1. WALL ASSEMBLY - THE 1 OR 2 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF TH MATERIALS AND IN THE MANNER SPECIFIED USDO OR UADO SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANC DIRECTORY AND PAUL INCLUDE THE FOLLOWING CONSTRUCTION FEATURE OF

A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.

B. GYPSUM BOARD* - 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DAG CORENING R 13:4/4 IN

DIA OF CIRCULAR OPENING CUT THROUGH GYPSUM WALLBOARD OF EACH SIDE OF WALL ASSEMBLY TO BE MIN 1/4 IN. TO MAX 1/2 IN. LARGER THAN OUTSIDE DIA OF THROUGH PENETRANT (ITEM 2). THE HOURLY FRATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FRATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FRATING OTHER WALL ASSEMBLY IN WHICH IT IS INSTALLED.

2. THROUGH PENETRAYTS - ONE METALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. PIPE, CONDUIT OR TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. THE ANNURLE SPACE STREAM THE THE PENETRIEN OF THE OPENING SHALL BE MIN O IN. TO MAX 1/4 IN. THE FOLLOWING TYPES AND SUZES OF METALLIC PIPES, CONDUITS OR TUBING MAY BE USED:

A. STEEL PIPE - NOM 12 IN. DIA (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

A STEEL PIPE "NOW IZ IN DICK OS SMALLER, STEEL BLOTTER HOVIET STEEL PIPE.

C. CONDUIT - NOM IZ IN DICK STAMLLER, STEEL ELECTRICAL IMPAILER OF STEEL CONDUIT.

C. CONDUIT - NOM 6 IN. DICK OS SMALLER, STEEL ELECTRICAL IMPAILER THALLE TUBING OR STEEL CONDUIT.

E. COPPER TUBING - NOM 6 IN. DICK OS SMALLER, STEEL ELECTRICAL IMPAILER COPPER TUBING.

E. COPPER TUBING - NOM 6 IN. DICK OS SMALLER, STEEL OF HEAVIER, COPPER TUBING.

3. FILL VOID, OR CAVITY MATERIAL* - SEALANT - FILL MATERIAL TO BE FORCED INTO THE ANNULUS TO MAXIMUM EXTENT POSSIBLE ADDITIONAL FILL MATERIAL TO BE INSTALLED SUCH THAT A MIN 1/2 IN. CROWN IS FORMED AROUND THE PENETRATING ITEM AND LUPPING 1/AI. BEYOND THE PERIPETRATING ITEM AND LUPPING 1/AI. BEYOND THE PERIPETRATING THE OPENING.

L Rating At 400 F -- 2 CFM/sq ft 2

2 3 SECTION A-A

System No. C-AJ-8056

I FLOOR ON WALL ASSERBLY — A 17.0 IN THEXE REINFORCED LIGHTWIGENT OR NORMAL WEIGHT (100-160 PCC). CONCERTE WALL MAY ALSO BE CONSTRUCTED OF ANY ILL CLASSIFIED CONCERTE BLOCKS. MAX AREA OF ORENING IS 1256 IN. SOWITH MAX DIMENSION OF 36 IN. SOWITH AND DIMENSION OF 36 IN. CO. AND DIMENSION OF SOWITH AND DIMENSION OF 36 IN. CO. AND DIMENSION OF SOWITH AND DIMENSION OF SO

JSED: I. NOM 6 IN. DIA (OR SMALLER) RIGID GALV STEEL CONDUIT. I. NOM 4 IN. DIA IOR SMALLERI STEEL ELECTRICAL METALLIC TUBING.

ALL STITMENTS LUL.

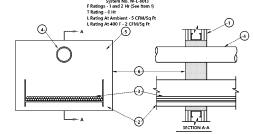
HILTI FIRESTOP SYSTEMS

REPRODUCED BY HILTI, INC. COURTESY OF U

USED:

OF THE DIA (OR SMALLES) PRICE CALLED FOR THE CONDUIT

A NOW! AND DIG SMALLES PRICE LICETRICAL METALLE TIBING.
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DIVIDING THE CONTROL OF THE CONTROL T



I WAIL ASSEMBLY — THE FOR Z HE FIRE FATTED GYPSUM BOARD/STUD WAIL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIED IN THE INDRODUCE WAS CONTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIED IN THE INDRODUCE WAS CONTRUCTED OF THE ERESTISTANCE DIRECTORY AND SALL INCLUDE THE FOLLOWING CONTRUCTION FEATURES.

A STUDS — WAIL FRAMING MAY CONSIST OF ETHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOW 2 NI. 6, 15 Ming 91 × 11, (02 Ming) LUMBER SPACED IS NI. 4005 MING SCREET STUDS TO SEME 7-12 NI. (4 MING) WOOD STUDS ON SPACED MAY 2 AN I. (60 MING) OC. ADDITIONAL STUDS INSTALLED TO COMPLETELY FRAME THE OPENING.

B. GYSSUM BOADD — 5/3 NI. (18 MING) HICK, 24 PT (20 MIN WING WITH SCALLE) OR TO SPACED BOADS. THE STUDS HIS STAND WAS CONTROLLED TO SEMENTIAL BOADS OF THE STUDS HIS STAND WAS CONTROLLED TO SEMENTIAL BOADS OF THE STUDS HIS STAND WAS CONTROLLED TO SEMENTIAL BOADS OF THE STUDS HIS STAND WAS CONTROLLED TO SEMENTIAL BOADS OF THE WAIL ASSEMBLY IN WHICH IT IS INSTALLED.

INSTALLED.

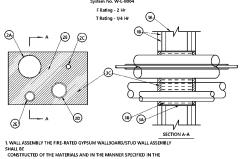
C. CABLE TRAY — MAX 18 IN. (457 MM) WIDE BY MAX 6 IN. (157 MM) DEP OPEN-LADDER OR SOLID-BACK CABLE TRAY WITH CHANNEL-SHPED SIDE BEALS FORMED OF 0.05 IN. (1.58 MM) THICK STEEL AND WITH CHANNEL-SHPED SIDE BEALS FORMED OF 0.05 IN. (1.58 MM) THICK STEEL AND WITH CYPE. IN. (1.58 MM) WIDE BY 11 IN. (2.58 MM) CHANNEL SHAPE RUNGS SPACED BY (2.29 MM) OC 0.76 AO 221 IN. (1.78 MM) THICK STEEL AND WITH CABLE TRAY AND THE PERIPHERY OF THE OPENING SHALL BE MIN 11N. (2.5 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE RUNG SHALL BE MIN 11N. (2.5 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE RUNG SHALL BE MIN 11N. (2.5 MM) TO MAX 7 IN. (178 MM) CABLE TRAY TO BE CABLE TRAY SHOWN TO SHAPE SHAPE

NO. I. AWG WITH POLYVINYL, CHOORDE (MYC) INSULATIOR AND PYC JACKET.
PAIR - NO. 25 AWG CABLE WITH PYC INSULATIOR AND PYC JACKET.
PAIR - NO. 25 AWG CABLE WITH PYC INSULATION AND JACKET.
GRIP - NO. 25 AWG CABLE WITH PYC INSULATION AND JACKET.
GRIP - DETERMENT SO DEFENDED TO THE SIZE OF THE OPENING AND TYPES AND SIZES OF THE PINETRANTS. AND THE PINETRANTS AND SIZES OF THE PINETRANTS. AND SIZES OF THE PINETRANTS. AND THE PINETRANTS AND THE

IN BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING 11FED AND
18 MAY 9E USED:
1. CHORDISE (PROC) PIRE — MAX 3 IN, (76 MM) DIA SCHEDULE 49 SOLID CORE PVC PIPE (OR SMALLER) FOR USE IN
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1. CHORDISE (PROC) PIPE (



HILTI FIRESTOP SYSTEMS
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CONSTRUCTED OF THE MENTAL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES: DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES A. STUDS WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL

ANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.

ATERIAL

TO BE RECESSED FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATI

THE REQUIRED THICKNESS OF FILL MATERIAL

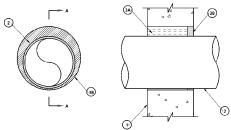
C. FILL, VOID OR CAVITY MATERIAL* - SEALANT MIN 1/2 IN. THICKNESS OF FILL

S. 1.F.

ATERIAL
APPUED WITHIN THE ANNUIUS, FIUSH WITH BOTH SURFACES OF WALL
HILTI CONSTRUCTION CHEMICALS, DIV OF
HILTI INC. +5-OH SEATANT
EARING THE ULCUSSIFICATION MARKING

REPRODUCED BY HILTI, INC. COURTESY OF UNDERWRITERS LABORATORIES, INC.

CAN/ULC S115 F RATING - 1 AND 2 HR (SEE ITEM 3) T RATING - 0 HR F RATING - 1 AND 2 HR (SEE ITEM 3) - 1 AND 2 HP (SEE ITEM 3



1. WALL ASSEMBLY — MIN 3-3/4 IN, 95 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (180-150 PCF OR 1800-2400 KG/M3) CONCRETE, WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFED CONCRETE BLOCKS*, MAX DIAMETER OF OPENING 10-1/2 PL, (267 MM).

(267 MM).

CRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

OH-PRINTRAMIS—ONE MITALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED ETHER CONCENTRICALLY OR

OH-PRINTRAMIS—ONE MITALLIC PIPE, CONDUIT OR TUBING TO BE INSTALLED ETHIES CONCENTRICALLY OR

CREATED AND SETS OF METALLIC PIPE, CONDUITS OR TUBING TO MIN 14 N IN CAME 1-18 N III, (14 MIN) SETCURED IN INCH TYPE AND SETS OF WALL ASSEMBLY. THE

INCY TYPE AND SETS OF METALLIC PIPE, CONDUITS OR TUBING MAY BU USED.

INCE TYPE AND SETS OF METALLIC PIPE, CONDUITS OR TUBING MAY BU USED.

INCH TYPE AND SETS OF METALLIC PIPE, CONDUITS OR TUBING MAY BU USED.

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INCH TYPE AND SETS OF METALLIC PIPE, CONDUITS OR TUBING MAY BUS ORDER OF METALLIC PIPE.

ONLY BUT ONLY MAY BUS OR MIN DAWN OR SMALLERS OF THE LEGENCE OR PIPE.

DUT — NOM 8 IN. (239 MM) DAWN OR SMALLER) STEEL LEGENCE AND THE METALLIC TUBING (MM) OR 6 IN. DAM STEEL

OUT — NOM 8 IN. (239 MM) DAWN OR SMALLER) STEEL LEGENCE AND THE METALLIC TUBING (MM) OR 6 IN. DAM STEEL

OUT — NOM 8 IN. (230 MM) DAWN OR SMALLER) STEEL LEGENCE AND THE METALLIC TUBING (MM) OR 6 IN. DAM STEEL

OUT — NOM 8 IN. (230 MM) DAWN OR SMALLER) STEEL LEGENCE AND THE METALLIC TUBING (MM) OR 6 IN. DAM STEEL

E4.02

ELECTRICAL DETAILS

08.24.2020

Bid Set

ARCHITECTURE INTERIORS

WATSON TATE SAVORY

NC STATE

UNIVERSIT

optima engineering 150 Fovetteville St. Suite 520, Roleids NC 27601 1927 South Tryon St. Suite 500, Charlotte NC 28203 Phone: 919-926-2280 - www.optinsengineering.com North Carolina License Number C-0914

Jordan Hall Library Renovation

ISSUE DATE

PHASE:

Watson Tate Savory NCSU Jordan Hall

PLANNING