DELIVERY - CONTRACT

Between the University of Rochester, Rochester - New York, represented by as purchaser

and

Royal Eijsbouts Ltd., bellfoundry of Asten, represented by the managing director M.F.H. Eijsbouts, as vendor.

Following has been agreed upon:

Royal Eijsbouts Ltd. shall provide a complete Eijsbouts cast bell carillon instrument, which is outlined in detail below.

The carillon will consist of 50 Eijsbouts cast bells, beginning with G3, 1411 lbs, A\#3, 827 lbs and furthermore C4 - C8 omitting the first semi-toner C#4, 496 lbs.

G3 and A\#3 will be used as underdominant in this carillon.

The actual bell weight of this 50-bell carillon will be 6668 lbs.

The following is a list of all 50 bells, with their respective diameters and weights.

<table>
<thead>
<tr>
<th>NOTE</th>
<th>DIAMETER</th>
<th>WEIGHT</th>
<th>NOTE</th>
<th>DIAMETER</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>G3</td>
<td>40 7/8 inch</td>
<td>1411 lbs</td>
<td>C6</td>
<td>11 3/16 inch</td>
<td>44 lbs</td>
</tr>
<tr>
<td>A#</td>
<td>34 3/8</td>
<td>827</td>
<td>C</td>
<td>10 15/16</td>
<td>42</td>
</tr>
<tr>
<td>C 4</td>
<td>30 5/8</td>
<td>595</td>
<td>C#</td>
<td>10 5/8</td>
<td>40</td>
</tr>
<tr>
<td>D</td>
<td>27 1/4</td>
<td>419</td>
<td>D</td>
<td>10 5/16</td>
<td>37</td>
</tr>
<tr>
<td>D#</td>
<td>25 11/16</td>
<td>364</td>
<td>E</td>
<td>10 1/16</td>
<td>35</td>
</tr>
<tr>
<td>E</td>
<td>24 15/16</td>
<td>320</td>
<td>F</td>
<td>9 7/8</td>
<td>35</td>
</tr>
<tr>
<td>F</td>
<td>23 5/8</td>
<td>282</td>
<td>F#</td>
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<td>33</td>
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<tr>
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<td>22 7/16</td>
<td>247</td>
<td>G</td>
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<td>33</td>
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<tr>
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<td>21 5/16</td>
<td>216</td>
<td>G#</td>
<td>9 7/16</td>
<td>33</td>
</tr>
<tr>
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<td>190</td>
<td>A</td>
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<tr>
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<td>150</td>
<td>B</td>
<td>8 11/16</td>
<td>31</td>
</tr>
<tr>
<td>C 5</td>
<td>17 7/8</td>
<td>134</td>
<td>C 7</td>
<td>8 9/16</td>
<td>31</td>
</tr>
<tr>
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<td>121</td>
<td>C#</td>
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<td>31</td>
</tr>
<tr>
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<td>110</td>
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<td>82</td>
<td>F</td>
<td>7 13/16</td>
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<td>14 3/16</td>
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<tr>
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<td>68</td>
<td>G</td>
<td>7 1/2</td>
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<tr>
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<td>64</td>
<td>G#</td>
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<td>26</td>
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<tr>
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<td>60</td>
<td>A</td>
<td>7 5/16</td>
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</tr>
<tr>
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<td>12 5/16</td>
<td>55</td>
<td>A#</td>
<td>7 1/4</td>
<td>26</td>
</tr>
<tr>
<td>A#</td>
<td>11 7/8</td>
<td>51</td>
<td>B</td>
<td>7 3/16</td>
<td>26</td>
</tr>
<tr>
<td>B</td>
<td>11 1/2</td>
<td>46</td>
<td>C8</td>
<td>7 1/8</td>
<td>26</td>
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</tbody>
</table>
Bells

Inscriptions & decorations:
The ornaments and decorations cast in relief on outside surface of the bells are cast clearly and free of flaws. Each bell's inscription: EIJSBOUTS ME FECIT ANNO ....... will appear with the year in Roman figures.

Inscription of names and dates, to be designed by the purchaser, will be provided on one or more of the largest bells.

Casting:
Each bell casting shall be totally free from both internal and external casting flaws, blisters, or any form of porosity. The casting skin of the bells shall be smooth.

Bell metal:
Every bell shall be made of the finest bell metal in the correct proportion, consisting of minimum 18½% tin, and the balance in copper. The tin percentage in the smaller bells rises to 25%.

G2 to C3 - minimum 18½% tin, balance in copper
C3 to B3 - minimum 19% tin
C4 to F#4 - minimum 20% tin
G4 to B4 - minimum 21% tin
C5 to F#5 - minimum 22% tin
G5 to B5 - minimum 23% tin
C6 and up - minimum 24% tin

Sound of bells:
According to the size of the bells, the sound will be harmonious. Annoying beats and dissonance will not be heard when striking the bell or during the decadence time. The reverberation times for the various overtones will be correct proportion to each other - the hum tone harmonizing with the formula
\[ t = \frac{185}{D_0 \cdot f_0.9} \]
in which D, the diameter of the bell is in meters, and \( f_{0.9} \) the frequency of the hum tone.

Tuning of the bells:
The bells are cast with the correct external profile and internally tuned according to the equally tempered musical scale of A-440 at 68°F. Each bell shall produce a perfect Flemish bell tone consisting of a strike tone plus prime, a hum tone full octave below strike, minor third of strike, fifth of strike, and octave of strike.

Each bell shall be free of "wows" and beats within their tone structure, and with other bells in the set.

The partials of each bell shall be tuned to the following standards:
Strike plus prime - maximum deviation 1 cent.
Hum tone - maximum deviation 1 cent.
Minor third - maximum deviation + 1 cent.
Fifth - maximum deviation + 5 cents.
All intervals of the carillon will have a maximum deviation of no more than 1 cent. Due to the fine quality of tuning, all chords played on the carillon will be fully free of beats and have an extraordinary tranquility in the reverberation times. This is of the utmost importance in producing clarity of music.

Weight:
The finished weight of each bell shall not vary more than 5%, plus or minus, of the weight specified for that bell.

MECHANICAL OPERATION

Suspension:
Each bell will be fitted with galvanized steel bolts; the center bolt being provided with nylon bearings for the clapper.

Clapper:
Bells will be fitted with clappers of manganese bronze of the correct weight and shape for each bell. Clapper bearings to provide free and noiseless action with strong, smooth stroke to produce a full, warm tone in the bell. Proper clapper design and construction eliminates damage to bells.

Framework:
Bells to be mounted or hung from steel framework designed to fully meet the weight requirements of the bells, and to fit the space requirements of the tower. Attached to the proposal is drawing 10.561.00 c showing the arrangement of the bells. The existing vertical w.f. beams will be used. This drawing is herewith submitted for approval.

Frame to be designed to provide complete and easy access to all bells, fittings, and roller action, and to permit the shortest possible connect wires between the clavier and the bells, thus insuring the most accurate action with a minimum of stretch.

Connections roller cranks:
All rollers and cranks shall be designed for maximum strength with a minimum of weight. All rollers to be mounted in special nylon bearings. All transmission wires between clappers, roller cranks, and clavier to be of stainless steel. Connecting wires to be easily adjustable. All steel parts to be galvanized.

Clavier:
The main framework of the clavier to be welded steel, with oak cornerposts. Manual keys shall be arranged to provide the maximum ease of playing and quiet action. Supplementary pedal action to be provided on bells as specified. All keys to be fitted with simple and accurately adjustable turnbuckles to permit precision adjustment of the connecting wires at the discretion of the carillonneur. Oak seat and music stand included. This clavier is to meet the standards set forth by the North American Guild of Carillonneurs.
Practice clavier:
This clavier will be identical to the clavier used with the bells in the tower. It will have exactly the same performance features, except that operation of the clavier will hit small metal tone bars with tubular sound resonators for simulated bell tones. This practice clavier can be placed in any unused room in the building, or in some adjacent building where it can be used for practice purpose.

OTHER

Paint:
All steel work of frame and fittings to be sandblasted, rust treated hot dipped galvanized, and painted with the best quality metal paint.

Pre-shipment test:
Prior to shipment to customer, foundry shall set up complete instrument and test under working conditions. After inspection and approval, the complete instrument shall then be dismantled, each part coded, and carefully crated in export pack for shipment to the University of Rochester, Rochester, New York.

Certificate:
Vendor's foundry will supply a Certificate endorsed by the Dutch Carillon Society guaranteeing the quality, accuracy of tuning, and weight of the carillon.

Insurance:
Vendor to provide liability and property damage insurance to satisfy coverage required by purchaser. All persons employed by vendor to be insured as specified by the U.S. Department of Labor and local regulations.

Guarantee:
The bells are guaranteed for a period of twenty-five years against breakage.

The mechanical operation is unconditionally guaranteed (with the exception of adjustments of transmission wires after initial installation) for a period of 3 years from date of completion of installation.

Any and all electrical equipment, with the exception of electrical equipment and wiring supplied by others, shall be guaranteed for a period of 1 year from the date of completion of installation.

If during that period any portion of the equipment fails due to any material or workmanship defect of any type, complete service, repairs, or replacement will be made free of any material, labor, or transportation charges. Vendor's liability shall not exceed the cost of correcting such defects.

DELIVERY

Carillon shall be delivered and installed within six (6) months from the date of the acceptance of the proposal. This date will be confirmed or adjusted when the approved copy of the contract is returned to the Purchaser.
If the vendor is unable to deliver or install said material by reason of strikes, fires, accidents, or causes beyond its control, the time for performance by vendor shall be extended until the cause of such delay shall cease and determine and vendor be able to deliver and/or install said equipment.

INSTALLATION

Included in this contract will be the cost for 2 engineers to dismantle the existing chime, take down the bells and frame. All material to be removed to the ground level by crane. Hoisting of new bells frame and further equipment by means of same crane to level below tower floor. Hoisting and installing of complete instrument. Access to the bell location in the tower shall be provided via elevator, permitting also to bring up the necessary tools and smaller parts. The University of Rochester will provide at its expenses the power supply, cable and wire and all conduit and will supervise the installation thereof, while our engineers are available to hook up the electrical units and magnetic hammers. Assistance will be given upon request to vendor’s engineers by the University’s technical department in the event that help or small material is wanted.

For the mechanical connections between the clavier and the bells a slot will have to be made locally through the removable wooden floor of bell tower and the removable trap-hole of the dome. The floor of the bellroom will be closed by a plate with rain-baffles, to be provided by vendor.

ELECTRICAL OPERATION - OPTIONAL

Magnetic hammers:
Electro-magnetic hammers of the proper size and weight would be included for 38 bells. The portion which strikes the bell is to be cast bronze. Pivot to be stainless steel and the electro-magnet is to be hermetically sealed.

Relay cabinet:
Each magnetic hammer is to be controlled through a solid state relay unit, especially designed by Eijsbouts, which will be housed in a heavy metal cabinet with locking doors, to be located as close as practical to the bell chamber.

Keyboard console:
Free standing single manual console of Walnut Formica finish. Keyboard designed to A.G.O. standards.

Rollplayer:
A special Eijsbouts rollplayer to play the 38 electrified bells shall be provided.
A playing device shall be supplied which will convert the perforated rolls to carillon music by means of snap action switches — operated by the perforations, which in turn operate the electro-magnetic hammers of the carillon.

Rolls to be loaded into the player from the front through a locking type door.

The entire player, together with all operating controls and control equipment, to be an integral unit mounted in one of the cabinet racks. Rollplayer to be capable of full automatic operation through a program clock or operated manually or semi-automatically.

This contract will include a total of 12 selections of the purchaser's choice.

Roll punching machine:
A specially designed Eijsbouts roll punch is included in this contract. This permits manual punching of the rolls by your own carillonneur, thus again allowing the style of playing on the rollplayer to be the same as under manual operation.

50 Yards of blank rollplayer material are included in this contract.

Westminster strike and hour toll:
Electro-magnetic hammers of the proper size and weight are included for these bells. The portion which strikes the bell is to be cast bronze. Pivot to be stainless steel and the electro-magnet is to be hermetically sealed.

Each magnetic hammer is to be controlled through a solid state relay unit, especially designed by Eijsbouts, which will be housed in a heavy metal cabinet, with locking doors, to be located as close as practical to the bell chamber.

A program clock for automatic operation will be provided.

This proposal sets forth a complete and operating carillon, in which the following is included:

50 Eijsbouts cast bells of the highest quality as specified on the foregoing sheet.
50 note mechanical clavier as described.
50 note practice clavier as described.
Anti-vibration material for all bells.
Complete frame and mounting assembly for the entire carillon.
Inscription of 50 bells as defined previously in this proposal.
Includes all shipping and transportation costs, delivered to the University of Rochester, Rochester, New York.
Includes the payment of all custom duties for import of the bells and equipment.
Complete installation of the carillon and accessory equipment.
OPTIONAL

Electrical play including the following:
- 38 external electro-magnetic hammers
- rollplayer and rollpunching machine as described previously in this proposal
- provisions for playing of Westminster strike and hour toll
- keyboard console as previously described in this proposal.

SUMMARY OF PRICES

1. Total cost of the complete carillon, for manual operation, as outlined herein: $ 39,022.15
   Recuperation of bellmetal estimated at 35,000 lbs (the actual weight to be the basis for clearance): $ 20,650.--
   $ 18,372.15

Optional:

2a A Westminster coder for 4 bells
   - d4 - f4 - g4 - a4 $ 168.--
   4 magnetic hammers with current supply - 409.50
   installation costs - 210.--
   $ 787.50

b Hour strike coder $ 157.50
   magnetic hammer, with current supply - 131.25
   timepiece (synchronous) for activating Westminster coder and Hour strike - 267.75
   installation costs - 262.50
   $ 819.00

c Provisions for magnetic hammers: brackets to be welded to the framework to anticipate the delivery of magnetic hammers at a later date. For remaining 33 bells: $ 999.50

d The delivery of 33 magnetic hammers - provided that delivery takes place as part of the total delivery - rollplayer, pianokeyboard, punching machine, 50 yards blanc tape and 12 selections: $ 6,494.25
   TOTAL for optional electric play: $ 9,100.25

3. Cabin to be placed on the existing floor consisting of 4 wooden walls with window and door, dummy roof.
   Price including the installation: $ 1,548.75

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We respectfully submit this contract for your consideration.

Respectfully submitted,

ROYAL EIJSBOUTS LTD.

M.F.H. Eijsbouts
Managing Director

Approved and accepted:

For item 1: $
For item 2a: $
  2b: $
  2c: $
  2d: $
For item 3: $

TOTAL: $

University of Rochester
ROCHESTER - New York

By:
Date: , 1972.