5	37.28	0.00		U 1 x 1 1/8 x 0.118	z 101	0.51	891	3.00 - 41
4.6	61.51	0.00	d	U 1 3/8 x 0.136	z 87	0.56	955	3.45 - 58

**Diagonal Towards Center**

5.1	0.00	-56.32	d	U 1 3/8 x 0.157	z 57	0.87	716	4.00 - 46
5.2	0.00	-47.17	d	U 1 3/8 x 0.136	z 73	0.89	891	3.45 - 45
5.3	0.00	-26.94		U 1 x 1 1/4 x 0.136	z 92	0.87	do	3.45 - 38
5.4	0.00	-27.34		U 1 x 1 1/4 x 0.136	z 92	0.88	do	3.45 - 38
5.5	0.00	-46.85	d	U 1 3/8 x 0.136	z 73	0.88	891	3.45 - 44
5.6	0.00	-56.07	d	U 1 3/8 x 0.157	z 57	0.87	716	4.00 - 46

**Secondary Web Member**

7.1	0.00	-27.99		U 1 x 1 1/8 x 0.118	z 84	0.98	820	3.00 - 31
7.2	0.00	-22.90		U 1 x 0.091	z 69	0.87	650	2.29 - 33
7.3	0.00	-23.72		do	z 69	0.90	do	2.29 - 34
7.4	0.00	-24.14		do	z 69	0.92	do	2.29 - 35
7.5	0.00	-23.69		do	z 69	0.90	do	2.29 - 34
7.6	0.00	-22.88		U 1 x 0.091	z 69	0.87	650	2.29 - 33
7.7	0.00	-27.98		U 1 x 1 1/8 x 0.118	z 84	0.98	820	3.00 - 31

**BRIDGING**

Maximum spacing between rows of bridging  
 @ Top Chord: 5281.13 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6886.82 ==> 1 Row(s) Minimum Acc. to the code

POSITION @ Top Chord 4754 @ Bottom Chord 4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

**PARTIAL LOADS**

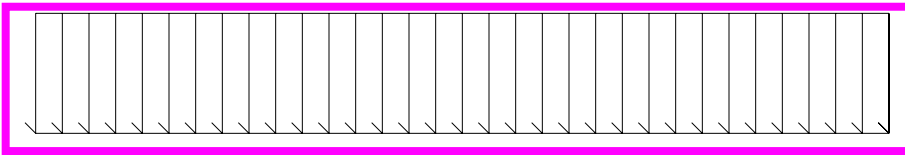
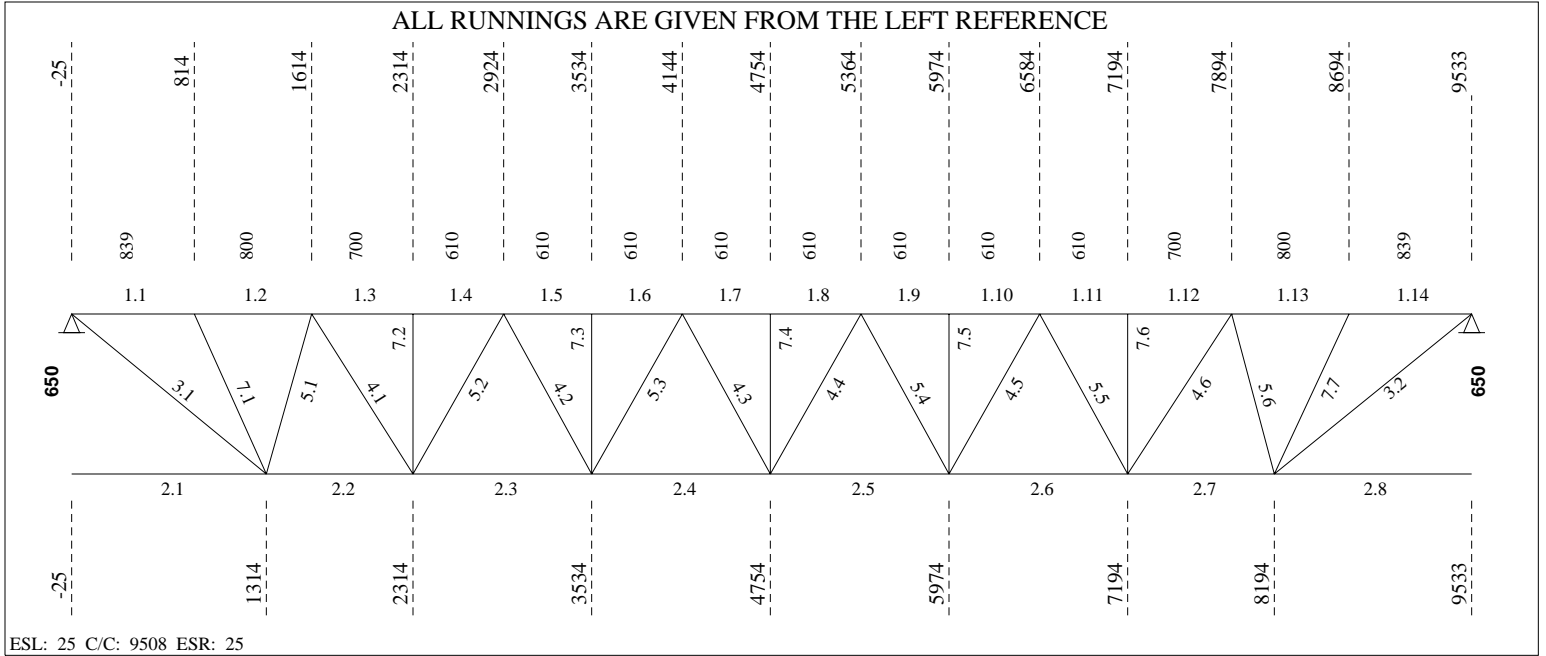
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 159 / 174 Area to Paint : 10.04 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

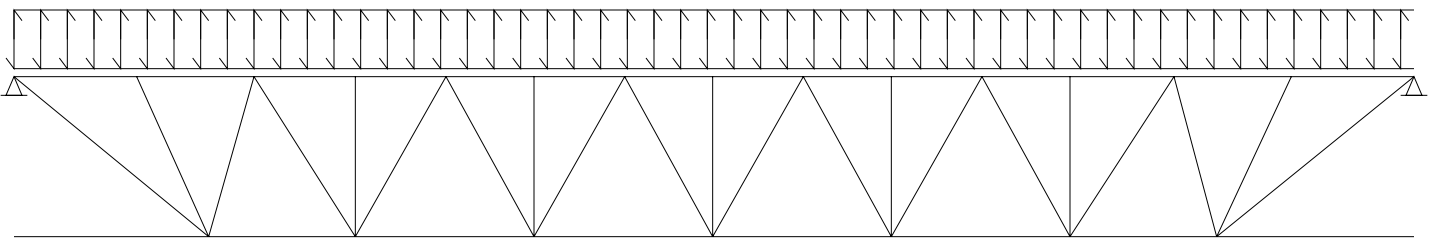
JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M2 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



**WHY ONLY  
PARTIAL  
LOAD?**

**EG: M2 SOUTH  
OF GL35 B/W  
GLH AND GLJ  
SHOULD BE  
FULL 4.8 KPA**



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord	Cat.
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.40	3.05	2.40	3.05	0	5800	1	2

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 16.34 mm (L/ 579)  
 Allowed deflection under total load..... = 39.41 mm (L/ 240)  
 Calculated deflection under service total load..... = 37.50 mm (L/ 252)  
 Gross joist inertia..... = 179.60 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 29.64 mm  
 Required joist inertia..... = 160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 619.86 mm)

Left Reaction = 79.08/ 0.00 kN Right Reaction = 68.79/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>								
1.1	0.00	-150.15	L 2 1/8 x 2 1/8 x.197 55 ksi	z 68	0.91	839		
1.2	0.00	-138.99	do	z 69	0.96	800		
1.3	0.00	-218.41	do	z 60	0.98	700		
1.4	0.00	-218.41	do	z 53	0.89	610		
1.5	0.00	-274.68	x do	xx 33	0.88	do		
1.6	0.00	-274.68	x do	xx 33	0.88	do		
1.7	0.00	-289.14	x do	xx 33	0.92	do		
1.8	0.00	-289.14	x do	xx 33	0.92	do		
1.9	0.00	-261.89	x do	xx 33	0.85	do		
1.10	0.00	-261.89	x do	xx 33	0.84	do		
1.11	0.00	-199.76	do	z 53	0.77	610		
1.12	0.00	-199.76	do	z 60	0.88	700		
1.13	0.00	-124.29	do	z 69	0.82	800		
1.14	0.00	-132.52	L 2 1/8 x 2 1/8 x.197 55 ksi	z 68	0.74	839		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 7/8 x 1 7/8 x.197 CF	yy154	0.56	1339		
2.2	167.24	0.00	do	yy155	0.84	1000		
2.3	251.77	0.00	do	yy155	0.96	1220		
2.4	287.13	0.00	do	yy155	0.97	do		
2.5	280.68	0.00	do	yy155	0.97	do		
2.6	234.68	0.00	do	yy155	0.94	1220		
2.7	150.20	0.00	do	yy155	0.79	1000		
2.8	0.00	0.00	LL 1 7/8 x 1 7/8 x.197 CF	yy154	0.50	1339		
<b>End Diagonal</b>								
3.1	160.37	0.00	SB 1" (50 ksi)	z 197	0.80	1444	6.35 - 83	
3.2	141.54	0.00	BR 1'' (50W)	z 227	0.90	1444	5.00 - 65	

**Diagonal Towards End**

4.1	69.17	0.00	d	U 1 3/8 x 0.157	z 85	0.54	955	4.00 - 57
4.2	38.67	0.00		U 1 x 1 1/8 x 0.118	z 101	0.53	891	3.00 - 42
4.3	15.70	-10.42		U 1 x 7/8 x 0.091	z 121	0.80	do	2.30 - 38
4.4	20.20	-5.93		U 1 x 7/8 x 0.091	z 121	0.45	do	2.30 - 38
4.5	41.29	0.00		U 1 x 1 1/8 x 0.118	z 101	0.57	891	3.00 - 45
4.6	65.80	0.00	d	U 1 3/8 x 0.157	z 85	0.52	955	4.00 - 54

**Diagonal Towards Center**

5.1	0.00	-64.95	d	U 1 3/8 x 0.176	z 57	0.89	716	4.47 - 47
5.2	0.00	-50.89	d	U 1 3/8 x 0.136	z 73	0.96	891	3.45 - 48
5.3	2.11	-26.94	d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.63	do	3.00 - 38
5.4	0.00	-31.35	d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.73	do	3.00 - 38
5.5	0.00	-50.86	d	U 1 3/8 x 0.136	z 73	0.96	891	3.45 - 48
5.6	0.00	-59.28	d	U 1 3/8 x 0.176	z 57	0.81	716	4.47 - 43

**Secondary Web Member**

7.1	0.00	-28.47		U 1 x 1 1/8 x 0.118	z 84	0.99	820	3.00 - 31
7.2	0.00	-23.50		U 1 x 0.091	z 69	0.89	650	2.29 - 34
7.3	0.00	-24.31		do	z 69	0.92	do	2.29 - 35
7.4	0.00	-24.61		do	z 69	0.94	do	2.29 - 35
7.5	0.00	-24.04		do	z 69	0.91	do	2.29 - 34
7.6	0.00	-23.11		U 1 x 0.091	z 69	0.88	650	2.29 - 33
7.7	0.00	-28.10		U 1 x 1 1/8 x 0.118	z 84	0.98	820	3.00 - 31

**BRIDGING**

Maximum spacing between rows of bridging  
 @ Top Chord: 5571.89 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 7303.16 ==> 1 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 4754 4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

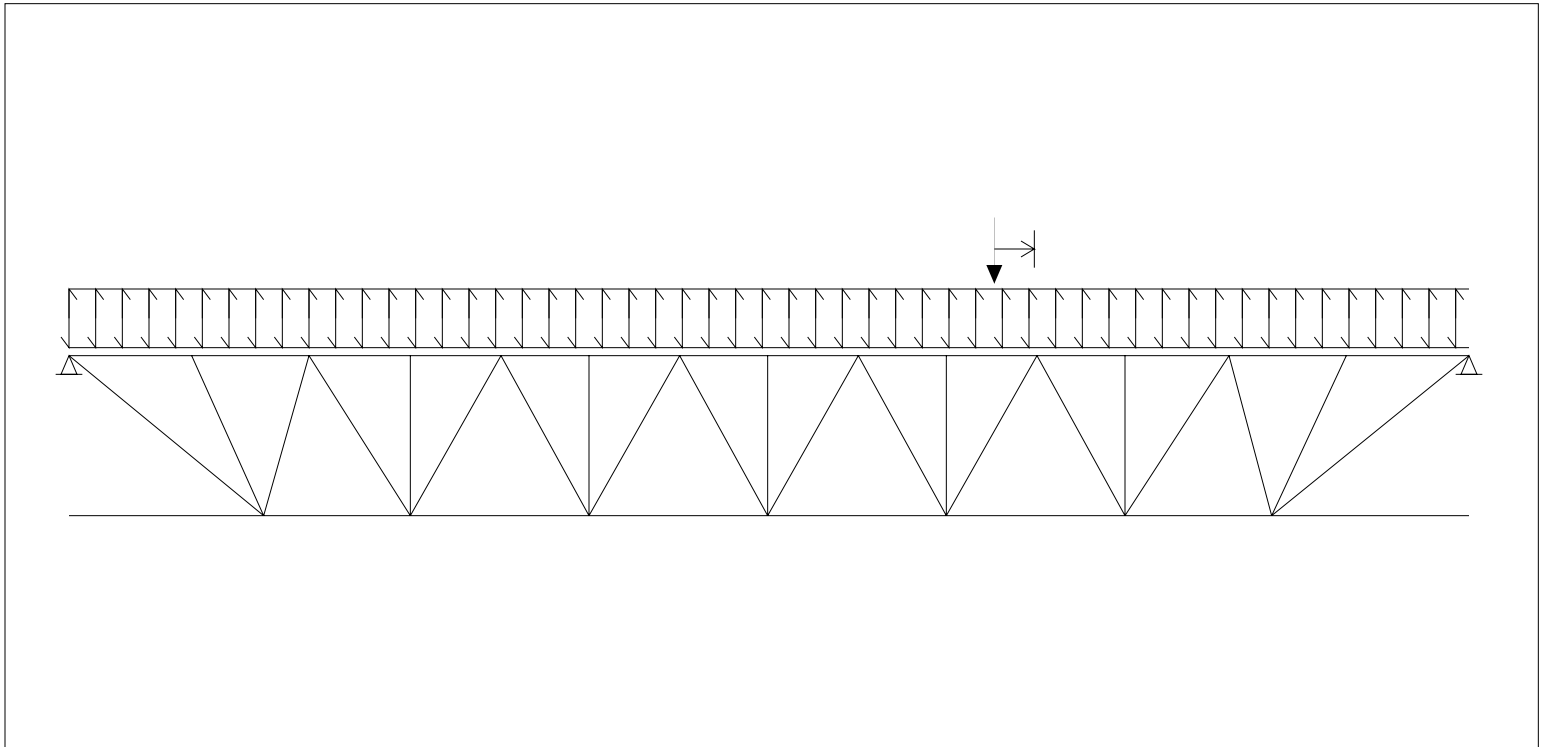
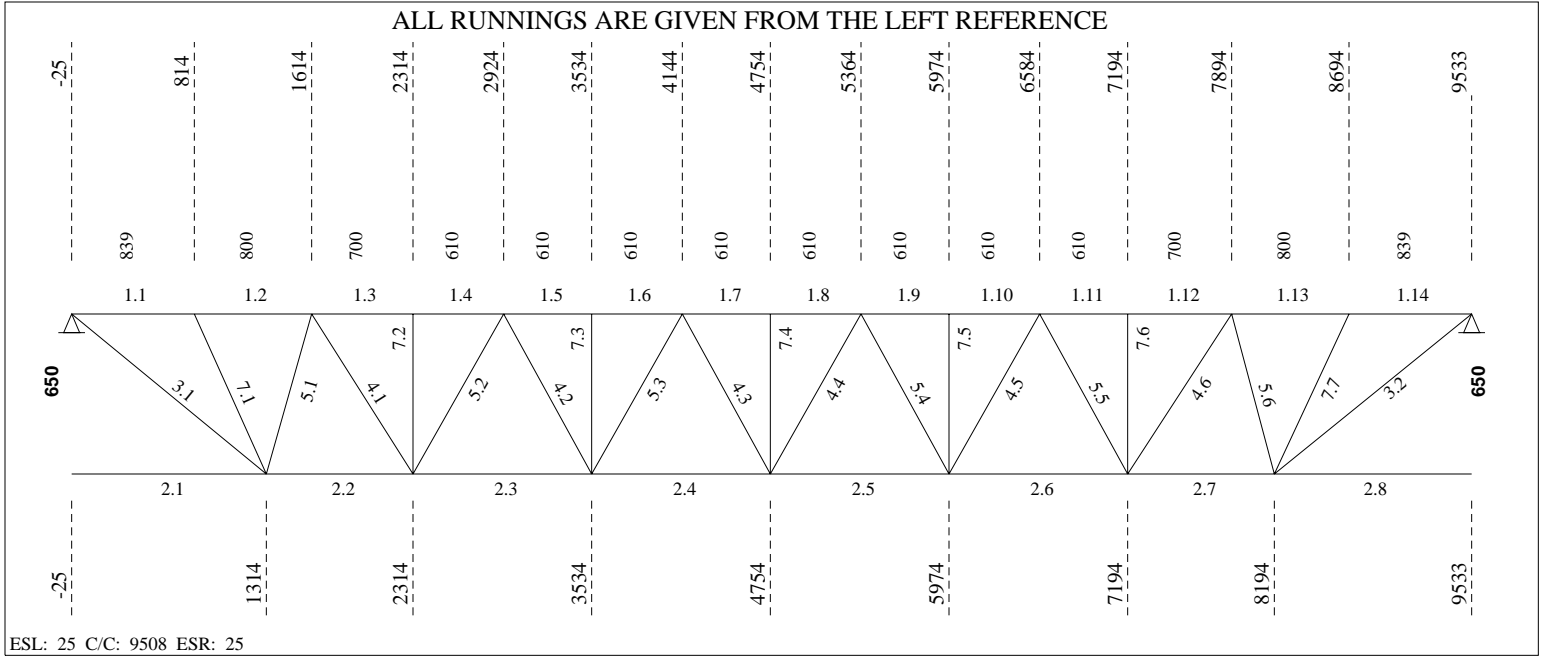
Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 172 / 188 Area to Paint : 10.51 m2 Material Sort : Cost

The Web-Fitting has Problems

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M3 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:    5.21 kN/m<sup>2</sup> (    6.62 kN/m)    SPACING...:  1.27 m  
 (L) LIVE LOAD.....:    2.40 kN/m<sup>2</sup> (    3.05 kN/m)    Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....:    0.00 kN/m<sup>2</sup> (    0.00 kN/m)

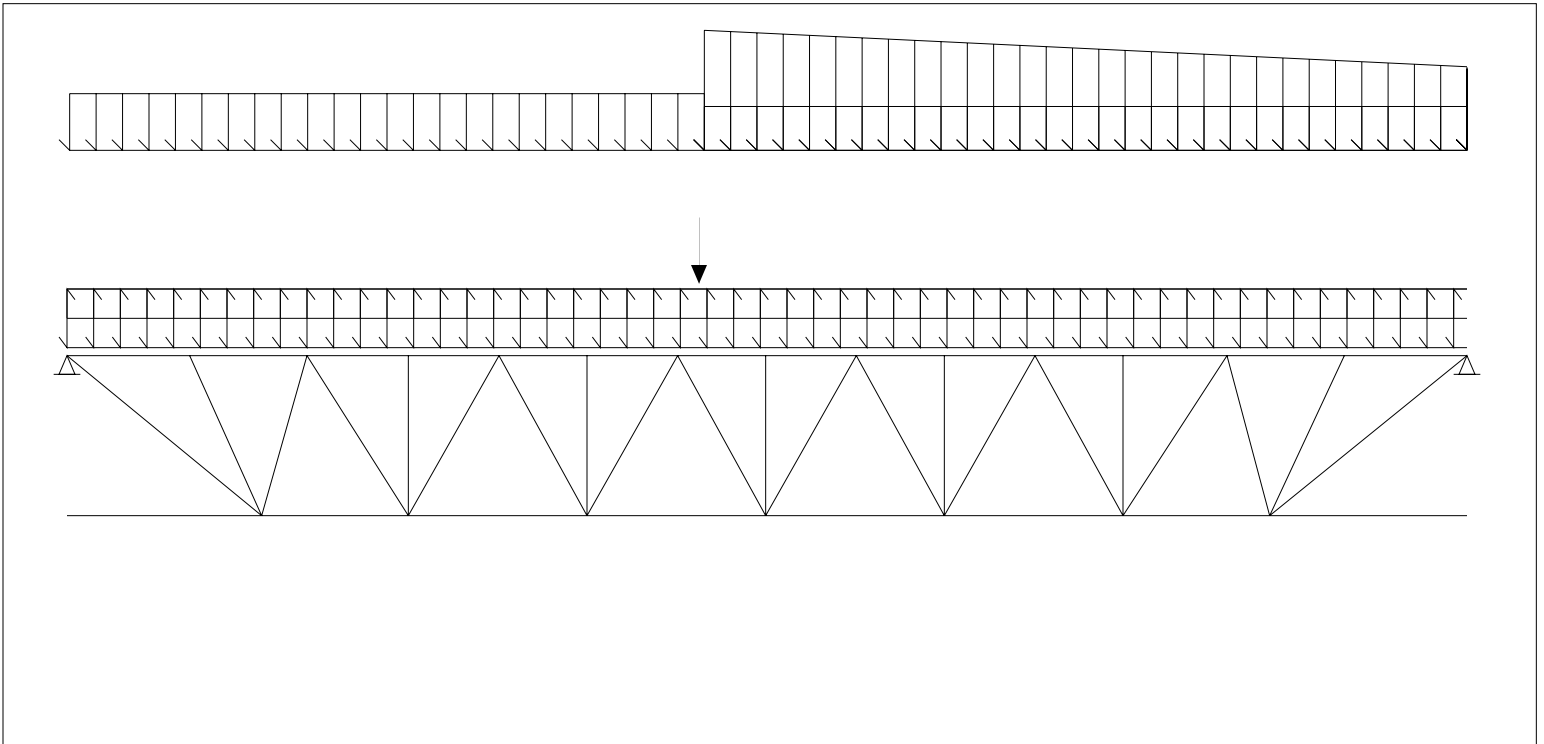
----- **CONCENTRATED LOADS (From Axis)** -----

No	Sp	Hole	Dead Load [kN]	Live load [kN]	Snow Load [kN]	Gross Uplift [kN]	Start [mm]	End [mm]	Cat.	Chord 1/2	Incl. [deg]
1	1	No	11.25	0.00	0.00	0.00	6300	9508	8	1	90

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =    19.70 mm (L/ 480)  
 Calculated deflection under combined loads (L + 0.9S) =    9.29 mm (L/ 1018)  
 Allowed deflection under total load..... =    39.41 mm (L/ 240)  
 Calculated deflection under service total load..... =    35.88 mm (L/ 264)  
 Gross joist inertia..... =    192.76 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... =    31.56 mm  
 Required joist inertia..... =    160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

===== **LOAD NO 2 ( M3#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**CONCENTRATED LOADS (From Axis)**

No	Sp	Hole	Dead Load [kN]	Live load [kN]	Snow Load [kN]	Gross Uplift [kN]	Position [mm]	Spacing [mm]	Cat. 0-9	Chord 1/2	Incl. [deg]
1	1	No	11.25	0.00	0.00	0.00	4300	4300	2	1	90

**PARTIAL LOADS (From Axis)**

No	Span	Left [kN/m <sup>2</sup> ]	Left [kN/m]	Right [kN/m <sup>2</sup> ]	Right [kN/m]	Start [mm]	Length [mm]	Chord	Cat.
1	1	2.40	3.05	2.40	3.05	0	4300	1	2
2	1	1.86	2.36	1.86	2.36	4300	5208	1	2
3	1	5.09	6.46	3.54	4.50	4300	5208	1	2

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 19.70 mm (L/ 480)  
 Calculated deflection under combined loads (L + 0.9S) = 18.28 mm (L/ 517)  
 Allowed deflection under total load..... = 39.41 mm (L/ 240)  
 Calculated deflection under service total load..... = 32.51 mm (L/ 291)  
 Required joist inertia..... = 160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**F O R C E S I N M E M B E R S [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 616.70 mm)

Left Reaction = 65.95/ 0.00 kN Right Reaction = 74.80/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-127.26	L 2 3/8 x 2 3/8 x.236 55 ksi	z 61 0.51	839		
1.2	0.00	-118.99	do	z 62 0.57	800		
1.3	0.00	-190.23	do	z 54 0.59	700		
1.4	0.00	-190.23	do	z 47 0.54	610		
1.5	0.00	-247.05	do	z 47 0.67	do		
1.6	0.00	-247.05	do	z 47 0.89	do		
1.7	0.00	-276.04	do	z 47 0.95	do		
1.8	0.00	-276.04	do	z 47 0.93	do		
1.9	0.00	-267.69	do	z 47 0.88	do		
1.10	0.00	-267.69	do	z 47 0.93	do		
1.11	0.00	-210.43	do	z 47 0.88	610		
1.12	0.00	-210.43	do	z 54 0.89	700		
1.13	0.00	-132.54	do	z 62 0.89	800		
1.14	0.00	-143.30	L 2 3/8 x 2 3/8 x.236 55 ksi	z 61 0.85	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	L 2 1/8 x 2 1/8 x.157 55 ksi	z 122 0.52	1339		
2.2	143.64	0.00	do	yy106 0.80	1000		
2.3	222.52	0.00	do	z 116 0.95	1220		
2.4	263.85	0.00	do	z 116 1.00	do		
2.5	274.16	0.00	do	z 116 1.00	do		
2.6	243.83	0.00	do	z 116 0.99	1220		



2.7	160.34	0.00		do	yy106	0.88	1000
2.8	0.00	0.00	L 2 1/8 x 2 1/8 x.157 55 ksi		z 122	0.58	1339

**End Diagonal**

3.1	135.22	0.00		BR 1'' (50W)	z 227	0.86	1444	5.00 - 62
3.2	152.26	0.00		BR 1'' (50W)	z 227	0.97	1444	5.00 - 70

**Diagonal Towards End**

4.1	61.62	0.00		U 1 x 1 1/4 x 0.136	z 100	0.69	955	3.45 - 58
4.2	45.14	0.00		U 1 x 0.091	z 105	0.82	891	2.29 - 65
4.3	24.23	-6.05		U 1 x 7/8 x 0.091	z 121	0.52	do	2.30 - 38
4.4	23.05	-12.73		U 1 x 7/8 x 0.091	z 121	0.97	do	2.30 - 38
4.5	42.36	0.00		U 1 x 0.091	z 105	0.77	891	2.29 - 61
4.6	69.62	0.00		U 1 x 1 1/4 x 0.136	z 100	0.78	955	3.45 - 66

**Diagonal Towards Center**

5.1	0.00	-56.15	d	U 1 3/8 x 0.157	z 57	0.87	716	4.00 - 46
5.2	0.00	-50.58	d	U 1 3/8 x 0.157	z 72	0.77	891	4.00 - 41
5.3	0.00	-39.94	d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.94	do	3.00 - 44
5.4	6.55	-31.80	d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.75	do	3.00 - 38
5.5	0.00	-53.18	d	U 1 3/8 x 0.157	z 72	0.81	891	4.00 - 43
5.6	0.00	-63.29	d	U 1 3/8 x 0.157	z 57	0.98	716	4.00 - 52

**Secondary Web Member**

7.1	0.00	-27.98	d	U 1 3/8 x 0.136	z 67	0.50	820	3.45 - 38
7.2	0.00	-22.89		U 1 x 1 1/4 x 0.136	z 67	0.52	650	3.45 - 25
7.3	0.00	-23.70		U 1 x 1 1/4 x 0.136	z 67	0.54	do	3.45 - 25
7.4	0.00	-24.24		U 1 x 0.091	z 69	0.92	do	2.29 - 35
7.5	0.00	-38.20		U 1 x 1 1/4 x 0.136	z 67	0.87	do	3.45 - 36
7.6	0.00	-37.37		U 1 x 1 1/4 x 0.136	z 67	0.85	650	3.45 - 35
7.7	0.00	-46.06	d	U 1 3/8 x 0.136	z 67	0.82	820	3.45 - 44

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	6032.94 ==>	1 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	7795.98 ==>	3 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	4754	Add 1314
		4754
		Add 8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

CONCENTRATED LOADS (\* indicates that the conc. load is not directly on the panel point.)

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension

Hole: Top Chord with Holes at Conc. Loads

Definition of the categories (Cat.):

2 = at center of panel with no reinforcement

8 = anywhere along the joist for an interval

Chord: 1 = Top, 2 = Bottom

Inclination (Incl.): 90 = Vertical, 0 = Horizontal

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow



Mark : M3

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:03

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Project no.: W01868  
194 / 208

Designer: Luis Baez  
Area to Paint

Shop: Canam Group Calgary [Production]  
: 11.47 m2

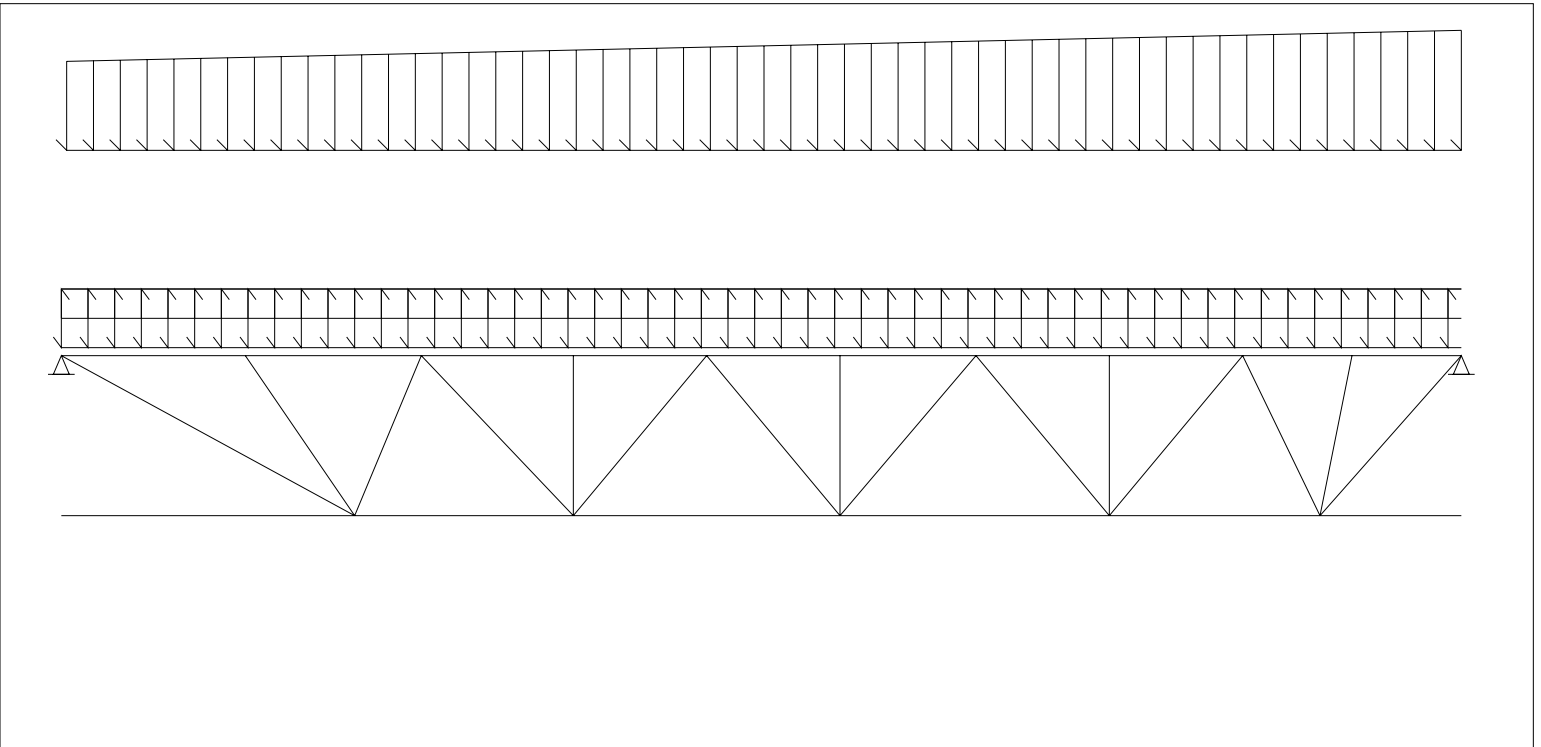
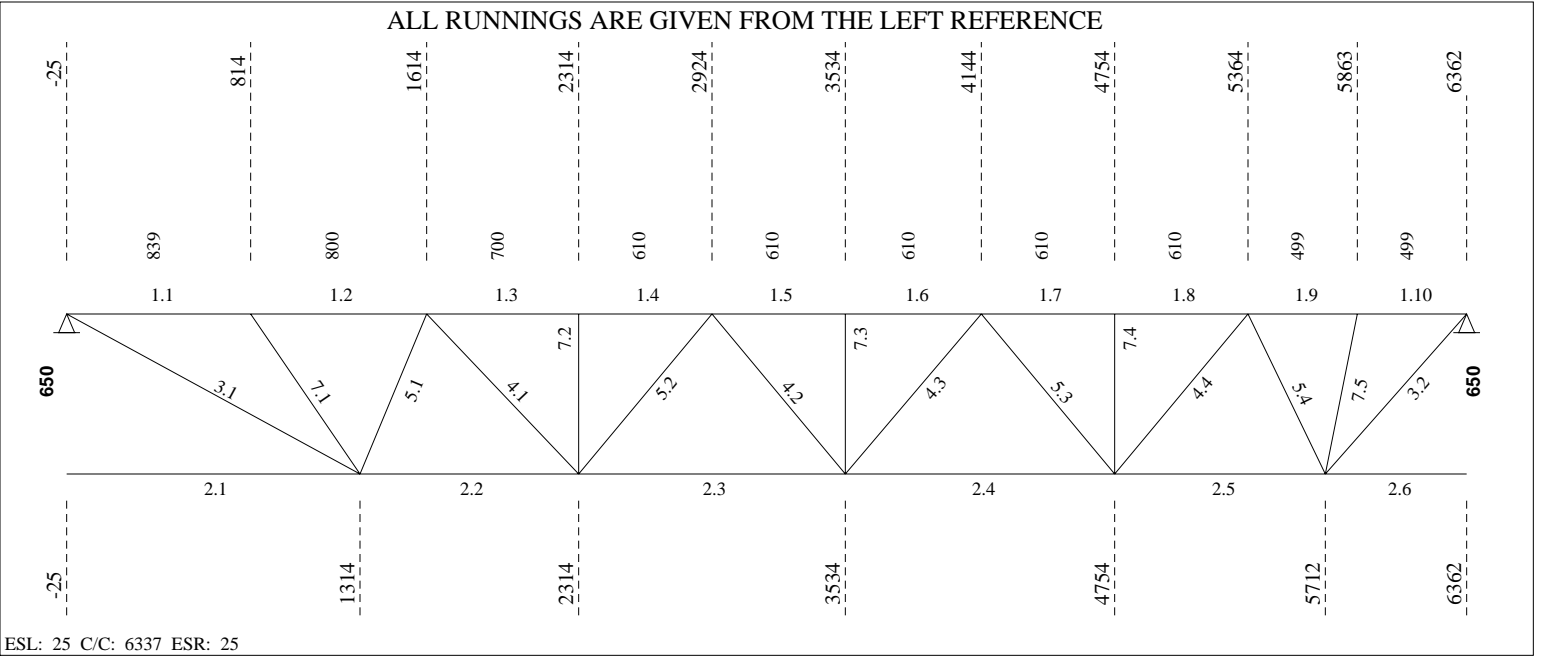
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M5 (Hybrid Mid Span, Asymmetrical, Free ends) aligned on M1

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.27 kN/m) SPACING...: 1.08 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.01 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 0.88 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]			1	8
1	1	3.78	4.09	5.09	5.51	0	6337	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 17.46 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 6.62 mm (L/ 949)  
 Allowed deflection under total load..... = 34.93 mm (L/ 180)  
 Calculated deflection under service total load..... = 9.09 mm (L/ 692)  
 Gross joist inertia..... = 123.98 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 6.24 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.78 mm)

Left Reaction = 39.96/ 0.00 kN Right Reaction = 42.18/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-72.60	LL 1 3/4 x 1 3/4 x .157 CF	z 82 0.93	839		
1.2	0.00	-64.79	do	z 84 0.93	800		
1.3	0.00	-94.98	do	z 73 0.84	700		
1.4	0.00	-94.98	do	z 64 0.76	610		
1.5	0.00	-102.24	do	z 64 0.68	do		
1.6	0.00	-102.24	do	z 64 0.68	do		
1.7	0.00	-78.08	do	z 64 0.52	do		
1.8	0.00	-78.08	do	z 64 0.52	610		
1.9	0.00	-35.87	do	z 52 0.35	499		
1.10	0.00	-37.47	LL 1 3/4 x 1 3/4 x .157 CF	z 47 0.20	499		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy170 0.37	1339		
2.2	77.01	0.00	do	yy170 0.49	1000		
2.3	102.47	0.00	do	yy170 0.49	1220		
2.4	94.15	0.00	do	yy170 0.49	1220		
2.5	53.91	0.00	do	z 120 0.45	958		
2.6	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 75 0.26	650		
<b>End Diagonal</b>							
3.1	78.15	0.00	BR 15/16 (50W)	z 242 0.57	1444	5.00 - 36	
3.2	53.10	0.00	BR 15/16 (50W)	z 149 0.39	885	5.00 - 25	
<b>Diagonal Towards End</b>							
4.1	25.61	0.00	U 1 x 7/8 x 0.091	z 144 0.55	955	2.30 - 38	
4.2	5.24	-5.77	do	z 121 0.44	891	do	
4.3	14.89	0.00	U 1 x 7/8 x 0.091	z 135 0.32	do	2.30 - 38	
4.4	34.83	0.00	U 1 x 0.091	z 105 0.63	891	2.29 - 50	

**Diagonal Towards Center**

5.1	0.00	-28.53	U 1 x 1 1/4 x 0.136	z 74	0.83	716	3.45 - 38
5.2	0.00	-14.05	U 1 x 1 1/8 x 0.118	z 91	0.55	891	3.00 - 38
5.3	0.00	-24.57	U 1 x 1 1/8 x 0.118	z 91	0.96	891	3.00 - 38
5.4	0.00	-36.96	d U 1 3/8 x 1 1/4 x 0.118	z 65	0.90	737	3.00 - 40

**Secondary Web Member**

7.1	0.00	-13.84	U 1 x 7/8 x 0.091	z 112	0.90	820	2.30 - 25
7.2	0.00	-10.37	do	z 88	0.47	650	do
7.3	0.00	-10.21	do	z 88	0.46	do	do
7.4	0.00	-9.95	do	z 88	0.45	650	do
7.5	0.00	-7.59	U 1 x 7/8 x 0.091	z 91	0.35	667	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4815.82 ==>	1 Row(s) Minimum
@ Bottom Chord:	6651.37 ==>	1 Row(s) Minimum

Lateral Supports

Deck (304.8)
Acc. to the code

POSITION

@ Top Chord
4754

@ Bottom Chord
4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension,

3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

81 / 89

Area to Paint

: 6.02 m2

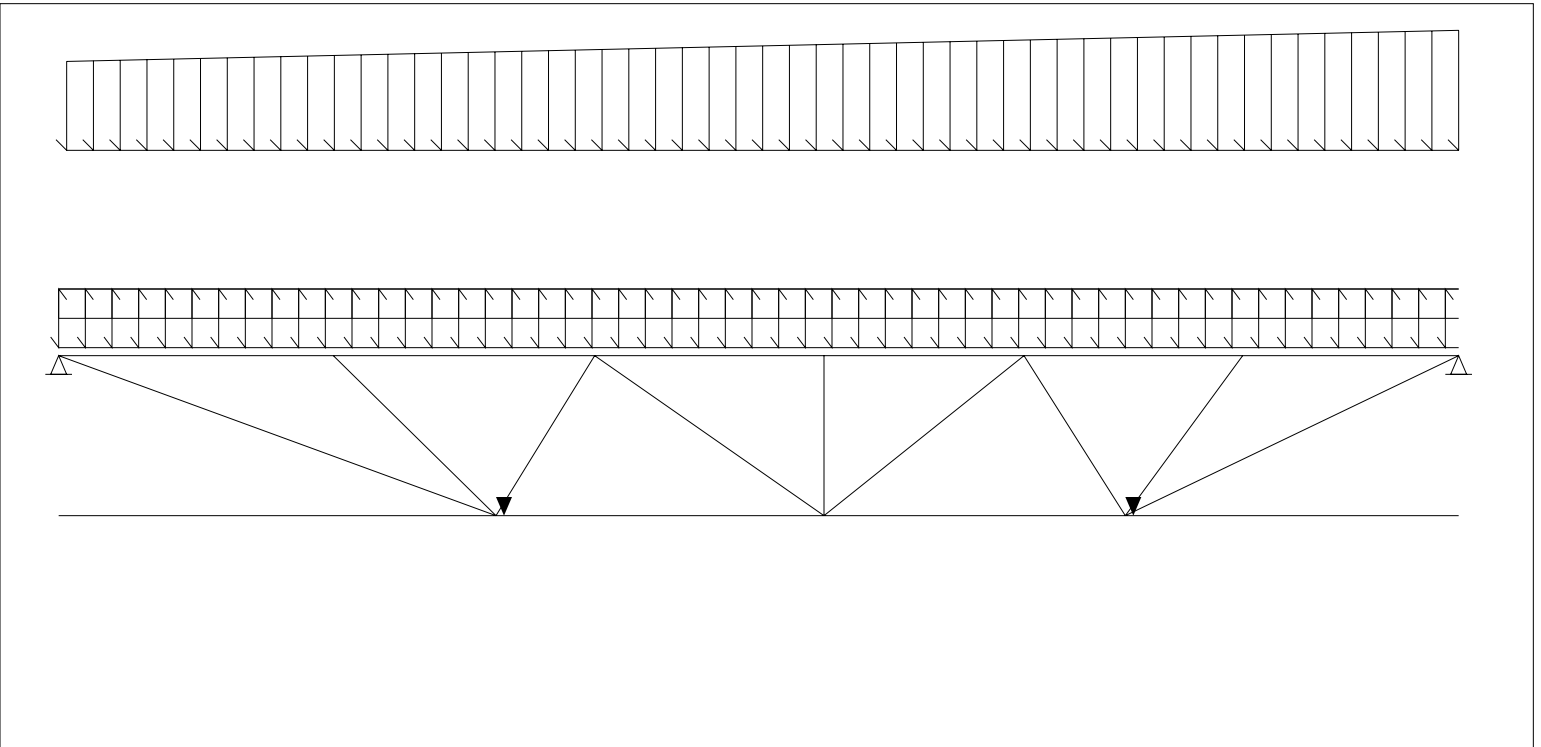
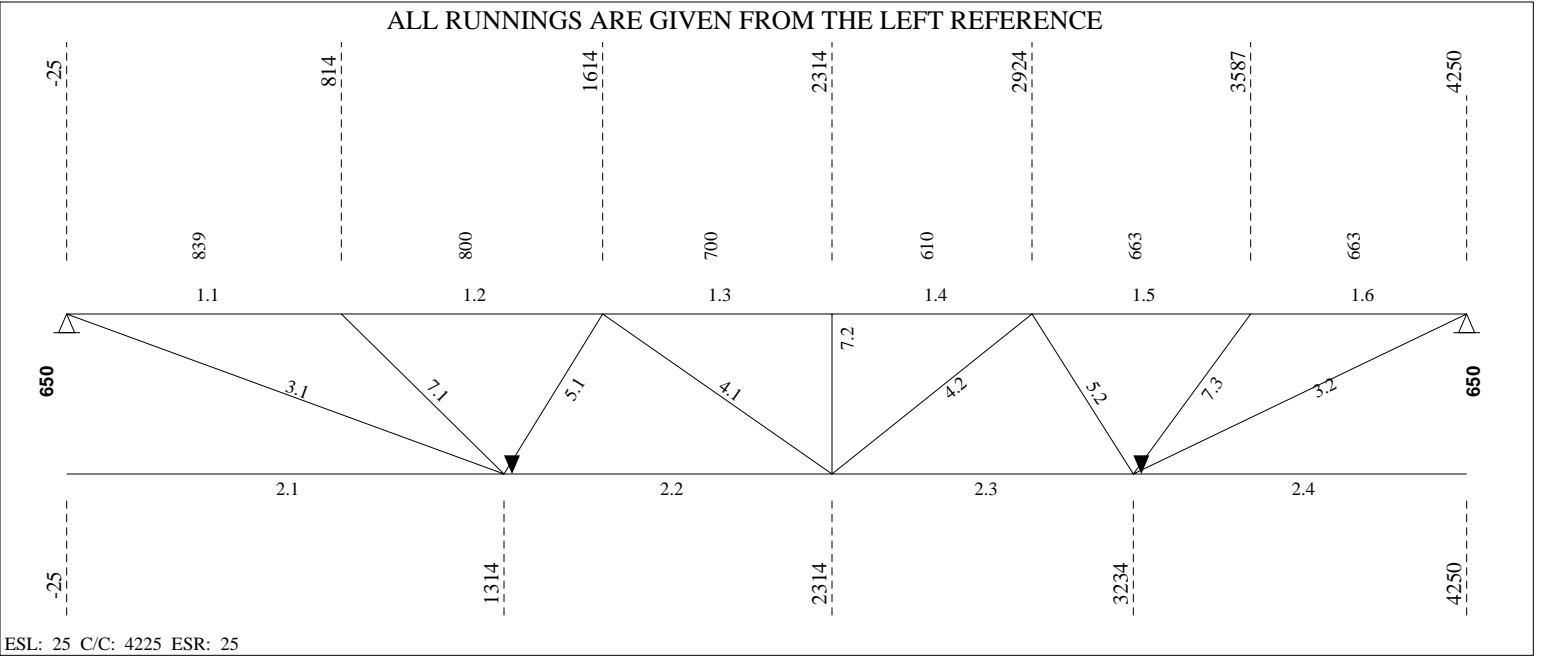
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M6 (Hybrid Mid Span, Asymmetrical, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.27 kN/m) SPACING...: 1.08 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.01 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 0.88 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	3.78	4.09	5.09	5.51	0	4225	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 11.60 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.99 mm (L/ 2093)  
 Allowed deflection under total load..... = 23.19 mm (L/ 180)  
 Calculated deflection under service total load..... = 2.73 mm (L/ 1527)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.89 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 26.54/ 0.00 kN Right Reaction = 28.00/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-44.81	LL 1 5/8 x 1 5/8 x .157	z 89 0.93	839		
1.2	0.00	-36.93	do	xx 56 0.93	800		
1.3	0.00	-45.20	do	z 79 0.72	700		
1.4	0.00	-45.20	do	z 69 0.61	610		
1.5	0.00	-31.64	do	z 75 0.69	663		
1.6	0.00	-36.61	LL 1 5/8 x 1 5/8 x .157	z 69 0.69	663		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.22	1339		
2.2	42.63	0.00	do	z 126 0.22	1000		
2.3	39.03	0.00	do	z 116 0.22	920		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 121 0.19	1016		
<b>End Diagonal</b>							
3.1	48.30	0.00	BR 15/16 (50W)	z 242 0.35	1444	5.00 - 22	
3.2	42.47	0.00	BR 15/16 (50W)	z 196 0.31	1164	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	6.51	-1.40	U 1 x 7/8 x 0.091	z 130 0.14	955	2.30 - 38	
4.2	10.79	0.00	U 1 x 7/8 x 0.091	z 135 0.23	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-13.88	U 1 x 0.091	z 76 0.68	716	2.29 - 38	
5.2	0.00	-17.08	U 1 x 0.091	z 77 0.85	720	2.29 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-13.39	U 1 x 7/8 x 0.091	z 112 0.87	820	2.30 - 25	
7.2	0.00	-9.57	do	z 88 0.43	650	do	



7.3 0.00 -10.79 U 1 x 7/8 x 0.091 z 101 0.58 740 2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging					Lateral Supports
@ Top Chord:	4614.56 ==>	1 Row(s) Minimum			Deck (304.8)
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum			Imposed and conc. load 5 or

POSITION	@ Top Chord	@ Bottom Chord
	2112.5	Add 1314
		Add 3234

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

PARTIAL LOADS

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

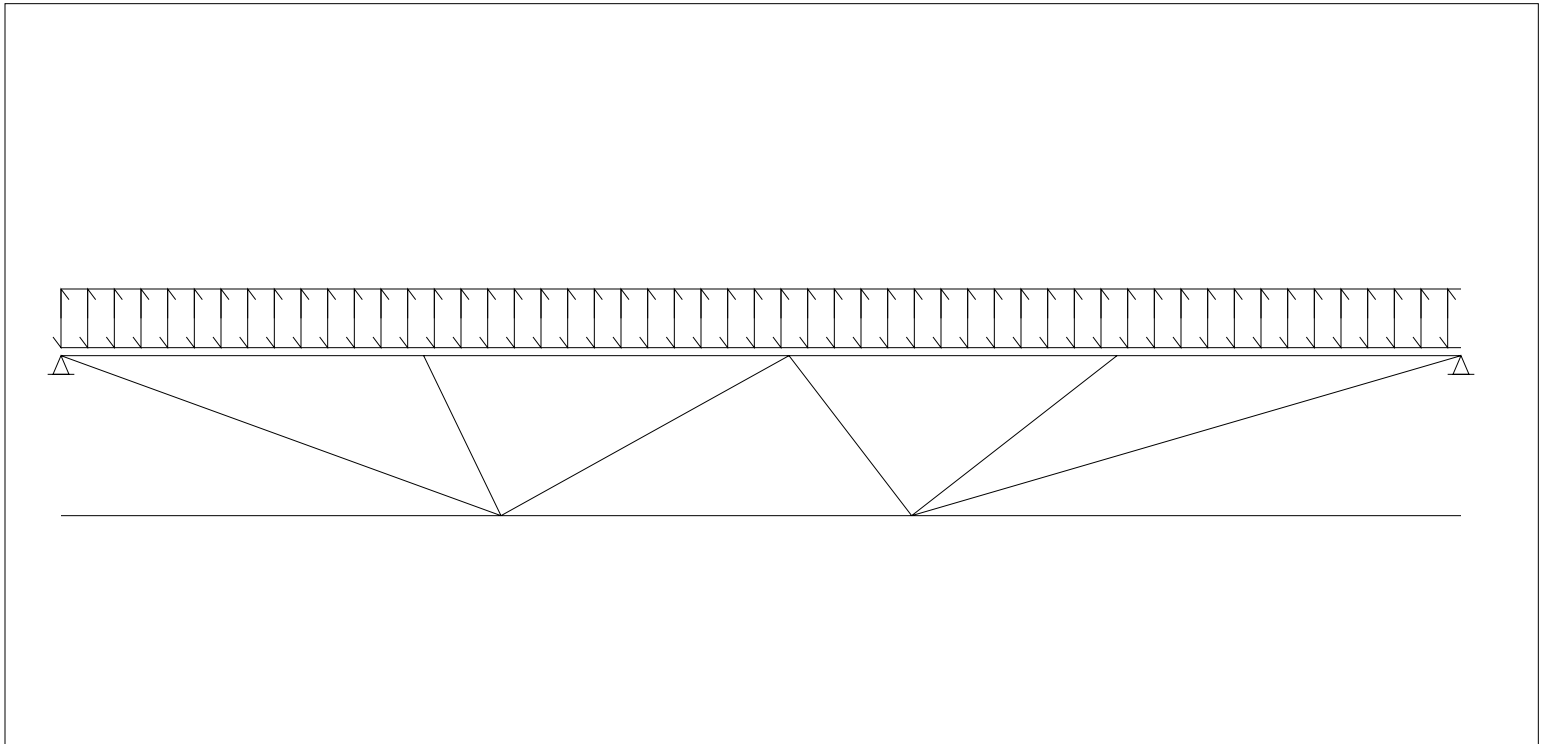
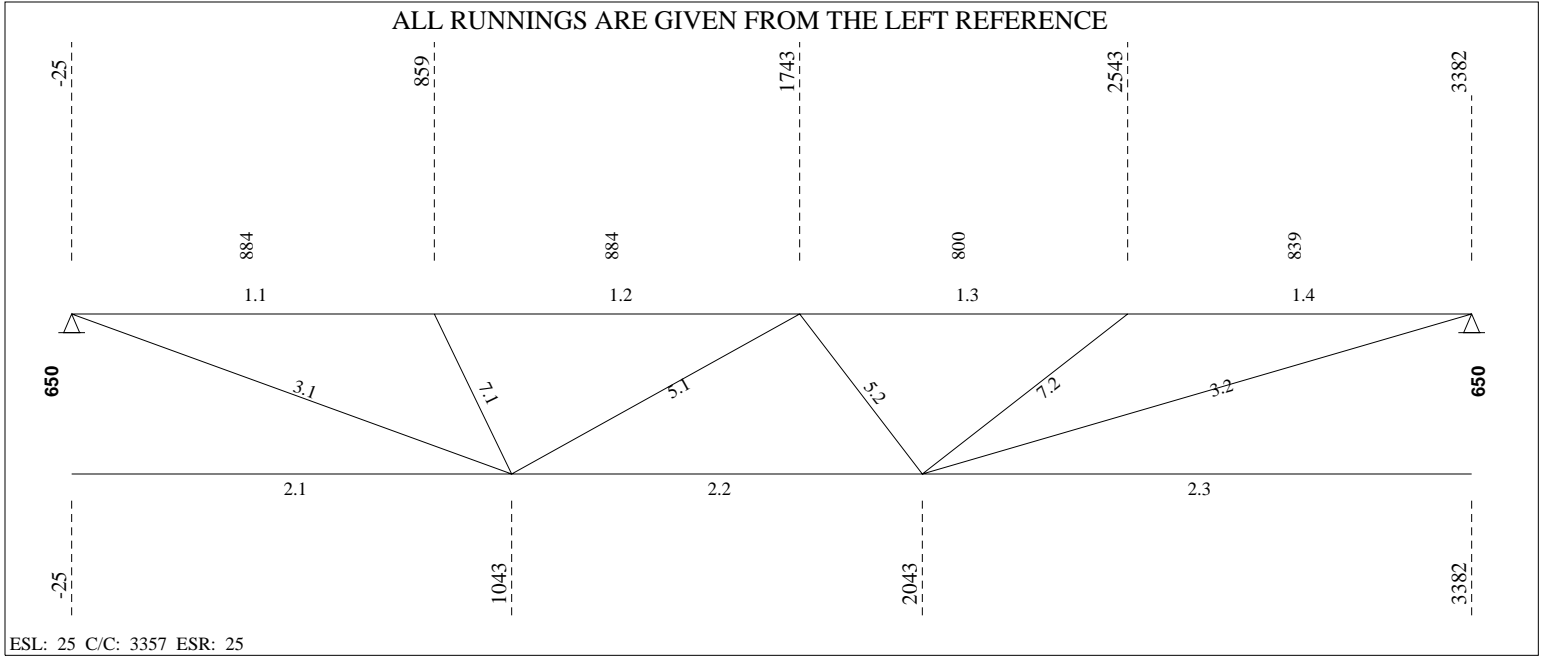
Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
50	/	60	Area to Paint	:	3.83 m2
					Material Sort : Cost



**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M7 (Hybrid Mid Span, Asymmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 9.19 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.92 mm (L/ 3600)  
 Allowed deflection under total load..... = 13.78 mm (L/ 240)  
 Calculated deflection under service total load..... = 1.92 mm (L/ 1726)  
 Gross joist inertia..... = 135.62 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.50 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.92 mm)

Left Reaction = 28.80/ 0.00 kN Right Reaction = 28.80/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-35.08	LL 1 3/4 x 3/16	z 86 0.98	884		
1.2	0.00	-30.67 x	do	xx 58 0.98	884		
1.3	0.00	-34.15	do	z 83 0.87	800		
1.4	0.00	-45.22	LL 1 3/4 x 3/16	z 81 0.87	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 128 0.18	1068		
2.2	38.04	0.00	do	z 126 0.22	1000		
2.3	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.22	1339		
<b>End Diagonal</b>							
3.1	40.01	0.00	BR 15/16 (50W)	z 203 0.29	1208	5.00 - 20	
3.2	48.69	0.00	BR 15/16 (50W)	z 242 0.35	1444	5.00 - 23	
<b>Diagonal Towards Center</b>							
5.1	1.70	-14.12	U 1 x 1 1/8 x 0.118	z 98 0.72	955	3.00 - 38	
5.2	0.50	-11.96	U 1 x 7/8 x 0.091	z 97 0.72	716	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-22.16	U 1 x 0.091	z 72 0.87	676	2.29 - 32	
7.2	0.00	-26.28	U 1 x 1 1/8 x 0.118	z 84 0.92	820	3.00 - 29	

----- **BRIDGING** -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4782.69 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Acc. to the code

Equally Spaced Bridging between Uplift Rows : No



Mark : M7

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:03

---

-U = 1 U profile,

-UU = 2 U profiles one inside the other, -CL = Crimped angle

Project no.: W01868  
45 / 55

Designer: Luis Baez  
Area to Paint

Shop: Canam Group Calgary [Production]  
: 3.13 m2

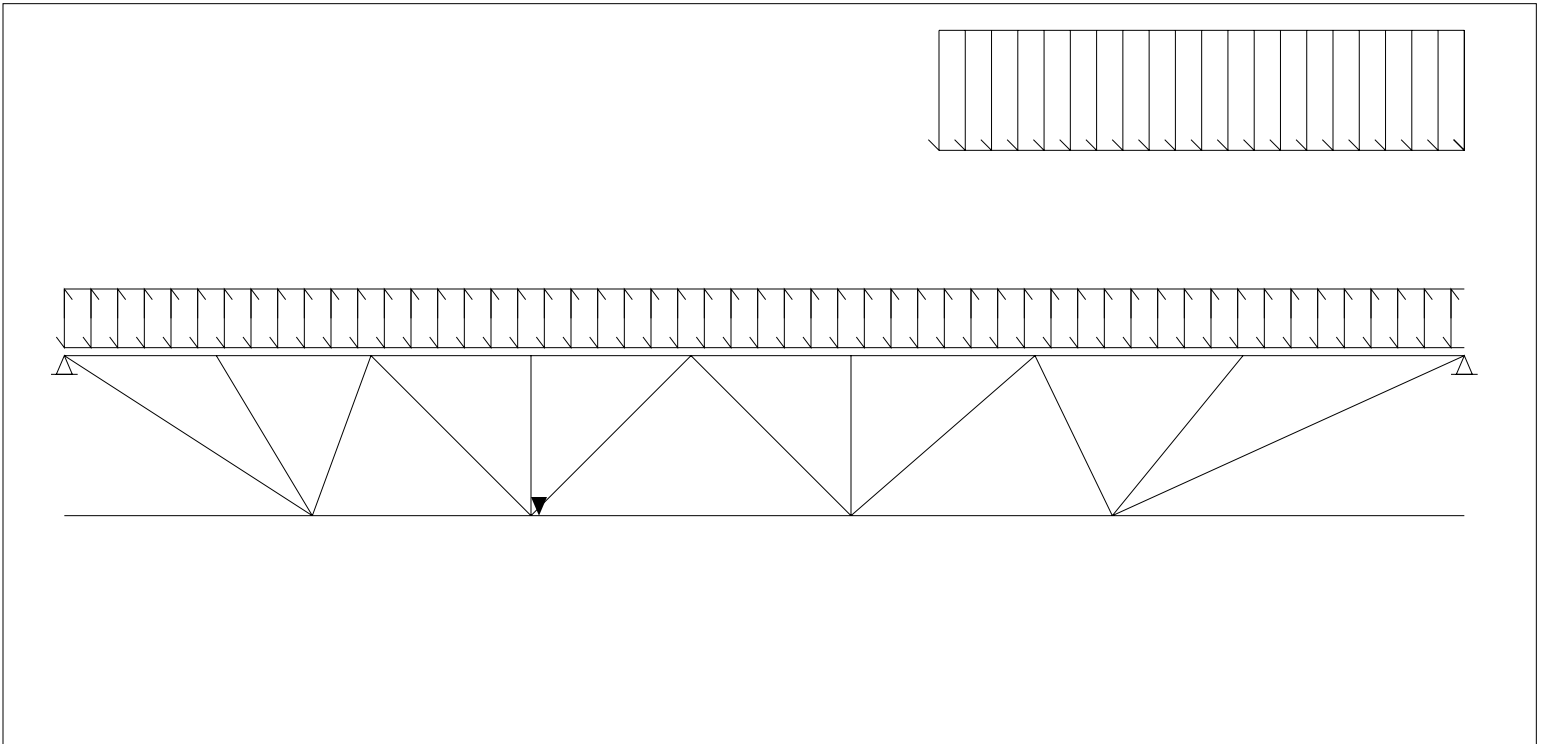
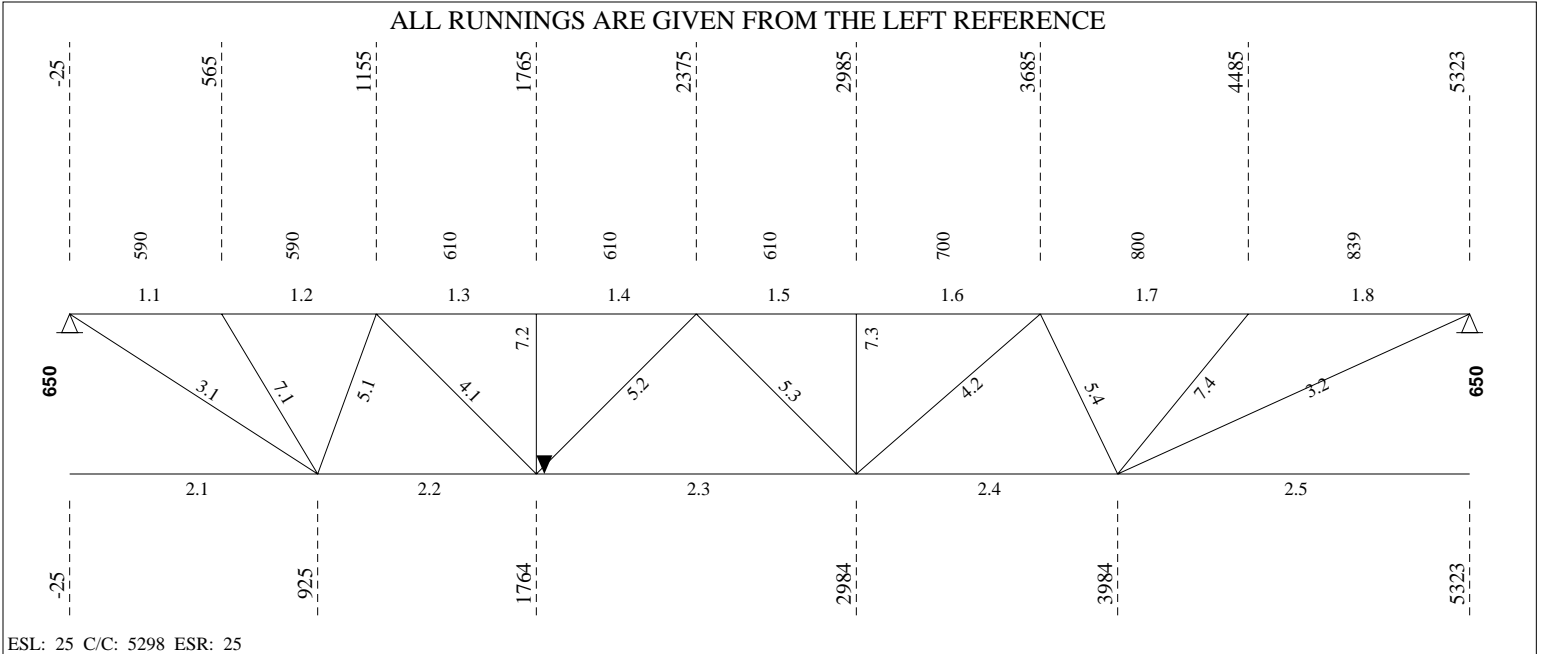
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M8 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start	Length	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]	[mm]	[mm]		
1	1	2.40	3.05	2.40	3.05	3298	2000	1	2

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 14.58 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 2.23 mm (L/ 2351)  
 Allowed deflection under total load..... = 21.87 mm (L/ 240)  
 Calculated deflection under service total load..... = 5.99 mm (L/ 876)  
 Gross joist inertia..... = 135.62 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 4.97 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.92 mm)

Left Reaction = 35.40/ 0.00 kN Right Reaction = 41.04/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>								
1.1	0.00	-45.99	LL 1 3/4 x 3/16	z 56	0.23	590		
1.2	0.00	-41.81	do	z 61	0.25	590		
1.3	0.00	-67.43	do	z 63	0.36	610		
1.4	0.00	-67.44	do	z 63	0.36	do		
1.5	0.00	-77.65	do	z 63	0.59	610		
1.6	0.00	-77.65	do	z 72	0.75	700		
1.7	0.00	-59.40	do	z 83	0.99	800		
1.8	0.00	-70.48	LL 1 3/4 x 3/16	z 81	0.99	839		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 113	0.24	950		
2.2	50.87	0.00	do	z 105	0.37	839		
2.3	76.37	0.00	do	z 153	0.37	1220		
2.4	69.14	0.00	do	yy126	0.37	1000		
2.5	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162	0.34	1339		
<b>End Diagonal</b>								
3.1	54.54	0.00	BR 15/16 (50W)	z 186	0.40	1110	5.00 - 25	
3.2	75.89	0.00	BR 15/16 (50W)	z 242	0.55	1444	5.00 - 35	
<b>Diagonal Towards End</b>								
4.1	25.86	0.00	U 1 x 7/8 x 0.091	z 135	0.55	891	2.30 - 38	
4.2	19.53	0.00	U 1 x 7/8 x 0.091	z 145	0.42	956	2.30 - 38	
<b>Diagonal Towards Center</b>								
5.1	0.00	-26.93	U 1 x 1 1/8 x 0.118	z 71	0.92	689	3.00 - 38	
5.2	1.40	-16.80	U 1 x 0.091	z 95	0.92	892	2.29 - 38	
5.3	7.82	-8.63	U 1 x 0.091	z 95	0.47	891	2.29 - 38	



5.4	0.00	-23.59	U 1 x 1 1/8 x 0.118	z 73	0.83	716	3.00 - 38
<b>Secondary Web Member</b>							
7.1	0.00	-21.75	U 1 x 0.091	z 79	0.95	743	2.29 - 31
7.2	0.00	-19.97	U 1 x 7/8 x 0.091	z 88	0.90	650	2.30 - 28
7.3	0.00	-20.56	U 1 x 7/8 x 0.091	z 88	0.92	650	2.30 - 29
7.4	0.00	-26.82	U 1 x 1 1/8 x 0.118	z 84	0.94	820	3.00 - 29

----- BRIDGING -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4782.69 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6650.56 ==> 1 Row(s) Minimum Imposed and conc. load 5 or

POSITION @ Top Chord @ Bottom Chord  
 2649 1764

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

- LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
- U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

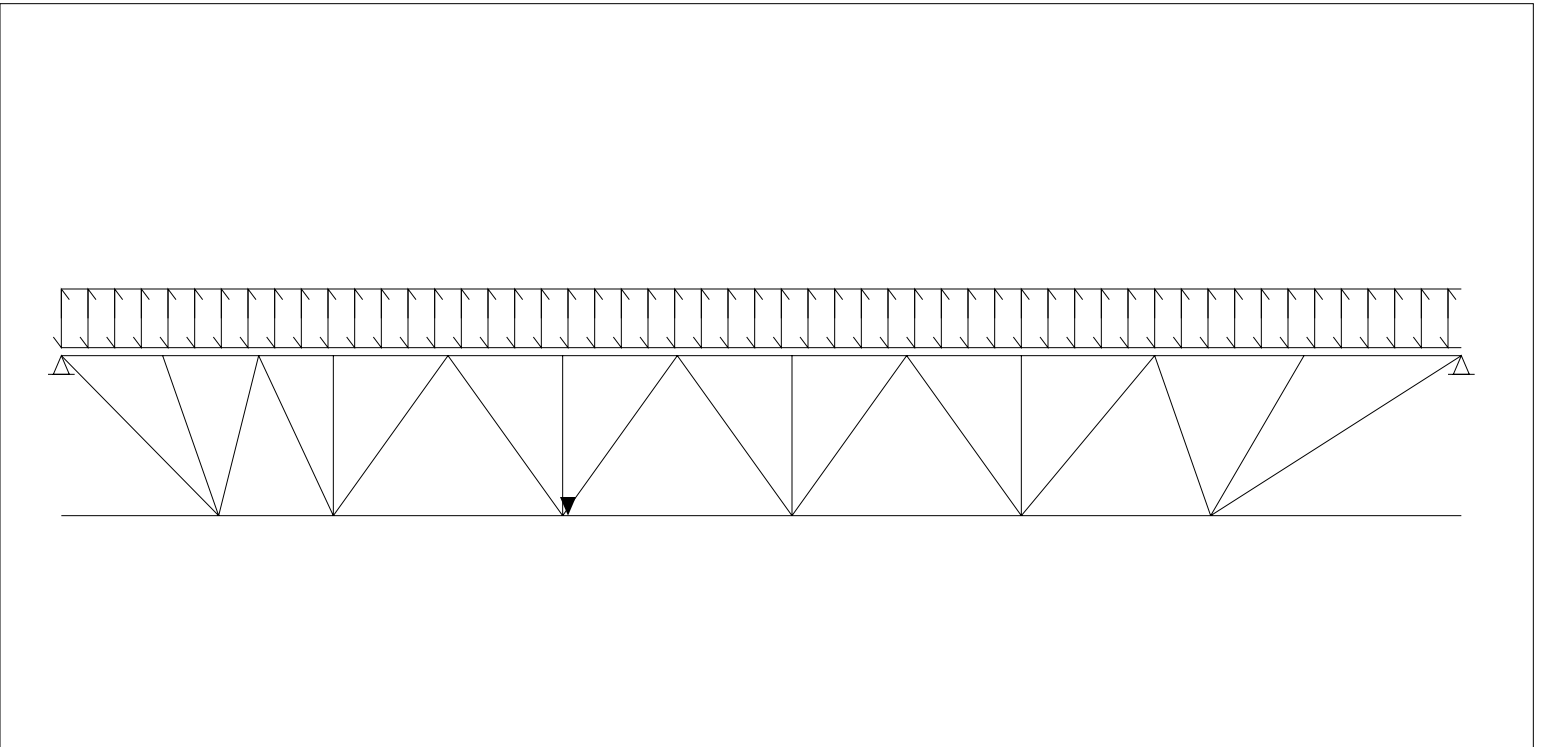
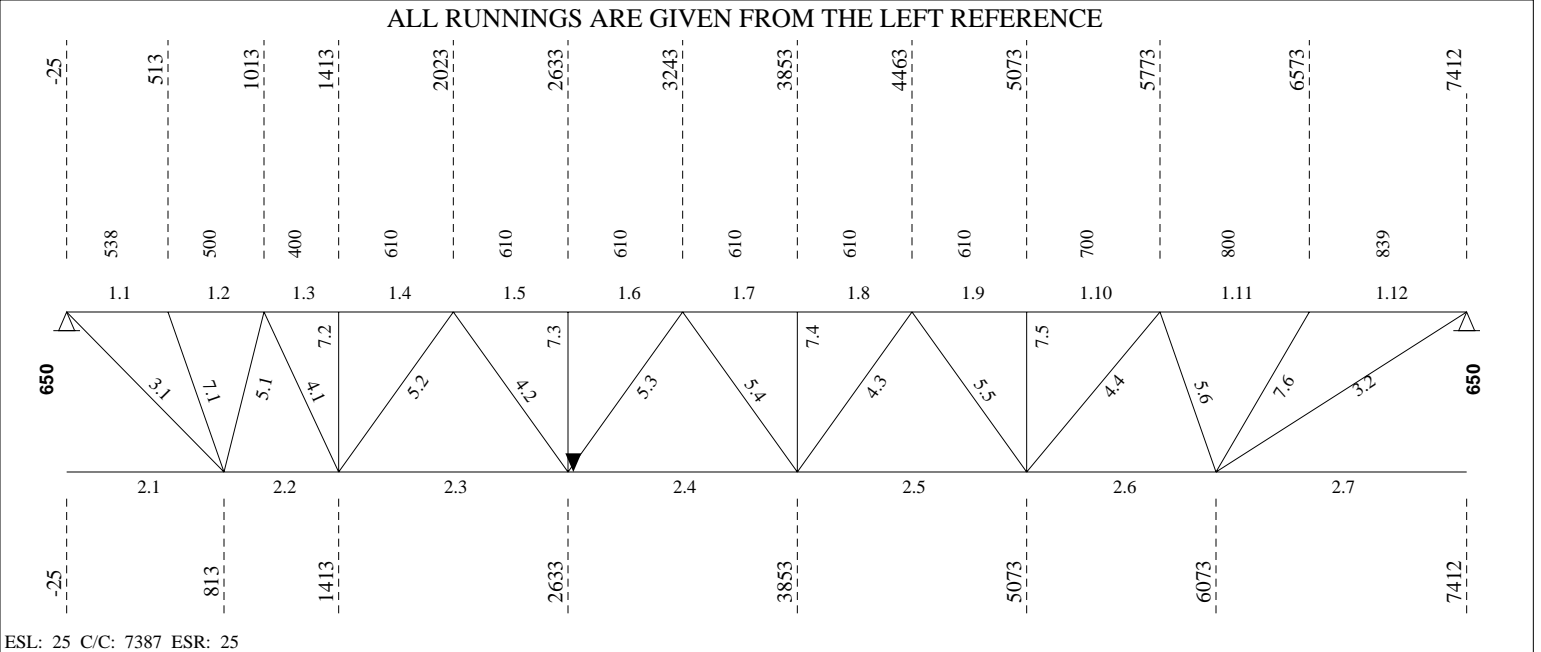
Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 73 / 82 Area to Paint : 5.08 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M9 (Hybrid Mid Span, Asymmetrical, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 20.38 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 5.46 mm (L/ 1343)  
 Allowed deflection under total load..... = 30.57 mm (L/ 240)  
 Calculated deflection under service total load..... = 17.32 mm (L/ 424)  
 Gross joist inertia..... = 128.08 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 14.79 mm  
 Required joist inertia..... = 115.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 623.99 mm)

Left Reaction = 47.11/ 0.00 kN Right Reaction = 47.11/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-55.54	LL 1 7/8 x 1 7/8 x.157 CF	z 47 0.28	538		
1.2	0.00	-52.49	do	z 49 0.35	500		
1.3	0.00	-84.97	do	z 39 0.40	400		
1.4	0.00	-84.97	do	z 59 0.52	610		
1.5	0.00	-126.92	do	z 59 0.74	do		
1.6	0.00	-126.92	do	z 59 0.74	do		
1.7	0.00	-138.23	do	z 59 0.81	do		
1.8	0.00	-138.23	do	z 59 0.81	do		
1.9	0.00	-118.91	do	z 59 0.78	610		
1.10	0.00	-118.91	do	z 68 0.86	700		
1.11	0.00	-78.68	do	z 78 0.91	800		
1.12	0.00	-86.86	LL 1 7/8 x 1 7/8 x.157 CF	z 77 0.91	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 99 0.31	838		
2.2	64.55	0.00	do	yy 94 0.53	600		
2.3	109.78	0.00	do	z 153 0.66	1220		
2.4	136.41	0.00	do	yy170 0.66	do		
2.5	132.40	0.00	do	yy170 0.66	1220		
2.6	93.99	0.00	do	yy170 0.64	1000		
2.7	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy170 0.45	1339		
<b>End Diagonal</b>							
3.1	69.12	0.00	BR 15/16 (50W)	z 172 0.50	1021	5.00 - 32	
3.2	93.39	0.00	BR 15/16 (50W)	z 242 0.68	1444	5.00 - 43	
<b>Diagonal Towards End</b>							
4.1	37.91	0.00	U 1 x 1 1/8 x 0.118	z 87 0.52	763	3.00 - 41	
4.2	27.42	0.00	U 1 x 7/8 x 0.091	z 135 0.59	891	2.30 - 39	
4.3	14.93	-3.52	U 1 x 7/8 x 0.091	z 121 0.32	891	2.30 - 38	
4.4	34.67	0.00	U 1 x 0.091	z 113 0.63	955	2.29 - 50	
<b>Diagonal Towards Center</b>							
5.1	0.00	-39.53	U 1 3/8 x 1 1/4 x 0.118	z 60 0.92	680	3.00 - 43	



5.2	0.00	-35.98	d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.84	891	3.00 - 39
5.3	0.41	-18.96		U 1 x 1 1/8 x 0.118	z 91	0.74	do	3.00 - 38
5.4	10.50	-6.93		U 1 x 1 1/8 x 0.118	z 91	0.27	do	do
5.5	0.00	-23.39	d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.55	891	3.00 - 38
5.6	0.00	-35.50	d	U 1 3/8 x 1 1/4 x 0.118	z 63	0.85	716	3.00 - 39

**Secondary Web Member**

7.1	0.00	-20.54		U 1 x 0.091	z 76	0.86	716	2.29 - 29
7.2	0.00	-19.47		U 1 x 7/8 x 0.091	z 88	0.87	650	2.30 - 28
7.3	0.00	-21.23		do	z 88	0.95	do	2.30 - 30
7.4	0.00	-21.46		do	z 88	0.96	do	do
7.5	0.00	-21.43		U 1 x 7/8 x 0.091	z 88	0.96	650	2.30 - 30
7.6	0.00	-27.16		U 1 x 1 1/8 x 0.118	z 84	0.95	820	3.00 - 30

## ----- BRIDGING -----

Maximum spacing between rows of bridging

@ Top Chord:	5018.72 ==>	1 Row(s) Minimum
@ Bottom Chord:	6650.56 ==>	1 Row(s) Minimum

Lateral Supports

Deck (304.8)
Imposed and conc. load 5 or

POSITION	@ Top Chord	@ Bottom Chord
	3693.5	2633

Equally Spaced Bridging between Uplift Rows : No

 -----  
 v1.49.2

Fabrication code unless noted

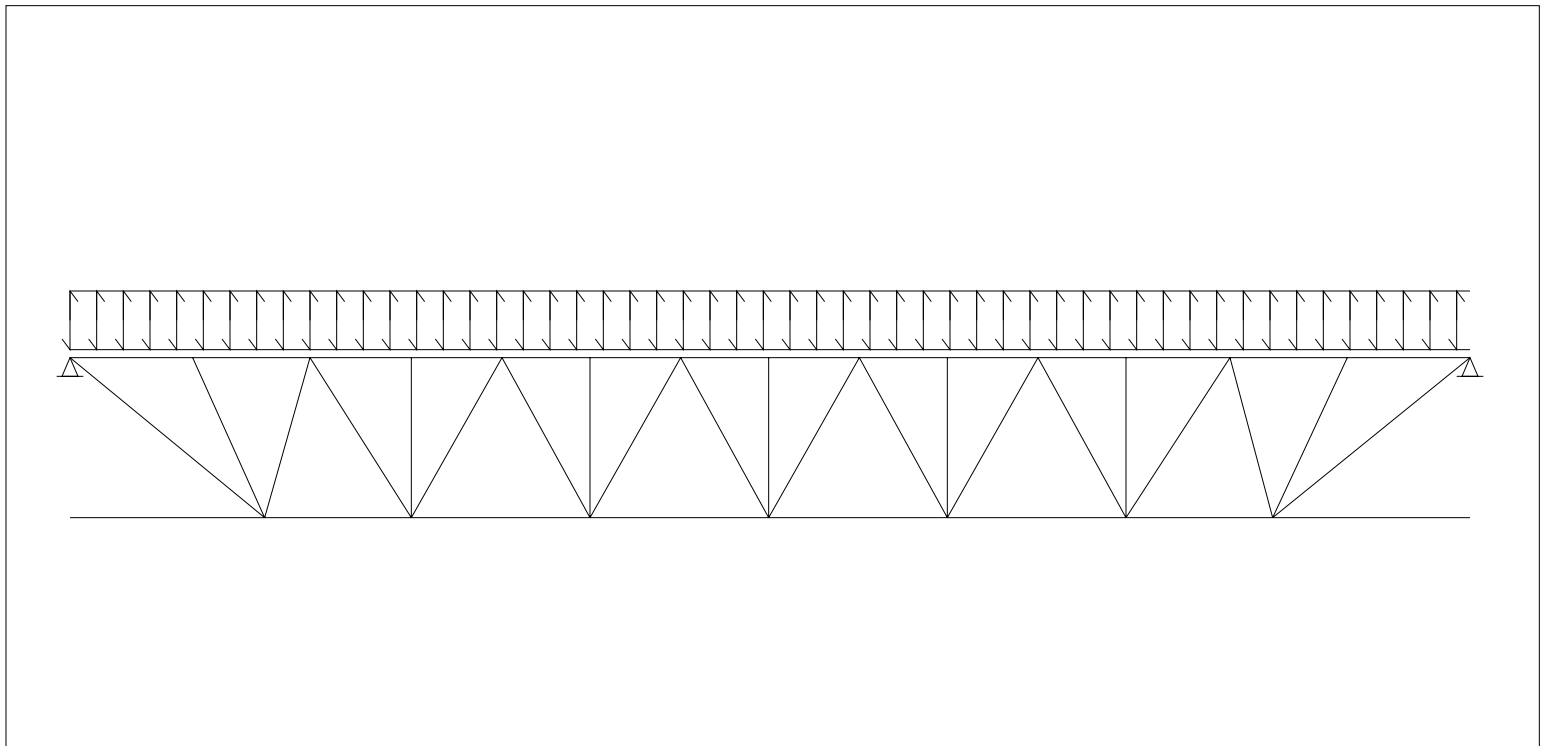
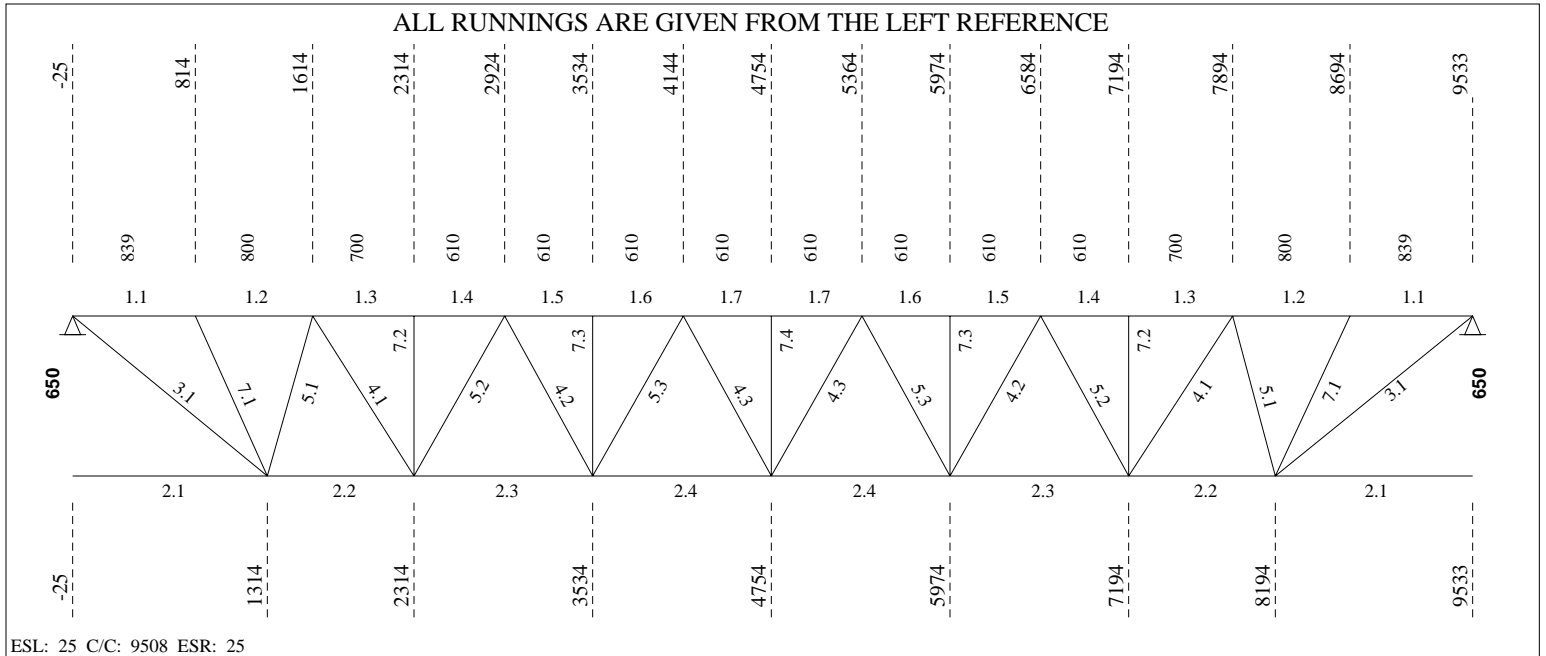
-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
100	/	109	Area to Paint	:	7.39 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M10 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 11.15 mm (L/ 849)  
 Allowed deflection under total load..... = 39.41 mm (L/ 240)  
 Calculated deflection under service total load..... = 35.34 mm (L/ 268)  
 Gross joist inertia..... = 162.43 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 30.08 mm  
 Required joist inertia..... = 160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 620.34 mm)

Left Reaction = 60.73/ 0.00 kN Right Reaction = 60.73/ 0.00 kN

No	Tension Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
			x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	
<b>Top Chord</b>								
1.1	0.00	-115.67	LL 1 7/8 x 1 7/8 x.197 CF	z 78	0.84	839		
1.2	0.00	-107.45	do	z 79	0.87	800		
1.3	0.00	-169.87	do	z 69	0.98	700		
1.4	0.00	-169.87	do	z 60	0.81	610		
1.5	0.00	-216.09 x	do	xx 37	0.82	do		
1.6	0.00	-216.09 x	do	xx 37	0.82	do		
1.7	0.00	-231.49 x	LL 1 7/8 x 1 7/8 x.197 CF	xx 37	0.87	610		
<b>Bottom Chord</b>								
2.1	0.00	0.00	L 2 1/8 x 2 1/8 x.157 55 ksi	yy145	0.47	1339		
2.2	129.43	0.00	do	yy145	0.71	1000		
2.3	196.83	0.00	do	yy145	0.82	1220		
2.4	227.64	0.00	L 2 1/8 x 2 1/8 x.157 55 ksi	yy145	0.83	1220		
<b>End Diagonal</b>								
3.1	123.63	0.00	BR 15/16 (50W)	z 242	0.90	1444	5.00 - 57	
<b>Diagonal Towards End</b>								
4.1	53.95	0.00	U 1 x 1 1/4 x 0.136	z 100	0.61	955	3.45 - 51	
4.2	30.23	0.00	U 1 x 7/8 x 0.091	z 135	0.65	891	2.30 - 43	
4.3	12.72	-5.57	U 1 x 7/8 x 0.091	z 121	0.43	891	2.30 - 38	
<b>Diagonal Towards Center</b>								
5.1	0.00	-50.41 d	U 1 3/8 x 0.136	z 59	0.97	716	3.45 - 48	
5.2	0.00	-39.80 d	U 1 3/8 x 1 1/4 x 0.118	z 79	0.93	891	3.00 - 43	
5.3	0.00	-20.91	U 1 x 1 1/8 x 0.118	z 91	0.82	891	3.00 - 38	
<b>Secondary Web Member</b>								
7.1	0.00	-27.75	U 1 x 1 1/8 x 0.118	z 84	0.97	820	3.00 - 30	
7.2	0.00	-22.48	U 1 x 0.091	z 69	0.85	650	2.29 - 32	
7.3	0.00	-23.08	do	z 69	0.88	do	2.29 - 33	
7.4	0.00	-23.41	U 1 x 0.091	z 69	0.89	650	2.29 - 33	

----- **BRIDGING** -----



Mark : M10

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868) 20/03/27 13:28:03

Maximum spacing between rows of bridging				Lateral Supports
@ Top Chord:	5077.97 ==>	1 Row(s) Minimum		Deck (304.8)
@ Bottom Chord:	7795.2 ==>	1 Row(s) Minimum		Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	4754	4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

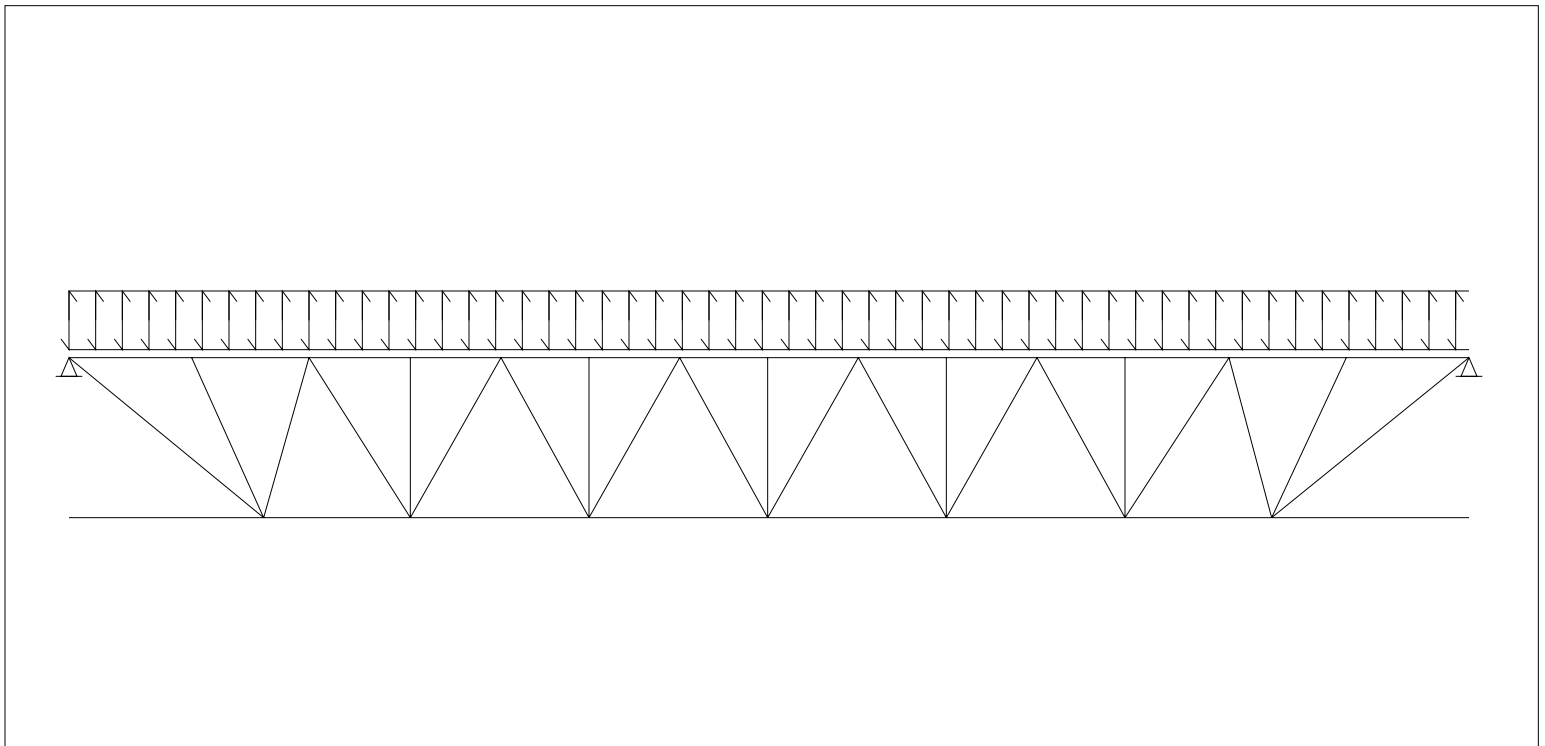
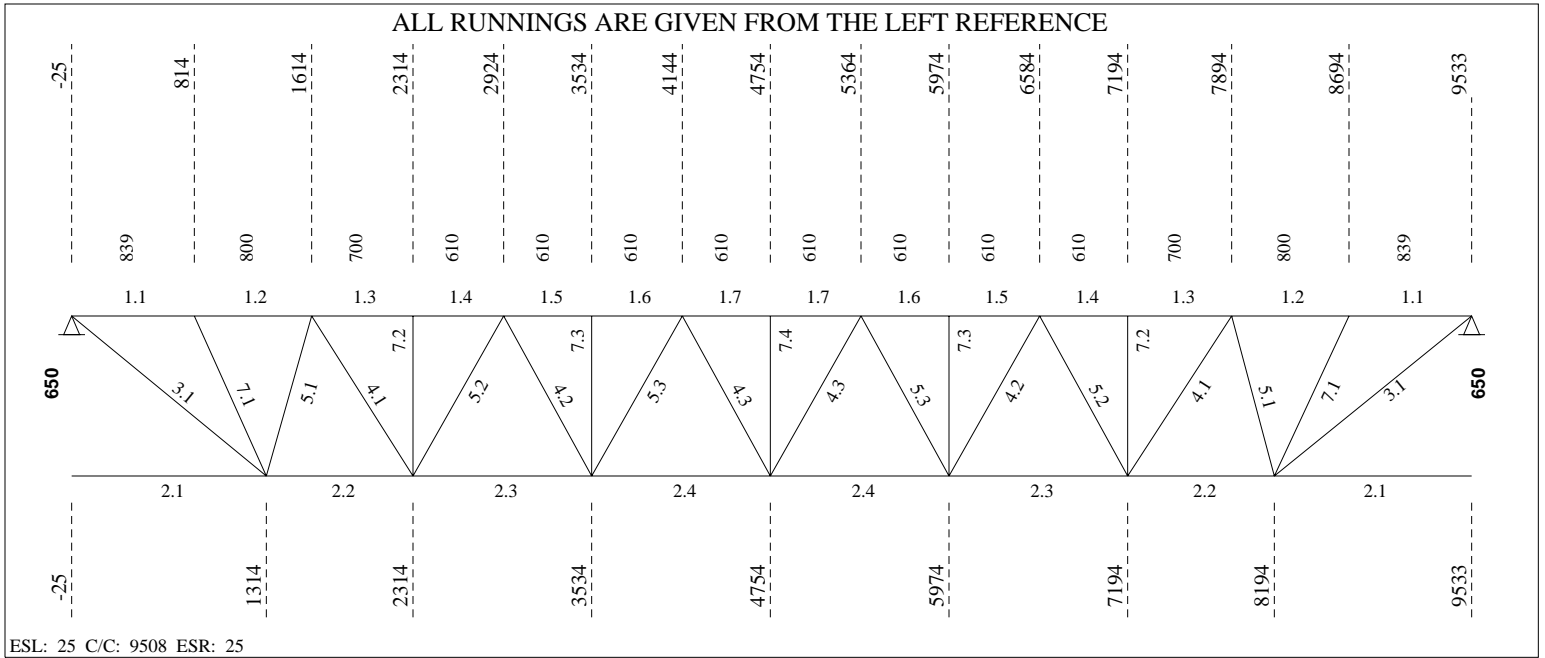
-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
151	/	166	Area to Paint	:	10.29 m2
					Material Sort : Cost

Project: SEVEN GENER.ENERGY COMM. BLDG

JOIST CALCULATION ACCORDING TO S16-09, S136-07 & NBC 2010 (rev 2017)

Mark : M11 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 18.22 mm (L/ 519)  
 Allowed deflection under total load..... = 39.41 mm (L/ 240)  
 Calculated deflection under service total load..... = 38.00 mm (L/ 249)  
 Gross joist inertia..... = 190.98 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 29.19 mm  
 Required joist inertia..... = 160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 618.28 mm)

Left Reaction = 82.35/ 0.00 kN Right Reaction = 82.35/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-157.37	L 2 1/4 x 2 1/4 x.197 55ksi	z 64 0.85	839		
1.2	0.00	-146.18	do	z 65 0.92	800		
1.3	0.00	-231.10	do	z 57 0.93	700		
1.4	0.00	-231.10	do	z 50 0.86	610		
1.5	0.00	-293.99 x	do	xx 31 0.87	do		
1.6	0.00	-293.99 x	do	xx 31 0.87	do		
1.7	0.00	-314.95 x	L 2 1/4 x 2 1/4 x.197 55ksi	xx 31 0.93	610		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LLV 2 x 2 x .197 (55 ksi)	yy148 0.55	1339		
2.2	176.09	0.00	do	yy149 0.84	1000		
2.3	267.79	0.00	do	yy149 0.97	1220		
2.4	309.71	0.00	LLV 2 x 2 x .197 (55 ksi)	yy149 0.99	1220		
<b>End Diagonal</b>							
3.1	167.65	0.00	SB 1" (50 ksi)	z 197 0.84	1444	6.35 - 86	
<b>Diagonal Towards End</b>							
4.1	73.99	0.00 d	U 1 3/8 x 0.157	z 85 0.58	955	4.00 - 60	
4.2	43.16	0.00	U 1 x 1 1/8 x 0.118	z 101 0.59	891	3.00 - 47	
4.3	20.20	-10.42	U 1 x 7/8 x 0.091	z 121 0.80	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-68.57 d	U 1 3/8 x 0.176	z 57 0.94	716	4.47 - 50	
5.2	0.00	-55.39 d	U 1 3/8 x 0.157	z 72 0.85	891	4.00 - 45	
5.3	2.11	-31.43 d	U 1 3/8 x 1 1/4 x 0.118	z 79 0.74	891	3.00 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-28.62	U 1 x 1 1/8 x 0.118	z 84 1.00	820	3.00 - 31	
7.2	0.00	-23.75	U 1 x 0.091	z 69 0.90	650	2.29 - 34	
7.3	0.00	-24.70	do	z 69 0.94	do	2.29 - 35	
7.4	0.00	-25.14	U 1 x 0.091	z 69 0.96	650	2.29 - 36	

----- **BRIDGING** -----



Mark : M11

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:03

Maximum spacing between rows of bridging

@ Top Chord:	5776.9 ==>	1 Row(s) Minimum
@ Bottom Chord:	7588.84 ==>	1 Row(s) Minimum

Lateral Supports

Deck (304.8)  
Acc. to the code

POSITION @ Top Chord  
4754

@ Bottom Chord  
4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

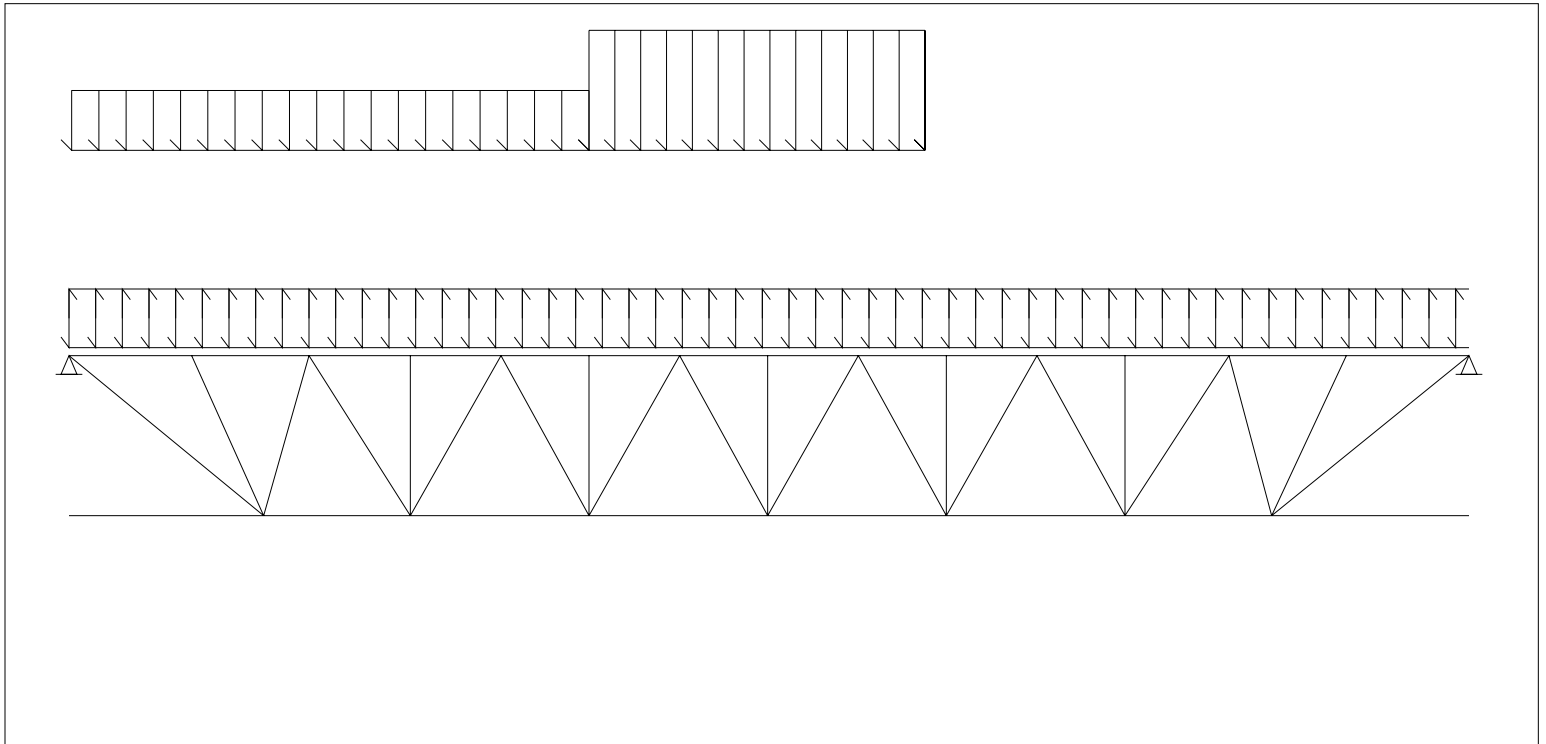
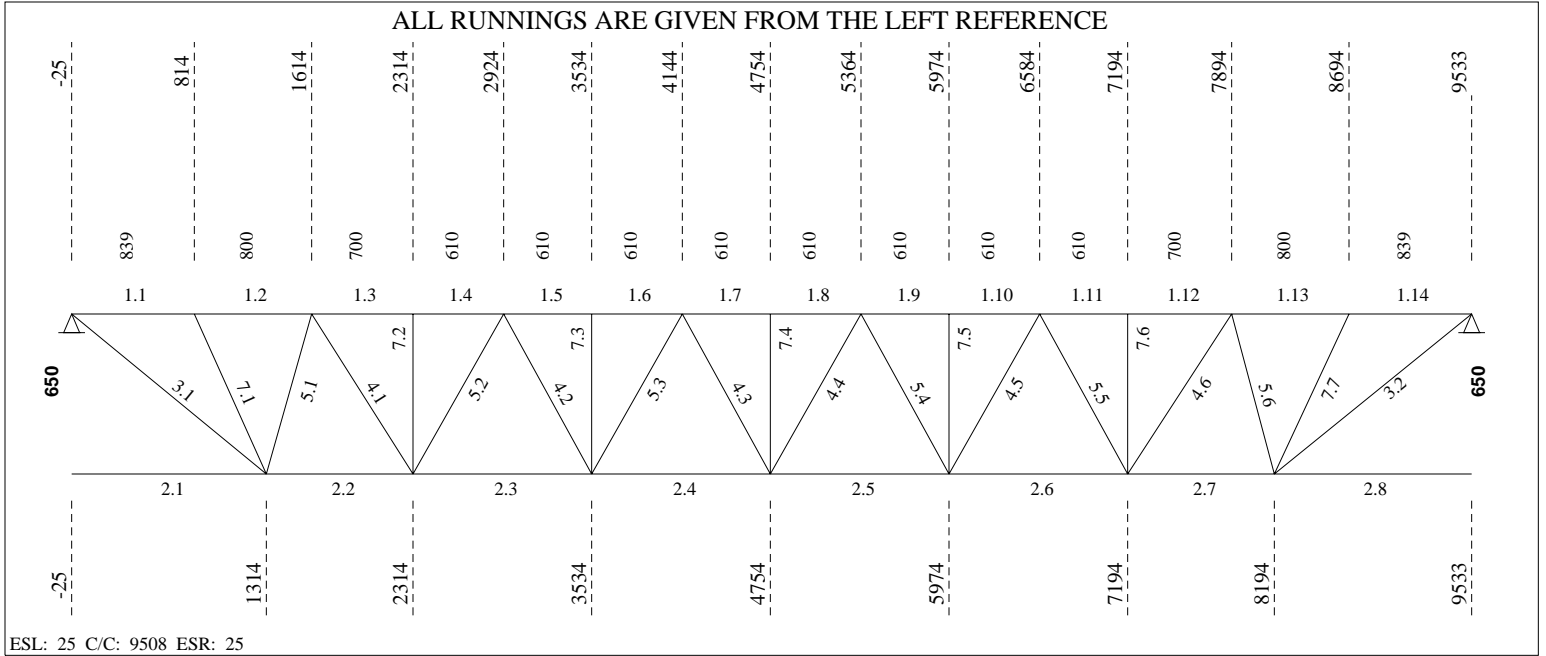
-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
183	/	200	Area to Paint	:	11.02 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M12 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1





----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.20	1.52	1.20	1.52	0	3500	1	2
2	1	2.40	3.05	2.40	3.05	3500	2300	1	2

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 15.58 mm (L/ 607)  
 Allowed deflection under total load..... = 39.41 mm (L/ 240)  
 Calculated deflection under service total load..... = 37.66 mm (L/ 251)  
 Gross joist inertia..... = 174.51 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 30.19 mm  
 Required joist inertia..... = 160.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 620.65 mm)

Left Reaction = 72.57/ 0.00 kN Right Reaction = 67.33/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-138.34	LLV 2 x 2 x .197 (55 ksi)	z 73 0.90	839		
1.2	0.00	-128.66	do	z 74 0.95	800		
1.3	0.00	-203.83 x	do	xx 40 0.95	700		
1.4	0.00	-203.83	do	z 56 0.88	610		
1.5	0.00	-260.31 x	do	xx 35 0.90	do		
1.6	0.00	-260.31 x	do	xx 35 0.90	do		
1.7	0.00	-277.62 x	do	xx 35 0.96	do		
1.8	0.00	-277.62 x	do	xx 35 0.96	do		
1.9	0.00	-253.28 x	do	xx 35 0.88	do		
1.10	0.00	-253.28 x	do	xx 35 0.88	do		
1.11	0.00	-194.11	do	z 56 0.83	610		
1.12	0.00	-194.11	do	z 64 0.97	700		
1.13	0.00	-121.09	do	z 74 0.87	800		
1.14	0.00	-129.32	LLV 2 x 2 x .197 (55 ksi)	z 73 0.80	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 7/8 x 1 7/8 x .197 CF	yy154 0.52	1339		
2.2	155.05	0.00	do	yy155 0.79	1000		
2.3	236.60	0.00	do	yy155 0.92	1220		
2.4	274.18	0.00	do	yy155 0.93	do		
2.5	270.61	0.00	do	yy155 0.93	do		
2.6	227.55	0.00	do	yy155 0.91	1220		
2.7	146.26	0.00	do	yy155 0.76	1000		
2.8	0.00	0.00	LL 1 7/8 x 1 7/8 x .197 CF	yy154 0.49	1339		
<b>End Diagonal</b>							
3.1	147.93	0.00	BR 1'' (50W)	z 227 0.94	1444	5.00 - 68	

3.2 138.29 0.00 BR 1'' (50W) z 227 0.88 1444 5.00 - 64

**Diagonal Towards End**

4.1	65.50	0.00	d	U 1 3/8 x 0.136	z 87	0.60	955	3.45 - 62
4.2	38.13	0.00		U 1 x 1 1/8 x 0.118	z 101	0.52	891	3.00 - 42
4.3	15.70	-8.42		U 1 x 7/8 x 0.091	z 121	0.65	do	2.30 - 38
4.4	18.19	-5.93		U 1 x 7/8 x 0.091	z 121	0.45	do	2.30 - 38
4.5	39.28	0.00		U 1 x 1 1/8 x 0.118	z 101	0.54	891	3.00 - 43
4.6	63.65	0.00	d	U 1 3/8 x 0.136	z 87	0.58	955	3.45 - 60

**Diagonal Towards Center**

5.1	0.00	-60.63	d	U 1 3/8 x 0.157	z 57	0.94	716	4.00 - 50
5.2	0.00	-49.03	d	U 1 3/8 x 0.136	z 73	0.92	891	3.45 - 46
5.3	0.10	-26.94		U 1 x 1 1/4 x 0.136	z 92	0.87	do	3.45 - 38
5.4	0.00	-29.34		U 1 x 1 1/4 x 0.136	z 92	0.94	do	3.45 - 38
5.5	0.00	-48.85	d	U 1 3/8 x 0.136	z 73	0.92	891	3.45 - 46
5.6	0.00	-57.67	d	U 1 3/8 x 0.157	z 57	0.89	716	4.00 - 47

**Secondary Web Member**

7.1	0.00	-28.23		U 1 x 1 1/8 x 0.118	z 84	0.99	820	3.00 - 31
7.2	0.00	-23.20		U 1 x 0.091	z 69	0.88	650	2.29 - 33
7.3	0.00	-24.01		do	z 69	0.91	do	2.29 - 34
7.4	0.00	-24.38		do	z 69	0.93	do	2.29 - 35
7.5	0.00	-23.87		do	z 69	0.91	do	2.29 - 34
7.6	0.00	-23.00		U 1 x 0.091	z 69	0.87	650	2.29 - 33
7.7	0.00	-28.04		U 1 x 1 1/8 x 0.118	z 84	0.98	820	3.00 - 31

**BRIDGING**

Maximum spacing between rows of bridging  
 @ Top Chord: 5368.13 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 7303.16 ==> 1 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 4754 4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

**PARTIAL LOADS**

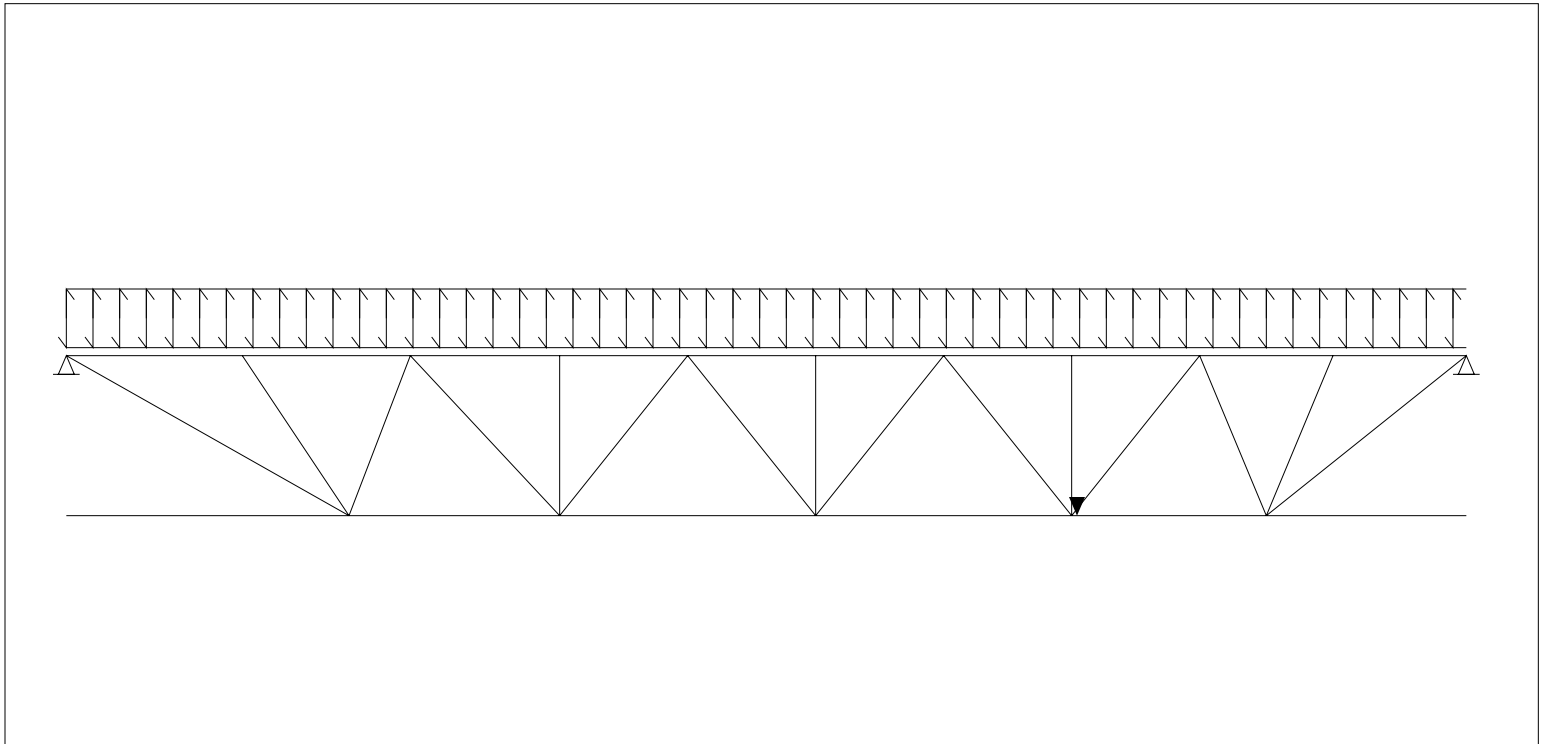
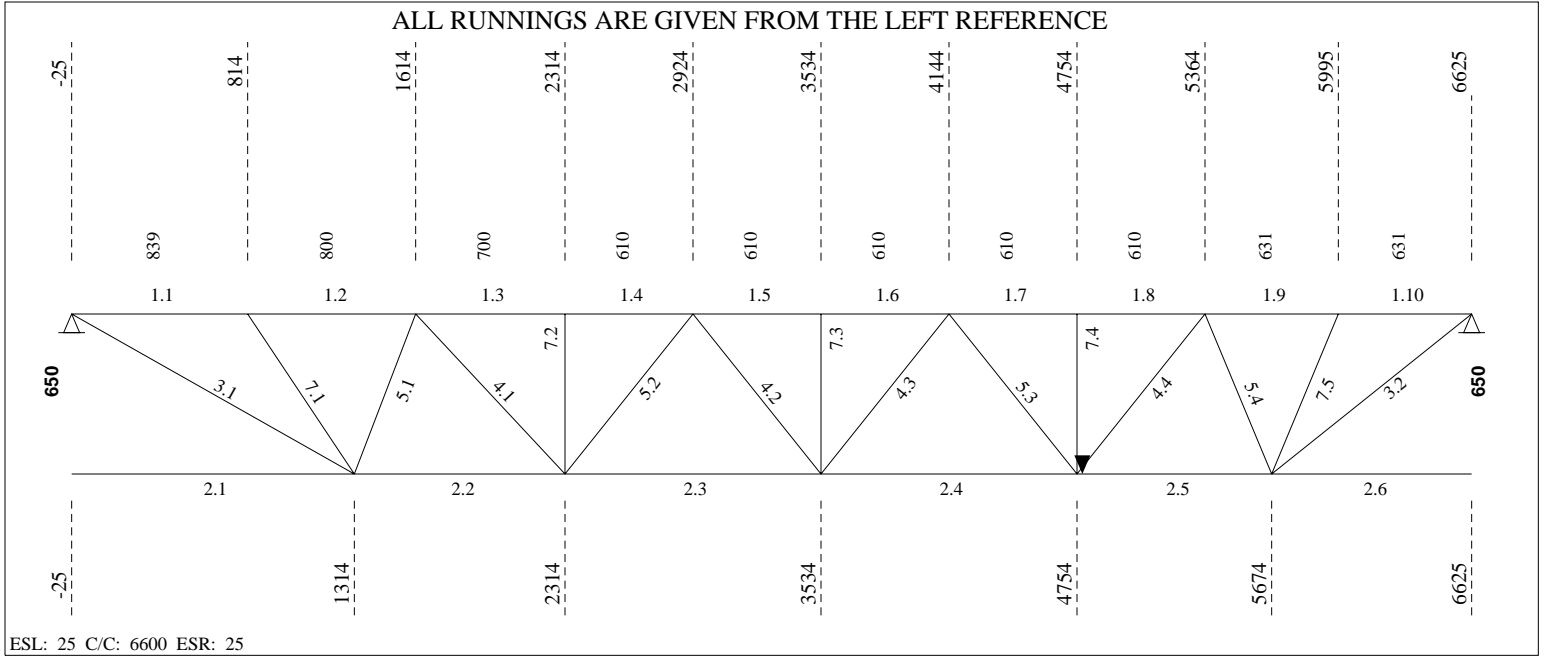
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 165 / 180 Area to Paint : 10.18 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M13 (Hybrid Mid Span, Asymmetrical,, Free ends)



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 18.19 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 6.69 mm (L/ 980)  
 Allowed deflection under total load..... = 27.29 mm (L/ 240)  
 Calculated deflection under service total load..... = 13.95 mm (L/ 470)  
 Gross joist inertia..... = 139.86 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 10.76 mm  
 Required joist inertia..... = 90.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 623.51 mm)

Left Reaction = 57.03/ 0.00 kN Right Reaction = 57.03/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-103.71	LL 1 7/8 x 1 7/8 x.197 CF	z 78 0.96	839		
1.2	0.00	-92.61	do	z 79 0.96	800		
1.3	0.00	-136.21	do	z 69 0.87	700		
1.4	0.00	-136.20	do	z 60 0.78	610		
1.5	0.00	-149.03	do	z 60 0.71	do		
1.6	0.00	-149.02	do	z 60 0.71	do		
1.7	0.00	-120.27	do	z 60 0.58	do		
1.8	0.00	-120.26	do	z 60 0.69	610		
1.9	0.00	-69.69	do	z 62 0.69	631		
1.10	0.00	-75.11	LL 1 7/8 x 1 7/8 x.197 CF	z 57 0.60	631		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy170 0.53	1339		
2.2	110.06	0.00	do	yy170 0.71	1000		
2.3	147.81	0.00	do	yy170 0.72	1220		
2.4	139.85	0.00	do	yy170 0.72	1220		
2.5	90.32	0.00	do	z 116 0.67	920		
2.6	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 113 0.43	951		
<b>End Diagonal</b>							
3.1	111.42	0.00	BR 15/16 (50W)	z 242 0.81	1444	5.00 - 51	
3.2	88.84	0.00	BR 15/16 (50W)	z 187 0.64	1111	5.00 - 41	
<b>Diagonal Towards End</b>							
4.1	37.95	0.00	U 1 x 1 1/8 x 0.118	z 109 0.52	956	3.00 - 41	
4.2	11.45	-9.15	U 1 x 7/8 x 0.091	z 121 0.70	892	2.30 - 38	
4.3	19.93	-2.68	U 1 x 7/8 x 0.091	z 121 0.43	891	2.30 - 38	
4.4	44.09	0.00	U 1 x 1 1/8 x 0.118	z 101 0.60	891	3.00 - 48	
<b>Diagonal Towards Center</b>							
5.1	0.00	-40.97	d U 1 3/8 x 0.136	z 59 0.79	716	3.45 - 39	
5.2	0.90	-22.62	d U 1 3/8 x 1 1/4 x 0.118	z 78 0.53	891	3.00 - 38	
5.3	0.00	-31.68	d U 1 3/8 x 1 1/4 x 0.118	z 79 0.74	892	3.00 - 38	
5.4	0.00	-46.46	d U 1 3/8 x 0.136	z 59 0.90	720	3.45 - 44	

**Secondary Web Member**

7.1	0.00	-27.52	U 1 x 1 1/8 x 0.118	z 84	0.96	820	3.00 - 30
7.2	0.00	-21.79	U 1 x 7/8 x 0.091	z 88	0.98	650	2.30 - 31
7.3	0.00	-21.69	do	z 88	0.97	do	2.30 - 31
7.4	0.00	-21.08	U 1 x 7/8 x 0.091	z 88	0.94	650	2.30 - 30
7.5	0.00	-22.22	U 1 x 0.091	z 77	0.94	725	2.29 - 32

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	5077.97 ==>	1 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6650.56 ==>	1 Row(s) Minimum	Deck (304.8)
			Imposed and conc. load 5 or

POSITION	@ Top Chord	@ Bottom Chord
	3300	4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

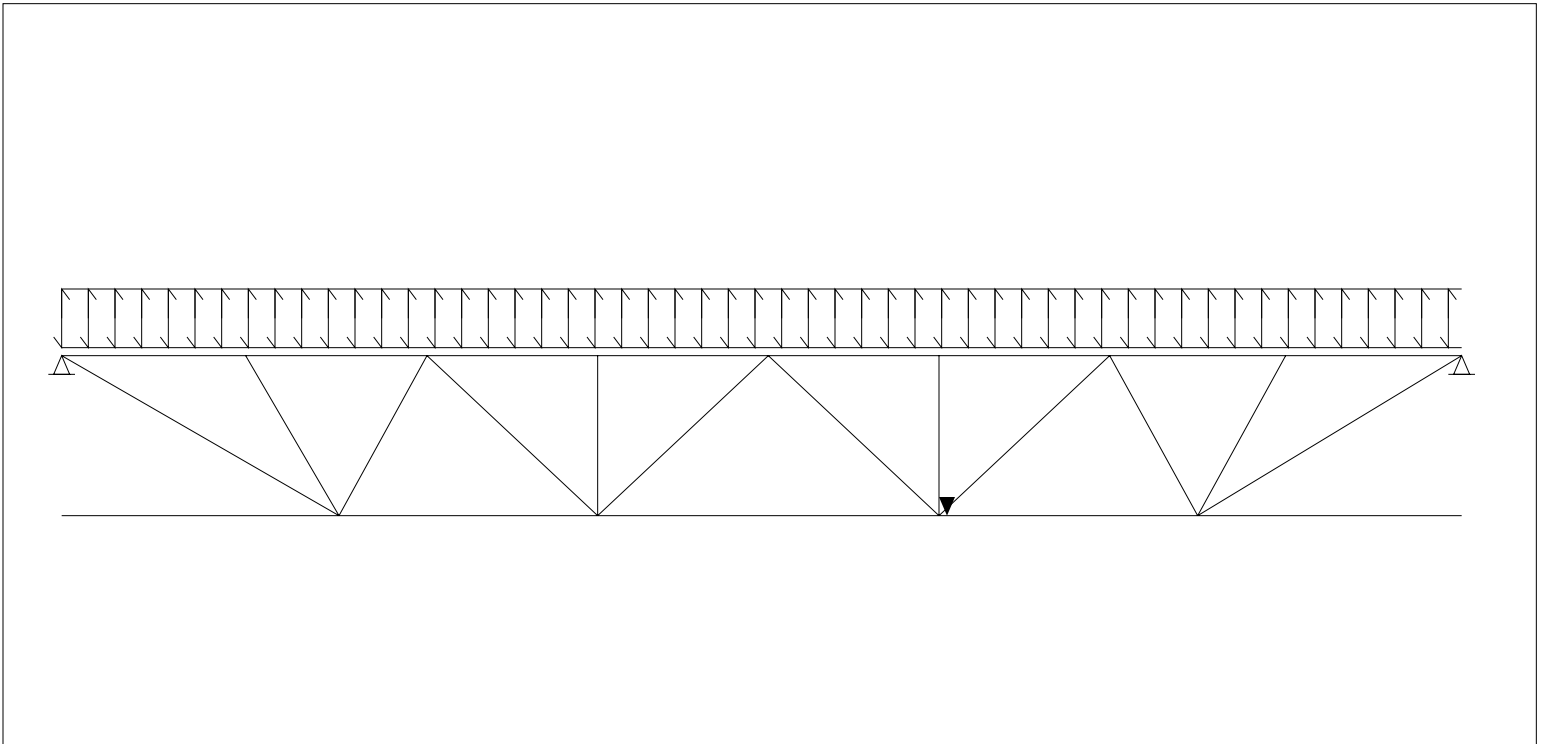
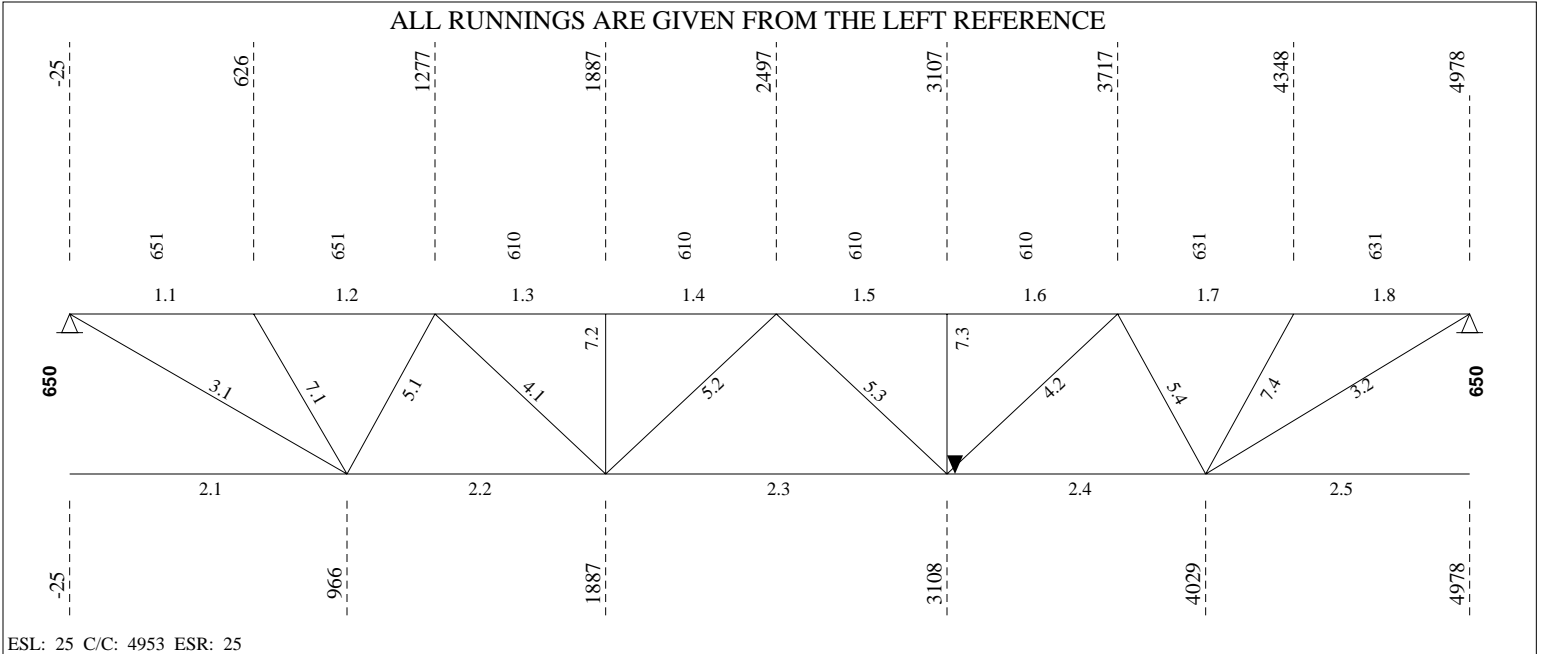
Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
98	/	107	Area to Paint	:	6.53 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M14 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 13.62 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 2.87 mm (L/ 1706)  
 Allowed deflection under total load..... = 20.43 mm (L/ 240)  
 Calculated deflection under service total load..... = 5.99 mm (L/ 818)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 4.65 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 42.69/ 0.00 kN Right Reaction = 42.69/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-56.32	LL 1 5/8 x 1 5/8 x .157	z 68 0.88	651		
1.2	0.00	-50.40	do	z 74 0.88	651		
1.3	0.00	-78.81	do	z 69 0.86	610		
1.4	0.00	-78.81	do	z 69 0.61	do		
1.5	0.00	-78.12	do	z 69 0.60	do		
1.6	0.00	-78.10	do	z 69 0.84	610		
1.7	0.00	-48.74	do	z 71 0.84	631		
1.8	0.00	-54.12	LL 1 5/8 x 1 5/8 x .157	z 66 0.83	631		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 118 0.31	991		
2.2	63.61	0.00	do	z 116 0.40	921		
2.3	83.65	0.00	do	z 153 0.40	1221		
2.4	62.25	0.00	do	z 116 0.40	921		
2.5	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 113 0.30	950		
<b>End Diagonal</b>							
3.1	65.89	0.00	BR 15/16 (50W)	z 192 0.48	1143	5.00 - 30	
3.2	64.26	0.00	BR 15/16 (50W)	z 186 0.47	1110	5.00 - 30	
<b>Diagonal Towards End</b>							
4.1	24.35	0.00	U 1 x 7/8 x 0.091	z 135 0.52	891	2.30 - 38	
4.2	25.13	0.00	U 1 x 7/8 x 0.091	z 135 0.54	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-30.23	U 1 x 1 1/4 x 0.136	z 74 0.89	721	3.45 - 38	
5.2	4.70	-12.69	U 1 x 0.091	z 95 0.70	891	2.29 - 38	
5.3	4.23	-13.44	U 1 x 0.091	z 95 0.74	892	2.29 - 38	
5.4	0.00	-30.78	U 1 x 1 1/4 x 0.136	z 75 0.90	721	3.45 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-22.27	U 1 x 0.091	z 78 0.96	734	2.29 - 32	
7.2	0.00	-20.21	U 1 x 7/8 x 0.091	z 88 0.91	650	2.30 - 29	
7.3	0.00	-20.20	U 1 x 7/8 x 0.091	z 88 0.91	650	2.30 - 29	



7.4 0.00 -21.76 U 1 x 0.091 z 77 0.92 724 2.29 - 31

----- BRIDGING -----

Maximum spacing between rows of bridging  
@ Top Chord: 4614.56 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
@ Bottom Chord: 6651.37 ==> 1 Row(s) Minimum Imposed and conc. load 5 or

POSITION @ Top Chord @ Bottom Chord  
2476.5 3107

Equally Spaced Bridging between Uplift Rows : No

----- v1.49.2 -----

Fabrication code unless noted

- LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
- U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

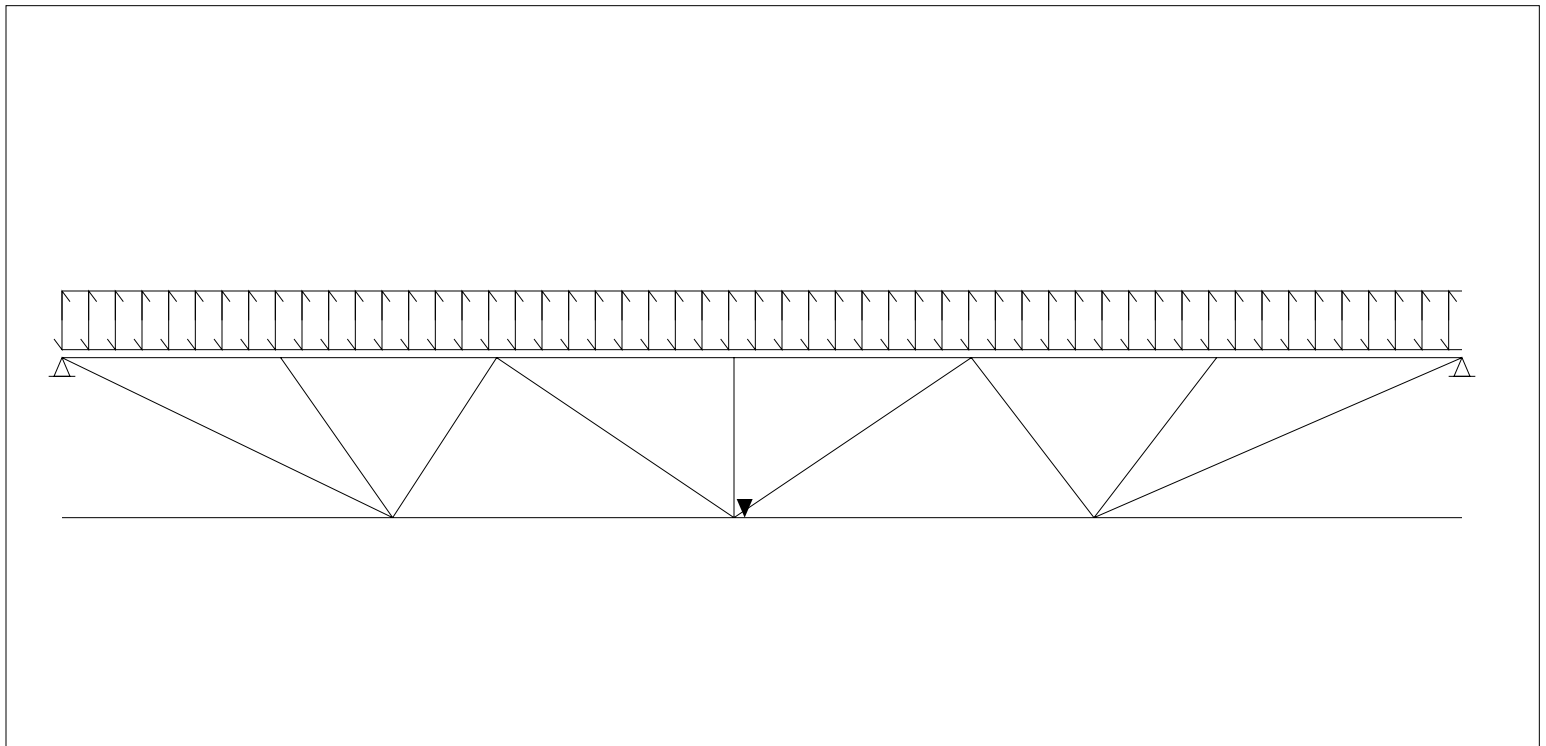
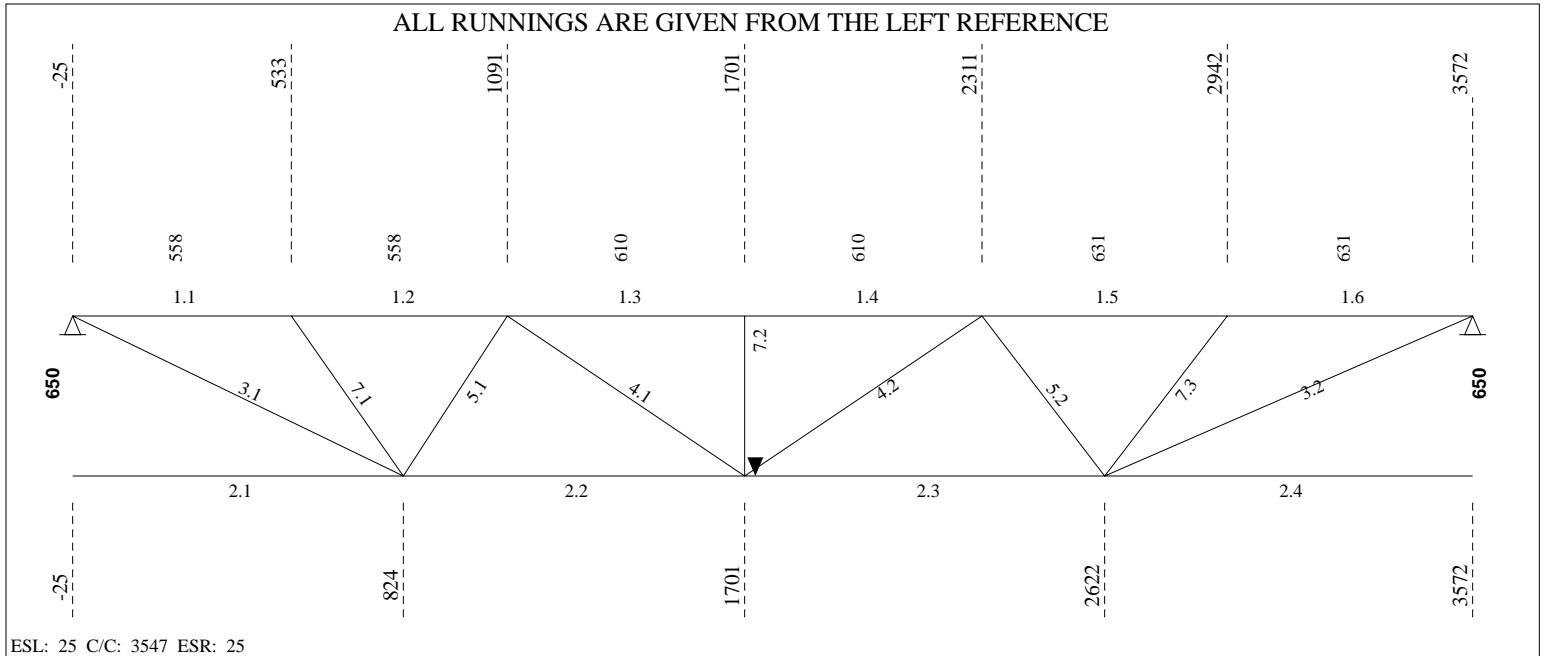
Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
62 / 70 Area to Paint : 4.64 m2 Material Sort : Cost



**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M15 (Hybrid Mid Span, Asymmetrical,, Free ends)



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 9.71 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.10 mm (L/ 3185)  
 Allowed deflection under total load..... = 14.57 mm (L/ 240)  
 Calculated deflection under service total load..... = 2.29 mm (L/ 1527)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.79 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 30.45/ 0.00 kN Right Reaction = 30.45/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-33.25	LL 1 5/8 x 1 5/8 x .157	z 57 0.22	558		
1.2	0.00	-28.92	do	z 63 0.21	558		
1.3	0.00	-42.49	do	z 69 0.33	610		
1.4	0.00	-42.48	do	z 69 0.66	610		
1.5	0.00	-31.15	do	z 71 0.75	631		
1.6	0.00	-36.54	LL 1 5/8 x 1 5/8 x .157	z 66 0.75	631		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 100 0.17	849		
2.2	36.06	0.00	do	z 110 0.20	877		
2.3	38.54	0.00	do	z 116 0.20	921		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 113 0.19	950		
<b>End Diagonal</b>							
3.1	41.25	0.00	BR 15/16 (50W)	z 173 0.30	1030	5.00 - 20	
3.2	43.37	0.00	BR 15/16 (50W)	z 186 0.31	1110	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	13.94	-2.55	U 1 x 7/8 x 0.091	z 121 0.30	892	2.30 - 38	
4.2	11.50	-4.52	U 1 x 7/8 x 0.091	z 121 0.35	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-18.87	U 1 x 0.091	z 75 0.91	703	2.29 - 38	
5.2	0.00	-17.60	U 1 x 0.091	z 77 0.87	721	2.29 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-20.33	U 1 x 0.091	z 76 0.85	712	2.29 - 29	
7.2	0.00	-19.44	U 1 x 7/8 x 0.091	z 88 0.87	650	2.30 - 28	
7.3	0.00	-21.40	U 1 x 0.091	z 77 0.91	724	2.29 - 31	

----- **BRIDGING** -----

Maximum spacing between rows of bridging @ Top Chord: 4614.56 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)



Mark : M15

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868) 20/03/27 13:28:04

@ Bottom Chord: 6650.56 ==> 1 Row(s) Minimum Imposed and conc. load 5 or

POSITION @ Top Chord @ Bottom Chord  
1701

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
-U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

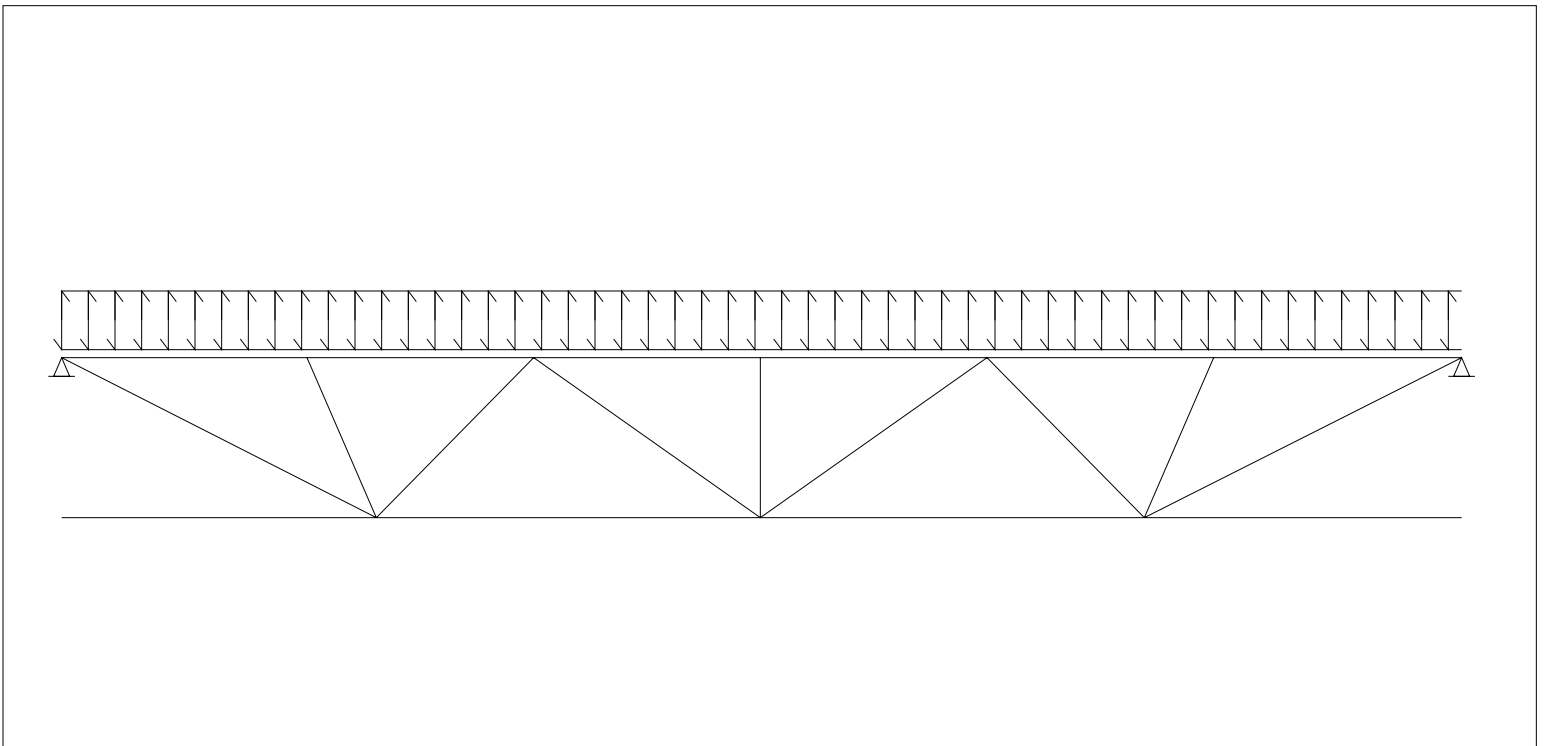
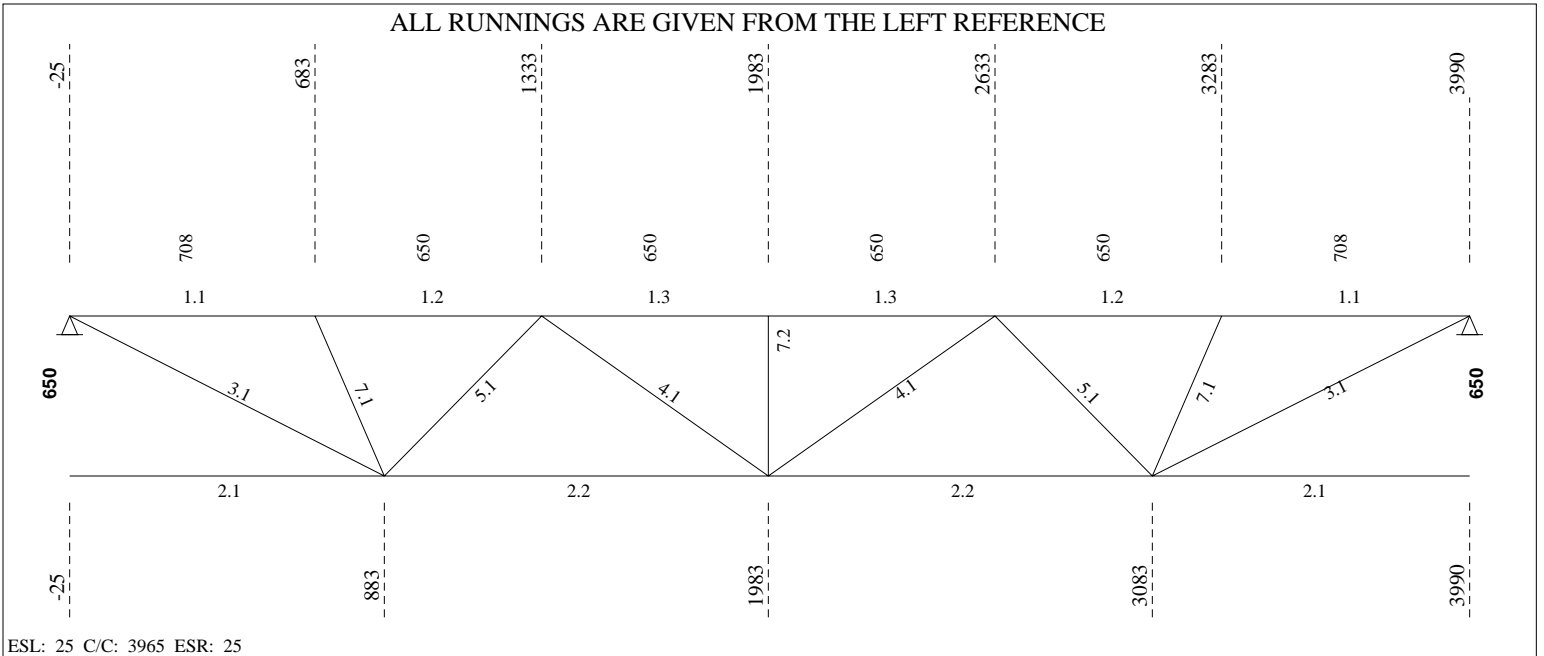
Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
45 / 52 Area to Paint : 3.37 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M16 (Hybrid Mid Span, Symmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 10.88 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.44 mm (L/ 2725)  
 Allowed deflection under total load..... = 16.31 mm (L/ 240)  
 Calculated deflection under service total load..... = 3.00 mm (L/ 1307)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 2.34 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 34.09/ 0.00 kN Right Reaction = 34.09/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-38.88	LL 1 5/8 x 1 5/8 x .157	z 74 0.87	708		
1.2	0.00	-35.24	do	z 74 0.87	650		
1.3	0.00	-53.34	LL 1 5/8 x 1 5/8 x .157	z 74 0.81	650		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy141 0.23	908		
2.2	47.45	0.00	LL 1 5/8 x 1 5/8 x .157	yy141 0.26	1100		
<b>End Diagonal</b>							
3.1	46.95	0.00	BR 15/16 (50W)	z 181 0.34	1076	5.00 - 22	
<b>Diagonal Towards End</b>							
4.1	13.35	-3.64	U 1 x 7/8 x 0.091	z 125 0.30	919	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-21.87	U 1 x 1 1/8 x 0.118	z 81 0.86	791	3.00 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-20.61	U 1 x 7/8 x 0.091	z 93 0.98	680	2.30 - 29	
7.2	0.00	-20.01	U 1 x 7/8 x 0.091	z 88 0.90	650	2.30 - 28	

----- **BRIDGING** -----

Maximum spacing between rows of bridging Lateral Supports  
 @ Top Chord: 4614.56 ==> 0 Row(s) Minimum Deck (304.8)  
 @ Bottom Chord: 6651.37 ==> 0 Row(s) Minimum Acc. to the code

Equally Spaced Bridging between Uplift Rows : No

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle



Mark : M16

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:04

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Project no.: W01868  
49 / 56

Designer: Luis Baez  
Area to Paint

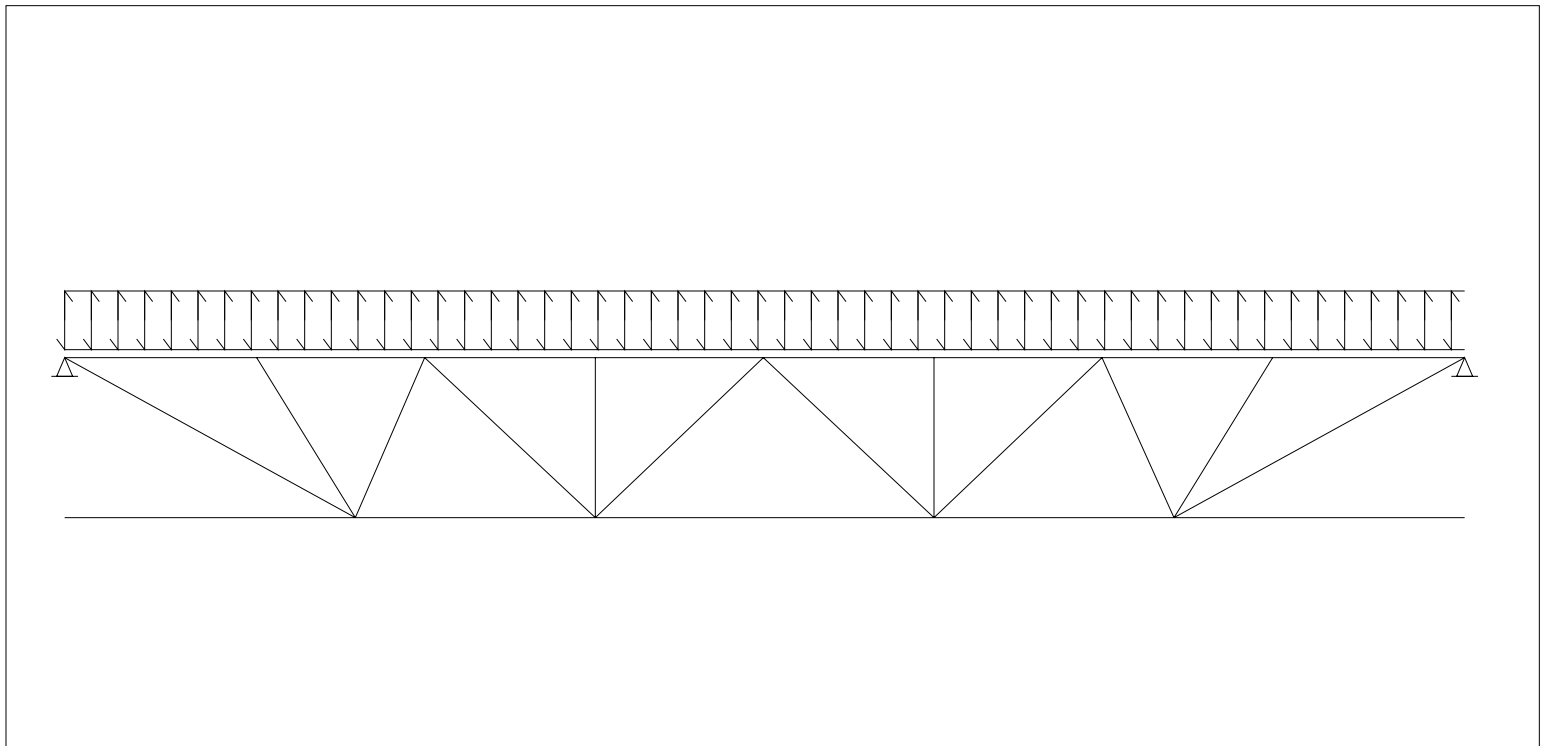
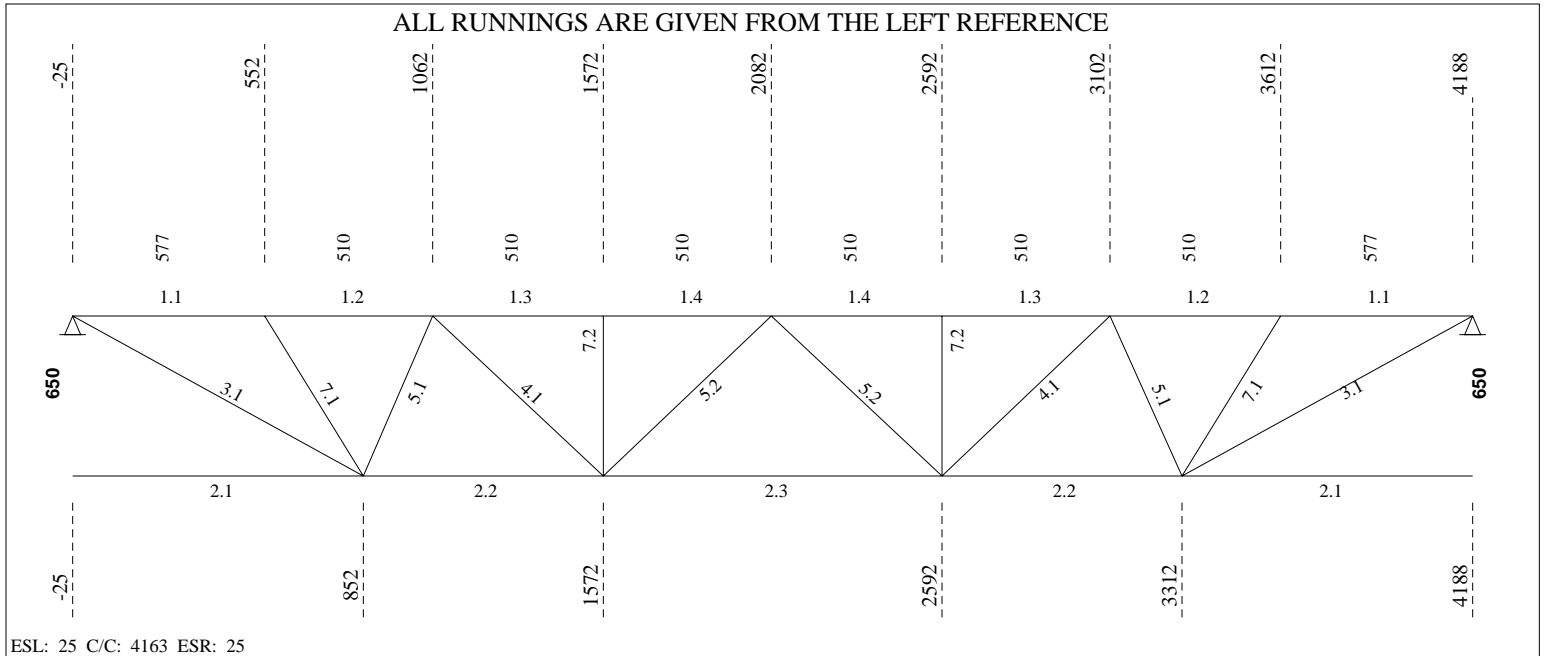
Shop: Canam Group Calgary [Production]  
: 3.63 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M17 (Hybrid Mid Span, Symmetrical,, Free ends)



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 11.43 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.65 mm (L/ 2487)  
 Allowed deflection under total load..... = 17.14 mm (L/ 240)  
 Calculated deflection under service total load..... = 3.45 mm (L/ 1193)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 2.69 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 35.81/ 0.00 kN Right Reaction = 35.81/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-41.26	LL 1 5/8 x 1 5/8 x .157	z 60 0.28	577		
1.2	0.00	-36.93	do	z 58 0.27	510		
1.3	0.00	-55.25	do	z 58 0.37	do		
1.4	0.00	-55.25	LL 1 5/8 x 1 5/8 x .157	z 58 0.37	510		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy148 0.21	877		
2.2	44.39	0.00	do	yy148 0.28	720		
2.3	58.87	0.00	LL 1 5/8 x 1 5/8 x .157	yy148 0.28	1020		
<b>End Diagonal</b>							
3.1	50.52	0.00	BR 15/16 (50W)	z 177 0.37	1051	5.00 - 23	
<b>Diagonal Towards End</b>							
4.1	19.20	0.00	U 1 x 7/8 x 0.091	z 125 0.41	826	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-23.97	U 1 x 1 1/8 x 0.118	z 70 0.81	683	3.00 - 38	
5.2	4.52	-11.26	U 1 x 7/8 x 0.091	z 112 0.74	826	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-20.46	U 1 x 0.091	z 76 0.86	716	2.29 - 29	
7.2	0.00	-18.89	U 1 x 7/8 x 0.091	z 88 0.85	650	2.30 - 27	

----- **BRIDGING** -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 2081.5

Equally Spaced Bridging between Uplift Rows : No





Mark : M17

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:04

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

54 / 60

Area to Paint

: 4.03 m2

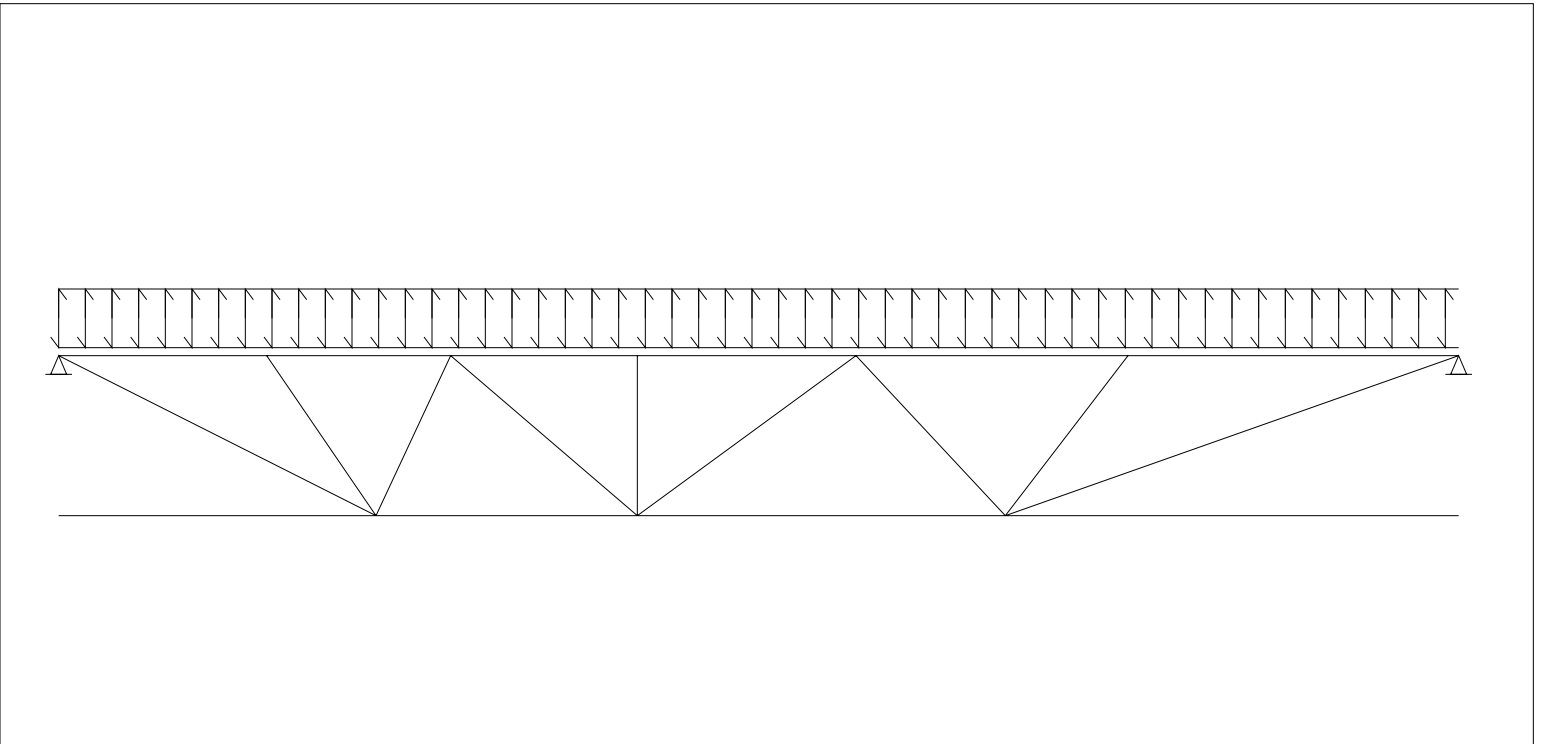
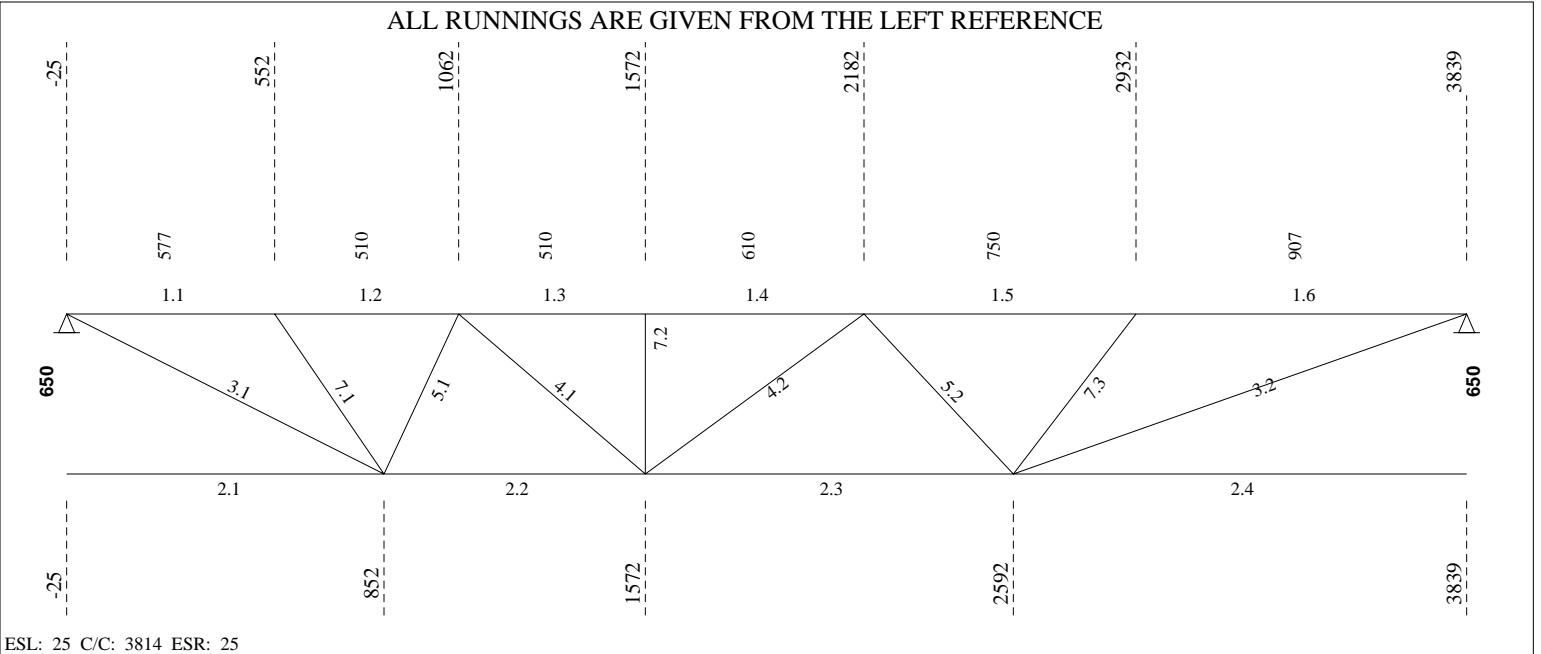
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M18 (Hybrid Mid Span, Asymmetrical., Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 10.46 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.26 mm (L/ 2994)  
 Allowed deflection under total load..... = 15.68 mm (L/ 240)  
 Calculated deflection under service total load..... = 2.62 mm (L/ 1436)  
 Gross joist inertia..... = 135.62 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 2.05 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **FORCES IN MEMBERS [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.92 mm)

Left Reaction = 32.77/ 0.00 kN Right Reaction = 32.77/ 0.00 kN

No	Tension		Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side			
<b>Top Chord</b>										
1.1	0.00	-37.30	LL 1 3/4 x 3/16	z 54	0.18	577				
1.2	0.00	-32.97	do	z 53	0.18	510				
1.3	0.00	-47.79	do	z 53	0.23	510				
1.4	0.00	-47.79	do	z 63	0.54	610				
1.5	0.00	-40.87	do	z 77	0.98	750				
1.6	0.00	-48.48	LL 1 3/4 x 3/16	z 88	0.98	907				
<b>Bottom Chord</b>										
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy135	0.19	877				
2.2	39.40	0.00	do	yy135	0.23	720				
2.3	48.30	0.00	do	yy135	0.23	1020				
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 150	0.23	1247				
<b>End Diagonal</b>										
3.1	45.61	0.00	BR 15/16 (50W)	z 177	0.33	1052	5.00	- 21		
3.2	53.04	0.00	BR 15/16 (50W)	z 229	0.38	1362	5.00	- 25		
<b>Diagonal Towards End</b>										
4.1	16.31	-0.26	U 1 x 7/8 x 0.091	z 112	0.35	826	2.30	- 38		
4.2	7.36	-8.24	U 1 x 7/8 x 0.091	z 121	0.63	891	2.30	- 38		
<b>Diagonal Towards Center</b>										
5.1	0.00	-20.83	U 1 x 0.091	z 73	0.98	683	2.29	- 38		
5.2	0.00	-15.50	U 1 x 0.091	z 82	0.83	769	2.29	- 38		
<b>Secondary Web Member</b>										
7.1	0.00	-20.38	U 1 x 0.091	z 76	0.85	716	2.29	- 29		
7.2	0.00	-19.14	U 1 x 7/8 x 0.091	z 88	0.86	650	2.30	- 27		
7.3	0.00	-23.76	U 1 x 1 1/8 x 0.118	z 75	0.73	734	3.00	- 26		

----- **BRIDGING** -----

Maximum spacing between rows of bridging @ Top Chord: 4782.69 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)



Mark : M18

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:04

@ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Acc. to the code

Equally Spaced Bridging between Uplift Rows : No

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v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

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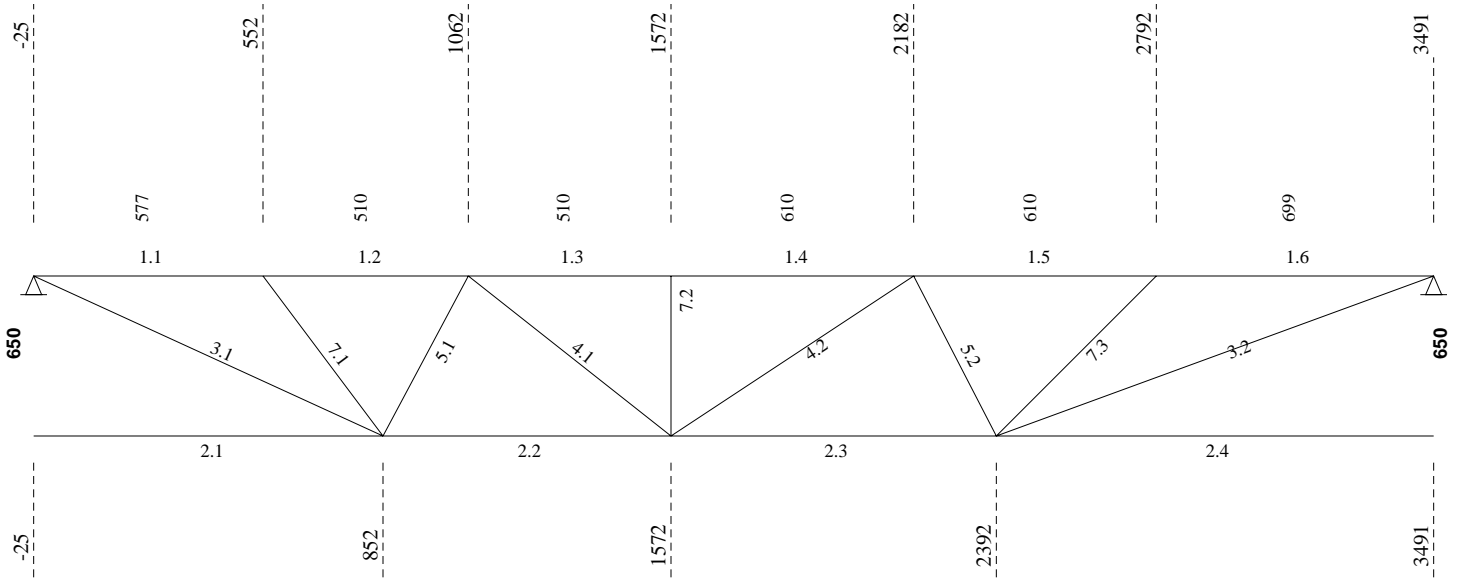
Area to Paint : 3.69 m2

Material Sort : Cost

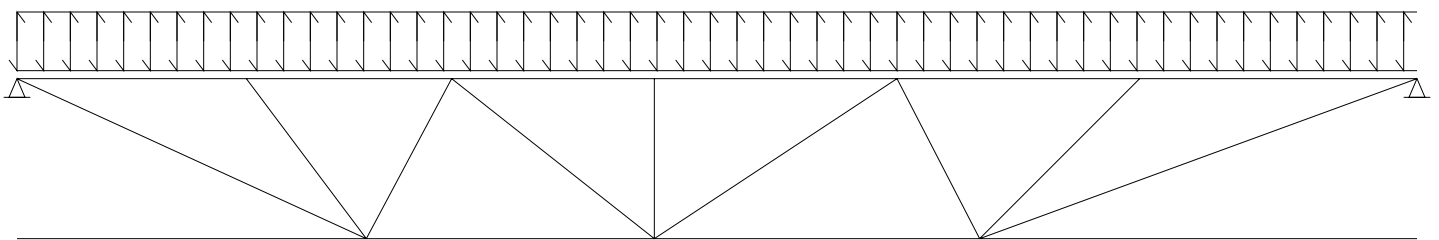
**Project: SEVEN GENER.ENERGY COMM. BLDG**
**JOIST CALCULATION ACCORDING TO S16-09, S136-07 & NBC 2010 (rev 2017)**

Mark : M19 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



ESL: 25 C/C: 3466 ESR: 25



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 9.49 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.06 mm (L/ 3237)  
 Allowed deflection under total load..... = 14.23 mm (L/ 240)  
 Calculated deflection under service total load..... = 2.20 mm (L/ 1552)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.72 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 29.74/ 0.00 kN Right Reaction = 29.74/ 0.00 kN

No	Tension Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
			x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side		
<b>Top Chord</b>								
1.1	0.00	-33.24	LL 1 5/8 x 1 5/8 x .157	z 60 0.23	577			
1.2	0.00	-28.91	do	z 58 0.19	510			
1.3	0.00	-40.24	do	z 58 0.27	510			
1.4	0.00	-40.25	do	z 69 0.31	610			
1.5	0.00	-33.40	do	z 69 0.83	610			
1.6	0.00	-40.42	LL 1 5/8 x 1 5/8 x .157	z 73 0.83	699			
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy123 0.17	877			
2.2	34.34	0.00	do	yy123 0.19	720			
2.3	37.80	0.00	do	yy123 0.19	820			
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 132 0.19	1100			
<b>End Diagonal</b>								
3.1	40.69	0.00	BR 15/16 (50W)	z 177 0.30	1051	5.00 - 20		
3.2	45.76	0.00	BR 15/16 (50W)	z 207 0.33	1234	5.00 - 21		
<b>Diagonal Towards End</b>								
4.1	13.76	-2.06	U 1 x 7/8 x 0.091	z 112 0.30	826	2.30 - 38		
4.2	10.02	-5.65	U 1 x 7/8 x 0.091	z 121 0.43	892	2.30 - 38		
<b>Diagonal Towards Center</b>								
5.1	0.00	-17.93	U 1 x 0.091	z 73 0.84	683	2.29 - 38		
5.2	0.00	-15.51	U 1 x 0.091	z 73 0.73	683	2.29 - 38		
<b>Secondary Web Member</b>								
7.1	0.00	-20.29	U 1 x 0.091	z 76 0.85	716	2.29 - 29		
7.2	0.00	-18.98	U 1 x 7/8 x 0.091	z 88 0.85	650	2.30 - 27		
7.3	0.00	-22.83	U 1 x 1 1/8 x 0.118	z 78 0.73	763	3.00 - 25		

----- **BRIDGING** -----

Maximum spacing between rows of bridging @ Top Chord: 4614.56 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)



Mark : M19

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:04

@ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Acc. to the code

Equally Spaced Bridging between Uplift Rows : No

-----  
v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

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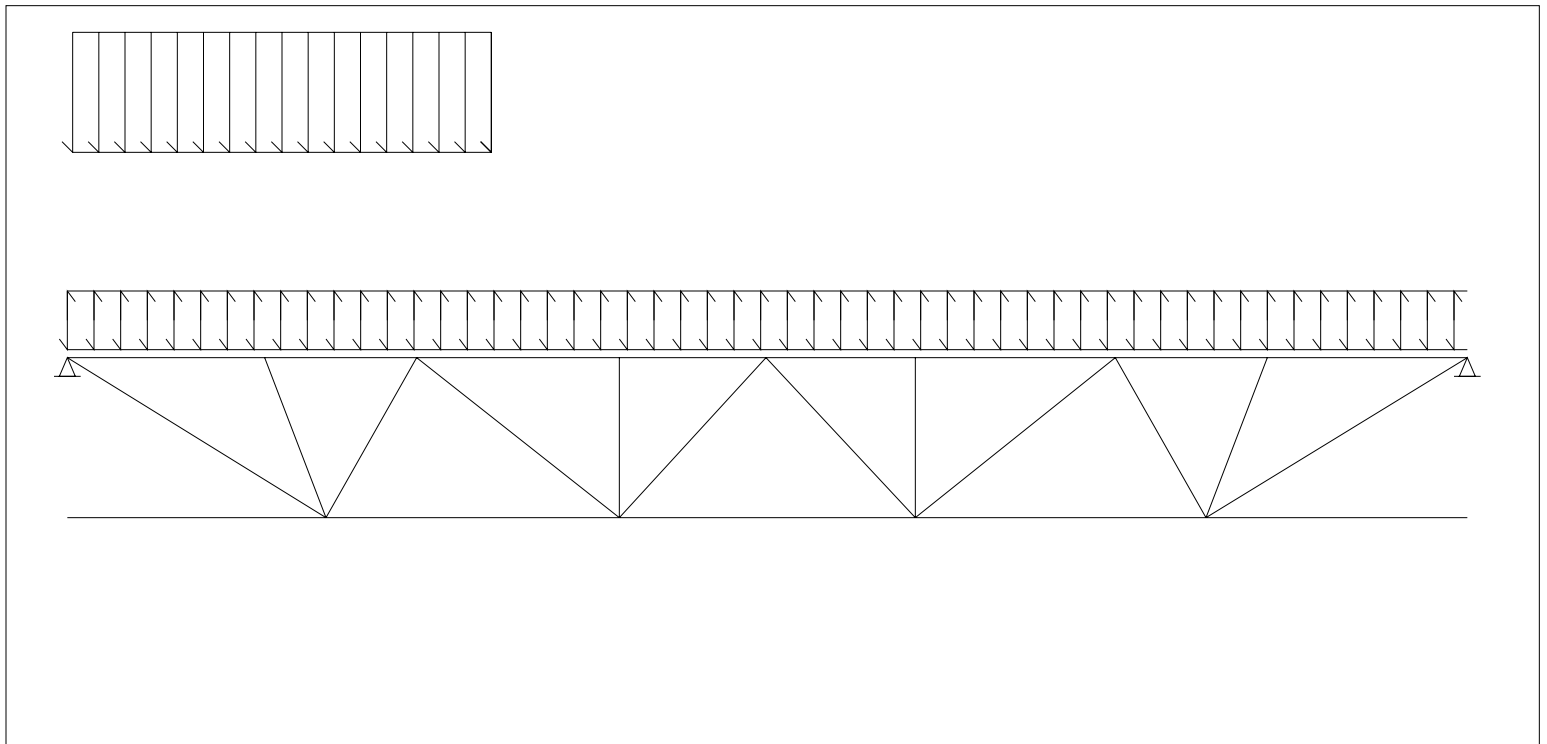
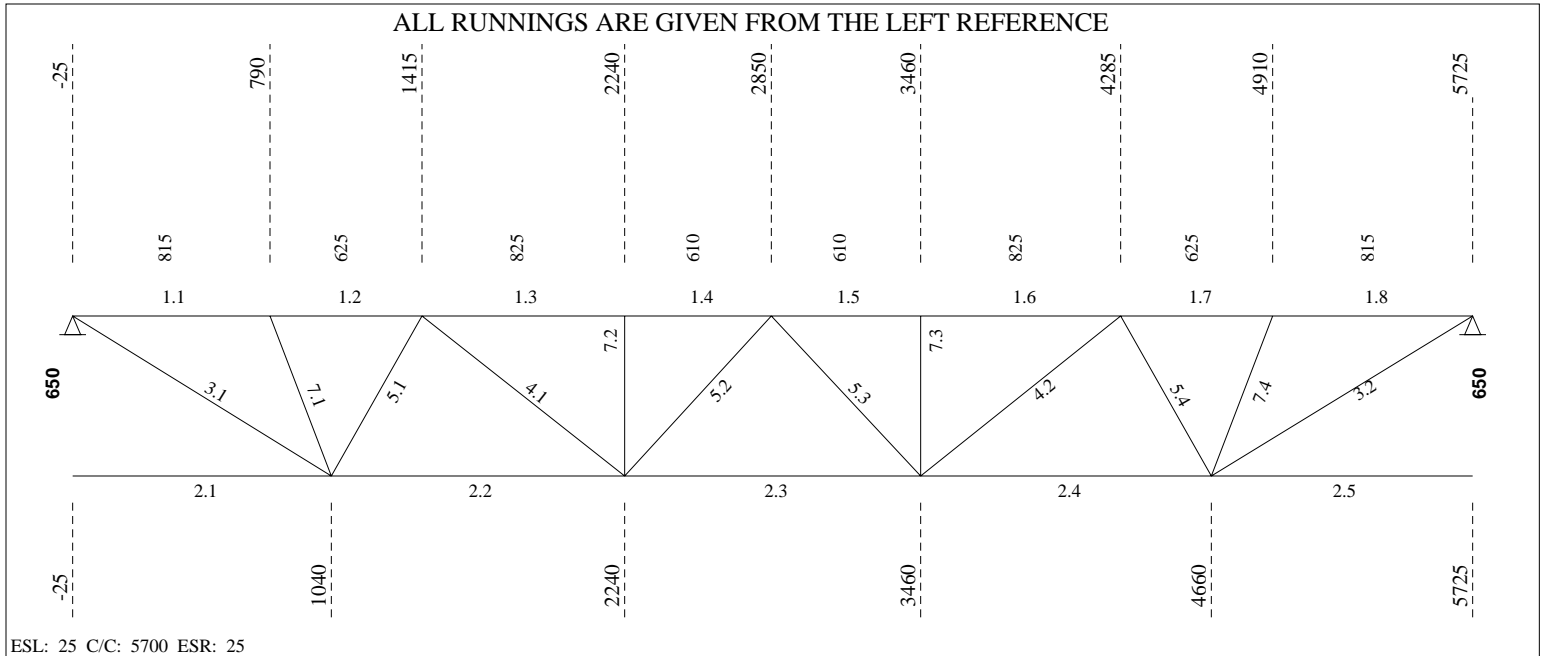
Area to Paint : 3.32 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M20 (Hybrid Mid Span, Symmetrical, Free ends)





**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 2.40 kN/m<sup>2</sup> ( 3.05 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start	Length	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]	[mm]	[mm]		
1	1	2.40	3.05	2.40	3.05	0	1700	1	2

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 15.69 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 2.74 mm (L/ 2063)  
 Allowed deflection under total load..... = 23.54 mm (L/ 240)  
 Calculated deflection under service total load..... = 7.78 mm (L/ 727)  
 Gross joist inertia..... = 123.98 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 6.52 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.78 mm)

Left Reaction = 42.81/ 0.00 kN Right Reaction = 37.42/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-58.72	LL 1 3/4 x 1 3/4 x .157 CF	z 80 0.95	815		
1.2	0.00	-53.88	do	z 65 0.95	625		
1.3	0.00	-84.44	do	z 86 0.92	825		
1.4	0.00	-84.44	do	z 64 0.89	610		
1.5	0.00	-82.23	do	z 64 0.86	610		
1.6	0.00	-82.23	do	z 86 0.89	825		
1.7	0.00	-49.23	do	z 65 0.78	625		
1.8	0.00	-52.81	LL 1 3/4 x 1 3/4 x .157 CF	z 80 0.73	815		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy203 0.33	1065		
2.2	68.31	0.00	do	yy203 0.42	1200		
2.3	87.16	0.00	do	yy203 0.42	1220		
2.4	63.39	0.00	do	yy203 0.42	1200		
2.5	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy203 0.30	1065		
<b>End Diagonal</b>							
3.1	67.03	0.00	BR 15/16 (50W)	z 202 0.49	1205	5.00 - 31	
3.2	60.27	0.00	BR 15/16 (50W)	z 202 0.44	1205	5.00 - 28	
<b>Diagonal Towards End</b>							
4.1	26.93	0.00	U 1 x 7/8 x 0.091	z 159 0.58	1050	2.30 - 38	
4.2	26.93	0.00	U 1 x 7/8 x 0.091	z 159 0.58	1050	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-28.75	U 1 x 1 1/4 x 0.136	z 78 0.88	750	3.45 - 38	
5.2	4.77	-12.72	U 1 x 7/8 x 0.091	z 121 0.97	891	2.30 - 38	
5.3	4.77	-12.72	U 1 x 7/8 x 0.091	z 121 0.97	891	2.30 - 38	



5.4 0.00 -28.44 U 1 x 1 1/4 x 0.136 z 78 0.87 750 3.45 - 38

Secondary Web Member

7.1 0.00 -21.86 U 1 x 0.091 z 74 0.89 696 2.29 - 31

7.2 0.00 -21.22 U 1 x 7/8 x 0.091 z 88 0.95 650 2.30 - 30

7.3 0.00 -21.17 U 1 x 7/8 x 0.091 z 88 0.95 650 2.30 - 30

7.4 0.00 -21.74 U 1 x 0.091 z 74 0.88 696 2.29 - 31

----- BRIDGING -----

Maximum spacing between rows of bridging Lateral Supports  
 @ Top Chord: 4815.82 ==> 1 Row(s) Minimum Deck (304.8)  
 @ Bottom Chord: 6651.37 ==> 0 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 2850

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

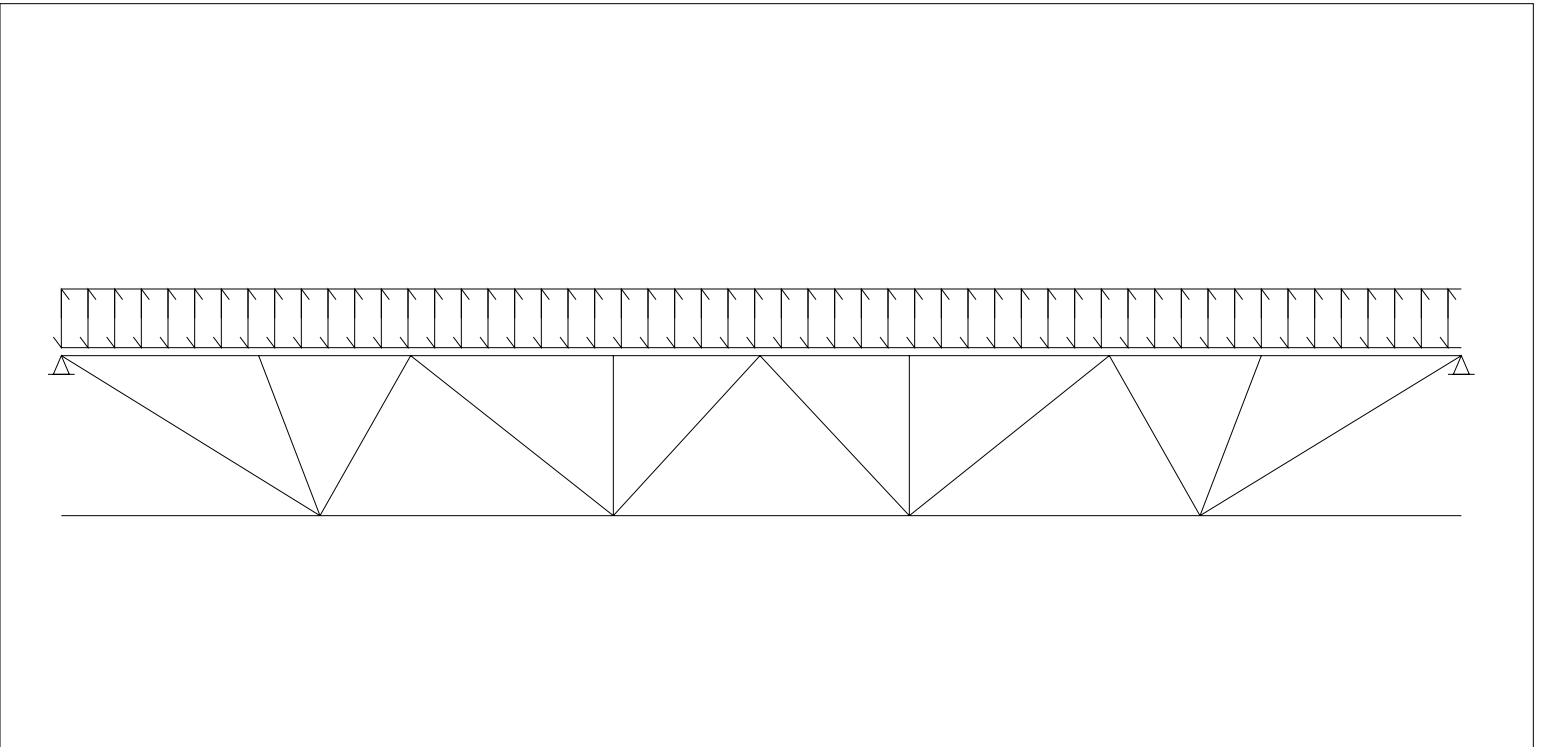
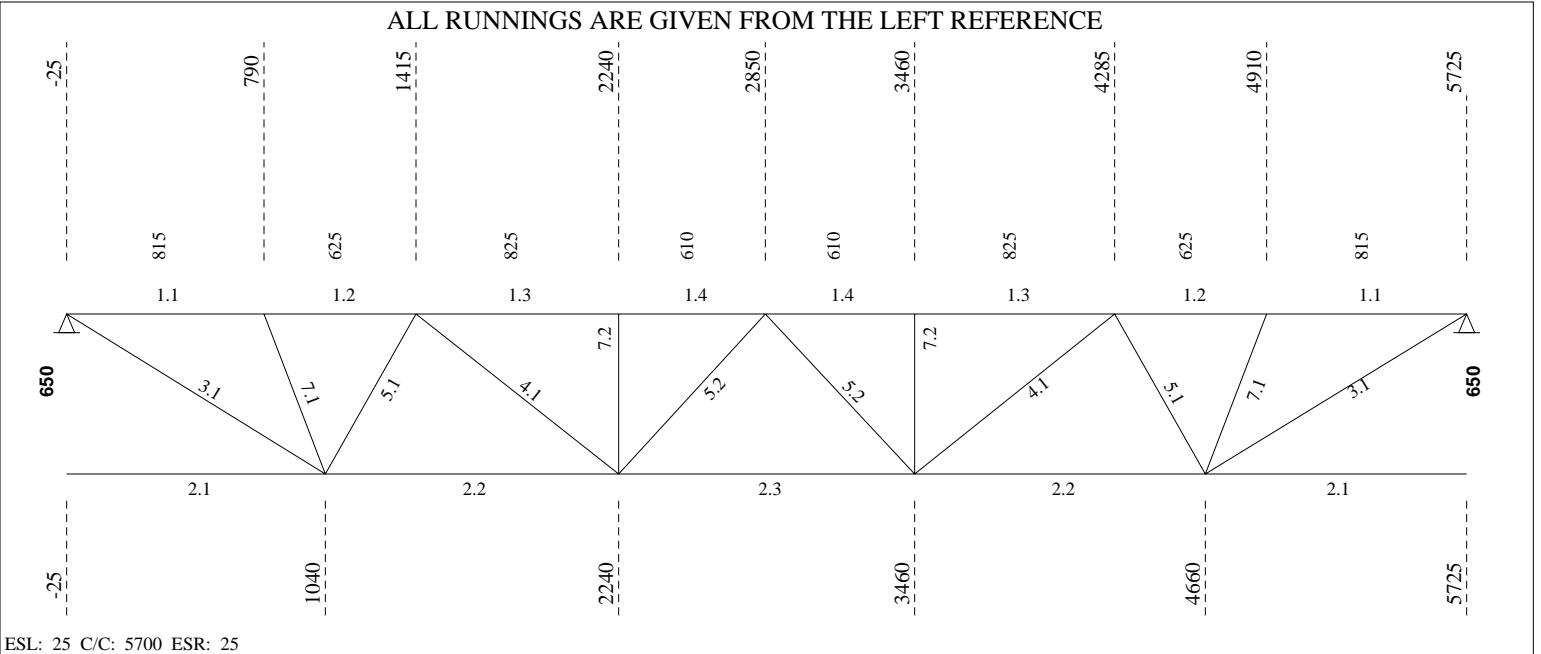
Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 71 / 80 Area to Paint : 5.28 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M21 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M20

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 15.69 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 4.32 mm (L/ 1307)  
 Allowed deflection under total load..... = 23.54 mm (L/ 240)  
 Calculated deflection under service total load..... = 9.02 mm (L/ 627)  
 Gross joist inertia..... = 135.62 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 6.98 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.92 mm)

Left Reaction = 49.20/ 0.00 kN Right Reaction = 49.20/ 0.00 kN

No	Tension Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
			x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	
<b>Top Chord</b>								
1.1	0.00	-69.09	LL 1 3/4 x 3/16	z 79	0.82	815		
1.2	0.00	-64.25	do	z 64	0.86	625		
1.3	0.00	-106.02	do	z 85	0.95	825		
1.4	0.00	-106.02	LL 1 3/4 x 3/16	z 63	0.95	610		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy203	0.40	1065		
2.2	82.51	0.00	do	yy203	0.53	1200		
2.3	111.20	0.00	LL 1 5/8 x 1 5/8 x .157	yy203	0.53	1220		
<b>End Diagonal</b>								
3.1	78.87	0.00	BR 15/16 (50W)	z 202	0.57	1205	5.00 - 36	
<b>Diagonal Towards End</b>								
4.1	32.80	0.00	U 1 x 7/8 x 0.091	z 159	0.70	1050	2.30 - 47	
<b>Diagonal Towards Center</b>								
5.1	0.00	-36.13	d U 1 3/8 x 1 1/4 x 0.118	z 66	0.89	750	3.00 - 39	
5.2	4.77	-14.23	U 1 x 0.091	z 95	0.78	891	2.29 - 38	
<b>Secondary Web Member</b>								
7.1	0.00	-22.08	U 1 x 0.091	z 74	0.90	696	2.29 - 32	
7.2	0.00	-21.68	U 1 x 7/8 x 0.091	z 88	0.97	650	2.30 - 31	

----- **BRIDGING** -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4782.69 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 2850

Equally Spaced Bridging between Uplift Rows : No



Mark : M21

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:04

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

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Area to Paint

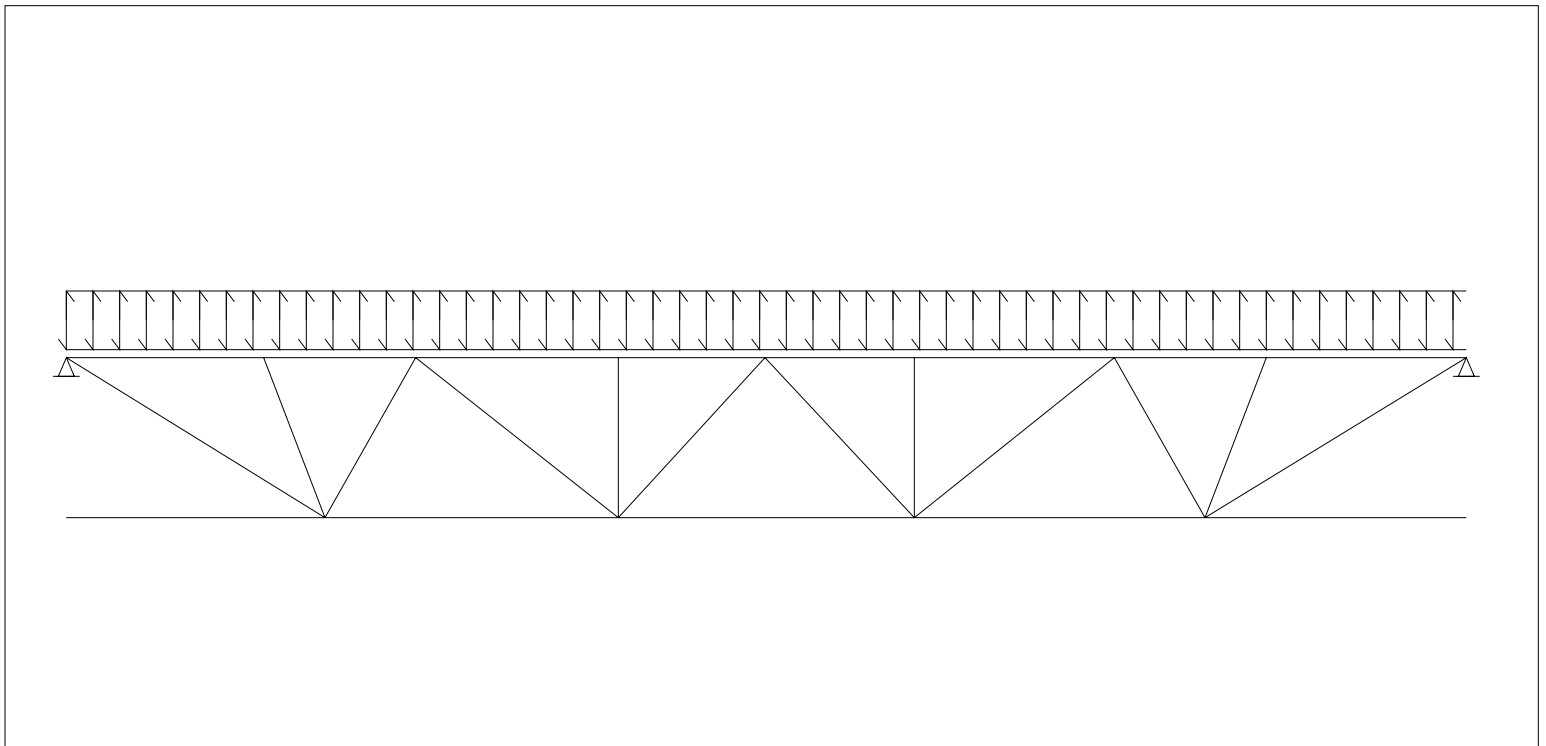
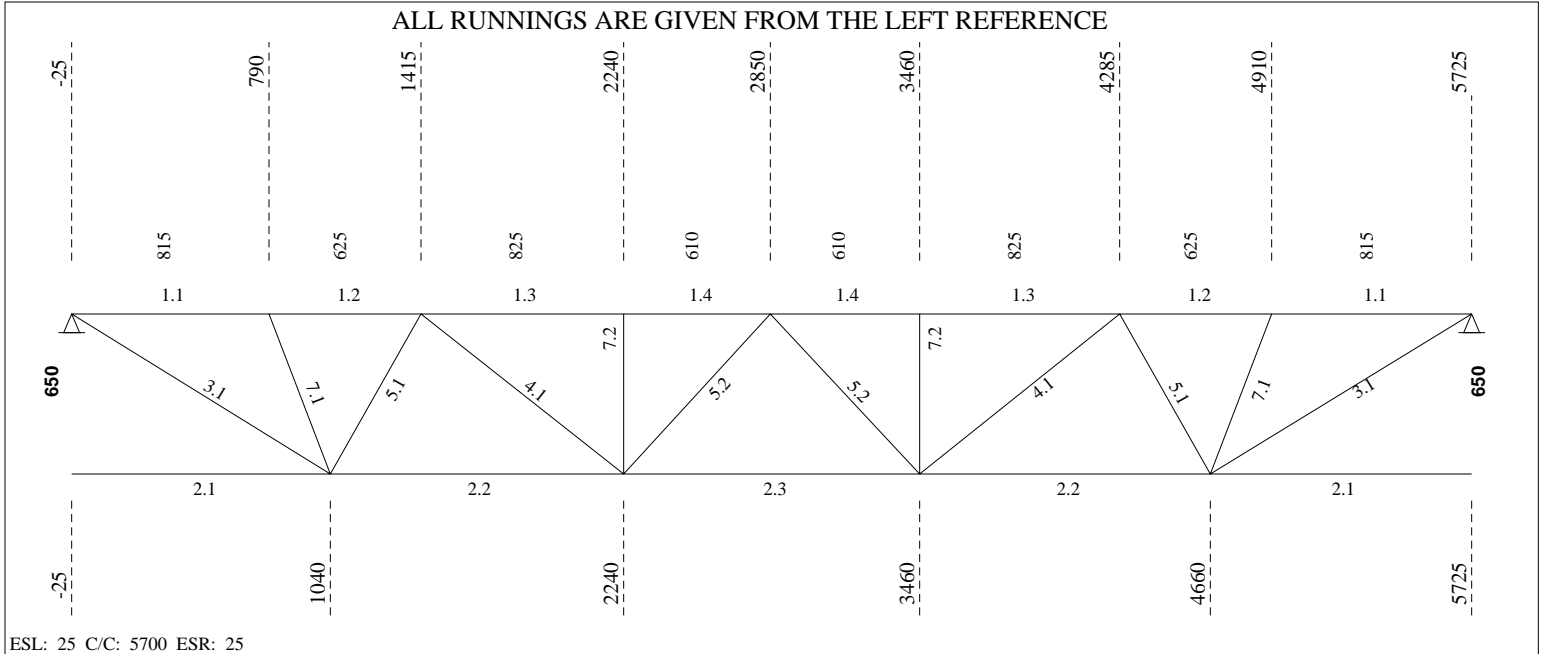
: 5.41 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M22 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M20



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 15.69 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 4.32 mm (L/ 1307)  
 Allowed deflection under total load..... = 23.54 mm (L/ 240)  
 Calculated deflection under service total load..... = 9.02 mm (L/ 627)  
 Gross joist inertia..... = 135.62 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 6.98 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.92 mm)

Left Reaction = 49.20/ 0.00 kN Right Reaction = 49.20/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-69.09	LL 1 3/4 x 3/16	z 79 0.82	815		
1.2	0.00	-64.25	do	z 64 0.86	625		
1.3	0.00	-106.02	do	z 85 0.95	825		
1.4	0.00	-106.02	LL 1 3/4 x 3/16	z 63 0.95	610		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy203 0.40	1065		
2.2	82.51	0.00	do	yy203 0.53	1200		
2.3	111.20	0.00	LL 1 5/8 x 1 5/8 x .157	yy203 0.53	1220		
<b>End Diagonal</b>							
3.1	78.87	0.00	BR 15/16 (50W)	z 202 0.57	1205	5.00 - 36	
<b>Diagonal Towards End</b>							
4.1	32.80	0.00	U 1 x 7/8 x 0.091	z 159 0.70	1050	2.30 - 47	
<b>Diagonal Towards Center</b>							
5.1	0.00	-36.13	d U 1 3/8 x 1 1/4 x 0.118	z 66 0.89	750	3.00 - 39	
5.2	4.77	-14.23	U 1 x 0.091	z 95 0.78	891	2.29 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-22.08	U 1 x 0.091	z 74 0.90	696	2.29 - 32	
7.2	0.00	-21.68	U 1 x 7/8 x 0.091	z 88 0.97	650	2.30 - 31	

----- **BRIDGING** -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4782.69 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 2850

Equally Spaced Bridging between Uplift Rows : No



Mark : M22

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:04

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868  
78 / 87

Designer: Luis Baez  
Area to Paint

Shop: Canam Group Calgary [Production]  
: 5.41 m2

Material Sort : Cost

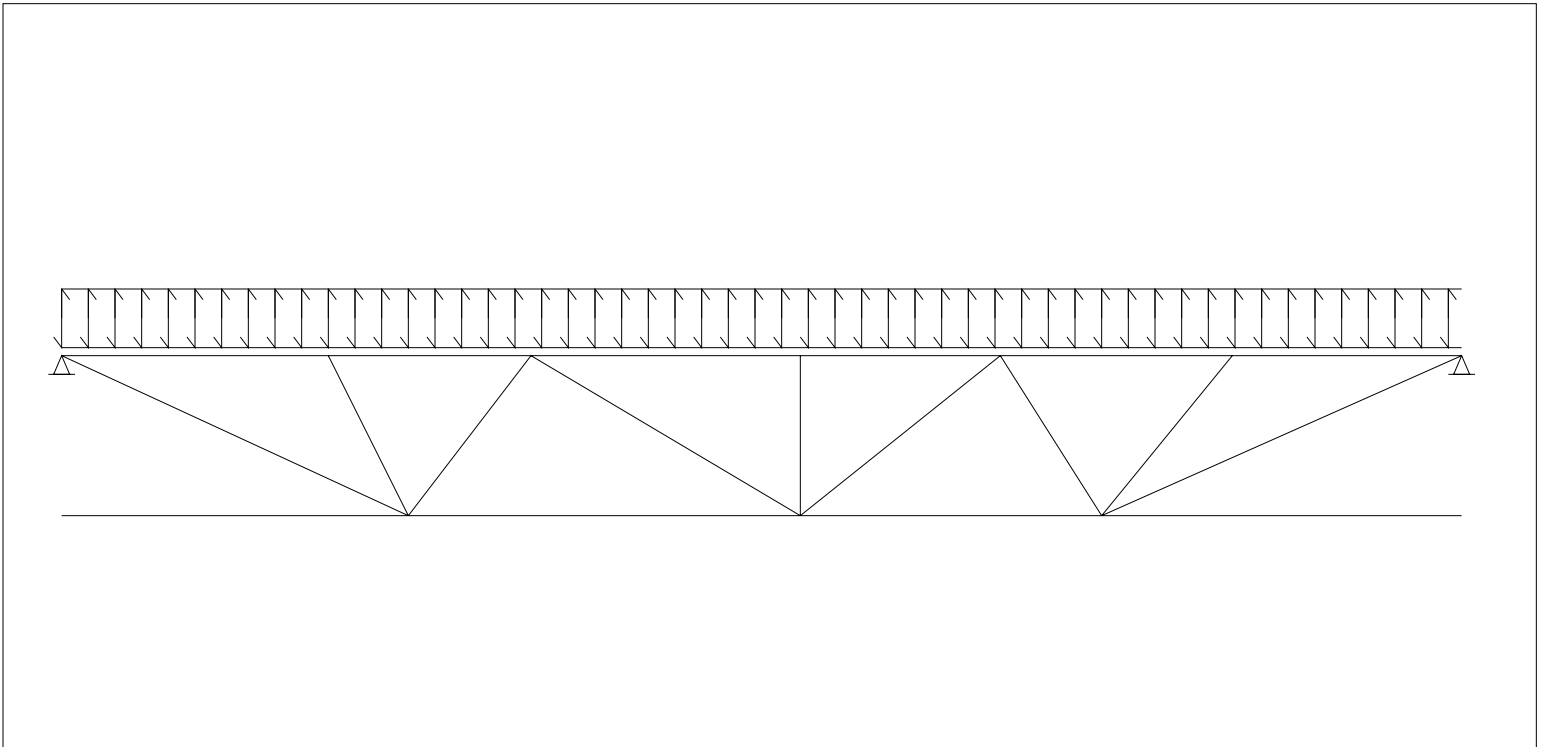
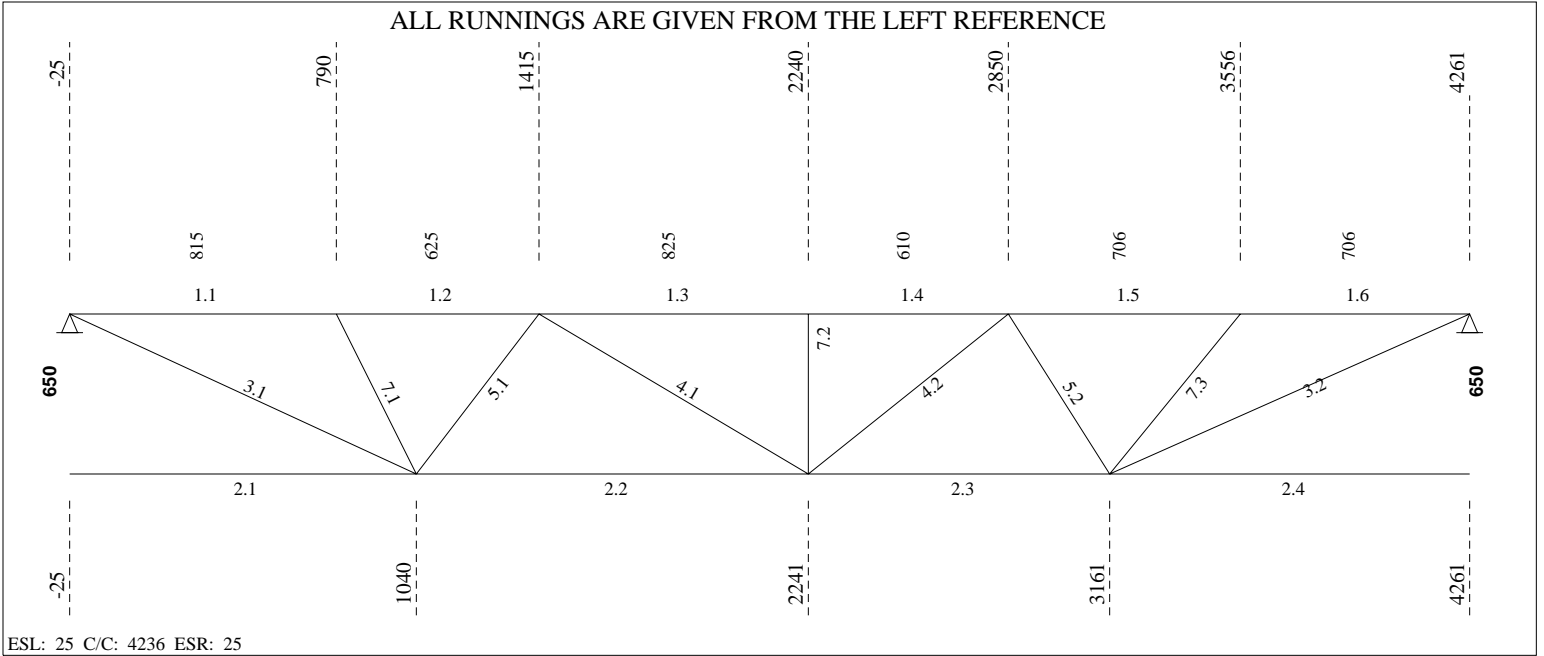


**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M23 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 5.21 kN/m<sup>2</sup> ( 6.62 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 4.80 kN/m<sup>2</sup> ( 6.10 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 11.63 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.83 mm (L/ 2285)  
 Allowed deflection under total load..... = 17.44 mm (L/ 240)  
 Calculated deflection under service total load..... = 3.82 mm (L/ 1096)  
 Gross joist inertia..... = 123.98 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 2.97 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Floor

----- **FORCES IN MEMBERS [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 624.78 mm)

Left Reaction = 36.45/ 0.00 kN Right Reaction = 36.45/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-48.38	LL 1 3/4 x 1 3/4 x.157 CF	z 80 0.88	815		
1.2	0.00	-43.53	do	z 65 0.88	625		
1.3	0.00	-60.85	do	z 86 0.91	825		
1.4	0.00	-60.83	do	z 64 0.91	610		
1.5	0.00	-44.19	do	z 74 0.88	706		
1.6	0.00	-51.69	LL 1 3/4 x 1 3/4 x.157 CF	z 69 0.88	706		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy150 0.26	1065		
2.2	54.15	0.00	do	z 151 0.29	1201		
2.3	53.59	0.00	do	yy150 0.29	920		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	yy150 0.26	1101		
<b>End Diagonal</b>							
3.1	55.22	0.00	BR 15/16 (50W)	z 202 0.40	1205	5.00 - 26	
3.2	58.42	0.00	BR 15/16 (50W)	z 208 0.42	1235	5.00 - 27	
<b>Diagonal Towards End</b>							
4.1	14.17	-4.44	U 1 x 7/8 x 0.091	z 143 0.47	1051	2.30 - 38	
4.2	14.62	-2.54	U 1 x 7/8 x 0.091	z 121 0.31	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-21.77	U 1 x 1 1/8 x 0.118	z 77 0.81	750	3.00 - 38	
5.2	0.00	-22.02	U 1 x 1 1/8 x 0.118	z 74 0.78	721	3.00 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-21.64	U 1 x 0.091	z 74 0.88	696	2.29 - 31	
7.2	0.00	-20.72	U 1 x 7/8 x 0.091	z 88 0.93	650	2.30 - 29	
7.3	0.00	-23.48	U 1 x 1 1/8 x 0.118	z 78 0.75	761	3.00 - 26	

----- **BRIDGING** -----

Maximum spacing between rows of bridging @ Top Chord: 4815.82 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)



Mark : M23

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868) 20/03/27 13:28:05

@ Bottom Chord: 6650.56 ==> 0 Row(s) Minimum Imposed and conc. load 5 or

POSITION @ Top Chord 2118 @ Bottom Chord

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
-U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

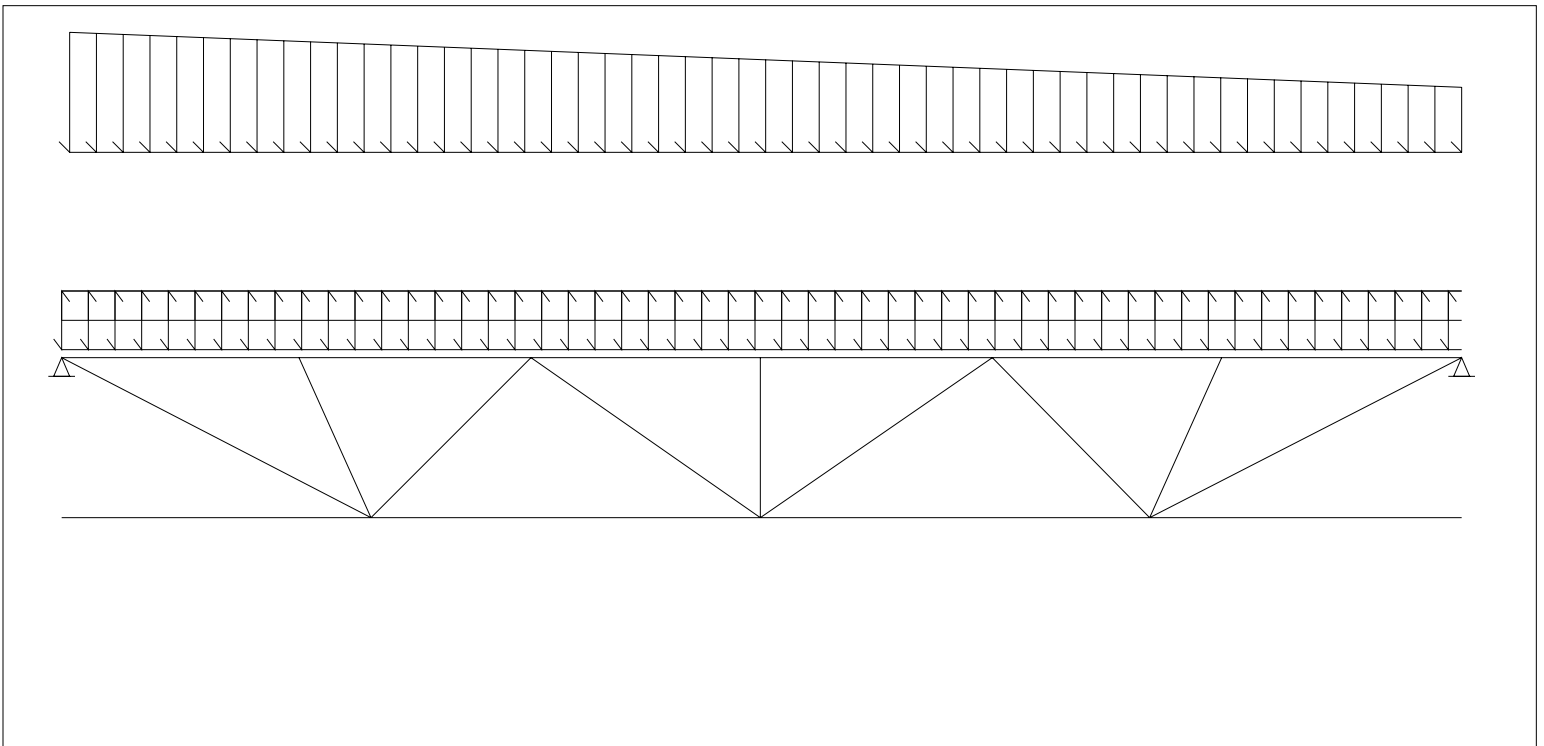
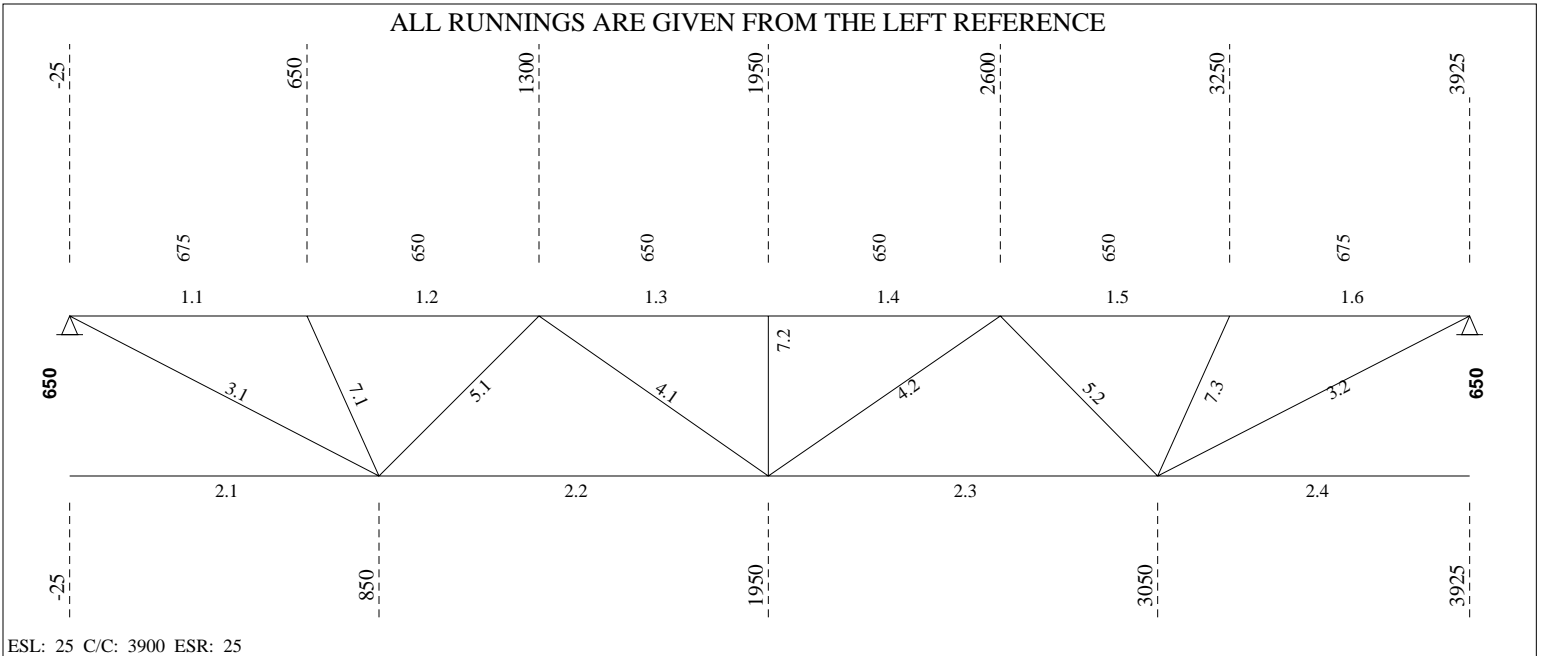
Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
53 / 62 Area to Paint : 3.98 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M24 (Hybrid Mid Span, Symmetrical, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

```

(D) DEAD LOAD.....:      2.10 kN/m^2 (    2.67 kN/m)   SPACING...:  1.27 m
(L) LIVE LOAD.....:      0.00 kN/m^2 (    0.00 kN/m)   Companion load factor (live)...:  1.0
(S) SNOW LOAD.....:      1.86 kN/m^2 (    2.36 kN/m)
(W) GROSS WIND UPLIFT:    0.81 kN/m^2 (    1.03 kN/m)
    
```

----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	5.09	6.46	2.76	3.51	0	3900	1	8

----- **(REAL) DEFLECTION** -----

```

Allowed deflection under live and snow load..... =      10.69 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =      1.53 mm (L/ 2514)
Allowed deflection under total load..... =      21.39 mm (L/ 180)
Calculated deflection under service total load..... =      2.15 mm (L/ 1791)
Gross joist inertia..... =      119.49 x10^6 mm^4
Required camber (100%D + 50%L + 50%S)..... =      1.51 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof
    
```

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 29.03/ 0.00 kN Right Reaction = 26.23/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-31.57	LL 1 5/8 x 1 5/8 x .157	z 71 0.73	675		
1.2	0.00	-28.35	do	z 74 0.73	650		
1.3	0.00	-42.52	do	z 74 0.65	do		
1.4	0.00	-42.52	do	z 74 0.65	do		
1.5	0.00	-26.85	do	z 74 0.61	650		
1.6	0.00	-29.48	LL 1 5/8 x 1 5/8 x .157	z 71 0.61	675		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 104 0.18	875		
2.2	38.31	0.00	do	z 138 0.20	1100		
2.3	37.02	0.00	do	z 138 0.20	1100		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 104 0.18	875		
<b>End Diagonal</b>							
3.1	38.68	0.00	BR 15/16 (50W)	z 176 0.28	1050	5.00 - 20	
3.2	36.12	0.00	BR 15/16 (50W)	z 176 0.26	1050	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	8.42	0.00	U 1 x 7/8 x 0.091	z 139 0.18	919	2.30 - 38	
4.2	9.74	0.00	U 1 x 7/8 x 0.091	z 139 0.21	919	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-17.64	U 1 x 0.091	z 84 0.97	791	2.29 - 38	
5.2	0.00	-17.80	U 1 x 0.091	z 84 0.98	791	2.29 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-11.22	U 1 x 7/8 x 0.091	z 93 0.53	680	2.30 - 25	
7.2	0.00	-10.23	do	z 88 0.46	650	do	



Mark : M24

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:05

7.3 0.00 -9.22 U 1 x 7/8 x 0.091 z 93 0.44 680 2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging					Lateral Supports
@ Top Chord:	4614.56 ==>	0 Row(s) Minimum			Deck (304.8)
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
		850
		3050

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

PARTIAL LOADS

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

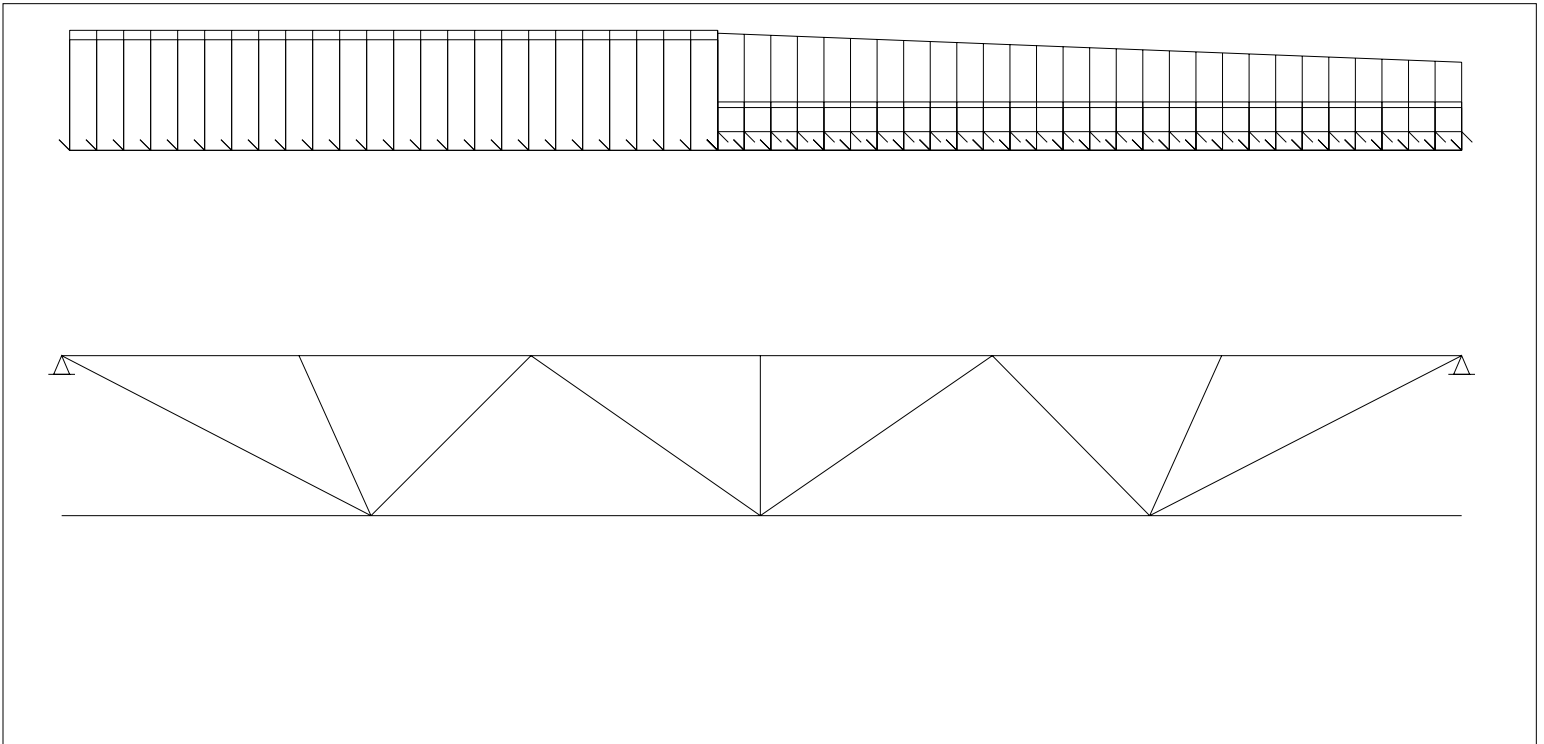
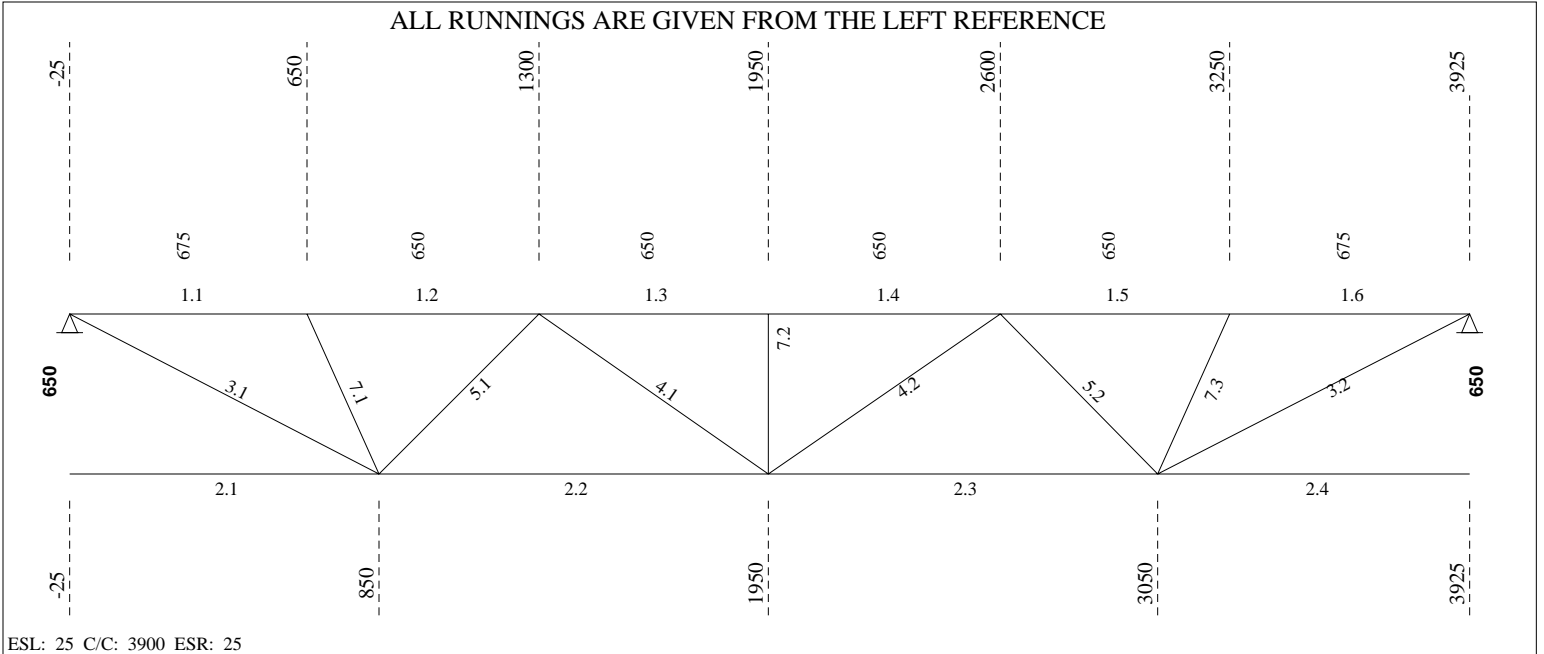
Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
48	/	55	Area to Paint	:	3.58 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M25 (Hybrid Mid Span, Symmetrical, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)

----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	5.21	6.62	5.21	6.62	0	1800	1	1
2	1	2.10	2.67	2.10	2.67	1800	2100	1	1
3	1	4.80	6.10	4.80	6.10	0	1800	1	2
4	1	1.86	2.36	1.86	2.36	1800	2100	1	2
5	1	5.09	6.46	3.83	4.86	1800	2100	1	2
6	1	0.81	1.03	0.81	1.03	1800	2100	1	3

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 10.69 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.65 mm (L/ 2334)  
 Allowed deflection under total load..... = 16.04 mm (L/ 240)  
 Calculated deflection under service total load..... = 2.61 mm (L/ 1474)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.83 mm  
 Required joist inertia..... = 60.00 x10<sup>6</sup> mm<sup>4</sup>  
 Use of the joist (Ref. Sl6-09, art.16.5.1)..... = Floor

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 32.62/ 0.00 kN Right Reaction = 30.22/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-35.84	LL 1 5/8 x 1 5/8 x .157	z 71 0.81	675		
1.2	0.00	-32.29	do	z 74 0.81	650		
1.3	0.00	-48.79	do	z 74 0.76	do		
1.4	0.00	-48.79	do	z 74 0.76	do		
1.5	0.00	-30.87	do	z 74 0.70	650		
1.6	0.00	-33.91	LL 1 5/8 x 1 5/8 x .157	z 71 0.70	675		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 104 0.21	875		
2.2	43.85	0.00	do	z 138 0.23	1100		
2.3	42.53	0.00	do	z 138 0.23	1100		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 104 0.20	875		
<b>End Diagonal</b>							
3.1	43.91	0.00	BR 15/16 (50W)	z 176 0.32	1050	5.00 - 20	
3.2	41.55	0.00	BR 15/16 (50W)	z 176 0.30	1050	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	10.89	-6.31	U 1 x 7/8 x 0.091	z 125 0.51	919	2.30 - 38	
4.2	14.02	-3.16	U 1 x 7/8 x 0.091	z 125 0.30	919	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-20.69	U 1 x 1 1/8 x 0.118	z 81 0.81	791	3.00 - 38	





5.2	0.00	-21.16	U 1 x 1 1/8 x 0.118	z 81	0.83	791	3.00 - 38
<b>Secondary Web Member</b>							
7.1	0.00	-20.40	U 1 x 7/8 x 0.091	z 93	0.97	680	2.30 - 29
7.2	0.00	-17.65	do	z 88	0.79	650	2.30 - 25
7.3	0.00	-17.07	U 1 x 7/8 x 0.091	z 93	0.81	680	2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6651.37 ==> 2 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 850  
 3050

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

- LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
- U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

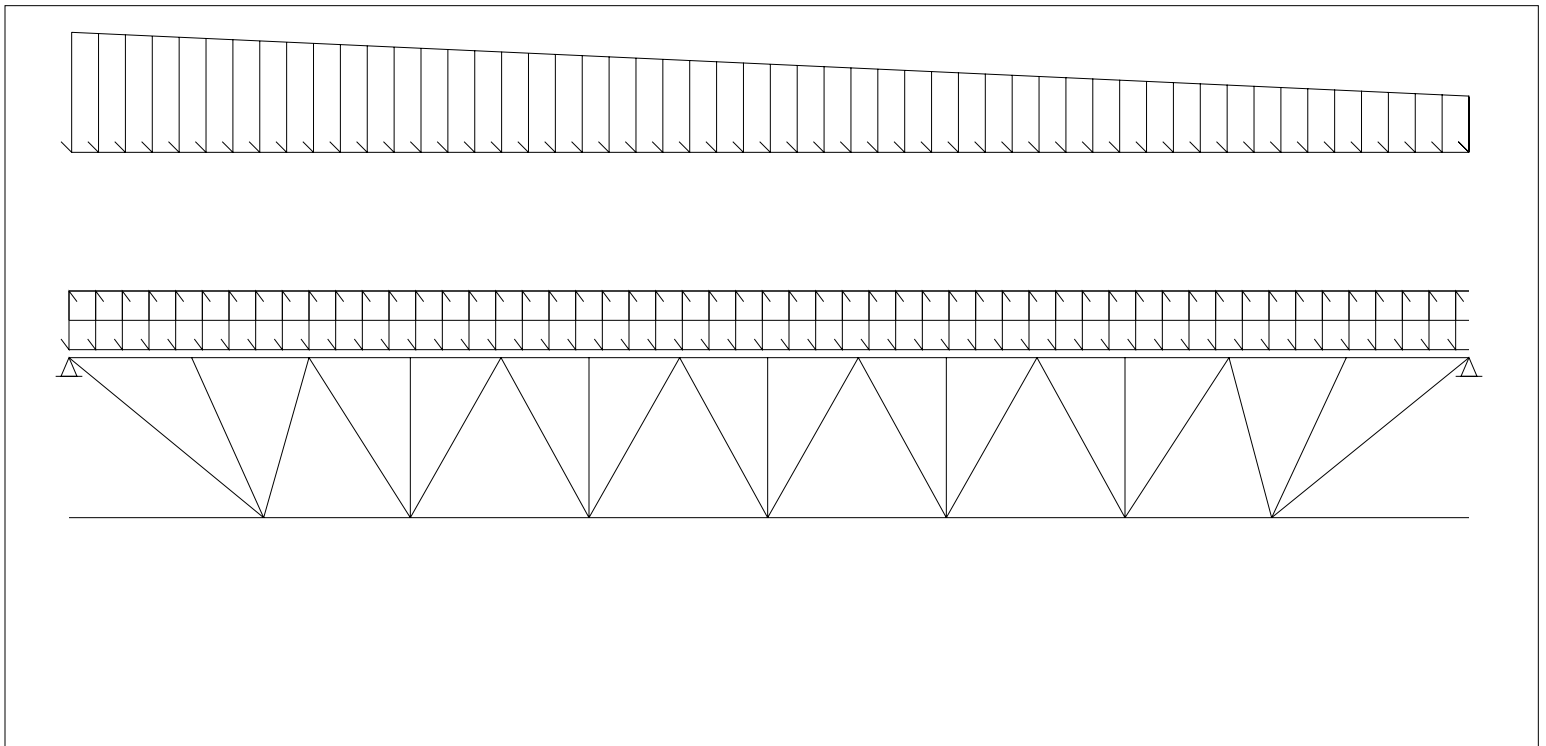
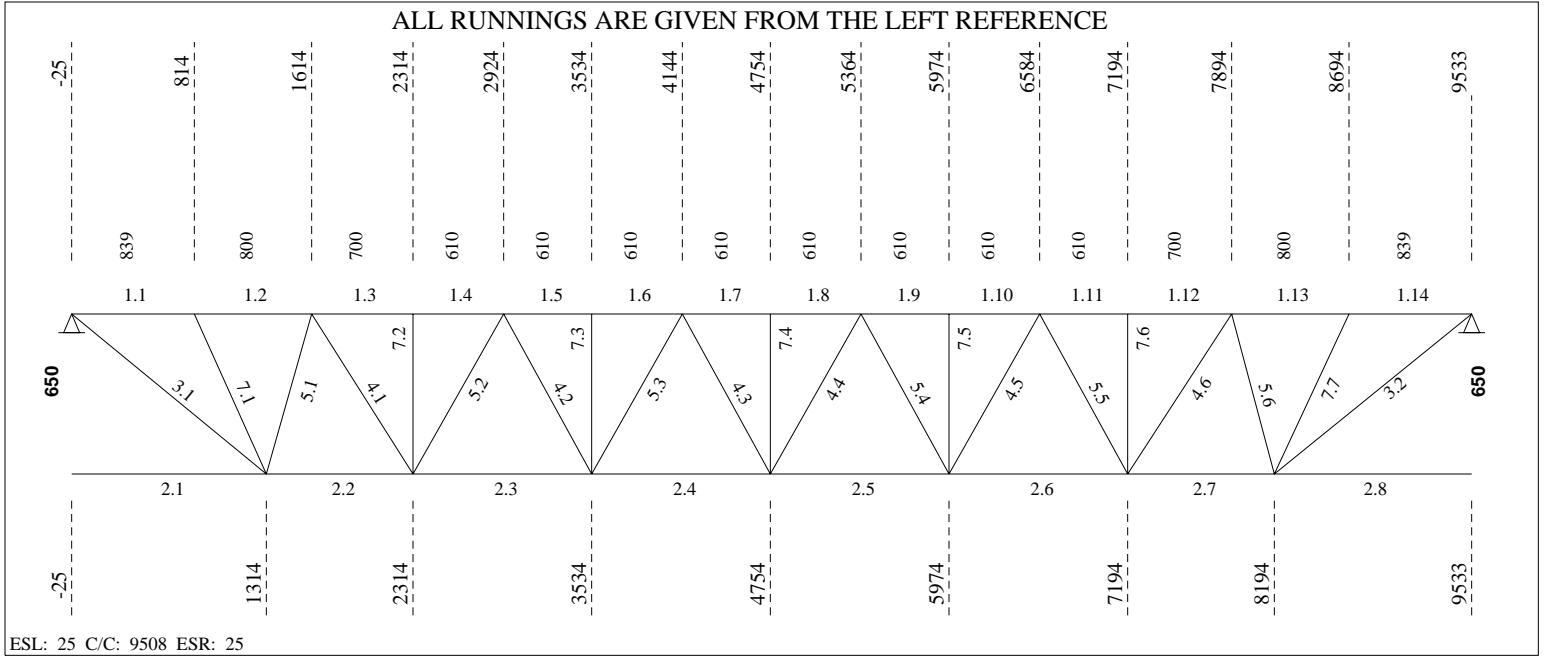
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 49 / 56 Area to Paint : 3.59 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M26 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:    2.10 kN/m<sup>2</sup> (    2.28 kN/m)    SPACING...:    1.09 m  
 (L) LIVE LOAD.....:    0.00 kN/m<sup>2</sup> (    0.00 kN/m)    Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....:    1.86 kN/m<sup>2</sup> (    2.02 kN/m)  
 (W) GROSS WIND UPLIFT:    0.81 kN/m<sup>2</sup> (    0.88 kN/m)

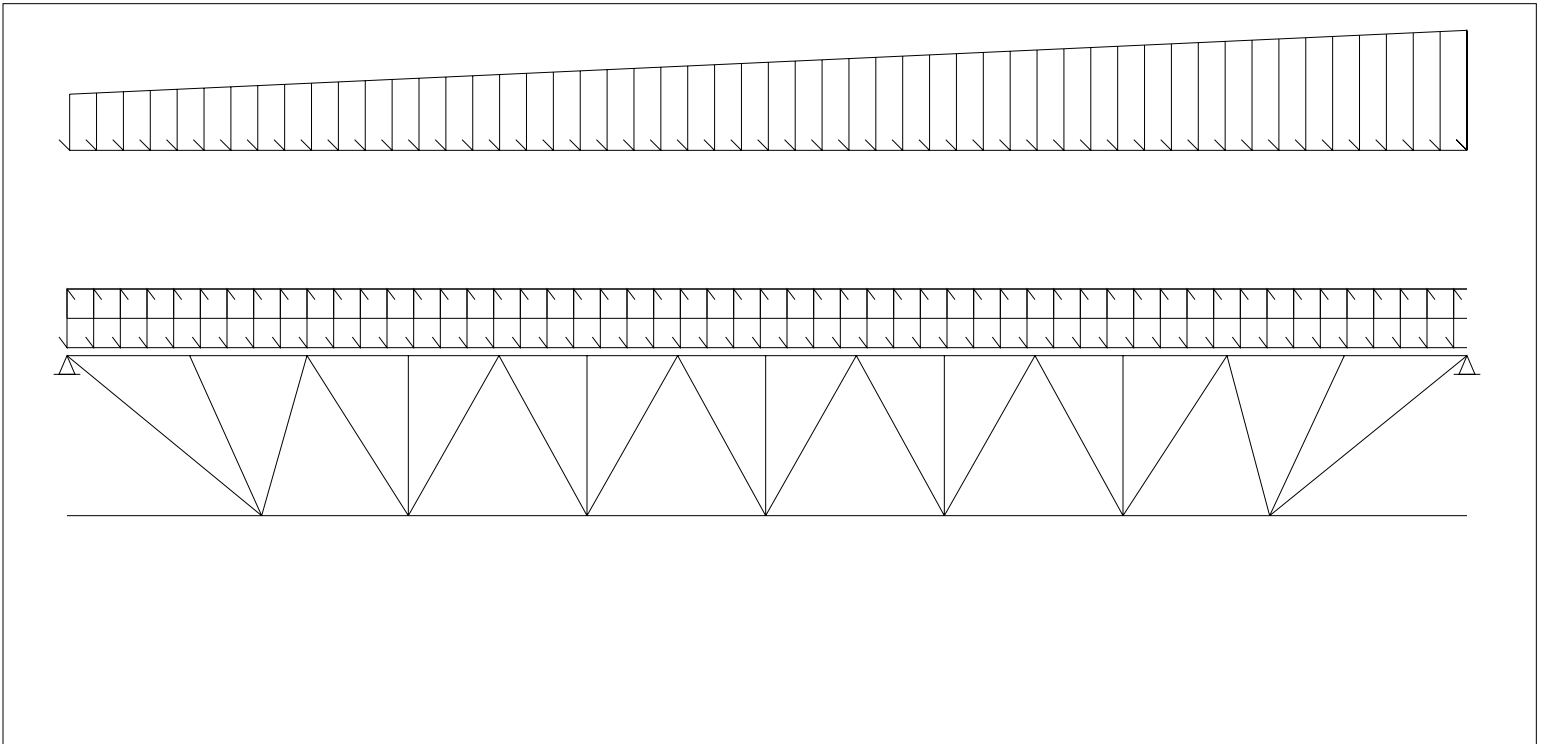
----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord	Cat.
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	5.09	5.52	2.39	2.59	0	9508	1	8

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =    26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) =    22.51 mm (L/ 420)  
 Allowed deflection under total load..... =    52.54 mm (L/ 180)  
 Calculated deflection under service total load..... =    31.90 mm (L/ 297)  
 Gross joist inertia..... =    141.48 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... =    22.12 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

===== **LOAD NO 2 ( M26#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.28 kN/m) SPACING...: 1.09 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.02 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 0.88 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.39	2.59	5.09	5.52	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 22.51 mm (L/ 420)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 31.90 mm (L/ 297)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 624.13 mm)

Left Reaction = 59.99/ 0.00 kN Right Reaction = 59.99/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-112.48	LL 1 3/4 x 3/16	z 81 0.99	839		
1.2	0.00	-103.71	do	z 83 0.99	800		
1.3	0.00	-162.14	x do	xx 46 0.97	700		
1.4	0.00	-162.14	do	z 63 0.88	610		
1.5	0.00	-203.12	x do	xx 40 0.85	do		
1.6	0.00	-203.12	x do	xx 40 0.85	do		
1.7	0.00	-214.23	x do	xx 40 0.90	do		
1.8	0.00	-214.23	x do	xx 40 0.90	do		
1.9	0.00	-203.12	x do	xx 40 0.85	do		
1.10	0.00	-203.12	x do	xx 40 0.85	do		
1.11	0.00	-162.14	do	z 63 0.88	610		
1.12	0.00	-162.14	x do	xx 46 0.97	700		
1.13	0.00	-103.71	do	z 83 0.99	800		
1.14	0.00	-112.48	LL 1 3/4 x 3/16	z 81 0.99	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 3/4 x 1 3/4 x .157 CF	z 150 0.55	1339		
2.2	124.63	0.00	do	yy119 0.83	1000		
2.3	186.45	0.00	do	z 142 0.94	1220		
2.4	212.32	0.00	do	z 142 0.95	do		
2.5	212.32	0.00	do	z 142 0.95	do		
2.6	186.45	0.00	do	z 142 0.94	1220		
2.7	124.63	0.00	do	yy119 0.83	1000		
2.8	0.00	0.00	LL 1 3/4 x 1 3/4 x .157 CF	z 150 0.55	1339		
<b>End Diagonal</b>							
3.1	120.96	0.00	BR 15/16 (50W)	z 242 0.88	1444	5.00 - 56	
3.2	120.96	0.00	BR 15/16 (50W)	z 242 0.88	1444	5.00 - 56	
<b>Diagonal Towards End</b>							
4.1	50.67	0.00	U 1 x 1 1/4 x 0.136	z 100 0.57	955	3.45 - 48	

4.2	29.54	0.00	U 1 x 7/8 x 0.091	z 135 0.63	891	2.30 - 42
4.3	13.18	-5.56	do	z 121 0.43	do	2.30 - 38
4.4	13.18	-5.56	do	z 121 0.43	do	2.30 - 38
4.5	29.54	0.00	U 1 x 7/8 x 0.091	z 135 0.63	891	2.30 - 42
4.6	50.67	0.00	U 1 x 1 1/4 x 0.136	z 100 0.57	955	3.45 - 48

**Diagonal Towards Center**

5.1	0.00	-48.33	d U 1 3/8 x 0.136	z 59 0.93	716	3.45 - 46
5.2	0.00	-37.78	d U 1 3/8 x 1 1/4 x 0.118	z 79 0.89	891	3.00 - 41
5.3	0.00	-21.34	U 1 x 1 1/8 x 0.118	z 91 0.83	do	3.00 - 38
5.4	0.00	-21.34	U 1 x 1 1/8 x 0.118	z 91 0.83	do	3.00 - 38
5.5	0.00	-37.78	d U 1 3/8 x 1 1/4 x 0.118	z 79 0.89	891	3.00 - 41
5.6	0.00	-48.33	d U 1 3/8 x 0.136	z 59 0.93	716	3.45 - 46

**Secondary Web Member**

7.1	0.00	-16.19	U 1 x 0.091	z 87 0.79	820	2.29 - 25
7.2	0.00	-12.01	U 1 x 7/8 x 0.091	z 88 0.54	650	2.30 - 25
7.3	0.00	-11.93	do	z 88 0.54	do	do
7.4	0.00	-11.82	do	z 88 0.53	do	do
7.5	0.00	-11.93	do	z 88 0.54	do	do
7.6	0.00	-12.01	U 1 x 7/8 x 0.091	z 88 0.54	650	2.30 - 25
7.7	0.00	-16.19	U 1 x 0.091	z 87 0.79	820	2.29 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging

@ Top Chord:	4782.69 ==>	1 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6933.43 ==>	3 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord	
	4754	Add 1314	
		4754	
		Add 8194	

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension

Chord: 1 = Top, 2 = Bottom

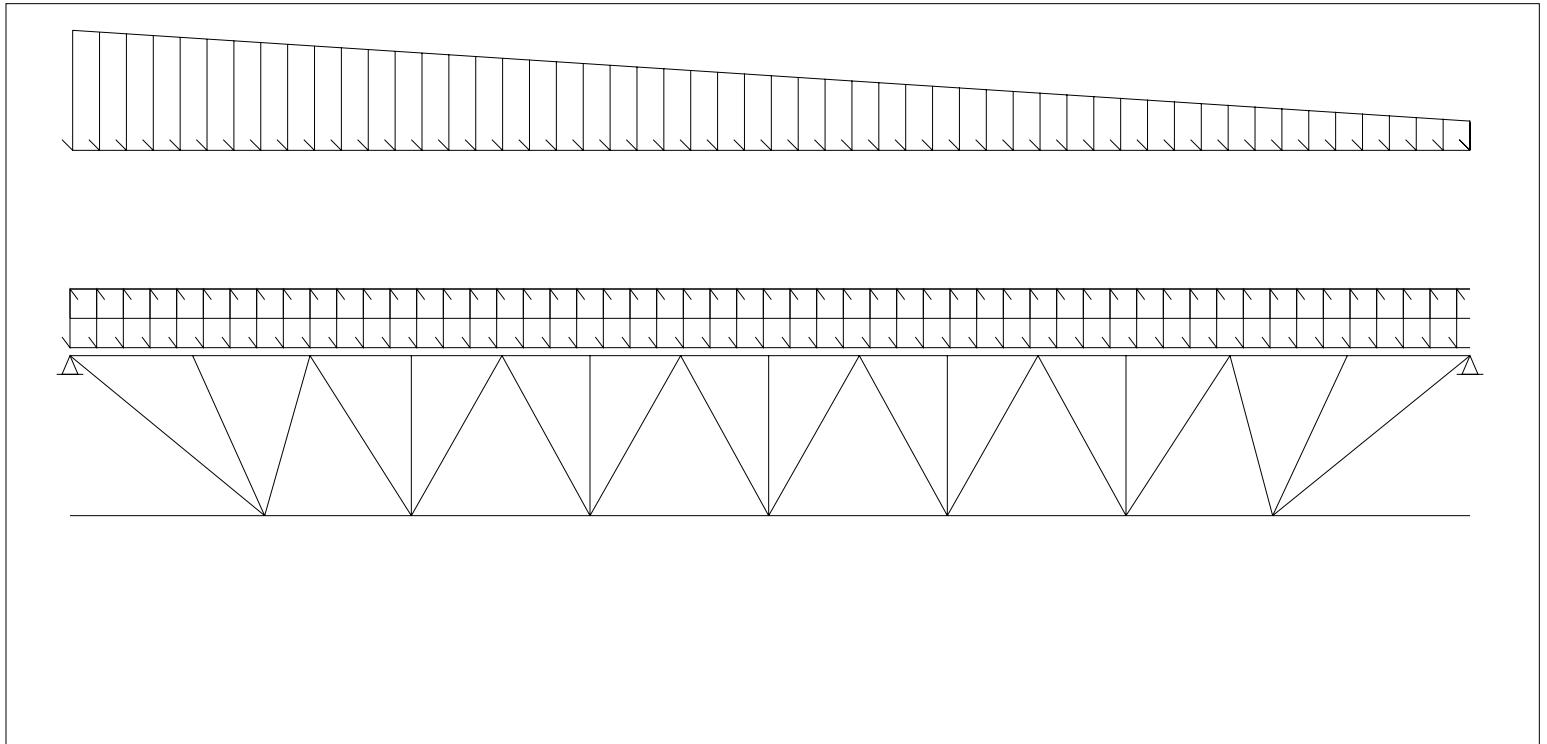
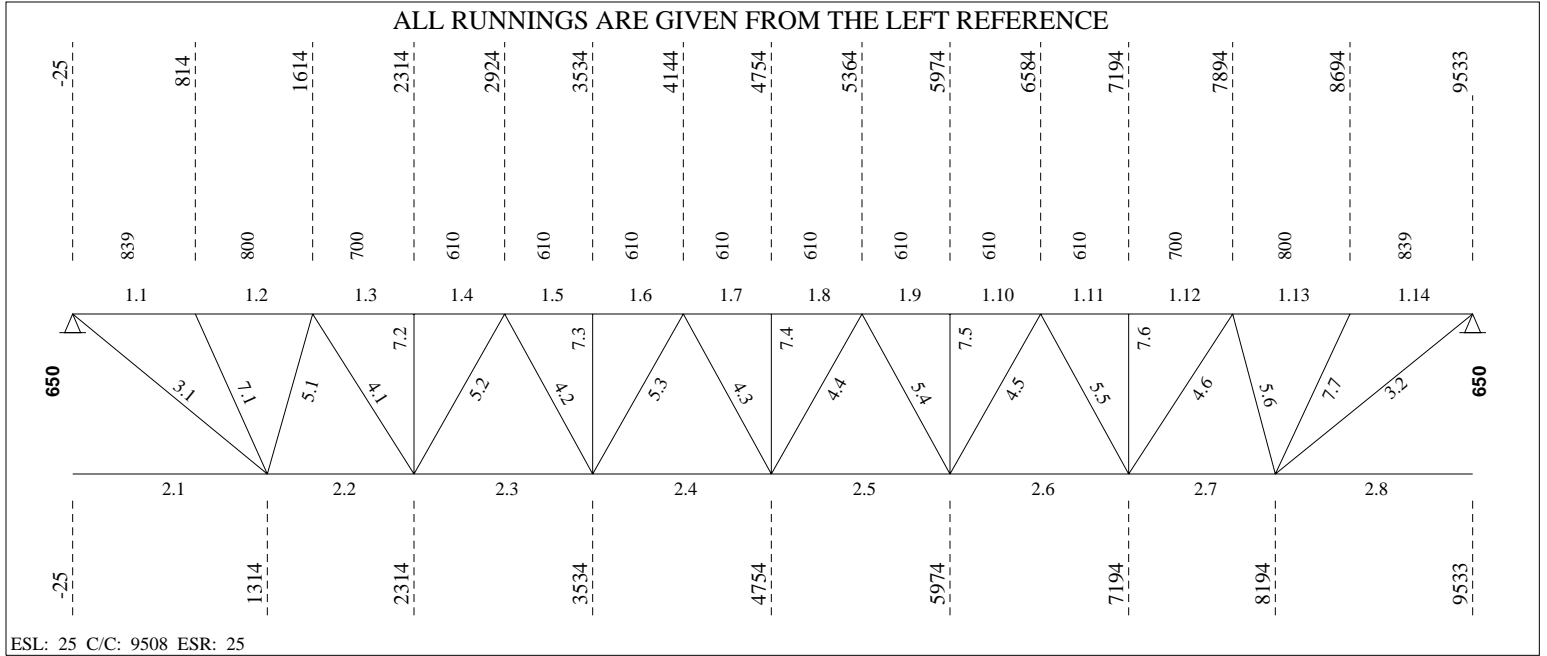
Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
136	/	148	Area to Paint	:	9.36 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M27 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.28 kN/m) SPACING...: 1.09 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.02 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 0.88 kN/m)

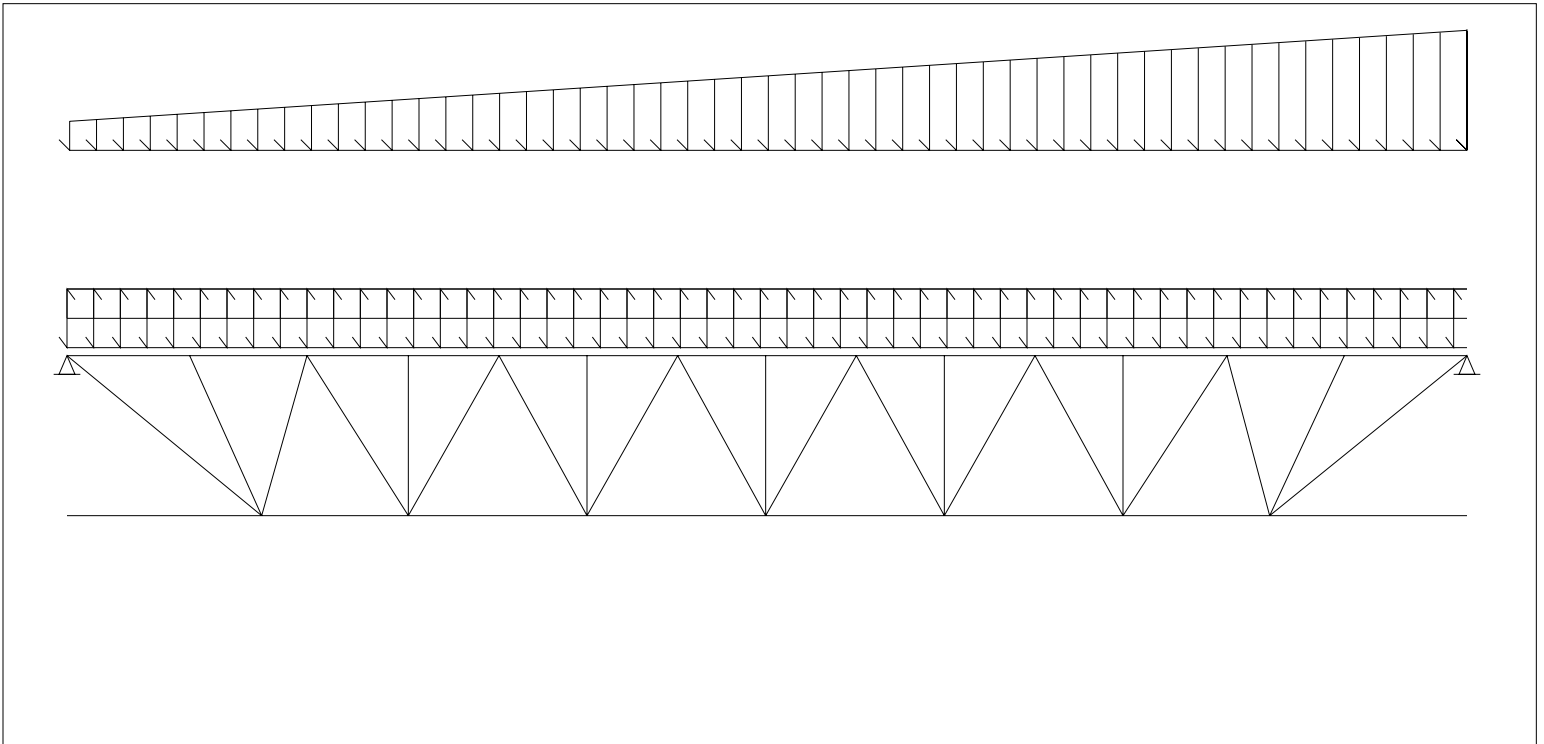
----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord	Cat.
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	3.78	4.10	0.92	1.00	0	9508	1	8

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 19.19 mm (L/ 493)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 29.82 mm (L/ 317)  
 Gross joist inertia..... = 123.98 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 21.52 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

===== **LOAD NO 2 ( M27#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.28 kN/m) SPACING...: 1.09 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.02 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 0.88 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	0.92	1.00	3.78	4.10	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 19.19 mm (L/ 493)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 29.82 mm (L/ 317)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 624.78 mm)

Left Reaction = 49.52/ 0.00 kN Right Reaction = 49.52/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-92.49	LL 1 3/4 x 1 3/4 x .157 CF	z 82 0.99	839		
1.2	0.00	-85.10	do	z 84 0.99	800		
1.3	0.00	-132.61 x	do	xx 46 0.96	700		
1.4	0.00	-132.61	do	z 64 0.88	610		
1.5	0.00	-165.37 x	do	xx 40 0.84	do		
1.6	0.00	-165.37 x	do	xx 40 0.84	do		
1.7	0.00	-173.61 x	do	xx 40 0.88	do		
1.8	0.00	-173.61 x	do	xx 40 0.88	do		
1.9	0.00	-165.37 x	do	xx 40 0.84	do		
1.10	0.00	-165.37 x	do	xx 40 0.84	do		
1.11	0.00	-132.61	do	z 64 0.88	610		
1.12	0.00	-132.61 x	do	xx 46 0.96	700		
1.13	0.00	-85.10	do	z 84 0.99	800		
1.14	0.00	-92.49	LL 1 3/4 x 1 3/4 x .157 CF	z 82 0.99	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.49	1339		
2.2	102.19	0.00	do	z 126 0.73	1000		
2.3	152.15	0.00	do	z 153 0.83	1220		
2.4	172.47	0.00	do	z 153 0.83	do		
2.5	172.47	0.00	do	z 153 0.83	do		
2.6	152.15	0.00	do	z 153 0.83	1220		
2.7	102.19	0.00	do	z 126 0.73	1000		
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.49	1339		
<b>End Diagonal</b>							
3.1	99.56	0.00	BR 15/16 (50W)	z 242 0.72	1444	5.00 - 46	
3.2	99.56	0.00	BR 15/16 (50W)	z 242 0.72	1444	5.00 - 46	
<b>Diagonal Towards End</b>							
4.1	41.11	0.00	U 1 x 1 1/8 x 0.118	z 109 0.56	955	3.00 - 45	



4.2	24.06	0.00	U 1 x 7/8 x 0.091	z 135 0.52	891	2.30 - 38
4.3	10.74	-4.54	do	z 121 0.35	do	do
4.4	10.74	-4.54	do	z 121 0.35	do	do
4.5	24.06	0.00	U 1 x 7/8 x 0.091	z 135 0.52	891	2.30 - 38
4.6	41.11	0.00	U 1 x 1 1/8 x 0.118	z 109 0.56	955	3.00 - 45

**Diagonal Towards Center**

5.1	0.00	-39.52	d U 1 3/8 x 1 1/4 x 0.118	z 63 0.95	716	3.00 - 43
5.2	0.00	-30.66	U 1 x 1 1/4 x 0.136	z 92 0.99	891	3.45 - 38
5.3	0.00	-17.41	U 1 x 0.091	z 95 0.96	do	2.29 - 38
5.4	0.00	-17.41	U 1 x 0.091	z 95 0.96	do	2.29 - 38
5.5	0.00	-30.66	U 1 x 1 1/4 x 0.136	z 92 0.99	891	3.45 - 38
5.6	0.00	-39.52	d U 1 3/8 x 1 1/4 x 0.118	z 63 0.95	716	3.00 - 43

**Secondary Web Member**

7.1	0.00	-13.61	U 1 x 7/8 x 0.091	z 112 0.88	820	2.30 - 25
7.2	0.00	-9.95	do	z 88 0.45	650	do
7.3	0.00	-9.78	do	z 88 0.44	do	do
7.4	0.00	-9.59	do	z 88 0.43	do	do
7.5	0.00	-9.78	do	z 88 0.44	do	do
7.6	0.00	-9.95	do	z 88 0.45	650	do
7.7	0.00	-13.61	U 1 x 7/8 x 0.091	z 112 0.88	820	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4815.82 ==>	1 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6651.37 ==>	3 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	4754	Add 1314
		4754
		Add 8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

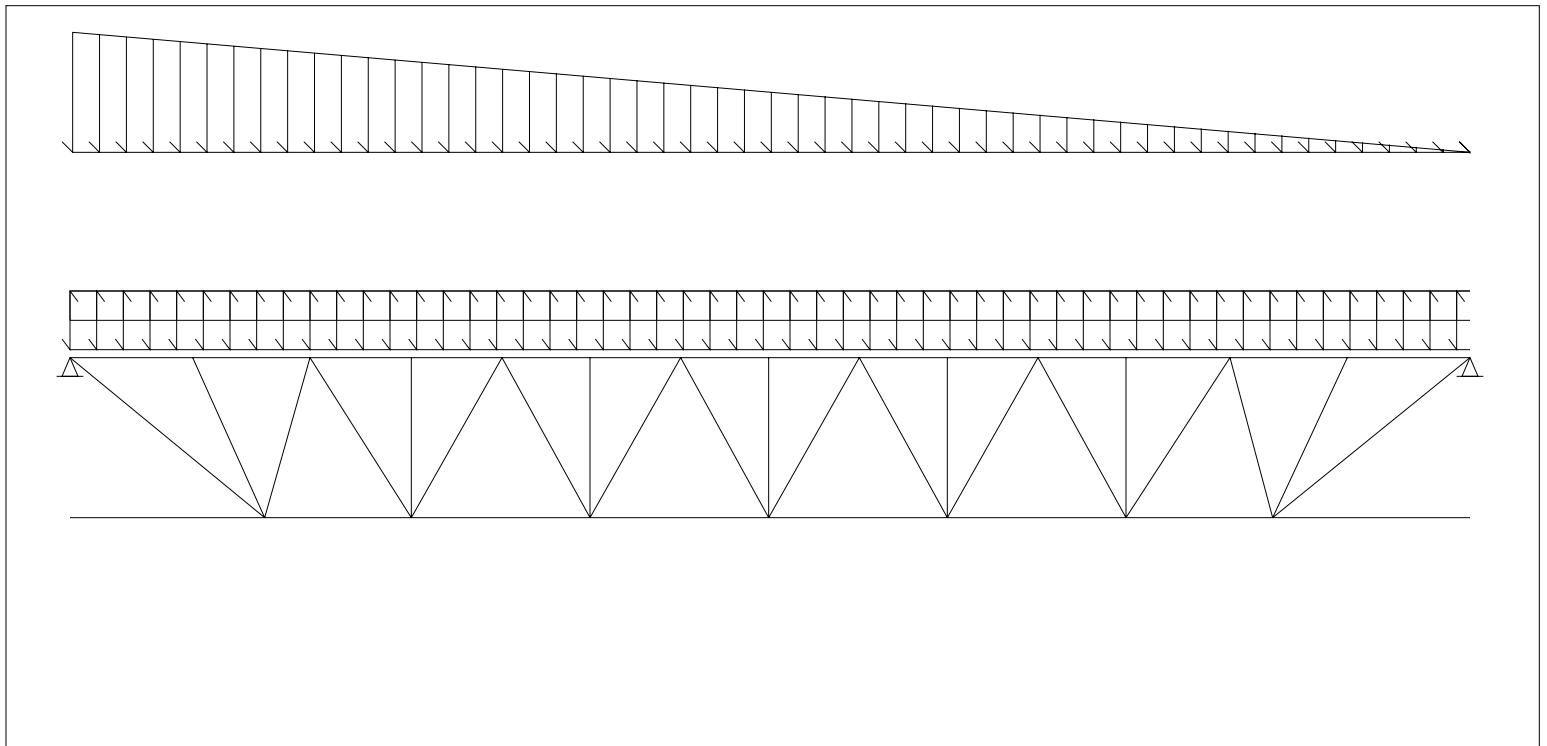
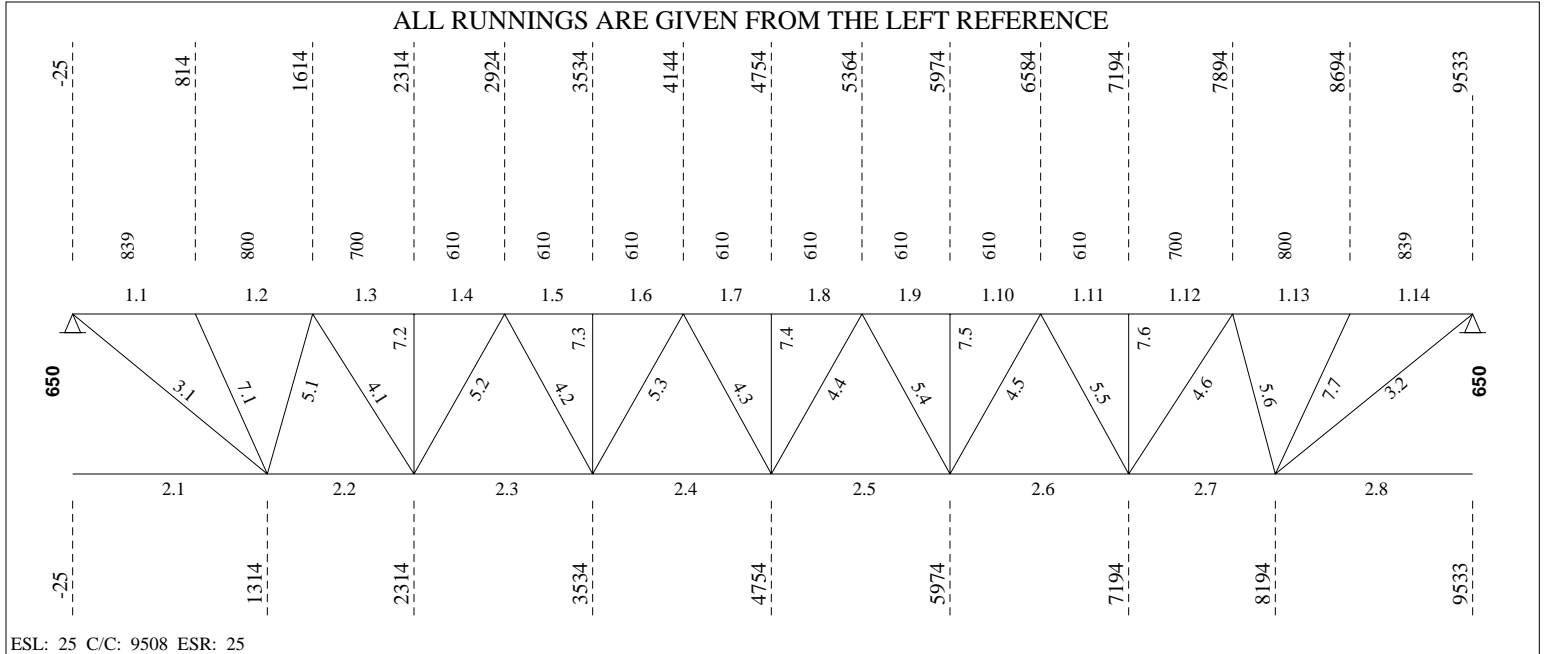
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
119	/	131	Area to Paint	:	8.91 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M28 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

```

(D) DEAD LOAD.....:    2.10 kN/m^2 (    2.28 kN/m)   SPACING...:    1.09 m
(L) LIVE LOAD.....:    0.00 kN/m^2 (    0.00 kN/m)   Companion load factor (live)...: 1.0
(S) SNOW LOAD.....:    1.86 kN/m^2 (    2.02 kN/m)
(W) GROSS WIND UPLIFT:  0.81 kN/m^2 (    0.88 kN/m)
    
```

----- **PARTIAL LOADS (From Axis)** -----

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.63	2.85	0.00	0.00	0	9508	1	8

----- **(REAL) DEFLECTION** -----

```

Allowed deflection under live and snow load..... =    26.27 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =    15.16 mm (L/ 624)
Allowed deflection under total load..... =    52.54 mm (L/ 180)
Calculated deflection under service total load..... =    26.31 mm (L/ 360)
Gross joist inertia..... =    119.49 x10^6 mm^4
Required camber (100%D + 50%L + 50%S)..... =    19.78 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof
    
```

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 41.24/ 0.00 kN Right Reaction = 34.54/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-76.84	LL 1 5/8 x 1 5/8 x .157	z 89 0.96	839		
1.2	0.00	-70.63 x	do	xx 56 0.94	800		
1.3	0.00	-109.89 x	do	xx 49 0.89	700		
1.4	0.00	-109.89	do	z 69 0.85	610		
1.5	0.00	-136.74 x	do	xx 43 0.78	do		
1.6	0.00	-136.74 x	do	xx 43 0.78	do		
1.7	0.00	-143.22 x	do	xx 43 0.81	do		
1.8	0.00	-143.22 x	do	xx 43 0.81	do		
1.9	0.00	-130.64 x	do	xx 43 0.74	do		
1.10	0.00	-130.64 x	do	xx 43 0.74	do		
1.11	0.00	-100.30	do	z 69 0.77	610		
1.12	0.00	-100.30	do	z 79 0.94	700		
1.13	0.00	-62.33 x	do	xx 56 0.74	800		
1.14	0.00	-66.29	LL 1 5/8 x 1 5/8 x .157	z 89 0.78	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.41	1339		
2.2	84.78	0.00	do	z 126 0.61	1000		
2.3	125.94	0.00	do	z 153 0.68	1220		
2.4	142.45	0.00	do	z 153 0.69	do		
2.5	139.23	0.00	do	z 153 0.69	do		
2.6	117.61	0.00	do	z 153 0.67	1220		
2.7	75.38	0.00	do	z 126 0.57	1000		
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.36	1339		
<b>End Diagonal</b>							
3.1	82.82	0.00	BR 15/16 (50W)	z 242 0.60	1444	5.00 - 38	
3.2	71.45	0.00	BR 15/16 (50W)	z 242 0.52	1444	5.00 - 33	

**Diagonal Towards End**

4.1	33.92	0.00	U 1 x 0.091	z 113	0.61	955	2.29 - 48
4.2	17.52	0.00	U 1 x 7/8 x 0.091	z 135	0.38	891	2.30 - 38
4.3	5.30	-3.55	do	z 121	0.27	do	do
4.4	8.69	-0.31	do	z 121	0.19	do	do
4.5	19.80	0.00	U 1 x 7/8 x 0.091	z 135	0.42	891	2.30 - 38
4.6	33.24	0.00	U 1 x 0.091	z 113	0.60	955	2.29 - 48

**Diagonal Towards Center**

5.1	0.00	-32.76	U 1 x 1 1/4 x 0.136	z 74	0.95	716	3.45 - 38
5.2	0.00	-24.14	U 1 x 1 1/8 x 0.118	z 91	0.94	891	3.00 - 38
5.3	0.00	-11.25	U 1 x 0.091	z 95	0.62	do	2.29 - 38
5.4	0.00	-14.28	U 1 x 0.091	z 95	0.79	do	2.29 - 38
5.5	0.00	-25.26	U 1 x 1 1/8 x 0.118	z 91	0.99	891	3.00 - 38
5.6	0.00	-30.09	U 1 x 1 1/4 x 0.136	z 74	0.88	716	3.45 - 38

**Secondary Web Member**

7.1	0.00	-11.43	U 1 x 7/8 x 0.091	z 112	0.74	820	2.30 - 25
7.2	0.00	-8.30	do	z 88	0.37	650	do
7.3	0.00	-8.12	do	z 88	0.36	do	do
7.4	0.00	-7.92	do	z 88	0.36	do	do
7.5	0.00	-7.32	do	z 88	0.33	do	do
7.6	0.00	-6.64	do	z 88	0.30	650	do
7.7	0.00	-7.66	U 1 x 7/8 x 0.091	z 112	0.50	820	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	2 Row(s) Minimum
@ Bottom Chord:	6651.37 ==>	3 Row(s) Minimum

Lateral Supports

Deck (304.8)
Acc. to the code

POSITION

@ Top Chord
3161
6347

@ Bottom Chord
Add 1314
4754
Add 8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension,

3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

114 / 125

Area to Paint

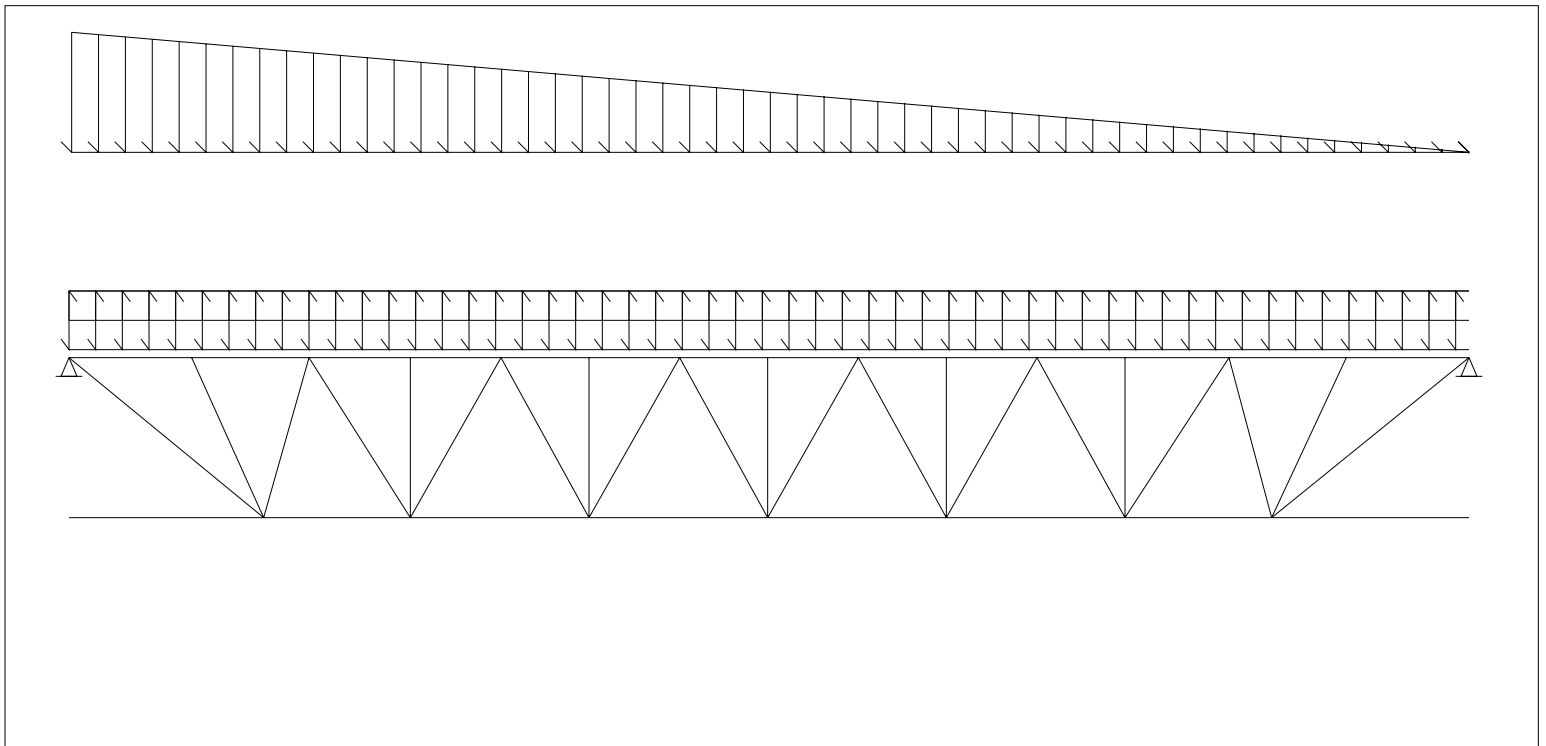
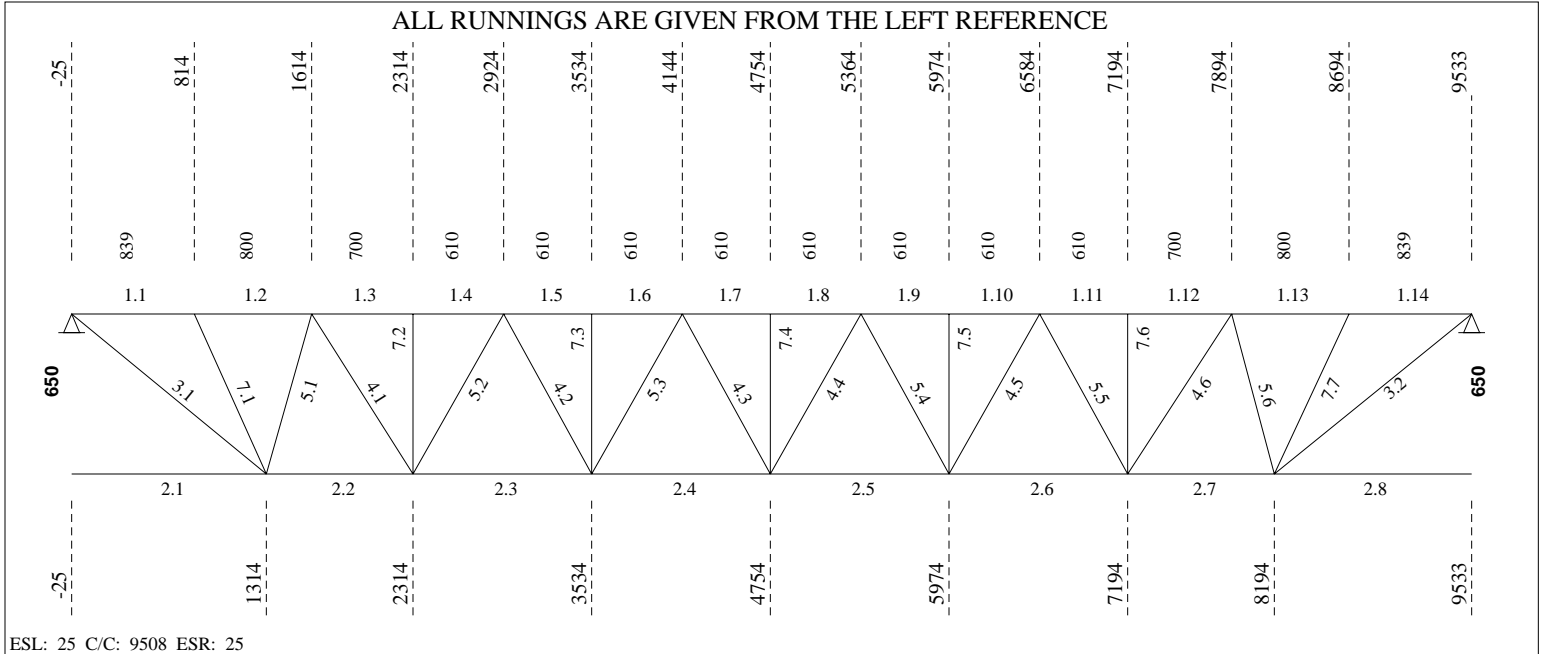
: 8.61 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M29 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M1



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.28 kN/m) SPACING...: 1.09 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.02 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 0.88 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]			1	8
1	1	1.26	1.37	0.00	0.00	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 12.03 mm (L/ 786)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 23.30 mm (L/ 406)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 18.14 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 34.25/ 0.00 kN Right Reaction = 31.03/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>								
1.1	0.00	-64.19	LL 1 5/8 x 1 5/8 x .157	z 89	0.79	839		
1.2	0.00	-59.26	do	xx 56	0.76	800		
1.3	0.00	-92.84	do	z 79	0.88	700		
1.4	0.00	-92.84	do	z 69	0.72	610		
1.5	0.00	-116.64	do	z 69	0.90	do		
1.6	0.00	-116.64	do	z 69	0.90	do		
1.7	0.00	-123.38	do	z 69	0.95	do		
1.8	0.00	-123.38	do	z 69	0.95	do		
1.9	0.00	-113.70	do	z 69	0.88	do		
1.10	0.00	-113.70	do	z 69	0.88	do		
1.11	0.00	-88.23	do	z 69	0.68	610		
1.12	0.00	-88.23	do	z 79	0.83	700		
1.13	0.00	-55.27	do	xx 56	0.67	800		
1.14	0.00	-59.12	LL 1 5/8 x 1 5/8 x .157	z 89	0.71	839		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162	0.34	1339		
2.2	71.25	0.00	do	z 126	0.51	1000		
2.3	106.91	0.00	do	z 153	0.59	1220		
2.4	122.10	0.00	do	z 153	0.59	do		
2.5	120.56	0.00	do	z 153	0.59	do		
2.6	102.90	0.00	do	z 153	0.58	1220		
2.7	66.72	0.00	do	z 126	0.49	1000		
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162	0.32	1339		
<b>End Diagonal</b>								
3.1	69.18	0.00	BR 15/16 (50W)	z 242	0.50	1444	5.00 - 32	
3.2	63.72	0.00	BR 15/16 (50W)	z 242	0.46	1444	5.00 - 29	



Diagonal Towards End

4.1	29.04	0.00	U 1 x 7/8 x 0.091	z 144	0.62	955	2.30 - 41
4.2	15.38	0.00	do	z 135	0.33	891	2.30 - 38
4.3	4.94	-2.12	do	z 121	0.16	do	do
4.4	6.57	-0.49	do	z 121	0.14	do	do
4.5	16.48	0.00	do	z 135	0.35	891	2.30 - 38
4.6	28.71	0.00	U 1 x 7/8 x 0.091	z 144	0.62	955	2.30 - 41

Diagonal Towards Center

5.1	0.00	-27.70	U 1 x 1 1/8 x 0.118	z 73	0.98	716	3.00 - 38
5.2	0.00	-20.92	U 1 x 1 1/8 x 0.118	z 91	0.82	891	3.00 - 38
5.3	0.00	-10.06	U 1 x 7/8 x 0.091	z 121	0.77	do	2.30 - 38
5.4	0.00	-11.51	U 1 x 7/8 x 0.091	z 121	0.88	do	2.30 - 38
5.5	0.00	-21.45	U 1 x 1 1/8 x 0.118	z 91	0.84	891	3.00 - 38
5.6	0.00	-26.42	U 1 x 1 1/8 x 0.118	z 73	0.93	716	3.00 - 38

Secondary Web Member

7.1	0.00	-9.13	U 1 x 7/8 x 0.091	z 112	0.59	820	2.30 - 25
7.2	0.00	-6.84	do	z 88	0.31	650	do
7.3	0.00	-6.84	do	z 88	0.31	do	do
7.4	0.00	-6.82	do	z 88	0.31	do	do
7.5	0.00	-6.46	do	z 88	0.29	do	do
7.6	0.00	-6.04	do	z 88	0.27	650	do
7.7	0.00	-7.32	U 1 x 7/8 x 0.091	z 112	0.47	820	2.30 - 25

BRIDGING

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 2 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6651.37 ==> 3 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 3161 Add 1314  
 6347 4754  
 Add 8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

- LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
- U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

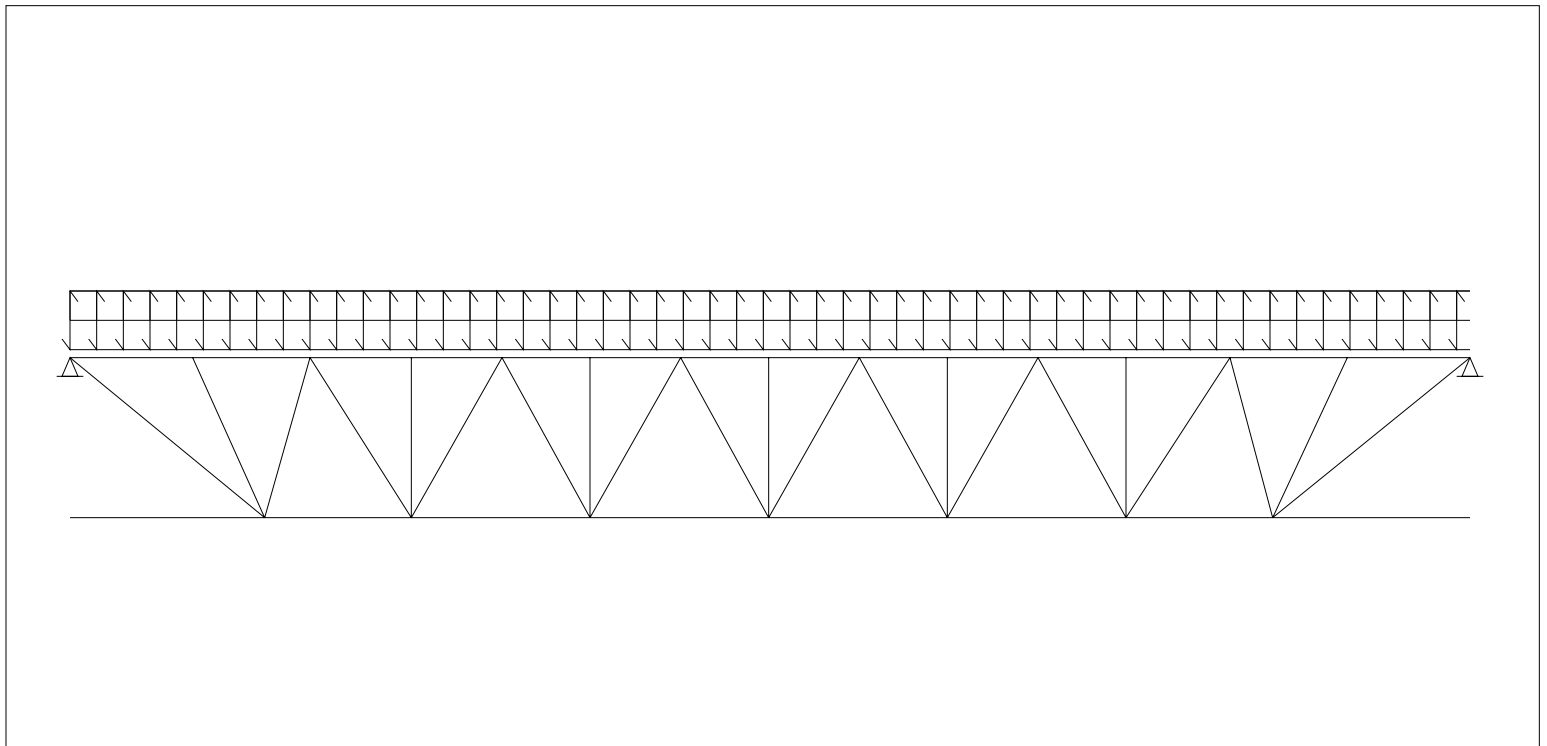
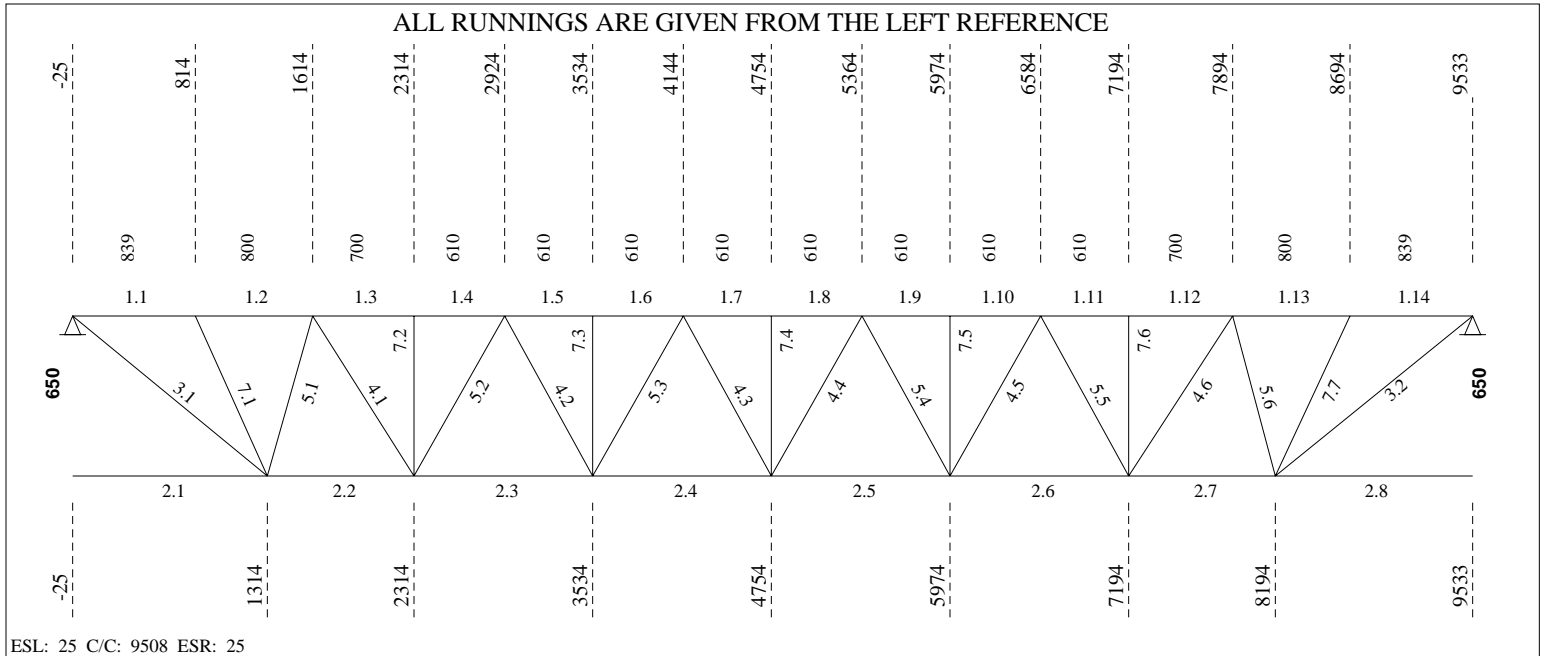
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 113 / 124 Area to Paint : 8.51 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M50 (Hybrid Mid Span, Symmetrical,, Free ends)





----- **LOADING CONDITIONS** -----

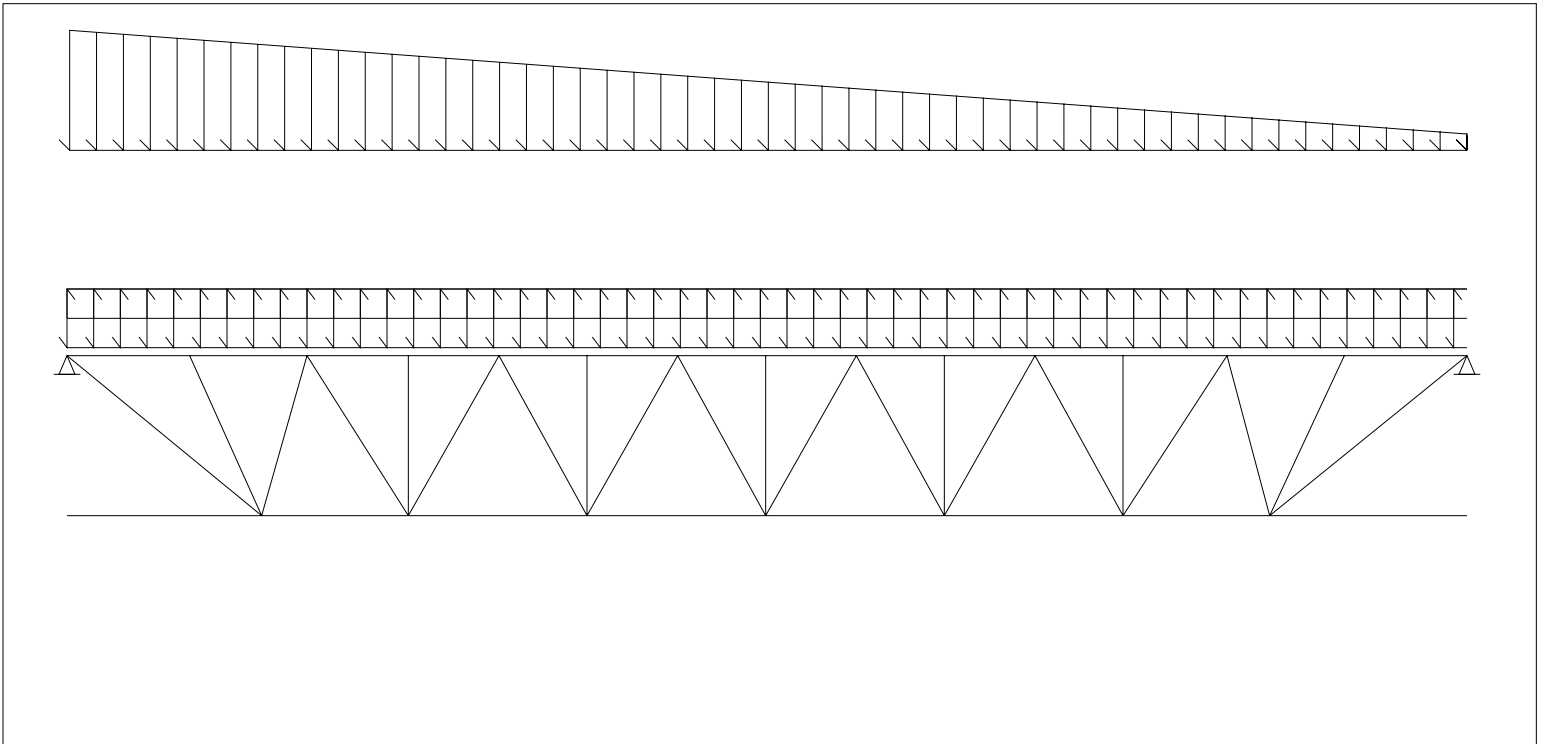
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	26.27 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	10.51 mm (L/ 900)
Allowed deflection under total load..... =	52.54 mm (L/ 180)
Calculated deflection under service total load..... =	23.70 mm (L/ 399)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	19.23 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M50#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.20	2.79	0.30	0.38	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 7.05 mm (L/ 1341)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 20.24 mm (L/ 467)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 32.52/ 0.00 kN Right Reaction = 32.52/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-61.42	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
1.2	0.00	-57.05	x do	xx 56 0.70	800		
1.3	0.00	-90.20	do	z 79 0.85	700		
1.4	0.00	-90.20	do	z 69 0.70	610		
1.5	0.00	-114.74	do	z 69 0.89	do		
1.6	0.00	-114.74	do	z 69 0.89	do		
1.7	0.00	-122.92	do	z 69 0.95	do		
1.8	0.00	-122.92	do	z 69 0.95	do		
1.9	0.00	-114.74	do	z 69 0.89	do		
1.10	0.00	-114.74	do	z 69 0.89	do		
1.11	0.00	-90.20	do	z 69 0.70	610		
1.12	0.00	-90.20	do	z 79 0.85	700		
1.13	0.00	-57.05	x do	xx 56 0.70	800		
1.14	0.00	-61.42	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
2.2	68.73	0.00	do	z 126 0.50	1000		
2.3	104.52	0.00	do	z 153 0.58	1220		
2.4	120.88	0.00	do	z 153 0.59	do		
2.5	120.88	0.00	do	z 153 0.59	do		
2.6	104.52	0.00	do	z 153 0.58	1220		
2.7	68.73	0.00	do	z 126 0.50	1000		
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
<b>End Diagonal</b>							
3.1	66.20	0.00	BR 15/16 (50W)	z 242 0.48	1444	5.00 - 31	
3.2	66.20	0.00	BR 15/16 (50W)	z 242 0.48	1444	5.00 - 31	
<b>Diagonal Towards End</b>							
4.1	28.70	0.00	U 1 x 7/8 x 0.091	z 144 0.61	955	2.30 - 41	

4.2	15.69	0.00		do	z 135	0.34	891	2.30 - 38
4.3	5.38	-1.78		do	z 121	0.14	do	do
4.4	5.50	-0.93		do	z 121	0.12	do	do
4.5	15.69	0.00		do	z 135	0.34	891	2.30 - 38
4.6	28.70	0.00	U 1 x 7/8 x 0.091		z 144	0.61	955	2.30 - 41

**Diagonal Towards Center**

5.1	0.00	-26.94	U 1 x 1 1/8 x 0.118		z 73	0.95	716	3.00 - 38
5.2	0.00	-20.99	U 1 x 1 1/8 x 0.118		z 91	0.82	891	3.00 - 38
5.3	0.00	-10.49	U 1 x 7/8 x 0.091		z 121	0.80	do	2.30 - 38
5.4	0.00	-10.49	U 1 x 7/8 x 0.091		z 121	0.80	do	2.30 - 38
5.5	0.00	-20.99	U 1 x 1 1/8 x 0.118		z 91	0.82	891	3.00 - 38
5.6	0.00	-26.94	U 1 x 1 1/8 x 0.118		z 73	0.95	716	3.00 - 38

**Secondary Web Member**

7.1	0.00	-8.40	U 1 x 7/8 x 0.091		z 112	0.55	820	2.30 - 25
7.2	0.00	-6.41	do		z 88	0.29	650	do
7.3	0.00	-6.62	do		z 88	0.30	do	do
7.4	0.00	-6.80	do		z 88	0.31	do	do
7.5	0.00	-6.62	do		z 88	0.30	do	do
7.6	0.00	-6.41	do		z 88	0.29	650	do
7.7	0.00	-8.19	U 1 x 7/8 x 0.091		z 112	0.53	820	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	2 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6651.37 ==>	3 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	3161	1314
	6347	4754
		8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

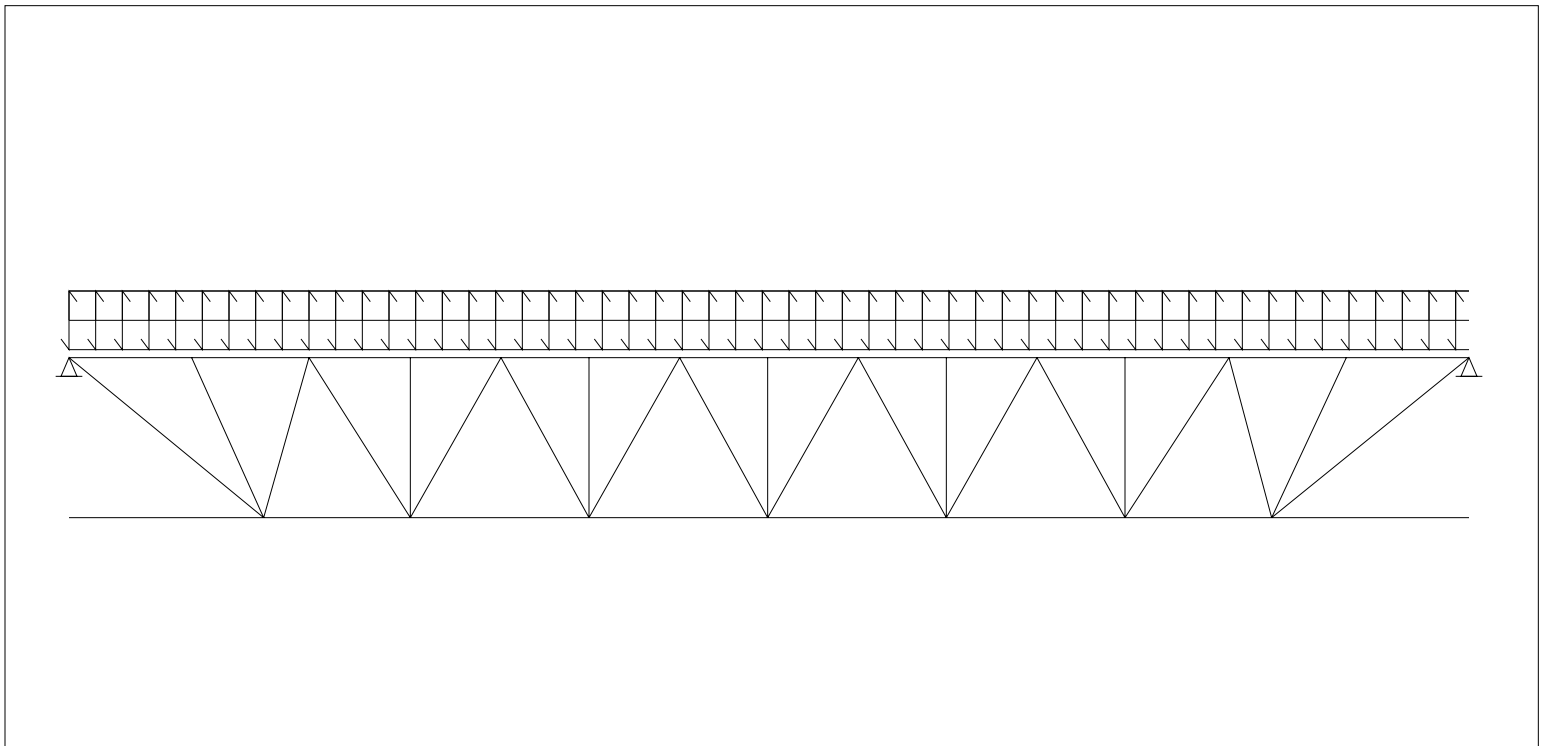
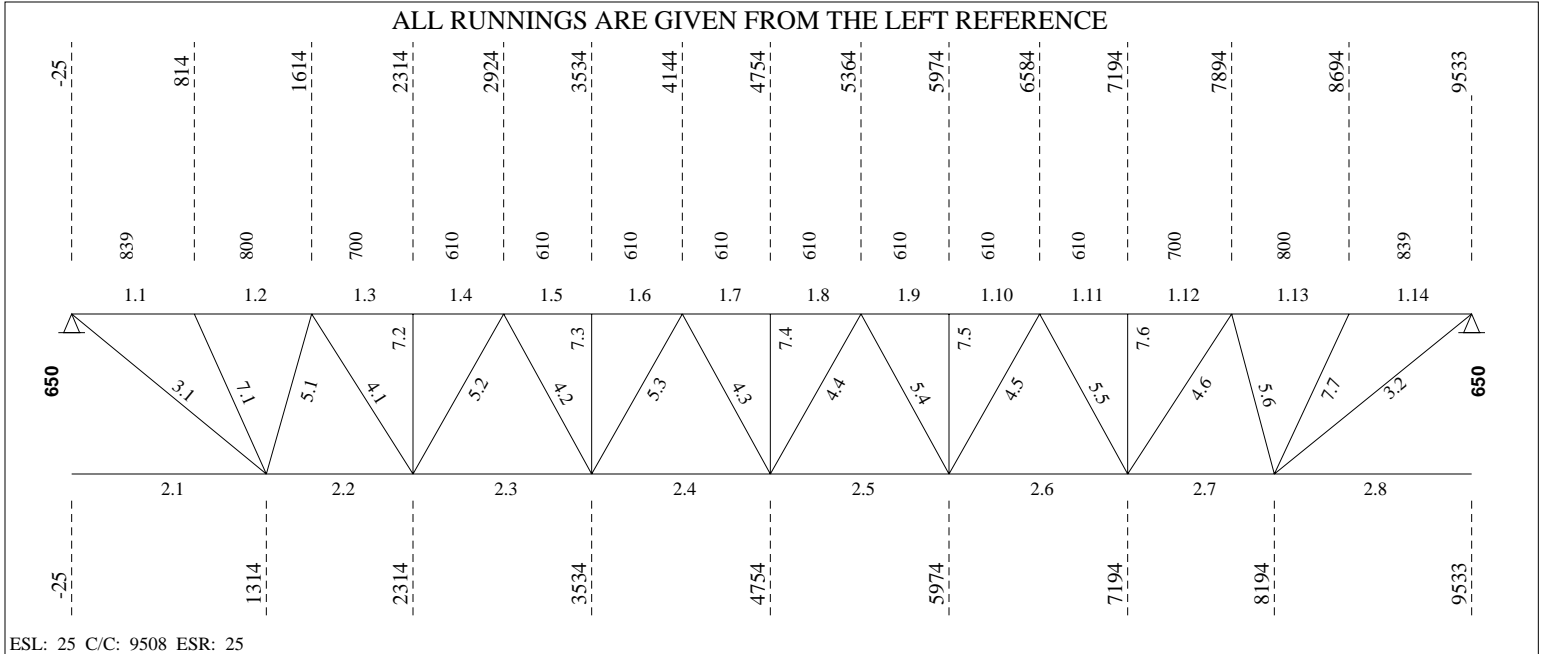
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
113	/	124	Area to Paint	:	8.51 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M51 (Hybrid Mid Span, Symmetrical,, Free ends)



----- **LOADING CONDITIONS** -----

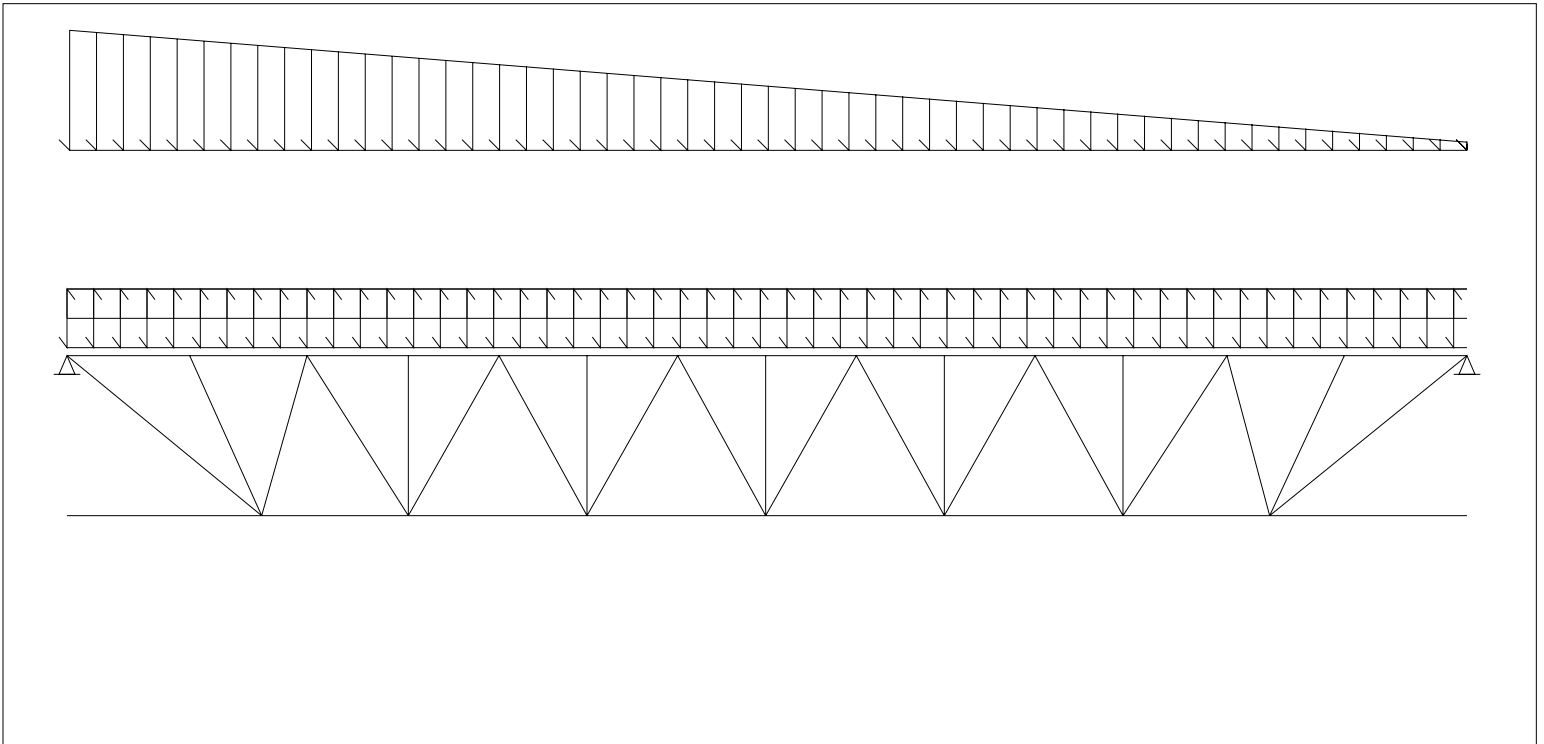
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	26.27 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	10.51 mm (L/ 900)
Allowed deflection under total load..... =	52.54 mm (L/ 180)
Calculated deflection under service total load..... =	23.70 mm (L/ 399)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	19.23 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M51#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.20	2.79	0.15	0.19	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 6.63 mm (L/ 1426)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 19.82 mm (L/ 477)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 32.52/ 0.00 kN Right Reaction = 32.52/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-61.42	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
1.2	0.00	-57.05	do	xx 56 0.70	800		
1.3	0.00	-90.20	do	z 79 0.85	700		
1.4	0.00	-90.20	do	z 69 0.70	610		
1.5	0.00	-114.74	do	z 69 0.89	do		
1.6	0.00	-114.74	do	z 69 0.89	do		
1.7	0.00	-122.92	do	z 69 0.95	do		
1.8	0.00	-122.92	do	z 69 0.95	do		
1.9	0.00	-114.74	do	z 69 0.89	do		
1.10	0.00	-114.74	do	z 69 0.89	do		
1.11	0.00	-90.20	do	z 69 0.70	610		
1.12	0.00	-90.20	do	z 79 0.85	700		
1.13	0.00	-57.05	do	xx 56 0.70	800		
1.14	0.00	-61.42	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
2.2	68.73	0.00	do	z 126 0.50	1000		
2.3	104.52	0.00	do	z 153 0.58	1220		
2.4	120.88	0.00	do	z 153 0.59	do		
2.5	120.88	0.00	do	z 153 0.59	do		
2.6	104.52	0.00	do	z 153 0.58	1220		
2.7	68.73	0.00	do	z 126 0.50	1000		
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
<b>End Diagonal</b>							
3.1	66.20	0.00	BR 15/16 (50W)	z 242 0.48	1444	5.00 - 31	
3.2	66.20	0.00	BR 15/16 (50W)	z 242 0.48	1444	5.00 - 31	
<b>Diagonal Towards End</b>							
4.1	28.70	0.00	U 1 x 7/8 x 0.091	z 144 0.61	955	2.30 - 41	

4.2	15.69	0.00		do	z 135	0.34	891	2.30 - 38
4.3	5.38	-1.83		do	z 121	0.14	do	do
4.4	5.45	-0.93		do	z 121	0.12	do	do
4.5	15.69	0.00		do	z 135	0.34	891	2.30 - 38
4.6	28.70	0.00	U 1 x 7/8 x 0.091		z 144	0.61	955	2.30 - 41

**Diagonal Towards Center**

5.1	0.00	-26.94	U 1 x 1 1/8 x 0.118		z 73	0.95	716	3.00 - 38
5.2	0.00	-20.99	U 1 x 1 1/8 x 0.118		z 91	0.82	891	3.00 - 38
5.3	0.00	-10.49	U 1 x 7/8 x 0.091		z 121	0.80	do	2.30 - 38
5.4	0.00	-10.49	U 1 x 7/8 x 0.091		z 121	0.80	do	2.30 - 38
5.5	0.00	-20.99	U 1 x 1 1/8 x 0.118		z 91	0.82	891	3.00 - 38
5.6	0.00	-26.94	U 1 x 1 1/8 x 0.118		z 73	0.95	716	3.00 - 38

**Secondary Web Member**

7.1	0.00	-8.36	U 1 x 7/8 x 0.091		z 112	0.54	820	2.30 - 25
7.2	0.00	-6.41	do		z 88	0.29	650	do
7.3	0.00	-6.62	do		z 88	0.30	do	do
7.4	0.00	-6.80	do		z 88	0.31	do	do
7.5	0.00	-6.62	do		z 88	0.30	do	do
7.6	0.00	-6.41	do		z 88	0.29	650	do
7.7	0.00	-8.19	U 1 x 7/8 x 0.091		z 112	0.53	820	2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging

@ Top	Chord:	4614.56 ==>	2 Row(s) Minimum	Lateral Supports
@ Bottom	Chord:	6651.37 ==>	3 Row(s) Minimum	Deck (304.8)
				Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	3161	1314
	6347	4754
		8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

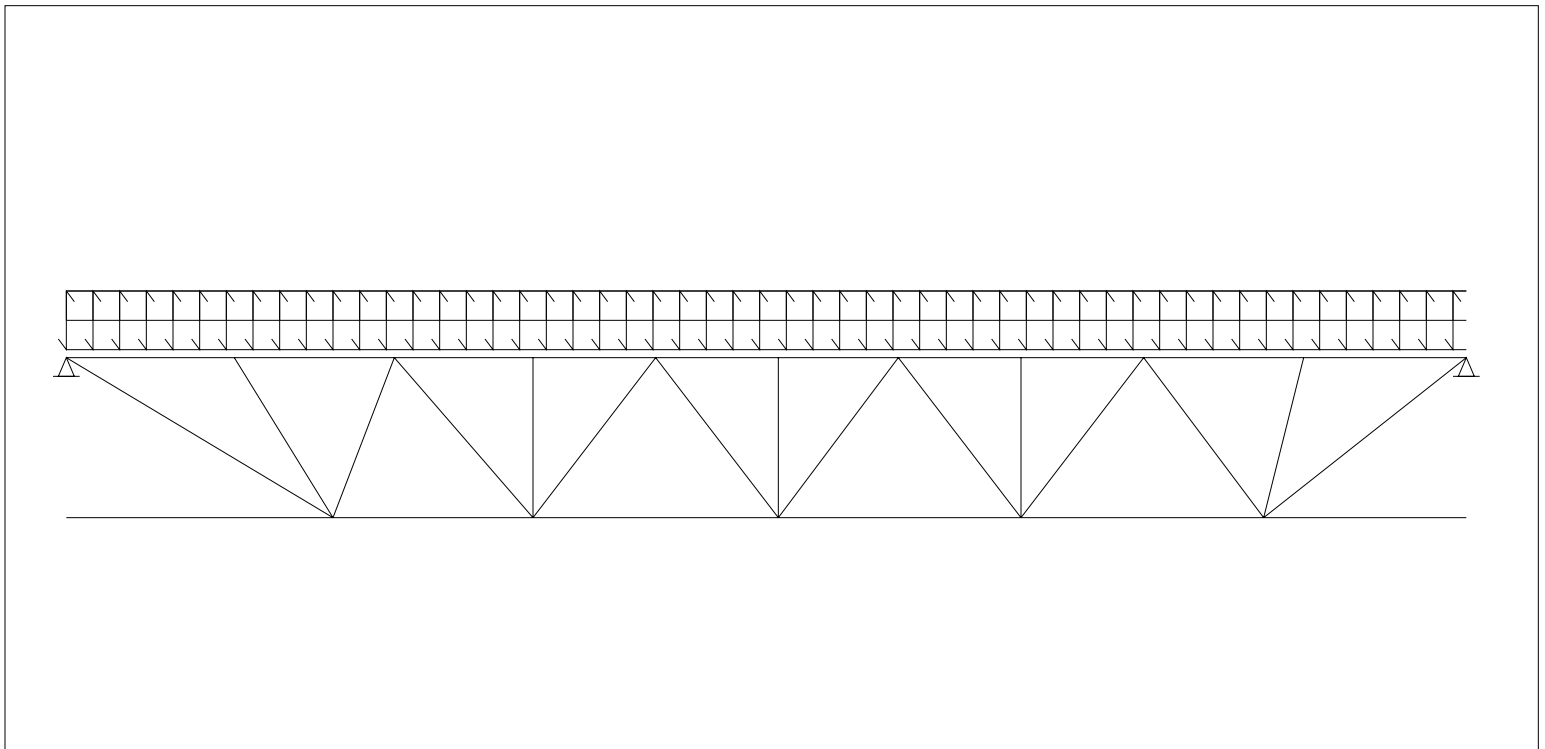
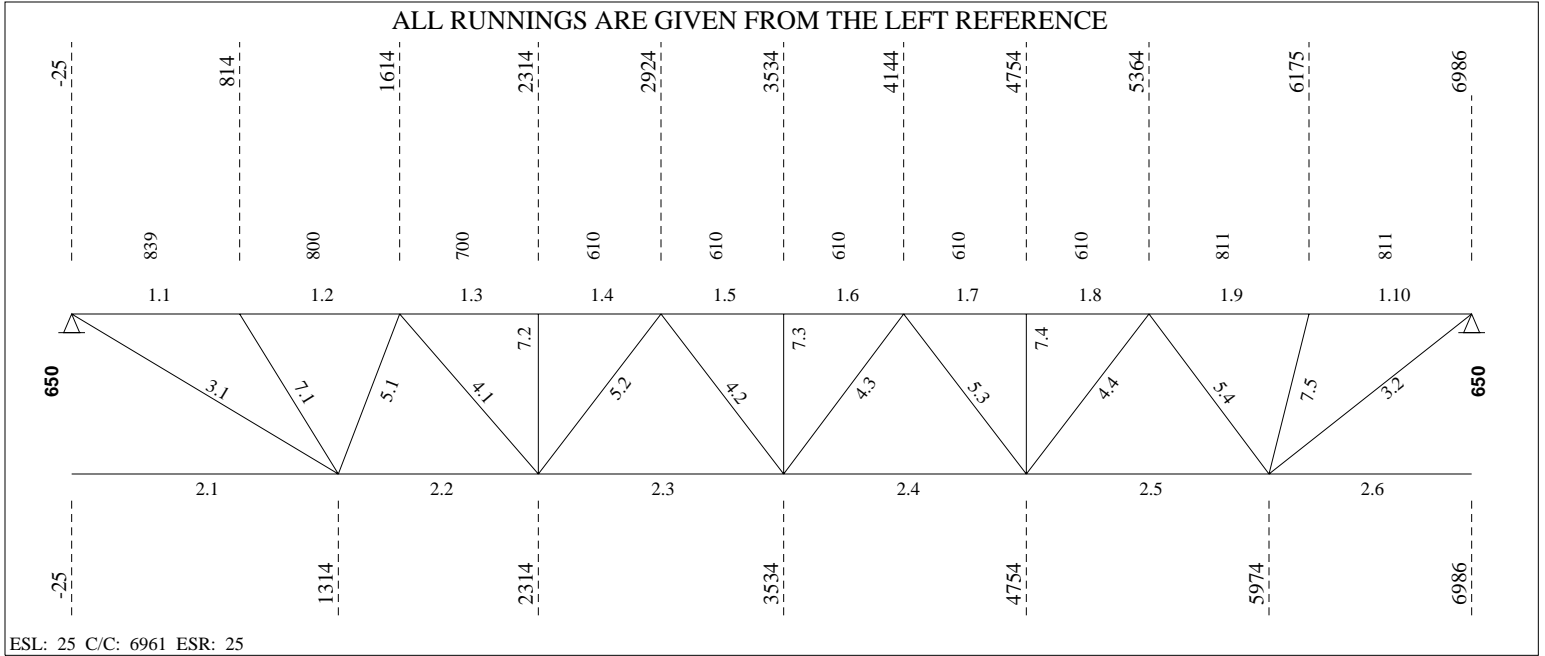
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
113	/	124	Area to Paint	:	8.51 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M52 (Hybrid Mid Span, Asymmetrical., Free ends) aligned on M50





----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 19.20 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 3.43 mm (L/ 2016)  
 Allowed deflection under total load..... = 38.39 mm (L/ 180)  
 Calculated deflection under service total load..... = 7.73 mm (L/ 894)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 6.29 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 23.76/ 0.00 kN Right Reaction = 23.76/ 0.00 kN

**REQUIRED MATERIAL**

**REQUIRED WELD**

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-43.38	LL 1 5/8 x 1 5/8 x .157	z 89 0.61	839		
1.2	0.00	-39.01 x	do	xx 56 0.61	800		
1.3	0.00	-58.15	do	z 79 0.57	700		
1.4	0.00	-58.15	do	z 69 0.49	610		
1.5	0.00	-65.62	do	z 69 0.51	do		
1.6	0.00	-65.62	do	z 69 0.51	do		
1.7	0.00	-56.72	do	z 69 0.44	do		
1.8	0.00	-56.72	do	z 69 0.52	610		
1.9	0.00	-30.78 x	do	xx 57 0.55	811		
1.10	0.00	-32.52	LL 1 5/8 x 1 5/8 x .157	z 86 0.55	811		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.22	1339		
2.2	46.48	0.00	do	z 126 0.31	1000		
2.3	63.93	0.00	do	z 153 0.32	1220		
2.4	63.21	0.00	do	z 153 0.32	do		
2.5	46.13	0.00	do	z 153 0.30	1220		
2.6	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 121 0.22	1012		
<b>End Diagonal</b>							
3.1	46.75	0.00	BR 15/16 (50W)	z 242 0.34	1444	5.00 - 22	
3.2	37.77	0.00	BR 15/16 (50W)	z 195 0.27	1161	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	16.01	0.00	U 1 x 7/8 x 0.091	z 144 0.34	955	2.30 - 38	
4.2	4.16	-0.49	do	z 121 0.09	891	do	
4.3	5.05	0.00	do	z 135 0.11	do	do	
4.4	15.49	0.00	U 1 x 7/8 x 0.091	z 135 0.33	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-17.34	U 1 x 0.091	z 76 0.85	716	2.29 - 38	
5.2	0.00	-9.29	U 1 x 7/8 x 0.091	z 121 0.71	891	2.30 - 38	
5.3	0.00	-10.20	U 1 x 7/8 x 0.091	z 121 0.78	do	2.30 - 38	
5.4	0.00	-21.80	U 1 x 1 1/8 x 0.118	z 91 1.00	891	3.00 - 38	



Secondary Web Member

7.1	0.00	-7.81	U 1 x 7/8 x 0.091	z 112	0.51	820	2.30 - 25
7.2	0.00	-5.74	do	z 88	0.26	650	do
7.3	0.00	-5.58	do	z 88	0.25	do	do
7.4	0.00	-5.40	do	z 88	0.24	650	do
7.5	0.00	-6.35	U 1 x 7/8 x 0.091	z 93	0.30	680	2.30 - 25

BRIDGING

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	2 Row(s) Minimum	Lateral Supports Deck (304.8)
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum	Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	3161	1314
	6347	4754

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

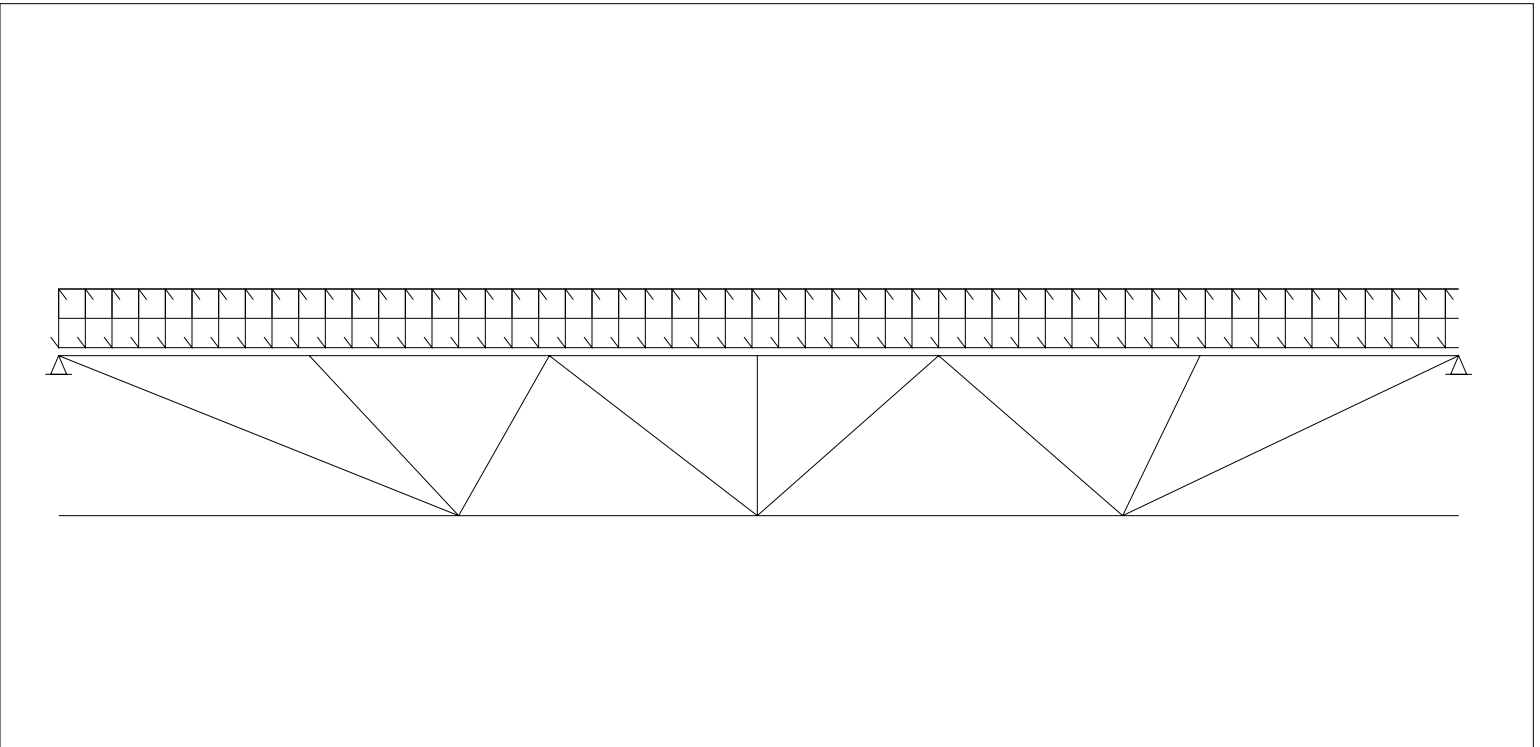
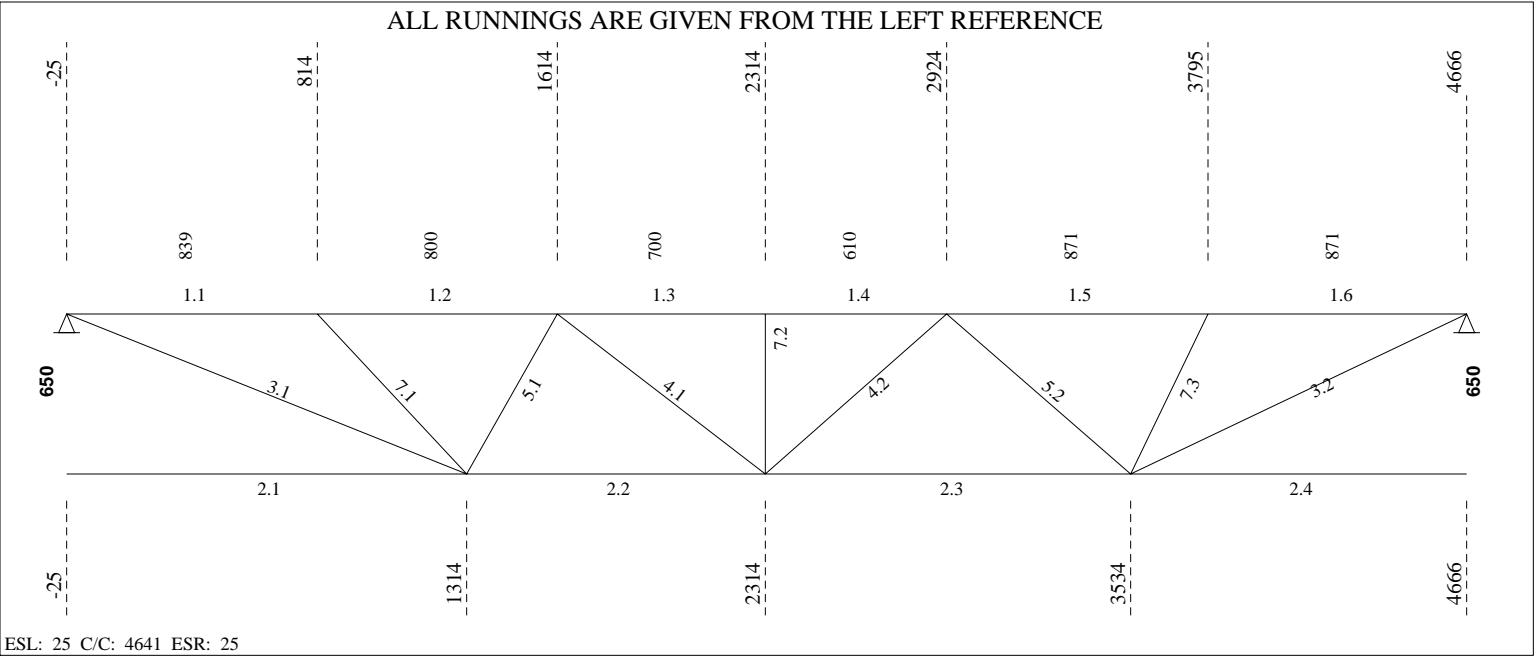
- LL = 2 angles short legs back to back,      -BL = 2 angles welded in box,      -BR = Round bar
- U = 1 U profile,      -UU = 2 U profiles one inside the other,      -CL = Crimped angle

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
	82 / 92		Area to Paint	:	6.21 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M53 (Hybrid Mid Span, Asymmetrical,, Free ends) aligned on M50



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 12.75 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.95 mm (L/ 4843)  
 Allowed deflection under total load..... = 25.51 mm (L/ 180)  
 Calculated deflection under service total load..... = 2.14 mm (L/ 2148)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.75 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **FORCES IN MEMBERS [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 15.79/ 0.00 kN Right Reaction = 15.79/ 0.00 kN

No	Tension Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
			x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	
<b>Top Chord</b>								
1.1	0.00	-26.94	LL 1 5/8 x 1 5/8 x .157	z 89	0.53	839		
1.2	0.00	-22.57 x	do	xx 56	0.53	800		
1.3	0.00	-28.96	do	z 79	0.41	700		
1.4	0.00	-28.96	do	z 69	0.41	610		
1.5	0.00	-19.99 x	do	xx 61	0.57	871		
1.6	0.00	-22.42	LL 1 5/8 x 1 5/8 x .157	z 93	0.57	871		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162	0.13	1339		
2.2	26.22	0.00	do	z 126	0.14	1000		
2.3	26.96	0.00	do	z 153	0.14	1220		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 136	0.13	1132		
<b>End Diagonal</b>								
3.1	29.04	0.00	BR 15/16 (50W)	z 242	0.21	1444	5.00 - 20	
3.2	25.17	0.00	BR 15/16 (50W)	z 212	0.18	1262	5.00 - 20	
<b>Diagonal Towards End</b>								
4.1	4.63	0.00	U 1 x 7/8 x 0.091	z 144	0.10	955	2.30 - 38	
4.2	3.85	0.00	U 1 x 7/8 x 0.091	z 135	0.08	891	2.30 - 38	
<b>Diagonal Towards Center</b>								
5.1	0.00	-8.65	U 1 x 7/8 x 0.091	z 97	0.52	716	2.30 - 38	
5.2	0.00	-10.17	U 1 x 7/8 x 0.091	z 121	0.92	891	2.30 - 38	
<b>Secondary Web Member</b>								
7.1	0.00	-7.46	U 1 x 7/8 x 0.091	z 112	0.48	820	2.30 - 25	
7.2	0.00	-5.12	do	z 88	0.23	650	do	
7.3	0.00	-6.74	U 1 x 7/8 x 0.091	z 95	0.33	700	2.30 - 25	

----- **BRIDGING** -----

Maximum spacing between rows of bridging @ Top Chord: 4614.56 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)



Mark : M53

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:06

@ Bottom Chord: 6651.37 ==> 1 Row(s) Minimum Acc. to the code

POSITION

@ Top Chord  
3161

@ Bottom Chord  
1314

Equally Spaced Bridging between Uplift Rows : No

-----  
v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,  
-U = 1 U profile,

-BL = 2 angles welded in box,

-UU = 2 U profiles one inside the other,

-BR = Round bar

-CL = Crimped angle

Project no.: W01868  
54 / 64

Designer: Luis Baez  
Area to Paint

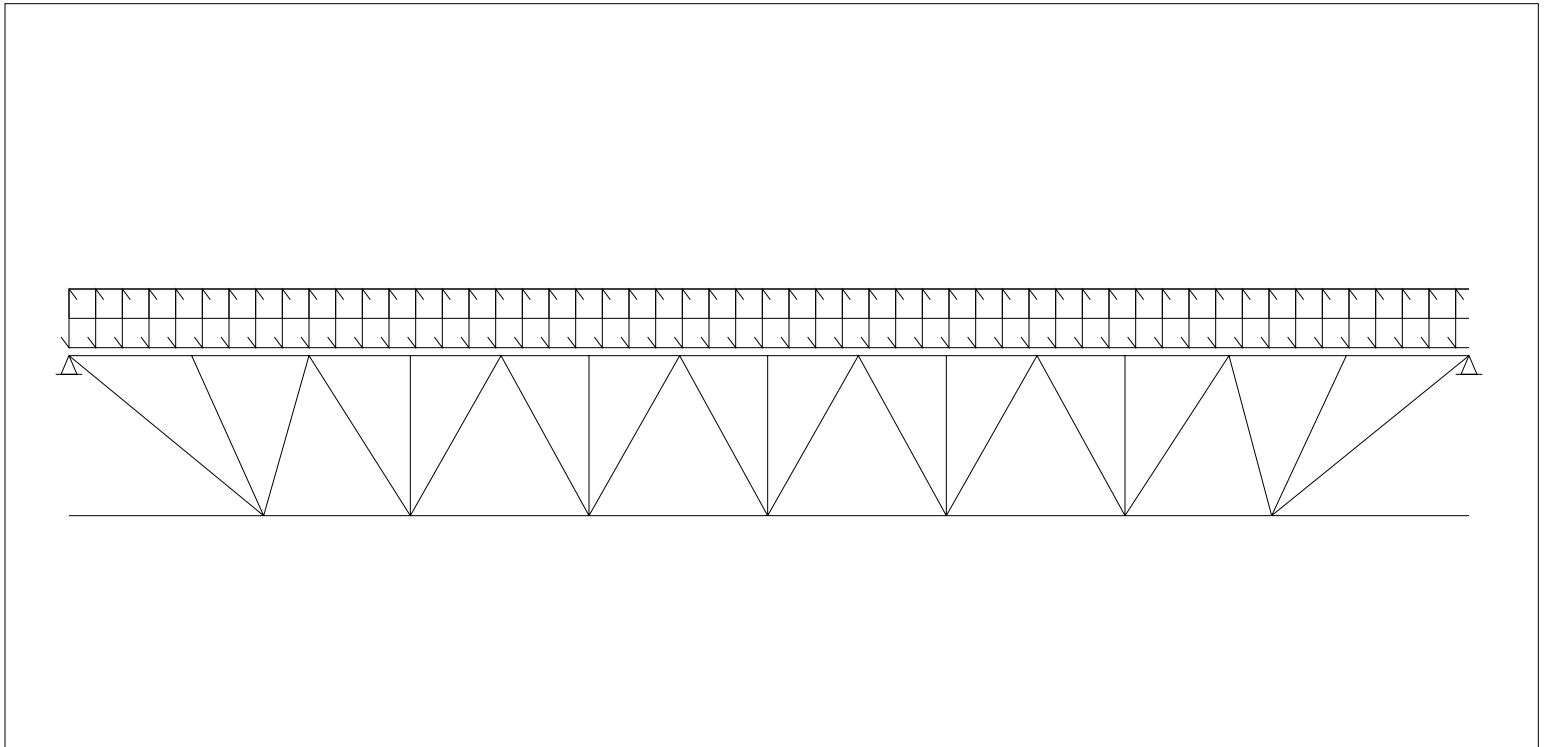
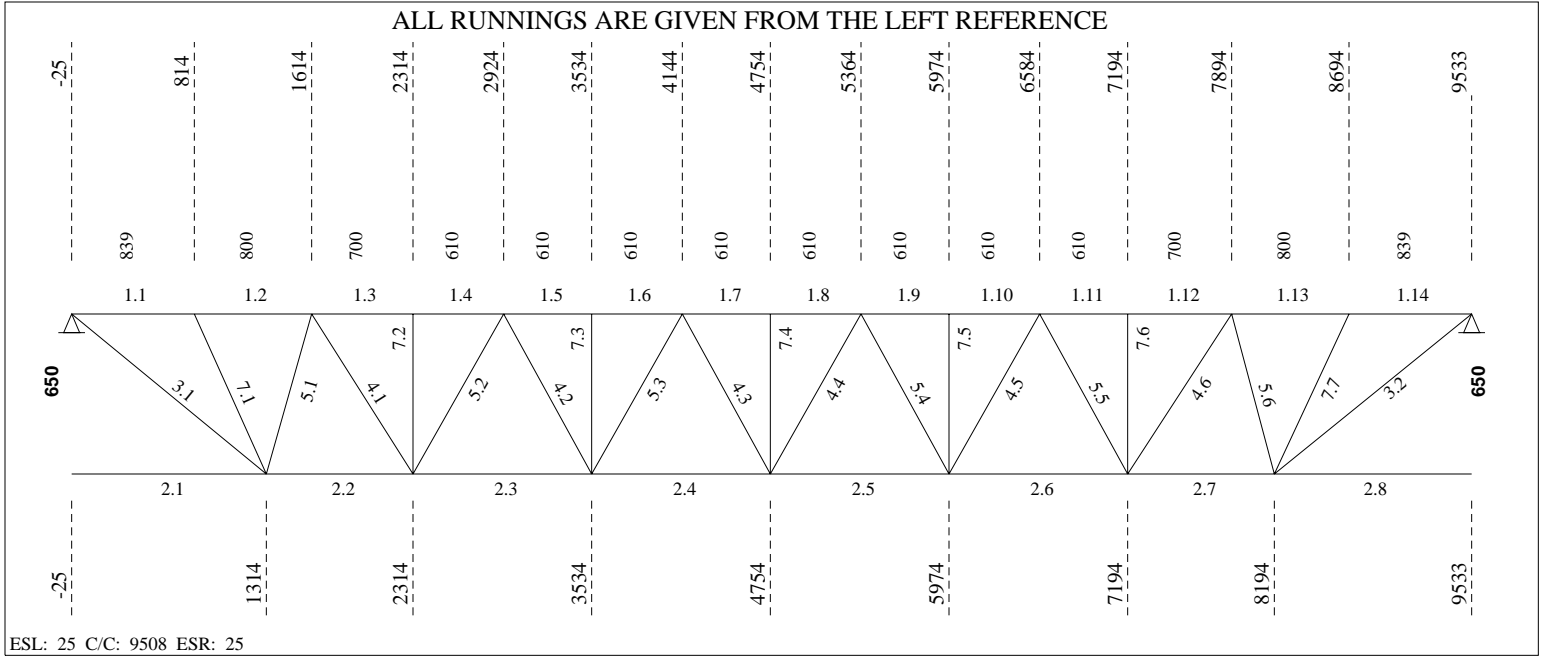
Shop: Canam Group Calgary [Production]  
: 4.09 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M54 (Hybrid Mid Span, Symmetrical,, Free ends)



----- **LOADING CONDITIONS** -----

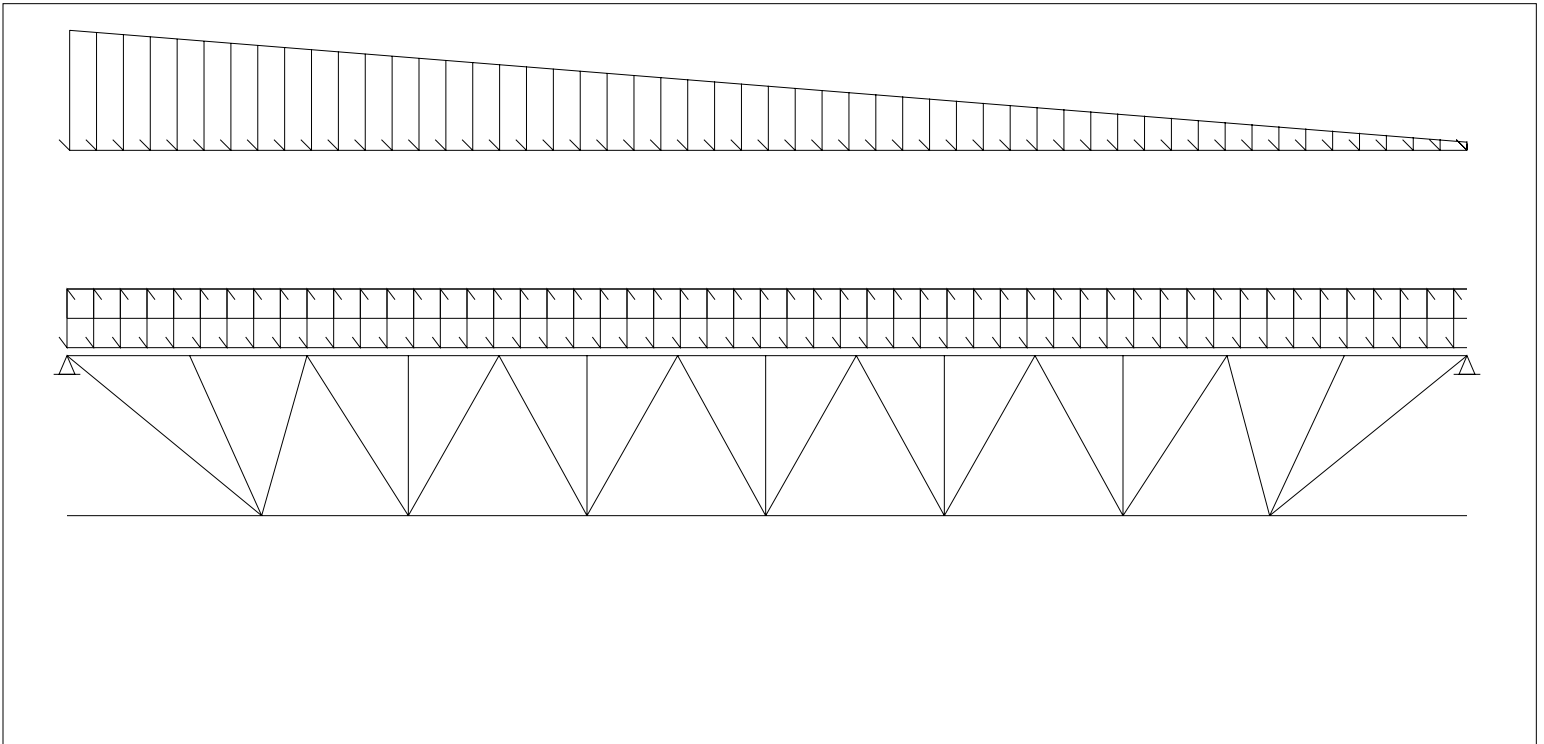
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	26.27 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	10.51 mm (L/ 900)
Allowed deflection under total load..... =	52.54 mm (L/ 180)
Calculated deflection under service total load..... =	23.70 mm (L/ 399)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	19.23 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M54#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	2.20	2.79	0.15	0.19	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 6.63 mm (L/ 1426)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 19.82 mm (L/ 477)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 32.52/ 0.00 kN Right Reaction = 32.52/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-61.42	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
1.2	0.00	-57.05	do	xx 56 0.70	800		
1.3	0.00	-90.20	do	z 79 0.85	700		
1.4	0.00	-90.20	do	z 69 0.70	610		
1.5	0.00	-114.74	do	z 69 0.89	do		
1.6	0.00	-114.74	do	z 69 0.89	do		
1.7	0.00	-122.92	do	z 69 0.95	do		
1.8	0.00	-122.92	do	z 69 0.95	do		
1.9	0.00	-114.74	do	z 69 0.89	do		
1.10	0.00	-114.74	do	z 69 0.89	do		
1.11	0.00	-90.20	do	z 69 0.70	610		
1.12	0.00	-90.20	do	z 79 0.85	700		
1.13	0.00	-57.05	do	xx 56 0.70	800		
1.14	0.00	-61.42	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
2.2	68.73	0.00	do	z 126 0.50	1000		
2.3	104.52	0.00	do	z 153 0.58	1220		
2.4	120.88	0.00	do	z 153 0.59	do		
2.5	120.88	0.00	do	z 153 0.59	do		
2.6	104.52	0.00	do	z 153 0.58	1220		
2.7	68.73	0.00	do	z 126 0.50	1000		
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
<b>End Diagonal</b>							
3.1	66.20	0.00	BR 15/16 (50W)	z 242 0.48	1444	5.00 - 31	
3.2	66.20	0.00	BR 15/16 (50W)	z 242 0.48	1444	5.00 - 31	
<b>Diagonal Towards End</b>							
4.1	28.70	0.00	U 1 x 7/8 x 0.091	z 144 0.61	955	2.30 - 41	



4.2	15.69	0.00		do	z 135	0.34	891	2.30 - 38
4.3	5.38	-1.83		do	z 121	0.14	do	do
4.4	5.45	-0.93		do	z 121	0.12	do	do
4.5	15.69	0.00		do	z 135	0.34	891	2.30 - 38
4.6	28.70	0.00	U 1 x 7/8 x 0.091		z 144	0.61	955	2.30 - 41

**Diagonal Towards Center**

5.1	0.00	-26.94	U 1 x 1 1/8 x 0.118		z 73	0.95	716	3.00 - 38
5.2	0.00	-20.99	U 1 x 1 1/8 x 0.118		z 91	0.82	891	3.00 - 38
5.3	0.00	-10.49	U 1 x 7/8 x 0.091		z 121	0.80	do	2.30 - 38
5.4	0.00	-10.49	U 1 x 7/8 x 0.091		z 121	0.80	do	2.30 - 38
5.5	0.00	-20.99	U 1 x 1 1/8 x 0.118		z 91	0.82	891	3.00 - 38
5.6	0.00	-26.94	U 1 x 1 1/8 x 0.118		z 73	0.95	716	3.00 - 38

**Secondary Web Member**

7.1	0.00	-8.36	U 1 x 7/8 x 0.091		z 112	0.54	820	2.30 - 25
7.2	0.00	-6.41	do		z 88	0.29	650	do
7.3	0.00	-6.62	do		z 88	0.30	do	do
7.4	0.00	-6.80	do		z 88	0.31	do	do
7.5	0.00	-6.62	do		z 88	0.30	do	do
7.6	0.00	-6.41	do		z 88	0.29	650	do
7.7	0.00	-8.19	U 1 x 7/8 x 0.091		z 112	0.53	820	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	2 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6651.37 ==>	3 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	3161	1314
	6347	4754
		8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

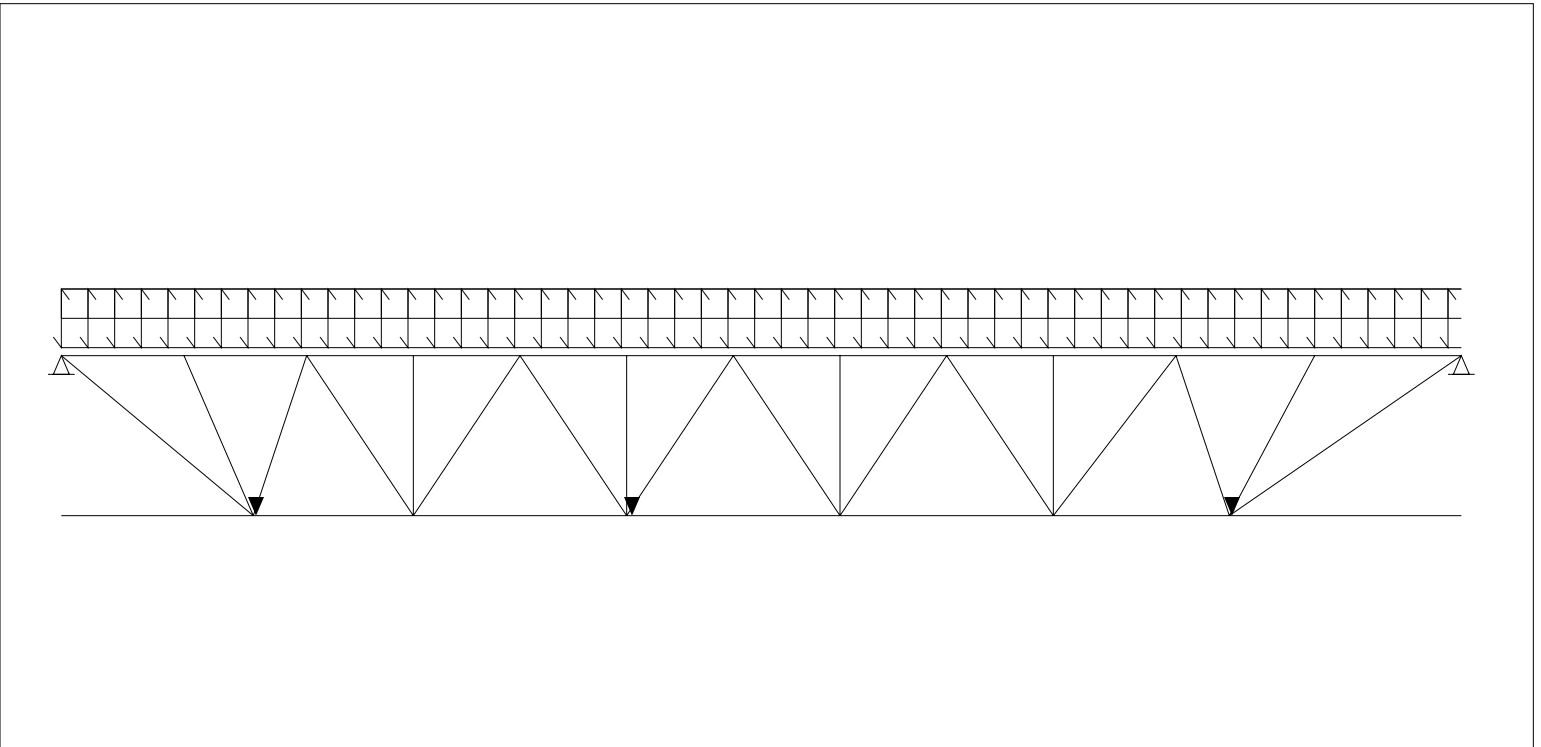
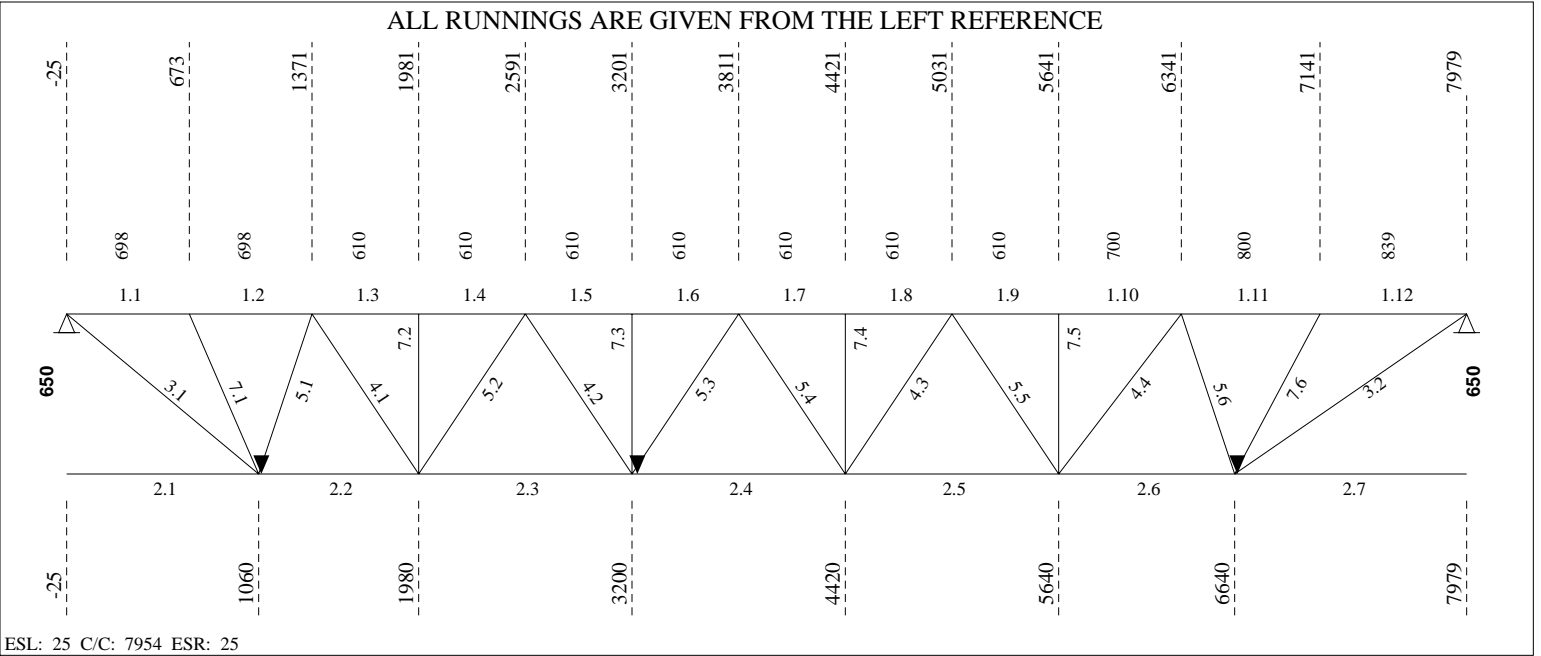
Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
113	/	124	Area to Paint	:	8.51 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M55 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 21.96 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 5.44 mm (L/ 1453)  
 Allowed deflection under total load..... = 43.91 mm (L/ 180)  
 Calculated deflection under service total load..... = 12.26 mm (L/ 645)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 9.97 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 27.18/ 0.00 kN Right Reaction = 27.18/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-41.28	LL 1 5/8 x 1 5/8 x .157	z 73 0.48	698		
1.2	0.00	-38.42	do	z 79 0.51	698		
1.3	0.00	-63.93	do	z 69 0.51	610		
1.4	0.00	-63.93	do	z 69 0.49	do		
1.5	0.00	-82.53	do	z 69 0.64	do		
1.6	0.00	-82.53	do	z 69 0.64	do		
1.7	0.00	-84.77	do	z 69 0.65	do		
1.8	0.00	-84.77	do	z 69 0.65	do		
1.9	0.00	-70.64	do	z 69 0.55	610		
1.10	0.00	-70.65	do	z 79 0.68	700		
1.11	0.00	-46.04 x	do	xx 56 0.64	800		
1.12	0.00	-50.41	LL 1 5/8 x 1 5/8 x .157	z 89 0.64	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 130 0.23	1085		
2.2	48.50	0.00	do	z 116 0.36	920		
2.3	75.28	0.00	do	z 153 0.41	1220		
2.4	85.70	0.00	do	z 153 0.41	do		
2.5	79.75	0.00	do	z 153 0.41	1220		
2.6	55.14	0.00	do	z 126 0.38	1000		
2.7	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.27	1339		
<b>End Diagonal</b>							
3.1	46.92	0.00	BR 15/16 (50W)	z 205 0.34	1222	5.00 - 22	
3.2	54.34	0.00	BR 15/16 (50W)	z 242 0.39	1444	5.00 - 25	
<b>Diagonal Towards End</b>							
4.1	22.10	0.00	U 1 x 7/8 x 0.091	z 135 0.47	891	2.30 - 38	
4.2	11.45	0.00	do	z 135 0.25	891	do	
4.3	8.63	0.00	do	z 135 0.19	892	do	
4.4	20.96	0.00	U 1 x 7/8 x 0.091	z 145 0.45	956	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-22.63	U 1 x 1 1/8 x 0.118	z 74 0.81	720	3.00 - 38	

5.2	0.00	-16.73	U 1 x 0.091	z 95	0.92	892	2.29 - 38
5.3	0.00	-6.30	U 1 x 7/8 x 0.091	z 121	0.48	892	2.30 - 38
5.4	1.51	-3.53	U 1 x 7/8 x 0.091	z 121	0.27	891	2.30 - 38
5.5	0.00	-13.83	U 1 x 0.091	z 95	0.76	891	2.29 - 38
5.6	0.00	-21.08	U 1 x 1 1/8 x 0.118	z 73	0.75	716	3.00 - 38

**Secondary Web Member**

7.1	0.00	-6.26	U 1 x 7/8 x 0.091	z 103	0.35	757	2.30 - 25
7.2	0.00	-5.55	do	z 88	0.25	650	do
7.3	0.00	-5.94	do	z 88	0.27	do	do
7.4	0.00	-5.99	do	z 88	0.27	do	do
7.5	0.00	-6.00	do	z 88	0.27	650	do
7.6	0.00	-7.96	U 1 x 7/8 x 0.091	z 112	0.52	820	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	1 Row(s) Minimum
@ Bottom Chord:	6651.37 ==>	3 Row(s) Minimum

Lateral Supports

Deck (304.8)
Imposed and conc. load 5 or

POSITION

@ Top Chord
3977

@ Bottom Chord
Add
1060
3200
6640

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

Project no.:	W01868
95	/ 105

Designer:	Luis Baez
Area to Paint	:

Shop:	Canam Group Calgary [Production]
:	7.18 m2

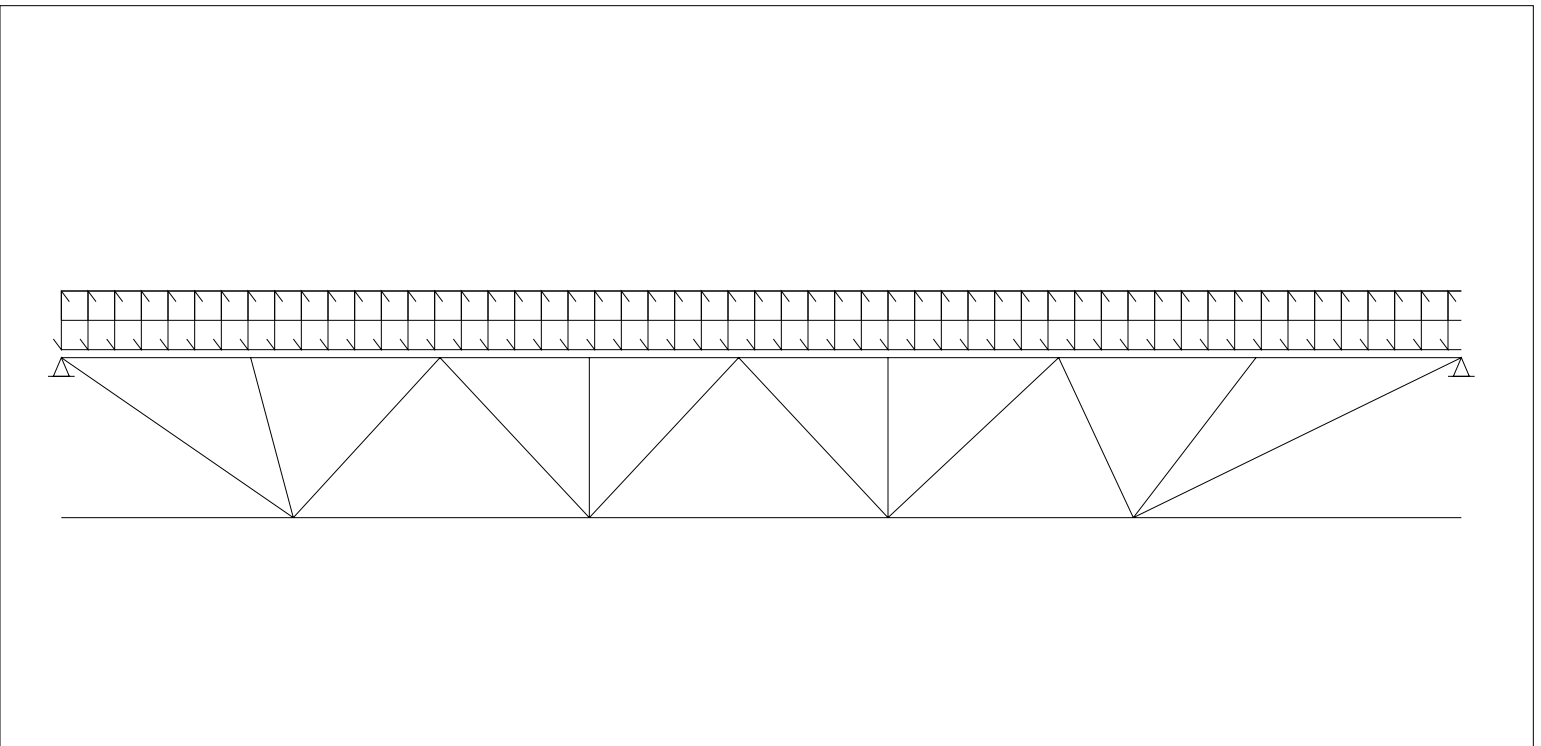
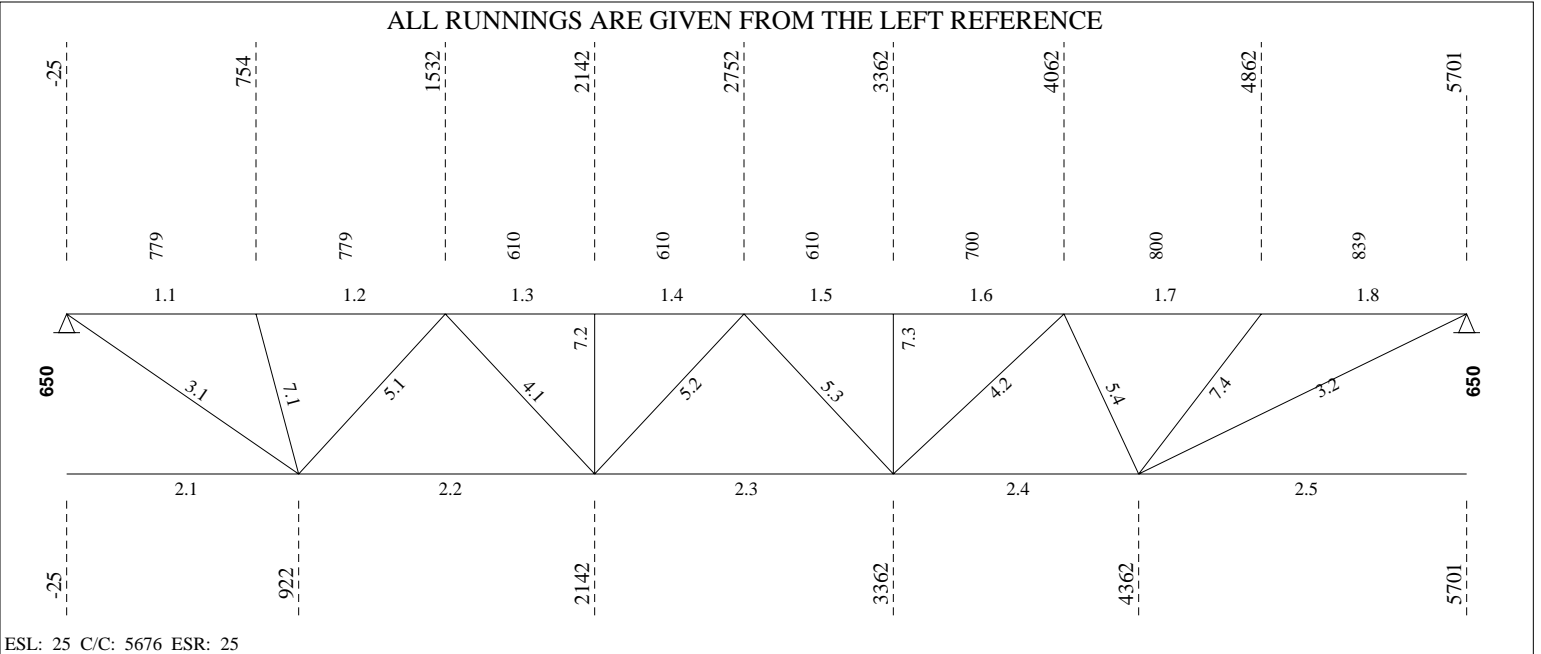
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M56 (Hybrid Mid Span, Asymmetrical,, Free ends) aligned on M50

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 15.63 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.68 mm (L/ 3341)  
 Allowed deflection under total load..... = 31.26 mm (L/ 180)  
 Calculated deflection under service total load..... = 3.80 mm (L/ 1482)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 3.10 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 19.35/ 0.00 kN Right Reaction = 19.35/ 0.00 kN

No	Tension Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	
<b>Top Chord</b>								
1.1	0.00	-24.15	LL 1 5/8 x 1 5/8 x .157	z 82	0.48	779		
1.2	0.00	-22.75	do	z 88	0.48	779		
1.3	0.00	-40.83	do	z 69	0.43	610		
1.4	0.00	-40.83	do	z 69	0.32	do		
1.5	0.00	-41.99	do	z 69	0.41	610		
1.6	0.00	-41.99	do	z 79	0.47	700		
1.7	0.00	-29.90 x	do	xx 56	0.57	800		
1.8	0.00	-34.27	LL 1 5/8 x 1 5/8 x .157	z 89	0.57	839		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 113	0.16	947		
2.2	34.12	0.00	do	z 153	0.21	1220		
2.3	43.45	0.00	do	z 153	0.21	1220		
2.4	35.26	0.00	do	z 126	0.21	1000		
2.5	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162	0.17	1339		
<b>End Diagonal</b>								
3.1	28.70	0.00	BR 15/16 (50W)	z 186	0.21	1108	5.00 - 20	
3.2	36.94	0.00	BR 15/16 (50W)	z 242	0.27	1444	5.00 - 20	
<b>Diagonal Towards End</b>								
4.1	10.13	0.00	U 1 x 7/8 x 0.091	z 135	0.22	891	2.30 - 38	
4.2	9.67	0.00	U 1 x 7/8 x 0.091	z 144	0.21	955	2.30 - 38	
<b>Diagonal Towards Center</b>								
5.1	0.00	-16.23	U 1 x 1 1/8 x 0.118	z 91	0.74	891	3.00 - 38	
5.2	0.00	-4.93	U 1 x 7/8 x 0.091	z 121	0.38	do	2.30 - 38	
5.3	0.37	-3.50	do	z 121	0.27	891	do	
5.4	0.00	-12.52	U 1 x 7/8 x 0.091	z 97	0.75	716	2.30 - 38	
<b>Secondary Web Member</b>								
7.1	0.00	-5.86	U 1 x 7/8 x 0.091	z 91	0.27	671	2.30 - 25	
7.2	0.00	-5.06	do	z 88	0.23	650	do	
7.3	0.00	-5.39	do	z 88	0.24	650	do	



Mark : M56

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868) 20/03/27 13:28:06

7.4 0.00 -7.62 U 1 x 7/8 x 0.091 z 112 0.49 820 2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging					Lateral Supports
@ Top Chord:	4614.56 ==>	1 Row(s) Minimum			Deck (304.8)
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	2515	922
		4362

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

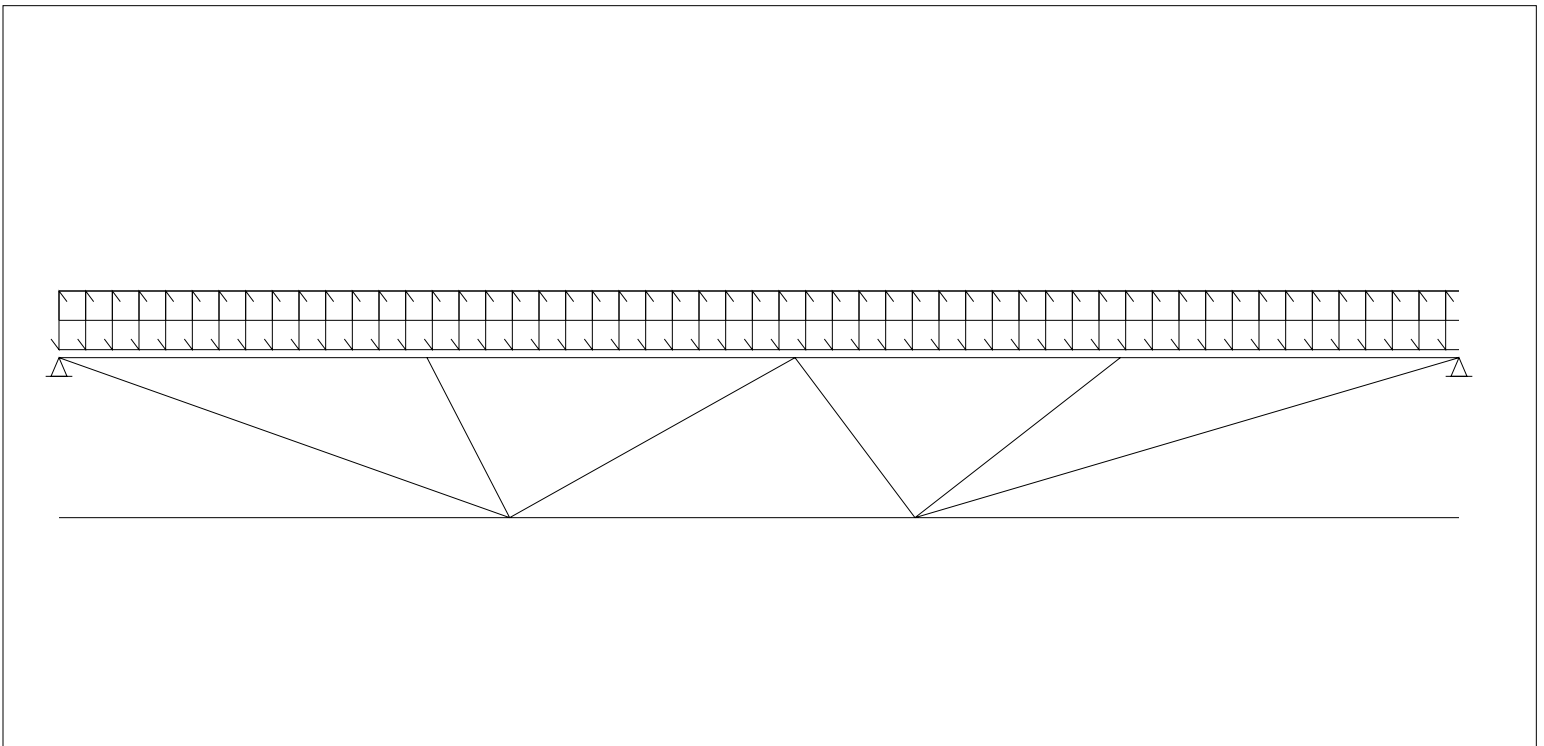
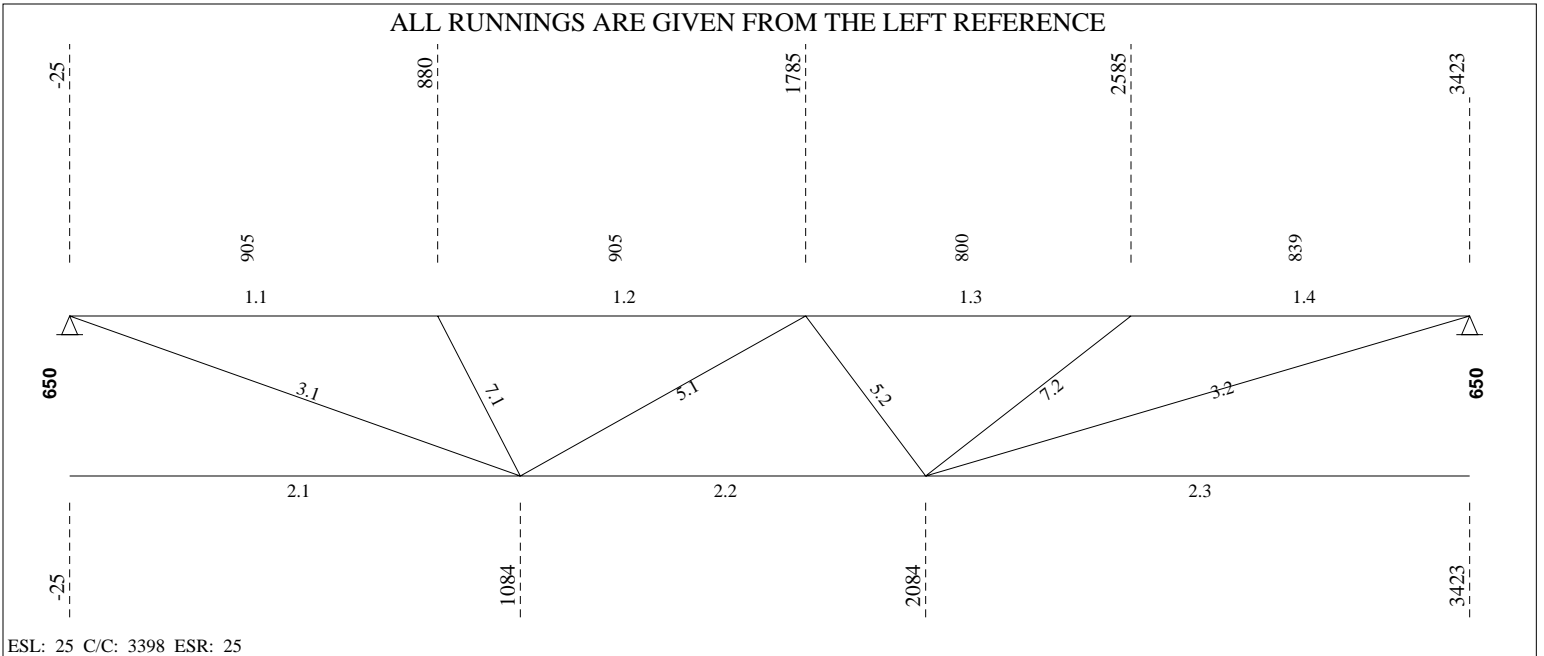
Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
67	/	77	Area to Paint	:	5.06 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M57 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE





----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 9.30 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.37 mm (L/ 9054)  
 Allowed deflection under total load..... = 18.60 mm (L/ 180)  
 Calculated deflection under service total load..... = 0.83 mm (L/ 4016)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 0.69 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 11.51/ 0.00 kN Right Reaction = 11.51/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-14.51	LL 1 5/8 x 1 5/8 x .157	z 97 0.56	905		
1.2	0.00	-12.54 x	do	xx 64 0.56	905		
1.3	0.00	-13.76 x	do	xx 56 0.47	800		
1.4	0.00	-18.13	LL 1 5/8 x 1 5/8 x .157	z 89 0.47	839		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 133 0.07	1109		
2.2	15.36	0.00	do	z 126 0.09	1000		
2.3	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.09	1339		
<b>End Diagonal</b>							
3.1	16.39	0.00	BR 15/16 (50W)	z 209 0.12	1243	5.00 - 20	
3.2	19.55	0.00	BR 15/16 (50W)	z 242 0.14	1444	5.00 - 20	
<b>Diagonal Towards Center</b>							
5.1	0.00	-4.30	U 1 x 7/8 x 0.091	z 130 0.45	956	2.30 - 38	
5.2	0.00	-4.04	U 1 x 7/8 x 0.091	z 97 0.24	716	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-6.65	U 1 x 7/8 x 0.091	z 93 0.32	681	2.30 - 25	
7.2	0.00	-7.28	U 1 x 7/8 x 0.091	z 112 0.47	820	2.30 - 25	

----- **BRIDGING** -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6651.37 ==> 2 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 1084  
 2084

Equally Spaced Bridging between Uplift Rows : No



Mark : M57

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:06

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

39 / 49

Area to Paint

: 2.99 m2

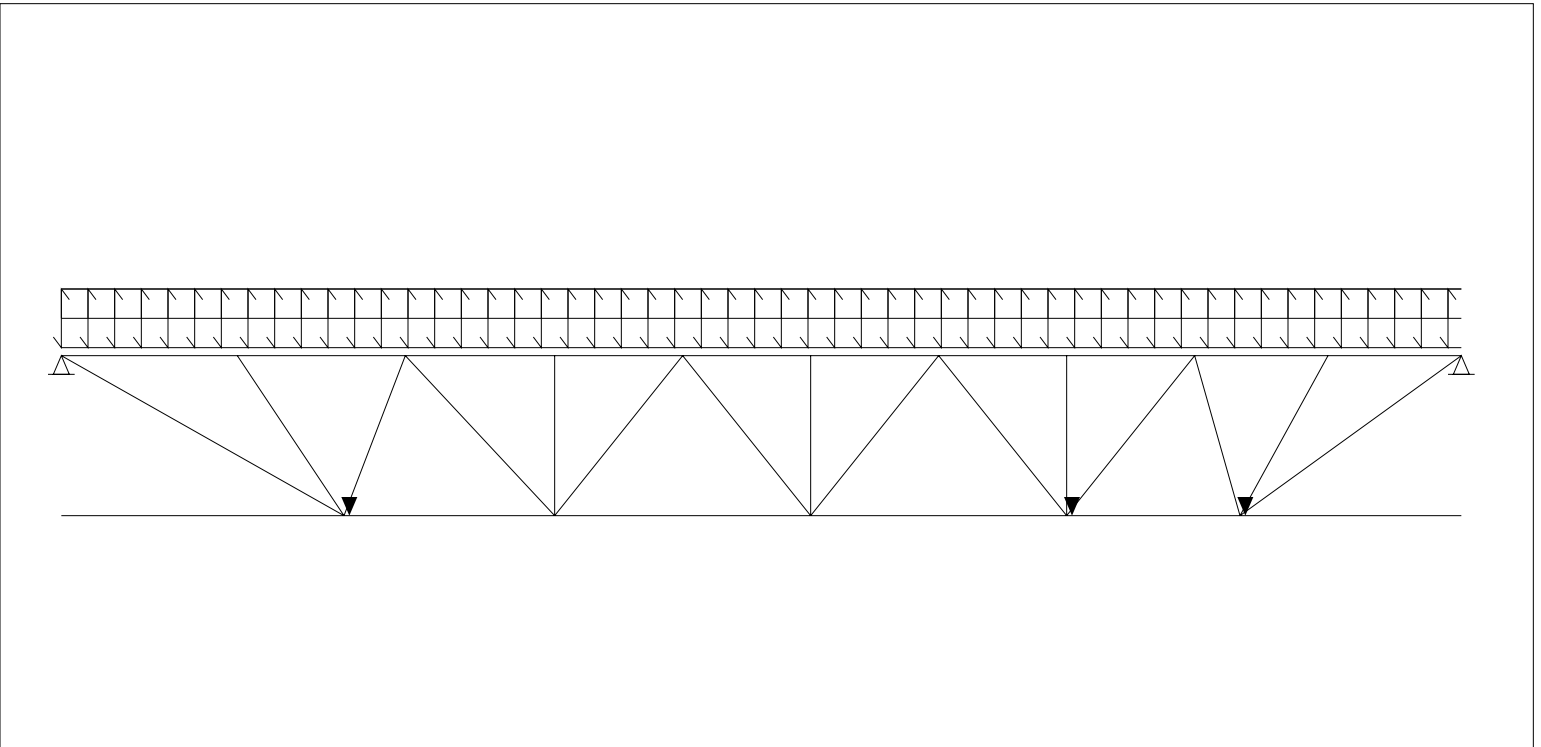
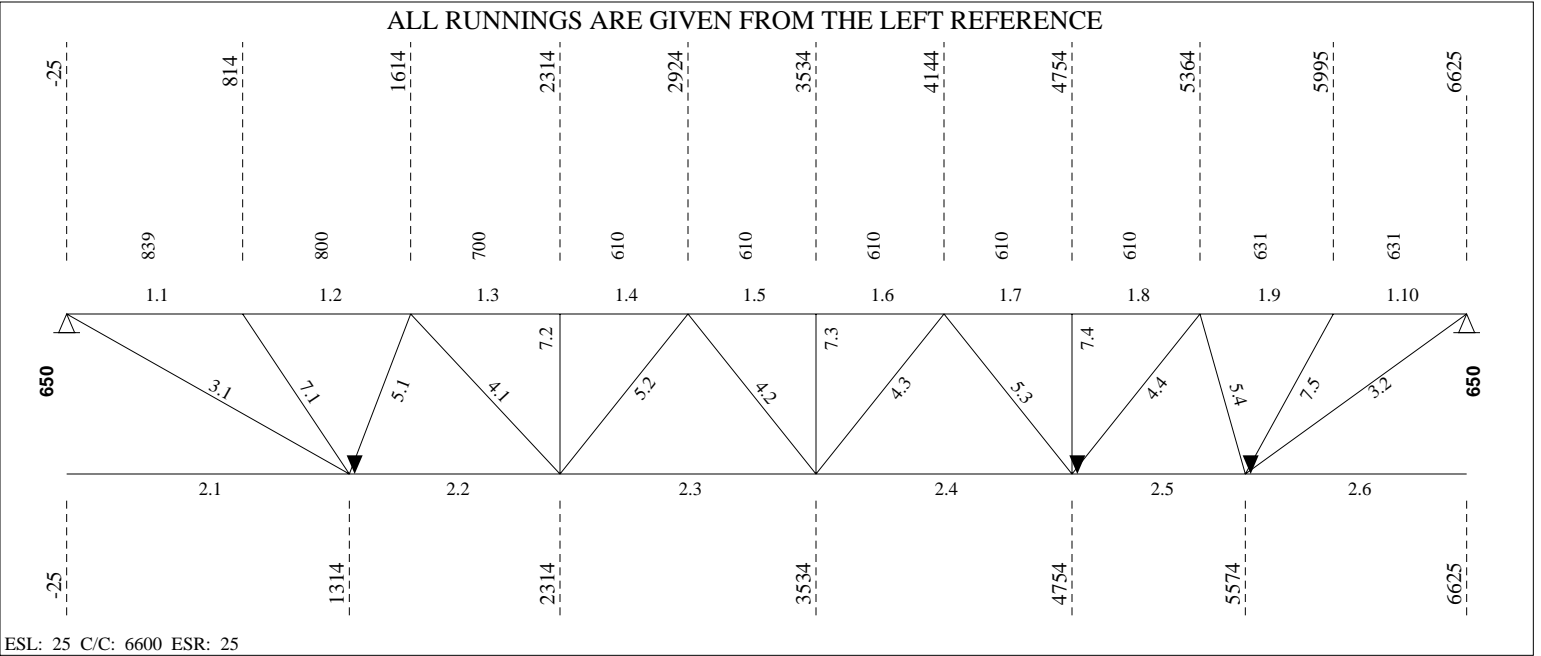
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M58 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

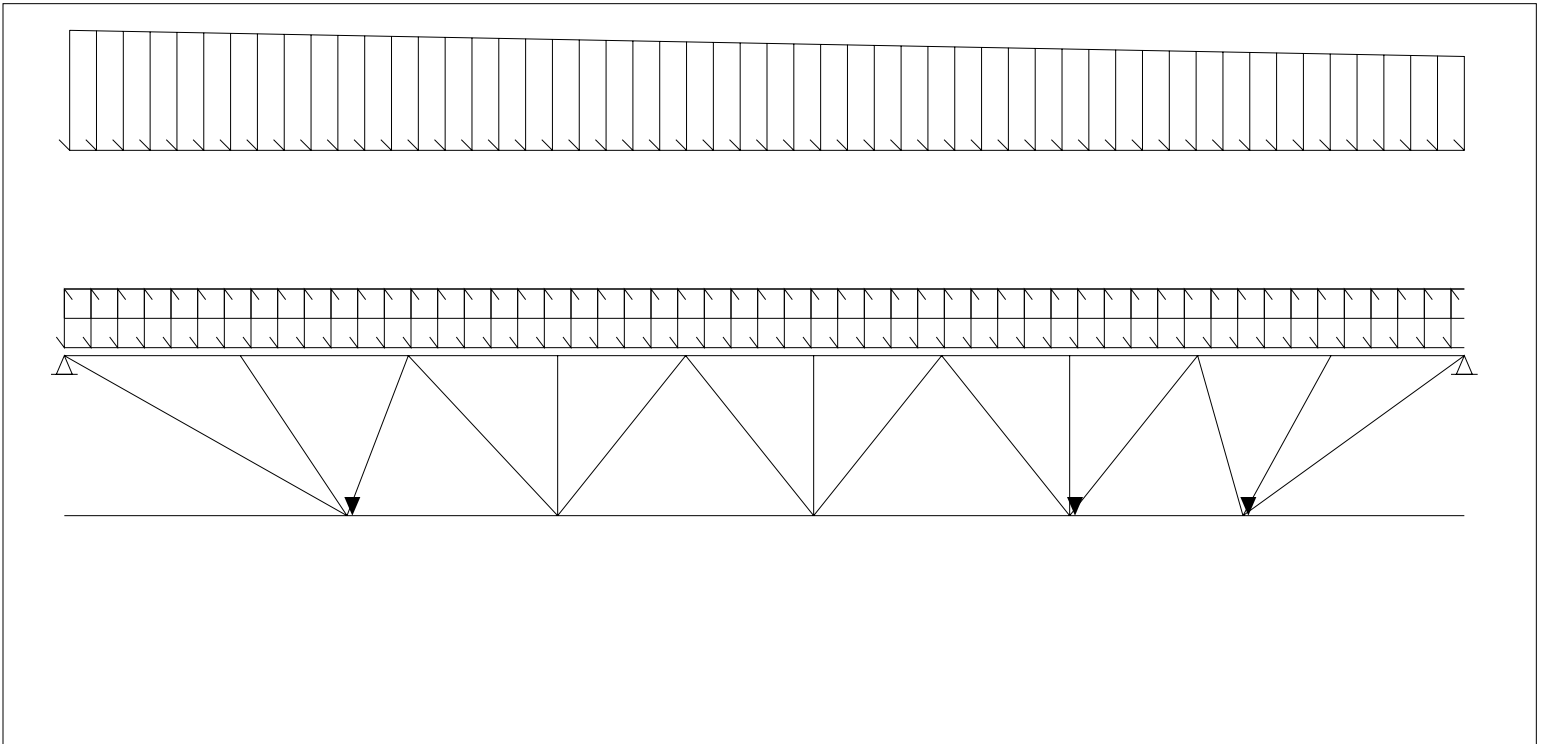
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	18.19 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	2.91 mm (L/ 2248)
Allowed deflection under total load..... =	36.39 mm (L/ 180)
Calculated deflection under service total load..... =	6.57 mm (L/ 997)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	5.35 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M58#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.92	2.44	1.50	1.91	0	6600	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 18.19 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 2.68 mm (L/ 2444)  
 Allowed deflection under total load..... = 36.39 mm (L/ 180)  
 Calculated deflection under service total load..... = 6.34 mm (L/ 1034)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 22.52/ 0.00 kN Right Reaction = 22.52/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-40.82	LL 1 5/8 x 1 5/8 x .157	z 89 0.60	839		
1.2	0.00	-36.45	do	xx 56 0.60	800		
1.3	0.00	-53.61	do	z 79 0.53	700		
1.4	0.00	-53.61	do	z 69 0.47	610		
1.5	0.00	-58.66	do	z 69 0.45	do		
1.6	0.00	-58.65	do	z 69 0.45	do		
1.7	0.00	-47.34	do	z 69 0.37	do		
1.8	0.00	-47.33	do	z 69 0.41	610		
1.9	0.00	-30.04	do	z 71 0.41	631		
1.10	0.00	-32.84	LL 1 5/8 x 1 5/8 x .157	z 66 0.38	631		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.21	1339		
2.2	43.32	0.00	do	z 126 0.28	1000		
2.3	58.18	0.00	do	z 153 0.28	1220		
2.4	55.04	0.00	do	z 153 0.28	1220		
2.5	35.55	0.00	do	z 103 0.26	820		
2.6	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 126 0.17	1051		
<b>End Diagonal</b>							
3.1	44.00	0.00	BR 15/16 (50W)	z 242 0.32	1444	5.00 - 20	
3.2	37.69	0.00	BR 15/16 (50W)	z 200 0.27	1194	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	14.24	0.00	U 1 x 7/8 x 0.091	z 145 0.31	956	2.30 - 38	
4.2	2.56	-1.60	do	z 121 0.12	892	do	
4.3	6.45	0.00	do	z 135 0.14	891	do	
4.4	16.99	0.00	U 1 x 7/8 x 0.091	z 135 0.36	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-15.99	U 1 x 7/8 x 0.091	z 97 0.96	716	2.30 - 38	



5.2	0.00	-7.65		do	z 121	0.59	891	do
5.3	0.00	-11.66		do	z 121	0.89	892	do
5.4	0.00	-17.30	U 1 x 7/8 x 0.091		z 93	0.97	683	2.30 - 38

Secondary Web Member

7.1	0.00	-7.76	U 1 x 7/8 x 0.091		z 112	0.50	820	2.30 - 25
7.2	0.00	-5.64		do	z 88	0.25	650	do
7.3	0.00	-5.44		do	z 88	0.24	do	do
7.4	0.00	-5.20		do	z 88	0.23	650	do
7.5	0.00	-5.66	U 1 x 7/8 x 0.091		z 105	0.33	774	2.30 - 25

BRIDGING

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 1 Row(s) Minimum  
 @ Bottom Chord: 6651.37 ==> 3 Row(s) Minimum  
 Lateral Supports Deck (304.8)  
 Imposed and conc. load 5 or

POSITION @ Top Chord @ Bottom Chord  
 3300 1314  
 4754  
 Add 5574

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

- LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
- U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

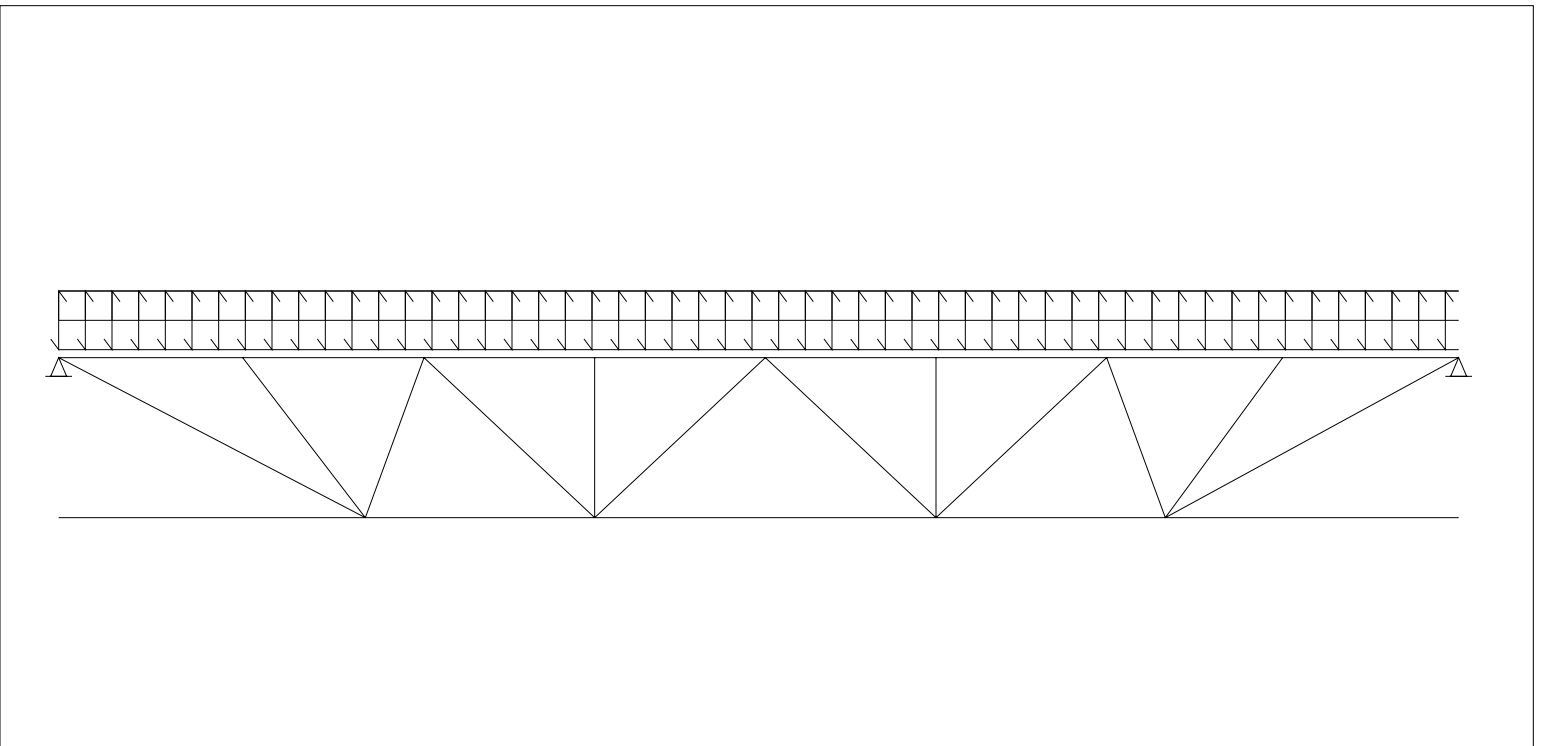
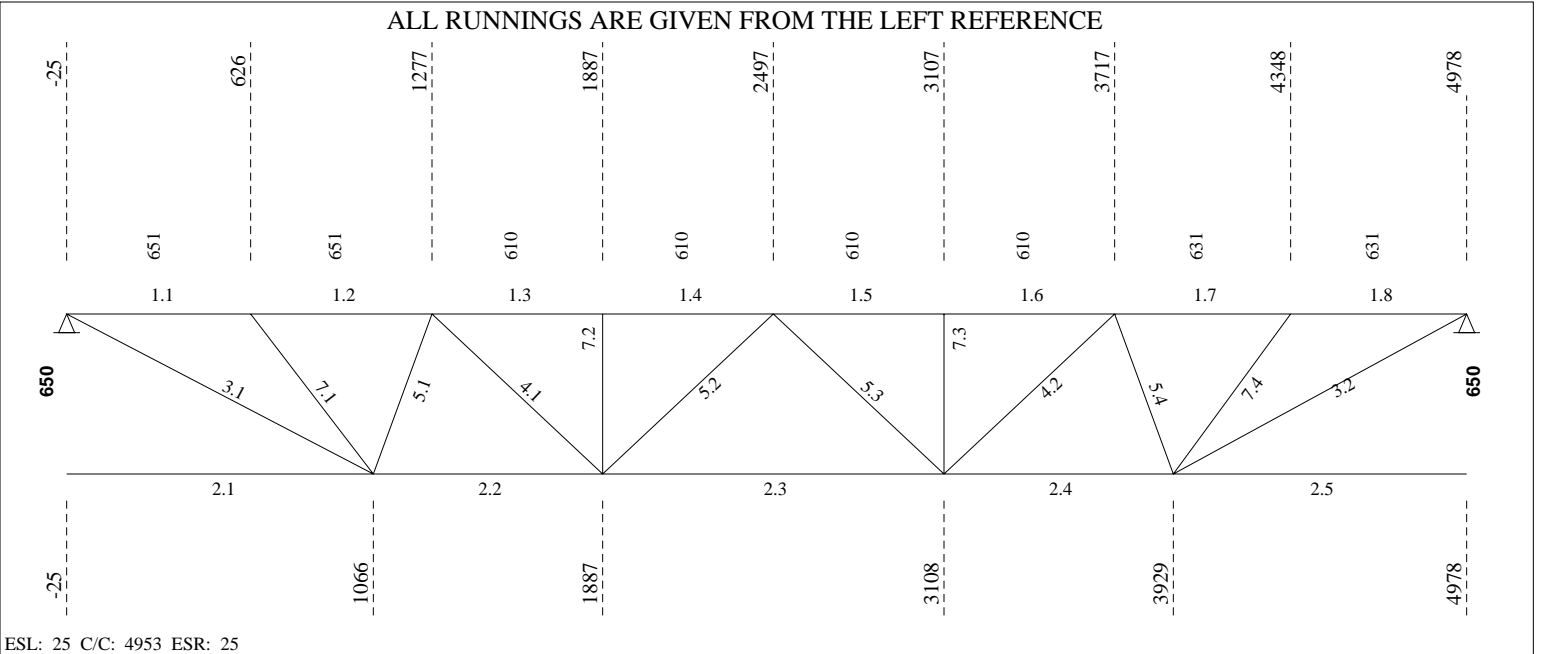
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 78 / 88 Area to Paint : 5.93 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**
**JOIST CALCULATION ACCORDING TO S16-09, S136-07 & NBC 2010 (rev 2017)**

Mark : M59 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

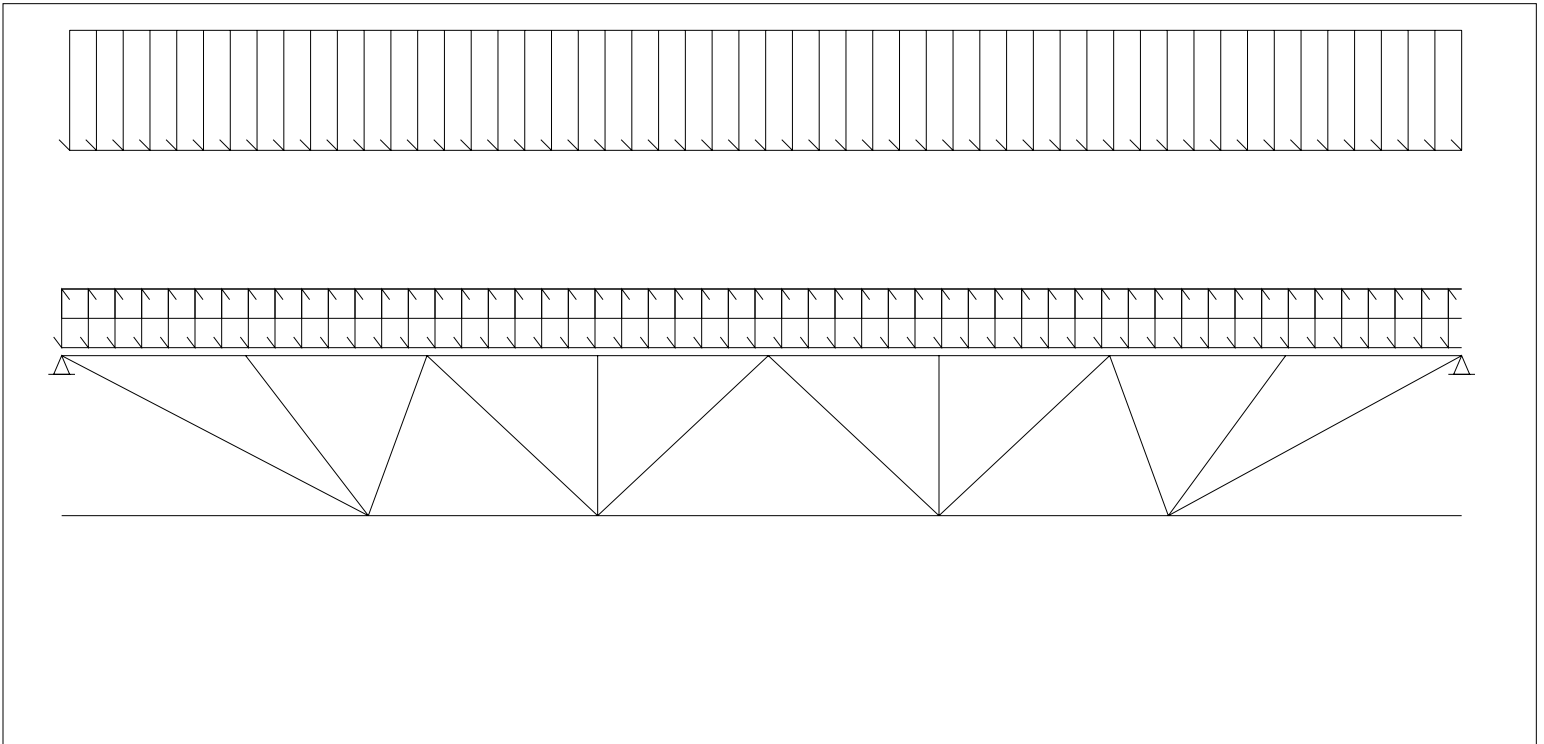
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	13.62 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	1.09 mm (L/ 4496)
Allowed deflection under total load..... =	27.24 mm (L/ 180)
Calculated deflection under service total load..... =	2.46 mm (L/ 1994)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	2.03 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M59#02 )** =====





**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.92	2.44	1.92	2.44	0	4953	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 13.62 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 1.13 mm (L/ 4353)  
 Allowed deflection under total load..... = 27.24 mm (L/ 180)  
 Calculated deflection under service total load..... = 2.49 mm (L/ 1966)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 17.15/ 0.00 kN Right Reaction = 17.15/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-25.02	LL 1 5/8 x 1 5/8 x .157	z 68 0.37	651		
1.2	0.00	-21.95	do	z 74 0.37	651		
1.3	0.00	-31.65	do	z 69 0.34	610		
1.4	0.00	-31.65	do	z 69 0.24	do		
1.5	0.00	-31.37	do	z 69 0.24	do		
1.6	0.00	-31.37	do	z 69 0.34	610		
1.7	0.00	-21.31	do	z 71 0.35	631		
1.8	0.00	-24.15	LL 1 5/8 x 1 5/8 x .157	z 66 0.35	631		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 131 0.12	1091		
2.2	25.54	0.00	do	z 103 0.16	821		
2.3	33.59	0.00	do	z 153 0.16	1221		
2.4	25.00	0.00	do	z 103 0.16	821		
2.5	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 126 0.12	1050		
<b>End Diagonal</b>							
3.1	28.40	0.00	BR 15/16 (50W)	z 206 0.21	1227	5.00 - 20	
3.2	27.73	0.00	BR 15/16 (50W)	z 200 0.20	1192	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	9.18	0.00	U 1 x 7/8 x 0.091	z 135 0.20	891	2.30 - 38	
4.2	9.53	0.00	U 1 x 7/8 x 0.091	z 135 0.20	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-11.36	U 1 x 7/8 x 0.091	z 93 0.64	683	2.30 - 38	
5.2	0.08	-3.91	do	z 121 0.30	891	do	
5.3	0.00	-4.25	do	z 121 0.33	892	do	
5.4	0.00	-11.58	U 1 x 7/8 x 0.091	z 93 0.65	684	2.30 - 38	

**Secondary Web Member**



7.1	0.00	-5.81	U 1 x 7/8 x 0.091	z 107	0.35	785	2.30 - 25
7.2	0.00	-4.94	do	z 88	0.22	650	do
7.3	0.00	-4.93	do	z 88	0.22	650	do
7.4	0.00	-5.55	U 1 x 7/8 x 0.091	z 105	0.32	773	2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 1 Row(s) Minimum Lateral Supports Deck (304.8)  
 @ Bottom Chord: 6651.37 ==> 2 Row(s) Minimum Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 2476.5 1065.5  
 3928.5

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

- LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar
- U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

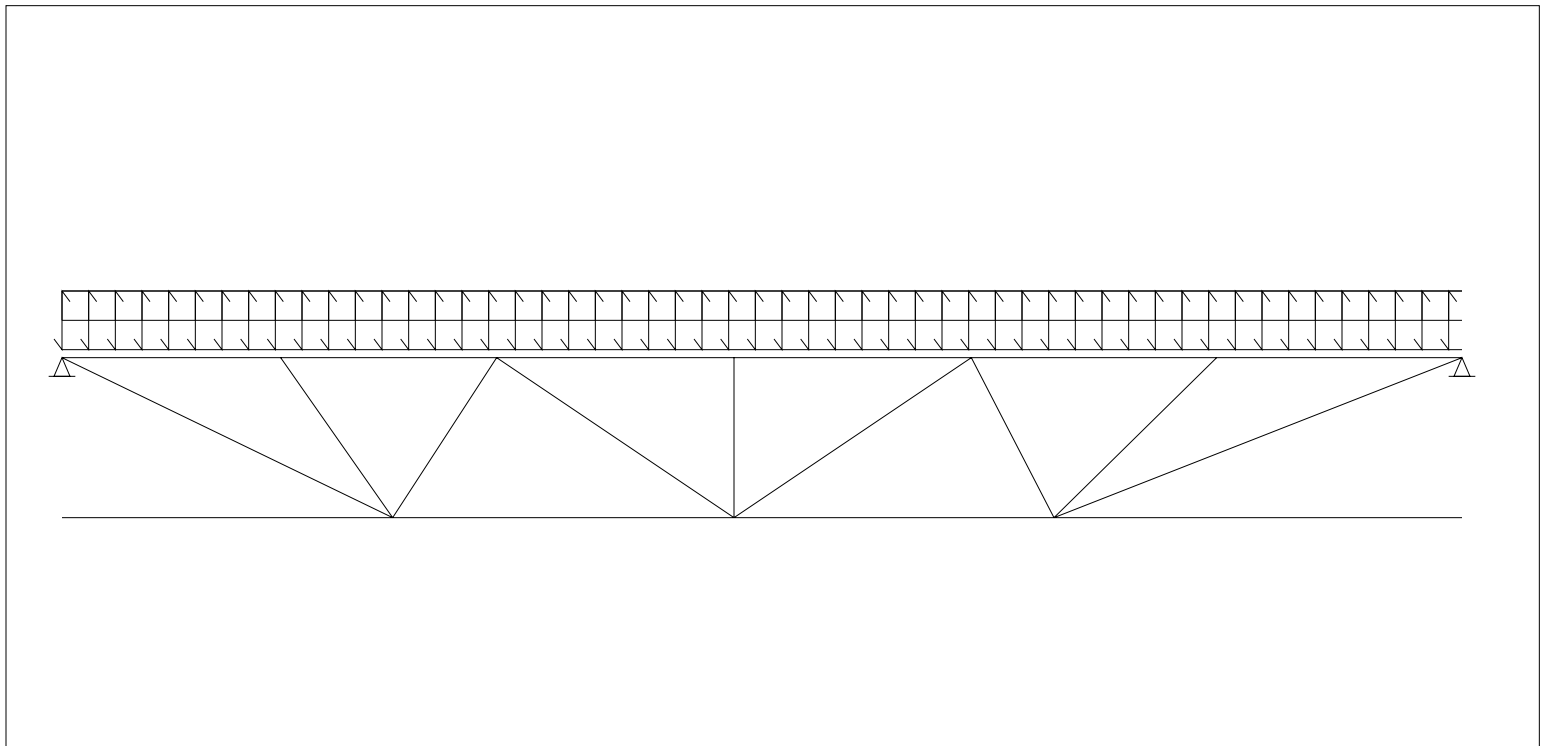
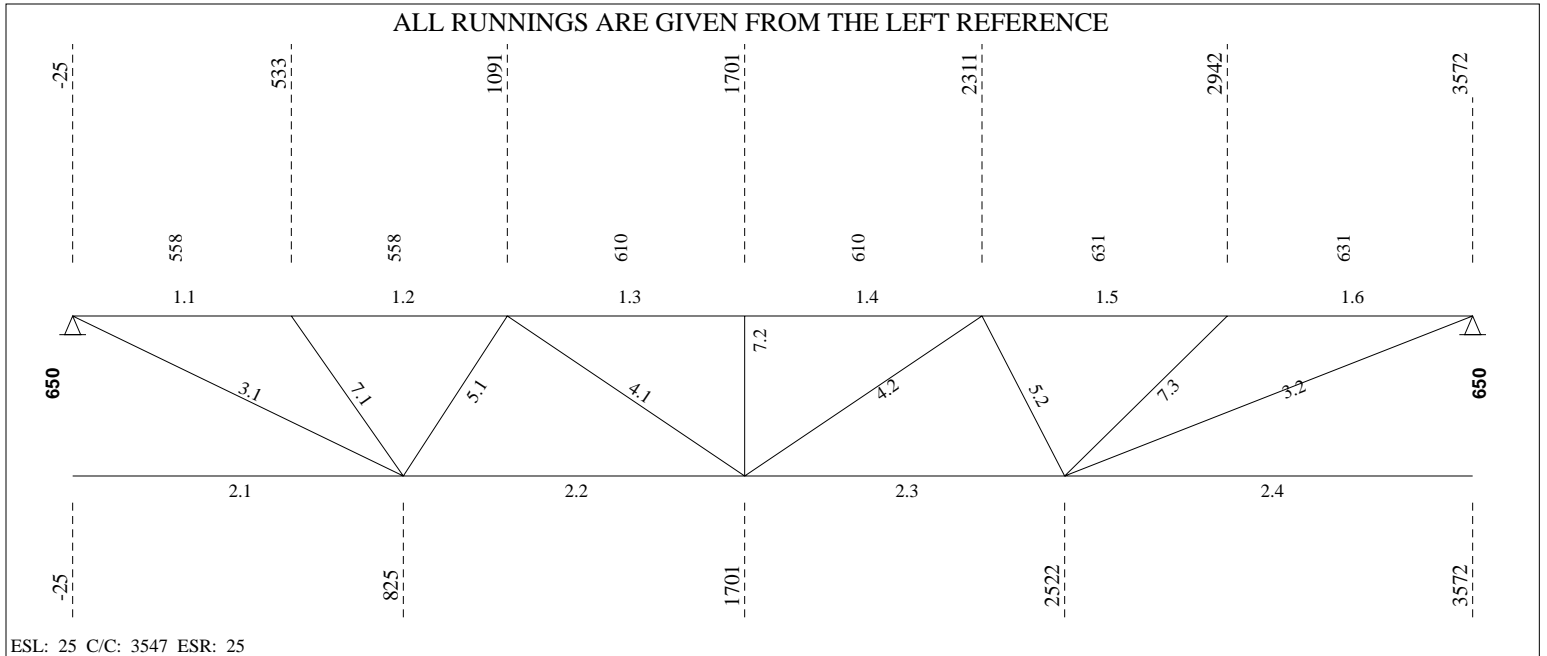
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 60 / 68 Area to Paint : 4.54 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M60 (Hybrid Mid Span, Asymmetrical,, Free ends)



----- **LOADING CONDITIONS** -----

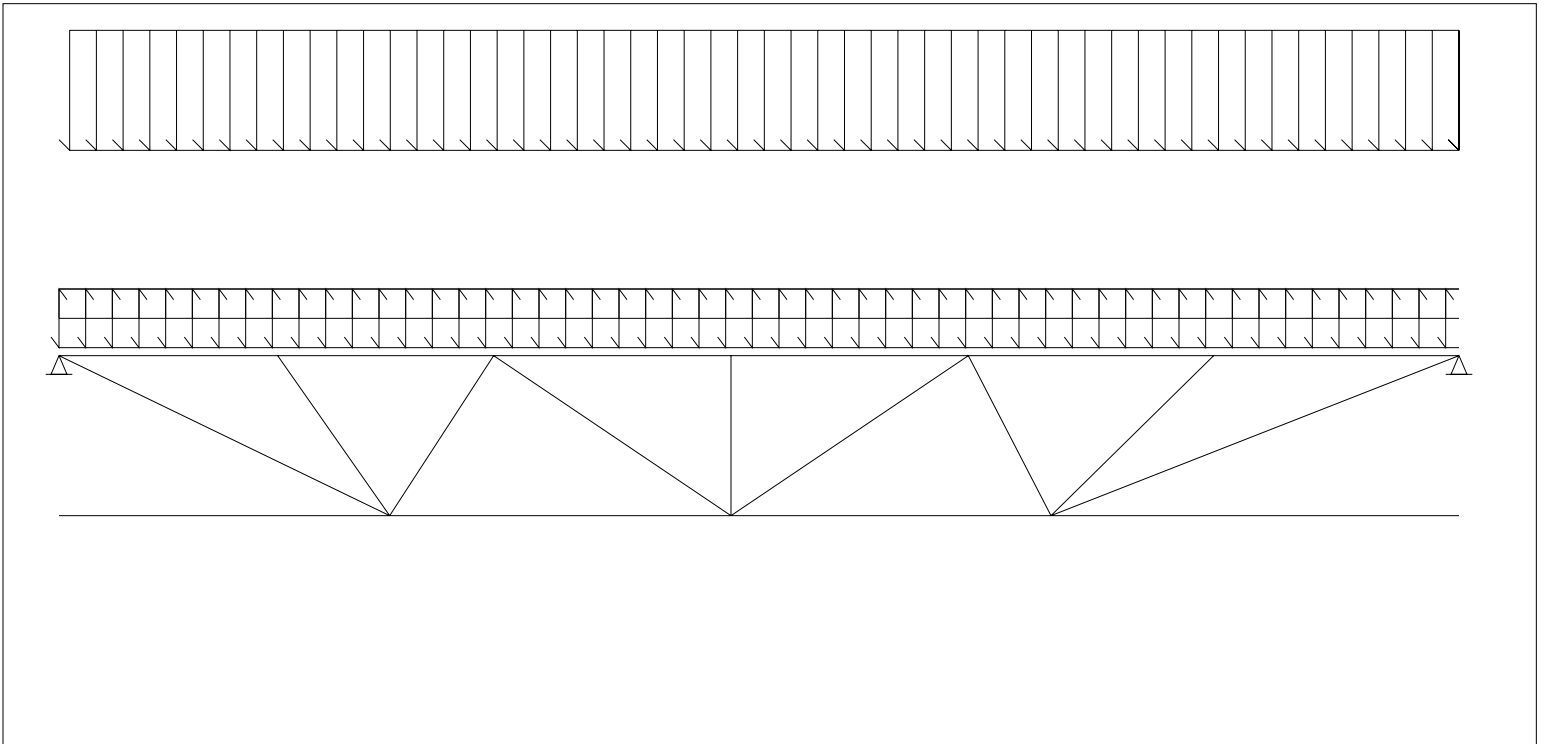
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	9.71 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	0.40 mm (L/ 8682)
Allowed deflection under total load..... =	19.43 mm (L/ 180)
Calculated deflection under service total load..... =	0.91 mm (L/ 3851)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	0.76 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M60#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.92	2.44	1.92	2.44	0	3547	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 9.71 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.42 mm (L/ 8405)  
 Allowed deflection under total load..... = 19.43 mm (L/ 180)  
 Calculated deflection under service total load..... = 0.92 mm (L/ 3796)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 12.23/ 0.00 kN Right Reaction = 12.23/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-13.36	LL 1 5/8 x 1 5/8 x .157	z 57 0.09	558		
1.2	0.00	-11.62	do	z 63 0.08	558		
1.3	0.00	-17.06	do	z 69 0.13	610		
1.4	0.00	-17.06	do	z 69 0.27	610		
1.5	0.00	-13.47	do	z 71 0.31	631		
1.6	0.00	-16.31	LL 1 5/8 x 1 5/8 x .157	z 66 0.31	631		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 100 0.07	850		
2.2	14.48	0.00	do	z 110 0.08	876		
2.3	15.48	0.00	do	z 103 0.08	821		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 126 0.08	1051		
<b>End Diagonal</b>							
3.1	16.57	0.00	BR 15/16 (50W)	z 173 0.12	1030	5.00 - 20	
3.2	18.72	0.00	BR 15/16 (50W)	z 200 0.14	1193	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	4.27	0.00	U 1 x 7/8 x 0.091	z 135 0.09	891	2.30 - 38	
4.2	3.02	-0.16	U 1 x 7/8 x 0.091	z 121 0.07	891	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-7.42	U 1 x 7/8 x 0.091	z 96 0.43	702	2.30 - 38	
5.2	0.00	-6.46	U 1 x 7/8 x 0.091	z 93 0.36	683	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-4.37	U 1 x 7/8 x 0.091	z 97 0.22	713	2.30 - 25	
7.2	0.00	-4.63	do	z 88 0.21	650	do	
7.3	0.00	-5.39	U 1 x 7/8 x 0.091	z 105 0.31	774	2.30 - 25	

**BRIDGING**



Mark : M60

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:07

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	0 Row(s) Minimum
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum

Lateral Supports  
Deck (304.8)  
Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
		824.5
		2521.5

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

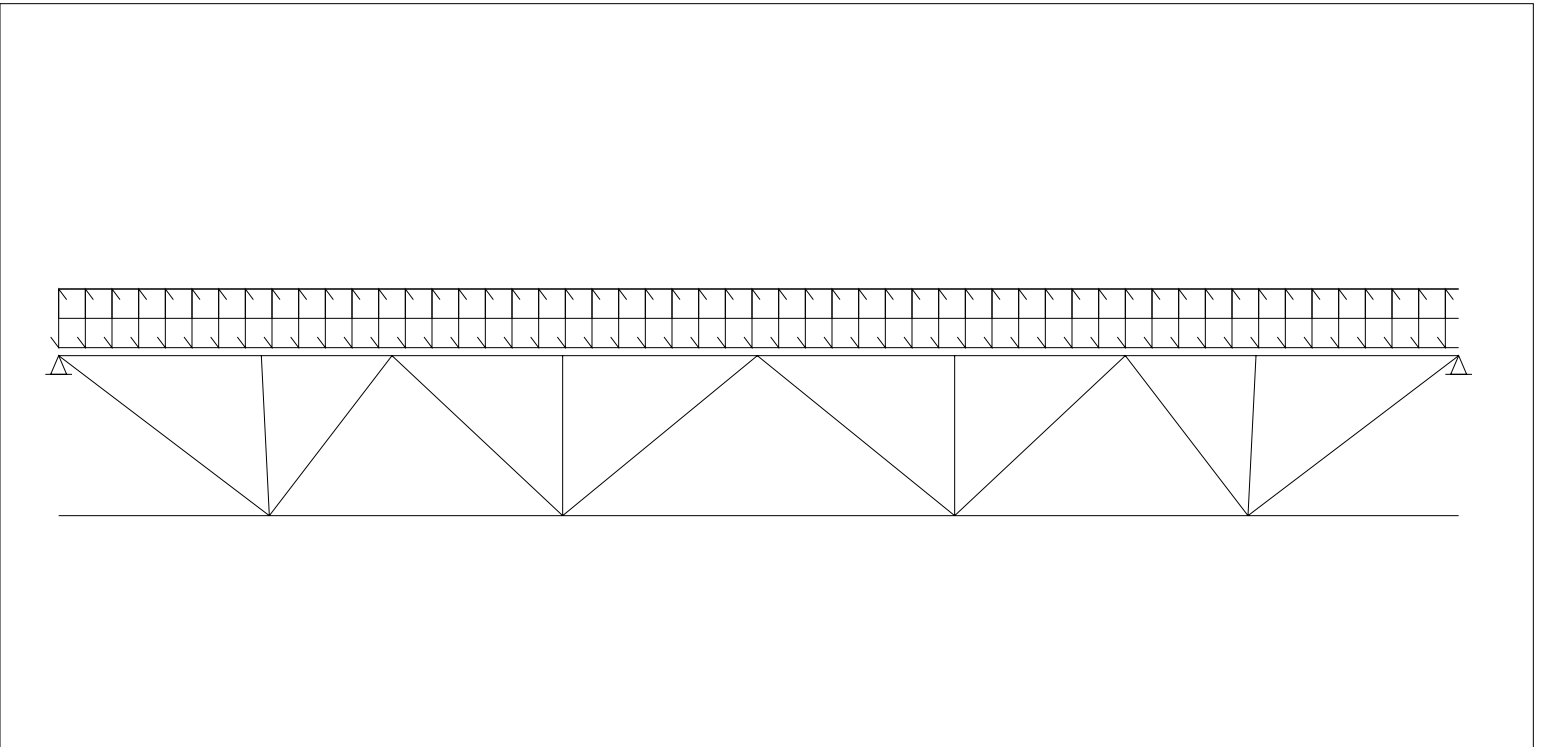
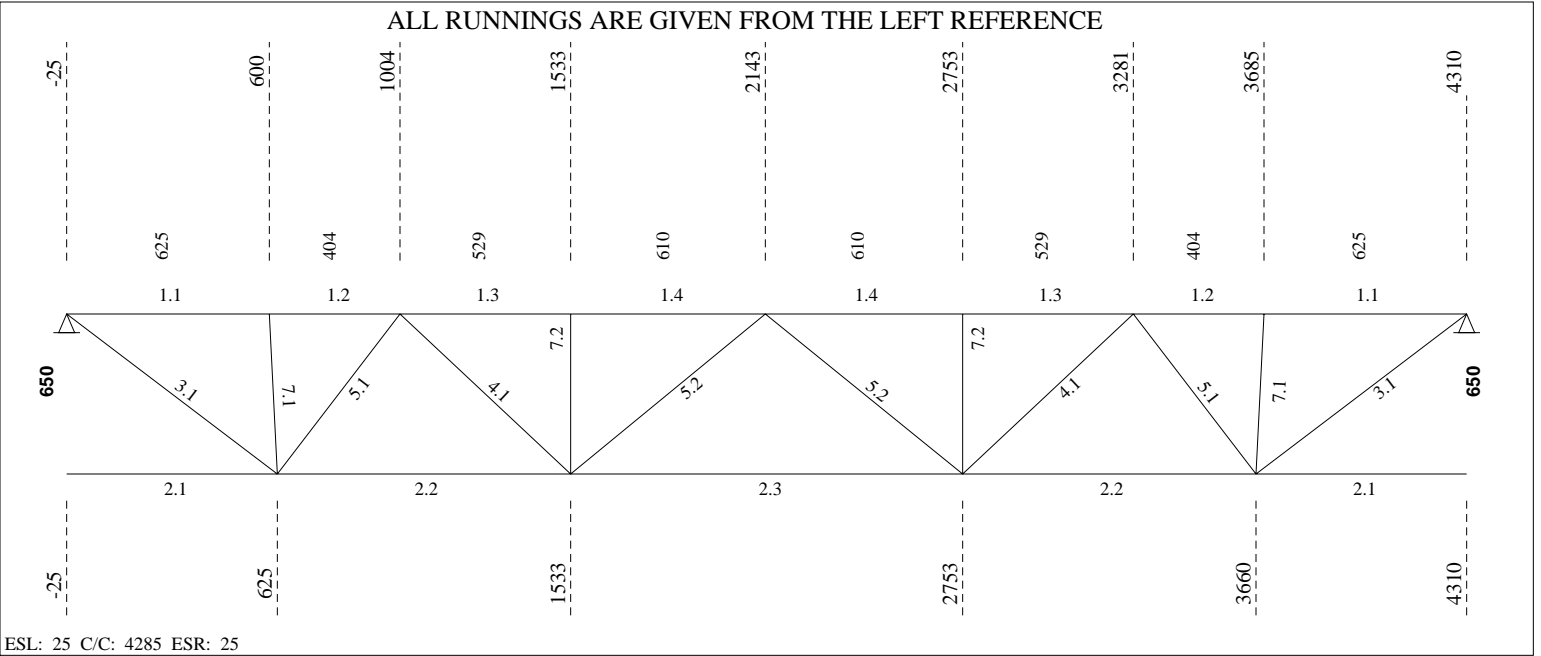
Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
44	/	51	Area to Paint	:	3.31 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M61 (Hybrid Mid Span, Symmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

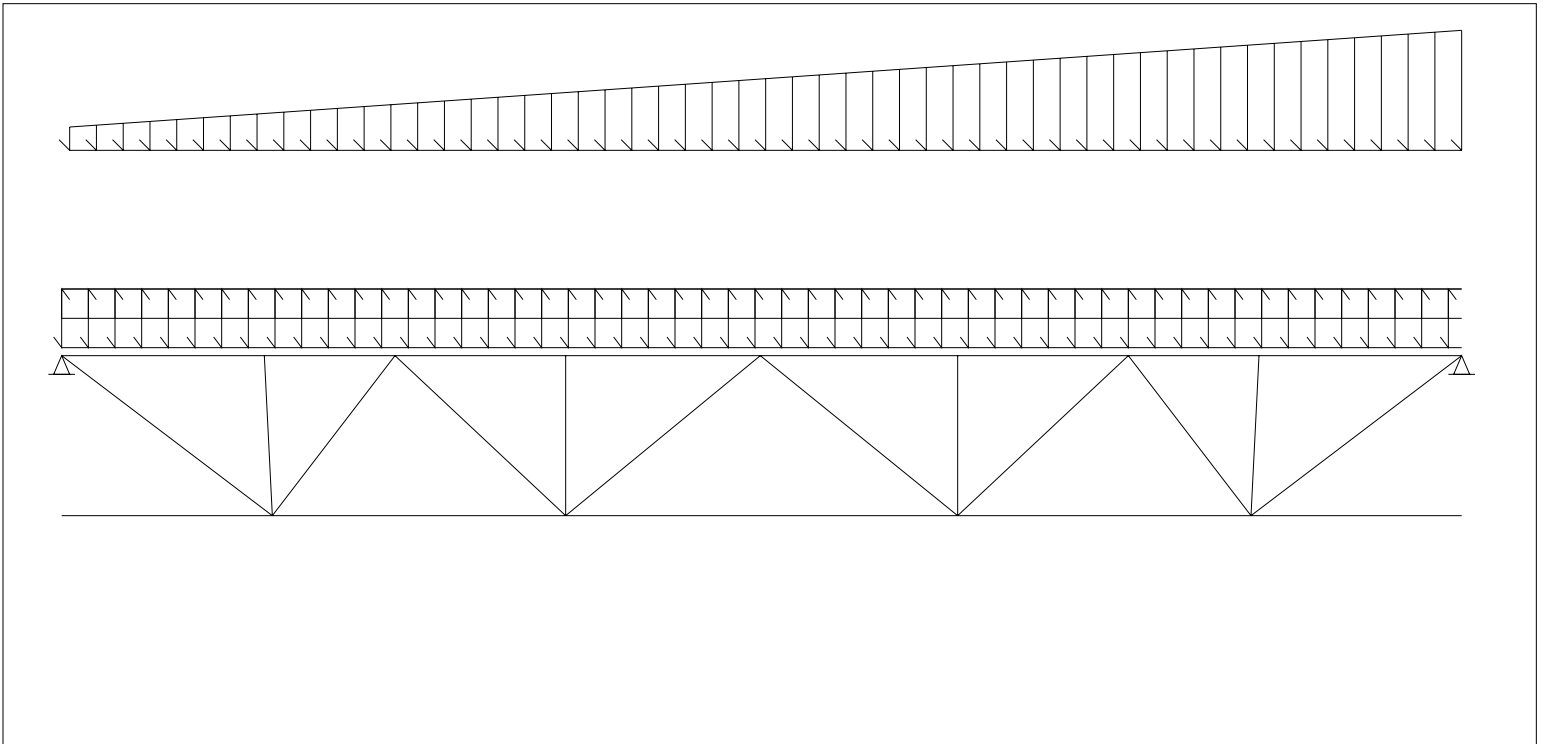
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	11.76 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	0.65 mm (L/ 6562)
Allowed deflection under total load..... =	23.53 mm (L/ 180)
Calculated deflection under service total load..... =	1.46 mm (L/ 2910)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	1.20 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M61#02 )** =====





**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	0.30	0.38	1.50	1.91	0	4285	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 11.76 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.31 mm (L/ 9999)  
 Allowed deflection under total load..... = 23.53 mm (L/ 180)  
 Calculated deflection under service total load..... = 1.12 mm (L/ 3773)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 14.56/ 0.00 kN Right Reaction = 14.56/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-12.07	LL 1 5/8 x 1 5/8 x .157	z 65 0.09	625		
1.2	0.00	-11.94	do	z 46 0.11	404		
1.3	0.00	-22.60	do	z 60 0.15	529		
1.4	0.00	-22.60	LL 1 5/8 x 1 5/8 x .157	z 69 0.17	610		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 75 0.08	650		
2.2	17.52	0.00	do	z 114 0.12	908		
2.3	24.65	0.00	LL 1 5/8 x 1 5/8 x .157	z 153 0.12	1220		
<b>End Diagonal</b>							
3.1	17.13	0.00	BR 15/16 (50W)	z 149 0.12	885	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	8.15	0.00	U 1 x 7/8 x 0.091	z 127 0.18	838	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-10.81	U 1 x 7/8 x 0.091	z 102 0.70	752	2.30 - 38	
5.2	0.00	-3.79	U 1 x 7/8 x 0.091	z 121 0.29	891	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-3.84	U 1 x 7/8 x 0.091	z 89 0.17	650	2.30 - 25	
7.2	0.00	-4.39	U 1 x 7/8 x 0.091	z 88 0.20	650	2.30 - 25	

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	1 Row(s) Minimum
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum

Lateral Supports

 Deck (304.8)  
 Acc. to the code

POSITION

@ Top Chord

@ Bottom Chord



Mark : M61

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:07

2142.5

625  
3660

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,  
-U = 1 U profile,

-BL = 2 angles welded in box,  
-UU = 2 U profiles one inside the other,

-BR = Round bar  
-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension,

3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868  
55 / 59

Designer: Luis Baez  
Area to Paint

Shop: Canam Group Calgary [Production]  
: 4.03 m2

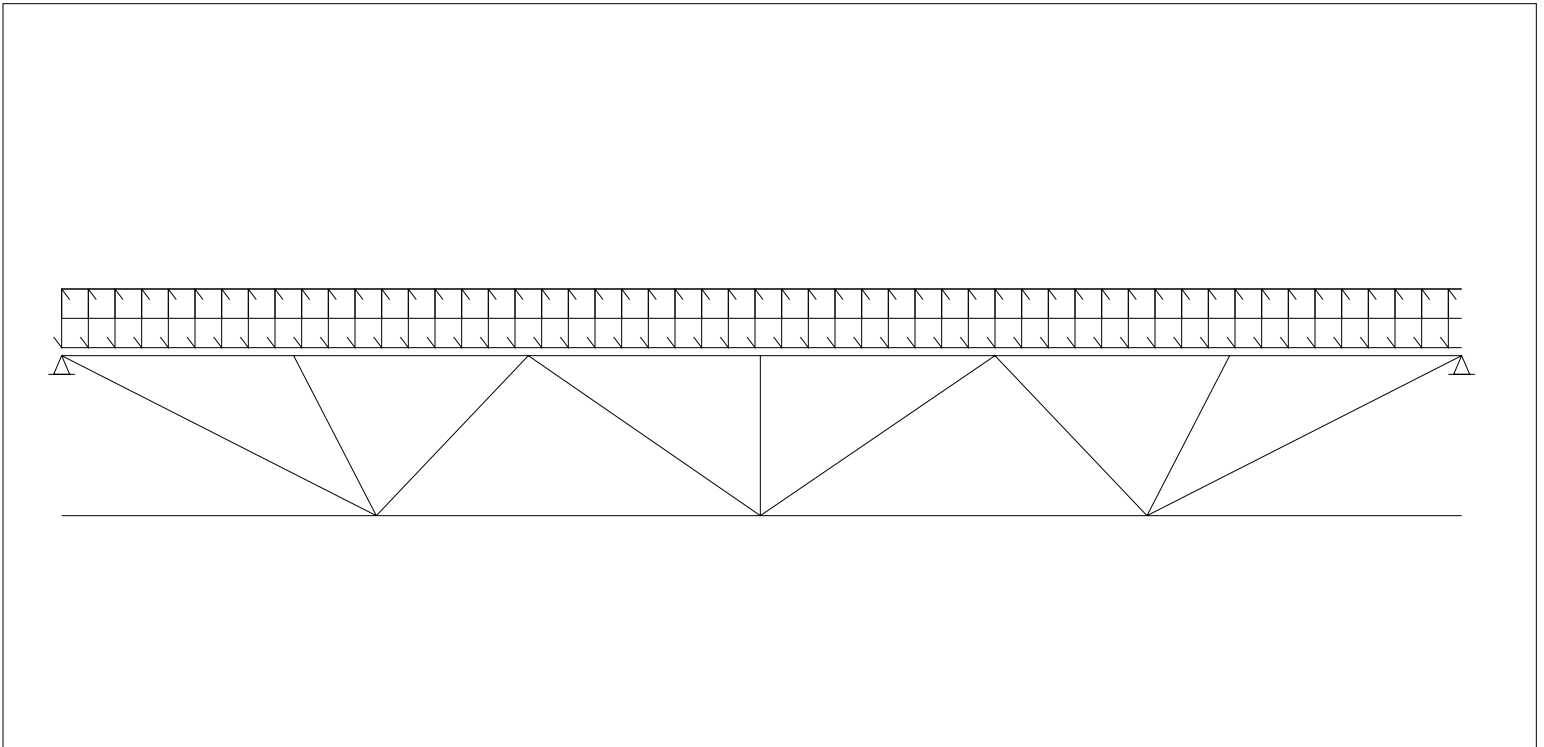
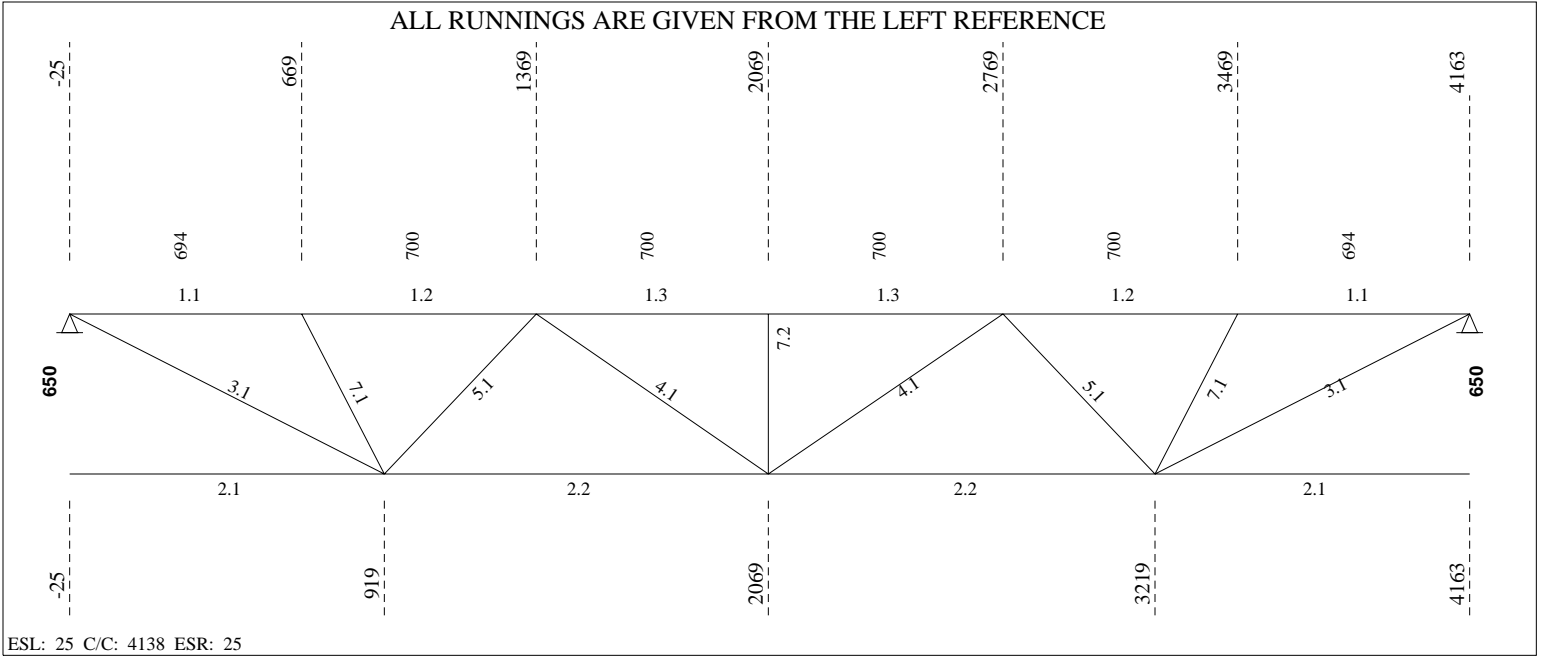
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M62 (Hybrid Mid Span, Symmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 11.36 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.62 mm (L/ 6637)  
 Allowed deflection under total load..... = 22.71 mm (L/ 180)  
 Calculated deflection under service total load..... = 1.39 mm (L/ 2944)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 1.14 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **FORCES IN MEMBERS [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 14.06/ 0.00 kN Right Reaction = 14.06/ 0.00 kN

REQUIRED MATERIAL

REQUIRED WELD

No	Tension	Compres.	REQUIRED MATERIAL x = tied at mid-length	Slend. Util.	Length	REQUIRED WELD Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-16.92	LL 1 5/8 x 1 5/8 x .157	z 73 0.36	694		
1.2	0.00	-15.08	do	z 79 0.36	700		
1.3	0.00	-22.96	LL 1 5/8 x 1 5/8 x .157	z 79 0.36	700		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 112 0.10	944		
2.2	20.27	0.00	LL 1 5/8 x 1 5/8 x .157	z 145 0.11	1150		
<b>End Diagonal</b>							
3.1	20.14	0.00	BR 15/16 (50W)	z 186 0.15	1105	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	4.41	0.00	U 1 x 7/8 x 0.091	z 144 0.10	955	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-9.01	U 1 x 7/8 x 0.091	z 108 0.64	791	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-5.31	U 1 x 7/8 x 0.091	z 95 0.26	696	2.30 - 25	
7.2	0.00	-5.30	U 1 x 7/8 x 0.091	z 88 0.24	650	2.30 - 25	

----- **BRIDGING** -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 1 Row(s) Minimum Lateral Supports  
 @ Bottom Chord: 6651.37 ==> 2 Row(s) Minimum Deck (304.8)  
 Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 2069 919  
 3219

Equally Spaced Bridging between Uplift Rows : No



Mark : M62

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:07

---

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,  
-U = 1 U profile,

-BL = 2 angles welded in box,

-UU = 2 U profiles one inside the other,

-BR = Round bar

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

50 / 57

Area to Paint

: 3.72 m2

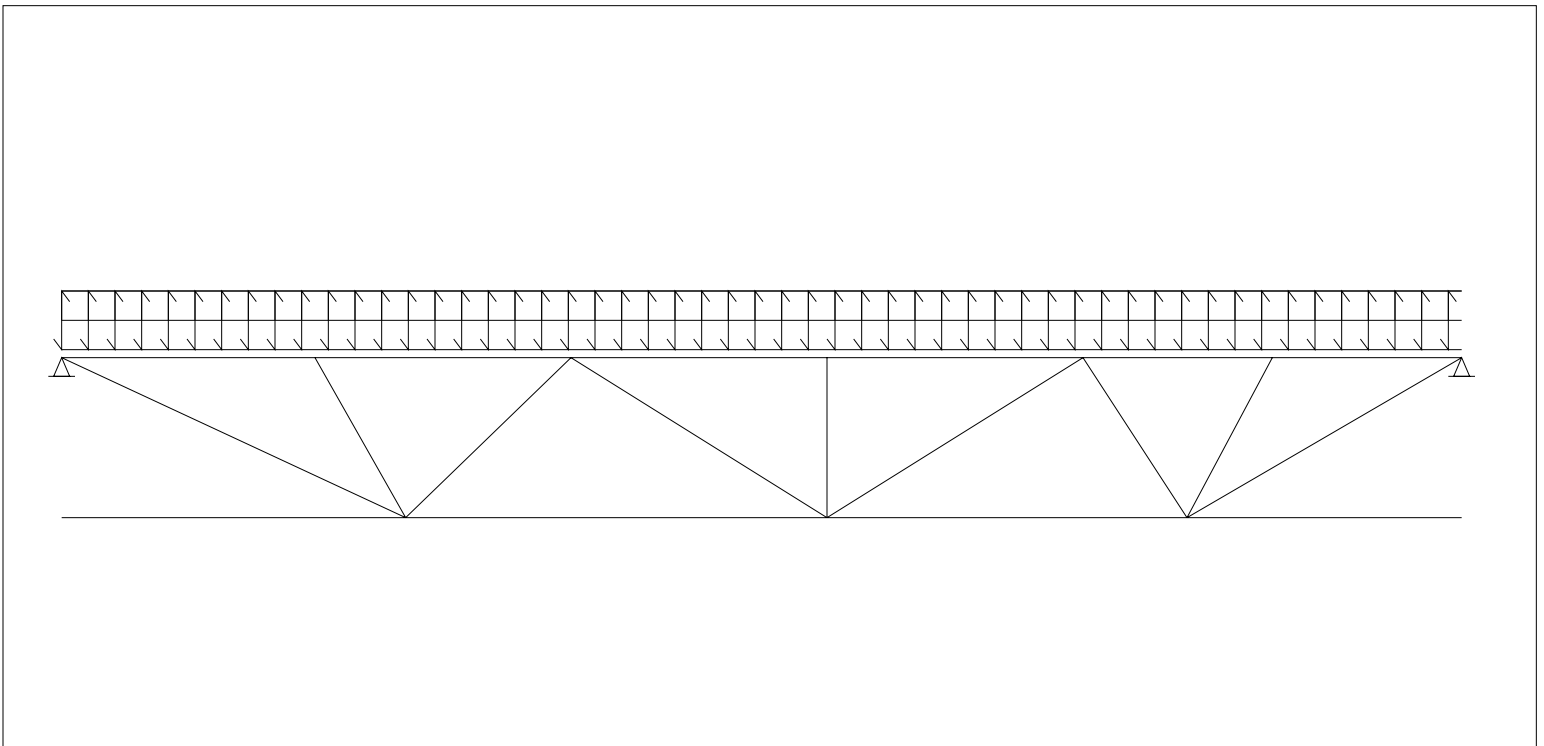
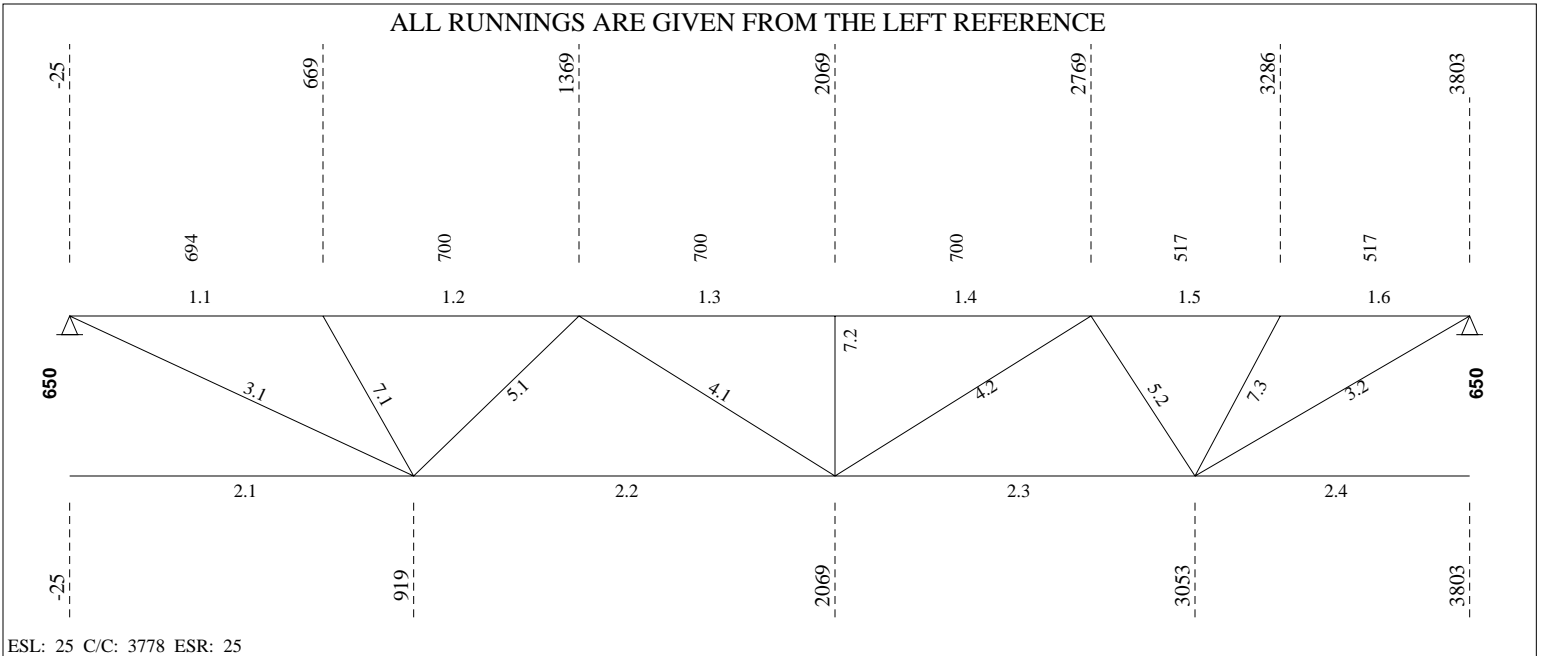
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M63 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 10.36 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.47 mm (L/ 7955)  
 Allowed deflection under total load..... = 20.71 mm (L/ 180)  
 Calculated deflection under service total load..... = 1.06 mm (L/ 3528)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 0.87 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

----- **FORCES IN MEMBERS [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 12.82/ 0.00 kN Right Reaction = 12.82/ 0.00 kN

No	Tension Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
			x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side	
<b>Top Chord</b>								
1.1	0.00	-15.15	LL 1 5/8 x 1 5/8 x .157	z 73	0.35	694		
1.2	0.00	-13.31	do	z 79	0.35	700		
1.3	0.00	-18.92	do	z 79	0.35	do		
1.4	0.00	-18.92	do	z 79	0.35	700		
1.5	0.00	-11.29	do	z 58	0.28	517		
1.6	0.00	-12.55	LL 1 5/8 x 1 5/8 x .157	z 53	0.08	517		
<b>Bottom Chord</b>								
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 112	0.08	944		
2.2	17.61	0.00	do	z 145	0.09	1150		
2.3	14.84	0.00	do	z 124	0.09	984		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 88	0.07	750		
<b>End Diagonal</b>								
3.1	18.03	0.00	BR 15/16 (50W)	z 186	0.13	1105	5.00 - 20	
3.2	16.48	0.00	BR 15/16 (50W)	z 160	0.12	955	5.00 - 20	
<b>Diagonal Towards End</b>								
4.1	2.68	-0.43	U 1 x 7/8 x 0.091	z 130	0.06	955	2.30 - 38	
4.2	5.94	0.00	U 1 x 7/8 x 0.091	z 144	0.13	955	2.30 - 38	
<b>Diagonal Towards Center</b>								
5.1	0.00	-7.53	U 1 x 7/8 x 0.091	z 108	0.53	791	2.30 - 38	
5.2	0.00	-8.66	U 1 x 7/8 x 0.091	z 97	0.51	709	2.30 - 38	
<b>Secondary Web Member</b>								
7.1	0.00	-5.27	U 1 x 7/8 x 0.091	z 95	0.26	696	2.30 - 25	
7.2	0.00	-5.21	do	z 88	0.23	650	do	
7.3	0.00	-4.08	U 1 x 7/8 x 0.091	z 94	0.20	690	2.30 - 25	

----- **BRIDGING** -----

Maximum spacing between rows of bridging @ Top Chord: 4614.56 ==> 0 Row(s) Minimum Lateral Supports Deck (304.8)



Mark : M63

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:07

@ Bottom Chord: 6651.37 ==> 2 Row(s) Minimum Acc. to the code

POSITION

@ Top Chord

@ Bottom Chord

919

3053

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,

-BL = 2 angles welded in box,

-BR = Round bar

-U = 1 U profile,

-UU = 2 U profiles one inside the other,

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

47 / 53

Area to Paint

: 3.47 m2

Material Sort : Cost

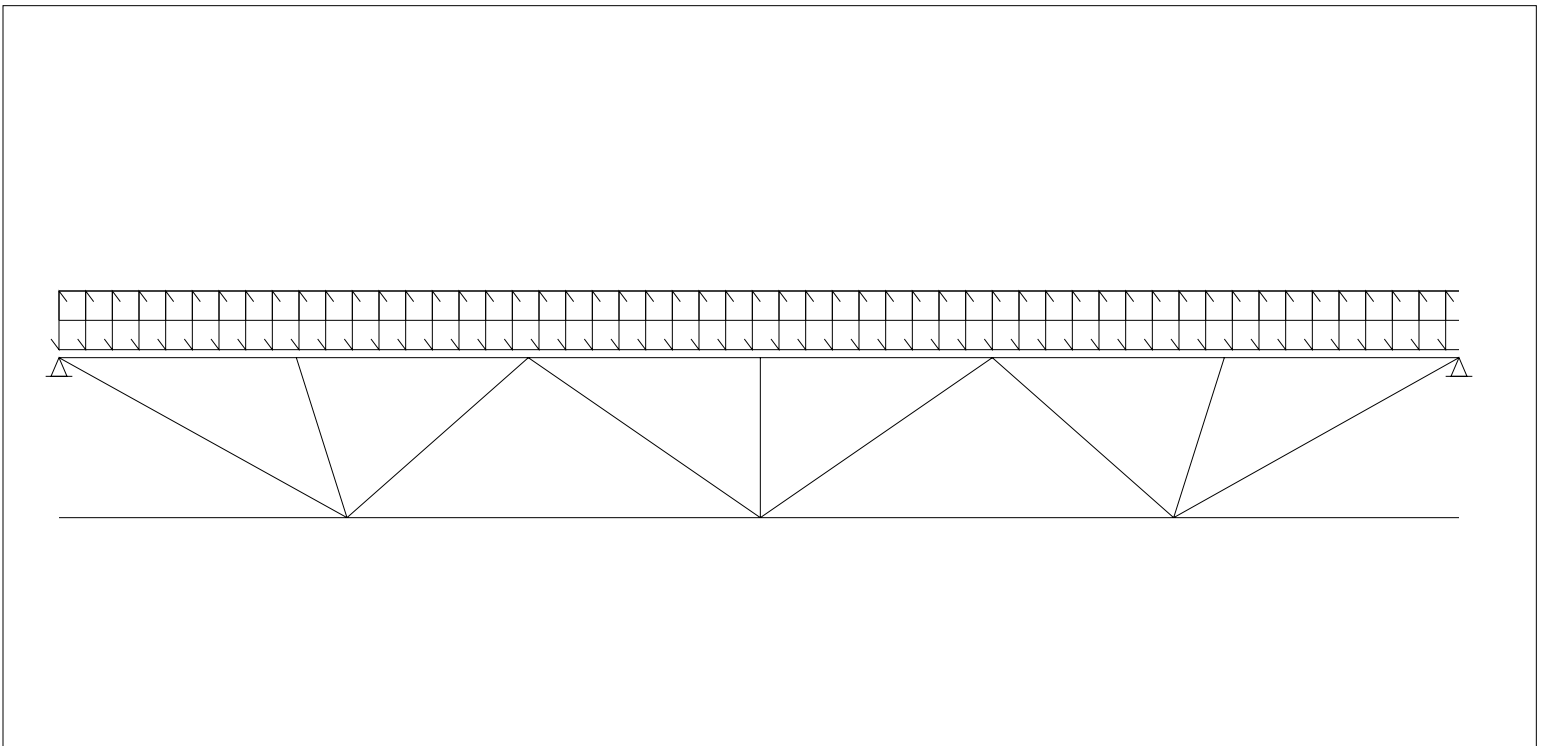
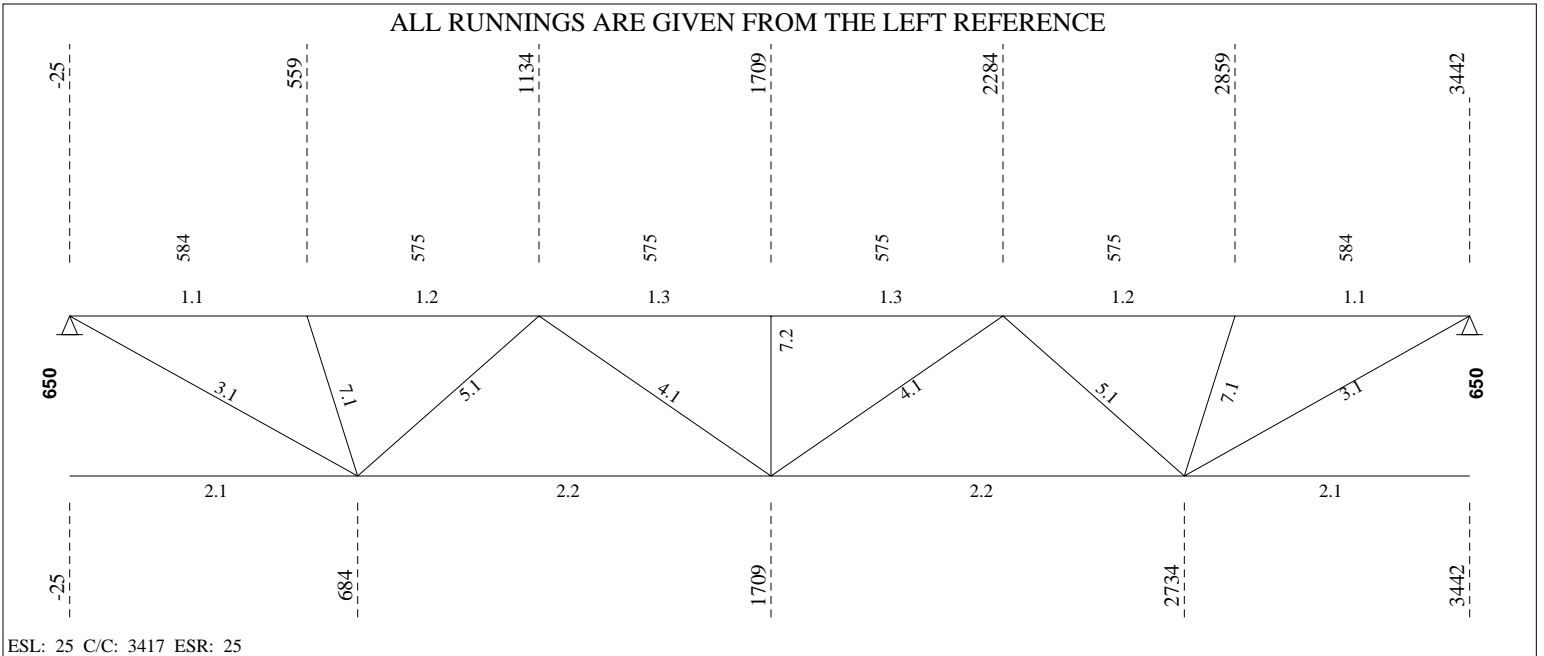


**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M64 (Hybrid Mid Span, Symmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

```

(D) DEAD LOAD.....:      2.10 kN/m^2 (   2.67 kN/m)   SPACING...:  1.27 m
(L) LIVE LOAD.....:      0.00 kN/m^2 (   0.00 kN/m)   Companion load factor (live)...: 1.0
(S) SNOW LOAD.....:      1.86 kN/m^2 (   2.36 kN/m)
(W) GROSS WIND UPLIFT:  0.81 kN/m^2 (   1.03 kN/m)
    
```

----- **(REAL) DEFLECTION** -----

```

Allowed deflection under live and snow load..... =      9.35 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =      0.34 mm (L/ 9975)
Allowed deflection under total load..... =      18.71 mm (L/ 180)
Calculated deflection under service total load..... =      0.76 mm (L/ 4425)
Gross joist inertia..... =      119.49 x10^6 mm^4
Required camber (100%D + 50%L + 50%S)..... =      0.63 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof
    
```

----- **F O R C E S I N M E M B E R S [kN]** -----

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 11.58/ 0.00 kN Right Reaction = 11.58/ 0.00 kN

No	Tension		Compres.		REQUIRED MATERIAL			REQUIRED WELD		Remarks
	Tension	Compres.	x = tied at mid-length	Slend.	Util.	Length	Weld-Ea.Side			
<b>Top Chord</b>										
1.1	0.00	-10.26	LL 1 5/8 x 1 5/8 x .157	z 60	0.07	584				
1.2	0.00	-9.49	do	z 65	0.08	575				
1.3	0.00	-15.58	LL 1 5/8 x 1 5/8 x .157	z 65	0.11	575				
<b>Bottom Chord</b>										
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 83	0.07	709				
2.2	13.76	0.00	LL 1 5/8 x 1 5/8 x .157	z 129	0.07	1025				
<b>End Diagonal</b>										
3.1	13.87	0.00	BR 15/16 (50W)	z 155	0.10	925	5.00	- 20		
<b>Diagonal Towards End</b>										
4.1	3.30	0.00	U 1 x 7/8 x 0.091	z 131	0.07	868	2.30	- 38		
<b>Diagonal Towards Center</b>										
5.1	0.00	-7.40	U 1 x 7/8 x 0.091	z 108	0.53	791	2.30	- 38		
<b>Secondary Web Member</b>										
7.1	0.00	-4.10	U 1 x 7/8 x 0.091	z 90	0.19	662	2.30	- 25		
7.2	0.00	-4.28	U 1 x 7/8 x 0.091	z 88	0.19	650	2.30	- 25		

----- **BRIDGING** -----

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	0 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION @ Top Chord @ Bottom Chord

683.5  
2733.5

Equally Spaced Bridging between Uplift Rows : No



Mark : M64

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:07

---

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,  
-U = 1 U profile,

-BL = 2 angles welded in box,

-UU = 2 U profiles one inside the other,

-BR = Round bar

-CL = Crimped angle

Project no.: W01868

Designer: Luis Baez

Shop: Canam Group Calgary [Production]

44 / 49

Area to Paint

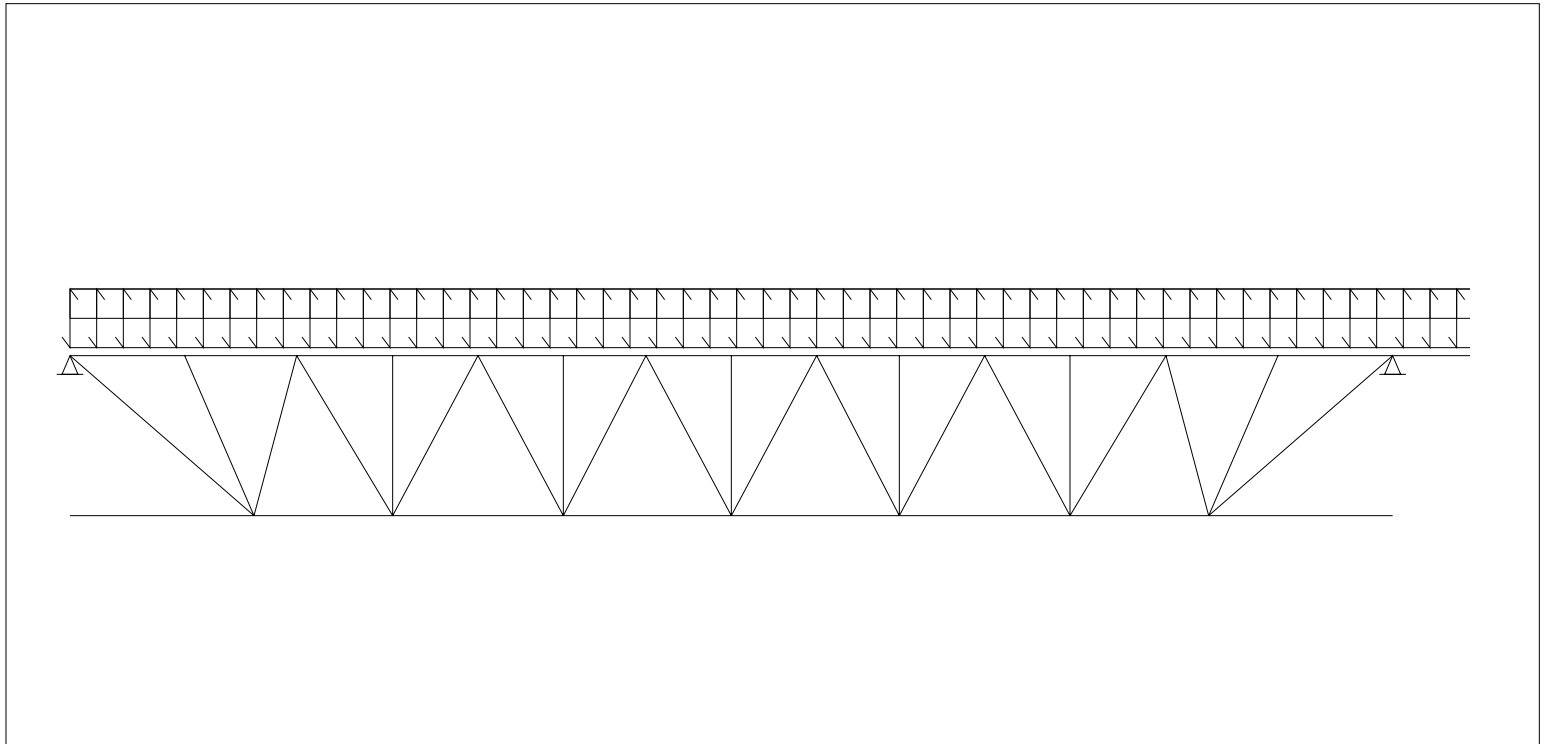
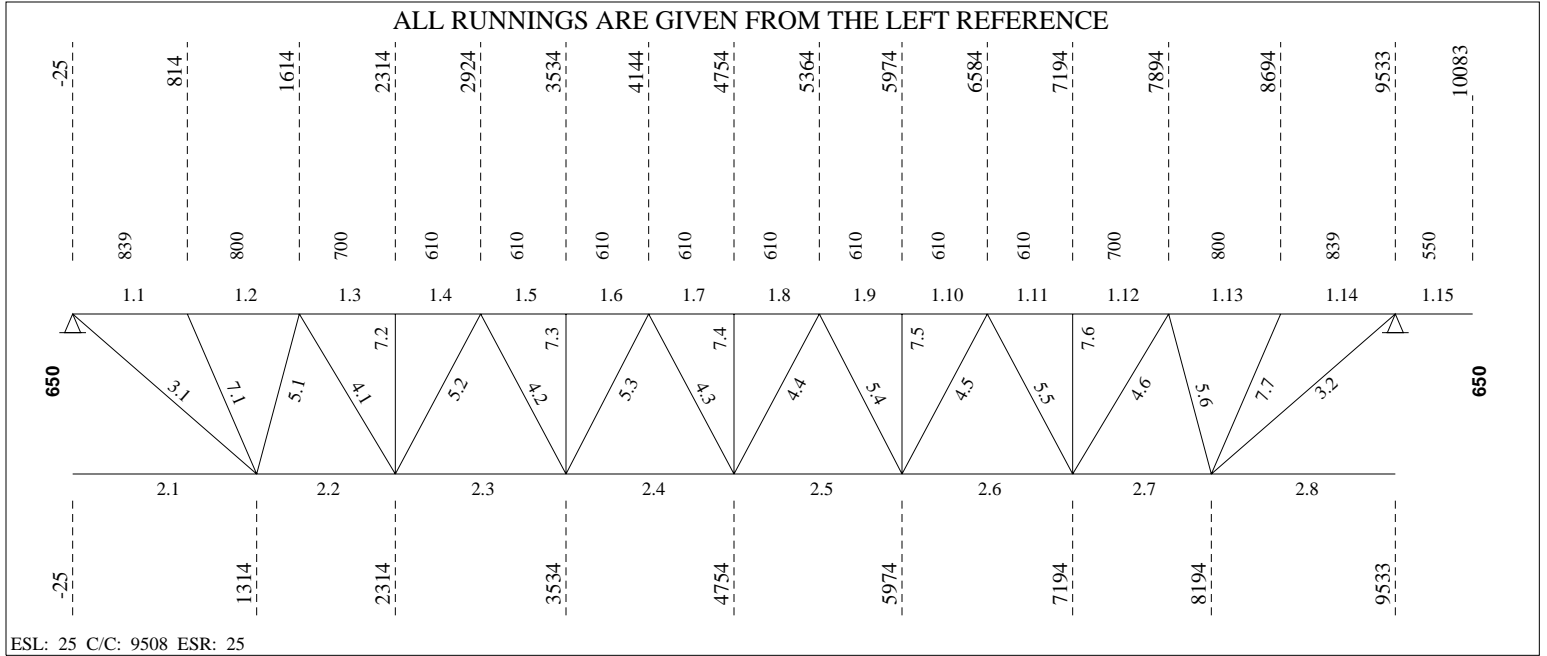
: 3.20 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M65 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M50



----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

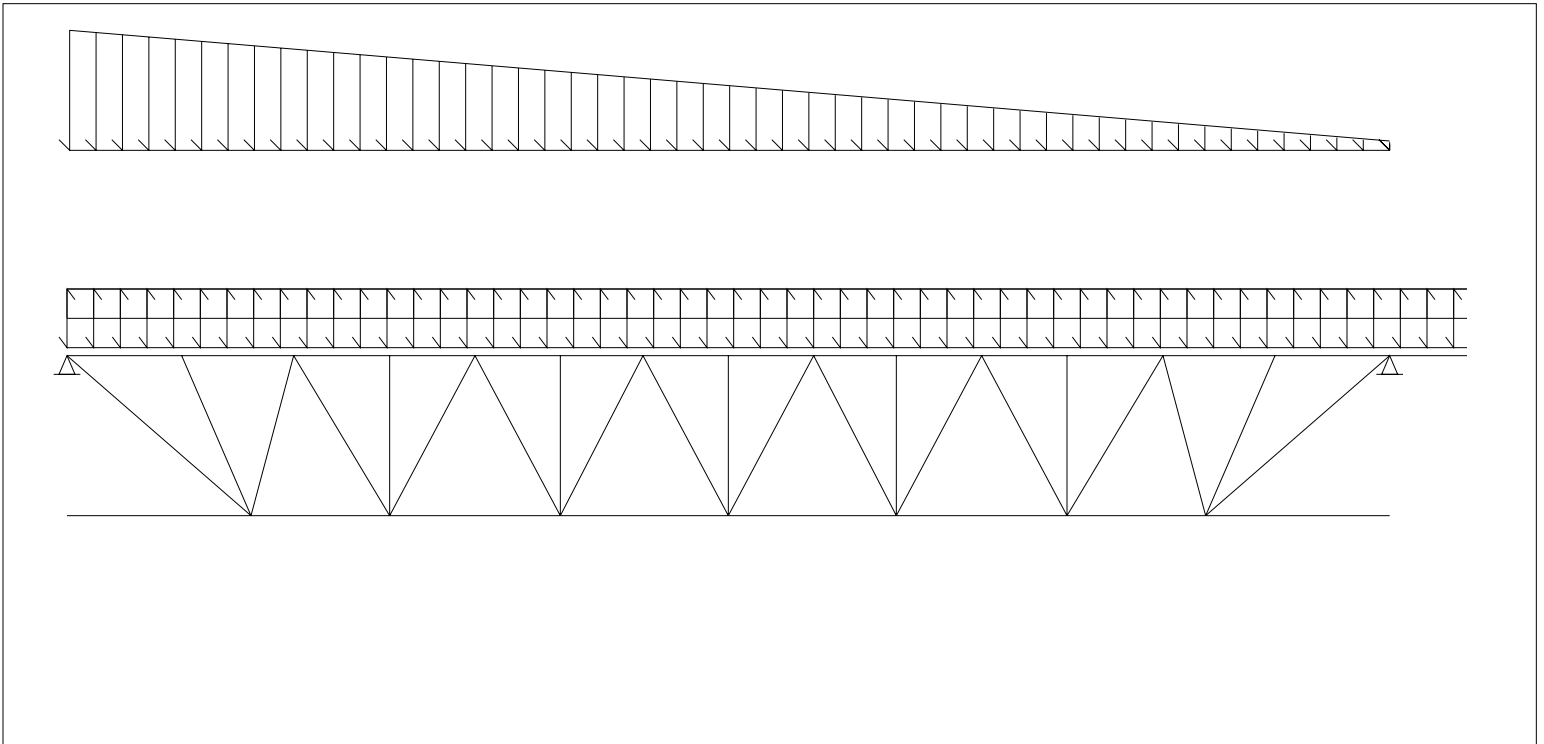
----- **EXTENSION** -----

RIGHT: Length.. = 550 mm	-----LOADS [kN/m]-----
Depth... = 100 mm	Dead(D)      Live(L)      Snow(S)      Wind(W)
Type.... = U[S]	2.67          0.00          2.36          1.03
Mf..... = -1.040 kN-m (0.308)	-----END DEFLECTIONS [mm (L/xxx)]-----
I..... = 1.59 x10 <sup>6</sup> mm <sup>4</sup>	Required                      Calculated
Top Splice...: [ 100 x 8 (4 @ 5.4) (50 ksi) x 1464 mmL+0.9S	: 3.06 (L/180)              -2.02 (L/- 273)
	Total        : 6.11 (L/90)              -4.36 (L/- 126)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 10.38 mm (L/ 911)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 23.36 mm (L/ 405)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 18.94 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

===== **LOAD NO 2 ( M65#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**EXTENSION**

RIGHT: Length.. = 550 mm  
 Depth... = 100 mm  
 Type.... = U[S]  
 Mf..... = -0.565 kN-m

	-----LOADS [kN/m]-----			
	Dead(D)	Live(L)	Snow(S)	Wind(W)
	2.67	0.00	0.00	1.03
	-----END DEFLECTIONS [mm (L/xxx)]-----			
		Required	Calculated	
L+0.9S	:	3.06 (L/180)	-1.06 (L/- 517)	
Total	:	6.11 (L/90)	-3.40 (L/- 162)	

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start	Length	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]	[mm]	[mm]		
1	1	1.92	2.44	0.15	0.19	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 5.81 mm (L/ 1628)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 18.78 mm (L/ 503)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

===== End of multiple loads =====

**F O R C E S I N M E M B E R S [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 32.45/ 0.00 kN Right Reaction = 36.41/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-61.28	LL 1 5/8 x 1 5/8 x .157	z 89 0.75	839		
1.2	0.00	-56.92	x do	xx 56 0.70	800		
1.3	0.00	-89.95	do	z 79 0.85	700		
1.4	0.00	-89.95	do	z 69 0.69	610		
1.5	0.00	-114.37	do	z 69 0.88	do		
1.6	0.00	-114.37	do	z 69 0.88	do		
1.7	0.00	-122.42	do	z 69 0.94	do		
1.8	0.00	-122.42	do	z 69 0.94	do		
1.9	0.00	-114.10	do	z 69 0.88	do		
1.10	0.00	-114.10	do	z 69 0.88	do		
1.11	0.00	-89.41	do	z 69 0.69	610		
1.12	0.00	-89.41	do	z 79 0.85	700		
1.13	0.00	-56.13	x LL 1 5/8 x 1 5/8 x .157	xx 56 0.77	800		
1.14	0.00	-63.38	[ 100 x 8 (4 @ 5.4) (50 ksi)	z 62 0.32	839		
1.15	0.00	0.00	[ 100 x 8 (4 @ 5.4) (50 ksi)	z 48 0.31	550		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
2.2	68.56	0.00	do	z 126 0.50	1000		
2.3	104.21	0.00	do	z 153 0.58	1220		
2.4	120.44	0.00	do	z 153 0.59	do		



2.5	120.31	0.00	do	z 153	0.59	do	
2.6	103.82	0.00	do	z 153	0.58	1220	
2.7	67.97	0.00	do	z 126	0.50	1000	
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162	0.35	1339	
<b>End Diagonal</b>							
3.1	66.05	0.00	BR 15/16 (50W)	z 242	0.48	1444	5.00 - 31
3.2	64.10	0.00	BR 15/16 (50W)	z 242	0.46	1444	5.00 - 30
<b>Diagonal Towards End</b>							
4.1	28.60	0.00	U 1 x 7/8 x 0.091	z 144	0.61	955	2.30 - 41
4.2	15.60	0.00	do	z 135	0.33	891	2.30 - 38
4.3	5.29	-1.55	do	z 121	0.12	do	do
4.4	5.51	-0.85	do	z 121	0.12	do	do
4.5	15.80	0.00	do	z 135	0.34	891	2.30 - 38
4.6	28.66	0.00	U 1 x 7/8 x 0.091	z 144	0.61	955	2.30 - 41
<b>Diagonal Towards Center</b>							
5.1	0.00	-26.87	U 1 x 1 1/8 x 0.118	z 73	0.95	716	3.00 - 38
5.2	0.00	-20.90	U 1 x 1 1/8 x 0.118	z 91	0.81	891	3.00 - 38
5.3	0.00	-10.39	U 1 x 7/8 x 0.091	z 121	0.80	do	2.30 - 38
5.4	0.00	-10.62	U 1 x 7/8 x 0.091	z 121	0.81	do	2.30 - 38
5.5	0.00	-21.17	U 1 x 1 1/8 x 0.118	z 91	0.83	891	3.00 - 38
5.6	0.00	-27.47	U 1 x 1 1/8 x 0.118	z 73	0.97	716	3.00 - 38
<b>Secondary Web Member</b>							
7.1	0.00	-8.19	U 1 x 7/8 x 0.091	z 112	0.53	820	2.30 - 25
7.2	0.00	-6.41	do	z 88	0.29	650	do
7.3	0.00	-6.62	do	z 88	0.30	do	do
7.4	0.00	-6.79	do	z 88	0.30	do	do
7.5	0.00	-6.60	do	z 88	0.30	do	do
7.6	0.00	-6.28	do	z 88	0.28	650	do
7.7	0.00	-6.53	U 1 x 7/8 x 0.091	z 112	0.42	820	2.30 - 25

----- BRIDGING -----

Maximum spacing between rows of bridging  
 @ Top Chord: 4614.56 ==> 2 Row(s) Minimum Lateral Supports  
 @ Bottom Chord: 6651.37 ==> 3 Row(s) Minimum Deck (304.8)  
 Acc. to the code

POSITION @ Top Chord @ Bottom Chord  
 3161 1314  
 6347 4754  
 8194

Equally Spaced Bridging between Uplift Rows : No

----- v1.49.2 -----

Fabrication code unless noted

-LL = 2 angles short legs back to back, -BL = 2 angles welded in box, -BR = Round bar  
 -U = 1 U profile, -UU = 2 U profiles one inside the other, -CL = Crimped angle

PARTIAL LOADS

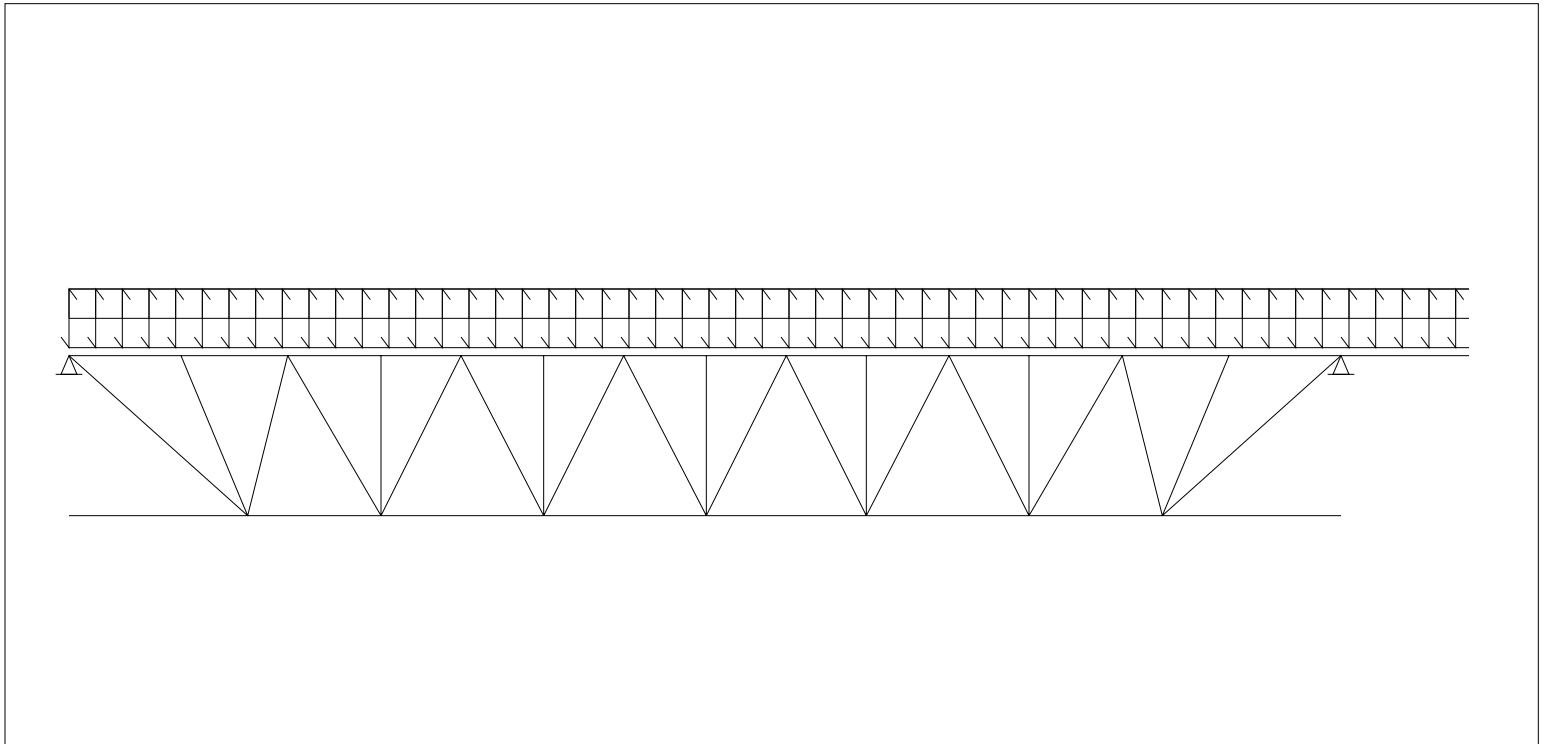
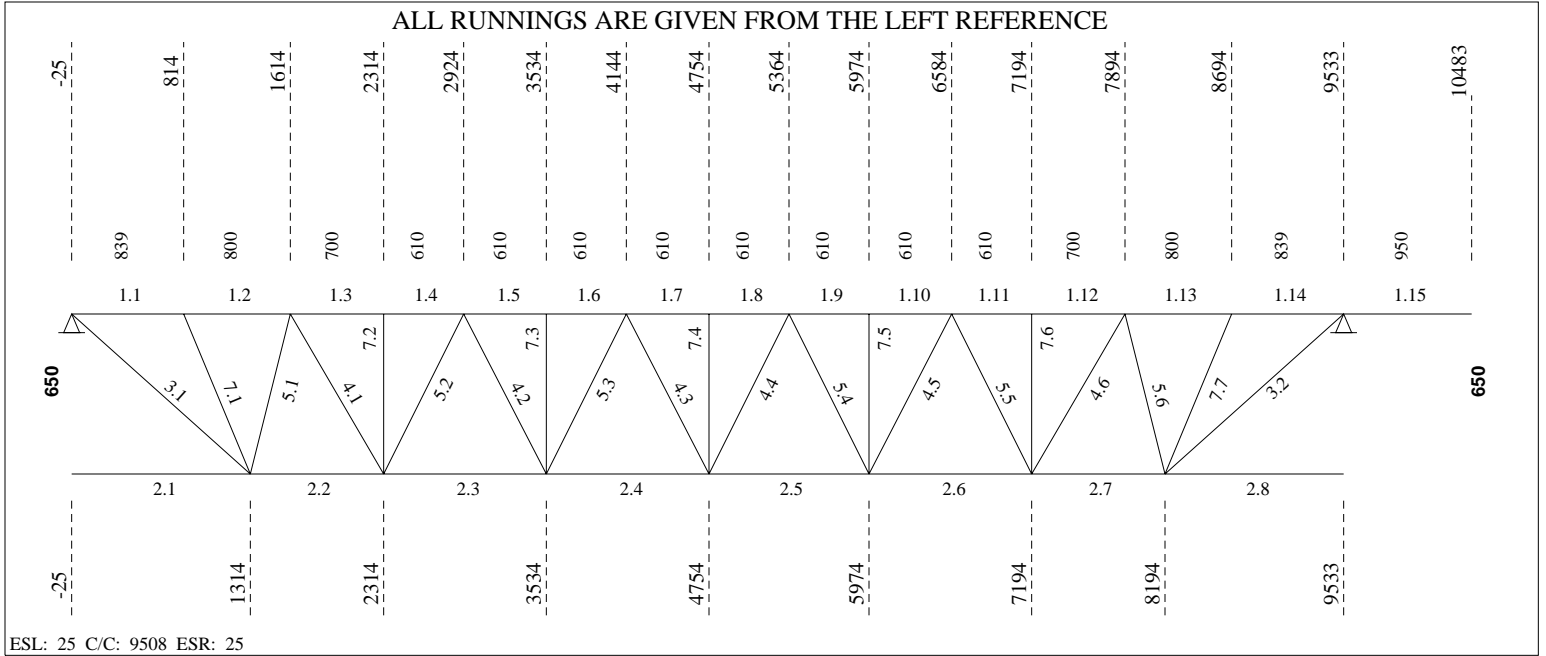
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868 Designer: Luis Baez Shop: Canam Group Calgary [Production]  
 120 / 131 Area to Paint : 8.62 m2 Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M66 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M50





----- **LOADING CONDITIONS** -----

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 1.86 kN/m<sup>2</sup> ( 2.36 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

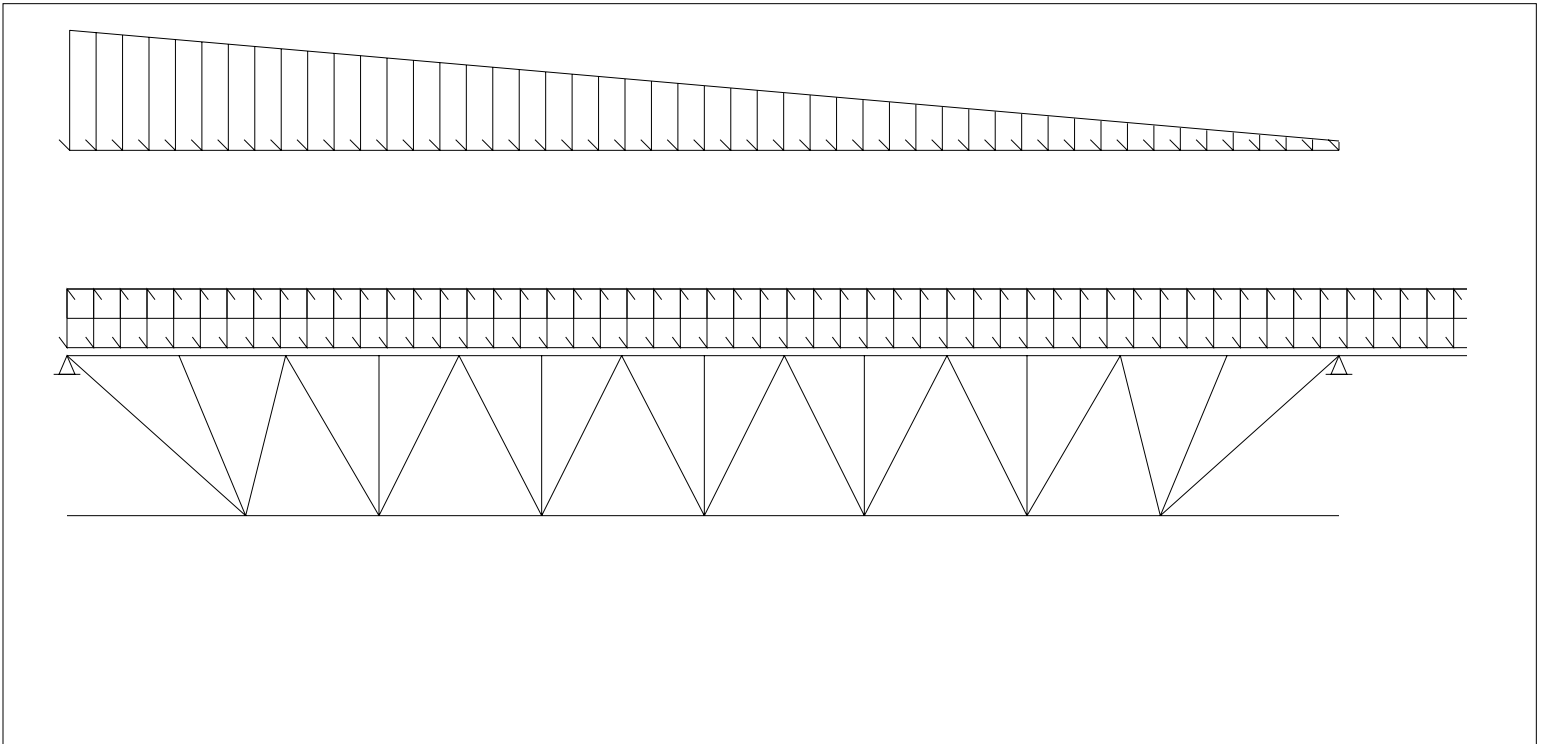
----- **EXTENSION** -----

RIGHT: Length.. = 950 mm	-----LOADS [kN/m]-----			
Depth... = 100 mm	Dead(D)	Live(L)	Snow(S)	Wind(W)
Type.... = U[S]	2.67	0.00	2.36	1.03
Mf..... = -3.103 kN-m (0.507)	-----END DEFLECTIONS [mm (L/xxx)]-----			
I..... = 1.59 x10 <sup>6</sup> mm <sup>4</sup>	Required		Calculated	
Top Splice...: [ 100 x 8 (4 @ 5.4) (50 ksi) x 1864 mmL+0.9S	:	5.28 (L/180)	0.05 (L/9999)	
	Total	:	10.56 (L/90)	-2.23 (L/- 426)

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 10.27 mm (L/ 921)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 23.00 mm (L/ 411)  
 Gross joist inertia..... = 119.49 x10<sup>6</sup> mm<sup>4</sup>  
 Required camber (100%D + 50%L + 50%S)..... = 18.63 mm  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

===== **LOAD NO 2 ( M66#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**EXTENSION**

RIGHT: Length.. = 950 mm  
 Depth... = 100 mm  
 Type.... = U[S]  
 Mf..... = -1.685 kN-m

	-----LOADS [kN/m]-----			
	Dead(D)	Live(L)	Snow(S)	Wind(W)
	2.67	0.00	0.00	1.03
	-----END DEFLECTIONS [mm (L/xxx)]-----			
		Required	Calculated	
L+0.9S	: 5.28 (L/180)		-1.84 (L/- 517)	
Total	: 10.56 (L/90)		-4.12 (L/- 231)	

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start	Length	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]	[mm]	[mm]		
1	1	1.92	2.44	0.15	0.19	0	9508	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 26.27 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 5.80 mm (L/ 1632)  
 Allowed deflection under total load..... = 52.54 mm (L/ 180)  
 Calculated deflection under service total load..... = 18.52 mm (L/ 511)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

===== End of multiple loads =====

**F O R C E S I N M E M B E R S [kN]**

(THE SHOWN FORCES ARE FACTORED)

Gap.....: 25.4 (Fy = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 32.32/ 0.00 kN Right Reaction = 39.38/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-61.01	LL 1 5/8 x 1 5/8 x .157	z 89 0.74	839		
1.2	0.00	-56.64	x do	xx 56 0.70	800		
1.3	0.00	-89.47	do	z 79 0.85	700		
1.4	0.00	-89.47	do	z 69 0.69	610		
1.5	0.00	-113.62	do	z 69 0.88	do		
1.6	0.00	-113.62	do	z 69 0.88	do		
1.7	0.00	-121.42	do	z 69 0.94	do		
1.8	0.00	-121.42	do	z 69 0.94	do		
1.9	0.00	-112.84	do	z 69 0.87	do		
1.10	0.00	-112.84	do	z 69 0.87	do		
1.11	0.00	-87.85	do	z 69 0.69	610		
1.12	0.00	-87.85	do	z 79 0.89	700		
1.13	0.00	-54.30	x LL 1 5/8 x 1 5/8 x .157	xx 56 0.89	800		
1.14	0.00	-59.25	[ 100 x 8 (4 @ 5.4) (50 ksi)	z 62 0.51	839		
1.15	0.00	0.00	[ 100 x 8 (4 @ 5.4) (50 ksi)	z 83 0.51	950		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 162 0.33	1339		
2.2	68.22	0.00	do	z 126 0.50	1000		
2.3	103.59	0.00	do	z 153 0.57	1220		
2.4	119.57	0.00	do	z 153 0.58	do		

2.5	119.18	0.00		do	z 153	0.58	do
2.6	102.45	0.00		do	z 153	0.57	1220
2.7	66.45	0.00		do	z 126	0.49	1000
2.8	0.00	0.00	LL 1 5/8 x 1 5/8 x .157		z 162	0.34	1339

**End Diagonal**

3.1	65.76	0.00	BR 15/16 (50W)		z 242	0.48	1444	5.00 - 30
3.2	59.93	0.00	BR 15/16 (50W)		z 242	0.43	1444	5.00 - 28

**Diagonal Towards End**

4.1	28.40	0.00	U 1 x 7/8 x 0.091		z 144	0.61	955	2.30 - 40
4.2	15.42	0.00	do		z 135	0.33	891	2.30 - 38
4.3	5.10	-1.68	do		z 121	0.13	do	do
4.4	5.76	-0.69	do		z 121	0.12	do	do
4.5	16.03	0.00	do		z 135	0.34	891	2.30 - 38
4.6	28.60	0.00	U 1 x 7/8 x 0.091		z 144	0.61	955	2.30 - 41

**Diagonal Towards Center**

5.1	0.00	-26.72	U 1 x 1 1/4 x 0.136		z 74	0.78	716	3.45 - 38
5.2	0.00	-20.72	U 1 x 1 1/8 x 0.118		z 91	0.81	891	3.00 - 38
5.3	0.00	-10.21	U 1 x 7/8 x 0.091		z 121	0.78	do	2.30 - 38
5.4	0.00	-10.89	U 1 x 7/8 x 0.091		z 121	0.83	do	2.30 - 38
5.5	0.00	-21.54	U 1 x 1 1/8 x 0.118		z 91	0.84	891	3.00 - 38
5.6	0.00	-28.52	U 1 x 1 1/4 x 0.136		z 74	0.83	716	3.45 - 38

**Secondary Web Member**

7.1	0.00	-8.18	U 1 x 7/8 x 0.091		z 112	0.53	820	2.30 - 25
7.2	0.00	-6.40	do		z 88	0.29	650	do
7.3	0.00	-6.60	do		z 88	0.30	do	do
7.4	0.00	-6.76	do		z 88	0.30	do	do
7.5	0.00	-6.55	do		z 88	0.29	do	do
7.6	0.00	-6.01	do		z 88	0.27	650	do
7.7	3.79	-4.19	U 1 x 7/8 x 0.091		z 112	0.27	820	2.30 - 25

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:	4614.56 ==>	2 Row(s) Minimum	Lateral Supports
@ Bottom Chord:	6651.37 ==>	3 Row(s) Minimum	Deck (304.8)
			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	3161	1314
	6347	4754
		8194

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

**Fabrication code unless noted**

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

**PARTIAL LOADS**

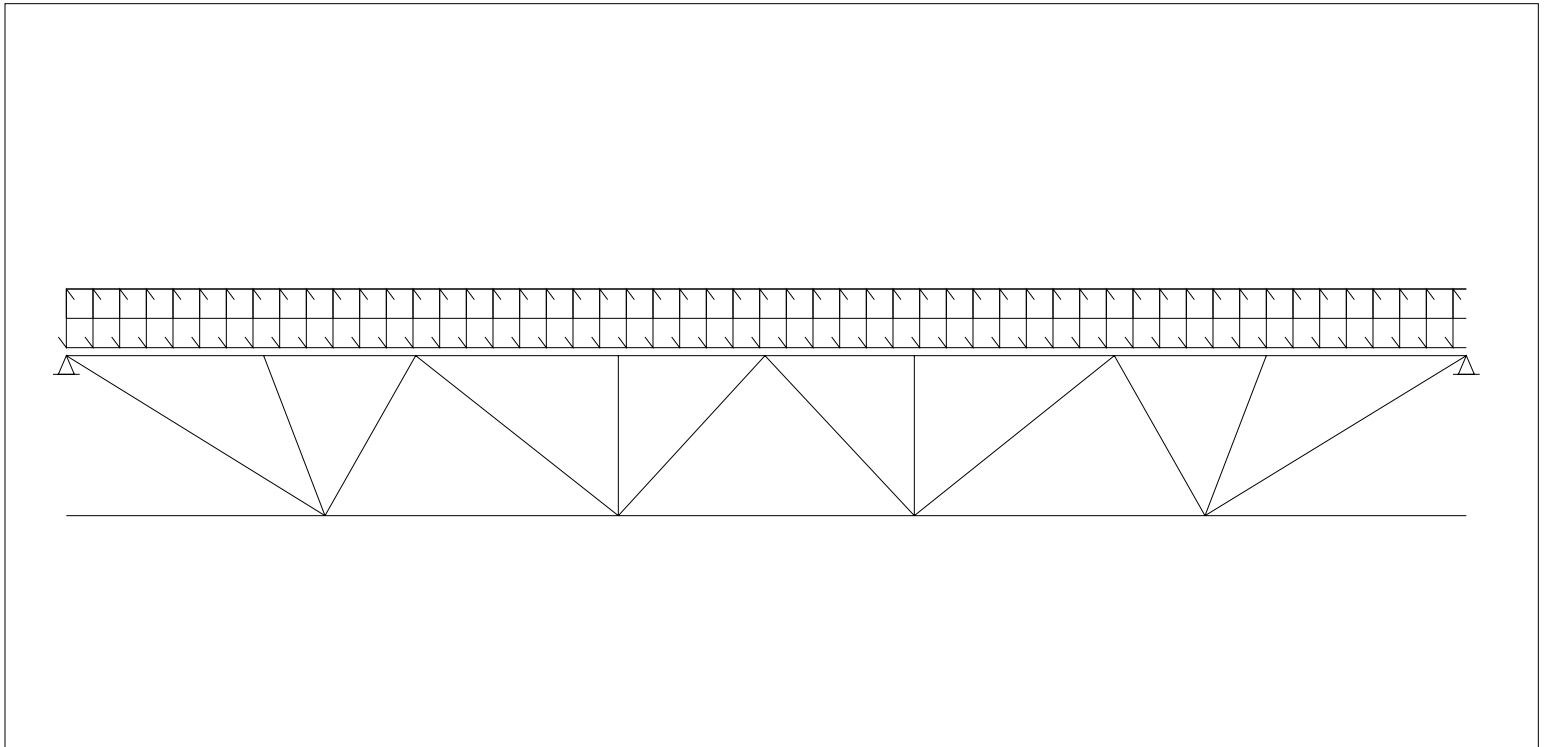
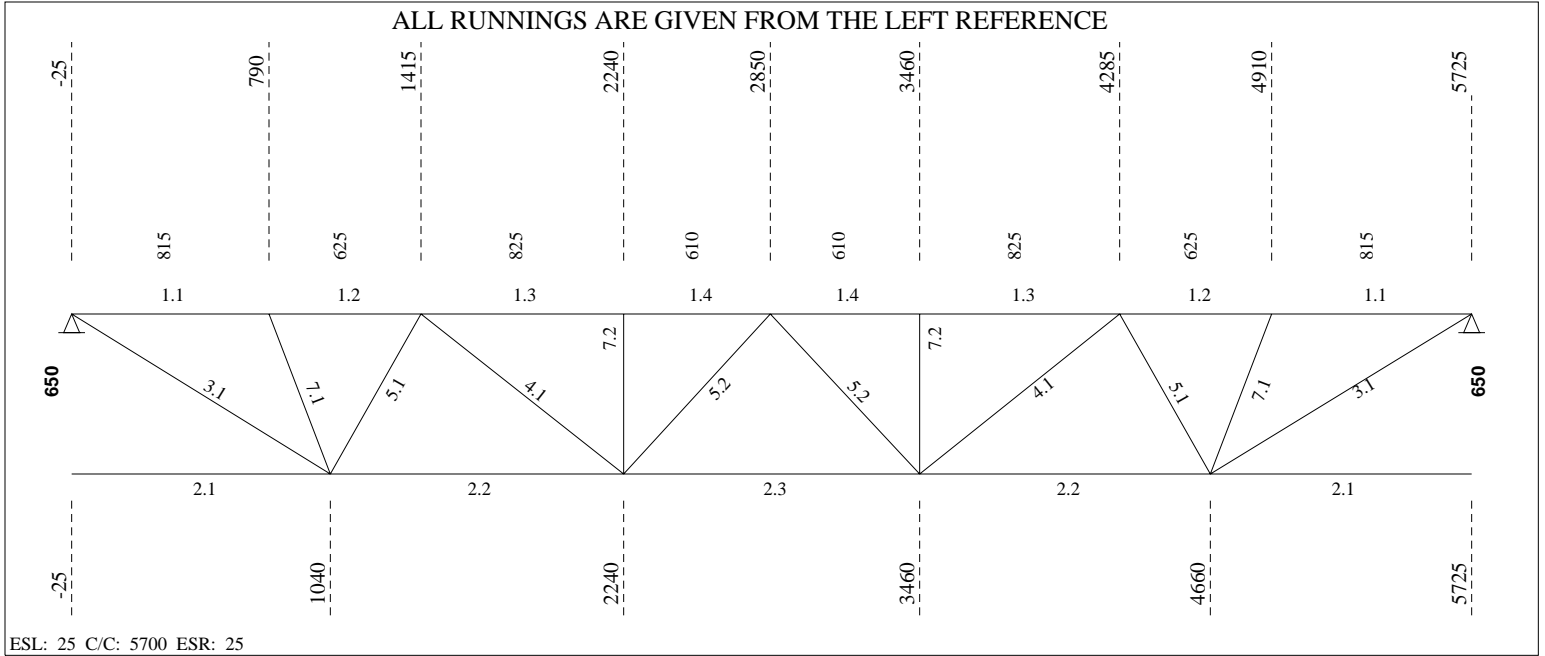
Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
124	/	135	Area to Paint	:	8.78 m2
					Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M67 (Hybrid Mid Span, Symmetrical, Free ends) aligned on M20



----- **LOADING CONDITIONS** -----

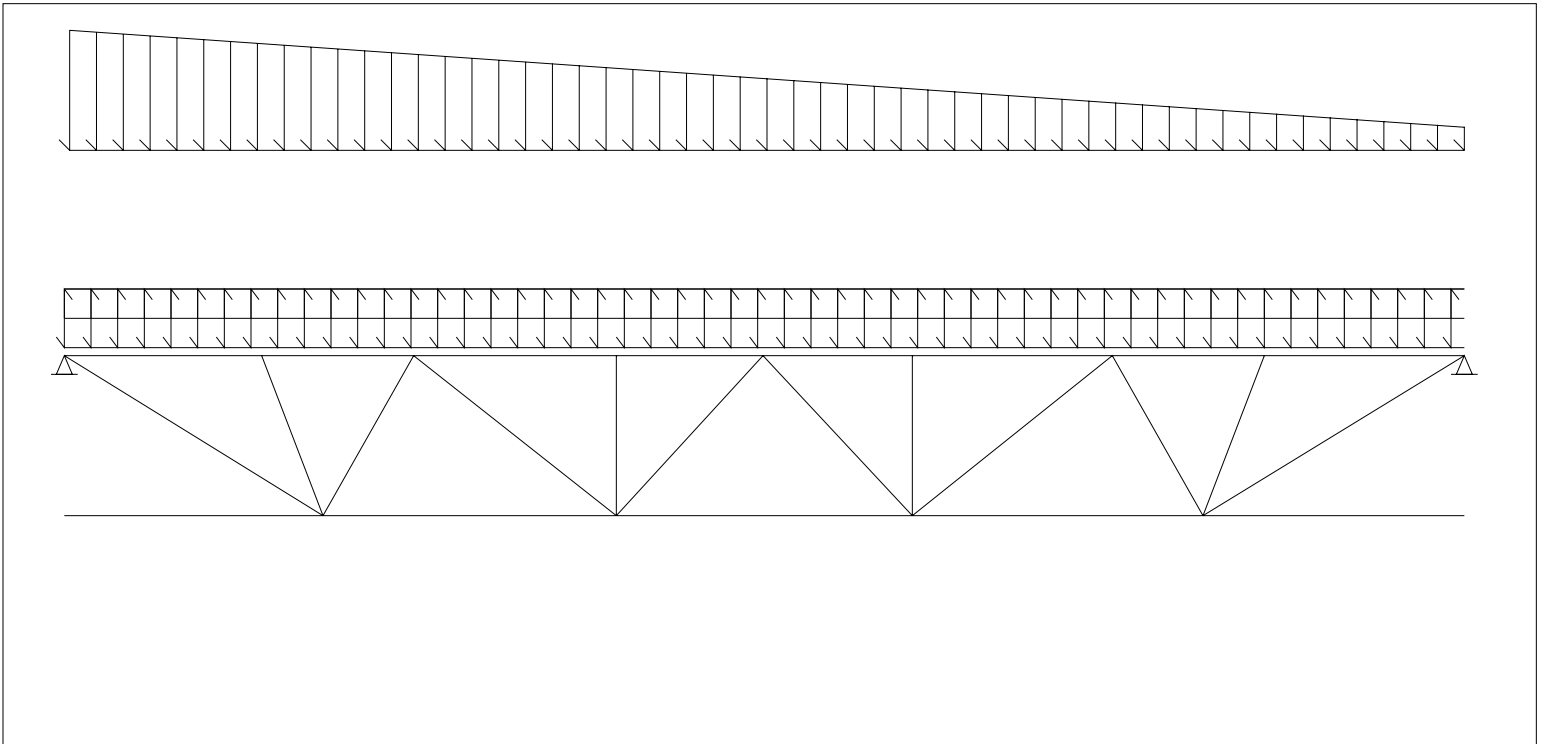
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	15.69 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	1.73 mm (L/ 3265)
Allowed deflection under total load..... =	31.39 mm (L/ 180)
Calculated deflection under service total load..... =	3.90 mm (L/ 1448)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	3.19 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M67#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.55	1.97	0.30	0.38	0	5700	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 15.69 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.86 mm (L/ 6564)  
 Allowed deflection under total load..... = 31.39 mm (L/ 180)  
 Calculated deflection under service total load..... = 3.03 mm (L/ 1864)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 19.43/ 0.00 kN Right Reaction = 19.43/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-27.25	LL 1 5/8 x 1 5/8 x .157	z 87 0.44	815		
1.2	0.00	-25.34	do	z 71 0.46	625		
1.3	0.00	-41.82 x	do	xx 58 0.51	825		
1.4	0.00	-41.82	LL 1 5/8 x 1 5/8 x .157	z 69 0.51	610		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 128 0.16	1065		
2.2	32.55	0.00	do	z 151 0.21	1200		
2.3	43.87	0.00	LL 1 5/8 x 1 5/8 x .157	z 153 0.21	1220		
<b>End Diagonal</b>							
3.1	31.15	0.00	BR 15/16 (50W)	z 202 0.23	1205	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	12.14	0.00	U 1 x 7/8 x 0.091	z 159 0.26	1050	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-14.07	U 1 x 7/8 x 0.091	z 102 0.91	750	2.30 - 38	
5.2	0.04	-4.22	U 1 x 7/8 x 0.091	z 121 0.32	891	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-5.70	U 1 x 7/8 x 0.091	z 95 0.28	696	2.30 - 25	
7.2	0.00	-5.82	U 1 x 7/8 x 0.091	z 88 0.26	650	2.30 - 25	

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord: 4614.56 ==> 1 Row(s) Minimum  
 @ Bottom Chord: 6651.37 ==> 2 Row(s) Minimum

Lateral Supports

Deck (304.8)  
 Acc. to the code

POSITION

@ Top Chord

@ Bottom Chord



Mark : M67

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:07

2850

Add  
Add

1040  
4660

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,  
-U = 1 U profile,

-BL = 2 angles welded in box,  
-UU = 2 U profiles one inside the other,

-BR = Round bar  
-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868  
67 / 76

Designer: Luis Baez  
Area to Paint

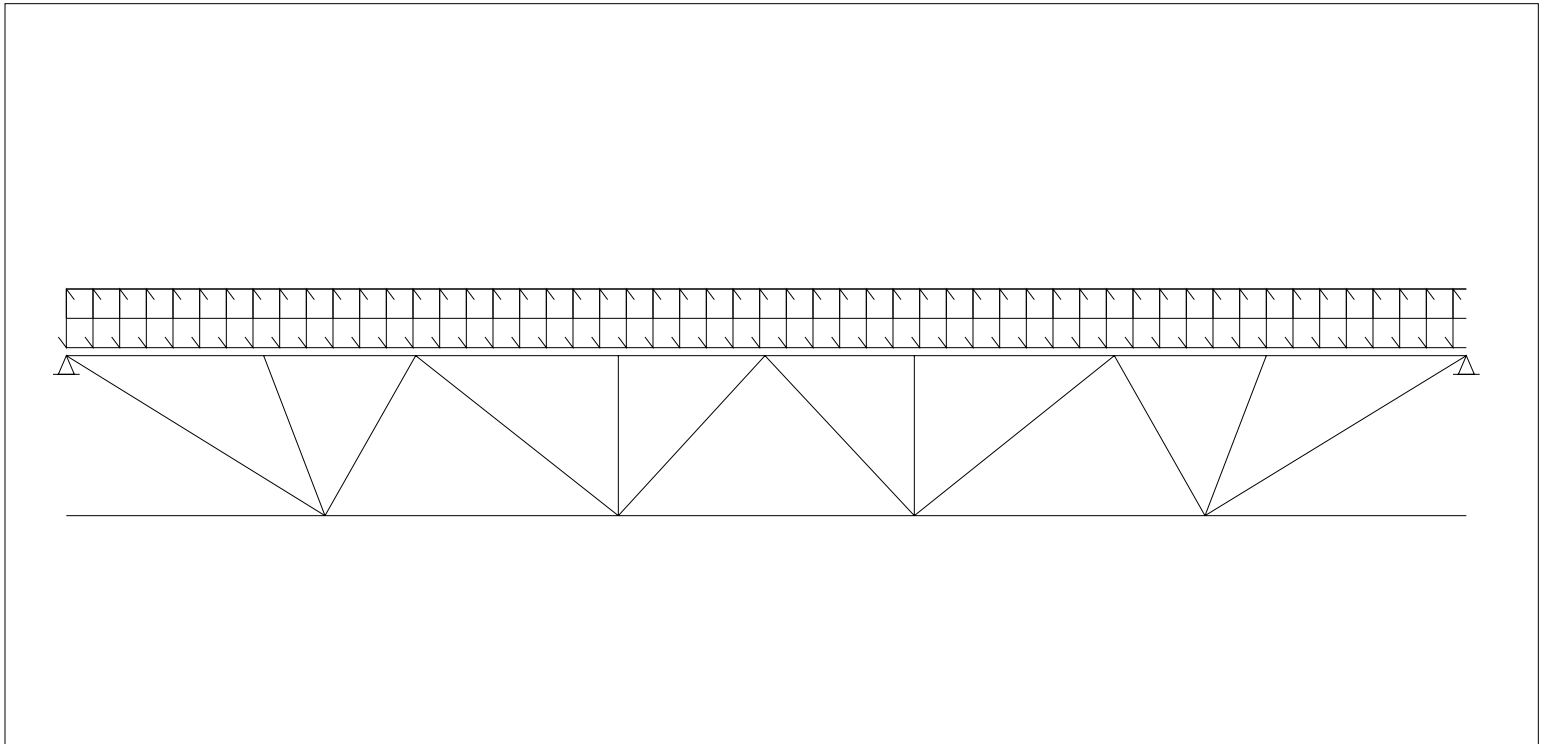
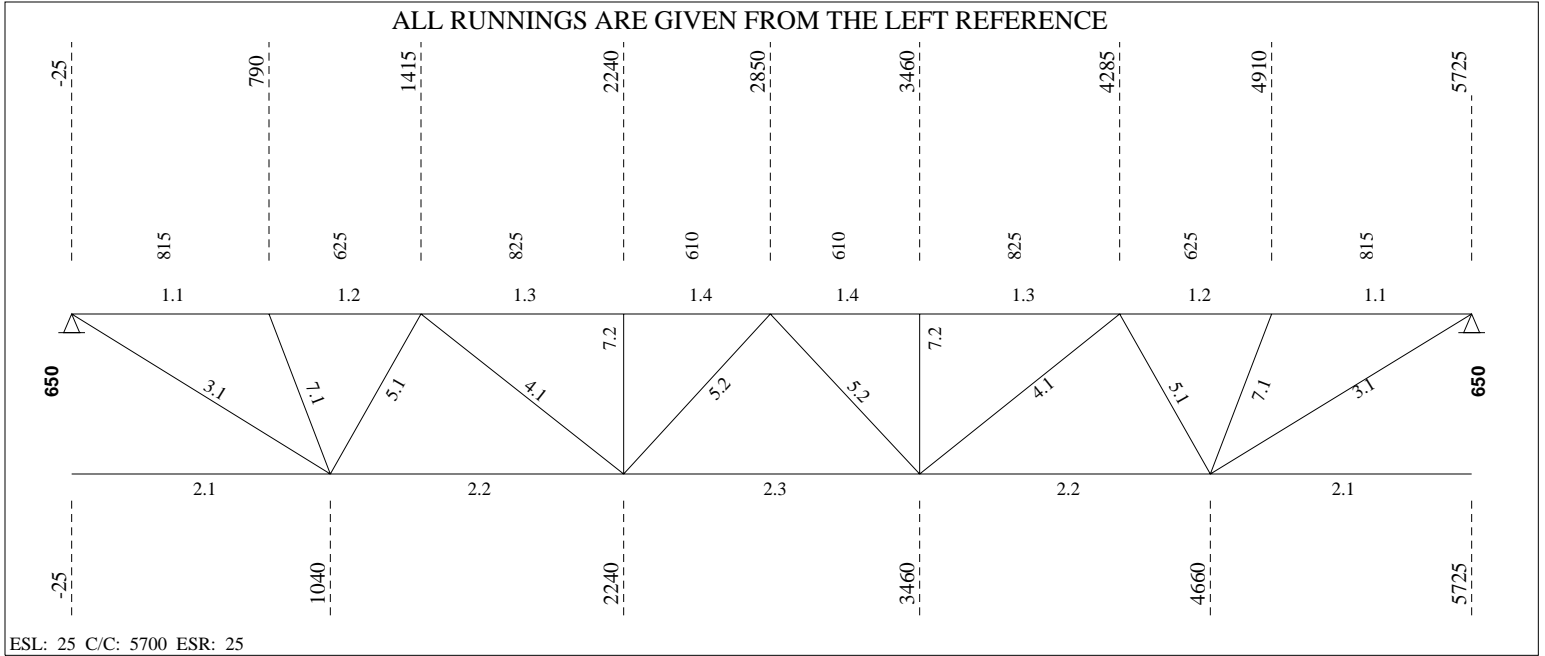
Shop: Canam Group Calgary [Production]  
: 5.05 m2

Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M68 (Hybrid Mid Span, Symmetrical,, Free ends) aligned on M20





----- **LOADING CONDITIONS** -----

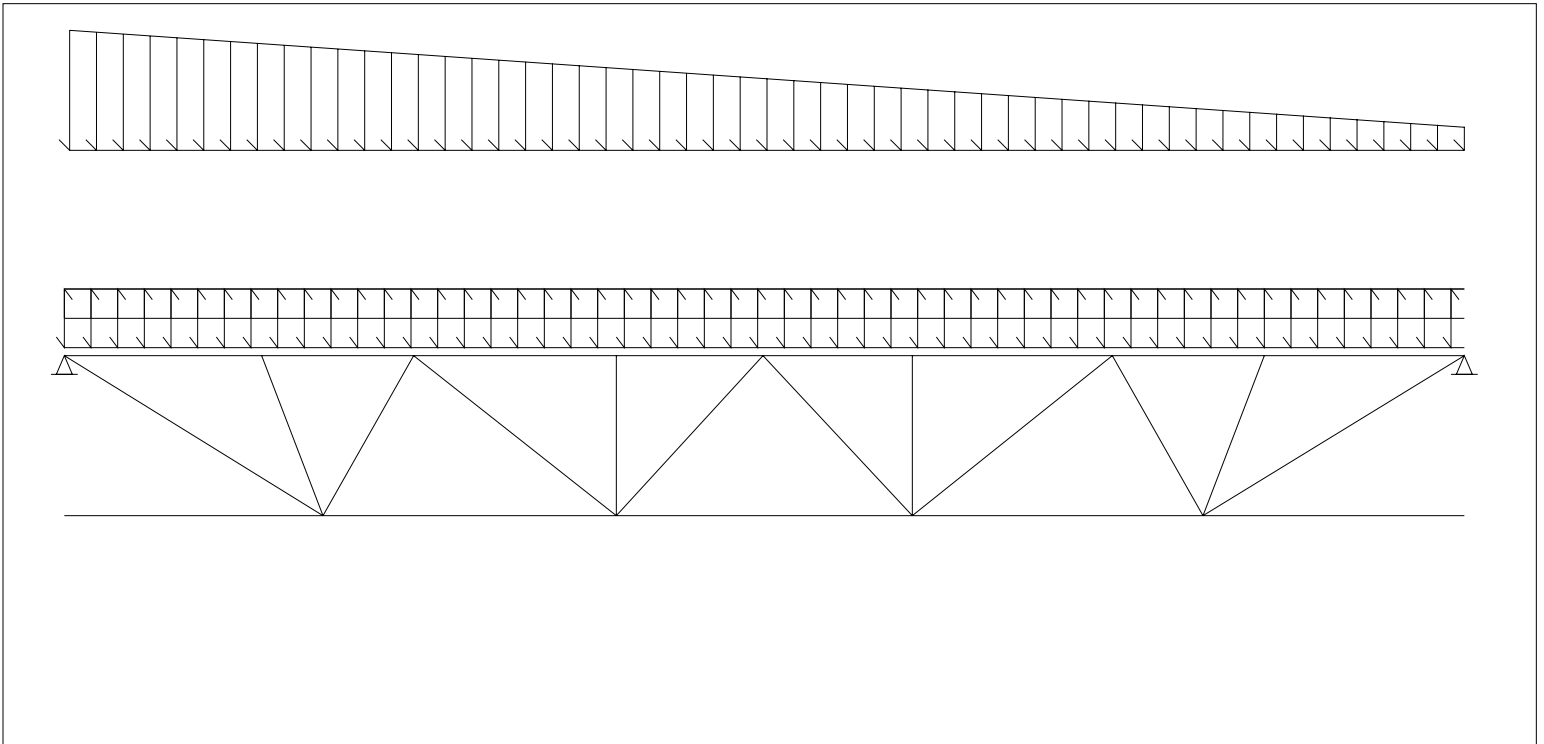
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	15.69 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	1.73 mm (L/ 3265)
Allowed deflection under total load..... =	31.39 mm (L/ 180)
Calculated deflection under service total load..... =	3.90 mm (L/ 1448)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	3.19 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M68#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:    2.10 kN/m<sup>2</sup> (    2.67 kN/m)    SPACING...:    1.27 m  
 (L) LIVE LOAD.....:    0.00 kN/m<sup>2</sup> (    0.00 kN/m)    Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....:    0.00 kN/m<sup>2</sup> (    0.00 kN/m)  
 (W) GROSS WIND UPLIFT:    0.81 kN/m<sup>2</sup> (    1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.55	1.97	0.30	0.38	0	5700	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... =    15.69 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) =    0.86 mm (L/ 6564)  
 Allowed deflection under total load..... =    31.39 mm (L/ 180)  
 Calculated deflection under service total load..... =    3.03 mm (L/ 1864)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4      (F<sub>y</sub> = 380 MPa U/N)      (Eff. depth = 625.57 mm)

Left Reaction =    19.43/    0.00 kN      Right Reaction =    19.43/    0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-27.25	LL 1 5/8 x 1 5/8 x .157	z 87 0.44	815		
1.2	0.00	-25.34	do	z 71 0.46	625		
1.3	0.00	-41.82 x	do	xx 58 0.51	825		
1.4	0.00	-41.82	LL 1 5/8 x 1 5/8 x .157	z 69 0.51	610		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 128 0.16	1065		
2.2	32.55	0.00	do	z 151 0.21	1200		
2.3	43.87	0.00	LL 1 5/8 x 1 5/8 x .157	z 153 0.21	1220		
<b>End Diagonal</b>							
3.1	31.15	0.00	BR 15/16 (50W)	z 202 0.23	1205	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	12.14	0.00	U 1 x 7/8 x 0.091	z 159 0.26	1050	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-14.07	U 1 x 7/8 x 0.091	z 102 0.91	750	2.30 - 38	
5.2	0.04	-4.22	U 1 x 7/8 x 0.091	z 121 0.32	891	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-5.70	U 1 x 7/8 x 0.091	z 95 0.28	696	2.30 - 25	
7.2	0.00	-5.82	U 1 x 7/8 x 0.091	z 88 0.26	650	2.30 - 25	

**BRIDGING**

Maximum spacing between rows of bridging

@ Top Chord:    4614.56 ==>    1 Row(s) Minimum  
 @ Bottom Chord:    6651.37 ==>    2 Row(s) Minimum

Lateral Supports

Deck (304.8)  
 Acc. to the code

POSITION

@ Top Chord

@ Bottom Chord



Mark : M68

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868)

20/03/27

13:28:08

2850

Add  
Add

1040  
4660

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,  
-U = 1 U profile,

-BL = 2 angles welded in box,  
-UU = 2 U profiles one inside the other,

-BR = Round bar  
-CL = Crimped angle

**PARTIAL LOADS**

Span: 1 = Main Joist, 2 = Left Extension,

3 = Right Extension

Chord: 1 = Top, 2 = Bottom

Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.: W01868  
67 / 76

Designer: Luis Baez  
Area to Paint

Shop: Canam Group Calgary [Production]  
: 5.05 m2

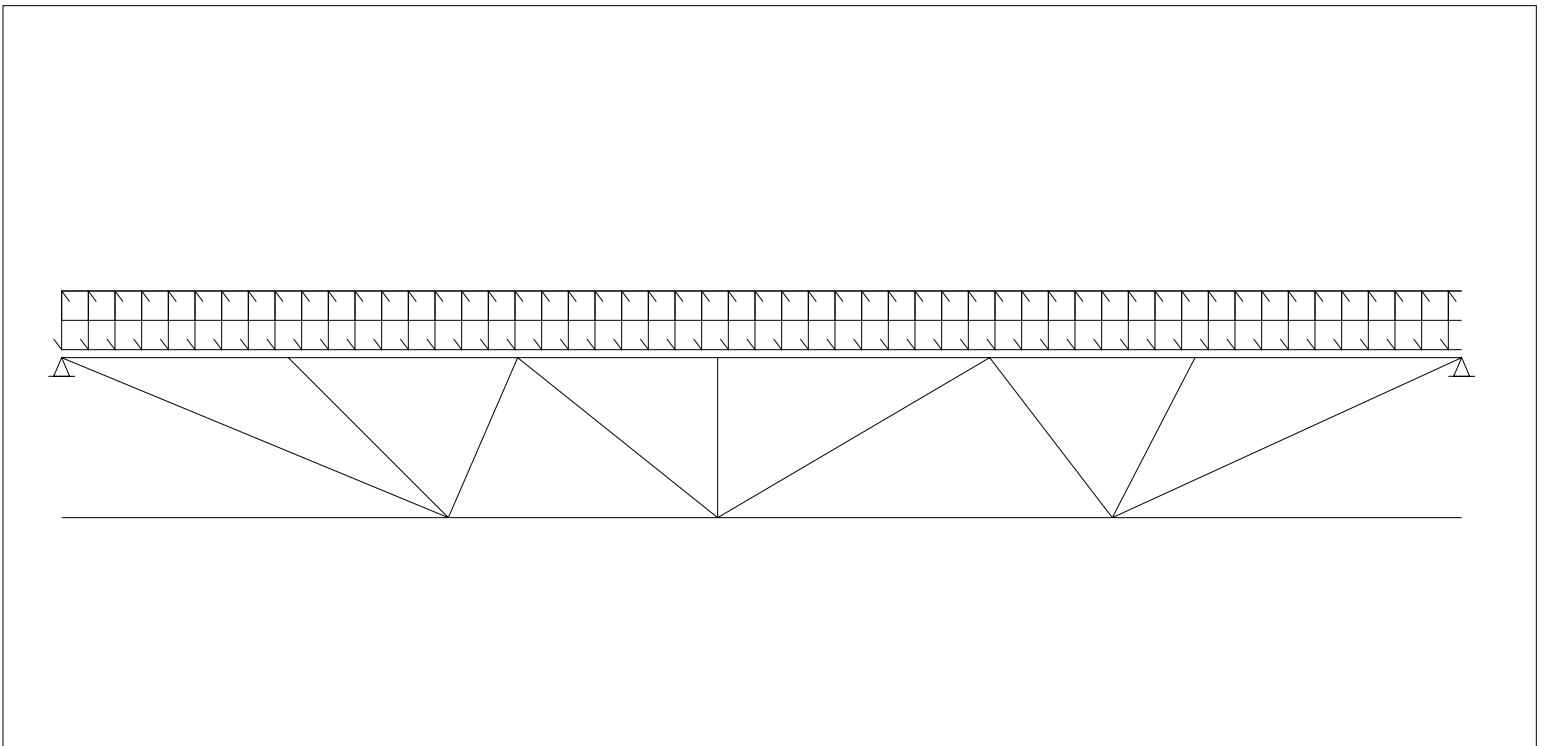
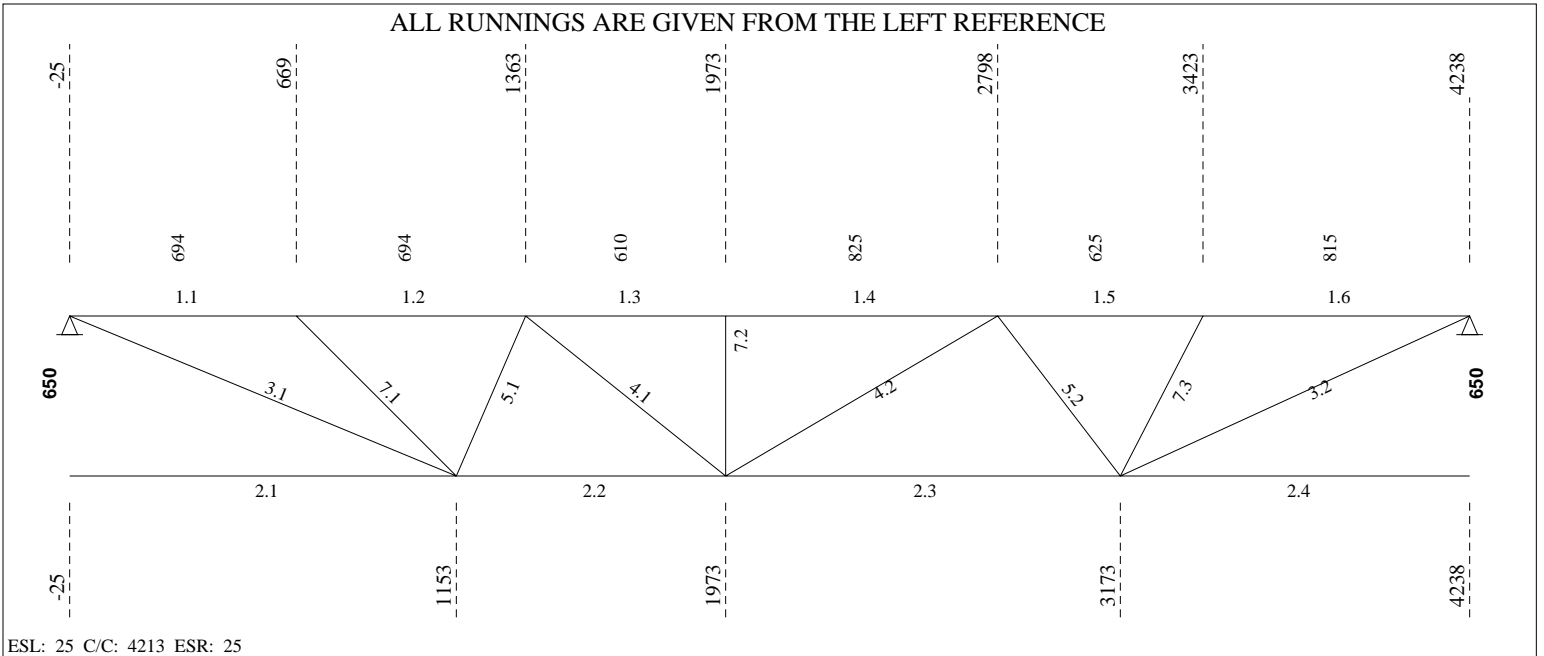
Material Sort : Cost

**Project: SEVEN GENER.ENERGY COMM. BLDG**

JOIST CALCULATION ACCORDING TO S16-09, S136-07 &amp; NBC 2010 (rev 2017)

Mark : M69 (Hybrid Mid Span, Asymmetrical,, Free ends)

ALL RUNNINGS ARE GIVEN FROM THE LEFT REFERENCE



----- **LOADING CONDITIONS** -----

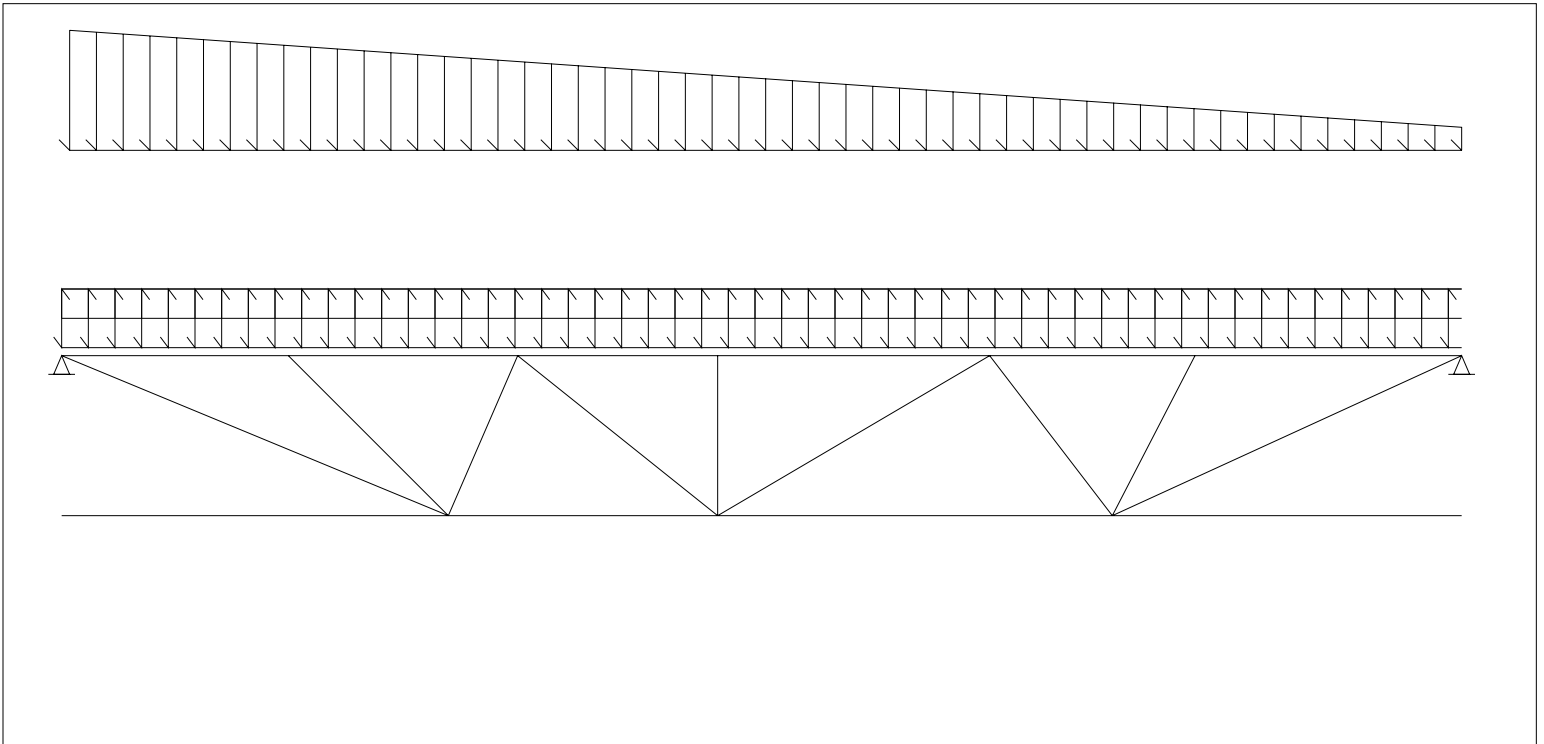
( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....:	2.10 kN/m <sup>2</sup> (	2.67 kN/m)	SPACING...:	1.27 m
(L) LIVE LOAD.....:	0.00 kN/m <sup>2</sup> (	0.00 kN/m)	Companion load factor (live)...	1.0
(S) SNOW LOAD.....:	1.86 kN/m <sup>2</sup> (	2.36 kN/m)		
(W) GROSS WIND UPLIFT:	0.81 kN/m <sup>2</sup> (	1.03 kN/m)		

----- **(REAL) DEFLECTION** -----

Allowed deflection under live and snow load..... =	11.56 mm (L/ 360)
Calculated deflection under combined loads (L + 0.9S) =	0.69 mm (L/ 6045)
Allowed deflection under total load..... =	23.13 mm (L/ 180)
Calculated deflection under service total load..... =	1.55 mm (L/ 2681)
Gross joist inertia..... =	119.49 x10 <sup>6</sup> mm <sup>4</sup>
Required camber (100%D + 50%L + 50%S)..... =	1.28 mm
Use of the joist (Ref. S16-09, art.16.5.1)..... =	Roof

===== **LOAD NO 2 ( M69#02 )** =====



**LOADING CONDITIONS**

( THE SHOWN VALUES ARE UN-FACTORED )

(D) DEAD LOAD.....: 2.10 kN/m<sup>2</sup> ( 2.67 kN/m) SPACING...: 1.27 m  
 (L) LIVE LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m) Companion load factor (live)...: 1.0  
 (S) SNOW LOAD.....: 0.00 kN/m<sup>2</sup> ( 0.00 kN/m)  
 (W) GROSS WIND UPLIFT: 0.81 kN/m<sup>2</sup> ( 1.03 kN/m)

**PARTIAL LOADS (From Axis)**

No	Span	Left		Right		Start [mm]	Length [mm]	Chord Cat.	
		[kN/m <sup>2</sup> ]	[kN/m]	[kN/m <sup>2</sup> ]	[kN/m]				
1	1	1.55	1.97	0.30	0.38	0	4213	1	8

**(REAL) DEFLECTION**

Allowed deflection under live and snow load..... = 11.56 mm (L/ 360)  
 Calculated deflection under combined loads (L + 0.9S) = 0.35 mm (L/ 9999)  
 Allowed deflection under total load..... = 23.13 mm (L/ 180)  
 Calculated deflection under service total load..... = 1.22 mm (L/ 3424)  
 Use of the joist (Ref. S16-09, art.16.5.1)..... = Roof

**End of multiple loads**
**FORCES IN MEMBERS [kN]**

(THE SHOWN FORCES ARE FACTORED)

 Gap.....: 25.4 (F<sub>y</sub> = 380 MPa U/N) (Eff. depth = 625.57 mm)

Left Reaction = 14.31/ 0.00 kN Right Reaction = 14.31/ 0.00 kN

**REQUIRED MATERIAL**
**REQUIRED WELD**

No	Tension	Compres.	x = tied at mid-length	Slend. Util.	Length	Weld-Ea.Side	Remarks
<b>Top Chord</b>							
1.1	0.00	-21.82	LL 1 5/8 x 1 5/8 x .157	z 73 0.39	694		
1.2	0.00	-18.26	do	z 78 0.39	694		
1.3	0.00	-23.72	do	z 69 0.41	610		
1.4	0.00	-23.72 x	do	xx 58 0.41	825		
1.5	0.00	-17.05	do	z 71 0.40	625		
1.6	0.00	-18.96	LL 1 5/8 x 1 5/8 x .157	z 87 0.40	815		
<b>Bottom Chord</b>							
2.1	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 142 0.10	1178		
2.2	20.78	0.00	do	z 103 0.11	820		
2.3	21.19	0.00	do	z 151 0.11	1200		
2.4	0.00	0.00	LL 1 5/8 x 1 5/8 x .157	z 128 0.10	1065		
<b>End Diagonal</b>							
3.1	24.24	0.00	BR 15/16 (50W)	z 219 0.18	1302	5.00 - 20	
3.2	21.67	0.00	BR 15/16 (50W)	z 202 0.16	1205	5.00 - 20	
<b>Diagonal Towards End</b>							
4.1	4.90	0.00	U 1 x 7/8 x 0.091	z 135 0.11	891	2.30 - 38	
4.2	4.16	0.00	U 1 x 7/8 x 0.091	z 159 0.09	1050	2.30 - 38	
<b>Diagonal Towards Center</b>							
5.1	0.00	-8.07	U 1 x 7/8 x 0.091	z 93 0.45	683	2.30 - 38	
5.2	0.00	-8.23	U 1 x 7/8 x 0.091	z 102 0.53	750	2.30 - 38	
<b>Secondary Web Member</b>							
7.1	0.00	-6.20	U 1 x 7/8 x 0.091	z 110 0.39	810	2.30 - 25	
7.2	0.00	-5.44	do	z 88 0.24	650	do	
7.3	0.00	-5.52	U 1 x 7/8 x 0.091	z 95 0.27	696	2.30 - 25	

**BRIDGING**



Mark : M69

Project: SEVEN GENER.ENERGY COMM. BLDG

(W01868) 20/03/27 13:28:08

Maximum spacing between rows of bridging					Lateral Supports
@ Top Chord:	4614.56 ==>	1 Row(s) Minimum			Deck (304.8)
@ Bottom Chord:	6651.37 ==>	2 Row(s) Minimum			Acc. to the code

POSITION	@ Top Chord	@ Bottom Chord
	2106.5	1153
		3173

Equally Spaced Bridging between Uplift Rows : No

v1.49.2

Fabrication code unless noted

-LL = 2 angles short legs back to back,	-BL = 2 angles welded in box,	-BR = Round bar
-U = 1 U profile,	-UU = 2 U profiles one inside the other,	-CL = Crimped angle

PARTIAL LOADS

Span: 1 = Main Joist, 2 = Left Extension, 3 = Right Extension  
 Chord: 1 = Top, 2 = Bottom  
 Load Category (Cat.): 1 = Dead, 2 = Live, 3 = Wind, 5 = Non-Composite Dead, 6 = Non-Composite Live 8 = Snow

Project no.:	W01868	Designer:	Luis Baez	Shop:	Canam Group Calgary [Production]
50	/	59	Area to Paint	:	3.79 m2
					Material Sort : Cost