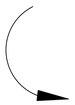
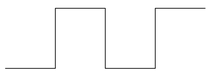
LEGEND

START	Start of TX Cable
END	End of TX Cable
T	Thermostat
	Direction of TX Mat
	Rotation of TX Mat
	Loose Cable

DRAWING LIST

1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:
TX General Submittal

Drawing Title:
Legend/Drawing List

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Baltimore, Maryland 21220
Tel: 1-888-326-3677 Option: 3 Fax : 1 410-931-8256
www.Heating.Danfoss.us

The Contractor shall verify all job site dimensions all drawing, details & specifications.
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Date:	Quote No:
March 2018	
Drawn By:	**Scale:**

Drawing No:
TX-1

TX Cables

SPECIFICATION

1. General
   Supply and install a complete system comprised of heating cables, accessories, and controls.

2. Material
   2.1. Shall be Danfoss TX twin conductor heating cable.

   2.2. Conductor: Copper or copper alloy, with tin-nickel coating.

   2.3. Insulation: Dupont FEP insulation with an average thickness not less than 0.25mm and than layer of XLPE

   2.4. Shield: Tin coated drain wire combined with 0.050mm aluminum foil coated with 0.012mm PBT, 100% COVERAGE.

   2.5. Jacket: PVC with an average thickness not less that 0.75mm.

   2.6. Shall include 10' cold lead, single point connection

   2.7. Rated temperature: 220°F (105°C), maximum voltage 600V ac, up to 9W/ft

   2.8. Shall be approved to applicable UL and CSA standards.

3. System Controls
   3.1. The system temperature shall be controlled by a Danfoss thermostat with a floor or air sensor, or a combination of both.

   3.2. The thermostat shall incorporate an integral 5mA Class A Ground Fault Circuit Interrupter (GFCI), temperature set-back option to reduce energy consumption, and a digital readout.

   3.3. Shall be approved to applicable UL and CSA standards.

4. Execution
   4.1. Installation
   a. System must be installed per manufacture's recommendation using the method described in the installation guide.
   b. Place the heating cables and sensors in the surface material as per the installation guide.
   c. Inspect the cable and controls upon receiving the shipment. Note any damage and ensure materials received match the order and shipping documents.

   4.2. Tests
   a. Refer to the manufacturer's literature for requirements for testing and documenting cable resistance and insulation-to-ground readings.
   b. Take test as outlined in the installation Manual.
   c. If problems are discovered, consult the manufacturer.
   d. If unable to correct problems notify the engineer before proceeding with the installation.
   e. Keep a record of all readings for inspection by the engineer or for submittal to the manufacturer to ensure a valid warranty.

5. Warranty
   5.1. Manufacture shall offer 10-years, non-prorated warranty.

1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:
TX General Submittal

Drawing Title:
TX Specifications

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Date:	Quote No:
March 2018	
Drawn By:	Scale:

Drawing No:
TX-2

TX-FH General Notes

CAUTION!
It is important that this equipment is installed only by qualified electricians who are familiar with the proper sizing, installation, construction and operation of floor warming system and the hazards involved. The heating cable is designed for under floor heating purposes only.

The installation shall be in accordance with the manufacturer's instructions and national and local electrical codes. The installation shall be in accordance with Part 424, American National Standard Institute / National Fire Protection Association (ANSI/NFPA70), National Electrical Code (NEC) and Canadian Electrical Code (CEC). Danfoss recommends GFCI for heating cables in normally wet areas (i.e. bathrooms, showers, kitchens).

All local codes concerning buildings, electrical installations etc. must be adhered to regardless of instructions provided in this manual. If these regulations are in direct conflict with instructions stated herein, please contact the Danfoss Electrical Heating Division.

It is important that this equipment is only installed by qualified electricians who are familiar with the proper sizing, installation, construction and operation of electric heating cable systems and the hazards involved.

Remember to check that the supply voltage matches the voltage required for your particular Danfoss TX-FH product

Extreme care must be used to ensure the TX-FH cables are not damaged when using sharp tools or other implements. Avoid walking on the cables or mats during installation

Never cut the heating cable

Do not install the Danfoss TX-FH cables in such a manner that two heating cables touch, cross or overlap

Measure, verify and record the actual resistance throughout the installation process:

1. Out of the box
2. After installation
3. After laying the mud bed
4. After connecting thermostat and/or contactors

Record these values in the warranty card. Failure to do so will void the warranty;

The Danfoss TX-FH electric heating system is most effective with tiled or stone or concrete floors. If carpet, wood or other flooring materials are to be used, please consult with Danfoss Electrical Heating Division.

The TX-FH cable must be embedded in mortar or mortar mixture, concrete or similar material.

Ensure that all sharp stones and debris are removed from the area where the heating cables are going to be installed.

Make sure the cable is not subjected to excessive tension or strain, especially at the heating cable to power lead slice.

At low temperatures, the heating cable stiffens and may be difficult to work with. To overcome this, connect the cable to the mains for a brief period of time. Ensure the cable is fully rolled out when this is done.

Do not install TX-FH cable in walls or ceilings

Do not install the heating cables under cabinets, kitchen island etc.

Never use the heating cables to cure the tile adhesive products.

Please consult the Danfoss Electrical Heating Division for any other questions, concerns or advice.

1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:

TX General Submittal

Drawing Title:

TX-FH General Notes

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Date: March 2018	Quote No:
Drawn By:	Scale:

Drawing No:

TX-3

TX-SH General Notes

CAUTION!
Danfoss TX is a heating system usually intended to be the sole source of heat in the building. Danfoss Strongly recommends consulting with a building engineer, architect or qualified professional to ensure that the Danfoss TX thermal storage system selected will be suitable for your intended application.

The installation shall be in accordance with the manufacturer's instructions and national and local electrical codes. The installation shall be in accordance with Part 426, American National Standard Institute / National Fire Protection Association (ANSI/NFPA70), National Electrical Code (NEC) and Canadian Electrical Code (CEC), Part 1. You must use a ground fault protection device (GFCI) or a Residual Current Device (RCD).

All local codes concerning buildings, electrical installations etc. must be adhered to regardless of instructions provided in this manual. If these regulations are in direct conflict with instructions stated herein, please contact the Danfoss Electrical Heating Division.

It is important that this equipment is only installed by qualified electricians who are familiar with the proper sizing, installation, construction and operation of electric heating cable systems and the hazards involved. The TX system is only designed for installation in concrete or sand applications.

Metal structures or materials used for the support of or on which the Danfoss TX is installed must be grounded in accordance with CSA Standard C22.1, Section 10 and the NEC.

It is recommended to install the Danfoss TX heating cables/mat with a controller that contains an integrated temperature limiter.

Remember to check that the supply voltage matches the voltage required for your particular Danfoss TX product.

Extreme care must be used to ensure the TX cables are not damaged when using sharp tools, wheelbarrows, heavy machinery, shovels, rakes, or other implements. Avoid walking on the cables or mats during installation.

Never cut the heating cable.

Do not install the Danfoss TX cables in such a manner that two heating cables touch, cross or overlap.

Measure, verify and record the actual resistance throughout the installation process:

1. Out of the box
2 After installation
3. After laying the sand bed (for sand bed installation)
4. After the concrete slab is poured (but not set)
5. After connecting thermostat and/or contactors

Record these values in the warranty card. Failure to do so will void the warranty.

The Danfoss TX thermal storage heating system is most effective in single story buildings, with tiled or stone or concrete floors. If carpet, wood or other flooring materials are to be used, please consult with Danfoss Electrical Heating Division.

The TX mat or TX cable must be embedded in mortar or mortar mixture, concrete, sand or similar material. Ensure no air pockets exist in the concrete or sand. This can damage to the cable.

The perimeter of the heated area should be insulated to 4ft below grade with a minimum of 2in of rigid, closed cell foam insulation (Styrofoam) or equivalent suitable for in-ground installation. Foamed urethane or polystyrene are not acceptable moisture reduced its insulation properties.

Ensure that all sharp stones and debris are removed from the area where the heating cables are going to be installed.

Make sure the cable is not subjected to excessive tension or strain, especially at the heating cable to power lead slice. It should not cross an expansion joint when installed in concrete. For two or more slabs, use of separate cables in each slab is recommended.

At low temperatures, the heating cable stiffens and may be difficult to work with. To overcome this, connect the cable to the mains for a brief period of time. Ensure the cable is fully rolled out when this is done.

A minimum of 12in (30 cm) should exist between the cables and the perimeter of the foundation, and obstructions such as drains, conduits, and structural members.

There should be a minimum of 2in (5 cm) of concrete or sand above and below the heating cables.

Allow the concrete to set for at least 30 days before the heating cables are turned on.

There should not be any moving groundwater in the building area. Natural moisture in the soil is acceptable. If in doubt, contact Danfoss Electric Heating Division.

Please consult the Danfoss Electrical Heating Division for any other questions, concerns or advice.

1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:

TX General Submittal

Drawing Title:

TX-SH General Notes

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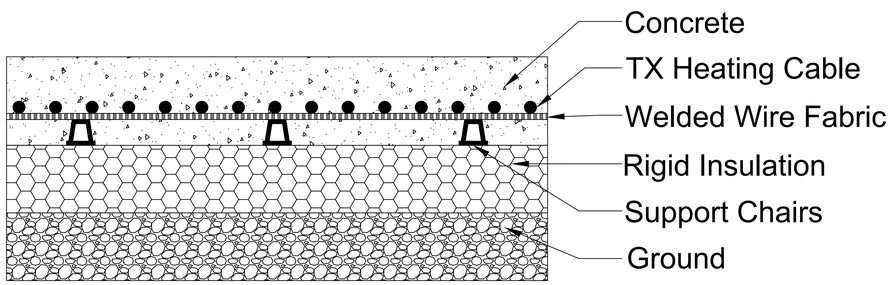
Date: March 2018	Quote No:
Drawn By:	Scale:

Drawing No:

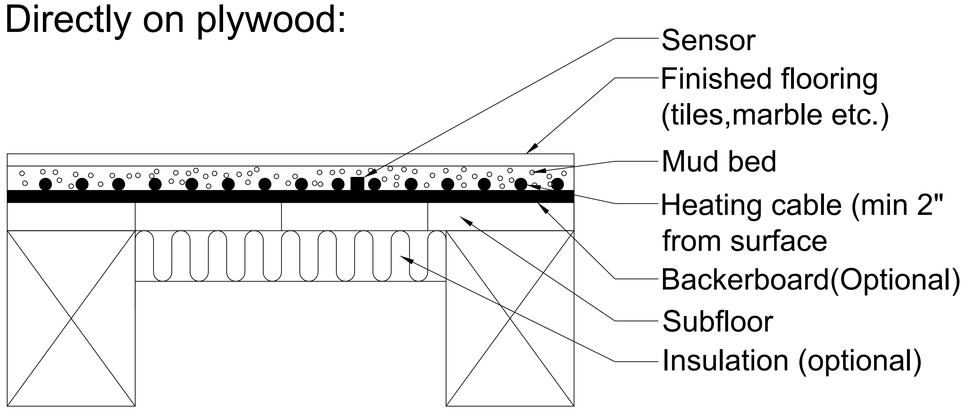
TX-4

Danfoss TX-FH Typical Installation and Application

Directly on Concrete:

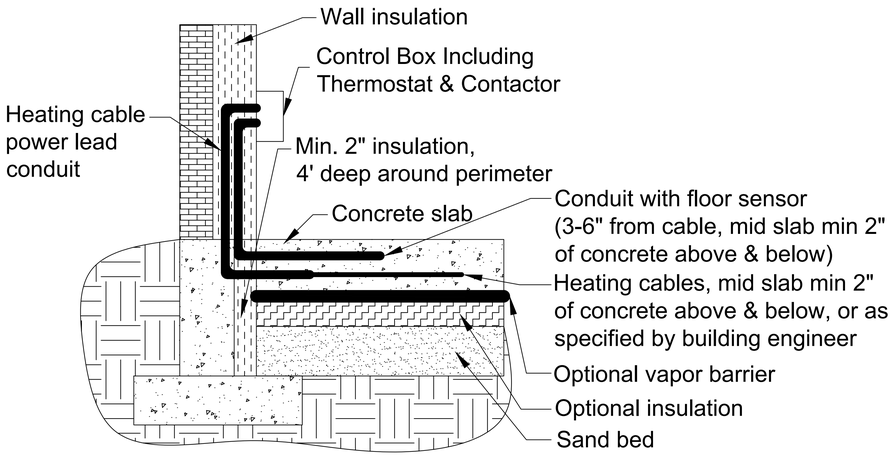


Directly on plywood:

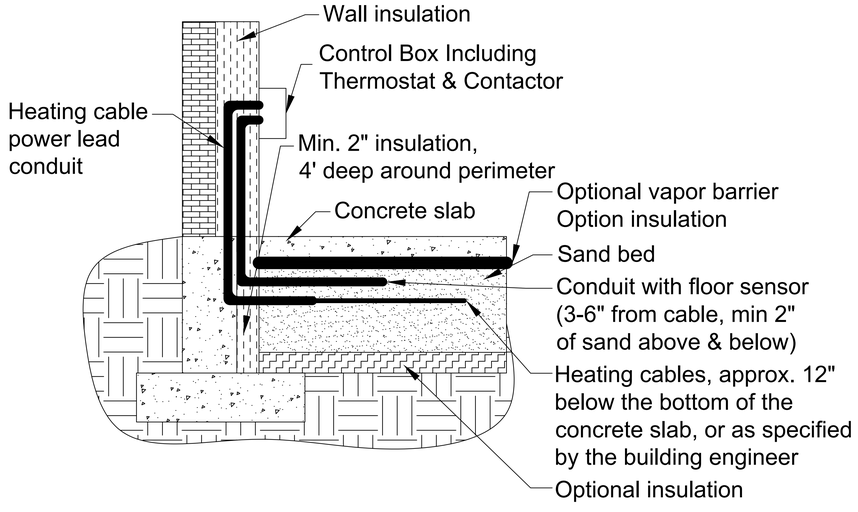


Danfoss TX-SH Typical Installation and Application

Concrete Installation



Sand Bed Installation



1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:

TX General Submittal

Drawing Title:

TX Typical Installation

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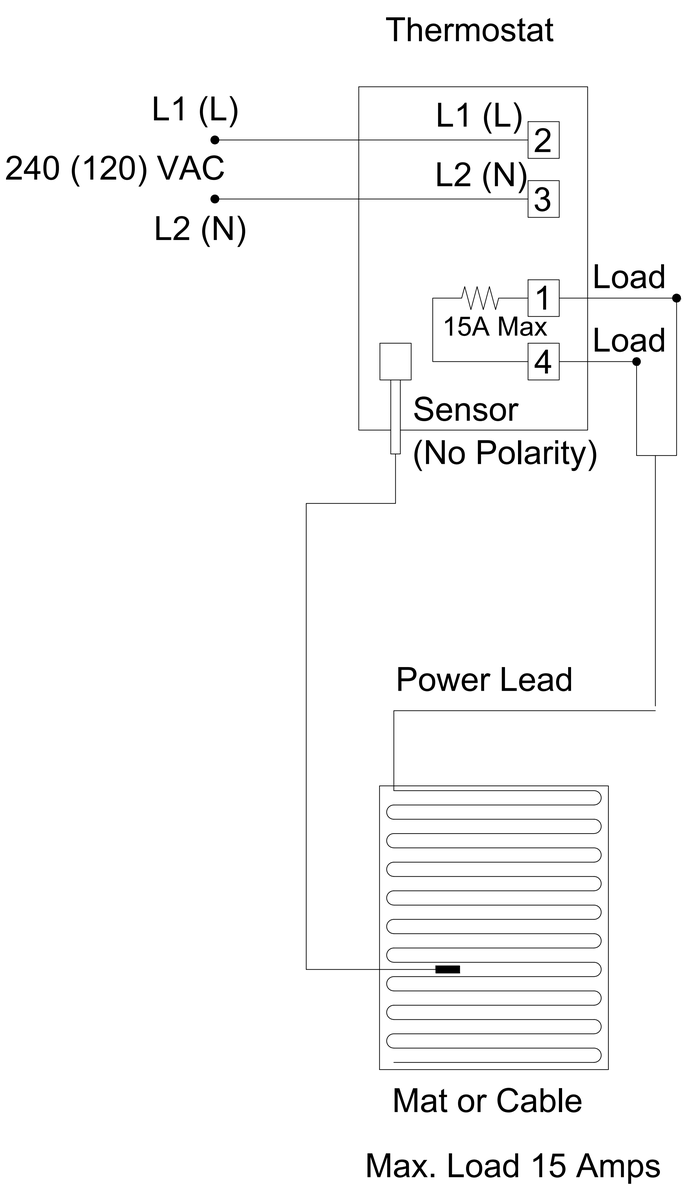
Date: March 2018	Quote No:
Drawn By:	Scale:

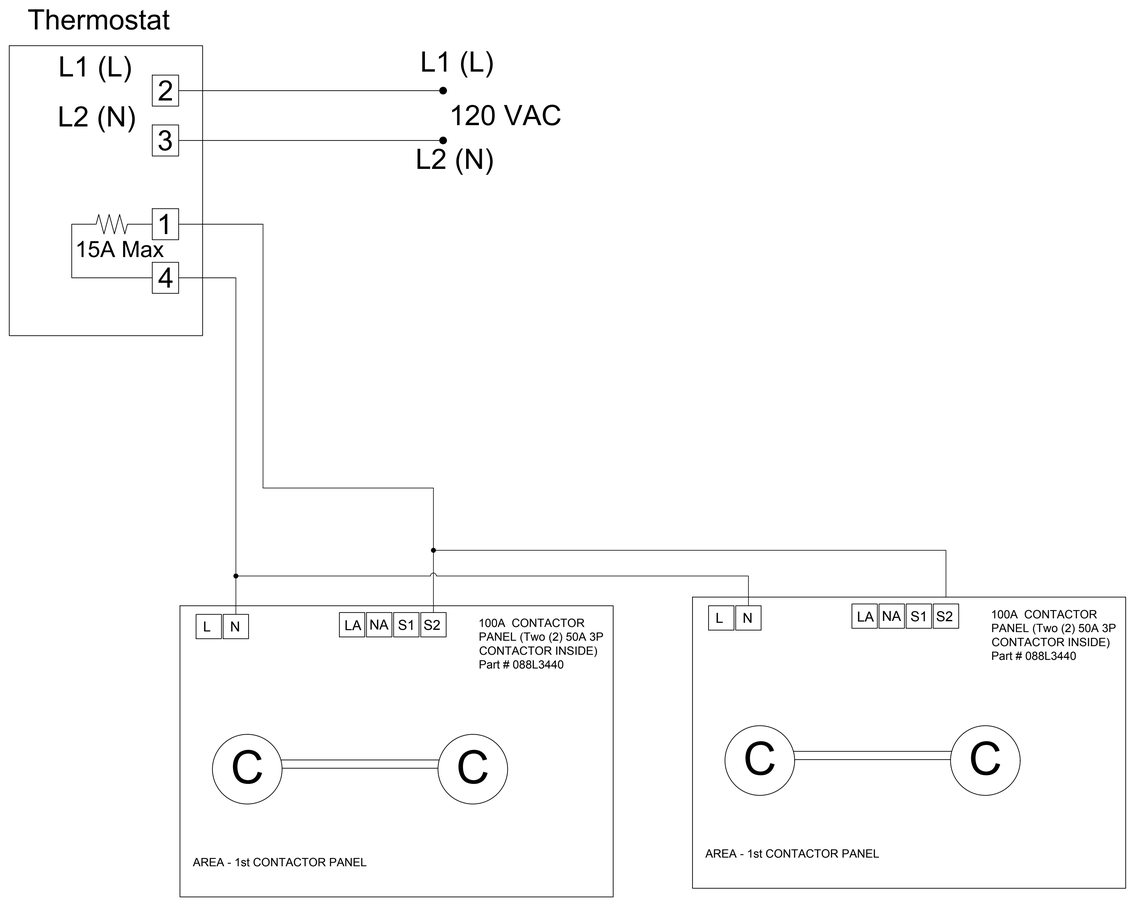
Drawing No:

TX-5

Typical Electrical wiring Diagram for Danfoss Thermostat Max. Load 15 Amps



Typical Electrical wiring Diagram for Danfoss Thermostat Load greater than 15 Amps



1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:

TX General Submittal

Drawing Title:

TX Typical Wiring

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Date:	Quote No:
March 2018	
Drawn By:	**Scale:**

Drawing No:

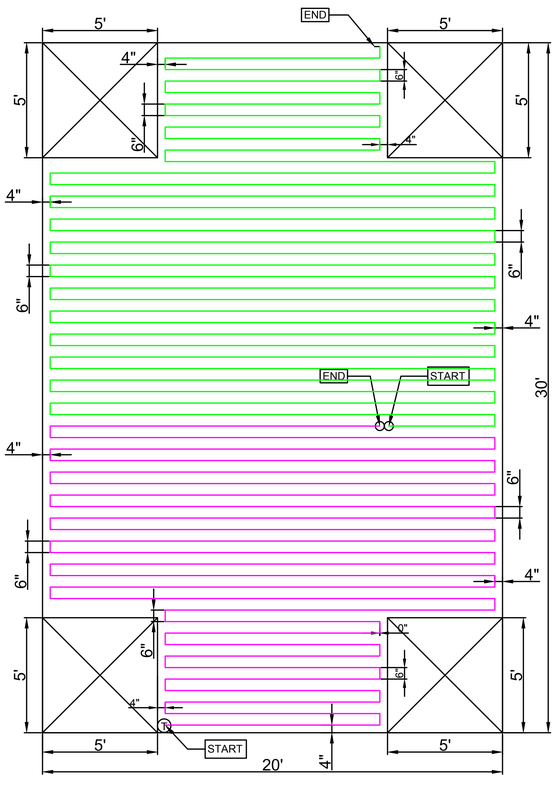
TX-6

TX-SH Cables

1. 088L3741 - 425 ft
   Coverage - 210sf
   @ 6" spacing

2. 088L3745 - 545ft
   Coverage - 270sf
   @ 6" spacing

Note: Cable to be spaced @ 6" spacing to achieve 18 W/SF.



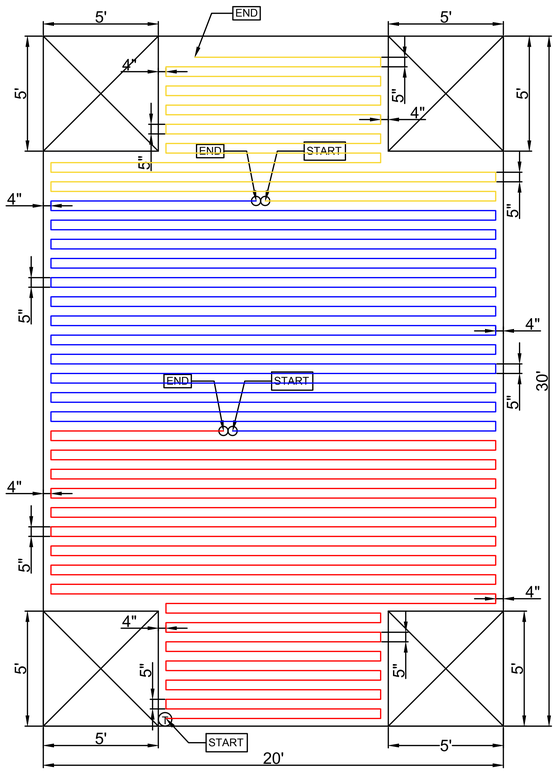
TX-SH Cables

1. 088L3743 - 475 ft
   Coverage - 200sf
   @ 5" spacing

2. 088L3743 - 475ft
   Coverage - 200sf
   @ 5" spacing

3. 088L3729 - 190ft
   Coverage - 80sf
   @ 5" spacing

Note: Cable to be spaced @ 5" spacing to achieve 22 W/SF.



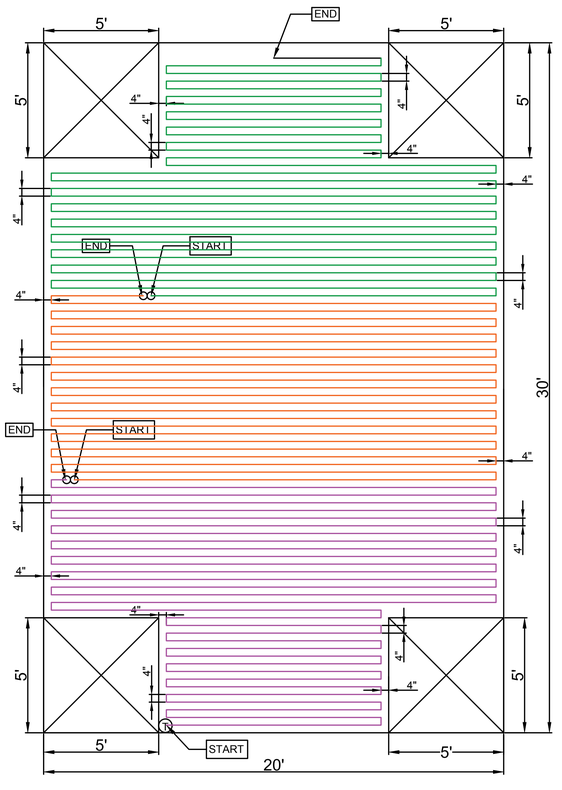
TX-SH Cables

1. 088L3743 - 475 ft
   Coverage - 155sf
   @ 4" spacing

2. 088L3743 - 475ft
   Coverage - 155sf
   @ 4" spacing

3. 088L3743 - 475ft
   Coverage - 155sf
   @ 4" spacing

Note: Cable to be spaced @ 4" spacing to achieve 27 W/SF.



1.	Date	Desc.
No:	Date:	Description:

Rep:

Project:

TX General Submittal

Drawing Title:

TX-SH Typical Layout

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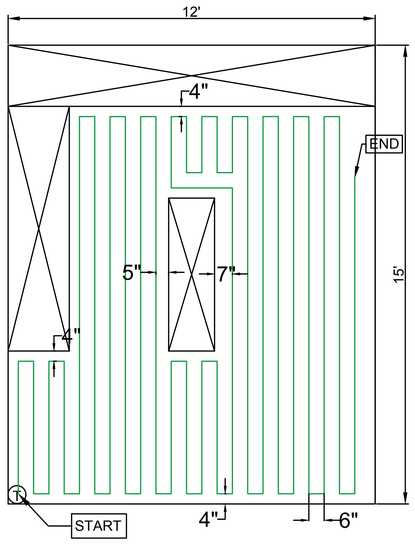
Date:	Quote No:
March 2018	
Drawn By:	**Scale:**
	3/8"=1'

Drawing No:

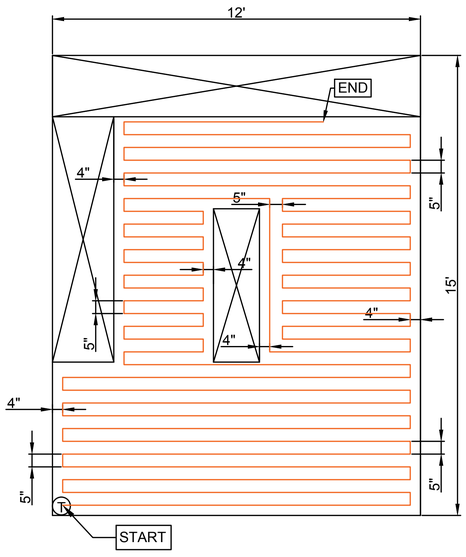
TX-6

TX-FH Cables
1. 088L3706 - 240 ft
Coverage - 120sf
@ 6" spacing



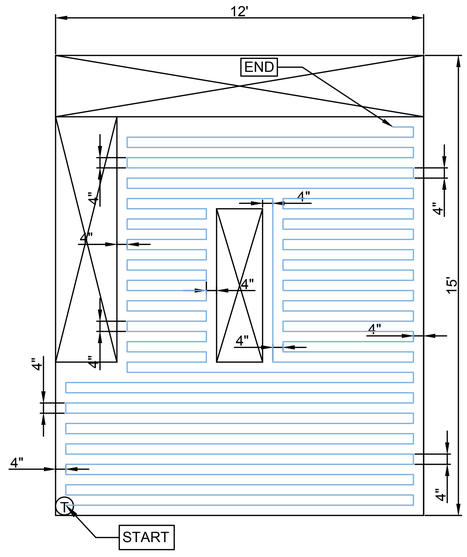
TX-FH Cables
1. 088L3707 - 300 ft
Coverage - 125sf
@ 5" spacing

Note: Cable to be spaced @ 5" spacing to achieve 14 W/SF.



TX-FH Cables
1. 088L3708 - 355 ft
Coverage - 120sf
@ 4" spacing

Note: Cable to be spaced @ 4" spacing to achieve 17 W/SF.



1.	Date	Desc.
No:	Date:	Description:

Rep:

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TX General Submittal

Drawing Title:

TX-FH Typical Layout

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Date: March 2018	Quote No:
Drawn By:	Scale: 1/2" = 1'

Drawing No:

TX-8