



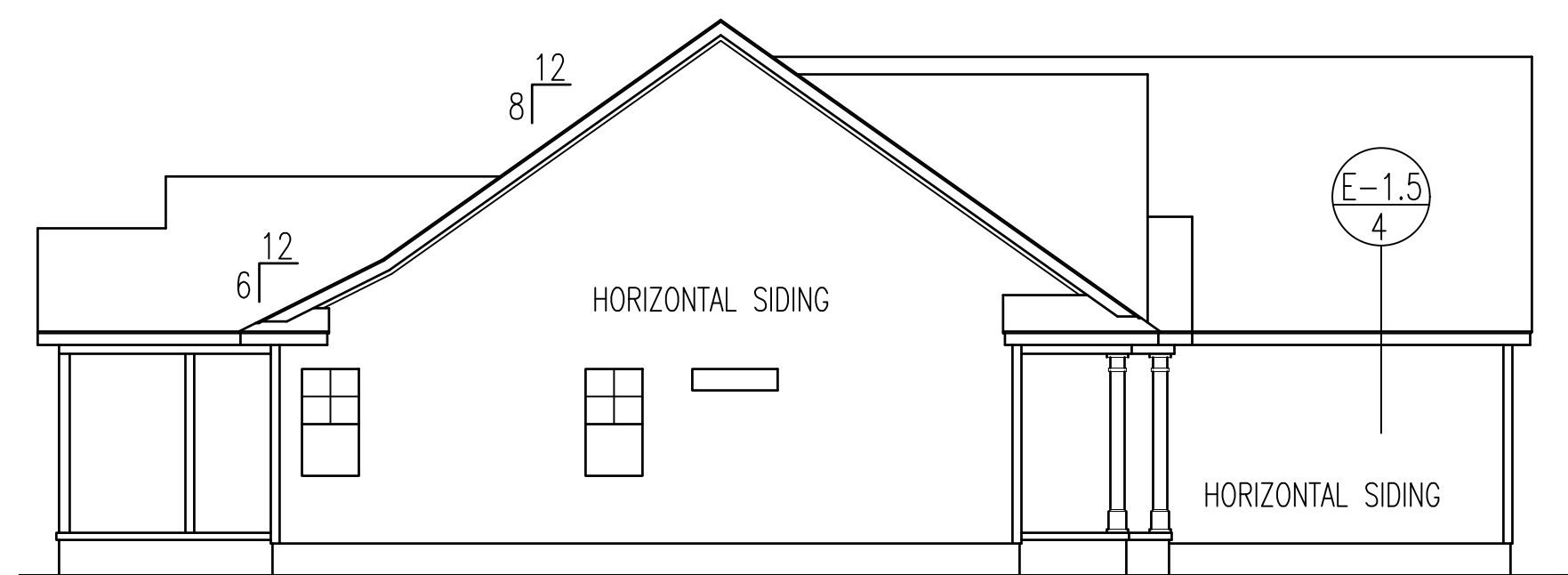
NOTICE TO CONTRACTOR  
All construction must comply with current NC Building Codes and is subject to field inspection and verification.

**APPROVED**  
Limited building only review.  
Owner/Builder responsible for full compliance with the code.

03/14/2022

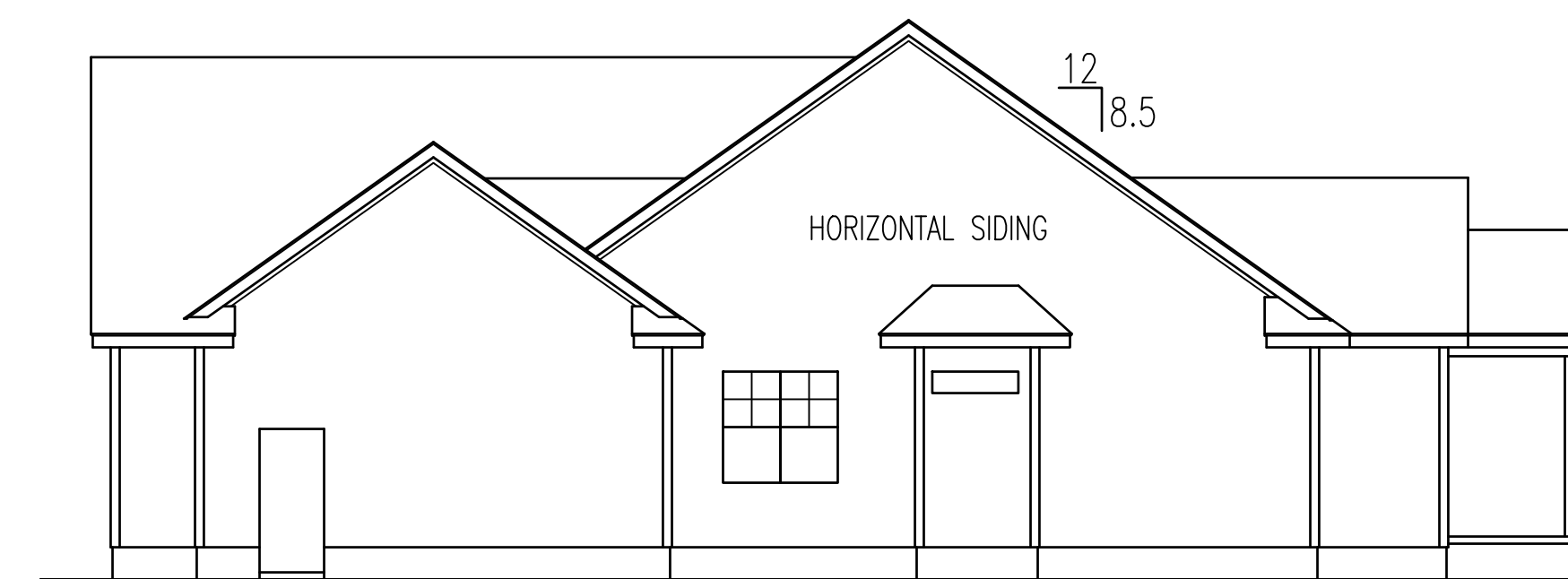
FRONT ELEVATION  
SCALE: 1/4" = 1'-0"



LEFT ELEVATION

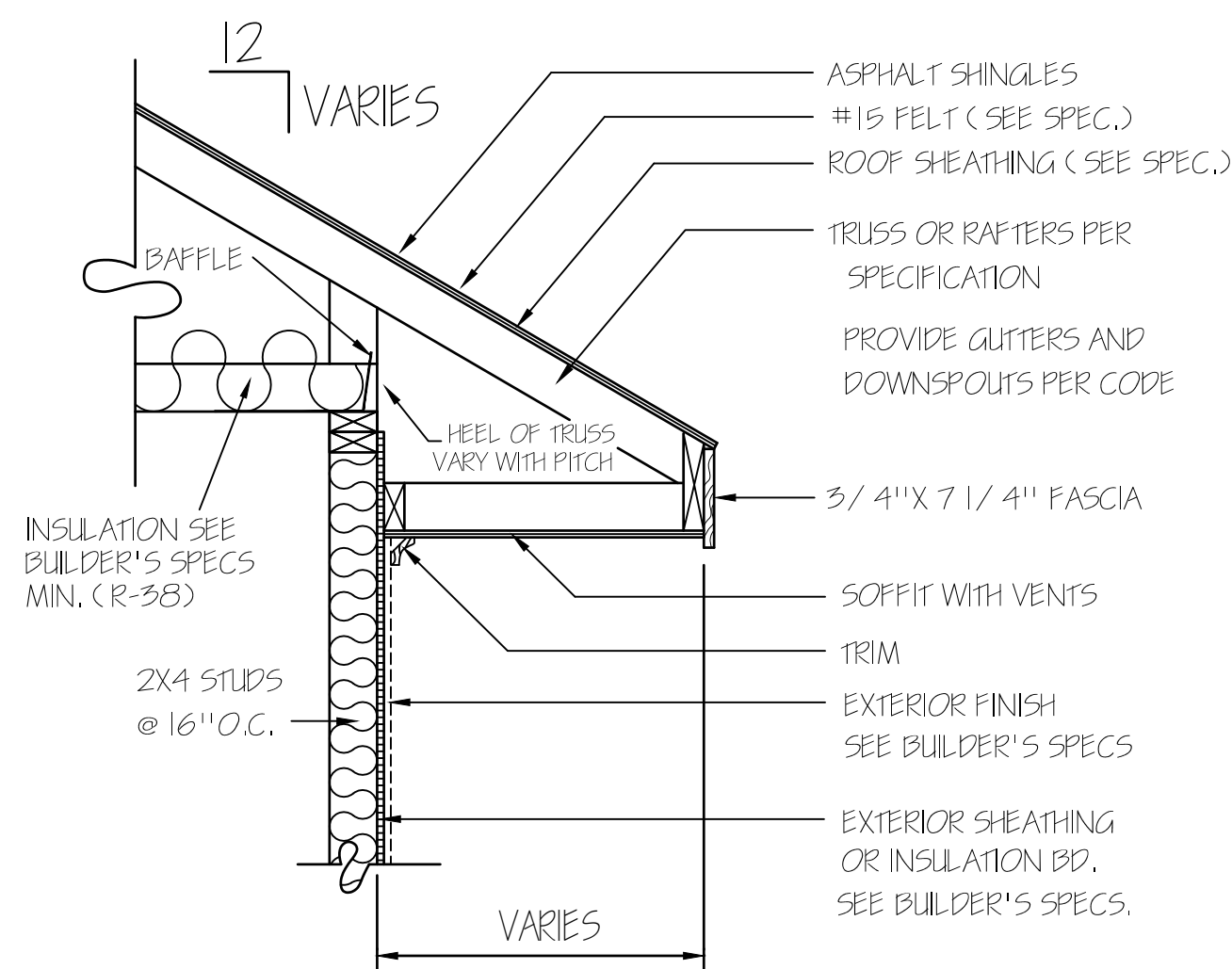
**ATTIC VENTILATION CALCULATIONS**

ATTIC AREA	3320 SQ.FT.	(AREA VENTILATION REQUIRED)	19.9 SQ.FT.
2' EACH 2' FT. BASE GABLE LOUVER @ 2' SQ.FT. NET FREE AREA	2	2	4
2' EACH 2' FT. BASE GABLE LOUVER @ 2' SQ.FT. NET FREE AREA	2	2	4
2' EACH 2' LOUVER @ 2' SQ.FT. NET FREE AREA	2	2	4
85 LIN.FT. EAVE VENT @ 11 SQ.IN./FT. = 6.5 SQ.FT. NET FREE AREA	85	11	6.5
128 LIN.FT. RIDGE VENT @ 18 SQ.IN./FT. = 16 SQ.FT. NET FREE AREA	128	18	16

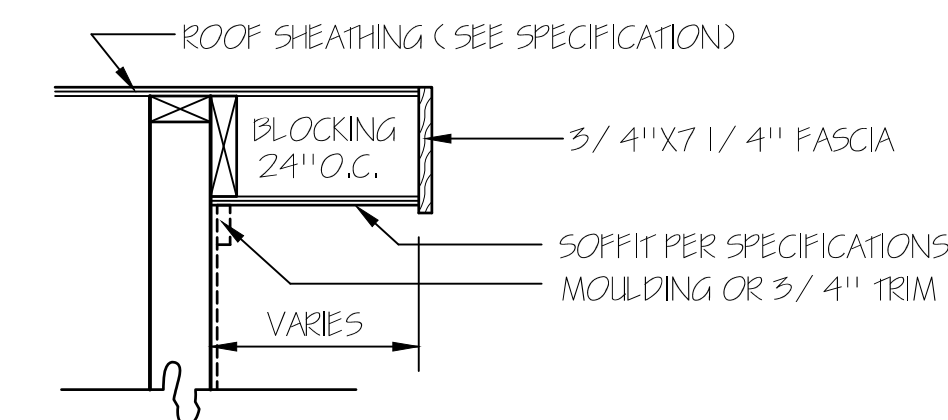


RIGHT ELEVATION

HERO PACKAGE



REAR ELEVATION  
SCALE: 1/8" = 1'-0"



RAKE DETAIL FOR GABLE ENDS

EXCLUSIVE RESIDENCE DESIGN FOR:

# WATERMARK HOMES

NAME: OLEANDER II

LOT: 38 OAK HAVEN

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TM DESIGNS WILL NOT BE LIABLE FOR ANY ERRORS NOT BROUGHT TO THEIR ATTENTION PRIOR TO THE START OF CONSTRUCTION. WHILE EVERY EFFORT WAS MADE IN THE PREPARATION OF THESE DRAWINGS AND DIMENSIONS TO AVOID ERRORS THE OWNER AND/OR BUILDER SHALL VERIFY ALL DIMENSIONS, DETAILS, LOCAL AND STATE CODES.

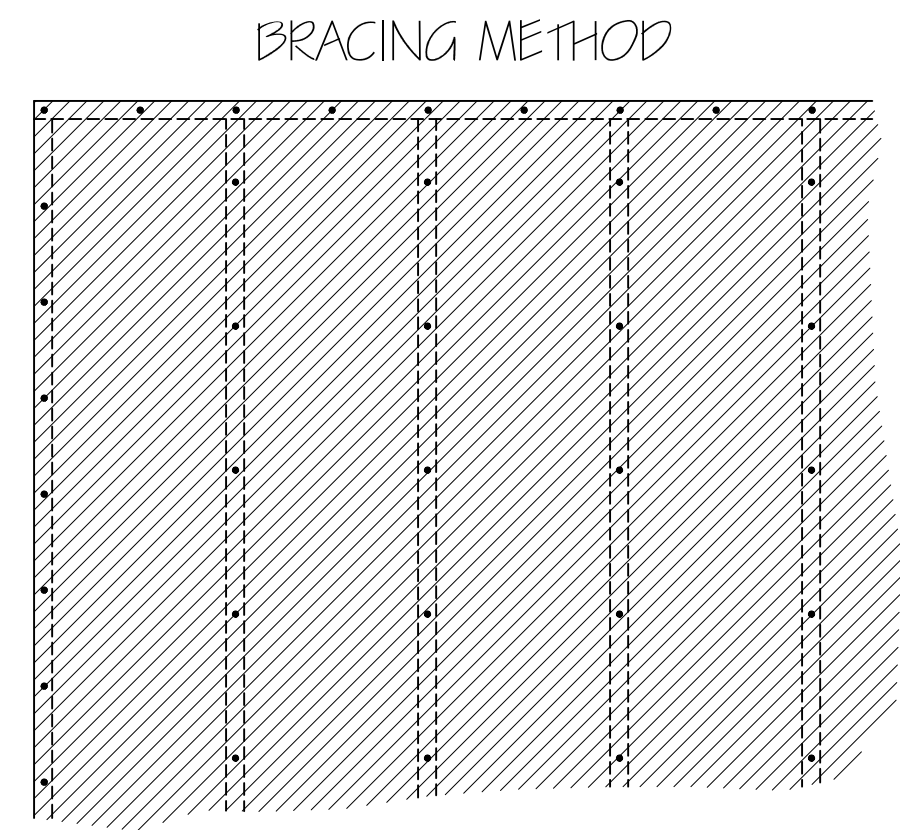
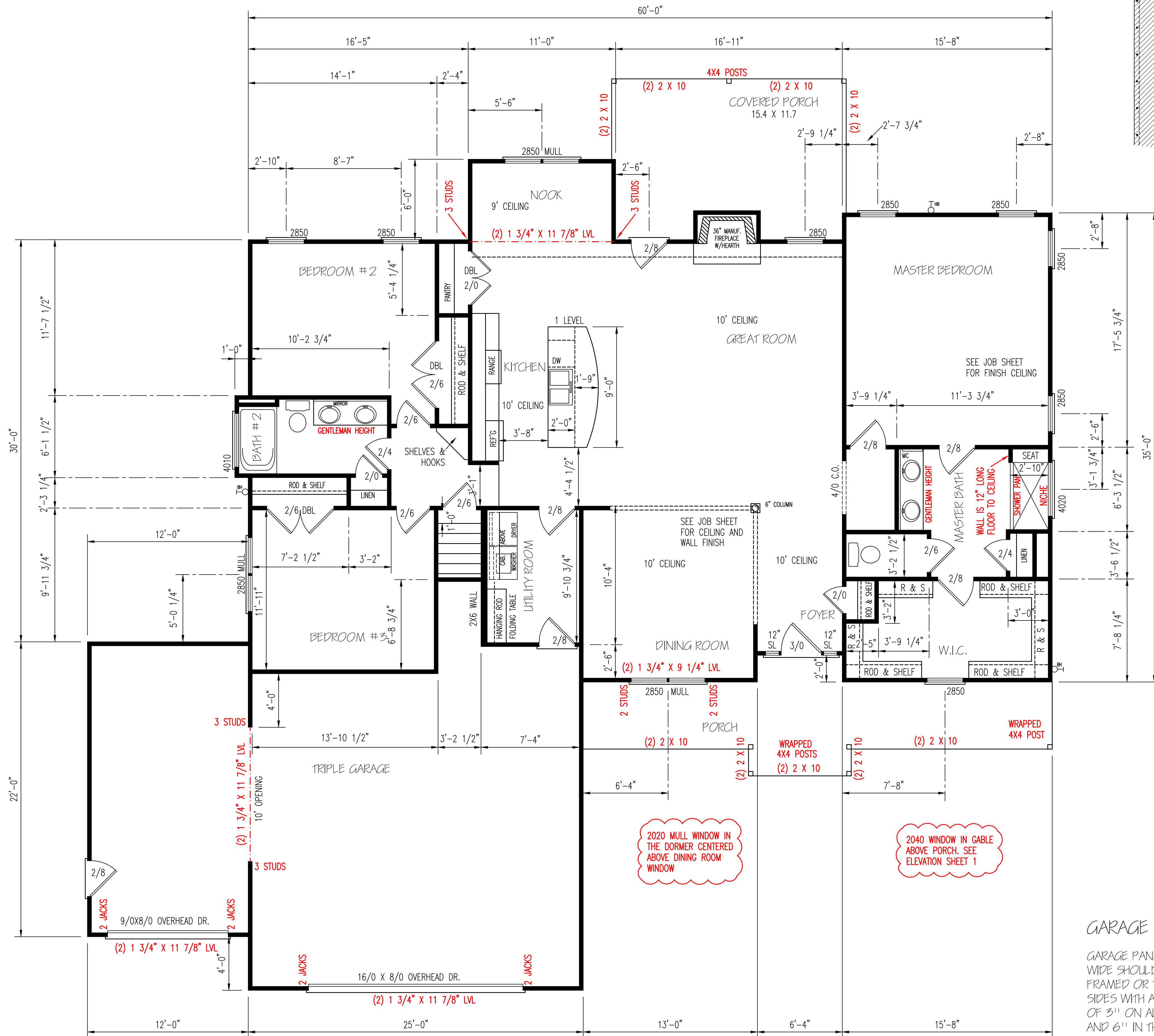
I HEREBY CERTIFY THAT THIS DRAWING MEETS LOCAL CODES, 2012 INTERNATIONAL BUILDING CODES.

THIS IS FOR THE CONSTRUCTION OF ONE HOUSE ON A SINGLE LOT, NOT TO BE REUSED.

PLAN NUMBER  
RG16-A01  
OPTION #4

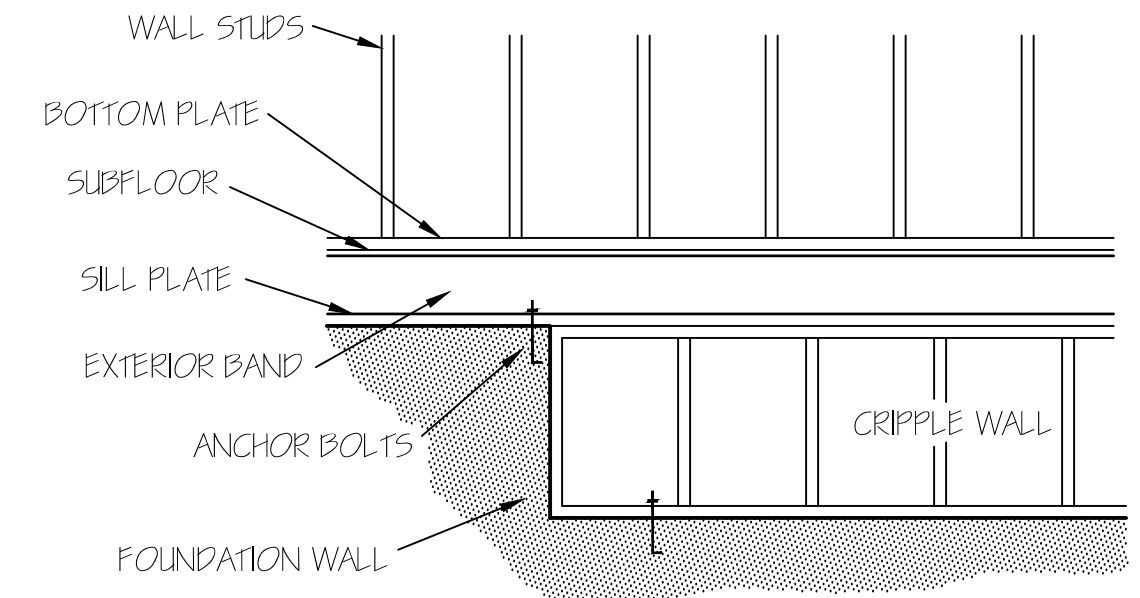
1	GARAGE	R	F
	DATE:	12/18/19	

**TM DESIGNS**  
RESIDENTIAL PLANS BY TINA MCFADDEN  
(910) 354-4736 TMDESIGNS2016@GMAIL.COM

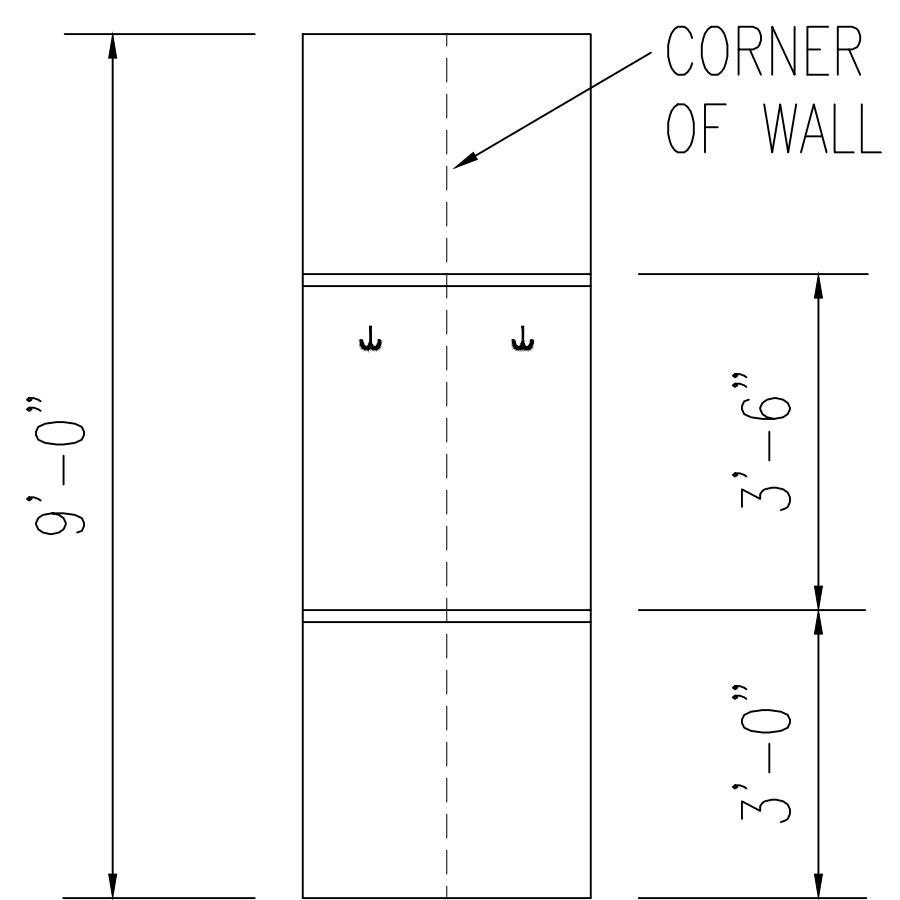


EXTERIOR WALL TO BE FULLY SHEATHED WITH 7/16\"/>

**ENERGY TABLE**  
 UFACTOR OF WINDOWS .30  
 CLIMATE ZONE 3  
 INSULATION: WALLS 15  
 CEILING 3/8  
 FLOORS 19



FOUNDATION CRIPPLE WALLS SHALL BE FRAMED OF STUDS NOT SMALLER THAN THE STUDDING ABOVE. WHEN EXCEEDING 4 FT. IN HEIGHT, SUCH WALLS SHALL BE FRAMED OF STUDS HAVING THE SIZE REQUIRED FOR AN ADDITIONAL STORY. CRIPPLE WALLS WITH A STUD HEIGHT LESS THAN 14 INCHES SHALL BE CONTINUOUSLY SHEATHED ON ONE SIDE WITH WOOD STRUCTURAL PANELS FASTENED TO BOTH THE TOP AND BOTTOM PLATES IN ACCORDANCE WITH TABLE R602.2.5(1), OR CRIPPLE WALLS SHALL BE CONSTRUCTED OF SOLID BLOCKING.



SHELVES IN HALLWAY DETAIL

**HERO PACKAGE**

**FIRST FLOOR PLAN**  
 SCALE: 1/4" = 1'-0"

HEATED AREA

1ST FL	2015	50 FT
2ND FL	399	50 FT
TOTAL	2414	50 FT

OTHER AREAS

GARAGE	894	50 FT
F.PORCH	203	50 FT
R.PORCH	208	50 FT

**NOTE:**  
 CEILINGS ARE 9'-0\"/>

**GARAGE PANEL WALL**

GARAGE PANEL WALLS UNDER 24\"/>

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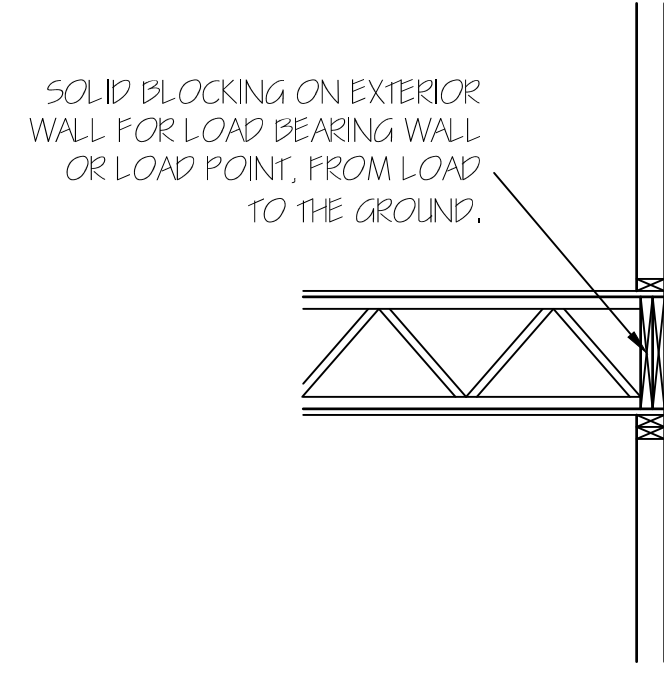
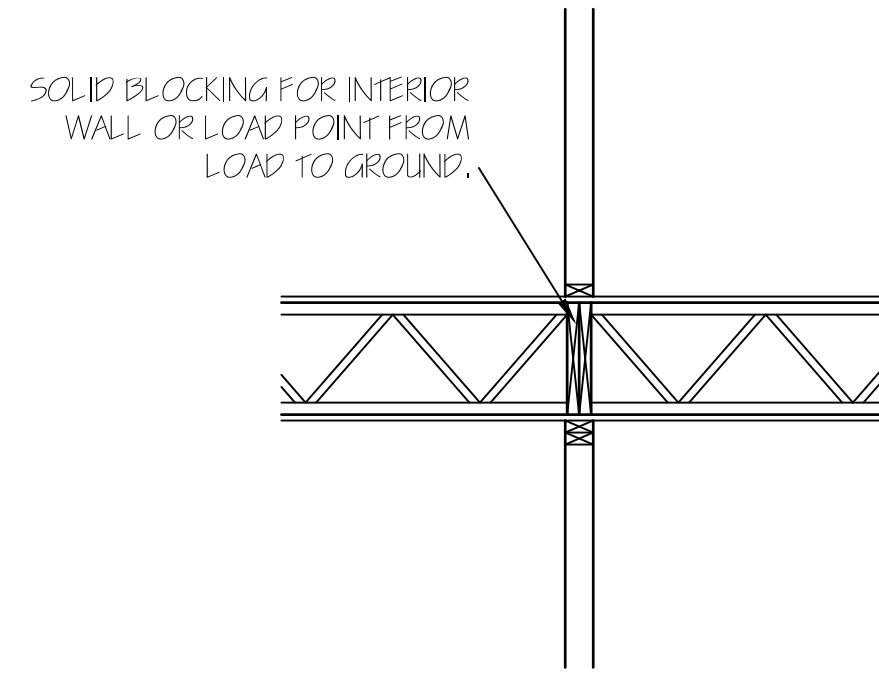
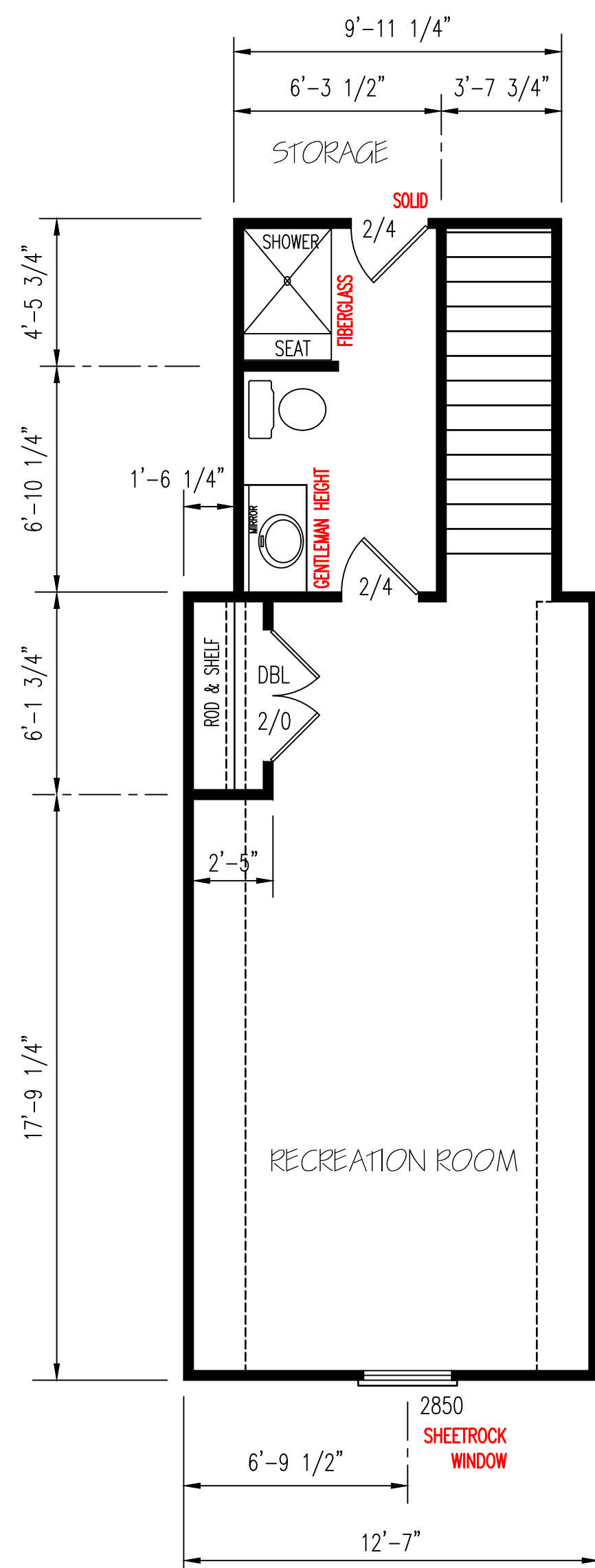
**WATERMARK HOMES**  
 LOT: 12 SPRING BRANCH  
 NAME: OLEANDER II

EXCLUSIVE RESIDENCE DESIGN FOR:

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**PLAN NUMBER**  
 RG16-A01  
**OPTION #4**

<b>2</b>	<b>GARAGE</b>	<b>L</b>	<b>F</b>
	<b>DATE:</b>	12/18/19	



RECREATION ROOM  
SCALE: 1/4" = 1'-0"

S.Y.P. (2) 2X10 HEADERS	
CLEAR SPAN FOR HEADER	NUMBER OF JACK STUDS
ALL DOOR & C.O. WIDTH 5'-0" & BELOW	1
ALL DOOR & C.O. WIDTH ABOVE 5'-0"	2
3/0 DOOR W/ SIDE LITES	2
ALL SINGLE WINDOWS	1
ALL TWIN WINDOWS	2
ALL TRIPLE WINDOWS	3

\*\*UNLESS NOTED OTHER WISE\*\*

EXCLUSIVE RESIDENCE DESIGN FOR:

# WATERMARK HOMES

LOT: 12 SPRING BRANCH

NAME: OLEANDER II

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PLAN NUMBER  
RG16-A01  
OPTION #4

2	GARAGE	L	F
	DATE:	12/18/19	

**TM DESIGNS**  
RESIDENTIAL PLANS BY TINA MCFADDEN  
(910) 354-4736 TMDESIGNS2016@GMAIL.COM





# ROOF & FLOOR TRUSSES & BEAMS

Reilly Road Industrial Park  
Fayetteville, N.C. 28309  
Phone: (910) 864-8787  
Fax: (910) 864-4444

**THIS IS A TRUSS PLACEMENT DIAGRAM ONLY.**  
These trusses are designed as individual building components to be incorporated into the building design at the specification of the building designer. The individual design sheets for each truss design identified on the drawing are the property of the building designer. The building designer is responsible for the design of the building structure including trusses, beams, walls and columns. It is the responsibility of the building designer to ensure that the trusses are properly supported and that the building structure is designed to support the reactions from the trusses. For general guidance regarding trusses, consult ICC-ES and ICC-ES provided with the truss delivery package or online at [www.iccsafe.com](http://www.iccsafe.com).

Bearing reactions less than or equal to 3000# are deemed to comply with the prescriptive Code requirements. The contractor shall refer to the attached Tables (derived from the prescriptive Code requirements) to determine the minimum foundation size and number of wood studs required to support reactions greater than 3000# but not greater than 1500#. A registered design professional shall be retained to design the support system for any reaction that exceeds those specified in the attached Tables. A registered design professional shall be retained to design the support system for all reactions that exceed 1500#.

Signature: \_\_\_\_\_  
Sales Area

Truss List	Truss	Qty	Span	Ply	Overhang	Height
A1-GE	1	39' 11"	1	1' 3"	11' 5 3/4"	
A2	7	39' 11"	1	1' 3"	11' 5 3/4"	
A3	3	37' 11"	1		11' 5 3/4"	
A4	1	37' 11"	1		11' 5 3/4"	
A5	6	37' 11"	1	L: 1' 3" R: 1' 3"	11' 5 3/4"	
A6	4	30' 3 3/4"	1		11' 5 3/4"	
A7	2	20' 1 1/2"	1	L: 1' 3" R:	11' 5 3/4"	
A7A	4	20' 1 1/2"	2	L: 1' 3" R:	11' 5 3/4"	
A8	3	32' 4"	1	L: 1' 3" R:	11' 5 3/4"	
A9-GE	1	32' 4"	1	L: 1' 3" R:	11' 5 3/4"	
B1-GE	1	17' 7"	1	1' 3"	5' 8 7/16"	
B2	2	17' 7"	1	1' 3"	5' 8 7/16"	
C1-GE	1	28' 2 1/2"	1	1' 3"	8' 4 5/16"	
C2	1	28' 2 1/2"	1	1' 3"	8' 4 5/16"	
C3	1	28' 2 1/2"	1	L: 1' 3" R:	8' 4 5/16"	
D1-GE	1	24' 11"	1	1' 3"	11' 5 3/4"	
D2	1	24' 11"	1	1' 3"	11' 5 3/4"	
D3	7	24' 11"	1	L: 1' 3" R:	11' 5 3/4"	
D4	2	24' 11"	1		11' 5 3/4"	
D5	1	24' 11"	1		11' 5 3/4"	
E1-GE	1	7' 7"	1	1' 3"	5' 9 7/16"	
E2	1	7' 7"	1		5' 9 7/16"	
G1-GE	1	21' 11"	1	1' 3"	9' 4 1/4"	
G2	5	21' 11"	1	1' 3"	9' 4 1/4"	
PB1	2	10' 0"	1		3' 6 1/2"	
PB2	24	10' 0"	1		3' 6 1/2"	
PB3	4	6' 2"	1		3' 6 1/2"	
PB4	12	5' 11 5/16"	1		2' 11 11/16"	
VA-1	1	23' 3 9/16"	1		11' 7 3/4"	
VA-2	1	20' 5 9/16"	1		10' 2 3/4"	
VA-3	1	17' 7 9/16"	1		8' 9 3/4"	
VA-4	1	14' 9 9/16"	1		7' 4 3/4"	
VA-5	1	11' 11 9/16"	1		5' 11 3/4"	
VA-6	1	9' 1 9/16"	1		4' 6 3/4"	
VA-7	1	6' 3 9/16"	1		3' 1 3/4"	
VA-8	1	3' 5 9/16"	1		1' 8 3/4"	
VC-1	1	26' 10 5/8"	1		6' 8 5/8"	
VC-2	1	21' 2 5/8"	1		5' 3 5/8"	
VC-3	1	15' 6 5/8"	1		3' 10 5/8"	
VC-4	1	9' 10 5/8"	1		2' 5 5/8"	
VC-5	1	4' 2 5/8"	1		1' 0 5/8"	

Connector Information				Nail Information		
Sym	Product	Manuf	Qty	Supported Member	Header	Truss
JUS26	USP	4	Varies	10d3"	10d3"	10d3"

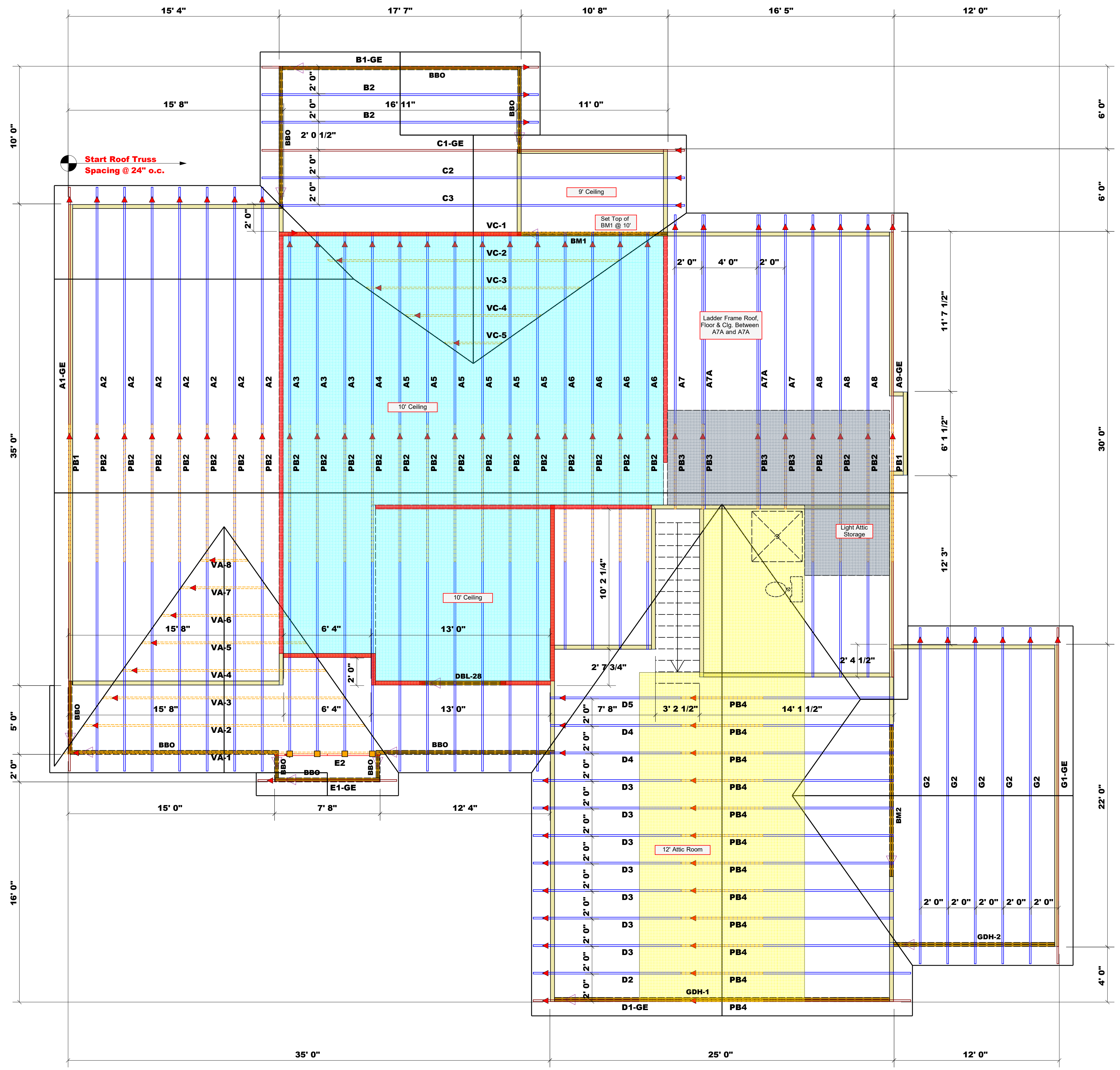
Beam Schedule					
ProdID	Length	Product	Pieces	Net Qty	Fab Type
BM1	11' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF
BM2	11' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF
DBL-28	7' 0"	1-3/4"x 9-1/4" LVL Kerto-S	2	2	FF
GDH-1	25' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF
GDH-2	12' 0"	1-3/4"x 11-7/8" LVL Kerto-S	2	2	FF

▲ = Indicates Left End of Truss (Reference Engineered Truss Drawing) Do Not Erect Trusses Backwards

Roof Area = 4581.87 sq.ft.  
Ridge Line = 161.78 ft.  
Hip Line = 0 ft.  
HORIZ. OH = 122.65 ft.  
RAKED OH = 278.43 ft.  
Decking = 158 sheets

All Walls Shown Are Considered Load Bearing

WALL SCHEDULE	
	9' Plate Height
	10' Plate Height
	Non-Bearing Walls



**Truss Placement Plan**  
SCALE: 1/4" = 1'-0"

BUILDER	Watermark Homes	JOHNSTON COUNTY	Johnston County
JOB NAME	Lot 38 Oak Haven	ADDRESS	Lot 38 Oak Haven
PLAN	Oleander II Plan	MODEL	Roof
SEAL DATE	12/18/19	DATE REV.	8/10/21
QUOTE #	NA	DRAWN BY	Anthony Williams
JOB #	J0322-1076	SALESMAN	Anthony Williams

LOAD CHART FOR JACK STUDS					
BASED ON TABLES SMC201 & S10					
NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADERS/BEAM		NUMBER OF JACK STUDS REQUIRED @ EA END OF HEADERS/BEAM			
REQ'D STUDS FOR (L) TO (R)	REQ'D STUDS FOR (L) TO (R)	REQ'D STUDS FOR (L) TO (R)	REQ'D STUDS FOR (L) TO (R)		
1700	1	2550	1	3400	1
3400	2	5100	2	6800	2
5100	3	7650	3	10200	3
6800	4	10200	4	13600	4
8500	5	12750	5	17000	5
10200	6	15300	6		
11900	7				
13600	8				
15300	9				

# Reaction Summary of Order



**ROOF & FLOOR TRUSSES & BEAMS**  
 Reilly Road Industrial Park P.O. Box 40408  
 Fayetteville, N.C. 28309 (910) 864-TRUS

REQ. QUOTE DATE	/ /	ORDER #	J0322-1076
ORDER DATE	03/01/22	QUOTE #	
DELIVERY DATE	/ /	CUSTOMER ACCT #	000030
DATE OF INVOICE	/ /	CUSTOMER PO #	
ORDERED BY	Brady Rufenacht	INVOICE #	
COUNTY	Johnston	TERMS	Net 10 Days
SUPERINTENDANT	Justin Thomas	SALES REP	Anthony Williams
JOBSITE PHONE #	(910) 759-1307	SALES AREA	Anthony Williams

SOLD TO	<b>Watermark Homes, Inc.</b> 196 Annette Drive Benson, NC 27504 (919) 938-8194	<b>JOB NAME:</b> Lot 38 Oak Haven <b>MODEL:</b> Roof <b>TAG:</b> Oleander II <b>DELIVERY INSTRUCTIONS:</b>	<b>LOT #</b> 38 <b>SUBDIV:</b> Oak Haven <b>JOB CATEGORY:</b> Residential - Roof
	<b>Watermark Homes</b> Lot 38 Oak Haven Benson, NC	<b>SPECIAL INSTRUCTIONS:</b> Copied from Lot 12 Spring Branch (J0821-4825)jb	<b>PLAN SEAL DATE:</b> BY      DATE

<b>BUILDING DEPARTMENT</b>	<b>OVERHANG INFO</b>	<b>HEEL HEIGHT</b>	00-06-08	<b>REQ. LAYOUTS</b>	<b>REQ. ENGINEERING</b>	<b>QUOTE</b>	/ /	
Roof Order	<b>END CUT</b>	<b>RETURN</b>				<b>LAYOUT</b>	/ /	
	NO		<b>GABLE STUDS</b>	16 IN. OC	JOBSITE 1	JOBSITE 1	<b>CUTTING</b>	/ /

<b>ROOF TRUSSES</b>	<b>LOADING INFORMATION</b>	TCLL-TCDL-BCLL-BCDL	STRESS INCR.	<b>ROOF TRUSS SPACING:</b> 24.0 IN. O.C. (TYP.)
		20.0,10.0,0.0,10.0	1.15	

PROFILE	QTY	PITCH		TYPE ID	BASE O/A	LUMBER		OVERHANG		REACTIONS				
		TOP	BOT			TOP	BOT	LEFT	RIGHT					
	1	6.00	0.00	GABLE A1-GE	39-11-00 39-11-00	2 X 6	2 X 6	01-03-00	01-03-00	Joint 2 274.3 lbs. -129.9 lbs.	Joint 26 209.7 lbs. -66.5 lbs.	Joint 27 196.4 lbs. -222.7 lbs.	Joint 28 174.9 lbs. -68.9 lbs.	Joint 29 179.0 lbs. -97.3 lbs.
	7	6.00	0.00	PIGGYBACK A2	39-11-00 39-11-00	2 X 6	2 X 6	01-03-00	01-03-00	Joint 2 1417.8 lbs. -83.8 lbs.	Joint 14 1904.8 lbs. -79.4 lbs.			
	3	8.50	0.00	PIGGYBACK A3	37-11-00 37-11-00	2 X 6	2 X 6			Joint 1 1230.3 lbs. -54.1 lbs.	Joint 10 216.1 lbs. -90.0 lbs.	Joint 13 1586.6 lbs. -42.5 lbs.		
	1	8.50	0.00	PIGGYBACK A4	37-11-00 37-11-00	2 X 6	2 X 6			Joint 1 1316.0 lbs. -54.7 lbs.	Joint 10 132.8 lbs. -38.7 lbs.	Joint 13 1569.6 lbs. -68.6 lbs.		
	6	8.50	0.00	PIGGYBACK A5	37-11-00 37-11-00	2 X 6	2 X 6		01-03-00	Joint 1 1286.8 lbs. -57.2 lbs.	Joint 14 1803.6 lbs. -80.2 lbs.			
	4	8.50	0.00	PIGGYBACK A6	30-03-12 30-03-12	2 X 6	2 X 6			Joint 1 1199.5 lbs. -44.4 lbs.	Joint 8 1201.7 lbs. -15.7 lbs.			
	2	8.50	0.00	PIGGYBACK A7	20-01-08 20-01-08	2 X 6	2 X 10	01-03-00		Joint 2 1032.0 lbs. -5.6 lbs.	Joint 9 1332.1 lbs. -163.6 lbs.			
	2 2 Ply	8.50	0.00	PIGGYBACK A7A	20-01-08 20-01-08	2 X 6	2 X 10	01-03-00		Joint 2 2064.1 lbs. -11.2 lbs.	Joint 9 2664.2 lbs. -327.2 lbs.			
	3	8.50	0.00	PIGGYBACK A8	32-04-00 32-04-00	2 X 6	2 X 10	01-03-00		Joint 2 1192.3 lbs. -64.7 lbs.	Joint 11 1019.2 lbs. -59.6 lbs.	Joint 13 772.6 lbs. 6.8 lbs.		
	1	8.50	0.00	GABLE A9-GE	32-04-00 32-04-00	2 X 6	2 X 6	01-03-00		Joint 20 262.8 lbs. -242.7 lbs.	Joint 21 341.8 lbs. -206.6 lbs.	Joint 22 180.3 lbs. -104.1 lbs.	Joint 23 180.7 lbs. -74.3 lbs.	Joint 24 165.8 lbs. 11.2 lbs.
	1	6.00	0.00	GABLE B1-GE	17-07-00 17-07-00	2 X 6	2 X 6	01-03-00	01-03-00	Joint 2 768.8 lbs. -203.6 lbs.	Joint 10 768.8 lbs. -203.6 lbs.			

# Reaction Summary of Order





**ROOF & FLOOR TRUSSES & BEAMS**  
 Reilly Road Industrial Park P.O. Box 40408  
 Fayetteville, N.C. 28309 (910) 864-TRUS

REQ. QUOTE DATE	/ /	ORDER #	J0322-1076
ORDER DATE	03/01/22	QUOTE #	
DELIVERY DATE	/ /	CUSTOMER ACCT #	000030
DATE OF INVOICE	/ /	CUSTOMER PO #	
ORDERED BY	Brady Rufenacht	INVOICE #	
COUNTY	Johnston	TERMS	Net 10 Days
SUPERINTENDANT	Justin Thomas	SALES REP	Anthony Williams
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SOLD TO	<b>Watermark Homes, Inc.</b> 196 Annette Drive Benson, NC 27504 (919) 938-8194	<b>JOB NAME:</b> Lot 38 Oak Haven <b>MODEL:</b> Roof <b>TAG:</b> Oleander II <b>DELIVERY INSTRUCTIONS:</b>	<b>LOT #</b> 38 <b>SUBDIV:</b> Oak Haven <b>JOB CATEGORY:</b> Residential - Roof
	<b>Watermark Homes</b> Lot 38 Oak Haven Benson, NC	<b>SPECIAL INSTRUCTIONS:</b> Copied from Lot 12 Spring Branch (J0821-4825)jb	<b>PLAN SEAL DATE:</b> BY      DATE

<b>BUILDING DEPARTMENT</b>	<b>OVERHANG INFO</b>	<b>HEEL HEIGHT</b>	00-06-08	<b>REQ. LAYOUTS</b>	<b>REQ. ENGINEERING</b>	<b>QUOTE</b>	/ /	
Roof Order	<b>END CUT</b>	<b>RETURN</b>				<b>LAYOUT</b>	/ /	
	NO		<b>GABLE STUDS</b>	16 IN. OC	JOBSITE 1	JOBSITE 1	<b>CUTTING</b>	/ /

**ROOF TRUSSES**      **LOADING INFORMATION**      TOLL-TCDL-BCLL-BCDL      STRESS INCR.      **ROOF TRUSS SPACING:** 24.0 IN. O.C. (TYP.)  
 20.0,10.0,0.0,10.0      1.15

PROFILE	QTY	PITCH		TYPE ID	BASE O/A	LUMBER		OVERHANG		REACTIONS
		TOP	BOT			TOP	BOT	LEFT	RIGHT	
	2	6.00	0.00	COMMON B2	17-07-00 17-07-00	2 X 6	2 X 6	01-03-00	01-03-00	Joint 2      Joint 6 768.8 lbs.      768.8 lbs. -157.7 lbs.      -157.7 lbs.
	1	6.00	0.00	QUEENPOST C1-GE	28-02-08 28-02-08	2 X 6	2 X 6	01-03-00	01-03-00	Joint 2      Joint 16      Joint 20      Joint 21      Joint 22 440.5 lbs.      910.9 lbs.      974.4 lbs.      91.6 lbs.      147.2 lbs. 18.2 lbs.      -214.8 lbs.      -265.5 lbs.      -375.1 lbs.      -32.8 lbs.
	1	6.00	0.00	COMMON C2	28-02-08 28-02-08	2 X 6	2 X 6	01-03-00	01-03-00	Joint 2      Joint 10      Joint 14 892.4 lbs.      1008.1 lbs.      600.0 lbs. -75.0 lbs.      -164.6 lbs.      -130.8 lbs.
	1	6.00	0.00	COMMON C3	28-02-08 28-02-08	2 X 6	2 X 6	01-03-00		Joint 2      Joint 10      Joint 13 894.5 lbs.      940.5 lbs.      599.0 lbs. -75.2 lbs.      -159.5 lbs.      -129.6 lbs.
	1	12.00	0.00	GABLE D1-GE	24-11-00 24-11-00	2 X 6	2 X 10	01-03-00	01-03-00	Joint 18      Joint 22 1622.3 lbs.      1622.3 lbs. 49.0 lbs.      49.0 lbs.
	1	12.00	0.00	PIGGYBACK D2	24-11-00 24-11-00	2 X 6	2 X 10	01-03-00	01-03-00	Joint 12      Joint 16 1622.3 lbs.      1622.3 lbs. 183.9 lbs.      183.9 lbs.
	7	12.00	0.00	PIGGYBACK D3	24-11-00 24-11-00	2 X 6	2 X 10	01-03-00		Joint 11      Joint 15 1552.2 lbs.      1624.2 lbs. 202.5 lbs.      185.3 lbs.
	2	12.00	0.00	PIGGYBACK D4	24-11-00 24-11-00	2 X 6	2 X 10			Joint 10      Joint 14 1554.1 lbs.      1554.1 lbs. 203.9 lbs.      203.9 lbs.
	1	12.00	0.00	PIGGYBACK D5	24-11-00 24-11-00	2 X 6	2 X 10			Joint 10      Joint 14 2331.1 lbs.      2331.1 lbs. 305.8 lbs.      305.8 lbs.
	1	12.00	0.00	COMMON E1-GE	07-07-00 07-07-00	2 X 6	2 X 6	01-03-00	01-03-00	Joint 4      Joint 5      Joint 6      Joint 8      Joint 9 97.1 lbs.      69.3 lbs.      223.3 lbs.      189.1 lbs.      222.8 lbs. -47.8 lbs.      1.7 lbs.      -54.2 lbs.      -132.4 lbs.      -173.8 lbs.
	1	12.00	0.00	COMMON E2	07-07-00 07-07-00	2 X 6	2 X 8			Joint 4      Joint 6 639.1 lbs.      640.7 lbs. -186.8 lbs.      -202.2 lbs.

# Reaction Summary of Order



**ROOF & FLOOR TRUSSES & BEAMS**  
 Reilly Road Industrial Park P.O. Box 40408  
 Fayetteville, N.C. 28309 (910) 864-TRUS

REQ. QUOTE DATE	/ /	ORDER #	J0322-1076
ORDER DATE	03/01/22	QUOTE #	
DELIVERY DATE	/ /	CUSTOMER ACCT #	000030
DATE OF INVOICE	/ /	CUSTOMER PO #	
ORDERED BY	Brady Rufenacht	INVOICE #	
COUNTY	Johnston	TERMS	Net 10 Days
SUPERINTENDANT	Justin Thomas	SALES REP	Anthony Williams
JOBSITE PHONE #	(910) 759-1307	SALES AREA	Anthony Williams

SOLD TO	<b>Watermark Homes, Inc.</b> 196 Annette Drive Benson, NC 27504 (919) 938-8194	<b>JOB NAME:</b> Lot 38 Oak Haven <b>MODEL:</b> Roof <b>TAG:</b> Oleander II <b>DELIVERY INSTRUCTIONS:</b>	<b>LOT #</b> 38 <b>SUBDIV:</b> Oak Haven <b>JOB CATEGORY:</b> Residential - Roof
	<b>Watermark Homes</b> Lot 38 Oak Haven Benson, NC	<b>SPECIAL INSTRUCTIONS:</b> Copied from Lot 12 Spring Branch (J0821-4825)jb	<b>PLAN SEAL DATE:</b> BY      DATE

<b>BUILDING DEPARTMENT</b>	<b>OVERHANG INFO</b>	<b>HEEL HEIGHT</b>	00-06-08	<b>REQ. LAYOUTS</b>	<b>REQ. ENGINEERING</b>	<b>QUOTE</b>	/ /	
Roof Order	<b>END CUT</b>	<b>RETURN</b>				<b>LAYOUT</b>	/ /	
	NO		<b>GABLE STUDS</b>	16 IN. OC	JOBSITE 1	JOBSITE 1	<b>CUTTING</b>	/ /

**ROOF TRUSSES**      **LOADING INFORMATION**      **ROOF TRUSS SPACING: 24.0 IN. O.C. (TYP.)**

TCLL-TCDL-BCLL-BCDL	STRESS INCR.
20.0,10.0,0.0,10.0	1.15

PROFILE	QTY	PITCH		TYPE ID	BASE O/A	LUMBER		OVERHANG		REACTIONS				
		TOP	BOT			TOP	BOT	LEFT	RIGHT	Joint 14	Joint 15	Joint 16	Joint 17	Joint 19
	1	8.50	0.00	GABLE G1-GE	21-11-00 21-11-00	2 X 6	2 X 6	01-03-00	01-03-00	223.3 lbs. -31.4 lbs.	243.4 lbs. -200.0 lbs.	168.0 lbs. -88.3 lbs.	183.1 lbs. -104.6 lbs.	176.1 lbs. -63.9 lbs.
	5	8.50	0.00	COMMON G2	21-11-00 21-11-00	2 X 6	2 X 6	01-03-00	01-03-00	939.2 lbs. -57.4 lbs.	939.2 lbs. -57.4 lbs.			
	2	8.50	0.00	GABLE PB1	08-06-10 08-06-10	2 X 4	2 X 4			79.6 lbs. -79.3 lbs.	185.2 lbs. -83.3 lbs.	158.8 lbs. -57.1 lbs.	38.2 lbs. -32.1 lbs.	217.2 lbs. -111.3 lbs.
	24	8.50	0.00	PIGGYBACK PB2	08-06-10 08-06-10	2 X 4	2 X 4			209.5 lbs. -60.7 lbs.	219.1 lbs. -45.2 lbs.	302.6 lbs. 26.7 lbs.		
	4	8.50	0.00	PIGGYBACK PB3	05-05-05 05-05-05	2 X 4	2 X 4			192.1 lbs. -4.5 lbs.	0.1 lbs. -52.6 lbs.	267.5 lbs. -8.1 lbs.		
	12	12.00	0.00	PIGGYBACK PB4	04-09-11 04-09-11	2 X 4	2 X 4			140.5 lbs. -47.0 lbs.	140.4 lbs. -53.6 lbs.	149.1 lbs. 8.8 lbs.		
	1	12.00	0.00	GABLE VA-1	23-03-09 23-03-09	2 X 4	2 X 4			235.3 lbs. -140.0 lbs.	182.2 lbs. -60.1 lbs.	190.6 lbs. -138.9 lbs.	108.5 lbs. -78.0 lbs.	122.9 lbs. -97.1 lbs.
	1	12.00	0.00	VALLEY VA-2	20-05-09 20-05-09	2 X 4	2 X 4			185.8 lbs. -106.7 lbs.	162.1 lbs. -67.9 lbs.	294.2 lbs. -135.1 lbs.	459.8 lbs. -184.2 lbs.	371.8 lbs. 71.5 lbs.
	1	12.00	0.00	VALLEY VA-3	17-07-09 17-07-09	2 X 4	2 X 4			207.5 lbs. -23.0 lbs.	182.5 lbs. 10.4 lbs.	524.0 lbs. -213.7 lbs.	344.9 lbs. 62.3 lbs.	524.2 lbs. -213.9 lbs.
	1	12.00	0.00	VALLEY VA-4	14-09-09 14-09-09	2 X 4	2 X 4			159.7 lbs. -32.3 lbs.	138.8 lbs. -4.4 lbs.	418.3 lbs. -177.1 lbs.	344.6 lbs. 59.7 lbs.	418.5 lbs. -177.3 lbs.
	1	12.00	0.00	VALLEY VA-5	11-11-09 11-11-09	2 X 4	2 X 4			112.5 lbs. -65.4 lbs.	90.1 lbs. -43.1 lbs.	337.5 lbs. -160.0 lbs.	223.4 lbs. 54.9 lbs.	337.8 lbs. -160.2 lbs.



# Reaction Summary of Order



REQ. QUOTE DATE	/ /	ORDER #	J0322-1076
ORDER DATE	03/01/22	QUOTE #	
DELIVERY DATE	/ /	CUSTOMER ACCT #	000030
DATE OF INVOICE	/ /	CUSTOMER PO #	
ORDERED BY	Brady Rufenacht	INVOICE #	
COUNTY	Johnston	TERMS	Net 10 Days
SUPERINTENDANT	Justin Thomas	SALES REP	Anthony Williams
JOBSITE PHONE #	(910) 759-1307	SALES AREA	Anthony Williams

SOLD TO	<b>Watermark Homes, Inc.</b> 196 Annette Drive Benson, NC 27504 (919) 938-8194	<b>JOB NAME:</b> Lot 38 Oak Haven <b>MODEL:</b> Roof <b>TAG:</b> Oleander II <b>DELIVERY INSTRUCTIONS:</b>	<b>LOT #</b> 38 <b>SUBDIV:</b> Oak Haven <b>JOB CATEGORY:</b> Residential - Roof
	<b>Watermark Homes</b> Lot 38 Oak Haven Benson, NC	<b>SPECIAL INSTRUCTIONS:</b> Copied from Lot 12 Spring Branch (J0821-4825)jb	<b>PLAN SEAL DATE:</b> BY      DATE

<b>BUILDING DEPARTMENT</b>	<b>OVERHANG INFO</b>	<b>HEEL HEIGHT</b>	00-06-08	<b>REQ. LAYOUTS</b>	<b>REQ. ENGINEERING</b>	<b>QUOTE</b>	/ /	
Roof Order	<b>END CUT</b>	<b>RETURN</b>				<b>LAYOUT</b>	/ /	
	NO		<b>GABLE STUDS</b>	16 IN. OC	JOBSITE 1	JOBSITE 1	<b>CUTTING</b>	/ /

<b>ROOF TRUSSES</b>	<b>LOADING INFORMATION</b>	TCLL-TCDL-BCLL-BCDL 20.0,10.0,0.0,10.0	STRESS INCR. 1.15	<b>ROOF TRUSS SPACING:</b> 24.0 IN. O.C. (TYP.)
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PROFILE	QTY	PITCH		TYPE ID	BASE O/A	LUMBER		OVERHANG		REACTIONS				
		TOP	BOT			TOP	BOT	LEFT	RIGHT					
	1	12.00	0.00	VALLEY VA-6	09-01-09 09-01-09	2 X 4	2 X 4			Joint 1 191.1 lbs. -25.1 lbs.	Joint 3 191.1 lbs. -25.1 lbs.	Joint 4 291.9 lbs. 11.8 lbs.		
	1	12.00	0.00	VALLEY VA-7	06-03-09 06-03-09	2 X 4	2 X 4			Joint 1 136.2 lbs. -24.3 lbs.	Joint 3 136.2 lbs. -24.3 lbs.	Joint 4 175.0 lbs. 23.1 lbs.		
	1	12.00	0.00	VALLEY VA-8	03-05-09 03-05-09	2 X 4	2 X 4			Joint 1 67.2 lbs. -12.0 lbs.	Joint 3 67.2 lbs. -12.0 lbs.	Joint 4 86.3 lbs. 11.4 lbs.		
	1	6.00	0.00	VALLEY VC-1	26-10-10 26-10-10	2 X 4	2 X 4			Joint 1 168.3 lbs. -2.8 lbs.	Joint 7 168.3 lbs. 6.2 lbs.	Joint 8 410.3 lbs. -84.6 lbs.	Joint 9 336.1 lbs. -69.5 lbs.	Joint 11 399.6 lbs. 71.5 lbs.
	1	6.00	0.00	VALLEY VC-2	21-02-10 21-02-10	2 X 4	2 X 4			Joint 1 59.7 lbs. -3.1 lbs.	Joint 7 51.8 lbs. 9.0 lbs.	Joint 8 268.4 lbs. -54.5 lbs.	Joint 9 350.5 lbs. -77.6 lbs.	Joint 11 358.2 lbs. 52.6 lbs.
	1	6.00	0.00	VALLEY VC-3	15-06-10 15-06-10	2 X 4	2 X 4			Joint 1 102.5 lbs. -3.4 lbs.	Joint 5 102.6 lbs. 2.2 lbs.	Joint 6 339.0 lbs. -75.9 lbs.	Joint 7 273.8 lbs. 32.1 lbs.	Joint 8 338.9 lbs. -75.9 lbs.
	1	6.00	0.00	VALLEY VC-4	09-10-10 09-10-10	2 X 4	2 X 4			Joint 1 159.9 lbs. -21.1 lbs.	Joint 3 160.0 lbs. -26.0 lbs.	Joint 4 375.2 lbs. 0.4 lbs.		
	1	6.00	0.00	VALLEY VC-5	04-02-10 04-02-10	2 X 4	2 X 4			Joint 1 119.3 lbs. -7.2 lbs.	Joint 3 119.3 lbs. -7.2 lbs.			

QTY	ITEM TYPE	SIZE	LENGTH FT-IN-16	PART NUMBER	NOTES
4	Hangers, USP	JUS26			SIMPSON (LUS26)
2	LVL Beams (Sized)	LVL, 1-3/4" x 9-1/4" (S)	07-00-00		DBL-28
4	LVL Beams (Sized)	LVL, 1-3/4" x 11-7/8" (S)	11-00-00		BM1

# Reaction Summary of Order



**ROOF & FLOOR TRUSSES & BEAMS**  
 Reilly Road Industrial Park P.O. Box 40408  
 Fayetteville, N.C. 28309 (910) 864-TRUS

REQ. QUOTE DATE	/ /	ORDER #	J0322-1076
ORDER DATE	03/01/22	QUOTE #	
DELIVERY DATE	/ /	CUSTOMER ACCT #	000030
DATE OF INVOICE	/ /	CUSTOMER PO #	
ORDERED BY	Brady Rufenacht	INVOICE #	
COUNTY	Johnston	TERMS	Net 10 Days
SUPERINTENDANT	Justin Thomas	SALES REP	Anthony Williams
JOBSITE PHONE #	(910) 759-1307	SALES AREA	Anthony Williams

<b>SOLD TO</b>	<b>Watermark Homes, Inc.</b> 196 Annettte Drive Benson, NC 27504 (919) 938-8194	<b>JOB NAME:</b> Lot 38 Oak Haven <b>MODEL:</b> Roof <b>TAG:</b> Oleander II <b>DELIVERY INSTRUCTIONS:</b>	<b>LOT # 38    SUBDIV:</b> Oak Haven <b>JOB CATEGORY:</b> Residential - Roof
	<b>Watermark Homes</b> Lot 38 Oak Haven Benson, NC	<b>SPECIAL INSTRUCTIONS:</b> Copied from Lot 12 Spring Branch (J0821-4825) jb	<b>PLAN SEAL DATE:</b> BY      DATE

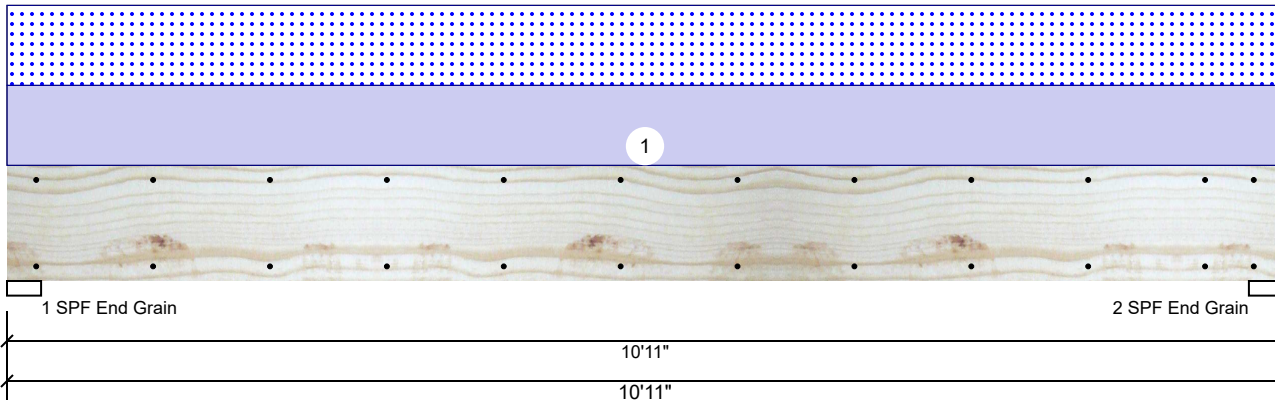
<b>BUILDING DEPARTMENT</b> Roof Order	<b>OVERHANG INFO</b>	<b>HEEL HEIGHT</b>	00-06-08	<b>REQ. LAYOUTS</b>	<b>REQ. ENGINEERING</b>	<b>QUOTE</b>	/ /
	<b>END CUT</b>	<b>RETURN</b>				<b>LAYOUT</b>	/ /
		NO	<b>GABLE STUDS</b>	16 IN. OC	JOBSITE 1	JOBSITE 1	<b>CUTTING</b>

## ITEMS

QTY	ITEM TYPE	SIZE	LENGTH FT-IN-16	PART NUMBER	NOTES
2	LVL Beams (Sized)	LVL, 1-3/4" x 11-7/8" (S)	25-00-00		GDH-1
2	LVL Beams (Sized)	LVL, 1-3/4" x 11-7/8" (S)	12-00-00		GDH-2

**BM1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Member Information**

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

**Reactions UNPATTERNED lb (Uplift)**

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1688	1638	0	0
2	Vertical	0	1688	1638	0	0

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.500"	Vert	31%	1688 / 1638	3325	L	D+S
2 - SPF End Grain	3.500"	Vert	31%	1688 / 1638	3325	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	8330 ft-lb	5'5 1/2"	22897 ft-lb	0.364 (36%)	D+S	L
Unbraced	8330 ft-lb	5'5 1/2"	9033 ft-lb	0.922 (92%)	D+S	L
Shear	2554 lb	1'3 3/8"	10197 lb	0.250 (25%)	D+S	L
LL Defl inch	0.094 (L/1335)	5'5 1/2"	0.261 (L/480)	0.360 (36%)	S	L
TL Defl inch	0.191 (L/657)	5'5 1/2"	0.349 (L/360)	0.548 (55%)	D+S	L

**Design Notes**

- 1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- 2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 3 Refer to last page of calculations for fasteners required for specified loads.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be laterally braced at end bearings.
- 7 Bottom must be laterally braced at end bearings.
- 8 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	300 PLF	0 PLF	300 PLF	0 PLF	0 PLF	A5
	Self Weight				9 PLF					

**Notes**

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

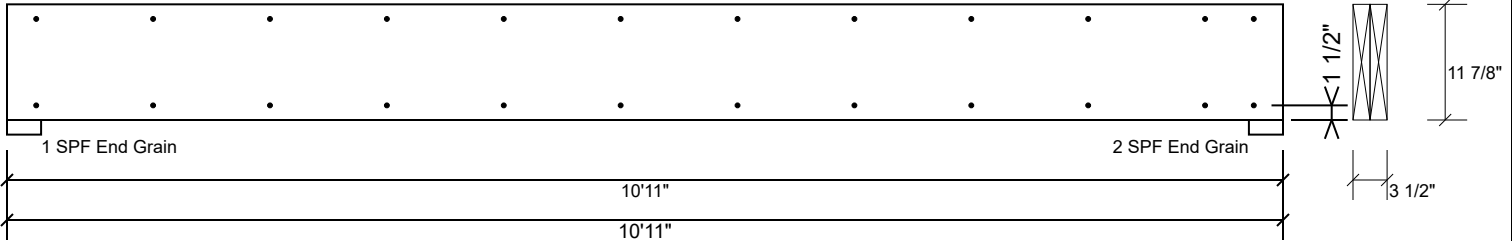
Metsä Wood  
 301 Merritt 7 Building, 2nd Floor  
 Norwalk, CT 06851  
 (800) 622-5850  
 www.metsawood.com/us  
 ICC-ES: ESR-3633

Comtech, Inc.  
 1001 S. Reilly Road, Suite #639  
 Fayetteville, NC  
 USA  
 28314  
 910-864-TRUS



**BM1 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Multi-Ply Analysis**

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

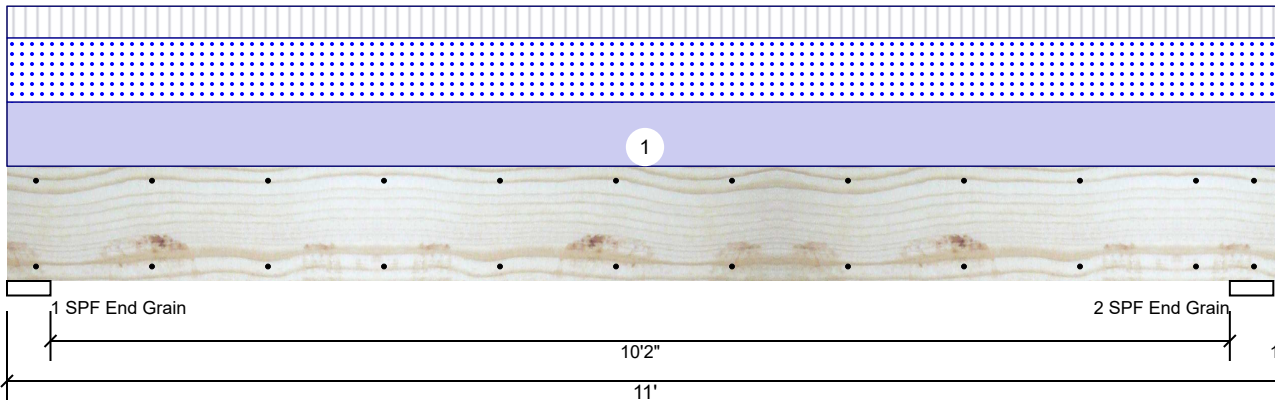
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Comtech, Inc.  
 1001 S. Reilly Road, Suite #639  
 Fayetteville, NC  
 USA  
 28314  
 910-864-TRUS



# BM2 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED

Level: Level



## Member Information

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

## Reactions UNPATTERNED lb (Uplift)

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	1060	2193	2142	0	0
2	Vertical	1052	2177	2126	0	0

## Bearings

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.500"	Vert	34%	2193 / 2402	4594	L_	D+0.75(L+S)
2 - SPF End Grain	4.500"	Vert	33%	2177 / 2384	4560	LL	D+0.75(L+S)

## Analysis Results

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Neg Moment	-3 ft-lb	10'11"	22897 ft-lb	0.000 (0%)	D+0.75(L+S)	L_
Unbraced	-3 ft-lb	10'11"	9062 ft-lb	0.000 (0%)	D+0.75(L+S)	L_
Pos Moment	11287 ft-lb	5'6 1/4"	22897 ft-lb	0.493 (49%)	D+0.75(L+S)	L_
Unbraced	11287 ft-lb	5'6 1/4"	11289 ft-lb	1.000 (100%)	D+0.75(L+S)	L_
Shear	3468 lb	1'4 3/8"	10197 lb	0.340 (34%)	D+0.75(L+S)	L_
LL Defl inch	0.134 (L/931)	5'6 1/4"	0.260 (L/480)	0.516 (52%)	0.75(L+S)	L_
TL Defl inch	0.257 (L/486)	5'6 1/4"	0.347 (L/360)	0.740 (74%)	D+0.75(L+S)	L_
LL Cant	-0.003 (2L/663)	Rt Cant	0.200 (2L/480)	0.015 (2%)	0.75(L+S)	L_
TL Cant	-0.006 (2L/347)	Rt Cant	0.300 (2L/360)	0.019 (2%)	D+0.75(L+S)	L_

## Design Notes

- Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- Refer to last page of calculations for fasteners required for specified loads.
- Girders are designed to be supported on the bottom edge only.
- Top loads must be supported equally by all plies.
- Top must be laterally braced at a maximum of 7'10 1/4" o.c.
- Bottom must be laterally braced at end bearings.
- Lateral slenderness ratio based on single ply width.
- Cantilever Upward Deflection Total Load 0.0057716 greater than recommended 0.006

## Notes

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

## Lumber

- Dry service conditions, unless noted otherwise
- LVL not to be treated with fire retardant or corrosive

chemicals

## Handling & Installation

- LVL beams must not be cut or drilled
- Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
- Damaged Beams must not be used
- Design assumes top edge is laterally restrained
- Provide lateral support at bearing points to avoid lateral displacement and rotation

- For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

## Manufacturer Info

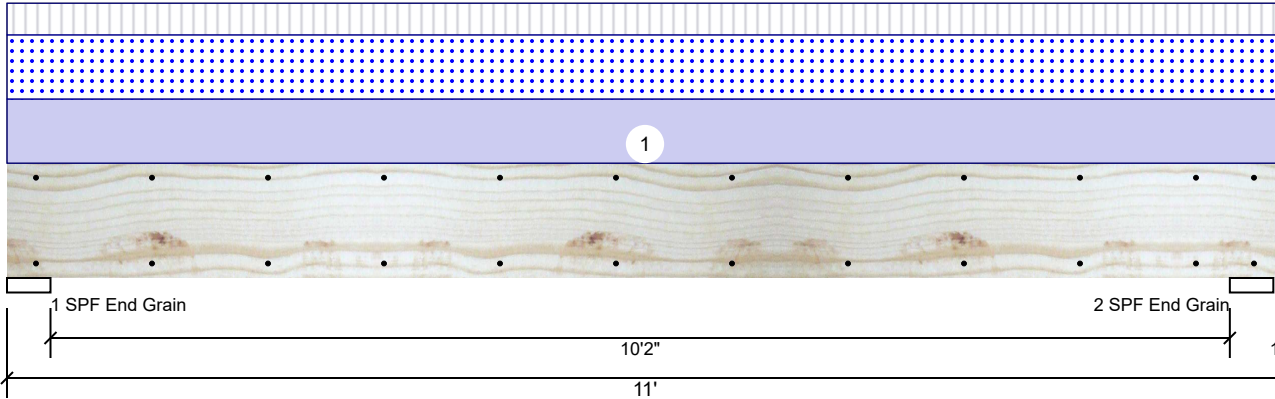
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 USA  
 28314  
 910-864-TRUS



**BM2 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	388 PLF	192 PLF	388 PLF	0 PLF	0 PLF	D3
	Self Weight				9 PLF					

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

**Handling & Installation**

1. LVL beams must not be cut or drilled
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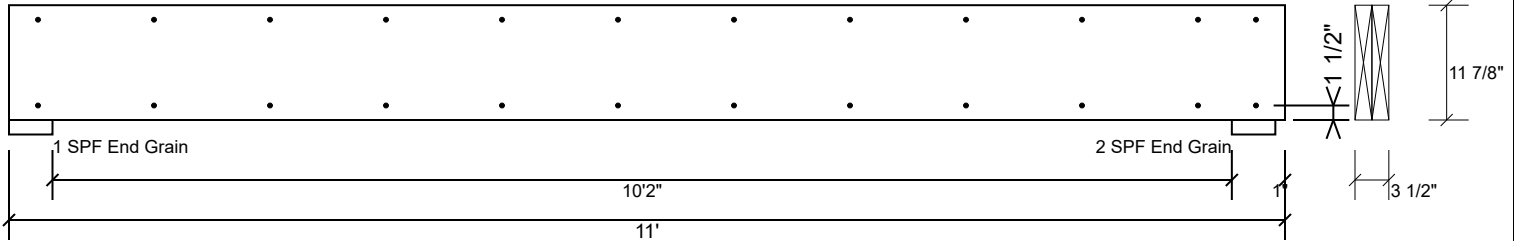
Metsä Wood  
 301 Merritt 7 Building, 2nd Floor  
 Norwalk, CT 06851  
 (800) 622-5850  
[www.metsawood.com/us](http://www.metsawood.com/us)  
 ICC-ES: ESR-3633

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 1001 S. Reilly Road, Suite #639  
 Fayetteville, NC  
 USA  
 28314  
 910-864-TRUS



**BM2 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Multi-Ply Analysis**

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

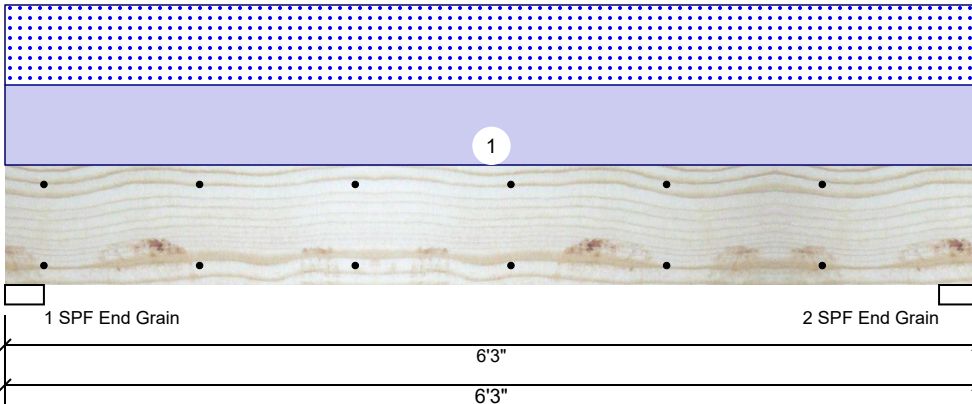
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**DBL-28 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED**

Level: Level



**Member Information**

Type:	Girder
Plies:	2
Moisture Condition:	Dry
Deflection LL:	480
Deflection TL:	360
Importance:	Normal - II
Temperature:	Temp <= 100°F

Application:	Floor
Design Method:	ASD
Building Code:	IBC/IRC 2015
Load Sharing:	No
Deck:	Not Checked

**Reactions UNPATTERNED lb (Uplift)**

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1432	1409	0	0
2	Vertical	0	1432	1409	0	0

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	3.000"	Vert	31%	1432 / 1409	2841	L	D+S
2 - SPF End Grain	3.000"	Vert	31%	1432 / 1409	2841	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	3923 ft-lb	3'1 1/2"	14423 ft-lb	0.272 (27%)	D+S	L
Unbraced	3923 ft-lb	3'1 1/2"	10696 ft-lb	0.367 (37%)	D+S	L
Shear	1919 lb	5'2 3/4"	7943 lb	0.242 (24%)	D+S	L
LL Defl inch	0.033 (L/2129)	3'1 1/2"	0.147 (L/480)	0.225 (23%)	S	L
TL Defl inch	0.067 (L/1056)	3'1 1/2"	0.196 (L/360)	0.341 (34%)	D+S	L

**Design Notes**

- 1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- 2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 3 Refer to last page of calculations for fasteners required for specified loads.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be laterally braced at end bearings.
- 7 Bottom must be laterally braced at end bearings.
- 8 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	451 PLF	0 PLF	451 PLF	0 PLF	0 PLF	A5
	Self Weight				7 PLF					

**Notes**  
 Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**  
 1. Dry service conditions, unless noted otherwise  
 2. LVL not to be treated with fire retardant or corrosive chemicals

**Handling & Installation**  
 1. LVL beams must not be cut or drilled  
 2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals  
 3. Damaged Beams must not be used  
 4. Design assumes top edge is laterally restrained  
 5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**  
 Metsä Wood  
 301 Merritt 7 Building, 2nd Floor  
 Norwalk, CT 06851  
 (800) 622-5850  
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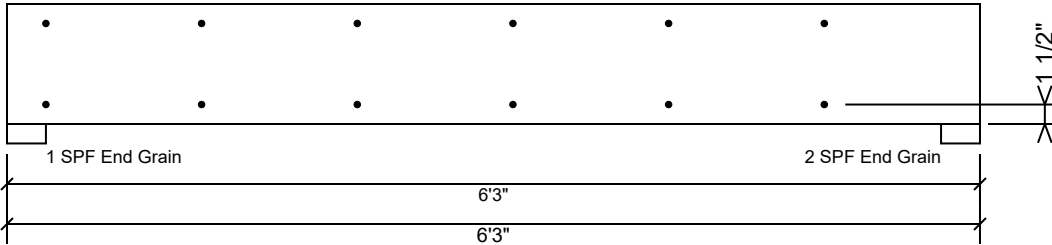
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**DBL-28 Kerto-S LVL 1.750" X 9.250" 2-Ply - PASSED**

Level: Level



**Multi-Ply Analysis**

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

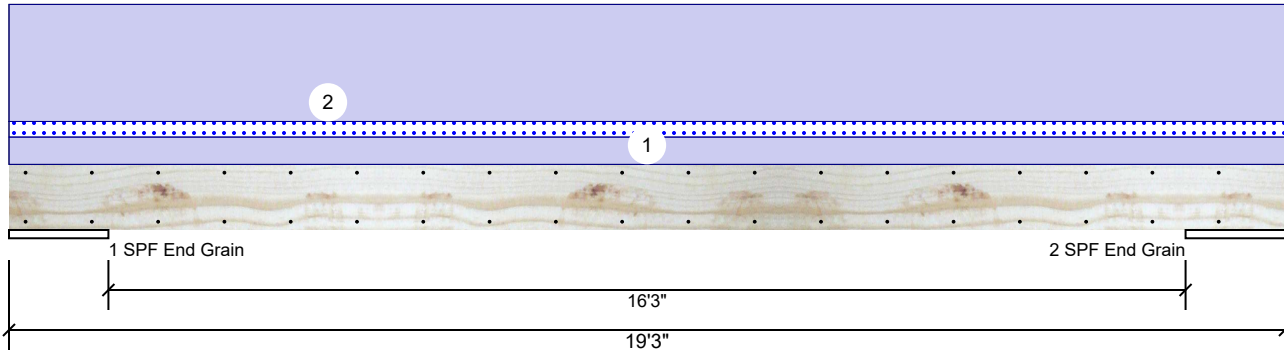
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**GDH Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Member Information**

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

**Reactions UNPATTERNED lb (Uplift)**

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1870	193	0	0
2	Vertical	0	1870	193	0	0

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	18.000"	Vert	4%	1870 / 193	2062	L	D+S
2 - SPF End Grain	18.000"	Vert	4%	1870 / 193	2062	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	6510 ft-lb	9'7 1/2"	17919 ft-lb	0.363 (36%)	D	Uniform
Unbraced	7181 ft-lb	9'7 1/2"	7190 ft-lb	0.999 (100%)	D+S	L
Shear	1395 lb	2'5 7/8"	7980 lb	0.175 (17%)	D	Uniform
LL Defl inch	0.035 (L/5617)	9'7 9/16"	0.409 (L/480)	0.085 (9%)	S	L
TL Defl inch	0.375 (L/524)	9'7 9/16"	0.546 (L/360)	0.686 (69%)	D+S	L

**Design Notes**

- 1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- 2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 3 Refer to last page of calculations for fasteners required for specified loads.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be laterally braced at a maximum of 13'9" o.c.
- 7 Bottom must be laterally braced at end bearings.
- 8 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	35 PLF	0 PLF	20 PLF	0 PLF	0 PLF	Roof+Floor
2	Uniform			Top	150 PLF	0 PLF	0 PLF	0 PLF	0 PLF	Wall
	Self Weight				9 PLF					

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive chemicals

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

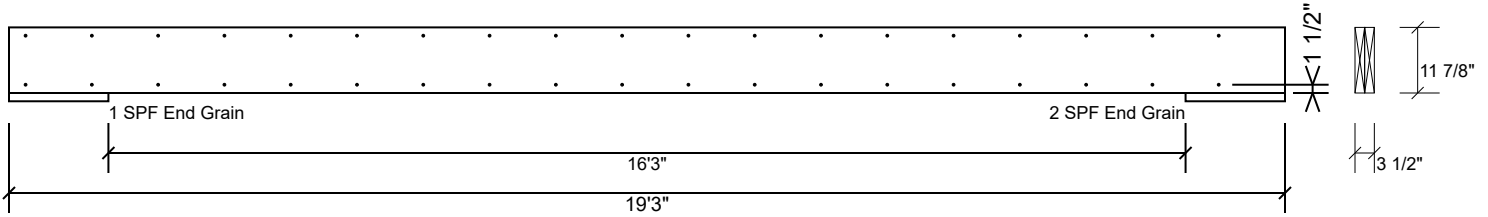
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**GDH Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Multi-Ply Analysis**

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

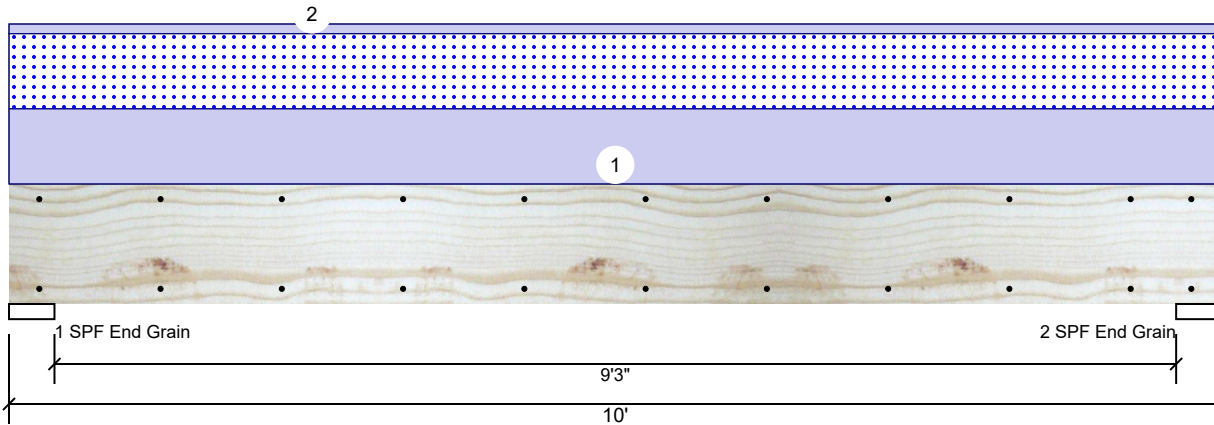
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**GDH-2 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Member Information**

Type:	Girder	Application:	Floor
Plies:	2	Design Method:	ASD
Moisture Condition:	Dry	Building Code:	IBC/IRC 2015
Deflection LL:	480	Load Sharing:	No
Deflection TL:	360	Deck:	Not Checked
Importance:	Normal - II		
Temperature:	Temp <= 100°F		

**Reactions UNPATTERNED lb (Uplift)**

Brg	Direction	Live	Dead	Snow	Wind	Const
1	Vertical	0	1371	1175	0	0
2	Vertical	0	1371	1175	0	0

**Bearings**

Bearing	Length	Dir.	Cap.	React D/L lb	Total	Ld. Case	Ld. Comb.
1 - SPF End Grain	4.500"	Vert	19%	1371 / 1175	2546	L	D+S
2 - SPF End Grain	4.500"	Vert	19%	1371 / 1175	2546	L	D+S

**Analysis Results**

Analysis	Actual	Location	Allowed	Capacity	Comb.	Case
Moment	5595 ft-lb	5'	22897 ft-lb	0.244 (24%)	D+S	L
Unbraced	5595 ft-lb	5'	9857 ft-lb	0.568 (57%)	D+S	L
Shear	1860 lb	1'4 3/8"	10197 lb	0.182 (18%)	D+S	L
LL Defl inch	0.049 (L/2297)	5'	0.234 (L/480)	0.209 (21%)	S	L
TL Defl inch	0.106 (L/1060)	5'	0.312 (L/360)	0.340 (34%)	D+S	L

**Design Notes**

- 1 Provide support to prevent lateral movement and rotation at the end bearings. Lateral support may also be required at the interior bearings by the building code.
- 2 Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c. Maximum end distance not to exceed 6".
- 3 Refer to last page of calculations for fasteners required for specified loads.
- 4 Girders are designed to be supported on the bottom edge only.
- 5 Top loads must be supported equally by all plies.
- 6 Top must be laterally braced at end bearings.
- 7 Bottom must be laterally braced at end bearings.
- 8 Lateral slenderness ratio based on single ply width.

ID	Load Type	Location	Trib Width	Side	Dead 0.9	Live 1	Snow 1.15	Wind 1.6	Const. 1.25	Comments
1	Uniform			Top	235 PLF	0 PLF	235 PLF	0 PLF	0 PLF	G2
2	Uniform			Top	30 PLF	0 PLF	0 PLF	0 PLF	0 PLF	WALL
	Self Weight				9 PLF					

**Notes**

Calculated Structural Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
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5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

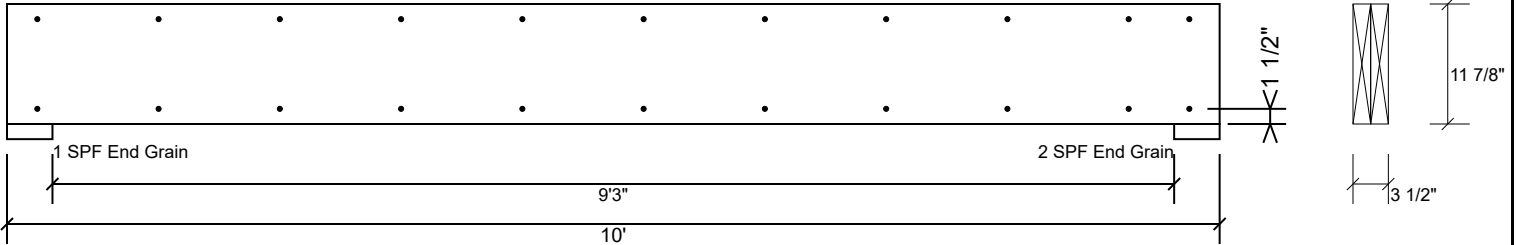
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**GDH-2 Kerto-S LVL 1.750" X 11.875" 2-Ply - PASSED**

Level: Level



**Multi-Ply Analysis**

Fasten all plies using 2 rows of 10d Box nails (.128x3") at 12" o.c.. Maximum end distance not to exceed 6".

Capacity	0.0 %
Load	0.0 PLF
Yield Limit per Foot	163.7 PLF
Yield Limit per Fastener	81.9 lb.
Yield Mode	IV
Edge Distance	1 1/2"
Min. End Distance	3"
Load Combination	
Duration Factor	1.00

**Notes**

Calculated Structured Designs is responsible only of the structural adequacy of this component based on the design criteria and loadings shown. It is the responsibility of the customer and/or the contractor to ensure the component suitability of the intended application, and to verify the dimensions and loads.

**Lumber**

1. Dry service conditions, unless noted otherwise
2. LVL not to be treated with fire retardant or corrosive

chemicals

**Handling & Installation**

1. LVL beams must not be cut or drilled
2. Refer to manufacturer's product information regarding installation requirements, multi-ply fastening details, beam strength values, and code approvals
3. Damaged Beams must not be used
4. Design assumes top edge is laterally restrained
5. Provide lateral support at bearing points to avoid lateral displacement and rotation

6. For flat roofs provide proper drainage to prevent ponding

This design is valid until 3/30/2024

**Manufacturer Info**

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Truss	Qty	Span	Ply	Over	Height	Notes
A1-GE	1	39' 11"	1	1	11' 5 3/4"	
A2	2	39' 11"	1	1	11' 5 3/4"	
A3	3	37' 11"	1	1	11' 5 3/4"	
A4	1	37' 11"	1	1	11' 5 3/4"	
A5	6	37' 11"	1	1	11' 5 3/4"	
A6	1	37' 11"	1	1	11' 5 3/4"	
A7A	4	20' 0"	2	1	11' 5 3/4"	
A9-GE	1	39' 11"	1	1	11' 5 3/4"	
B1-GE	1	17' 8"	1	1	11' 5 3/4"	
B2	2	17' 8"	1	1	11' 5 3/4"	
C1-GE	1	28' 2 1/2"	1	1	11' 5 3/4"	
C2	1	28' 2 1/2"	1	1	11' 5 3/4"	
D1-GE	1	24' 11"	1	1	11' 5 3/4"	
D2	34	11"	1	1	11' 5 3/4"	
D3	7	24' 11"	1	1	11' 5 3/4"	
D4	2	24' 11"	1	1	11' 5 3/4"	
D5	1	24' 11"	1	1	11' 5 3/4"	
E1-GE	1	7' 7"	1	1	5' 9 7/16"	
E2	1	7' 7"	1	1	5' 9 7/16"	
G1-GE	1	21' 11"	1	1	9' 4 1/4"	
G2	5	21' 11"	1	1	9' 4 1/4"	
PB1	4	6' 3"	1	1	9' 4 1/4"	
PB2	24	18' 0"	1	1	9' 4 1/4"	
PB3	4	6' 3"	1	1	9' 4 1/4"	
PB4	12	5' 11 5/16"	1	1	9' 4 1/4"	
VA-1	1	23' 3 3/8"	1	1	10' 0"	
VA-2	1	30' 5 5/8"	1	1	10' 0"	
VA-3	1	17' 7 1/8"	1	1	10' 0"	
VA-4	1	14' 9 9/16"	1	1	10' 0"	
VA-5	1	11' 11 5/16"	1	1	10' 0"	
VA-6	1	11' 11 5/16"	1	1	10' 0"	
VA-7	1	6' 3"	1	1	10' 0"	
VA-8	1	3' 5 9/16"	1	1	10' 0"	
VC-1	1	26' 10 5/8"	1	1	6' 8 5/8"	
VC-2	1	21' 2 5/8"	1	1	5' 3 5/8"	
VC-3	1	15' 6 5/8"	1	1	3' 10 5/8"	
VC-4	1	9' 10 5/8"	1	1	2' 5 5/8"	
VC-5	1	4' 2 5/8"	1	1	1' 0 5/8"	

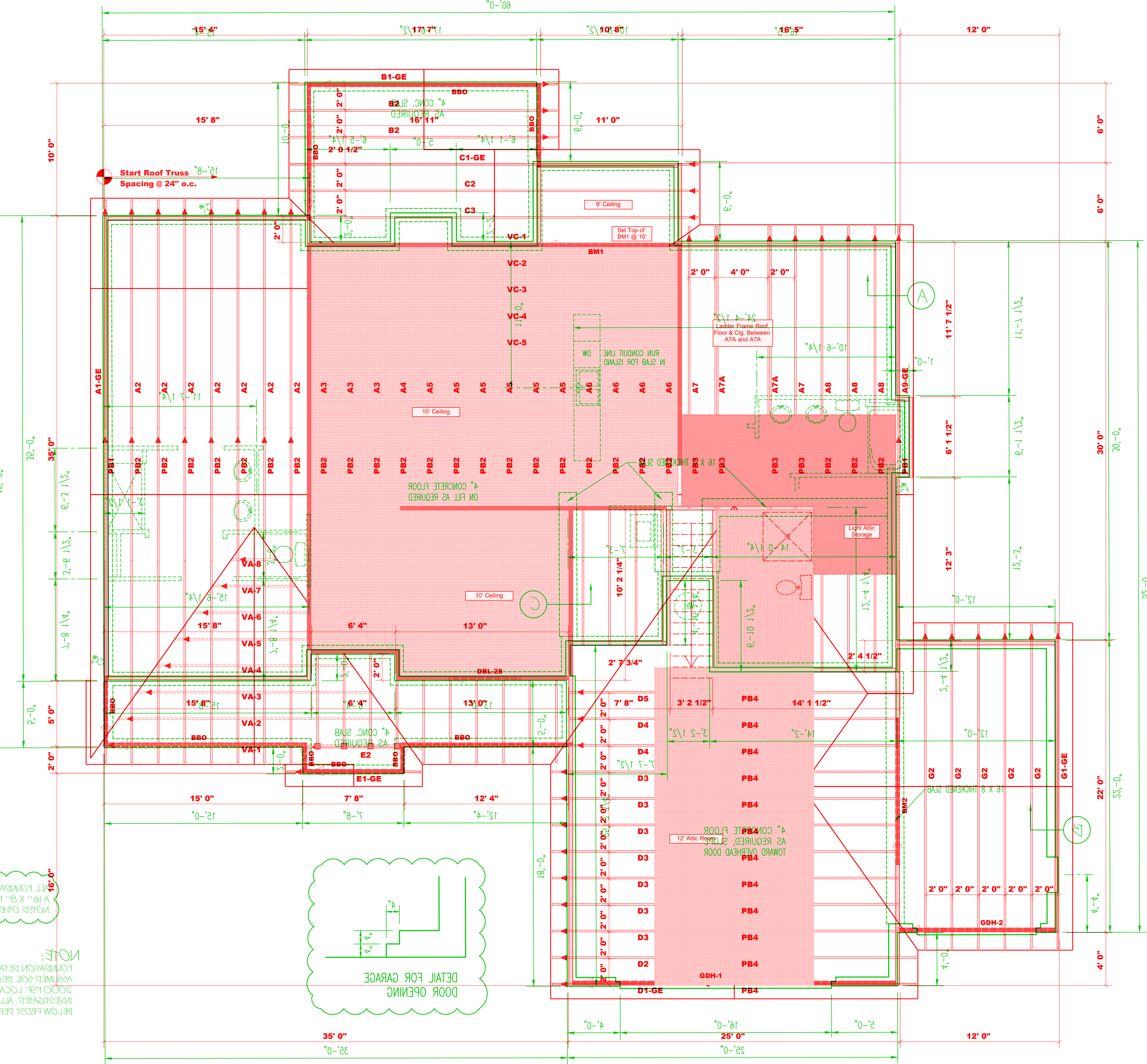
Product	Manuf	Qty	Supported Member	Header	Truss
JUS26	USP	4	Varies	1003"	1003"

ProdID	Length	Product	Piles	Net Qty	Fab Type
BM1	11' 0"	1-3/4" X 11-7/8" LVL Kerto-S	2	2	FF
BM2	11' 0"	1-3/4" X 11-7/8" LVL Kerto-S	2	2	FF
DBL-28	7' 0"	1-3/4" X 9-1/4" LVL Kerto-S	2	2	FF
GDH-1	25' 0"	1-3/4" X 11-7/8" LVL Kerto-S	2	2	FF
GDH-2	12' 0"	1-3/4" X 11-7/8" LVL Kerto-S	2	2	FF

▲ Indicates Left End of Truss (Reference Engineered Truss Drawing) Do Not Erect Trusses Backwards  
 Roof Area = 4581.87 sq. ft.  
 Ridge Line = 161.78 ft.  
 Hip Line = 0 ft.  
 Horiz. OH = 122.65 ft.  
 Raked OH = 278.43 ft.  
 Decking = 158 sheets  
 All Walls Shown Are Considered Load Bearing  
 WALL SCHEDULE  
 9" Plate Height  
 10" Plate Height  
 Non-Bearing Walls  
 FOUNDATION PLAN  
 SCALE: 1/4" = 1'-0"  
 NOTED OVERLAP: ALL FOUNDATION WALLS HAVE 4" X 8" FOOTING INTERSECTIONS OVERLAP.  
 FOUNDATION DETAILS SHOWN ARE BASED ON ASSUMED SOIL BEARING CAPACITY OF 3000 PSF. LOCAL SITE CONDITIONS MUST BE INVESTIGATED. ALL FOOTINGS TO BE LOCATED BELOW FROST DEPTH.



**Truss Placement Plan**  
 SCALE: 1/4" = 1'-0"

**comTech**  
**ROOF & FLOOR TRUSSES & BEAMS**  
 Reilly Road Industrial Park  
 Fayetteville, N.C. 28309  
 Phone: (910) 864-8787  
 Fax: (910) 864-4444

THIS IS A TRUSS PLACEMENT DIAGRAM ONLY. These trusses are designed as individual building components to be incorporated into the building design at the specification of the building designer. The building designer shall refer to the attached Tables (derived from the prescriptive Code requirements) to determine the minimum foundation size and number of wood studs required to support reactions greater than 3000# but not greater than 1500#. A registered design professional shall be retained to design the support system for any reaction that exceeds those specified in the attached Tables. A registered design professional shall be retained to design the support system for all reactions that exceed 1500#.

Signature: \_\_\_\_\_  
 Sales Area

BUILDER	Watermark Homes	Johnston County
JOB NAME	Lot 38 Oak Haven	Lot 38 Oak Haven
PLAN	Oleander II Plan	Roof
SEAL DATE	12/18/19	DATE REV. 8/10/21
QUOTE #	NA	DRAWN BY Anthony Williams
JOB #	J0322-1076	SALESMAN Anthony Williams

REACTION	REQ. STUDS FROM JOIST CENTER	REQ. STUDS FROM JOIST EDGE	REQ. REACTORS
1700	1	2550	1
3400	2	5100	2
5100	3	7650	3
6800	4	10200	4
8500	5	12750	5
10200	6	15300	6
11900	7		
13600	8		
15300	9		



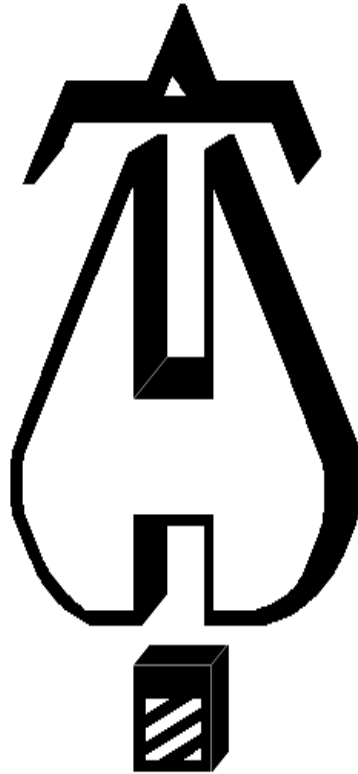
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# OAK HAVEN LOT 38

## HYDRAULIC CALCULATIONS

12/20/2021



Hydraulic calculations using HydraCALC

Fire & Life Safety America  
1731 Roundrock Drive  
Raleigh, NC 27615  
P: (919) 872-3250  
F: (919) 877-5775

Job Name : Oak Haven Lot 38 - RA1  
Drawing : FP1  
Location : 157 Oak Haven Drive  
Remote Area : RA1  
Contract : 22NC1551  
Data File : RA1.WXF



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**HYDRAULIC CALCULATIONS**  
**for**

**Project name:** Oak Haven Lot 38  
**Location:** 157 Oak Haven Drive  
**Drawing no:** FP1  
**Date:** 12/19/2021

**Design**

**Remote area number:** RA1  
**Remote area location:** Master Bedroom  
**Occupancy classification:** Residential  
**Density:** .05 - Gpm/SqFt  
**Area of application:** 257 - SqFt  
**Coverage per sprinkler:** 400 - SqFt  
**Type of sprinklers calculated:** VK494  
**No. of sprinklers calculated:** 1  
**In-rack demand:** N/A - GPM  
**Hose streams:** 3 - GPM  
**Total water required (including hose streams):** 23.03 - GPM @ 28.47 - Psi  
**Type of system:** WET  
**Volume of dry or preaction system:** N/A - Gal

**Water supply information**

**Date:** 4/21/2021  
**Location:** NC 42, NC 27540  
**Source:** Fire & Life Safety America

**Name of contractor:** Fire & Life Safety America  
**Address:** 1731 Roundrock Drive / Raleigh, NC 27615 / P: (919) 872-3250  
**Phone number:** F: (919) 877-57  
**Name of designer:** H. WEYANT  
**Authority having jurisdiction:** Harnett County  
**Notes: (Include peaking information or gridded systems here.)**

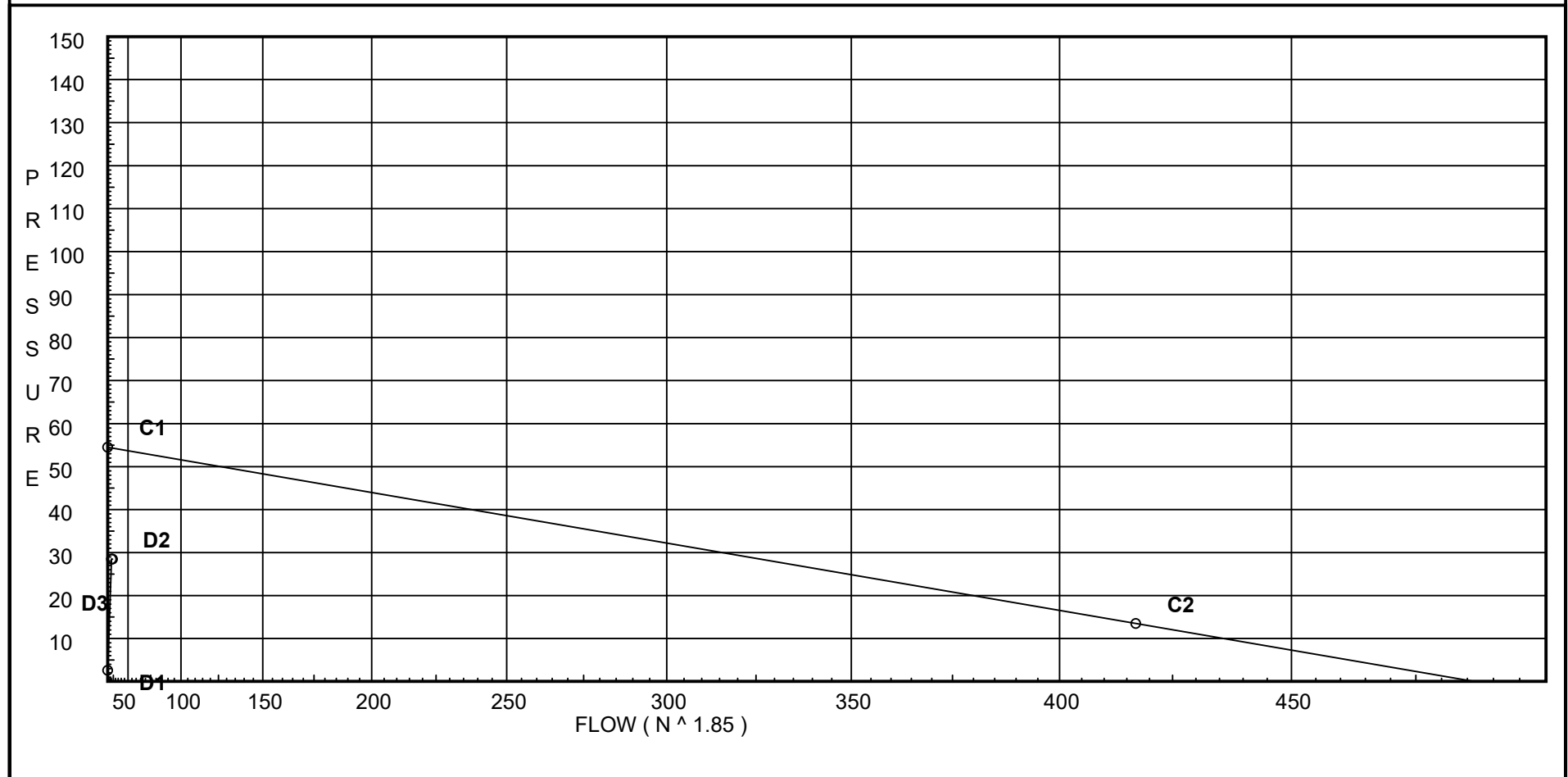
# Water Supply Curve C

Fire & Life Safety America  
Oak Haven Lot 38 - RA1

Page 2  
Date 12/19/2021

City Water Supply:  
C1 - Static Pressure : 54.5  
C2 - Residual Pressure: 13.5  
C2 - Residual Flow : 417

Demand:  
D1 - Elevation : 2.599  
D2 - System Flow : 20.024  
D2 - System Pressure : 28.474  
Hose ( Demand ) : 3  
D3 - System Demand : 23.024  
Safety Margin : 25.833



# Fittings Used Summary

Fire & Life Safety America  
Oak Haven Lot 38 - RA1

Page 3  
Date 12/19/2021

## Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90'El Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

## Units Summary

Diameter Units                   Inches  
Length Units                       Feet  
Flow Units                         US Gallons per Minute  
Pressure Units                   Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with \*. The fittings marked with a \* show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a \* will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

**SUPPLY ANALYSIS**

<b>Node at Source</b>	<b>Static Pressure</b>	<b>Residual Pressure</b>	<b>Flow</b>	<b>Available Pressure</b>	<b>Total Demand</b>	<b>Required Pressure</b>
TEST	54.5	13.5	417.0	54.307	23.02	28.474

**NODE ANALYSIS**

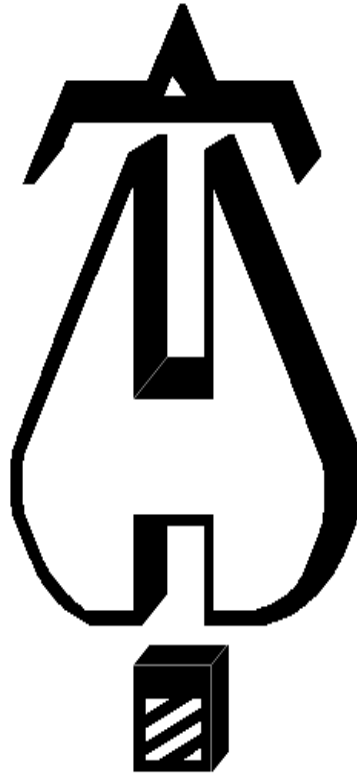
<b>Node Tag</b>	<b>Elevation</b>	<b>Node Type</b>	<b>Pressure at Node</b>	<b>Discharge at Node</b>	<b>Notes</b>
S101	9.0	4.9	16.7	20.02	
101	10.0		16.68		
M101	10.0		17.94		
M102	10.0		20.39		
TOR	8.0		22.38		
BOR	3.0		25.57		
UG1	3.0		26.37	3.0	
UG2	-3.0		31.04		
UG3	-3.0		31.05		
TEST	3.0		28.47		

# Final Calculations : Hazen-Williams

Fire & Life Safety America  
Oak Haven Lot 38 - RA1

Page 5  
Date 12/19/2021

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
S101 to 101	9 10	4.90	20.02	1	O	5.0 0.0	1.000 5.000	150	16.700 -0.433			
			20.02	1.101		0.0	6.000	0.0682	0.409	Vel =	6.75	
			0.0 20.02						16.676	K Factor =	4.90	
101 to M101	10 10		20.02	1	O	5.0 0.0	13.583 5.000	150	16.676 0.0			
			20.02	1.101		0.0	18.583	0.0682	1.267	Vel =	6.75	
			0.0 20.02						17.943	K Factor =	4.73	
M101 to M102	10 10		20.02	1	O	5.0 0.0	30.917 5.000	150	17.943 0.0			
			20.02	1.101		0.0	35.917	0.0682	2.450	Vel =	6.75	
M102 to TOR	10 8		0.0	1	O	5.0 0.0	11.500 5.000	150	20.393 0.866			
			20.02	1.101		0.0	16.500	0.0682	1.125	Vel =	6.75	
			0.0 20.02						22.384	K Factor =	4.23	
TOR to BOR	8 3		20.02	1	N	7.0 0.0	8.000 7.000	150	22.384 2.166			
			20.02	1.101		0.0	15.000	0.0681	1.022	Vel =	6.75	
BOR to UG1	3 3		0.0	1	2E	7.65 0.0	4.000 7.650	150	25.572 0.0			
			20.02	1.101		0.0	11.650	0.0682	0.795	Vel =	6.75	
UG1 to UG2	3 -3	H3	3.00	1.25	T 2E	9.523 9.523	55.000 19.046	150	26.367 2.599			
			23.02	1.394		0.0	74.046	0.0280	2.071	Vel =	4.84	
UG2 to UG3	-3 -3		0.0	6	2G 3E	9.25 64.749	504.083 95.581	150	31.037 0.0			
			23.02	6.09	2F	21.583	599.664	0	0.013	Vel =	0.25	
UG3 to TEST	-3 3		0.0	6	T 2E	48.896 45.637	1000.000 99.422	150	31.050 -2.599			
			23.02	6.16	G	4.89	1099.422	0	0.023	Vel =	0.25	
			0.0 23.02						28.474	K Factor =	4.31	



Hydraulic calculations using HydraCALC

Fire & Life Safety America  
1731 Roundrock Drive  
Raleigh, NC 27615  
P: (919) 872-3250  
F: (919) 877-5775

Job Name : Oak Haven Lot 38 - RA2  
Drawing : FP1  
Location : 157 Oak Haven Drive  
Remote Area : RA2  
Contract : 22NC1551  
Data File : RA2.WXF

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**HYDRAULIC CALCULATIONS**  
**for**

**Project name:** Oak Haven Lot 38  
**Location:** 157 Oak Haven Drive  
**Drawing no:** FP1  
**Date:** 12/19/2021

**Design**

**Remote area number:** RA2  
**Remote area location:** Bonus Room  
**Occupancy classification:** Residential  
**Density:** .05 - Gpm/SqFt  
**Area of application:** 275.9 - SqFt  
**Coverage per sprinkler:** 256 - SqFt  
**Type of sprinklers calculated:** VK494  
**No. of sprinklers calculated:** 2  
**In-rack demand:** N/A - GPM  
**Hose streams:** 3 - GPM  
**Total water required (including hose streams):** 29.47 - GPM @ 29.48 - Psi  
**Type of system:** WET  
**Volume of dry or preaction system:** N/A - Gal

**Water supply information**

**Date:** 4/21/2021  
**Location:** NC 42, NC 27540  
**Source:** Fire & Life Safety America

**Name of contractor:** Fire & Life Safety America  
**Address:** 1731 Roundrock Drive / Raleigh, NC 27615 / P: (919) 872-3250  
**Phone number:** F: (919) 877-57  
**Name of designer:** H. WEYANT  
**Authority having jurisdiction:** Harnett County  
**Notes: (Include peaking information or gridded systems here.)**

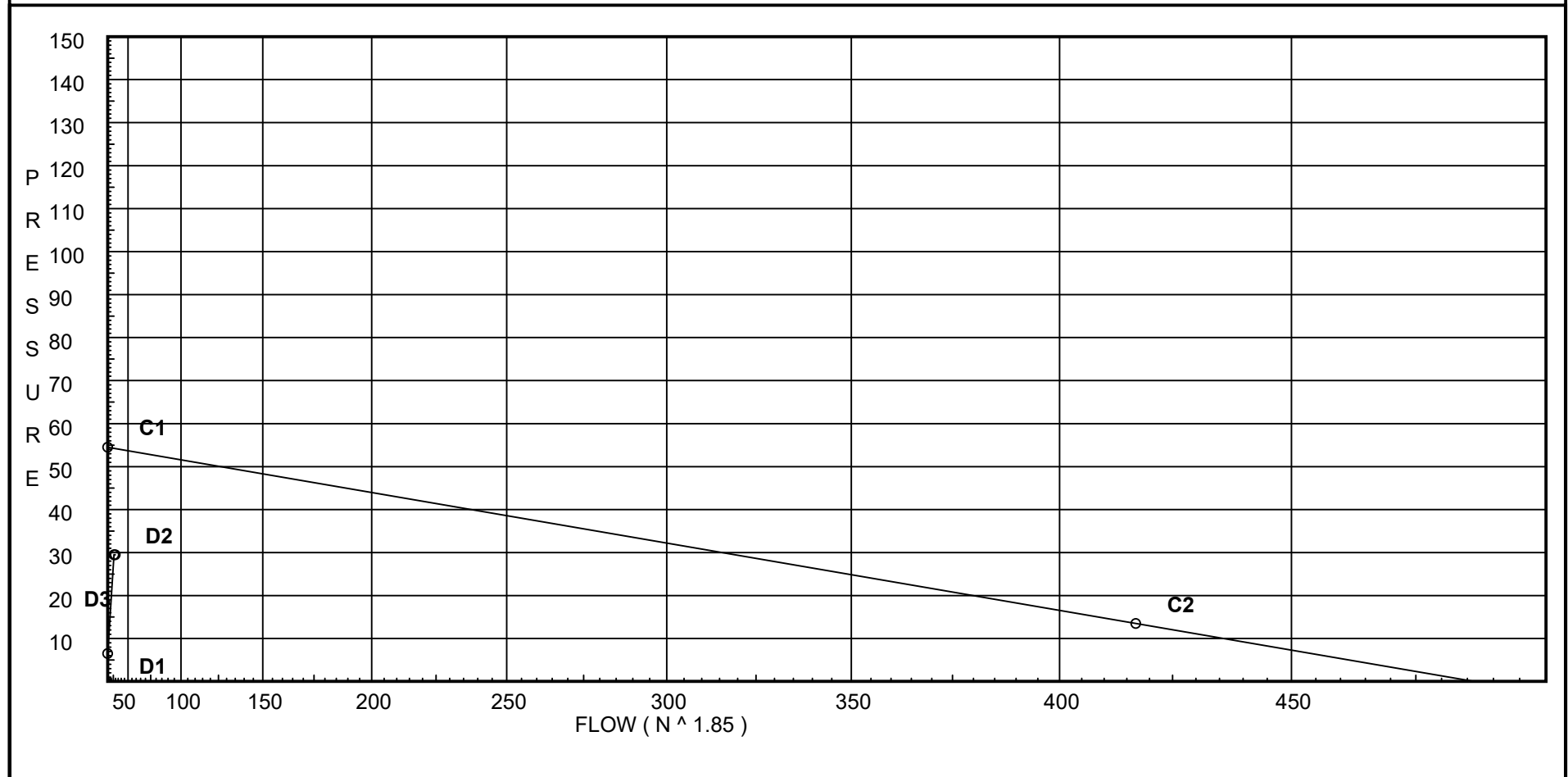
# Water Supply Curve C

Fire & Life Safety America  
Oak Haven Lot 38 - RA2

Page 2  
Date 12/19/2021

City Water Supply:  
C1 - Static Pressure : 54.5  
C2 - Residual Pressure: 13.5  
C2 - Residual Flow : 417

Demand:  
D1 - Elevation : 6.496  
D2 - System Flow : 26.469  
D2 - System Pressure : 29.478  
Hose ( Demand ) : 3  
D3 - System Demand : 29.469  
Safety Margin : 24.717





# Fittings Used Summary

Fire & Life Safety America  
Oak Haven Lot 38 - RA2

Page 3  
Date 12/19/2021

## Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
N *	CPVC 90'El Harvel-Spears		7	7	8	9	11	12	13	0	0	0	0	0	0	0	0	0	0	0	0
O *	CPVC Tee - Branch	3	3	5	6	8	10	12	15	0	0	0	0	0	0	0	0	0	0	0	0
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121

## Units Summary

Diameter Units                   Inches  
Length Units                       Feet  
Flow Units                         US Gallons per Minute  
Pressure Units                   Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with \*. The fittings marked with a \* show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a \* will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

**SUPPLY ANALYSIS**

<b>Node at Source</b>	<b>Static Pressure</b>	<b>Residual Pressure</b>	<b>Flow</b>	<b>Available Pressure</b>	<b>Total Demand</b>	<b>Required Pressure</b>
TEST	54.5	13.5	417.0	54.195	29.47	29.478

**NODE ANALYSIS**

<b>Node Tag</b>	<b>Elevation</b>	<b>Node Type</b>	<b>Pressure at Node</b>	<b>Discharge at Node</b>	<b>Notes</b>
S201	18.0	4.9	7.0	12.96	
S202	18.0	4.9	7.6	13.5	
201	19.0		6.81		
202	19.0		7.36		
M102	10.0		14.59		
D102	10.0		16.53		
TOR	8.0		20.94		
BOR	3.0		24.82		
UG1	3.0		26.15	3.0	
UG2	-3.0		32.02		
UG3	-3.0		32.04		
TEST	3.0		29.48		

# Final Calculations : Hazen-Williams

Fire & Life Safety America  
Oak Haven Lot 38 - RA2

Page 5  
Date 12/19/2021

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
S201 to 201	18 19	4.90	12.96 12.96	1 1.101	N	7.0 0.0 0.0	1.000 7.000 8.000	150 0.0305	7.000 -0.433 0.244		Vel = 4.37	
201			0.0 12.96						6.811		K Factor = 4.97	
S202 to 202	18 19	4.90	13.50 13.5	1 1.101	O	5.0 0.0 0.0	1.000 5.000 6.000	150 0.0328	7.596 -0.433 0.197		Vel = 4.55	
202			0.0 13.50						7.360		K Factor = 4.98	
201 to 202	19 19		12.96 12.96	1 1.101		0.0 0.0 0.0	18.000 0.0 18.000	150 0.0305	6.811 0.0 0.549		Vel = 4.37	
202			0.0 12.96						7.360		K Factor = 4.78	
202 to M102	19 10		26.47 26.47	1 1.101	2N	14.0 0.0 0.0	15.125 14.000 29.125	150 0.1143	7.360 3.898 3.328		Vel = 8.92	
M102 to D102	10 10		0.0 26.47	1 1.101	N	7.0 0.0 0.0	10.000 7.000 17.000	150 0.1143	14.586 0.0 1.943		Vel = 8.92	
D102 to TOR	10 8		0.0 26.47	1 1.101	3O N	15.0 7.0 0.0	9.000 22.000 31.000	150 0.1143	16.529 0.866 3.542		Vel = 8.92	
TOR			0.0 26.47						20.937		K Factor = 5.78	
TOR to BOR	8 3		26.47 26.47	1 1.101	N	7.0 0.0 0.0	8.000 7.000 15.000	150 0.1143	20.937 2.166 1.714		Vel = 8.92	
BOR to UG1	3 3		0.0 26.47	1 1.101	2E	7.65 0.0 0.0	4.000 7.650 11.650	150 0.1142	24.817 0.0 1.331		Vel = 8.92	
UG1 to UG2	3 -3	H3	3.00 29.47	1.25 1.394	T 2E	9.523 9.523 0.0	55.000 19.046 74.046	150 0.0442	26.148 2.599 3.270		Vel = 6.20	
UG2 to UG3	-3 -3		0.0 29.47	6 6.09	2G 3E 2F	9.25 64.749 21.583	504.083 95.581 599.664	150 0	32.017 0.0 0.020		Vel = 0.32	
UG3 to TEST	-3 3		0.0 29.47	6 6.16	T 2E G	43.037 40.168 4.304	1000.000 87.509 1087.509	140 0	32.037 -2.599 0.040		Vel = 0.32	
TEST			0.0 29.47						29.478		K Factor = 5.43	



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# Oak Haven Lot 38

## FIRE SPRINKLER PRODUCT DATA

12/20/2021

# Steel Pipe Submittal Data for Fire Sprinkler System

See Chart For Inside Diameters and Wall Thickness

All piping to be one or more of the following: (Refer to checked for submittal items).

- Schedule 40 Steel pipe conforming to ASTM A-135 or A-795 using Cast Iron, Malleable Iron or Ductile Iron screw fittings in accordance with standard ANSI B16.3 or ANSI B16.4. Pipe may also be joined by grooved fittings approved for fire protection use.
- Schedule 7 or 10 Steel Pipe conforming to ASTM A-135 or A-795 using grooved fittings listed for fire protection use.
- All welding will comply with the applicable requirements of AWS B2.1, Specification for Welding Procedure and Performance Qualification. This will be limited to pipe outlets and flanged end treatments.

All materials to be used in the installation of sprinkler system are to conform to NFPA 13, Local Authorities Having Jurisdiction and any applicable referenced codes and standards.

### Steel Pipe Dimensions per NFPA 13:

Pipe		Sch 40		Sch 10		Sch 07	
Nom. Dia.	O.D (in)	I.D. (in)	Wall (in)	I.D. (in)	Wall (in)	I.D. (in)	Wall (in)
1"	1.315	1.049	0.133	1.097	0.109	n/a	n/a
1¼"	1.660	1.380	0.140	1.442	0.109	1.536	0.062
1½"	1.900	1.610	0.145	1.682	0.109	1.728	0.086
2"	2.375	2.067	0.154	2.157	0.109	2.203	0.086
2½"	2.875	2.469	0.203	2.635	0.120	2.703	0.086
3"	3.500	3.068	0.216	3.260	0.120	3.314	0.093
4"	4.500	4.026	0.237	4.260	0.120	4.310	0.095
6"	6.625	6.065	0.280	6.357	0.134	n/a	n/a
8"	8.625	7.981	0.322	8.249	0.188	n/a	n/a
10"	10.750	10.020	0.365	n/a	n/a	n/a	n/a
12"	12.750	11.938	0.406	n/a	n/a	n/a	n/a

**This submittal shall include the following checked items.**

	<i>Domestic</i>	<i>Foreign</i>
<b>Origin of Manufacture</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	<i>Black</i>	<i>Galvanized</i>
<b>Exterior Finish</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

	<i>Sch. 40</i>	<i>Sch. 10</i>	<i>Sch. 7</i>
<b>Schedule</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	<i>A-135</i>	<i>A-795</i>	<i>A-53</i>
<b>ASTM</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



## Submittal Data CPVC Pipe and Fittings

### Listings:

- Light hazard occupancies as defined in the standard for “Installation of Sprinkler Systems”, NFPA 13.
- Residential occupancies as defined in the standard for “Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height”, NFPA 13R.
- Residential occupancies as defined in the standard for “Installation of Sprinkler Systems in One and Two Family Dwellings and Manufactured Homes”, NFPA 13D. - Underground fire service systems as described in the “Installation of Sprinkler
- Systems”, NFPA 13 2007 Edition, and where appropriate the “Standard for Installation of Private Service Mains & Their Appurtenances”, NFPA 24
- Local Authorities having jurisdiction and any applicable referenced
- codes and standards.

### Approvals:

UL, FM, CUL, NSF, Dade County, LPCB, MEA, and the City of Los Angeles.

### Material Specifications:

Pipe: ASTM F442, SDR 13.5

Fittings: ASTM F438, (Sch. 40) and ASTM F439 (Sch. 80)

Maximum Working Pressure of 175 PSI



Straight Elbow



Reducing Elbow



Straight Tee



Reducing Tee



Cross



Reducing Cross



45 Elbow



Coupling



Sprinkler Adapter  
w/ Brass Insert



Slip-Thread Adapter



Sprinkler Head Adapter 90° Ell



Sprinkler Head Adapter Tee



Back-to-Back Tee



Grooved Coupling Adapter



Reducer Bushing



Cap

### CPVC Pipe Submittal Data for Fire Sprinkler Systems

All material used in the installation of the sprinkler system conforms to:

NFPA 13

NFPA 13R

NFPA 13D



- All CPVC piping should be pressure tested at 200 PSI for 2 hours.
- Chemical compatibility should be checked per manufacturer.
- Glycerin antifreeze solutions are acceptable and installation of antifreeze systems should comply with NFPA Section 7.6.2 of NFPA 13 (2007 Edition).

BlazeMaster® Pipe Dimensions and Weights SDR 13.5 (ASTM F 442)									
Nominal Size		Average OD		Average ID		Pounds Per Foot	Kilograms Per Meter	Pounds Per Foot	Kilograms Per Meter
Inches	mm	Inches	mm	Inches	mm	Empty	Empty	H <sub>2</sub> O Filled	H <sub>2</sub> O Filled
3/4	20.0	1.050	26.7	.874	22.2	0.168	0.250	0.428	0.637
1	25.0	1.315	33.4	1.101	28.0	0.262	0.390	0.675	1.005
1 1/4	32.0	1.660	42.2	1.394	35.4	0.418	0.622	1.079	1.606
1 1/2	40.0	1.900	48.3	1.598	40.6	0.548	0.816	1.417	2.109
2	50.0	2.375	60.3	2.003	50.9	0.859	1.278	2.224	3.310
2 1/2	65.0	2.875	73.0	2.423	61.5	1.257	1.871	3.255	4.844
3	80.0	3.500	88.9	2.950	75.0	1.867	2.778	4.829	7.186

Note: The above average OD and average ID information is per ASTM F442. Check with individual manufacturers for actual OD and ID information.

Allowance for Friction Loss in Fittings (Equivalent Feet of Pipe)								
Fitting Size (In.)	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	
Tee Branch	3	5	6	8	10	12	15	
Elbow 90° *	4	5	6	7	9	12	13	
Elbow 45°	1	1	2	2	2	3	4	
Coupling	1	1	1	1	1	2	2	
Tee Run	1	1	1	1	1	2	2	

## Submittal Data for CPVC Strap Hangers

All materials to be used in the installation of sprinkler system are to conform to NFPA 13, 13R and 13D, Local Authorities having Jurisdiction and any applicable referenced codes and standards.

UL Listed in the USA and Canada to support fire sprinkler piping.

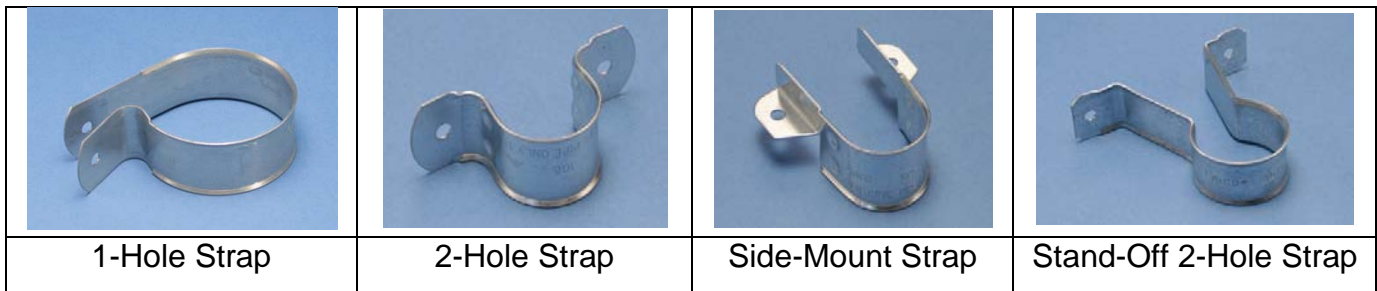
- A “one-hole strap” can function as a hanger and restraining device. It supports CPVC pipe horizontally from top or side of beam. As a restraining device, the hanger will be inverted so the fastener is downward. This installation will prevent upward movement of the sprinkler during activation.
- A “two-hole strap” can function as a hanger and restraining device. It supports CPVC pipe horizontally from top, bottom, or side of beam. A hex-head self-threading screw (furnished with most CPVC hangers) is easily installed using an electric drill. No pre-drilling pilot hole is required.
- A “side-mount strap” supports the CPVC pipe horizontally from top or bottom of beam
- A “stand-off 2-hole strap” supports the CPVC pipe off of the vertical face of the structural or composite wood joists.

Hangers must be clean, free of burrs, and all surface oils. Any contaminants must be removed from the hanger.

The pipe size of the hanger shall be the same size as the supported pipe.

Pipe hangers must have a load bearing surface at least ½” inch wide.

Examples of CPVC Hangers



**This submittal shall include the following checked items:**

Product	
<input type="checkbox"/>	¾” Hangers
<input checked="" type="checkbox"/>	1” Hangers
<input type="checkbox"/>	1-1/4” Hangers
<input type="checkbox"/>	1-1/2” Hangers
<input type="checkbox"/>	2” Hangers

Origin of Manufacture	
Domestic	Foreign
<input checked="" type="checkbox"/>	<input type="checkbox"/>





## TECHNICAL DATA

## FREEDOM® RESIDENTIAL CONCEALED PENDENT SPRINKLER VK494 (K4.9)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page [www.vikinggroupinc.com](http://www.vikinggroupinc.com)

### 1. DESCRIPTION

Viking Freedom® Residential Concealed Pendent Sprinkler VK494 is a small thermosensitive, glass-bulb residential sprinkler designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired. The orifice design, with a K-factor of 4.9 (70.6 metric\*), allows the sprinkler's efficient use of available water supplies for the hydraulically designed fire-protection system. The fast response glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.

The sprinkler is pre-assembled with a threaded adapter for installation with a low-profile small-diameter cover assembly installed flush to the ceiling. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on" and "thread-on" designs of the concealed cover plate assemblies allow easy installation of the cover plate after the system has been tested and the ceiling finish has been applied, while also providing up to 1/2" (13 mm) of vertical adjustment. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler. The Electroless Nickel PTFE (ENT) coating has been investigated for installation in corrosive atmospheres and is C-UL-US-EU Listed as indicated in the Approval Charts. The ENT finish is only available for the sprinkler assembly, the cover plate is not plated.

### 2. LISTINGS AND APPROVALS



**cULusEU Listed:** Category VKKW

Refer to the Approval Charts and Design Criteria for C-UL-US-EU Listing requirements that must be followed.

### 3. TECHNICAL DATA

#### Specifications:

Minimum Operating Pressure: Refer to the Approval Chart.

Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 1/2" (15 mm) NPT

Nominal K-factor: 4.9 U.S. (70.6 metric\*)

Glass-bulb fluid temperature rating: to -65 °F (-55 °C)

\* Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

#### Material Standards:

Sprinkler Body: Brass UNS-C84400 or QM Brass

Deflector: Phosphor Bronze UNS-C51000

Deflector Pins: Stainless Steel UNS-S30200

Button: Brass UNS-C36000

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

Compression Screw: 18-8 Stainless Steel

Yoke: Phosphor Bronze UNS-C51000

Belleville Spring Sealing Assembly: Beryllium Nickel Alloy, coated on both sides with PTFE Tape

Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

Shipping Cap: High Density Polyethylene

#### Cover Plate Materials:

Cover Plate Assembly: Copper UNS-C11000 and Brass UNS-C26800 or Stainless Steel UNS-S30400

Spring: Beryllium Nickel

Solder: Eutectic

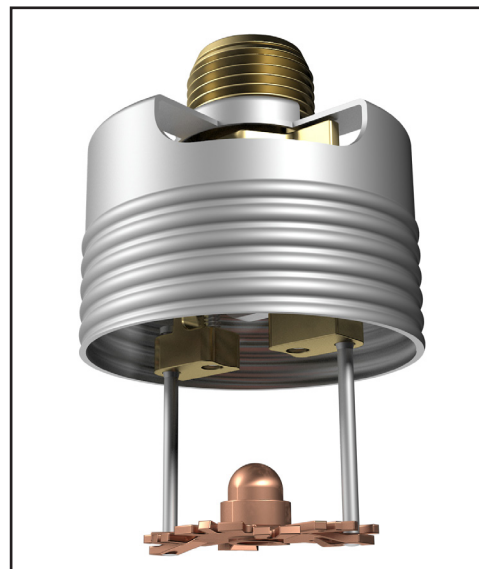
**Ordering Information:** The sprinkler and cover plate must be ordered separately. Refer to Tables 1 and 2.

### 4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

### 5. OPERATION

During fire conditions, when the temperature around the sprinkler approaches the cover plate's nominal temperature rating, the cover plate detaches and releases the deflector. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand. When the temperature reaches the sprinkler's nominal temperature rating, the glass bulb shatters releasing the yoke, pip cap assembly and sealing spring. Water begins flowing through the sprinkler orifice and strikes the deflector forming a uniform spray pattern over a specific area of coverage, which is determined by the water supply pressure at the sprinkler, in order to extinguish or control the fire.



**WARNING:** Cancer and Reproductive Harm-  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)



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### 6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

### 7. AVAILABILITY

Viking Sprinkler Model VK494 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

### 8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

**TABLE 1: SPRINKLER ORDERING INFORMATION**

#### Instructions:

- (1) Select a Sprinkler Base Part Number
- (2) Add the suffix for the desired Finish
- (3) Add the suffix for the desired Sprinkler Temperature Rating
- (4) Order a cover plate (refer to Table 2)

#### Example:

20759AE = 200 °F (93 °C) Temperature Rated Sprinkler with a standard Brass finish.

Sprinkler Base Part Number <sup>1</sup>	Size	1: Finishes		2: Temperature Ratings <sup>7</sup>			
	NPT Inch	Description	Suffix	Nominal Rating	Bulb Color	Max. Ambient Ceiling Temperature <sup>2</sup>	Suffix
20759	1/2	Brass	A	155 °F (68 °C)	Red	100 °F (38 °C)	B
		ENT <sup>5,6</sup>	JN	200 °F (93 °C)	Green	150 °F (65 °C)	E
		<b>Corrosion Resistant Sprinkler Finish: ENT</b>					

#### Accessories

##### Sprinkler Wrenches and tools:

- A. Heavy Duty Part Number: 14047W/B<sup>3</sup> (available since 2006)
- B. Head Cabinet Wrench Part Number: 14031<sup>3,4</sup> (available since 2006)
- C. Optional Concealed Cover Plate Installer Tool Part Number: 14412<sup>8</sup> (available since 2007)
- D. Optional Large Concealed Cover Plate Installer Tool Part No. 14867<sup>8</sup> (available since 2007)

##### Sprinkler Cabinet:

Holds up to 6 sprinklers: Part number 01731A (available since 1971).

#### Footnotes

1. Part number shown is the base part number. For complete part number, refer to the current Viking price list schedule.
2. Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
3. Requires a 1/2" ratchet (not available from Viking).
4. Also optional for removal of the protective cap. Ideal for sprinkler cabinets.
5. cULus Listed as corrosion resistant.
6. The corrosion resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway. For ENT coated sprinklers, the Belleville spring is exposed.
7. The sprinkler temperature rating is stamped on the deflector.
8. The installer tool is for push-on style cover plates only.



## TECHNICAL DATA

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### TABLE 2: COVER PLATE ORDERING INFORMATION

#### Instructions:

- (1) Select a Cover Plate Base Part Number
- (2) Add the suffix for the desired Finish
- (3) Add the suffix for the required Cover Plate Nominal Rating.

#### Example:

23190MC/W = 165 °F (74 °C) Temperature Rated, 2-3/4" (70 mm) diameter, Thread-On style, Round Cover Plate with a Painted White finish.

1: Select a Cover Plate Base Part Number <sup>3</sup>						2: Select a Finish	
Thread-On Style			Push-On Style			Description	Suffix <sup>5</sup>
Base Part Number <sup>1</sup>	Size Inch (mm)	Type	Base Part Number	Size Inch (mm)	Type		
23190	2-3/4 (70)	Round	23447	2-3/4 (70)	Round	Polished Chrome	F
23174	3-5/16 (84)	Round	23463	3-5/16 (84)	Round	Brushed Chrome	F-/B
23179	3-5/16 (84)	Square	23482	3-5/16 (84)	Square	Bright Brass	B
23193 <sup>5</sup>	2-3/4 (70)	Stainless Steel Round	23455 <sup>5</sup>	2-3/4 (70)	Stainless Steel Round	Antique Brass	B-/A
						Brushed Brass	B-/B
23183 <sup>5</sup>	3-5/16 (84)	Stainless Steel Round	23473 <sup>5</sup>	3-5/16 (84)	Stainless Steel Round	Brushed Copper	E-/B
						Painted White	M-/W
						Painted Ivory	M-/I
						Painted Black	M-/B

3: Temperature Rating Matrix <sup>1,2</sup>				
Cover Plate Nominal Rating (Required)	Temperature Classification	Sprinkler Nominal Rating	Sprinkler Maximum Ambient Ceiling Temperature <sup>2</sup>	Suffix
135 °F (57 °C)	Ordinary	155 °F (68 °C)	100 °F (38 °C)	<b>A</b>
165 °F (74 °C)	Intermediate	200 °F (93 °C)	150 °F (65 °C)	<b>C</b>

#### Footnotes

1. Part number shown is the base part number. For complete part number, refer to the current Viking price list schedule.
2. The sprinkler temperature rating is stamped on the deflector.
3. Based on NFPA-13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
4. Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
5. Stainless Steel versions are not available with any finishes or paint.




## TECHNICAL DATA

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### Approval Chart Viking VK494, 4.9 K-factor Residential Concealed Pendent Sprinkler

For systems designed to NFPA 13D or NFPA 13R. For systems designed to NFPA 13, refer to the Design Criteria. For Ceiling types refer to current editions of NFPA 13, 13R or 13D

Sprinkler Base Part Number <sup>1</sup>	SIN	NPT Thread Size		Nominal K-factor		Maximum Water Working Pressure
		Inches	mm	U.S.	metric <sup>2</sup>	
20759	VK494	1/2	15	4.9	70.6	175 psi (12 bar)
Max. Coverage Area <sup>6</sup> W X L Ft. X Ft. (m X m)	Flow GPM (LPM)	Pressure PSI (bar)	Deflector to Ceiling	Installation Type	Listings and Approvals <sup>3,5</sup> 	Minimum Spacing Ft. (m)
12 X 12 (3.7 X 3.7)	13 (49.2)	7.0 (0.48)	Refer to Figure 2	Concealed with Cover Plate Assembly. See Footnote 7.	See Footnotes 8, & 9	8 (2.4)
14 X 14 (4.3 X 4.3)	13 (49.2)	7.0 (0.48)				
16 X 16 (4.9 X 4.9)	13 (49.2)	7.0 (0.48)				
18 X 18 (5.5 X 5.5)	17 (64.4)	12.0 (0.83)				
20 X 20 (6.1 X 6.1)	20 (75.7)	16.7 (1.15)				

#### Footnotes

- Part number shown is the base part number. For complete part number, refer to the current Viking price schedule.
- Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
- This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals. Refer also to Design Criteria.
- Listed by Underwriter's Laboratories, Inc. for use in the U.S., Canada, and European Union.
- Meets New York City requirements, effective July 1, 2008.
- For areas of coverage smaller than shown, use the "Flow" and "Pressure" for the next larger area listed. Flows and pressures listed are per sprinkler. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the minimum "Flow" and "Pressure" used.
- Other paint colors are available on request with the same listings as the standard finish colors. Stainless Steel cover plates are not available with any finishes or paint. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information. Custom colors are indicated on a label inside the cover assembly. Refer to Figure 3.
- Accepted Cover Plate Finishes are: Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black.
- C-UL-US-EU Listed as corrosion resistant - Electroless Nickel PTFE (ENT)



**TECHNICAL DATA**

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**DESIGN CRITERIA**

(Also refer to the Approval Chart.)

**UL Listing Requirements (C-UL-US-EU):**

When using Viking Residential Concealed Pendent Sprinkler VK494 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart.

For systems designed to NFPA 13: The number of design sprinklers is to be the four contiguous most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

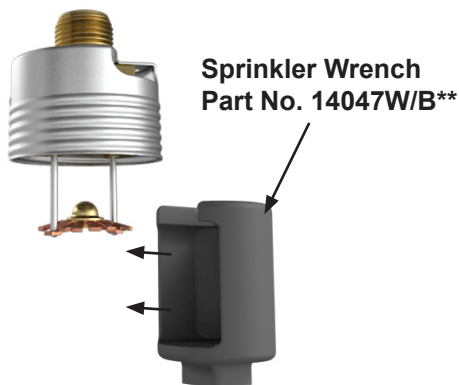
- The flow rates given in the Approval Chart for NFPA 13D and NFPA 13R applications for each listed area of coverage, or
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the “design area” in accordance with sections 9.5.2.1 or 10.2.4.1.2 of the current edition of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

**NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.**

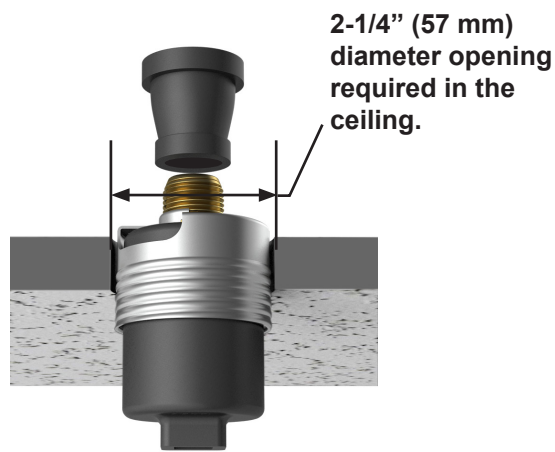
**IMPORTANT: Always refer to Bulletin Form No. F\_080415 - Best Practices for Residential Sprinkler Handling and Installation. Also refer to Form No. F\_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.**

**Sprinkler and Adapter Assembly**

- Protective cap removed
- Use wrench 14047W/B\*\*

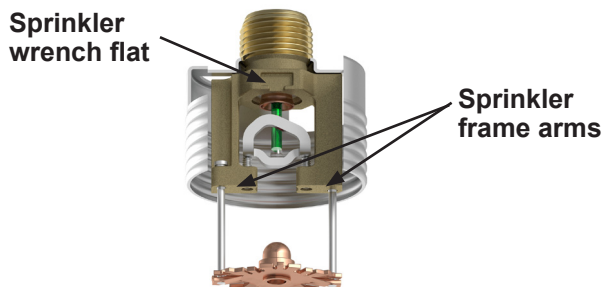


**Step 1:**  
 Carefully slide the wrench sideways around the deflector and pins



**Step 2:**  
 Carefully press the wrench upward and turn slightly to ensure engagement with the sprinkler wrench flats.

**NEVER** install the sprinkler by applying the installation wrench across the frame arms. **DO NOT** overtighten. Use only the designated sprinkler wrenches, Viking Part Numbers 14047W/B\*\* or 14031\*\*. A leak tight seal should be achieved by turning the sprinkler clockwise 1 to 1-1/2 turns beyond finger tight.



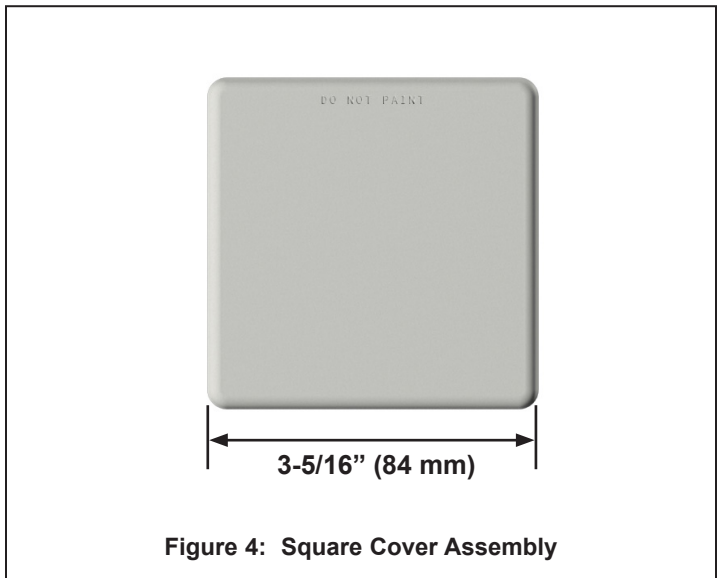
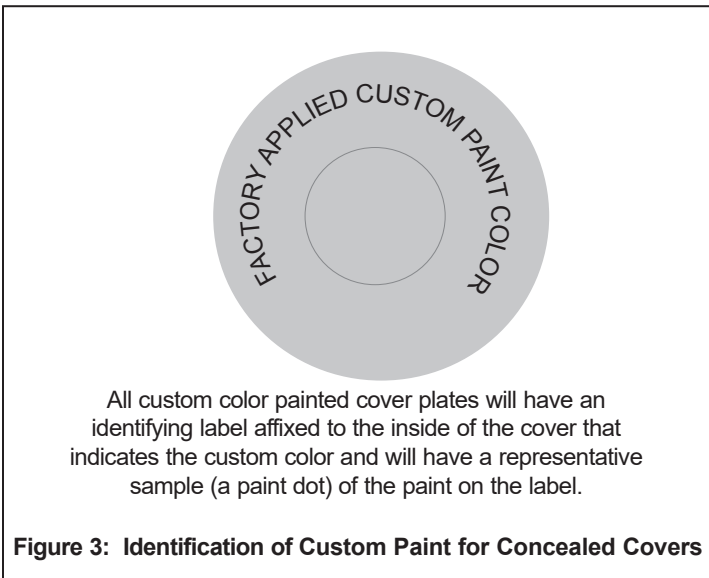
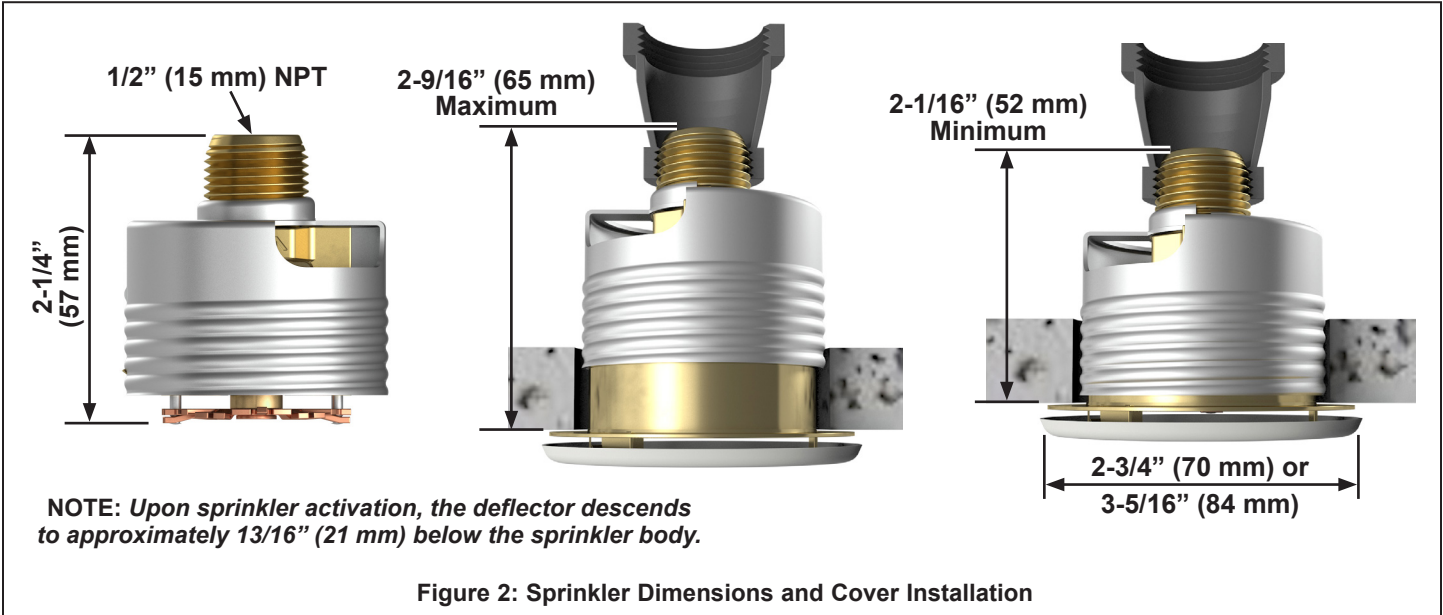
**Figure 1: Sprinkler Installation and Proper Wrench Usage**  
 \*\* A 1/2" ratchet is required (Not available from Viking)



TECHNICAL DATA

FREEDOM® RESIDENTIAL CONCEALED PENDENT SPRINKLER VK494 (K4.9)

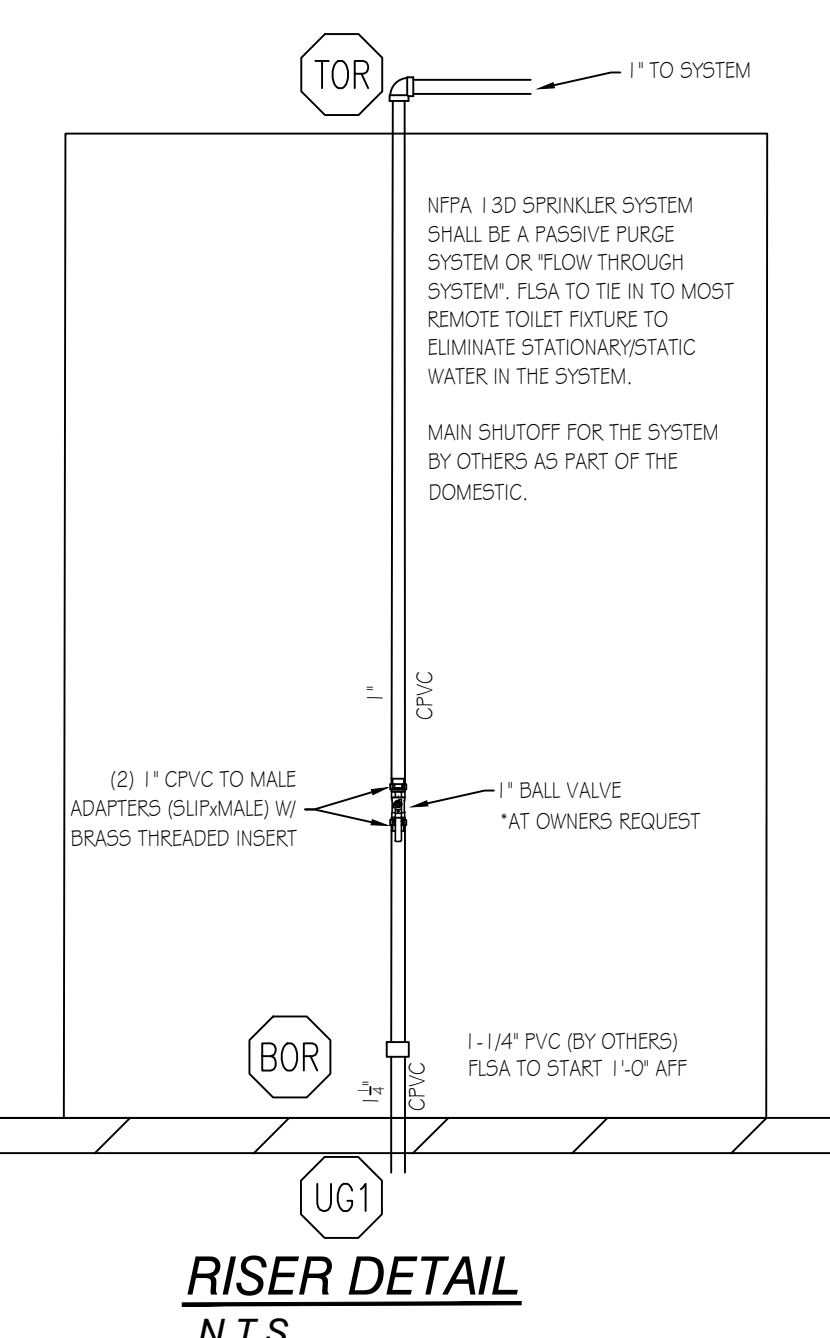
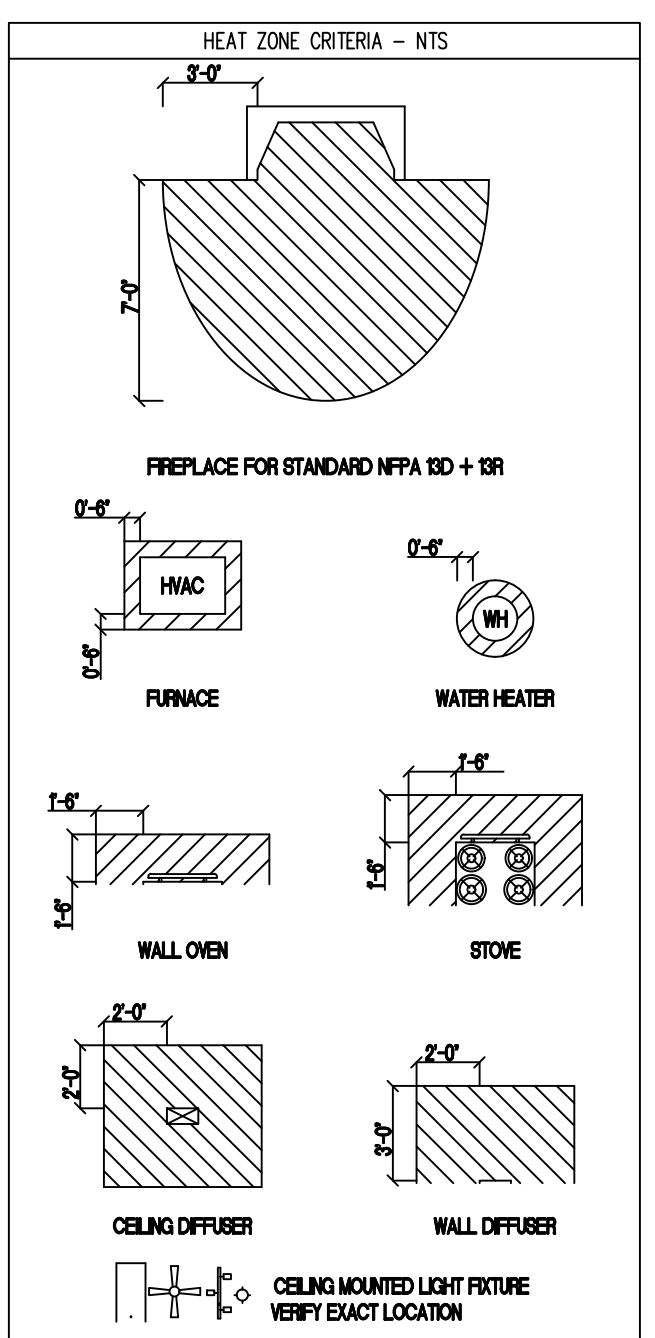
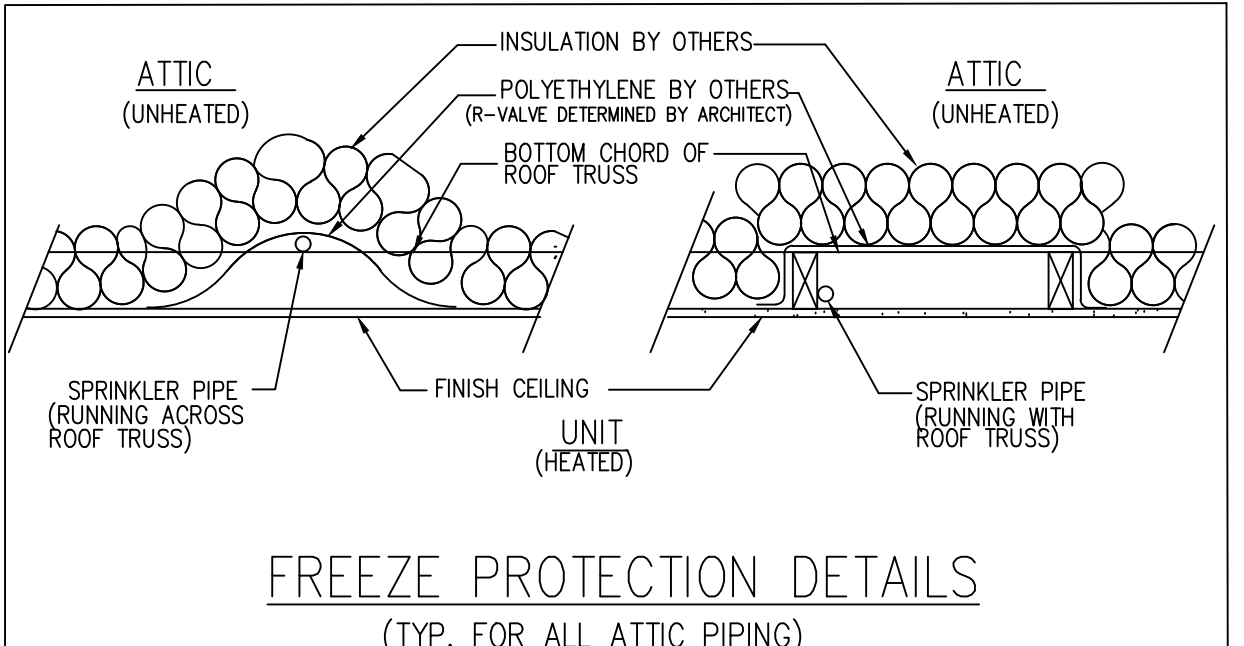
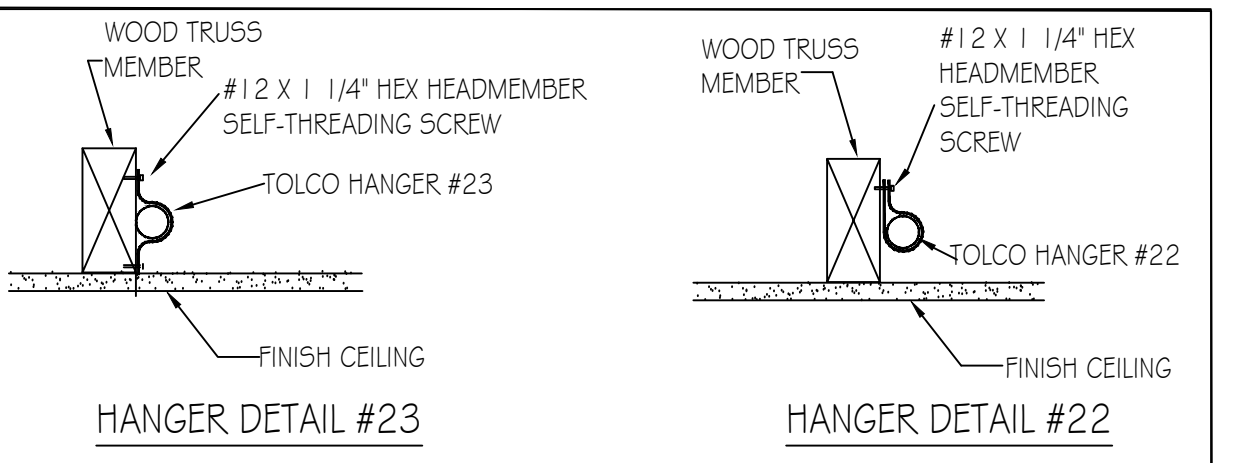
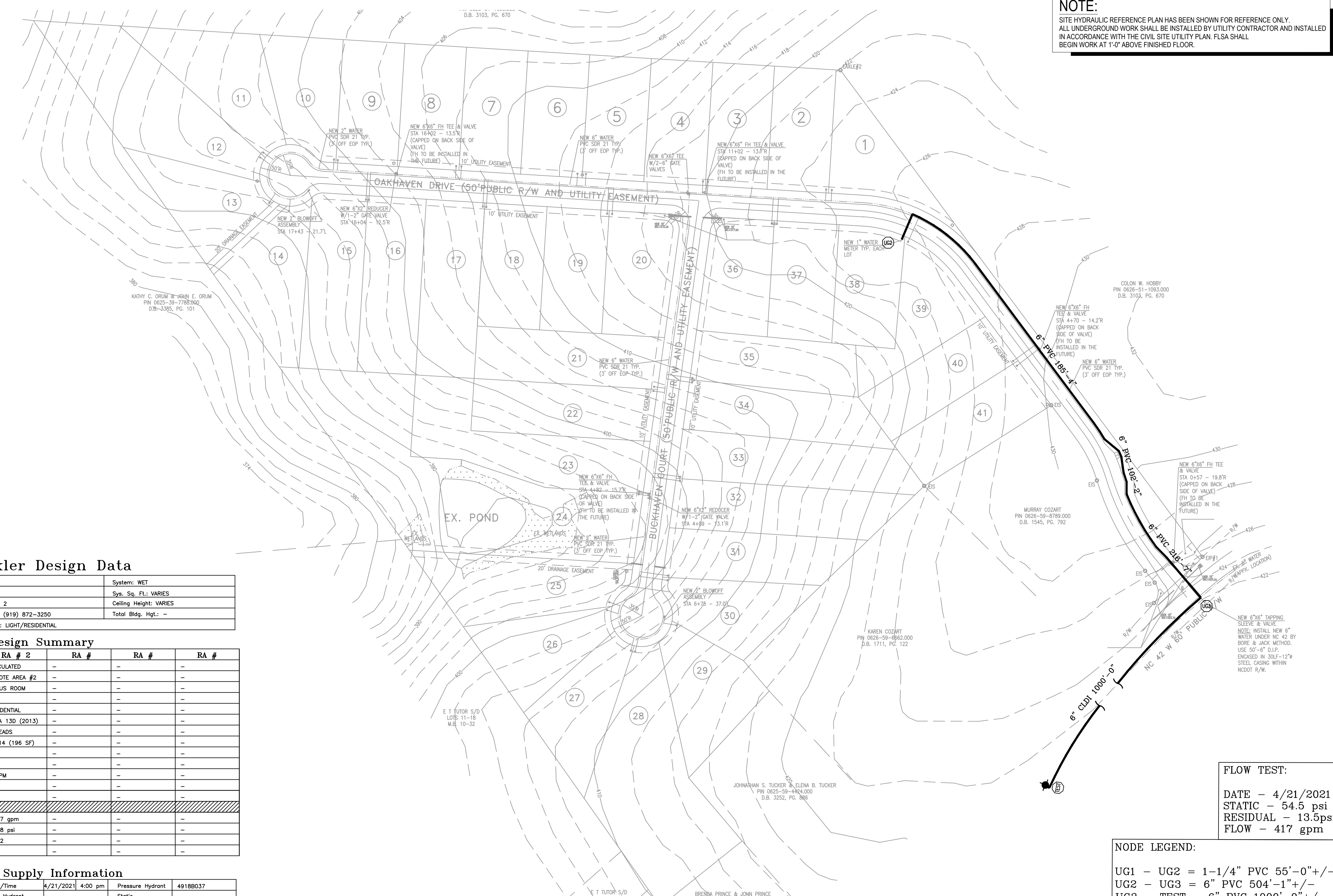
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# GENERAL NOTES

- THIS WET PIPE FIRE SPRINKLER SYSTEM IS DESIGNED AS LIGHT HAZARD/RESIDENTIAL OCCUPANCY WITH A DESIGN DENSITY OF .05 GPM/2 SPRINKLERS MAX IN ACCORDANCE WITH 13D (2013 EDITION) AND NFPA 13-11.3.1.1.
- HYDRAULIC CALCULATIONS ARE BASED UPON FLOW DATA PERFORMED BY FLSA ON 04/21/2021 AT 4:00PM. HYDRAULIC CALCULATIONS TO BE BASED ON NFPA 13D (2013 EDITION).
- FIRE SPRINKLER OVERHEAD PIPE AND FITTINGS ARE TO BE CPVC PIPE LISTED FOR FIRE PROTECTION USED UNLESS NOTED OTHERWISE.
- ALL HANGERS TO BE U.L. LISTED FOR FIRE PROTECTION SERVICES. HANGERS SHALL BE INSTALLED IN ACCORDANCE WITH THEIR LISTING. SPACING AND LOCATION TO COMPLY WITH NFPA 13.
- ALL EQUIPMENT TO BE U.L. LISTED FOR FIRE PROTECTION SERVICES AND LISTED IN ACCORDANCE WITH ITS LISTING.
- PENDENT SPRINKLERS ARE TO BE SPACED A MAXIMUM OF 18 FT. X 18 FT. AND A MINIMUM OF 8 FT. APART. PENDANTS MAY BE A MAXIMUM OF 9'-0" OFF OF ANY WALL.
- IN AREAS WHERE WET-TYPE SPRINKLER SYSTEM PIPING HAS BEEN INSTALLED, IT IS THE OWNERS' RESPONSIBILITY TO PROVIDE ADEQUATE HEAT. (AMBIENT TEMPERATURE OF A MINIMUM 40°F)
- ALL DRAINAGE TO COMPLY WITH NFPA 13D AND CONTRACT DOCUMENTS.
- [X'-X'] DENOTES CENTERLINE OF PIPE AFF.
- ALL SPRINKLER HEADS SHALL BE LISTED RESIDENTIAL SPRINKLER HEADS IN ACCORDANCE WITH 7.5.1 OF NFPA 13D.
- FLSA POINT OF CONNECTION IS AT 1'-0" AFF.
- UNDERGROUND PIPING TO BE FLUSHED PRIOR TO SPRINKLER PIPE CONNECTION. FLUSHING IS TO BE COMPLETED BY OTHERS.
- PIPING TO SPRINKLER HEADS 1" CPVC UNLESS OTHERWISE NOTED.

**NOTE:**  
SITE HYDRAULIC REFERENCE PLAN HAS BEEN SHOWN FOR REFERENCE ONLY. ALL UNDERGROUND WORK SHALL BE INSTALLED BY UTILITY CONTRACTOR AND INSTALLED IN ACCORDANCE WITH THE CIVIL SITE UTILITY PLAN. FLSA SHALL BEGIN WORK AT 1'-0" ABOVE FINISHED FLOOR.



**Sprinkler Design Data**

Project Name:	OAKHAVEN LOT 38	System:	WET
Project Street Address:	157 OAKHAVEN DR	Sys. Sq. Ft.:	VARIES
Suite:	-	Floor#:	2
Designed By:	HAILEY WEYANT	Phone:	(919) 872-3250
Occupancy:	RESIDENTIAL	Hazard:	LIGHT/RESIDENTIAL
		Total Bldg. Hgt.:	-

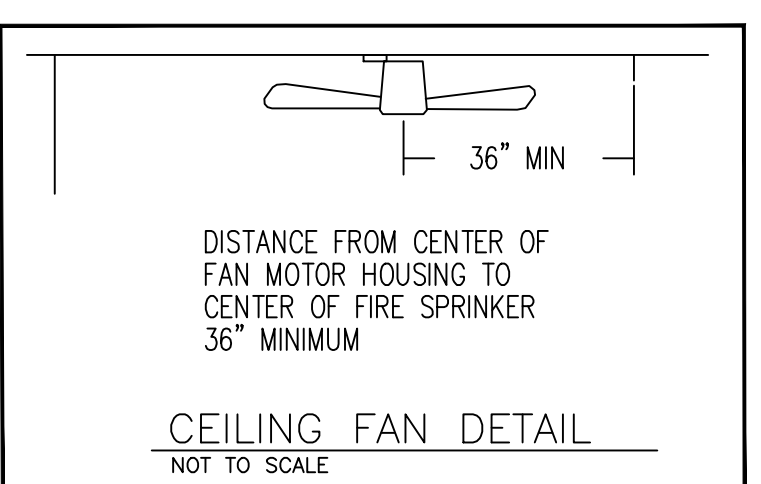
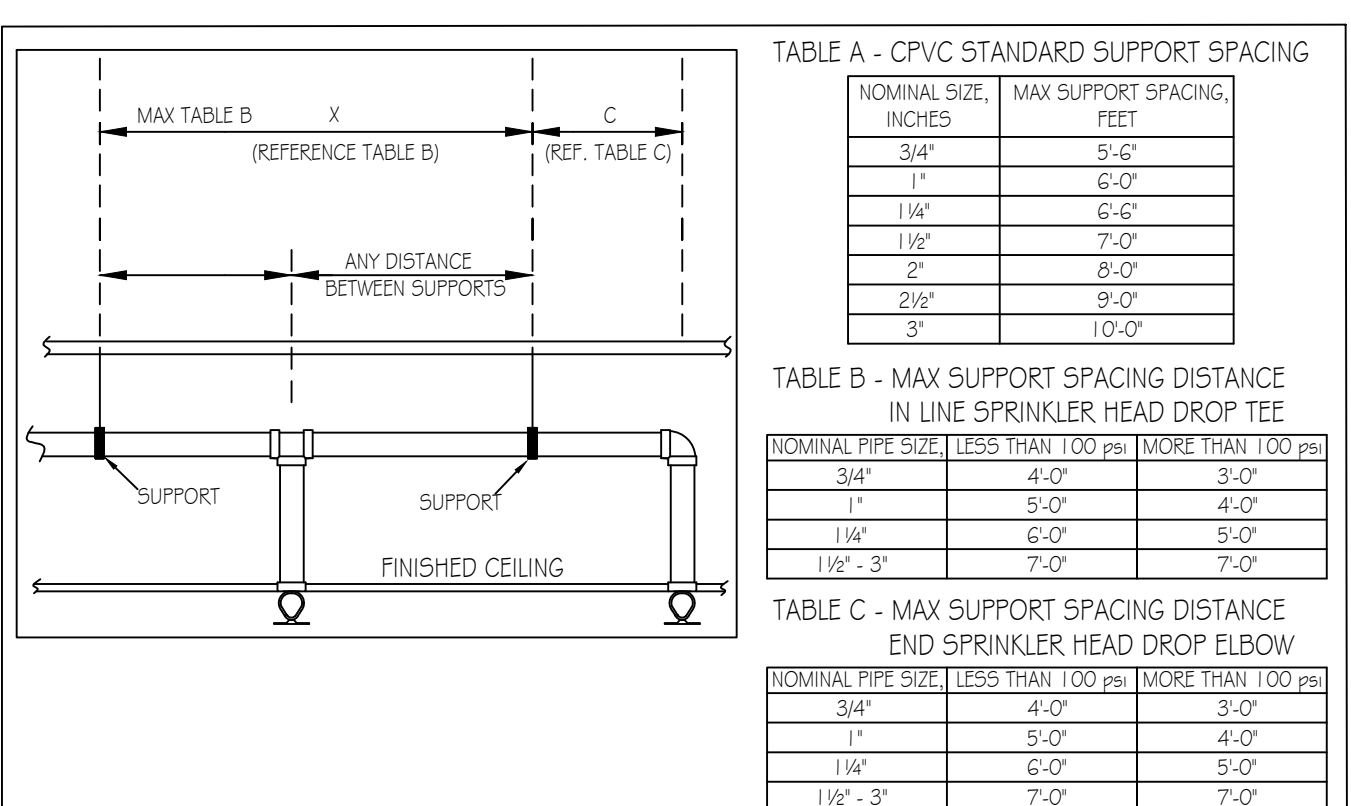
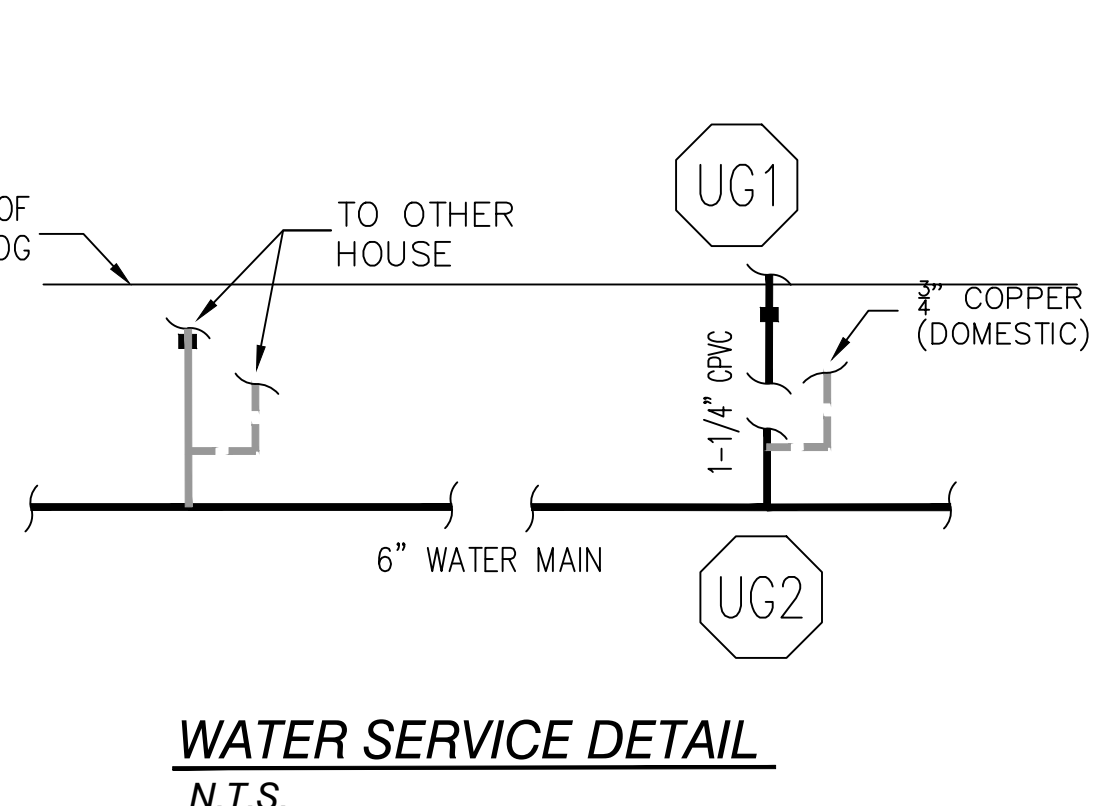
**Design Summary**

Design Method	RA # 1	RA # 2	RA #	RA #	RA #
Design Area #	1	2	-	-	-
Location	MASTER BEDROOM	BONUS ROOM	-	-	-
Type of System	WET	WET	-	-	-
Hazard Class	RESIDENTIAL	RESIDENTIAL	-	-	-
Criteria Form	NFPA 13D (2013)	NFPA 13D (2013)	-	-	-
Design Area	1 HEAD	2 HEADS	-	-	-
Sprinkler Spacing	20X20 (400 SF)	14X14 (196 SF)	-	-	-
Density	.05	.05	-	-	-
K-factor	4.9	4.9	-	-	-
Domestic Flow	3 GPM	2 GPM	-	-	-
# Design Sprinklers	1	2	-	-	-
Special Application Spk.	-	-	-	-	-
Requirement @ TEST	-	-	-	-	-
G.P.M. Req'd	23.03 gpm	29.47 gpm	-	-	-
P.S.I. Req'd	28.47 psi	29.48 psi	-	-	-
Safety Factor @ TEST	25.83	24.72	-	-	-
Volume of Dry System	-	-	-	-	-

**Water Supply Information**

Tested by:	-	Date/Time	4/21/2021	4:00 pm	Pressure Hydrant	49180037
Hydrant Elevation	-	Flow Hydrant	-	-	Static	-
Static (PSI)	54.5	Residual (PSI)	13.5	Flow (GPM)	417	-

Copy of Water Test Data Included with Calculation is required



**FLOW TEST:**  
DATE - 4/21/2021  
STATIC - 54.5 psi  
RESIDUAL - 13.5psi  
FLOW - 417 gpm

**NODE LEGEND:**  
UG1 - UG2 = 1-1/4" PVC 55'-0"+/-  
UG2 - UG3 = 6" PVC 504'-1"+/-  
UG3 - TEST = 6" PVC 1000'-0"+/-

## SITE PLAN - FOR HYDRAULIC REFERENCE ONLY

## SCOPE OF WORK

- FLSA TO BEGIN WORK AT 1'-0" AFF
  - FLSA TO INSTALL AUTOMATIC SPRINKLER SYSTEM UNDER NFPA 13D (2013) TO PROTECT NEW RESIDENTIAL HOME
  - FLSA TO TIE THE NEW SPRINKLER SYSTEM INTO PLUMBING FOR A PASSIVE PURGE SYSTEM.
  - ALL PIPING TO BE CPVC.
  - ALL UNDERGROUND AND RUN-IN BY OTHERS
- THIS FIRE SPRINKLER PLANNING AND DESIGN DRAWING HAS BEEN PREPARED BY FIRE & LIFE SAFETY AMERICA, INC. AS A LICENSED FIRE SPRINKLER CONTRACTOR UNDER ARTICLE 2 OF CHAPTER 87 OR THE GENERAL STATUTES FOR THE STATE OF NORTH CAROLINA.
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<b>SYSTEM DESIGN CRITERIA</b> TYPE SYSTEM: <input checked="" type="checkbox"/> WET <input type="checkbox"/> DRY <input type="checkbox"/> DELUGE NFPA STANDARD: <input type="checkbox"/> #13D <input type="checkbox"/> #13R <input type="checkbox"/> #14 <input type="checkbox"/> #20 <input type="checkbox"/> #22 <input type="checkbox"/> PREACTION <input type="checkbox"/> ANTI-FREEZE <input type="checkbox"/> #24 <input type="checkbox"/> #21 <input type="checkbox"/> #23C <input type="checkbox"/> #15 <input type="checkbox"/> #16 <input type="checkbox"/> #409 OCCUPANCY: RESIDENTIAL HAZARD: LIGHT LOCAL HOSE THREADS: N.S.T. SLEEVES REQUIRED: NO MAXIMUM SPACING: VARIES REQUIRED TO BE LOCATED IN THE CENTER OF THE CEILING TILES: SPRINKLERS ARE		<b>APPROVING AGENCIES</b> APPROVING AUTHORITY: HARNETT COUNTY UNDERWRITER: N/A		<b>GENERAL NOTES</b> 1. Freeze Protection: The owner is responsible for maintaining a min. of 40° F temperature for all wet systems and portions of other systems containing water. 2. M.I.C. Protection: The owner is responsible for all detection testing/prevention. 3. Design is subject to minor deviations arising from field conditions and/or trade coordination. Such deviations shall not affect code compliance or scope of work and shall not require resubmittal except in "as-built" if required by contract documents. 4. Underground piping to ensure lead-in is plumbed, 2-holed, rodded, flushed, thrust blocked and a fully executed underground test certificate required per NFPA to be provided to FLSA prior to connection. FLSA is not responsible for damage to its system or components due to debris entering the system from underground water lines provided by others. 5. This drawing is property of Fire and Life Safety America and is not to be duplicated and/or distributed without written authorization from FLSA. 6. Hydrostatic testing will only be performed with water or air depending on adequate temperature. Any other form of testing is excluded.		<b>LEGEND</b> Symbol Description ● Hydraulic Reference Point ○ 18" BTS Elev. Below Top of Steel ○ 12'-0" AFF Elev. Above Finished Floor + 105 12'-0" Elev. Top of Steel ○ Ceiling Height - Denotes Hanger Location - Denotes Seismic Support □ Room name or use = Sleeve Location ● FLSA Start Point		<b>SPRINKLER SUMMARY</b> <table border="1"> <tr> <th>SYMBOL</th> <th>TYPE</th> <th>FINISH</th> <th>TEMP</th> <th>ORIE.</th> <th>K*</th> <th>NPT</th> <th>MANUF.</th> <th>SIN#</th> <th>ESCUTCHEON</th> <th>QTY</th> </tr> <tr> <td>●</td> <td>RES. PENDENT</td> <td>WHITE</td> <td>200°</td> <td>1/2"</td> <td>4.9</td> <td>1/2"</td> <td>VIKING</td> <td>VK494</td> <td>CONCEALED</td> <td>0</td> </tr> <tr> <td colspan="10">TOTAL SPRINKLERS THIS PROJECT</td> <td>18</td> </tr> <tr> <td colspan="10">TOTAL SPRINKLERS THIS DRAWING</td> <td>0</td> </tr> </table>		SYMBOL	TYPE	FINISH	TEMP	ORIE.	K*	NPT	MANUF.	SIN#	ESCUTCHEON	QTY	●	RES. PENDENT	WHITE	200°	1/2"	4.9	1/2"	VIKING	VK494	CONCEALED	0	TOTAL SPRINKLERS THIS PROJECT										18	TOTAL SPRINKLERS THIS DRAWING										0	<b>REVISIONS</b> <table border="1"> <tr> <th>#</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> <tr> <td>1</td> <td>12/20/2021</td> <td>SUBMITTAL TO AHJ</td> <td>HCW</td> </tr> </table>		#	DATE	DESCRIPTION	BY	1	12/20/2021	SUBMITTAL TO AHJ	HCW	RICHMOND, VA CHESAPEAKE, VA ROANOKE, VA SPRINGFIELD, VA ORLANDO, FL HOUSTON, TX SAN ANTONIO, TX DALLAS, TX AUSTIN, FL CHARLOTTE, NC RALEIGH, NC BALTIMORE, MD ATLANTA, GA 1721 Round Rock Drive Raleigh, NC 27615 PHONE (919) 872-3250 FAX (919) 877-8776 JOB #: 22NC1551 HYD. SITE PLAN, GENERAL NOTES & DETAILS DRAWING #: <b>FP1</b> DATE: 12/19/2021 OAKHAVEN LOT 38 DRAWN BY: H. WEYANT 157 OAKHAVEN DR. SCALE: AS NOTED HOLY SPRINGS, NC 27540 OF 2	
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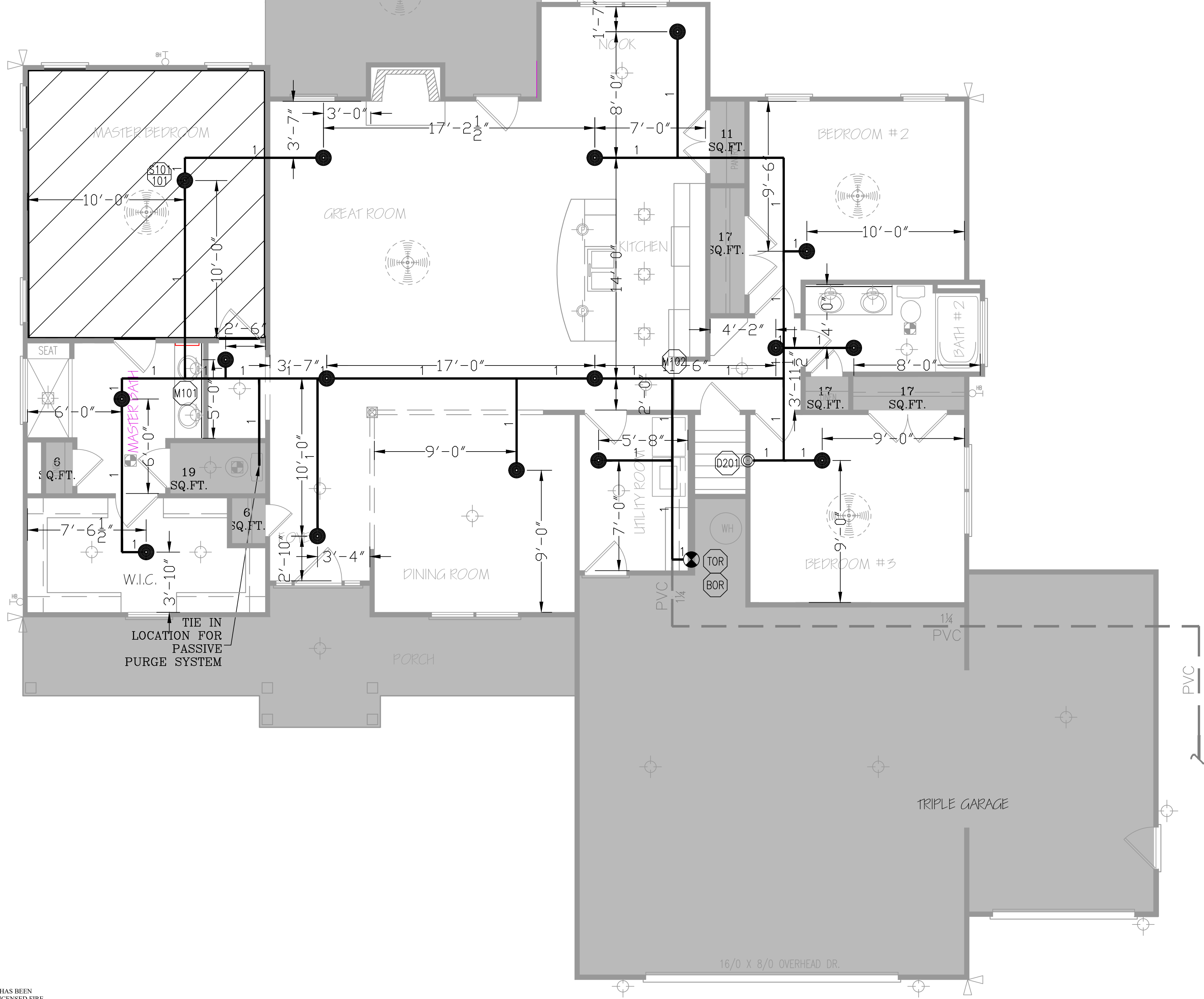
**SPRINKLER LEGEND**

NO HEADS REQUIRED

REMOTE AREA

- NOTES:**
- PORCHES AND GARAGES ARE OMITTED PER NFPA 13D (2013) 8.3.4
  - CLOSETS 24 SQ. FT. OR LESS IN AREA ARE UNSPRINKLERED PER NFPA 13D (2013) 8.3.3; WALLS AND CEILING TO BE SURFACED WITH NONCOMBUSTIBLE OR LIMITED COMBUSTIBLE MATERIAL AS DEFINED BY NFPA 220
  - BATHROOMS 55 SQ. FT. OR LESS IN AREA ARE UNSPRINKLERED PER NFPA 13D (2013) 8.3.2

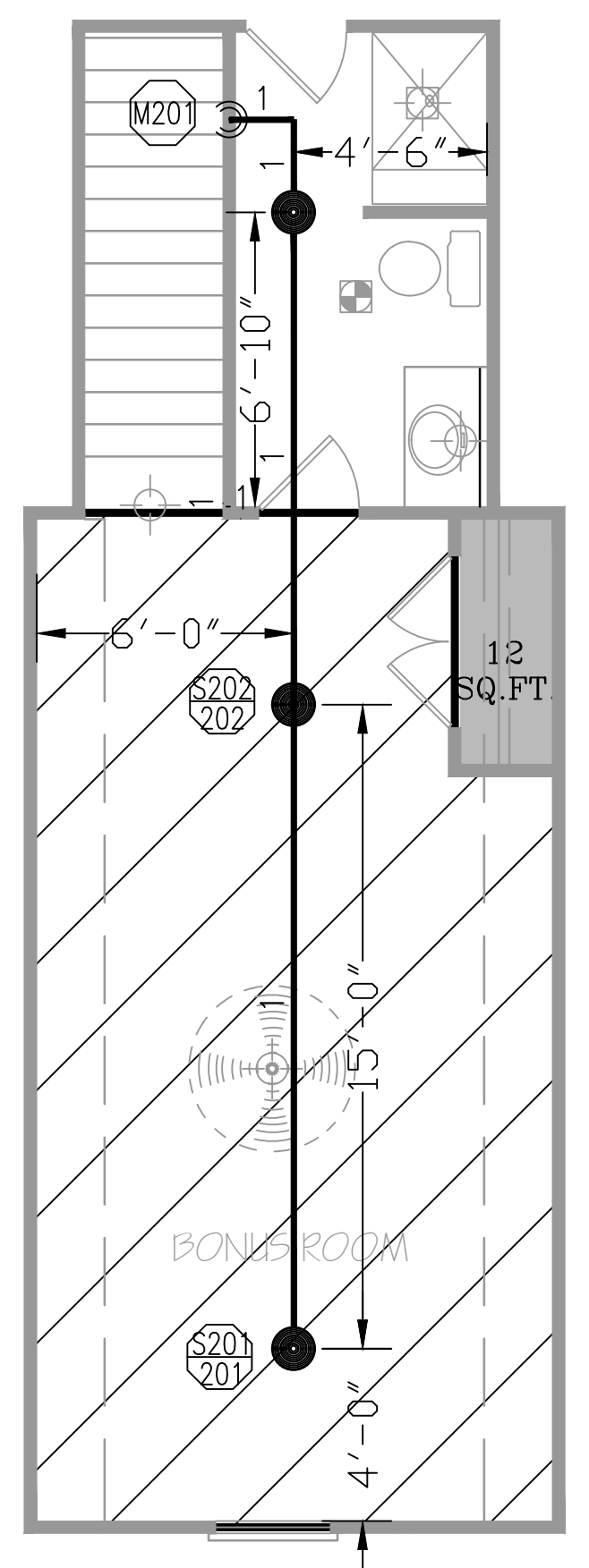
**RA1 - MASTER BEDROOM**  
 Design Area No. 1 - RESIDENTIAL  
 Density .05 Area 1 HEADS  
 Flow 23.03 gpm @ 28.47 psi  
 Includes N/A gpm Hose allowance  
 SAFETY: 25.83



**LEVEL 1 - SPRINKLER PLAN**

1/4" = 1' - 0"

**RA2 - BONUS ROOM**  
 Design Area No. 2 - RESIDENTIAL  
 Density .05 Area 2 HEADS  
 Flow 29.47 gpm @ 29.48 psi  
 Includes N/A gpm Hose allowance  
 SAFETY: 24.72



**LEVEL 2 - SPRINKLER PLAN**

1/4" = 1' - 0"



THIS FIRE SPRINKLER PLANNING AND DESIGN DRAWING HAS BEEN PREPARED BY FIRE & LIFE SAFETY AMERICA, INC. AS A LICENSED FIRE SPRINKLER CONTRACTOR UNDER ARTICLE 2 OF CHAPTER 87 OR THE GENERAL STATUTES FOR THE STATE OF NORTH CAROLINA.

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SYSTEM DESIGN CRITERIA		APPROVING AGENCIES		GENERAL NOTES		LEGEND		SPRINKLER SUMMARY		REVISIONS		DRAWING INFORMATION	
TYPE SYSTEM: <input checked="" type="checkbox"/> WET <input type="checkbox"/> DRY <input type="checkbox"/> DELUGE <input type="checkbox"/> NFPA STANDARD: <input type="checkbox"/> #13 <input type="checkbox"/> #13D <input type="checkbox"/> #13R <input type="checkbox"/> #14 <input type="checkbox"/> #20 <input type="checkbox"/> #22 <input type="checkbox"/> PREACTION <input type="checkbox"/> ANTI-FREEZE	HAZARD: <input type="checkbox"/> LIGHT <input type="checkbox"/> MEDIUM <input type="checkbox"/> SEVERE	APPROVING AUTHORITY: HARNETT COUNTY	UNDERWRITER: N/A	1. Freeze Protection: The owner is responsible for maintaining a min. of 40° F temperature for all wet systems and portions of other systems containing water.	Symbol Description	SYM TYPE FINISH TEMP ORIF. "K" NPT MANUF. SIN# ESCUTCHEON QTY	RES. PENDENT WHITE 200° 1/2" 4.9 1/2" VIKING VK494 CONCEALED 0	DATE DESCRIPTION BY	RICHMOND, VA CHESAPEAKE, VA ROANOKE, VA SPRINGFIELD, VA ORLANDO, FL	1721 Round Rock Drive Raleigh, NC 27715 PHONE (919) 872-3250 FAX (919) 877-0770	12/20/2021 SUBMITTAL TO AHJ JCV	JOB #: 22NC1551 LEVEL 1 & 2 - SPRINKLER PLAN DRAWING #:	
OCCUPANCY: RESIDENTIAL	HAZARD: LIGHT	GENERAL CONTRACTOR: WATERMARK HOMES	ADDRESS: 1303 FT BRAGG ROAD SUITE 201	2. M.I.C. Protection: The owner is responsible for all detection/testing/prevention.	○ 18" BTS Elev. Below Top of Steel	DATE: 12/19/2021	SCALE: AS NOTED	OAKHAVEN LOT 38	157 OAKHAVEN DR.	HOLLY SPRINGS, NC 27540	FP2		
MAXIMUM SPACING: VARIES	LOCAL HOSE THREADS: N.S.T.	CITY & STATE: FAYETTEVILLE, NC 28305	PHONE NO.: (910) 483-2229	3. Design is subject to minor deviations arising from field conditions and/or trade coordination. Such deviations shall not affect code compliance or scope of work and shall not require resubmittal except in "as-built" if required by contract documents.	□ 12" AFF Elev. Above Finished Floor	TOTAL SPRINKLERS THIS PROJECT: 18	TOTAL SPRINKLERS THIS DRAWING: 0	OF 2					
PIPE TYPES AND FITTING TYPES	PIPE ID REQUIRED: NO	PHONE NO.: (910) 483-2229	FAX NO.:	4. Underground provider to ensure lead-in is plumbed, 2-holed, rodded, flushed, thrust blocked and a fully executed underground test certificate required per NFPA to be provided to FLSA prior to connection. FLSA is not responsible for damage to its system or components due to debris entering the system from underground water lines provided "by others".	+ TOS 12"-0 Elev. of Top of Steel								
LINE PIPING: CPVC	LINE FITTINGS: CPVC			5. This drawing is property of Fire and Life Safety America and is not to be duplicated and/or distributed without written authorization from FLSA.	○ Ceiling Height								
MAIN PIPING: CPVC	MAIN FITTINGS: CPVC			6. Hydrostatic testing will only be performed with water or air depending on adequate temperature. Any other form of testing is excluded.	○ Denotes Hanger Location								
					○ Denotes Seismic Support								
					○ Room name or use								
					○ Sleeve Location								
					○ FLSA Start Point								