ADDENDUM #1

DATE: September 1, 2016

TO CONTRACT DOCUMENTS ENTITLED:

LIFE SCIENCES CHILLER #3 ADDITION
MU PROJECT NUMBER: CP161141

At University of Missouri
Columbia, Missouri 65211

ADVERTISEMENT DATE: Tuesday, August 9, 2016
PREPARED FOR: The Curators of the University of Missouri
CONSULTANT Ross & Baruzzini, Inc.
6 South Old Orchard
St. Louis, Missouri 63119
314-918-8383

Drawings and Specifications for the above noted project and the work covered thereby are herein modified as follows, and except as set forth herein, otherwise remain unchanged and in full force and effect:

General:
1. ADVERTISEMENT FOR BIDS:
   a. Revise paragraph to read: “will be received by the Curators of the University of Missouri, Owner, at Campus Facilities, Planning, Design & Construction, Room L100 (Front Reception Desk), General Services Building, University of Missouri, Columbia, Missouri 65211, until 1:30 pm, C.T., Thursday, September 8, 2016 and then immediately opened and publicly read aloud.

2. SPECIAL CONDITIONS; 8. USE OF PREMISES
   a. Revise paragraph “d. Utilities” to read: Water required to carry on work and 120 volt electrical power required for small tool operation may be obtained without cost to the Contractor from existing utilities at locations designated by the Owner’s Representative. Provision for obtaining power, including temporary extensions, shall be furnished and maintained by the Contractor. Upon completion of work such extensions shall be removed and any damage caused by use of such extensions shall be repaired to satisfaction of the Owner’s Representative, at no cost to the Owner.

   b. Revise paragraph “e.” to read: Not Used.

   c. Revise paragraph “f.” to read: Not Used.

Specifications:

1. 23 09 00 – Control Systems:
   a. Modify 2.1 B 1 to read as follows: Division 23 shall provide and install all raceway and conduit for this specification per Division 26 all requirements.

   b. Modify 3 C to read as follows: Raceway: Raceway is to be installed in accordance with the National Electric Code. Use of flexible metal conduit or liquidtight flexible conduit is
limited to 36” to connect from rigid conduit to devices subject to movement. Flexible raceway is not to be used to compensate for misalignment of raceway during installation.

c. Modify E.2 to read as follows: Provide conduit and fittings in mechanical rooms and where indicated on drawings.

2. 23 21 13 – Hydronic Piping:
   a. Add 2.6 C.5 to read: Stainless steel stub ends with ductile iron backing rings are acceptable at flange connections.

   b. Add 3.3 B1 to read: Provide Exterior High-Performance Coating by Sherman-Williams Company (The), Benjamin Moore & Co. or PPG Architectural Coatings. Steel Substrate: Epoxy System MPI EXT 5.1F, Prime Coat: Primer, epoxy, anti-corrosive, for metal, MPI#101; Intermediate Coat: Epoxy, high build, low gloss, MPI#108, Topcoat: Epoxy, gloss, MPI#77.

3. 23 64 16 – Packaged Liquid Chillers:
   a. Modify 3.2 H to read as follows: Unit will come with factory charged refrigerant. Pressure-test chiller refrigerant system for leakage in manner recommended by manufacturer. Bleed-out noncondensible gases charged in refrigerant.

   b. Modify 3.2 I to read as follows: Verify unit is full of factory provided and installed oil.

4. 23 65 00 – Cooling Towers:
   a. Modify 2.4 H 1 to read as follows: The fill shall be manufactured, tested and rated by the cooling tower manufacturer and shall be elevated above the cold water floor to facilitate cleaning. The high temperature fill and integral drift eliminators shall be formed from self extinguishing (per ASTM-568) polyvinyl chloride (PVC) having a flame spread rating of 5 per ASTM E84 and shall be impervious to rot, decay, fungus and biological attack. The fill shall be 20 mil suitable for entering water temperatures up to and including 130°F (54.4°C). Fill shall be suspended from stainless steel structural tubing supported from the tower structure, and shall be elevated above the floor of the cold-water basin to facilitate cleaning.

5. 23 73 13 – Modular Packaged Air-Handling Units:
   a. Add 2.1 A.4 to read: Diakin Applied.

6. 33 73 13 – Medium Voltage Transformers:
   a. Modify 2.3-I to read as follows: The transformer primary/high voltage shall be as shown on the project drawings. The primary/high voltage winding configuration shall be delta.

7. 33 73 13 – Medium Voltage Transformers:
   a. Modify 2.3-N to read as follows: shall be

Drawings:

1. A101:
   a. MODIFY Lower Level – Demolition Plan: Add keyed note 2A and 2B to clarify thickness of concrete slabs noted to be removed.
   b. MODIFY Lower Level – Demolition Plan: Modify dimension to reflect 7”-3”.
   c. MODIFY Lower Level – Demolition Plan: Modify extent of concrete slab demolition.
   d. MODIFY Lower Level – Demolition Plan: Modify plan to reflect existing pedestals at north cooling tower as 18” square.
   e. MODIFY Upper Level – Demolition Plan: Add keyed note 2A to clarify removal of two housekeeping pads.
f. **MODIFY** Keynotes – Demolition Plan: Add keyed note 2A and 2B to clarify thickness of concrete slabs noted to be removed.

g. **MODIFY** Keynotes – Demolition Plan: Modify keyed note 21 to clarify grating is to be saw cut as required to match structural drawings.

2. **A201**:  
   a. **MODIFY** Lower Level – Renovation Plan: Modify plan to reflect existing pedestals at north cooling tower as 18” square.
   b. **MODIFY** Lower Level – Renovation Plan: Modify extent of concrete slab installation.

3. **A301**:  
   a. **MODIFY** East Elevation 02/A301: Revise new door to reflect 7’-0” tall door.
   b. **MODIFY** East Door Elev 13/A301: Revise new door to reflect 7’-0” tall door and prefinished sheet metal flashing coping at top of door.
   c. **MODIFY** East Door Section 14/A301: Revise new door to reflect 7’-0” tall door and prefinished sheet metal flashing coping at top of door.

4. **A701**:  
   a. **MODIFY** Door Jamb 14/A701: Revise detail to add prefinished sheet metal flashing coping at top of door.
   b. **MODIFY** Door Schedule: Revise schedule to reflect door 101A as a 7’-0” tall door.

5. **S102**:  
   a. **MODIFY** Section 7/S102: Revise existing pedestals at north cooling tower from 18” diameter to 18” square.

6. **S201**:  
   a. **MODIFY** Lower Level Plan: Revise existing pedestals at north cooling tower from 18” diameter to 18” square.
   b. **MODIFY** Lower Level Plan: Add note prohibiting overcut corners at slab demolition.
   c. **MODIFY** Lower Level Plan: Taper east end of slab fill near Door 001.
   d. **MODIFY** Lower Level Plan: Add dimensions locating slab fill north to south.
   e. **MODIFY** Lower Level Plan: Revise note to saw cut grating at north edge of slab fill.
   f. **MODIFY** Lower Level Plan: Add clarification note for concrete curb at new wall.
   g. **MODIFY** Lower Level Plan: Enlarge area of bond breaker per Plan Note 7 at two areas noted.

7. **S301**:  
   a. **MODIFY** Section 6/S301: Revise new opening as indicated.

8. **M601**:  
   a. **MODIFY**: Water Cooled Chiller Schedule notes.
   b. **MODIFY**: Cooling Tower Schedule design temperatures.
   c. **MODIFY**: Pump Schedule notes.

9. **ED101**:  
   a. **MODIFY** drawing to include emergency phone information as shown in attached revised drawing ED101.

10. **E102**:  
    a. **MODIFY** drawing to include emergency phone information as shown in attached revised drawing E102.
Attachments:

1. A101 – DEMOLITION FLOOR PLANS
2. A201 – LOWER LEVEL FLOOR PLANS
3. A301 – BUILDING ELEVATIONS AND SECTIONS
4. A701 – SCHEDULES & CONSTRUCTION DETAILS
5. S102 - TYPICAL DETAILS
6. S201 – LOWER LEVEL PLAN
7. S301 - SECTIONS
8. M601 – SCHEDULES
9. ED101 – ELECTRICAL DEMOLITION
10. E102 – ELECTRICAL POWER AND SYSTEMS NEW WORK

END OF ADDENDUM 1
GENERAL NOTES - DEMOLITION

1. REMOVE WALLS INDICATED BY THE FOLLOWING LINETYPE (UNLESS NOTED OTHERWISE):

2. LIGHT FIXTURES, CONDUIT, SWITCHES, RECEPTACLES, AND ASSOCIATED WIRING - REFER TO MEP DRAWINGS FOR EXTENT OF DEMOLITION

3. PIPING, PIPING SUPPORTS, VALVES, AND OTHER PLUMBING AND MECHANICAL EQUIPMENT - REFER TO MEP DRAWINGS FOR EXTENT OF DEMOLITION

4. METAL ROOF AND SUPPORT STRUCTURE - REMOVE AND DISPOSE OF AS INDICATED ON THOSE DRAWINGS.

5. CHAIN-LINK FENCING AND GATE DOOR - REMOVE AND DISPOSE OF AS INDICATED ON THOSE DRAWINGS.

6. LIQUID NITROGEN TANK - REMOVE AS INDICATED ON MECHANICAL DRAWINGS.

7. COOLING TOWERS AND ASSOCIATED PIPING - REMOVE AS INDICATED ON MECHANICAL DRAWINGS.

8. METAL DOOR AND METAL FRAME - REMOVE AND DISPOSE OF AS INDICATED ON THOSE DRAWINGS.

9. METAL WALL PANELS, METAL FRAMING, AND METAL ROOFING - REMOVE AND DISPOSE OF AS INDICATED ON THOSE DRAWINGS.

10. CONCRETE FOUNDATION WALL - REMOVE PORTION AS REQUIRED FOR PIPING. REFER TO MECHANICAL AND STRUCTURAL DRAWINGS FOR OPENING TO WEST PIT.

11. ELECTRICAL EQUIPMENT - REMOVE AS INDICATED ON ELECTRICAL DRAWINGS.

12. CONCRETE FOUNDATION WALL - REMOVE PORTION AS INDICATED ON STRUCTURAL DRAWINGS FOR NEW DOOR ASSEMBLY.

13. EXISTING CONCRETE PEDESTAL COLUMN TO REMAIN - PROTECT DURING DEMOLITION.

14. EXISTING CONCRETE WALL - REMOVE AS INDICATED ON STRUCTURAL DRAWINGS FOR NEW DOOR AND FRAME ASSEMBLY.

15. EXISTING CONCRETE WALL - REMOVE SECTION AS REQUIRED FOR COOLING TOWER PLATFORM - REFER TO STRUCTURE AND MECHANICAL FOR PLATFORM SIZE.

16. EXISTING CONCRETE SLAB - REMOVE PORTION REQUIRED FOR CHILLER PEDESTAL FOOTING - REFER TO STRUCTURE.

17. EXISTING CONCRETE WALL - REMOVE AS INDICATED ON STRUCTURAL DRAWINGS FOR OPENING TO WEST PIT.

18. EXISTING CONCRETE SLAB - REMOVE AS REQUIRED FOR SUMP PUMP - REFER TO PLUMBING.

19. EXISTING CONCRETE SLAB - REMOVE AS REQUIRED FOR UNDER SLAB PIPING - REFER TO PLUMBING.

20. EXISTING CONCRETE SLAB - REMOVE AS REQUIRED FOR NEW CONCRETE SLAB ABOVE OVERHEAD DOOR - SAWCUT GRATING AS REQUIRED.

21. EXISTING GALVANIZED STEEL GUARDRAIL - REMOVE SECTION AS REQUIRED FOR INSTALLATION OF NEW STEEL GRATING PLATFORM WALL.

22. EXISTING CONCRETE CURB - REMOVE SECTION AS REQUIRED FOR INSTALLATION OF NEW STEEL GRATING PLATFORM WALL.

23. EXISTING CONCRETE SLAB - SHOT-BLAST AS REQUIRED TO RECEIVE CONCRETE SEALER.

24. EXISTING CONCRETE CURB - SHOT-BLAST AS REQUIRED TO RECEIVE CONCRETE SEALER.

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GENERAL NOTES - CEILING

DIMENSIONS VARY SIGNIFICANTLY
NOTIFY THE ARCHITECT
STUD OR EXISTING FINISH UNLESS
NOTED OTHERWISE

T 314.918.8383
F  314.918.1766
ST. LOUIS, MO 63119

3. CONTRACTOR TO PROTECT AND
MAINTAIN EXISTING SUMP PUMP AND
PIT DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR
CLEANING THE PIT AND SUPPLYING A SUMP PUMP AT THE CONCLUSION OF
THE PROJECT.

4. CONTRACTOR TO PROTECT EXISTING
PANEL & GRID SYSTEM

5. SUMP PUMP - REFER TO PLUMBING
SUPPLY AIR DIFFUSER

6. PUMP - REFER TO MECHANICAL
7. CHILLER - REFER TO MECHANICAL
8. CONDENSER PIPING - REFER TO
SLOT TYPE AIR DIFFUSER

9. WATERPROOFING AT ENTIRE PERIMETER

10. PREFINISHED METAL GUTTER
11. SNOW GUARD
12. RELIEF HOOD WITH FACTORY CURB - REFER TO MECHANICAL
13. COOLING TOWER - REFER TO MECHANICAL
14. ELECTRICAL EQUIPMENT - REFER TO ELECTRIC
15. FILL MISC. HOLES FROM REMOVED PIPING
16. PAINT EXISTING METAL DOOR AND FRAME - REFER TO
EPS-5A

17. CONCRETE SLOPE 1/4" PER FOOT TO
CONCRETE HOUSEKEEPING FOR
21. CONCRETE - HOUSEKEEPING FOR
25. CONCRETE SLAB - INFILL AS REQUIRED
AND ALIGN FLUSH WITH EXISTING SLAB AT
COMPLETION OF PIPING INSTALLATION -
COORDINATE EXCAVATION UNDER
EXISTING GRADE BEAM AS INDICATED ON
STRUCTURE

26. FLOOR DRAIN - REFER TO PLUMBING
27. DRAINAGE DEPRESSION IN CONCRETE
SLAB - ALIGN WITH ADJACENT EXISTING DRAIN AT WEST PIT

28. RELIEF VENT PIPING W/ PIPE BOOT &
SEALANT - REFER TO MECHANICAL
30. RELIEF VENT PIPING W/ PIPE BOOT &
SEALANT - REFER TO MECHANICAL
31. CONCRETE HOUSEKEEPING FOR
21. CONCRETE - HOUSEKEEPING FOR

32. STEEL GRATING AND STEEL STRUCTURE
OVER EXISTING CONCRETE GIRT - REFER TO ELECTRICAL

33. GALVANIZED STEEL POST AND GUARD RAIL - REFER TO STRUCTURE
34. EPS-5A
35. CONCRETE SIDEWALK - REFER TO
36. PLUMBING VENT W/ PIPE BOOT AND
37. EXISTING CONCRETE GIRT
38. STEEL STRINGERS WITH STEEL GRATING
TREADS - REFER TO ELECTRICAL

39. CONCRETE - HOUSEKEEPING FOR
40. FLOOR DRAIN - REFER TO PLUMBING
41. DRAINAGE DEPRESSION IN CONCRETE
SLAB - ALIGN WITH ADJACENT EXISTING DRAIN AT WEST PIT

42. CHILLER
43. ROOM

MISSOURI STATE CERTIFICATE
OF AUTHORITY #000148

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FAIRVIEW HEIGHTS, IL 62208

DESIGNED BY:
WILLIAM HOWARD OSWALD
The Professional Architect, whose signature and personal
seal appear on this document, assumes responsibility only
for what appears hereon, and disclaims responsibility for
all

ISSUE DATE:
DRAWING TITLE:
DRAWING NO.:
SCALE: 1/4" = 1'-0"

WHEN THIS DRAWING IS
REVISIONS:
A201
7. At hatched area of pad, provide (2) layers of 6 mil plastic sheet bonded to top drawings, and do not represent as-builtin conditions.

6. Member sizes denoted in parenthesis (CONC BM 24"x24") indicate existing structural members. Locate wall reinforcing prior to drilling and coordinate hole to miss reinforcing.

5. Core drill hole thru concrete wall for piping. Coordinate size and location with MEP drawings.

4. All cooling tower support steel and overhead door opening framing is to be galvanized.


2. Existing slab on grade construction:

1. Existing floor elevation varies (100'-0" = 748' at high point on civil drawings.)

LOWER LEVEL PLAN NOTES:

- Over vapor barrier over 4" compacted granular fill.
- 12" thick concrete slab reinforced with #5 @ 8"oc top and bottom.
- For removal of top concrete with out damage to bottom concrete. Fill with 4" min regular wall and sloped to match surrounding slab.
- Remove top of existing concrete and rebar sawcut perimeter and interior as required down to 4" below new finish elevation.

- Existing 8' x 6' x 1' footing (x4)
- Existing 5' x 5' x 1' footing (x2)
- Outline of S301
- Outline of 5A
- Outline of 5B
- 8' (E) Trench
- TYP (4) 8" stake hole.
- HSS frame, (NTS)
- CASMF wall, and specs
- T/C EL 101'-0"
- See 3/S102, drain
- TYP (6) thus (E) 18" square pedestal, 30"x30" concencaement
- Weight = 110,000#
- Maximum operating cooling tower, places (4)
- Weight = 85,000#
- Maximum operating chiller, places (2)
- Weight = 75,000#
- Maximum operating electrical equipment, places (4)
- Weight = 80,000#
- coordinating to concrete races, with architectural finishes.
- See 5/S102 - SEE ARCH
- SEE EQUIP SUPPLIER
- SEE 1/S301
- SEE 7/S102
- TYP (4)
- SEE 5/S102.
- EQUIP PAD
- TYP
- PER A101 PEDSTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
- EXISTING COOLING TOWER
- GRADE BEAM
- DO NOT DAMAGE PIPE INSTALLATION.
- CONCRETE CURB SIMILAR TO FIT SLAB FILL
- 4'-3".
- SEE 1/S301
- HSS FRAME,
- (SHOWN SHADED).
- EQUIP PAD
- TYP
- PER A101
- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
- EXISTING COOLING TOWER
- WEBSITE = 85,000#
- MAXIMUM OPERATING CHILLER,
- PLACES (4)
- WEIGHT = 75,000#
- MAXIMUM OPERATING ELECTRICAL EQUIPMENT,
- PLACES (4)
- WEIGHT = 80,000#
- MAXIMUM OPERATING CONCRETE STEPS,
- (SHOWN SHADED).
- EQUIP PAD
- TYP
- PER A101
- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
- EXISTING COOLING TOWER
- GRADE BEAM
- DO NOT DAMAGE PIPE INSTALLATION.
- CONCRETE CURB SIMILAR TO FIT SLAB FILL
- 4'-3".
- SEE 1/S301
- HSS FRAME,
- (SHOWN SHADED).
- EQUIP PAD
- TYP
- PER A101
- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
- EXISTING COOLING TOWER
- GRADE BEAM
- DO NOT DAMAGE PIPE INSTALLATION.
- CONCRETE CURB SIMILAR TO FIT SLAB FILL
- 4'-3".
- SEE 1/S301
- HSS FRAME,
- (SHOWN SHADED).
- EQUIP PAD
- TYP
- PER A101
- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
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- GRADE BEAM
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- CONCRETE CURB SIMILAR TO FIT SLAB FILL
- 4'-3".
- SEE 1/S301
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- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
- EXISTING COOLING TOWER
- GRADE BEAM
- DO NOT DAMAGE PIPE INSTALLATION.
- CONCRETE CURB SIMILAR TO FIT SLAB FILL
- 4'-3".
- SEE 1/S301
- HSS FRAME,
- (SHOWN SHADED).
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- PER A101
- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
- EXISTING COOLING TOWER
- GRADE BEAM
- DO NOT DAMAGE PIPE INSTALLATION.
- CONCRETE CURB SIMILAR TO FIT SLAB FILL
- 4'-3".
- SEE 1/S301
- HSS FRAME,
- (SHOWN SHADED).
- EQUIP PAD
- TYP
- PER A101
- PEDESTALS TO BE REMOVED FOOTINGS (x6) TO REMAIN.
## Water Cooled Chiller Schedule (Owner Provided)

### Chiller Shipping Weight:
- Weight: 58,527 LBS.
- Chiller is owner purchased and provided. Contractor shall coordinate delivery to the site and shall be responsible for unloading and installing chiller.

### Mfr. Model:
- S-2 TITUS 301FL Double Deflection Louvered Supply Gril
- Surface Mount 48x24 49.75x25.75 Aluminum White 0.1 30 90 00

### Type:
- Service Location
- Refrigeration Type

### Notes:
- Provide (4) lifting lugs.
- Provide (1) 3" U-vent of Sch 80 CPVC w/Viton Gasket, with SS insect screen on top.
- Provide (2) 2" CPVC bulkhead fittings, CPVC/Viton gaskets, 2" FNPT connections on top.

### Unit:
- Type: Assmann Corp. IMT-550 Double-Wall - 1.9 S.G. Cross-Linked
- Provide 2" lift lug.
- Provide 1" 3-1/2" U-vent of Sch 80 CPVC w/Viton Gasket, with SS insect screen on top.
- Provide (2) 2" CPVC bulkhead fittings, CPVC/Viton gaskets, 2" FNPT connections on top.

### Supply Fan:
- Variable Frequency Drive and disconnect by Division 26.
- Unit shall be suspended from structure.

### Damper Motorized Schedule:
- Damper actuator shall be furnished and installed as work of Section 230900.

### Bldg. 1:
- York-Johnson Controls ACR Vertical Reduced Foot Print
- Elec Room
- HP: 0.5
- Design: 1500
- HP: 0.5
- Rated: 413
- volts: 3/4
- volts: 60
- All notes apply:
  - Side access filter rack.
  - Unit will sit on concrete housekeeping pad.
  - Manufacturer provided high water level switch in drain pan.
  - Standard rotation, top discharge arrangement.
  - 2 supply fans.

### Bldg. 2:
- Greenheck BSQ-240 Inline Chiller
- RM Ventilation and Chiller Purge Belt
- 7200 CFM
- 0.75 HP
- 892 RPM
- 1725 V/PH/Hz
- Min. Eff: 300
- 208/3/60

### Bldg. 3:
- Armstrong 4300-14x14x15 Vertical In-line Chiller
- MAX BHP @ DESIGN: 135.25 HP.
- PROVIDE FLUSH LINE SEPARATOR.
- PROVIDE OPTIONAL STEEL CASING SUPPORT FOR MOUNTING ON CONCRETE PAD.

### Cooling Tower (CT-3):
- 6000 CFM
- 101.95 Max. CFM @ EWT
- 85.38 Max. CFM @ LWT
- 80.38 Max. CFM @ 30°F
- 23 Max. CFM @ 92°F
- 42'-1" x 22'-5" x 27'-2"
- 106,000 GPM
- 239.7 BHP
- 4200 V/PH/Hz
- 120/3/60

### Evaporator Performance Schedule:
- Condenser Data
- Fill Tower shall be constructed of stainless steel. Refer to specifications.

### Bldg. 4:
- Greenheck FRI Gravitate Refrigerant Intake
- 7200 CFM
- 12.5 Max. CFM @ EWT
- 600 Max. CFM @ LWT
- 0.085 Min. Eff
- 1, 2, 3, 4, 5

### Bldg. 5:
- Armstrong 4300-14x14x15 Vertical In-line Chiller
- MAX BHP @ DESIGN: 135.25 HP.
- PROVIDE FLUSH LINE SEPARATOR.
- PROVIDE OPTIONAL STEEL CASING SUPPORT FOR MOUNTING ON CONCRETE PAD.