Goat4

Ultralight Glider, Descriptive Drawings

By Mike Sandlin San Diego, California, US of A April 18, 2009

This file contains 82 drawings which describe the Goat4, an experimental ultralight glider which I have designed, built, and flown.

The Pig plans (a different download from the same website) are worth looking at for Goat4 possible upgrades, since the construction is similar and it is a later design. In particular, the newer quickpins and control line standards may be of interest. Other possible upgrades might be suggested by the Pig's boat seat, simplified nose structure, and prismatic rudder pedals.

These technical drawings are intended to be a description of what I have done, not a set of plans, at least not in the sense of providing instructions or advice to any second party. For liability reasons, I give no technical advice, nor do I recommend building or flying any specific aircraft, nor do I represent myself as any kind of expert.

These drawings is provided in ".DFX" format, an Autocad file format, which can be viewed, printed, and edited with Computer Assisted Design (CAD) software. The .dxf files are primarily provided for CAD users who wish to closely examine and/or modify the design.

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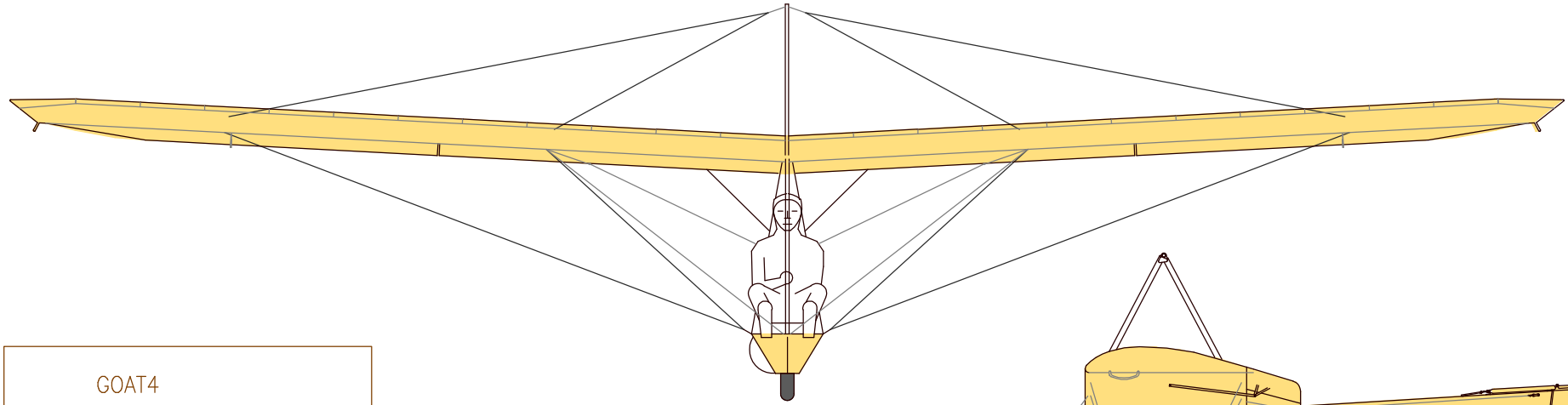
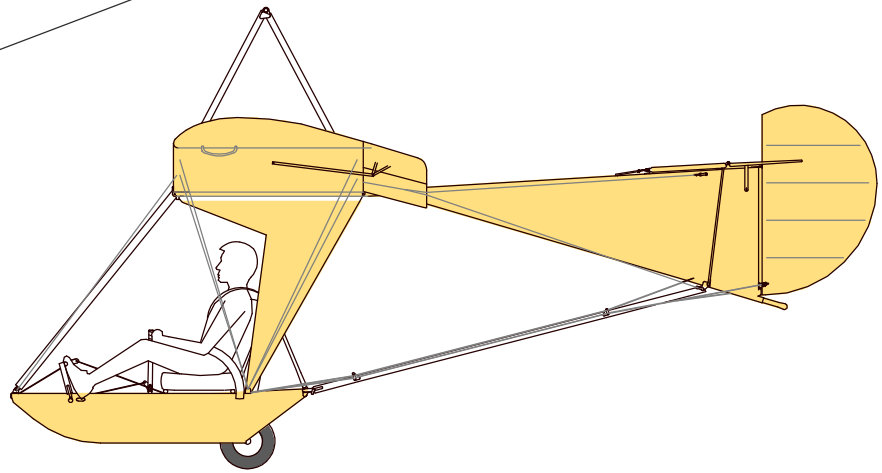
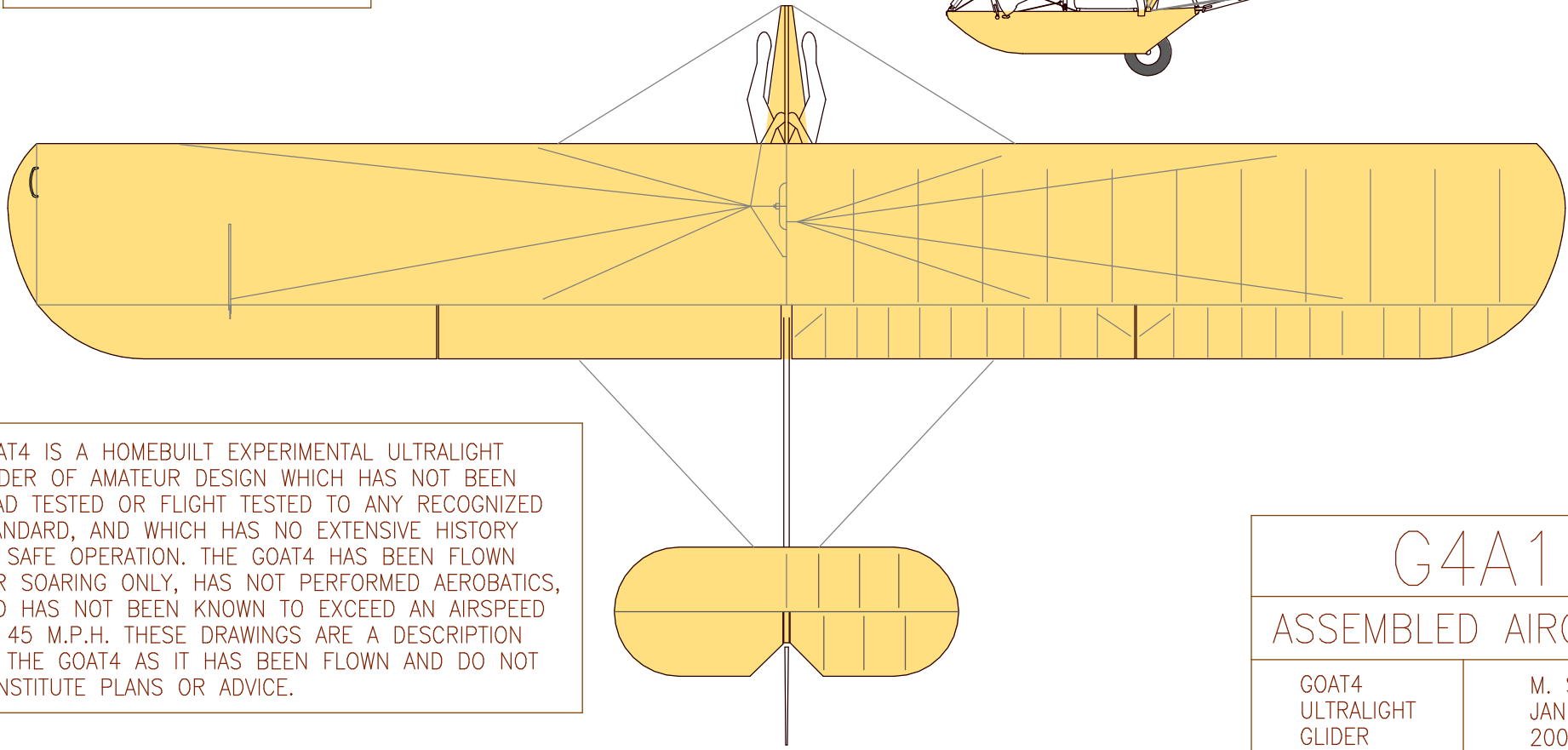
Additions and revisions to the Goat4 drawings will be posted on my "Basic Ultralight Glider" Website. A drawing that is revised will have a later date than previous versions. (These updated drawings will be included in susequent (higher numbered) Zip files). Check the website for a revision of any downloaded drawing before accepting it as the current version.





GOAT4

WING SPAN.....36 FT.
WING AREA.....174 SQFT.
EMPTY WEIGHT, WITH
PARACHUTE.....120 LBS.



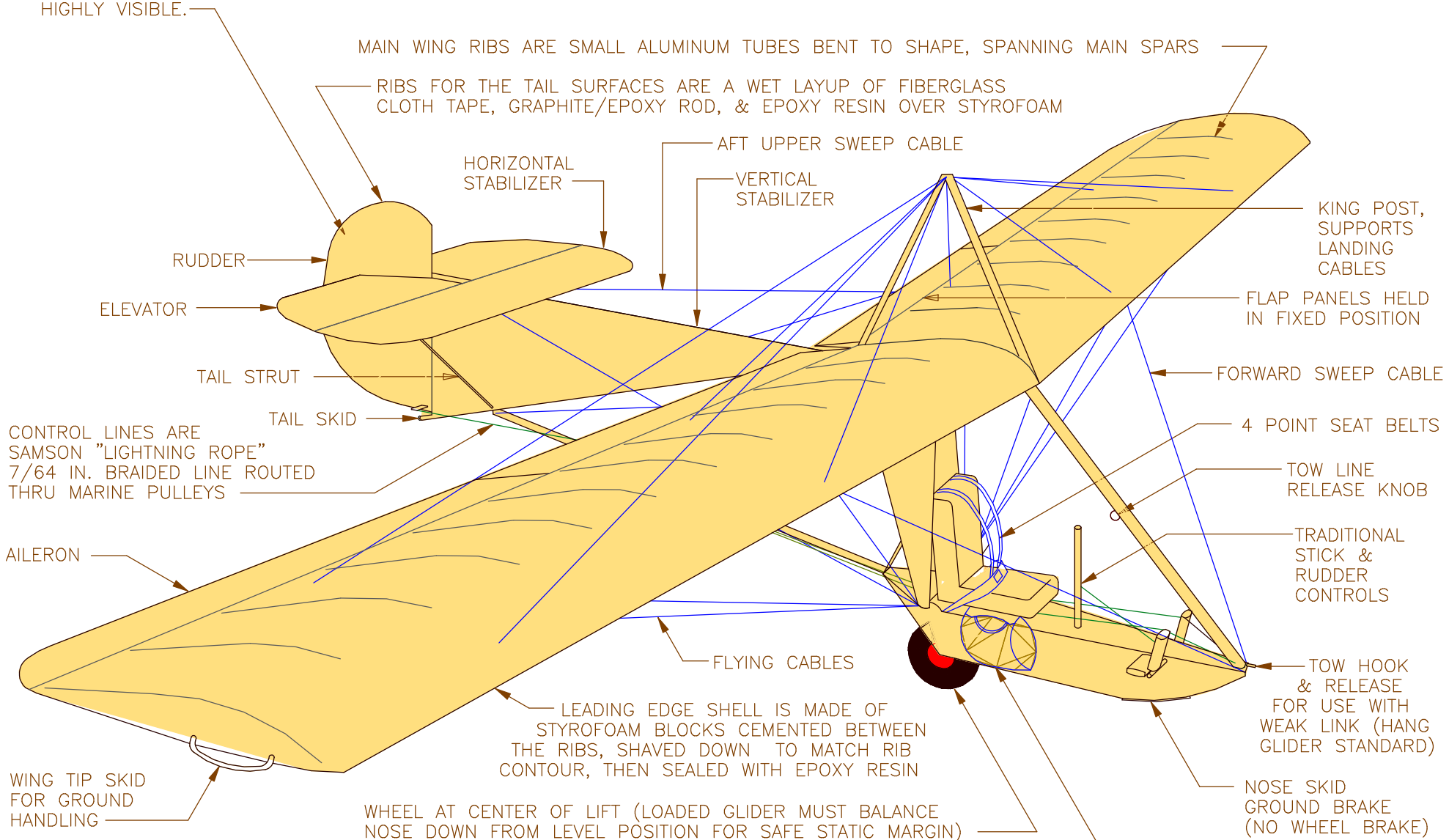
GOAT4 IS A HOMEBUILT EXPERIMENTAL ULTRALIGHT GLIDER OF AMATEUR DESIGN WHICH HAS NOT BEEN LOAD TESTED OR FLIGHT TESTED TO ANY RECOGNIZED STANDARD, AND WHICH HAS NO EXTENSIVE HISTORY OF SAFE OPERATION. THE GOAT4 HAS BEEN FLOWN FOR SOARING ONLY, HAS NOT PERFORMED AEROBATICS, AND HAS NOT BEEN KNOWN TO EXCEED AN AIRSPEED OF 45 M.P.H. THESE DRAWINGS ARE A DESCRIPTION OF THE GOAT4 AS IT HAS BEEN FLOWN AND DO NOT CONSTITUTE PLANS OR ADVICE.

G4A1

ASSEMBLED AIRCRAFT

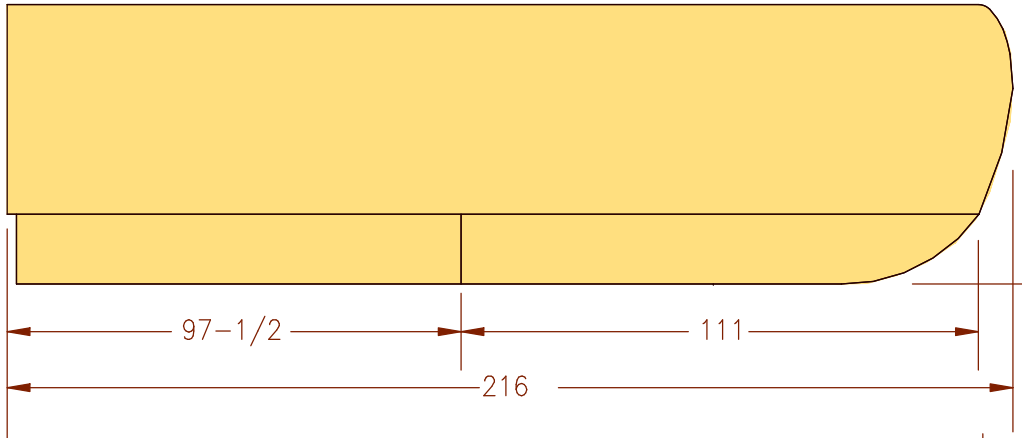
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007

FABRIC COVERING IS BY A CONVENTIONAL AIRCRAFT PROCESS, BUT USING LIGHT, UNCERTIFIED CLOTH (POLYESTER). FABRIC PANELS ARE CUT TO SIZE, CEMENTED ONTO THE FRAME, THEN SHRUNK TO CONTOUR WITH A CLOTHES IRON. FABRIC IS SEALED BY BRUSHING ON A SEALANT/ADHESIVE (POLYBRUSH OR BUTYRATE DOPE). SURFACES EXPOSED TO SUNLIGHT ARE PROTECTED BY ADDITIONAL COATS OF DOPE MIXED WITH ALUMINUM PASTE (SILVERING). BRIGHT PAINT IS APPLIED OVER SILVERED SURFACES TO MAKE THE AIRCRAFT HIGHLY VISIBLE.

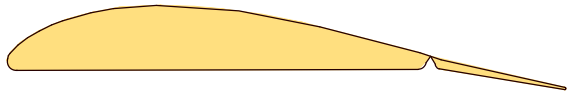


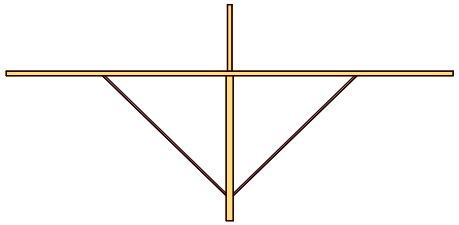
MAIN STRUCTURE IS MADE OF ALUMINUM TUBE FASTENED WITH NUTS & BOLTS (GOAT IS FABRICATED WITH HAND TOOLS, USING NO SPECIALLY MACHINED OR WELDED PARTS). FIXED RIGGING IS BRAIDED STAINLESS STEEL CABLE WITH THIMBLES, TANGS, & NICOPRESS SLEEVES. FOR TRANSPORT, GOAT4 BREAKS DOWN INTO 6 MAIN PIECES: HORIZONTAL TAIL PLANE, TAIL BOOM & RUDDER, NOSE SECTION, 2 WING PANELS, & THE KING POST, WHICH IS FOLDED AND STOWED IN THE NOSE SECTION.

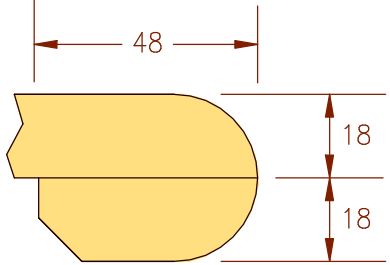
G4A2	AIRCRAFT OVERVIEW	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 5, 2007

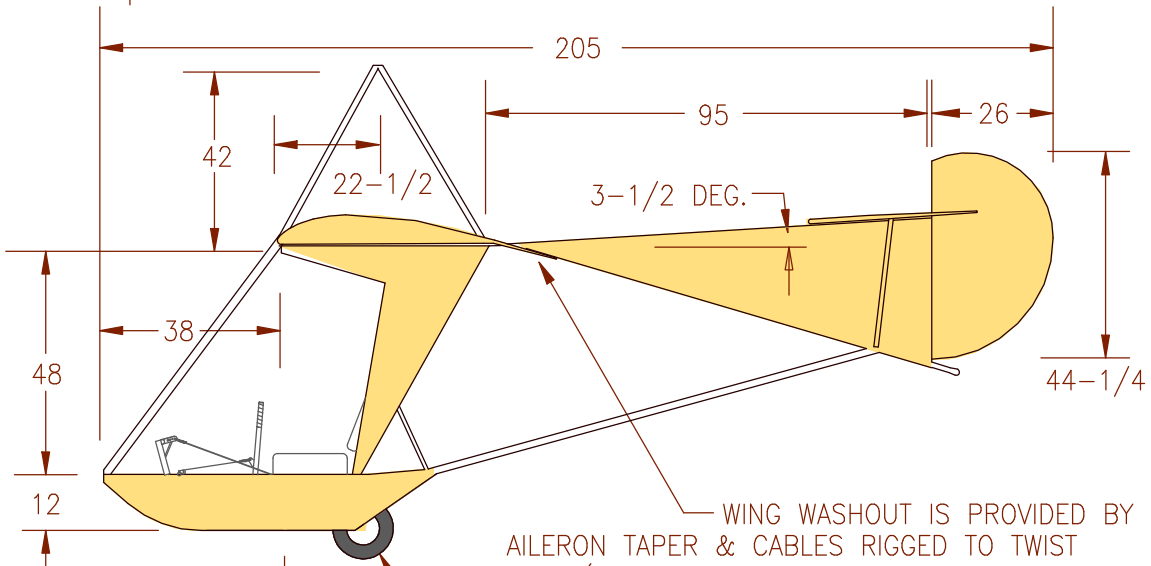


ALL FABRIC SURFACES ARE FLAT EXCEPT FOR THE TOP OF THE MAIN WING PANEL. MAIN WING RIB AIRFOIL IS 12% THICK AT 26% CHORD (7-1/4 IN. AT 15-1/2 IN.). NOMINAL WING CHORD IS 60 INCHES. REFERENCE PITCH LEVEL FOR AIRCRAFT IS FLAT BOTTOM OF THE WING AT CENTERLINE.



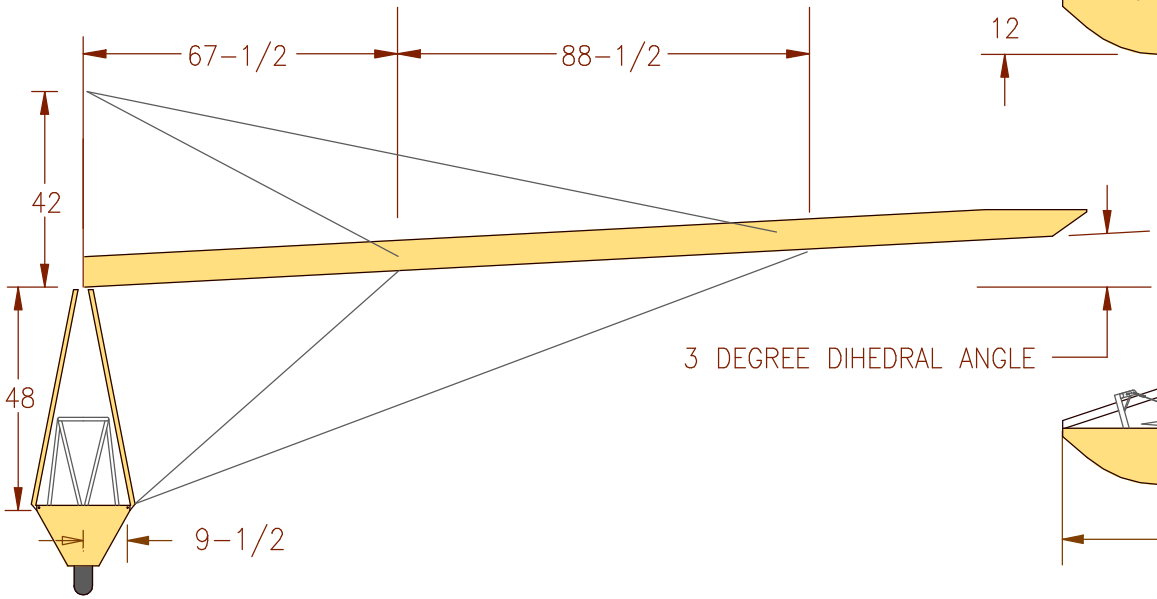






WING WASHOUT IS PROVIDED BY AILERON TAPER & CABLES RIGGED TO TWIST WING (WING TIP IS RIGGED TO 1 OR 2 DEGREES LOWER ANGLE OF ATTACK THAN WING ROOT)

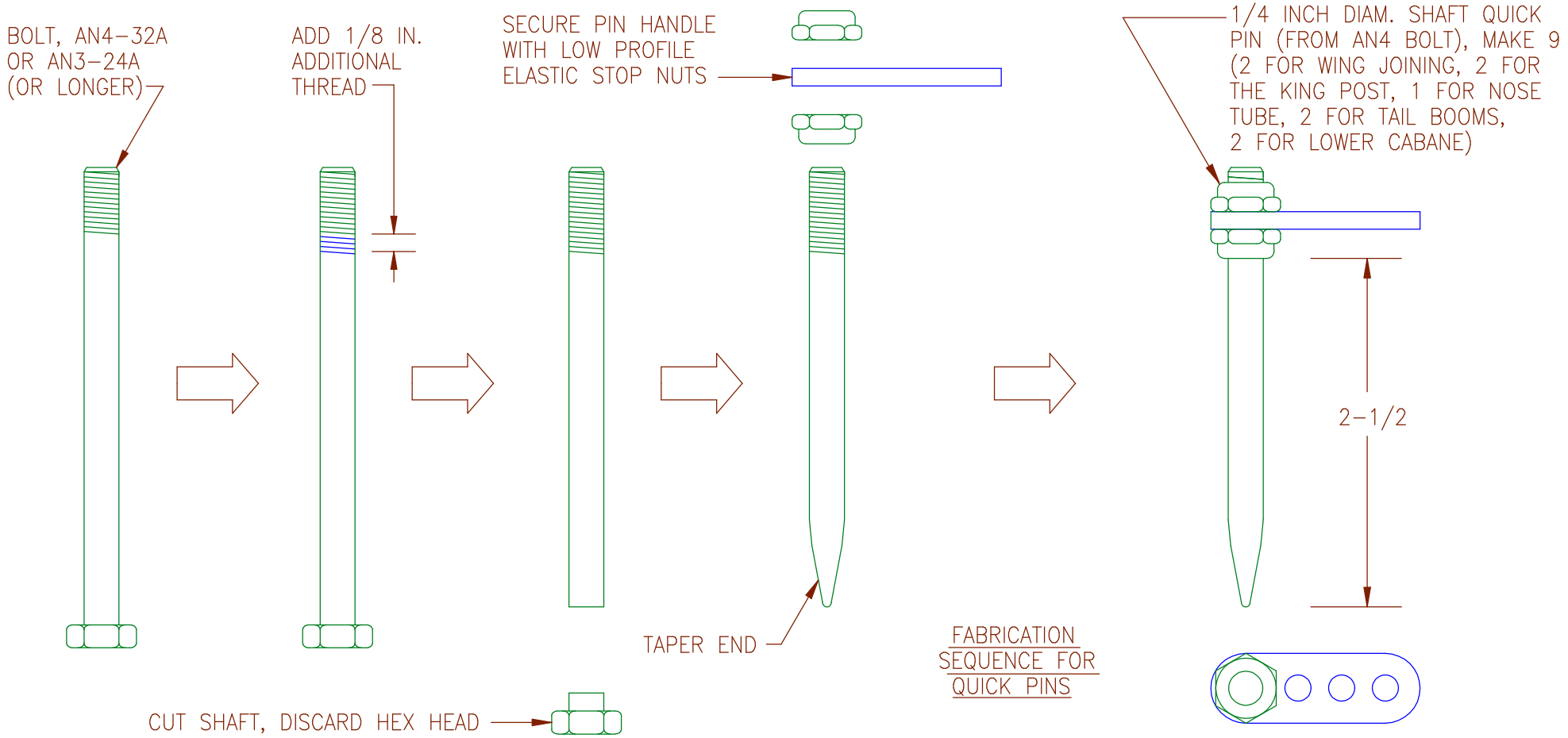
TIRE AT 29% OF CHORD, DIAM. 13 IN. FOR PROPER BALANCE LOADED AIRCRAFT MUST BE SLIGHTLY NOSE HEAVY WHEN LEVELED.



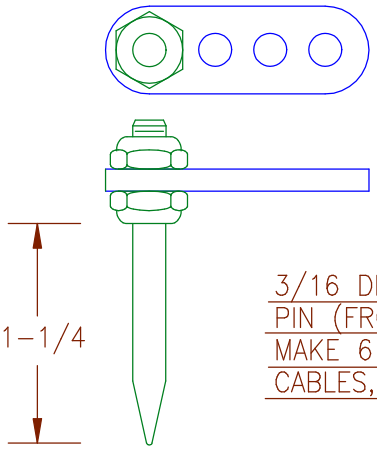
G4A3

NOMINAL DIMENSIONS

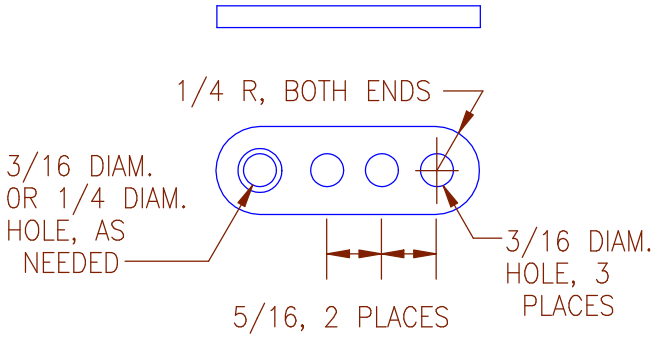
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 6, 2007



FABRICATION SEQUENCE FOR QUICK PINS



3/16 DIAM. SHAFT QUICK PIN (FROM AN-3 BOLT), MAKE 6 (4 FOR SWEEP CABLES, 2 FOR AILERONS)



QUICK PIN HANDLE, I/2 X 1/8 X 1-1/2 ALUM. BAR,, MAKE 15

QUICK PIN FASTENERS WERE DESIGNED BY ME FOR MY PURPOSES, AND ARE EXPERIMENTAL AND UNPROVEN IN SERVICE. THESE FASTENERS DO NOT REPRESENT THE CONTINUATION OF ANY CONVENTIONAL DESIGN OR TRADITION OF FASTENER EVER USED ON ANY KIND OF AIRCRAFT.

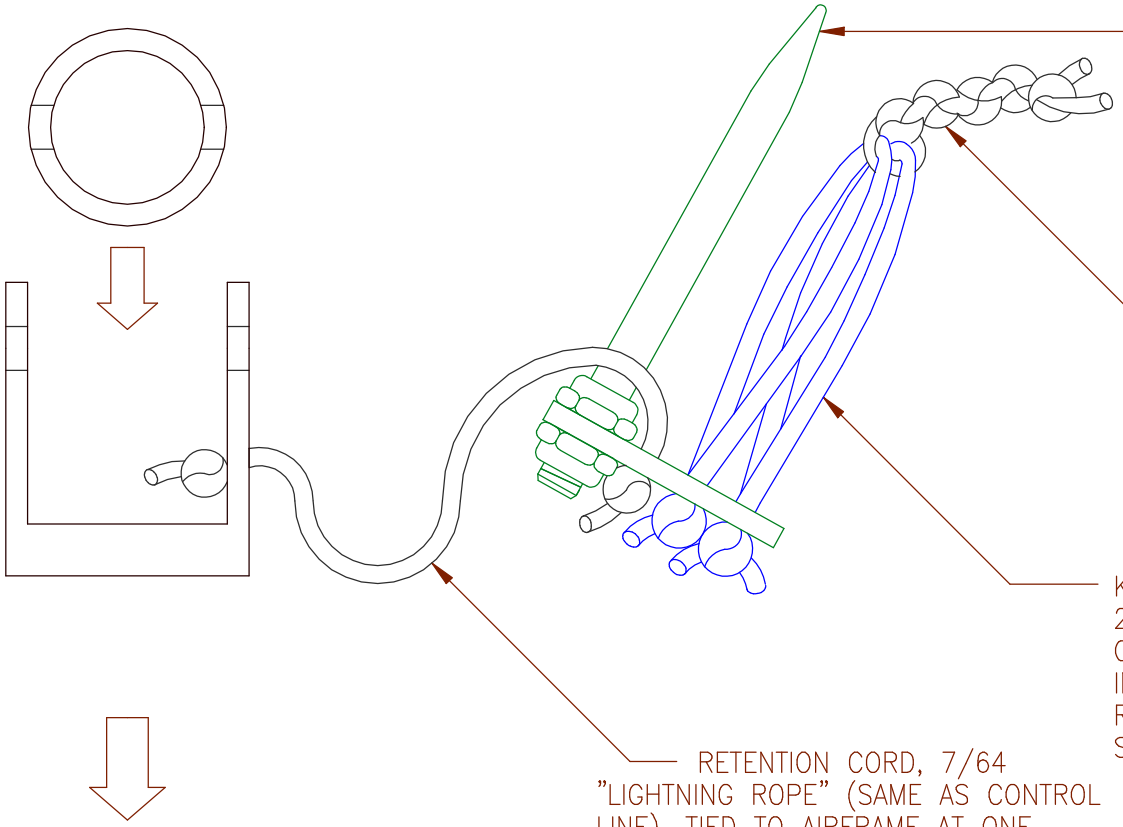
G4A4

QUICK PIN SHAFTS & HANDLES

GOAT4 ULTRALIGHT GLIDER

M. SANDLIN, FEBRUARY 5, 2007

VIEW OF PARTS TO BE CONNECTED (HYPOTHETICAL)

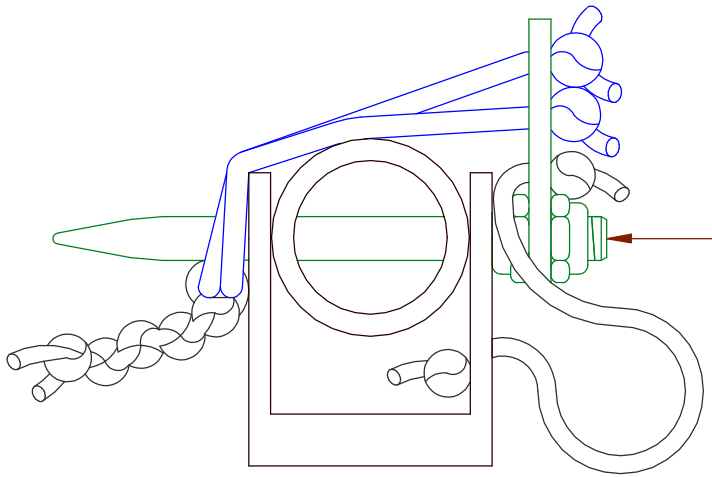


QUICK PIN, FROM G4A4. THE TAPERED END OF THE QUICK PIN ALLOWS IT TO SERVE AS A DRIFT PIN DURING ASSEMBLY, DRAWING THE PARTS TOGETHER INTO FLIGHT POSITION AS IT IS INSERTED. THIS PERMITS THE INITIAL PARTS ALIGNMENT TO BE PERFORMED QUICKLY WITH NO NEED FOR PRECISION, THUS MAKING THE ASSEMBLY EASIER AND FASTER.

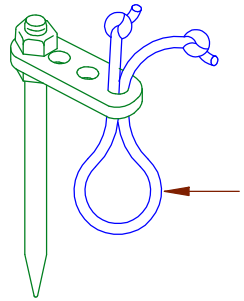
STRETCH HANDLE, SMALL CORD OR CONTROL LINE, JOINS THE TWO BUNGEE LOOPS, HANDLE TIED IN A SERIES OF SQUARE KNOTS,

KNOTTED LOOP OF 1/8 ELASTIC CORD, 2 PLACES. ADJUST LENGTH TO SUIT STIFFNESS OF THE CORD FOR FIRM RETENTION. TWO INDEPENDENT LOOPS ARE USED FOR REDUNDANCY (IF ONE LOOP FAILS THE OTHER STILL RETAINS THE PIN IN PLACE).

RETENTION CORD, 7/64 "LIGHTNING ROPE" (SAME AS CONTROL LINE), TIED TO AIRFRAME AT ONE END. ALL FASTENERS ARE ATTACHED TO THE GLIDER SO THEY WILL NOT BE MISSING WHEN AIRCRAFT IS ASSEMBLED.



QUICK PIN RETAINED IN FLIGHT POSITION, AS A SHEAR PIN FASTENER (FLIGHT LOADS ON THE PIN ARE SHEARING FORCE ONLY).



1/8 DIAM. ELASTIC SHOCK CORD (BUNGEE CORD)

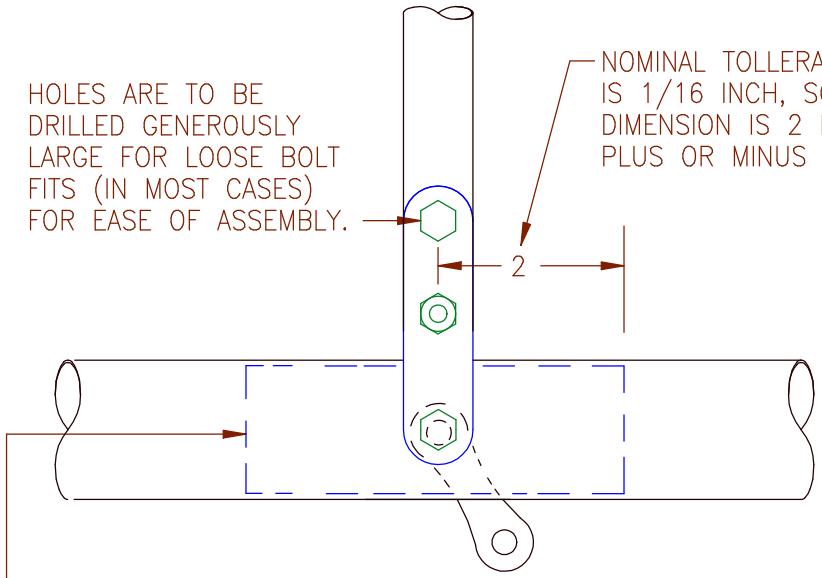
QUICK PIN (SHOWN WITH ONLY A SINGLE ELASTIC (BUNGEE) LOOP FOR CLARITY)

G4A5	QUICK PIN RETAINERS	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 7, 2007

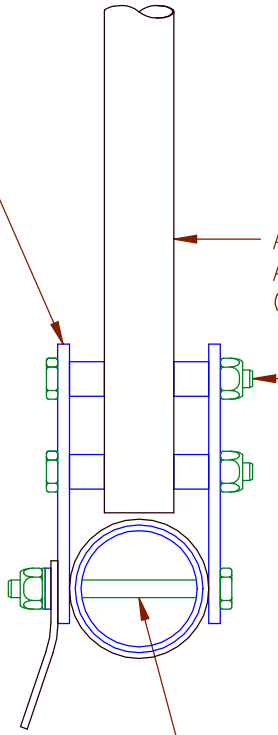
ALL CUT EDGES AND DRILLED HOLE EDGES MUST BE SMOOTH. ALL CUTS SHOULD BE SMOOTHED BY FILING OR DE-BURRING.

HOLES ARE TO BE DRILLED GENEROUSLY LARGE FOR LOOSE BOLT FITS (IN MOST CASES) FOR EASE OF ASSEMBLY.

NOMINAL TOLLERANCE IS 1/16 INCH, SO THIS DIMENSION IS 2 INCHES PLUS OR MINUS 1/16 IN.



THE ENDS OF TUBULAR SLEEVES MUST BE SMOOTH. SLEEVES ARE TO BE PADDED BY WRAPPING THEM WITH LAYERS OF 10 MIL. VINYL TAPE (PIPE WRAP) TO FILL THE GAP BETWEEN THE TUBES, RESULTING IN A MARGINAL SLIDING FIT. TAPE PADDING NEED NOT BE USED WHEN A CLOSE TELESCOPING FIT IS ALREADY POSSIBLE (I.E., WHEN THE OUTER TUBE IS .058 IN. THICK AND FITS THE INNER TUBE CLOSELY, NO TAPE PADDING IS USED).



ALL TUBES, BAR, ANGLE, & ROD STOCK ARE 6061-T6 ALUMINUM OR EQUIVALENT. CHANNEL IS 6063 T5.

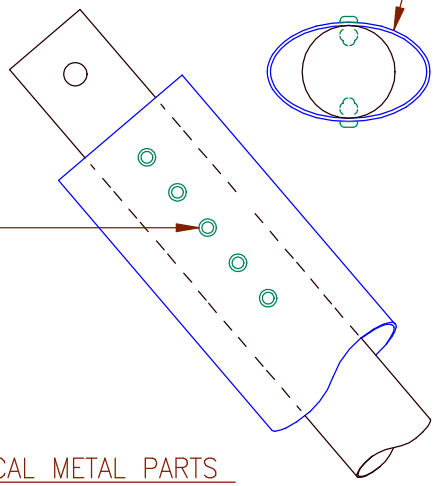
NUTS, BOLTS, WASHERS, AND COTTER PINS ARE AIRCRAFT GRADE UNLESS OTHERWISE SPECIFIED. DO NOT OVER TIGHTEN BOLTS OR PARTS WILL BE CRUSHED. FOR BOLTS THRU SOLID PARTS, AGAIN DO NOT OVER TIGHTEN, OR ELSE BOLTS MAY BE WEAKENED OR BROKEN. NUTS ARE ELASTIC STOP NUTS UNLESS OTHERWISE SPECIFIED. DEPICTIONS OF THE USE OF NUTS AND WASHERS MAY NOT BE EXACT (USE MORE OR FEWER WASHERS AS NEEDED).

IF THREADDED END OF BOLT MUST BE LOADED, USE LONG BOLTS WITH WASHERS TO AVOID SHEAR LOADING ACROSS THREADS

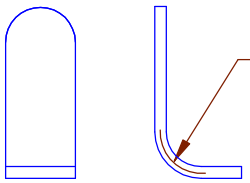
SMALL TUBES (1/4 OR 3/8 DIAM.) MAY BE SPLICED WITH A PIECE OF LARGER TUBE OR SPLIT TUBE OF THE SAME SIZE, SECURED BY RIVETS.

TUBE OVALIZING IS DONE IN A PADDED VICE. SMALL IRREGULARITIES ARE ACCEPTABLE SINCE WHEN OVALIZATION IS FULL LENGTH THERE IS A ROUND TUBE INSIDE FOR ADDITIONAL STRENGTH. WHEN THE END OF AN OVALIZED TUBE IS CLOSED TO FLATNESS, THE TRANSITION MUST BE SMOOTH AND NOT CREASED.

ALL RIVETS ARE 1/8 INCH CHERRY BSP OR BSPS ALUMINUM BLIND RIVETS WITH STEEL MANDREL (HIGH QUALITY POP RIVETS). NOMINAL MINIMAL RIVET SEPARATION IS 1/2 INCH.



TYPICAL METAL PARTS



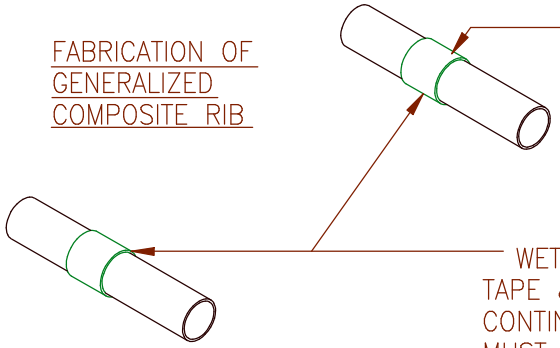
MINIMUM BEND RADIUS FOR ANY ALUMINUM BAR OR STEEL TANG SHOULD BE 3 THICKNESSES (MAKE LARGER THAN MINIMUM RADIUS BENDS WHEREVER POSSIBLE)

G4A6

METAL FABRICATION & FASTENERS

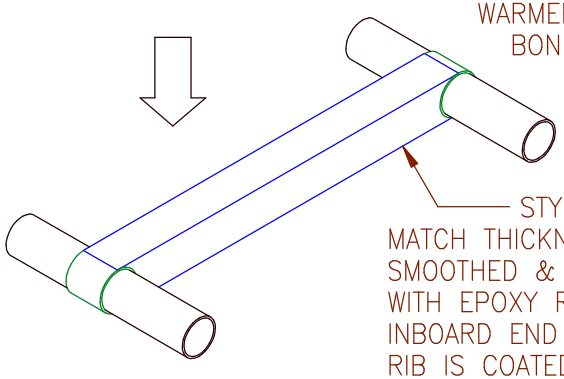
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 9, 2007

FABRICATION OF GENERALIZED COMPOSITE RIB

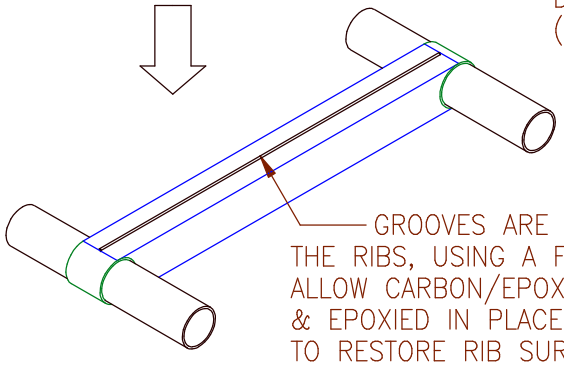


ALUMINUM TUBE SURFACES WHERE RESIN WILL BE APPLIED ARE LIGHTLY SANDED FOR CLEANING & ROUGHENING.

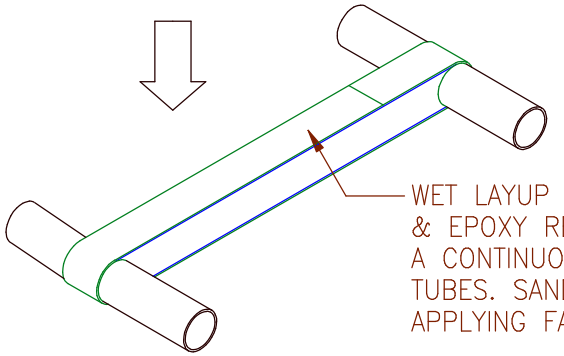
WET LAYUP OF WOVEN FIBERGLASS FABRIC TAPE & EPOXY RESIN IS APPLIED TO PRODUCE CONTINUOUS BANDS AROUND TUBES. LAYUPS MUST BE DONE AT ROOM TEMPERATURE OR WARMER, ELSE RESIN WILL NOT PENETRATE & BONDING WILL BE TOO WEAK



STYROFOAM RIB 1 INCH WIDE IS CUT TO MATCH THICKNESS OF BANDS WITH HACKSAW BLADE, SMOOTHED & SHAPED BY SANDING, GLUED TO BANDS WITH EPOXY RESIN. AT PANEL ENDS, SUCH AS THE INBOARD END OF THE AILERON, THE EXPOSED SIDE OF RIB IS COATED WITH RESIN OR MICROSLURRY TO SEAL IT AND THUS PREVENT THE STYROFOAM RIB FROM DISSOLVING WHEN THE FABRIC SEALANT (POLYBRUSH OR OTHER) IS APPLIED.

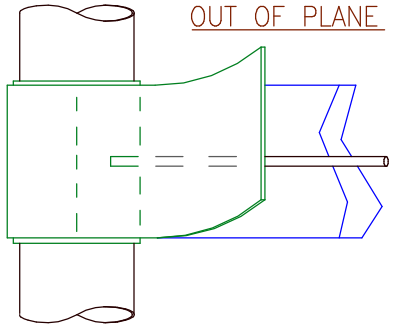


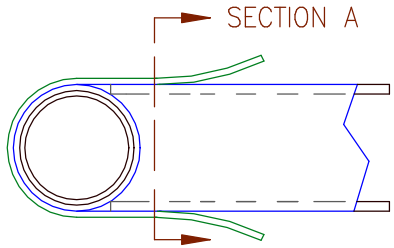
GROOVES ARE SCORED IN THE TOP AND BOTTOM OF THE RIBS, USING A FLAT EDGE SCREWDRIVER BLADE, TO ALLOW CARBON/EPOXY RODS TO BE EMBEDDED IN THE RIB & EPOXIED IN PLACE. FILL OVER RODS WITH MICROSLURRY TO RESTORE RIB SURFACES, SAND AS REQUIRED.



WET LAYUP OF WOVEN FIBERGLASS FABRIC TAPE & EPOXY RESIN IS APPLIED OVERALL TO PRODUCE A CONTINUOUS CAP STRIP AROUND THE RIB AND TUBES. SAND LIGHTLY FOR SMOOTHING BEFORE APPLYING FABRIC.

SAME AREA AS BELOW, VIEW FROM OUT OF PLANE



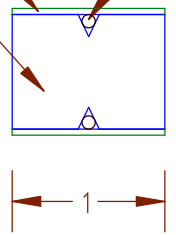


GENERALIZED COMPOSITE RIB, VIEW ACROSS TUBE SECTION

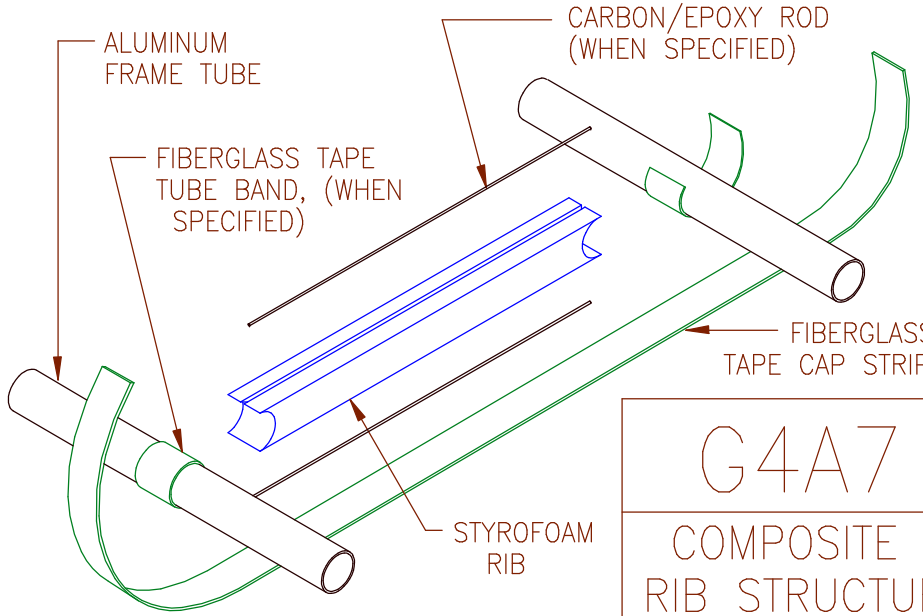
STYROFOAM, BLUE, SMALL CELL, 2 LB./CUFT. 1 IN. THICK,

WOVEN FIBERGLASS FABRIC TAPE, 1 INCH WIDE, 8.7 OZ./SQYD., WET LAYUP WITH EPOXY RESIN

.063 INCH DIAM. CARBON/EPOXY ROD



SECTION A, FROM VIEW AT LEFT



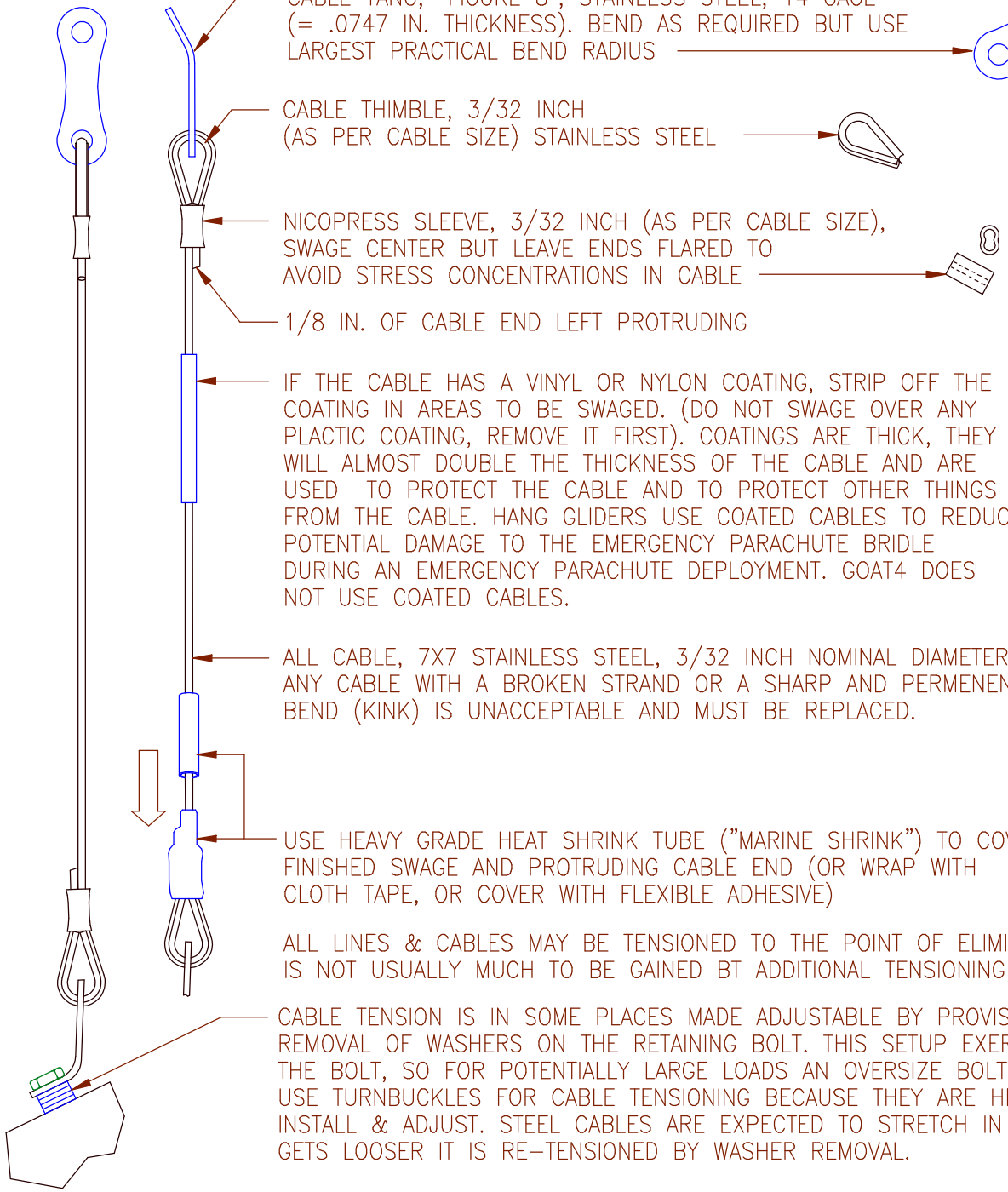
EXPLODED ISOMETRIC VIEW OF GENERALIZED COMPOSITE RIB

G4A7

COMPOSITE RIB STRUCTURE

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 9, 2007

VIEWS OF CABLE ASSEMBLIES



CABLE TANG, "FIGURE 8", STAINLESS STEEL, 14 GAGE (= .0747 IN. THICKNESS). BEND AS REQUIRED BUT USE LARGEST PRACTICAL BEND RADIUS

CABLE THIMBLE, 3/32 INCH (AS PER CABLE SIZE) STAINLESS STEEL

NICOPRESS SLEEVE, 3/32 INCH (AS PER CABLE SIZE), SWAGE CENTER BUT LEAVE ENDS FLARED TO AVOID STRESS CONCENTRATIONS IN CABLE

1/8 IN. OF CABLE END LEFT PROTRUDING

IF THE CABLE HAS A VINYL OR NYLON COATING, STRIP OFF THE COATING IN AREAS TO BE SWAGED. (DO NOT SWAGE OVER ANY PLACTIC COATING, REMOVE IT FIRST). COATINGS ARE THICK, THEY WILL ALMOST DOUBLE THE THICKNESS OF THE CABLE AND ARE USED TO PROTECT THE CABLE AND TO PROTECT OTHER THINGS FROM THE CABLE. HANG GLIDERS USE COATED CABLES TO REDUCE POTENTIAL DAMAGE TO THE EMERGENCY PARACHUTE BRIDLE DURING AN EMERGENCY PARACHUTE DEPLOYMENT. GOAT4 DOES NOT USE COATED CABLES.

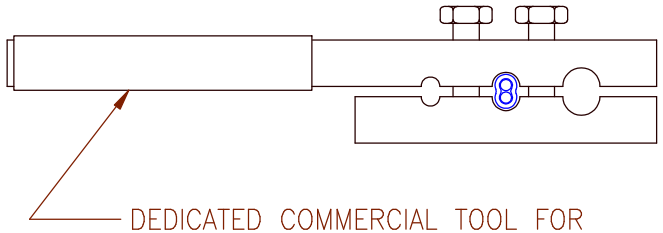
ALL CABLE, 7X7 STAINLESS STEEL, 3/32 INCH NOMINAL DIAMETER. ANY CABLE WITH A BROKEN STRAND OR A SHARP AND PERMENENT BEND (KINK) IS UNACCEPTABLE AND MUST BE REPLACED.

USE HEAVY GRADE HEAT SHRINK TUBE ("MARINE SHRINK") TO COVER FINISHED SWAGE AND PROTRUDING CABLE END (OR WRAP WITH CLOTH TAPE, OR COVER WITH FLEXIBLE ADHESIVE)

ALL LINES & CABLES MAY BE TENSIONED TO THE POINT OF ELIMINATING SLACK, BUT THERE IS NOT USUALLY MUCH TO BE GAINED BT ADDITIONAL TENSIONING BEYOND THAT.

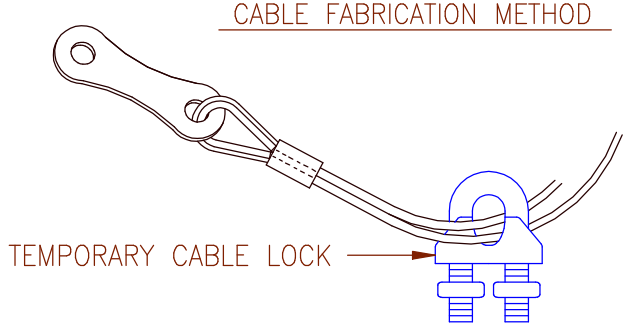
CABLE TENSION IS IN SOME PLACES MADE ADJUSTABLE BY PROVISION FOR THE ADDITION OR REMOVAL OF WASHERS ON THE RETAINING BOLT. THIS SETUP EXERTS A BENDING LOAD ON THE BOLT, SO FOR POTENTIALLY LARGE LOADS AN OVERSIZE BOLT IS USED. GOAT4 DOES NOT USE TURNBUCKLES FOR CABLE TENSIONING BECAUSE THEY ARE HEAVY AND COMPLEX TO INSTALL & ADJUST. STEEL CABLES ARE EXPECTED TO STRETCH IN SERVICE, SO IF THE RIGGING GETS LOOSER IT IS RE-TENSIONED BY WASHER REMOVAL.

CABLE SWAGING TOOL



DEDICATED COMMERCIAL TOOL FOR SWAGING NICOPRESS SLEEVES MUST BE USED FOR PROPER FINISHED SWAGE SHAPE. CHECK FINISHED DIMENSION OF SWAGED SLEEVE WITH NICOPRESS GAGE OR MICROMETER. THIS BOLT-DOWN TOOL CAN BE SECURED IN A VICE FOR USE.

CABLE FABRICATION METHOD



TEMPORARY CABLE LOCK IS USED FOR EASE OF CABLE ASSEMBLY & IN-PLACE TRIAL FITTING PRIOR TO FINAL SWAGING AND CABLE END TRIMMING. CABLE LOCK IS REMOVED AFTER SLEEVE IS SWAGED.

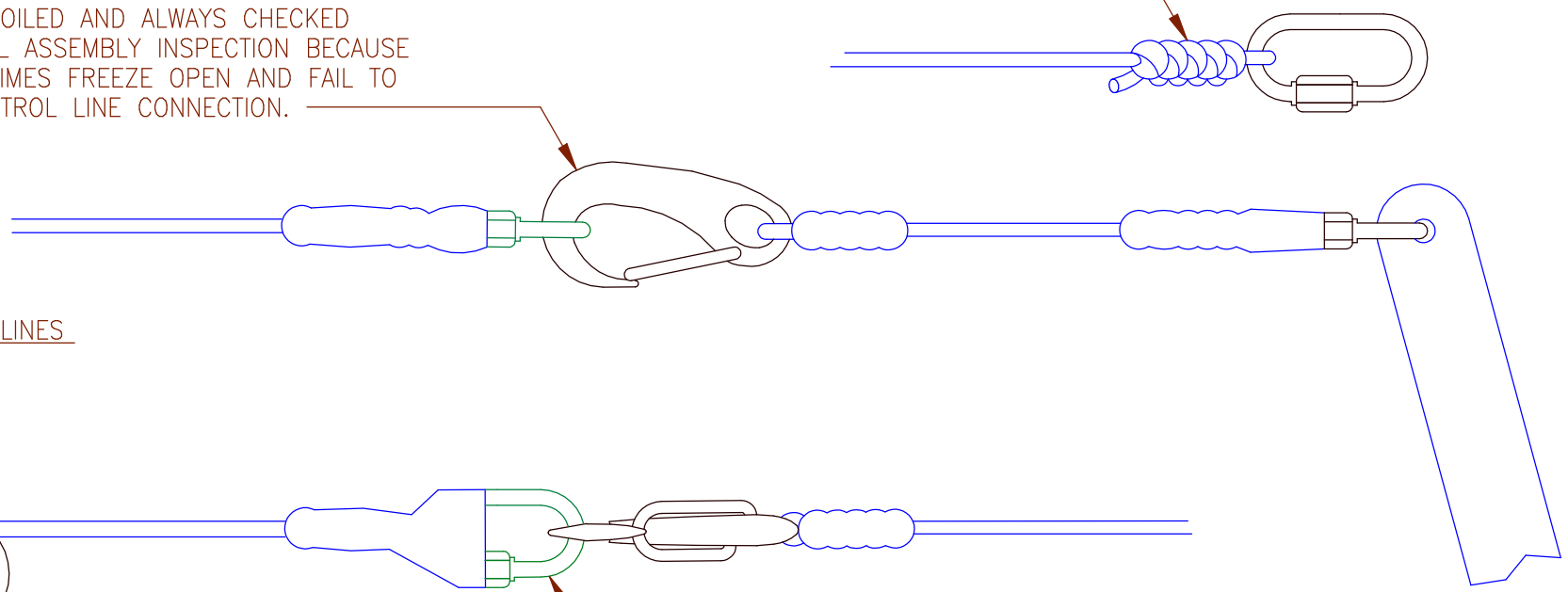
G4A8

STANDARDS FOR STEEL CABLES

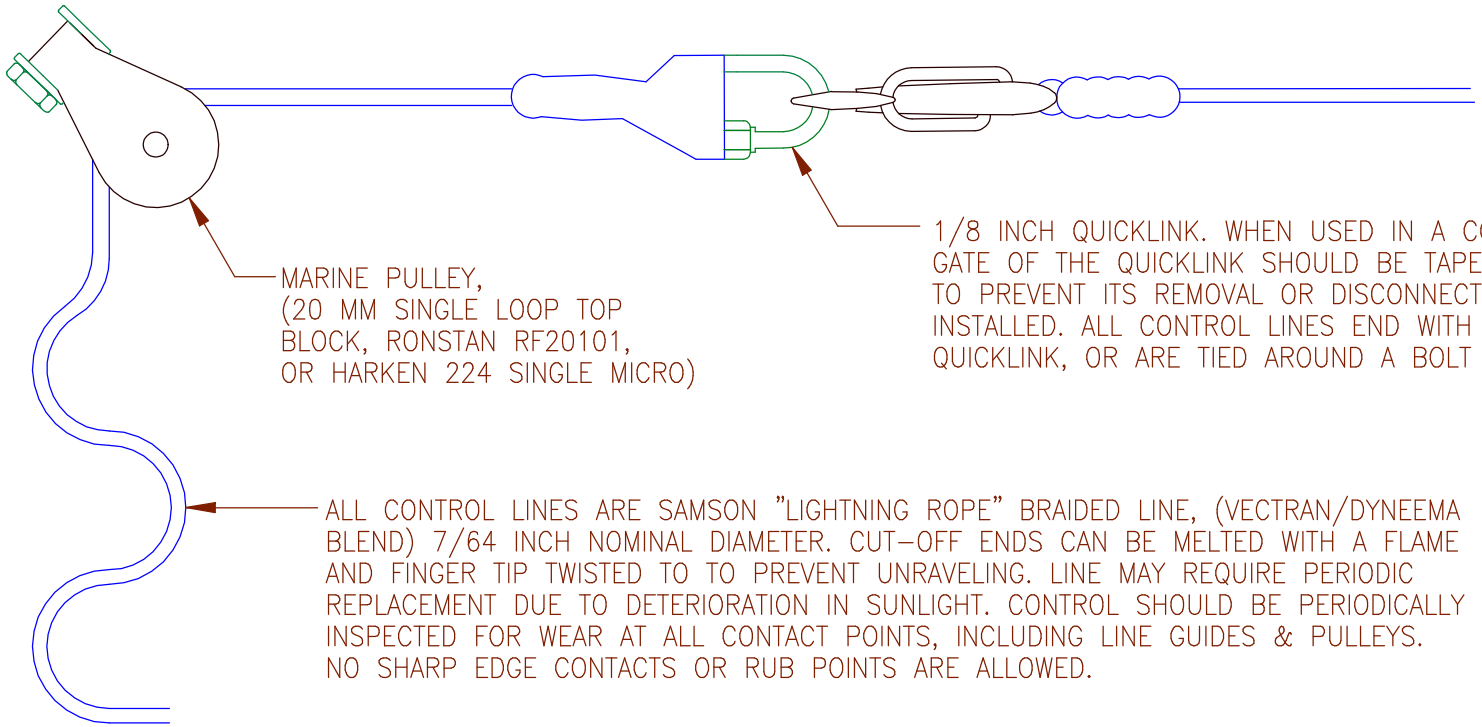
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, OCTOBER 14, 2007

ALL LINE ENDS ARE TIED WITH A SERIES OF FIVE HALF HITCH KNOTS. THE KNOTS AND LINE END ARE THEN COVERED WITH TAPE, AND/OR GLUED IN PLACE WITH FLEXIBLE ADHESIVE

SNAPHOOK, 2 INCH, MARINE HARDWARE. THE SPRING GATES ON THESE HOOKS SHOULD OCASIONALLY BE OILED AND ALWAYS CHECKED DURING THE FINAL ASSEMBLY INSPECTION BECAUSE THEY WILL SOMETIMES FREEZE OPEN AND FAIL TO SECURE THE CONTROL LINE CONNECTION.



TYPICAL CONTROL LINES



MARINE PULLEY, (20 MM SINGLE LOOP TOP BLOCK, RONSTAN RF20101, OR HARKEN 224 SINGLE MICRO)

1/8 INCH QUICKLINK. WHEN USED IN A CONTROL LINE, THE THREADED GATE OF THE QUICKLINK SHOULD BE TAPED OVER OR GLUED CLOSED TO PREVENT ITS REMOVAL OR DISCONNECTION ONCE IT HAS BEEN INSTALLED. ALL CONTROL LINES END WITH A SNAPHOOK, A 1/8 INCH QUICKLINK, OR ARE TIED AROUND A BOLT AS SPECIFIED.

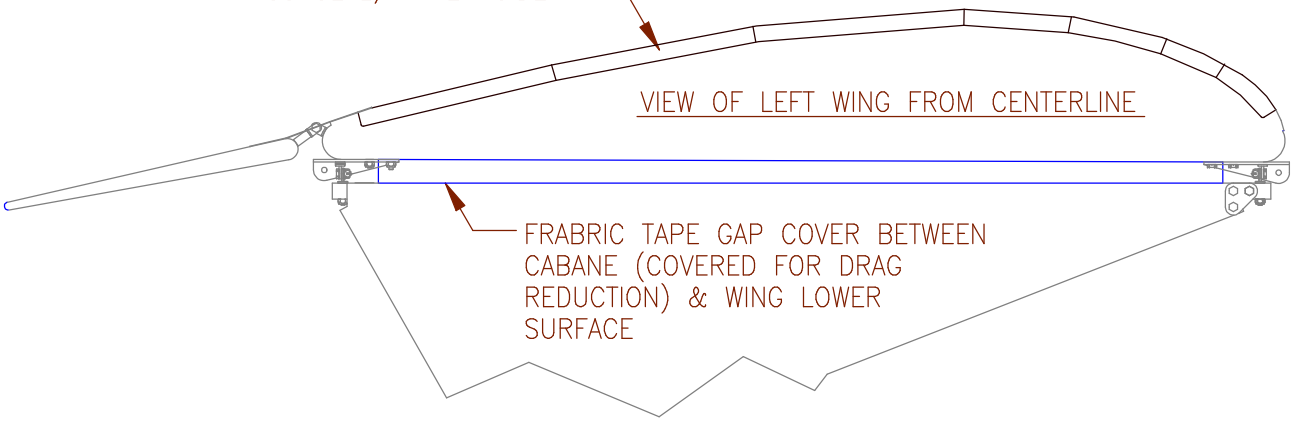
ALL CONTROL LINES ARE SAMSON "LIGHTNING ROPE" BRAIDED LINE, (VECTRAN/DYNEEMA BLEND) 7/64 INCH NOMINAL DIAMETER. CUT-OFF ENDS CAN BE MELTED WITH A FLAME AND FINGER TIP TWISTED TO TO PREVENT UNRAVELING. LINE MAY REQUIRE PERIODIC REPLACEMENT DUE TO DETERIORATION IN SUNLIGHT. CONTROL SHOULD BE PERIODICALLY INSPECTED FOR WEAR AT ALL CONTACT POINTS, INCLUDING LINE GUIDES & PULLEYS. NO SHARP EDGE CONTACTS OR RUB POINTS ARE ALLOWED.

ALL LINES & CABLES MAY BE TENSIONED TO THE POINT OF ELIMINATING SLACK, BUT THERE IS NOT USUALLY MUCH TO BE GAINED BT ADDITIONAL TENSIONING BEYOND THAT.

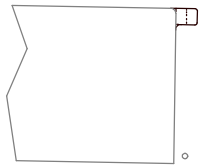
G4A9

STANDARDS FOR CONTROL LINES

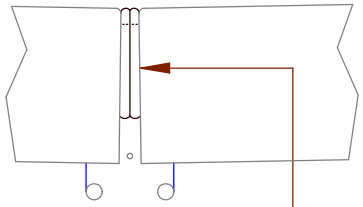
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 9, 2007



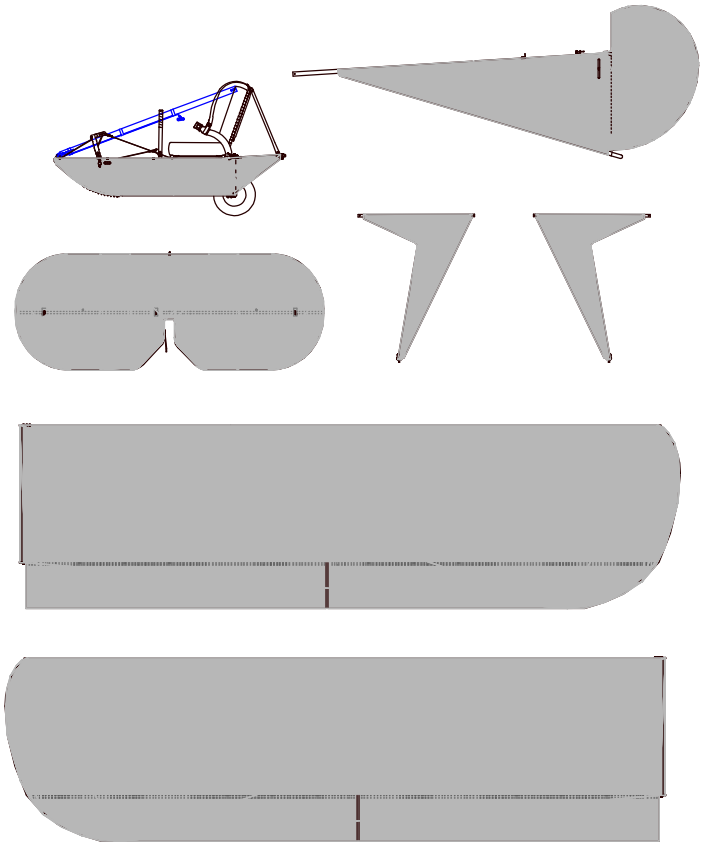
SECTION VIEW OF WING END FROM FORWARD



VIEW OF WING INBOARD ENDS JOINED AT CENTERLINE, SEEN FROM REAR



CENTERLINE KISS SEAL, FLEXIBLE FOAM WEATHER STRIPPING, APPLY TO WING INBOARD SURFACES ON BOTH SIDES TO GET LIGHT CONTACT WHEN WINGS ARE JOINED, COVER WITH FABRIC SRRIPS.



ALL AIRCRAFT FABRIC COVERING MATERIALS AND PRACTICE ARE BASED ON CONVENTIONAL AIRCRAFT COVERING METHODS, NOMINALLY THE POLYFIBER (STITTS) PROCESS AS DESCRIBED BY THEIR MANUAL AND WEBSITE. COVER AIRCRAFT WITH 1.8 OZ./SQYD. DACRON (POLYESTER) AIRCRAFT FABRIC (UNCERTIFIED, HEAT SHRINKABLE), ALL FLIGHT CRITICAL PARTS (WINGS, AILERONS, & TAIL SURFACES) MUST BE COVERED SO AS TO ESTABLISH A CONTINUOUS ENVELOPE OF FABRIC WHICH COMPLETELY ENCLOSES THE METAL FRAME STRUCTURE AND THUS DOES NOT DEPEND ON THE CEMENTING OF FABRIC TO METAL FOR STRENGTH. APPLY TAPES IN THE PRESCRIBED POLYFIBER MANNER SO AS TO REINFORCE ALL HIGH STRESS AREAS (EDGES WHERE FABRIC DEPARTS THE SOLID STRUCTURE) OR AREAS SUBJECT TO ABRASION (OUTSIDE EDGES).

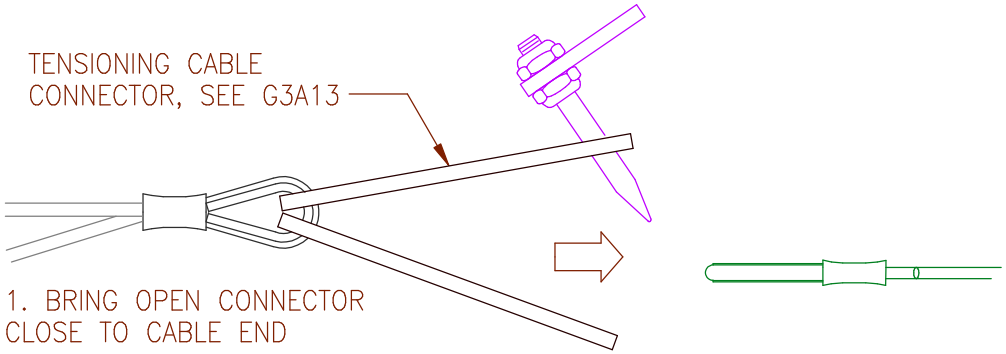
FABRIC MUST BE SEALED TO REDUCE ITS PERMEABILITY FOR BEST AERODYNAMIC PERFORMANCE. THIS GLIDER HAS 6 COATS OF BRUSH APPLIED SILVERING (DOPE WITH ALUMINUM POWDER) ON THE UPWARD FACING SURFACES FOR RADIATION PROTECTION.

ALL FABRIC TREATMENTS WERE APPLIED BY BRUSH. NO SPRAY RIG WAS USED. ENAMEL SPRAY PAINT (FROM CANS) WAS APPLIED OVER SOME SILVERED AREAS TO CREATE LARGE PANELS OF BRIGHT COLOR TO MAKE THE AIRCRAFT MORE VISIBLE IN FLIGHT.

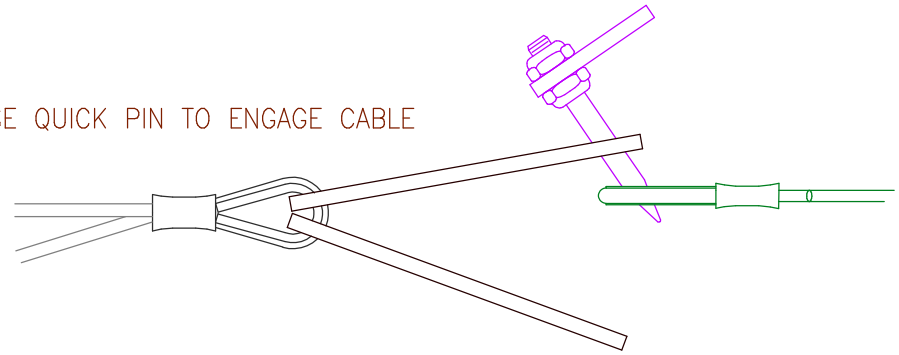
G4A10

FABRIC COVERING STANDARDS

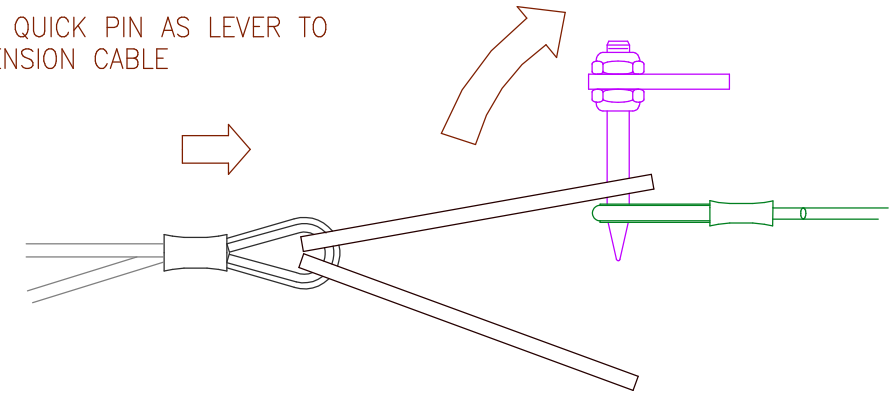
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 10, 2007



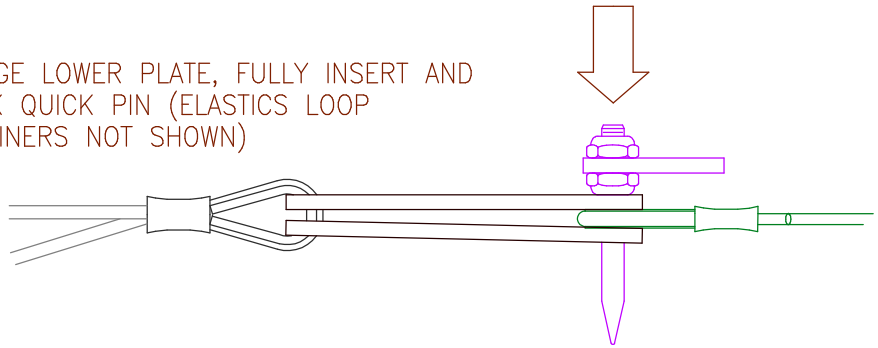
1. BRING OPEN CONNECTOR CLOSE TO CABLE END



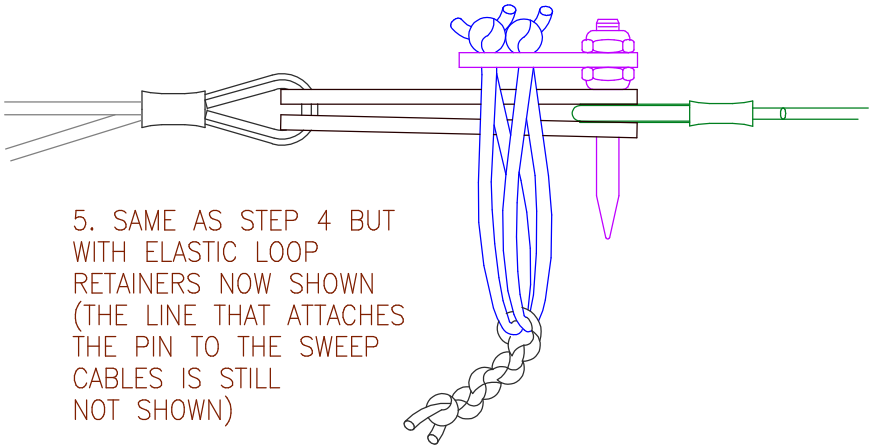
2. USE QUICK PIN TO ENGAGE CABLE



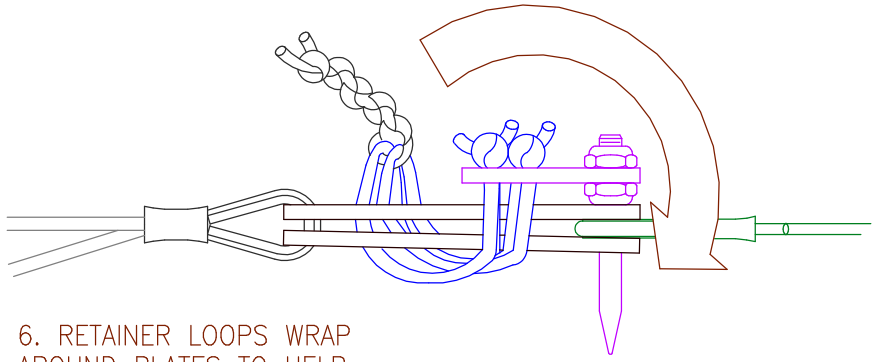
3. USE QUICK PIN AS LEVER TO TENSION CABLE



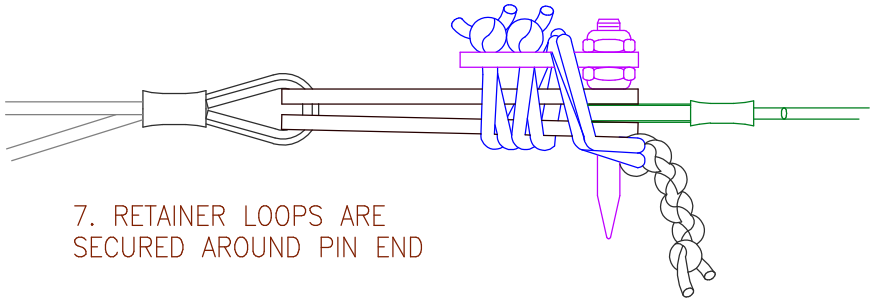
4. ENGAGE LOWER PLATE, FULLY INSERT AND LOCK QUICK PIN (ELASTICS LOOP RETAINERS NOT SHOWN)



5. SAME AS STEP 4 BUT WITH ELASTIC LOOP RETAINERS NOW SHOWN (THE LINE THAT ATTACHES THE PIN TO THE SWEEP CABLES IS STILL NOT SHOWN)

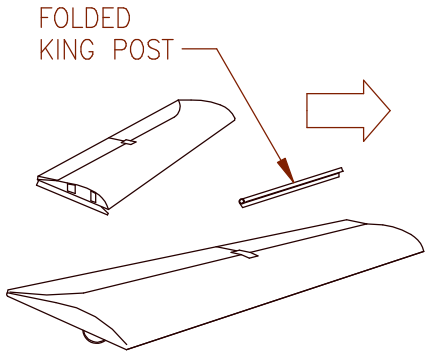


6. RETAINER LOOPS WRAP AROUND PLATES TO HELP HOLD THEM TOGETHER



7. RETAINER LOOPS ARE SECURED AROUND PIN END

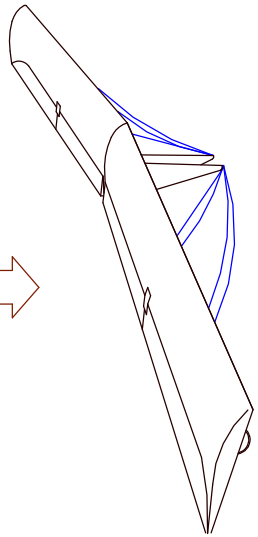
TENSIONING CABLE CONNECTOR	G4A11	
	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 11, 2007



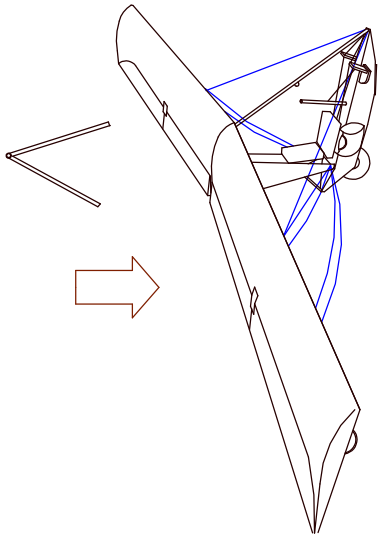
1. UNLOAD THE 6 MAJOR PARTS (2 WINGS, NOSE, TAIL BOOM, HORIZONTAL TAILPLANE, KING POST), LAY THEM OUT IN THE ASSEMBLY AREA.

2. SWING OUT EACH CABANE TO PROP UP THE WING PANELS, TRAILING EDGE DOWN.

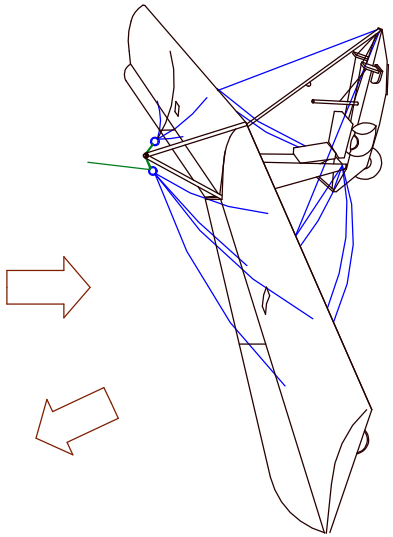
3. JOIN WING PANELS (2 PINS)

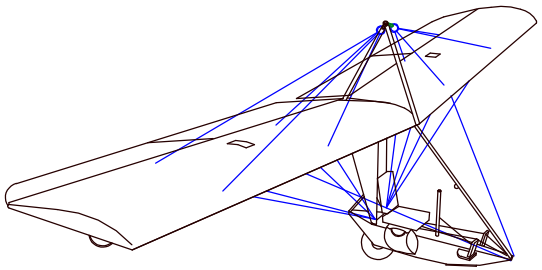


4. ATTACH NOSE SECTION (3 PINS) & FORWARD SWEEP CABLES (2 PINS)

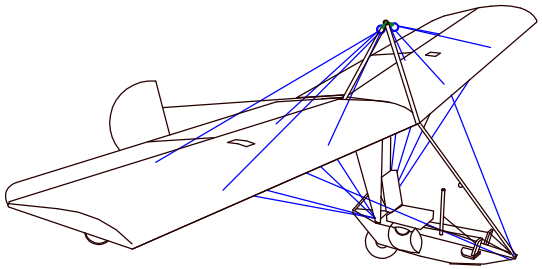


5. OPEN TRAILING EDGE PANELS, ATTACH KING POST (2 PINS), TENSION & TIE OFF UPPER (LANDING) CABLES.

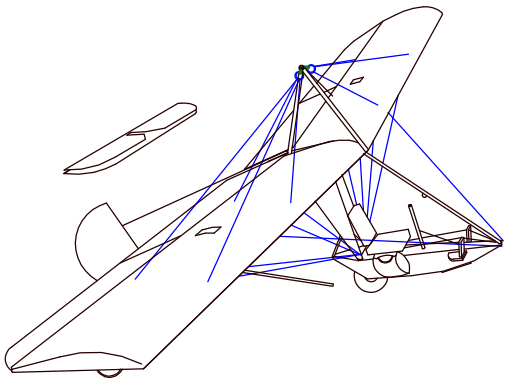




6. ROTATE SKID ONTO GROUND, ATTACH AILERON CONTROLS (2 PINS, 3 SNAPHOOKS)



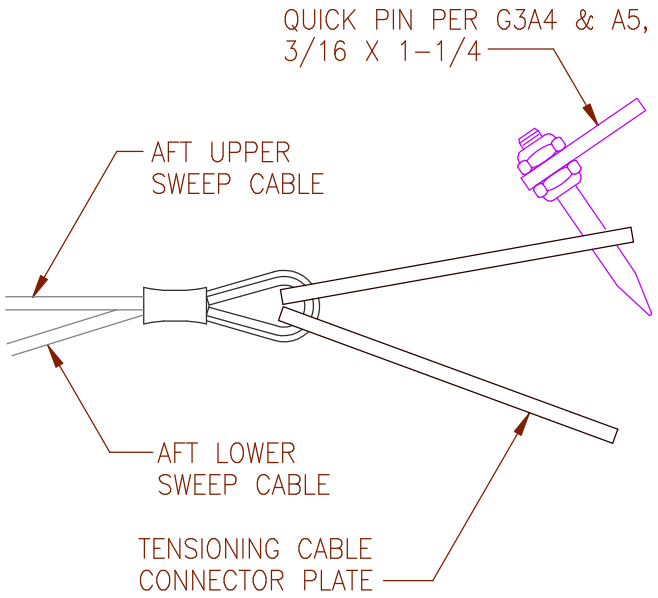
7. ATTACH TAIL BOOM (2 PINS) & AFT SWEEP CABLES (2 PINS, 2 QUICKLINKS FOR FLAP PANELS) SIT BACK ON TAIL SKID



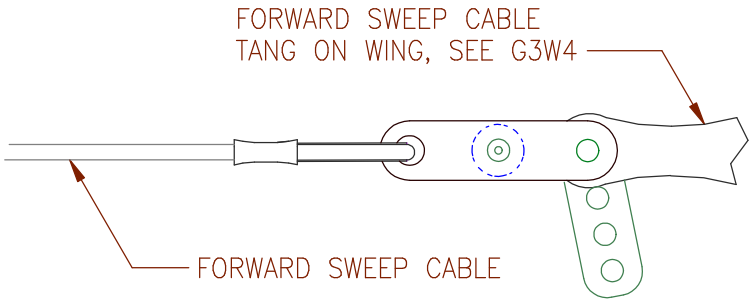
8. ATTACH HORIZONTAL TAIL PLANE, TAIL STRUTS, & ELEVATOR CONTROL ARM (4 SWIVEL SNAPS), ELVATOR LINES (2 SNAPHOOKS), & RUDDER LINES (2 SNAPHOOKS). DO PREFLIGHT INSPECTION BEFORE FLYING.

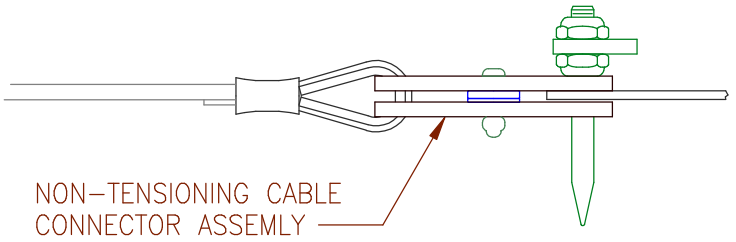
G4A12	ASSEMBLY SEQUENCE	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 17, 2007

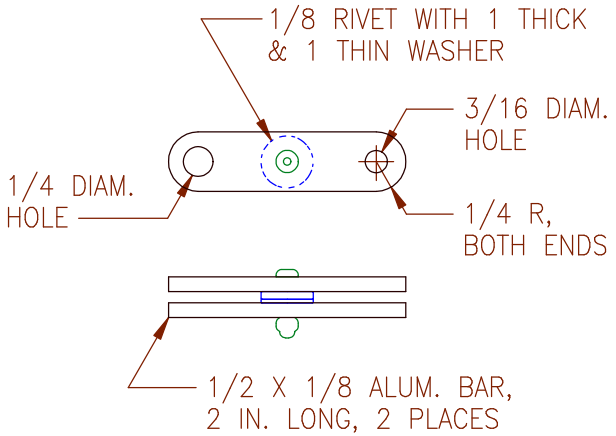
TENSIONING CABLE CONNECTORS ARE USED FOR THE AFT SWEEP CABLE PAIRS. EACH CONNECTOR CONSISTS OF TWO PLATES ASSEMBLED ONTO A CONTINUOUS CABLE, WHICH BRANCHES INTO THE UPPER & LOWER AFR SWEEP CABLES. SEE G4A11 FOR THE METHOD OF USE.



TENSIONING CABLE CONNECTOR PLATE,
1/2 X 1/8 ALUM. BAR, 2 IN. LONG,
MAKE 4 PLATES TO MAKE 2 CONNECTORS

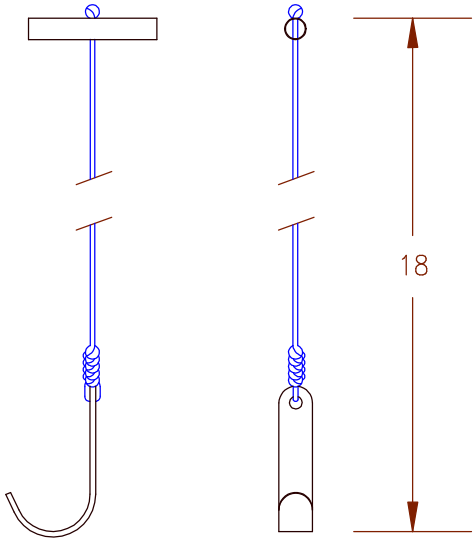




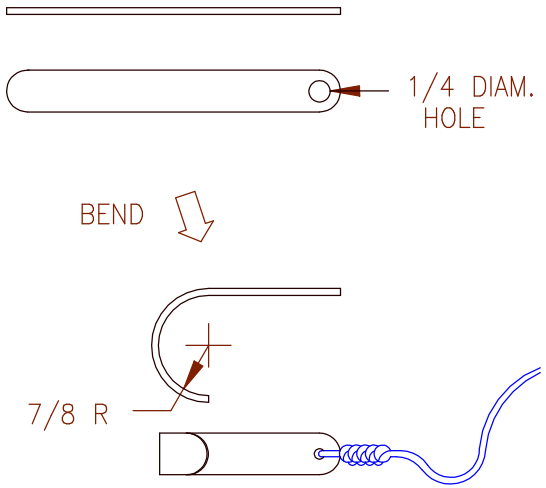


NON-TENSIONING CABLE CONNECTION
(RIVETED CONNECTOR) MAKE 2

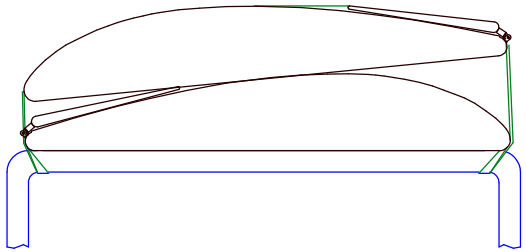
G4A13	CABLE CONNECTORS	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 11, 2007



WING CARRYING SLING FOR ONE PERSON WING CARRY

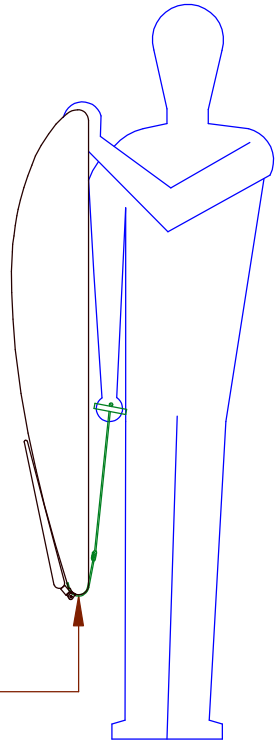


LIFT HOOK FOR WING CARRYING SLING, 3/4 X 18 X 5 ALUM. BAR



FOR CAR TOP TRANSPORT THE WINGS ARE STACKED ONTO A FLAT PADDED RACK, WING TIPS FORWARD. WEBBING STRAPS ARE PASSED OVER THE WINGS. ADDITIONAL TIES ARE APPLIED AS NEEDED, ESPECIALLY TO SECURE THE AILERONS AGAINST FLAPPING, WHICH CAN CAUSE DAMAGE.

USE OF WING CARRYING SLING FOR ONE PERSON WING CARRY



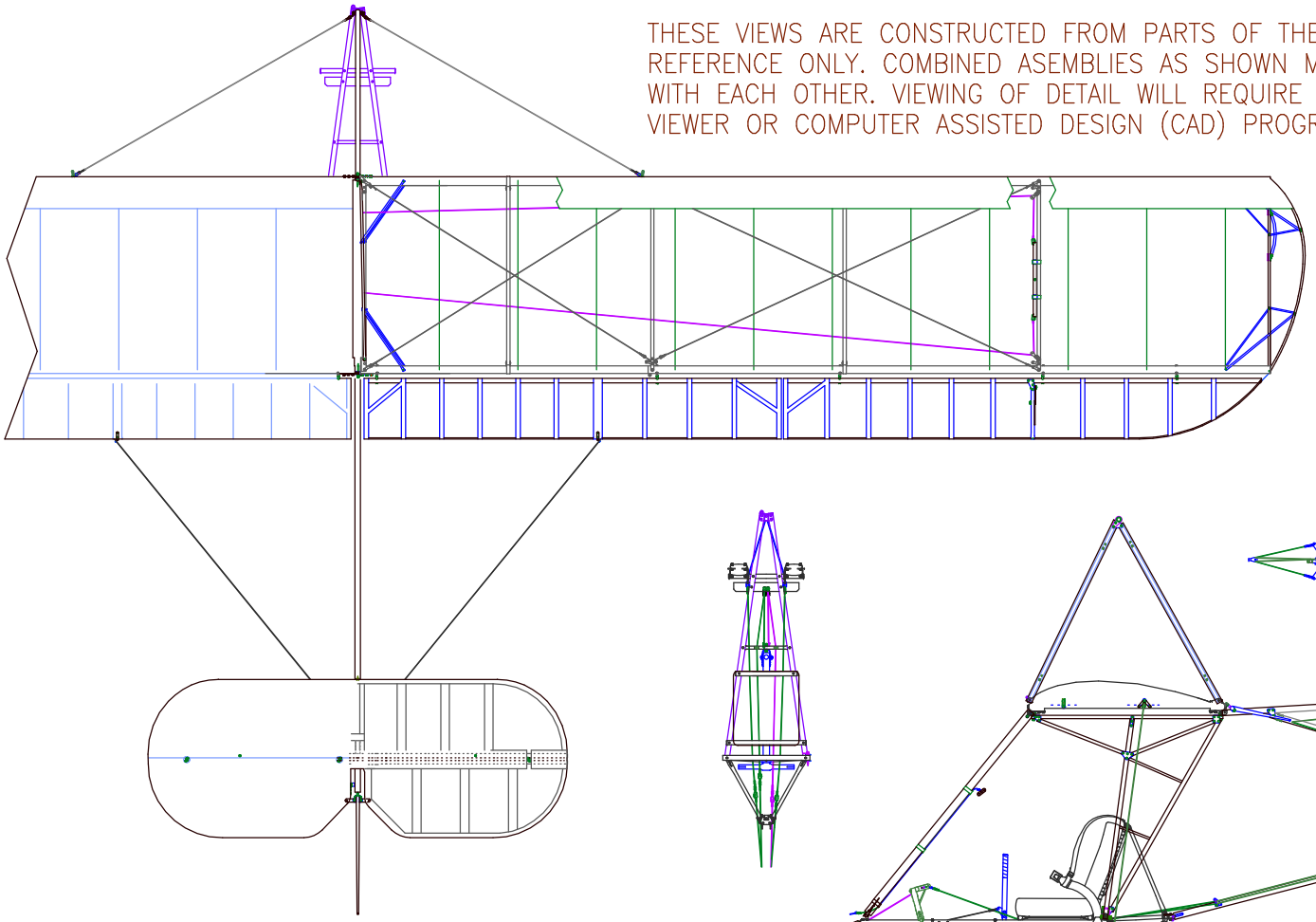
WING CAN BE CARRIED BY ONE PERSON USING THIS WING CARRYING SLING. THE HOOK IS PLACED AROUND THE AFT SPAR TUBE AT THE BALANCE POINT NEAR THE CENTER OF THE WING.

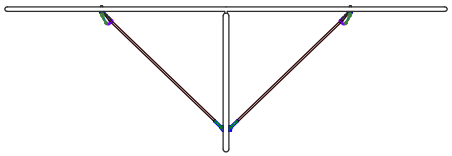
G4A14

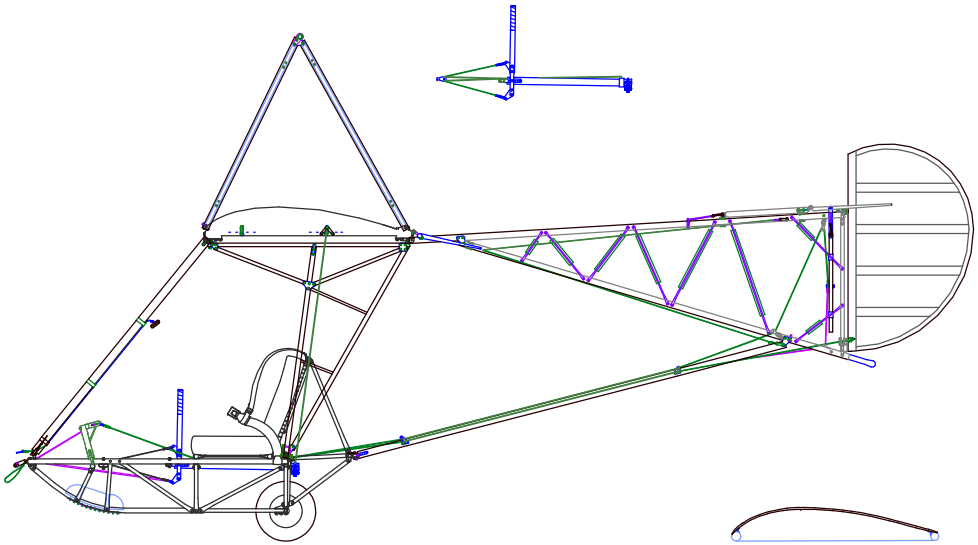
TRANSPORT ITEMS

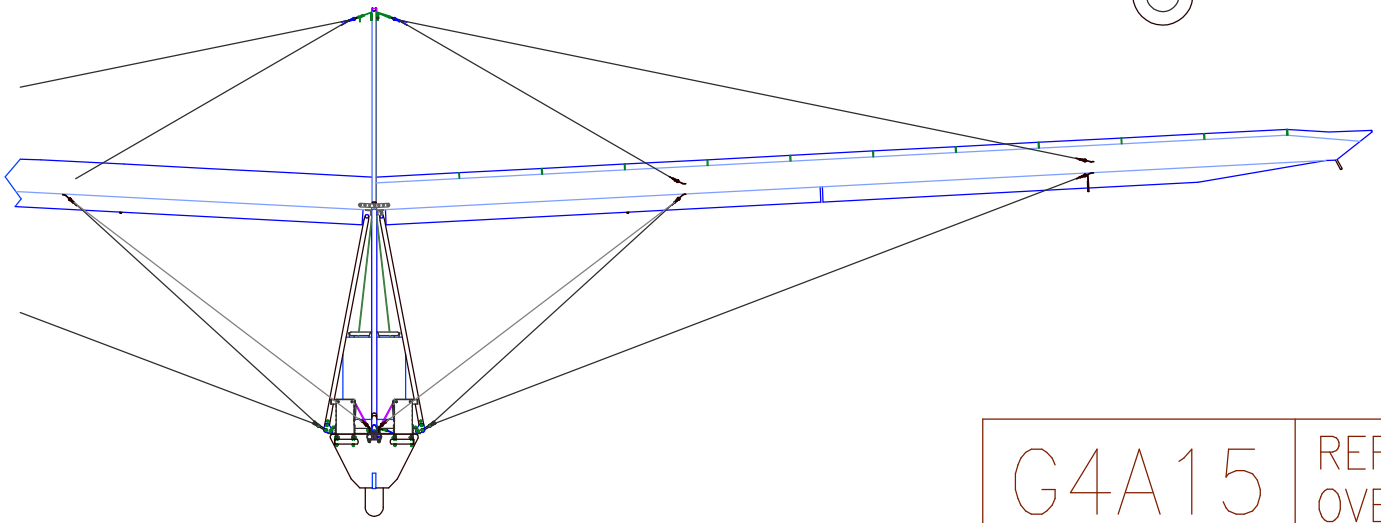
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 11, 2007

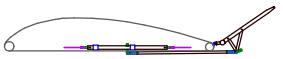
THESE VIEWS ARE CONSTRUCTED FROM PARTS OF THE CONTROLLING DRAWINGS AND ARE FOR REFERENCE ONLY. COMBINED ASEMBLIES AS SHOWN MAY NOT BE COMPLETE OR CONSISTENT WITH EACH OTHER. VIEWING OF DETAIL WILL REQUIRE DISPLAY IN VECTOR FORMAT (.DXF VIEWER OR COMPUTER ASSISTED DESIGN (CAD) PROGRAM).

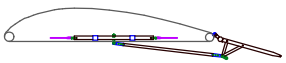


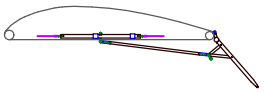






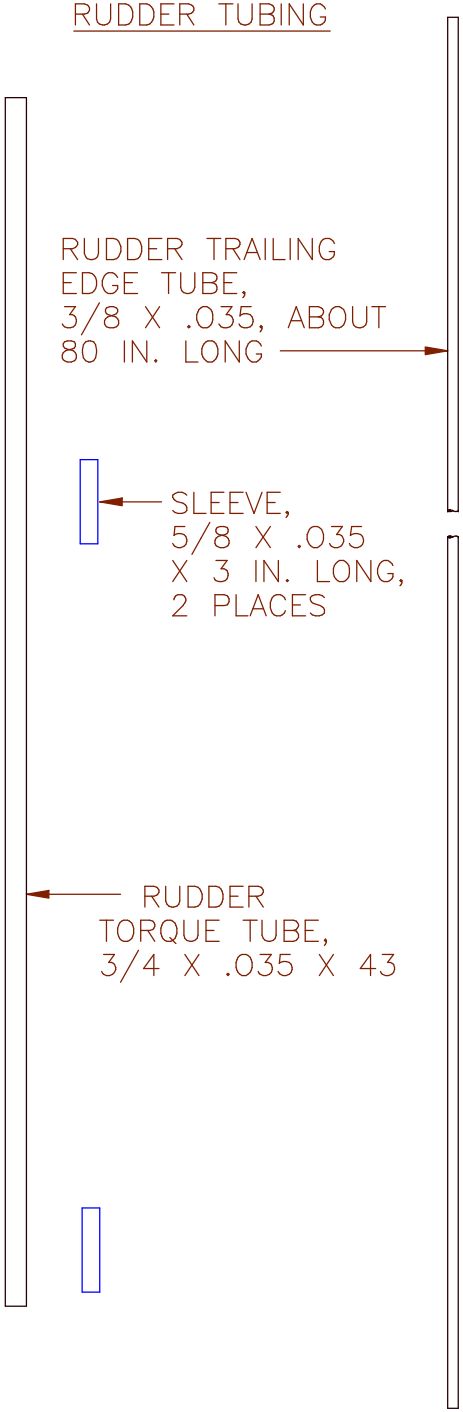


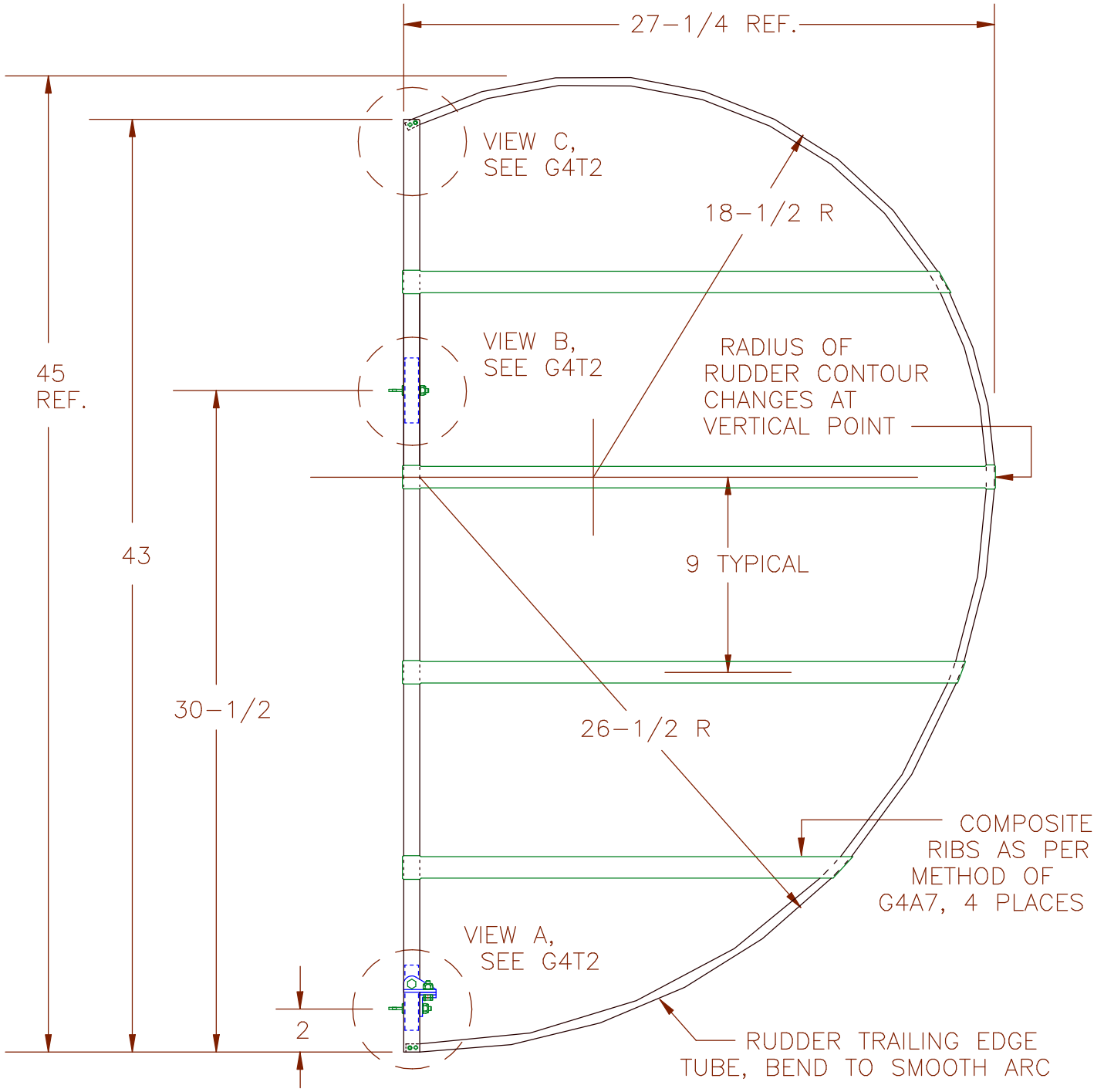




G4A15	REFERENCE OVERVIEW	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, FEBRUARY 12, 2007

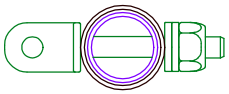
RUDDER TUBING



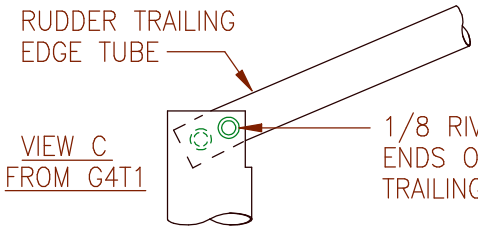


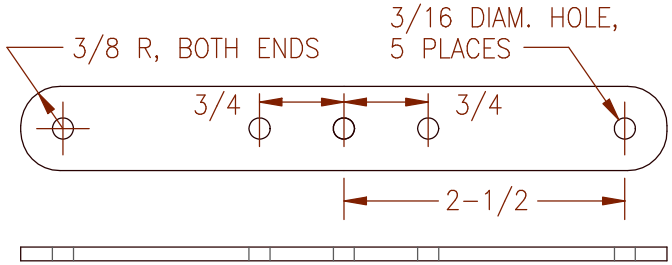
RUDDER ASSEMBLY, UNCOVERED, VIEWED FROM LEFT

G4T1	RUDDER	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 24, 2007

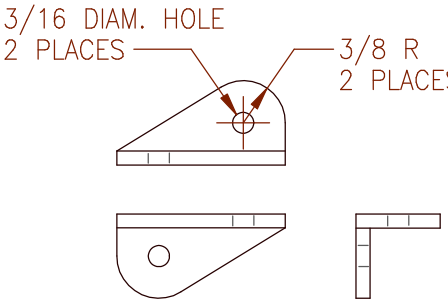


AREA OF UPPER RUDDER EYEBOLT SEEN FROM ABOVE

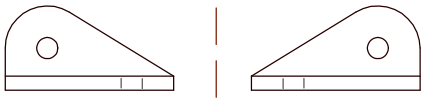


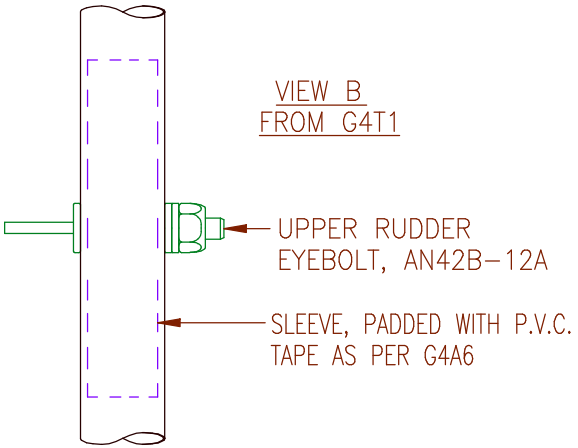


RUDDER CONTROL HORN, 1/8 X 3/4 ALUM. BAR STOCK, 5-3/4 INCHES LONG

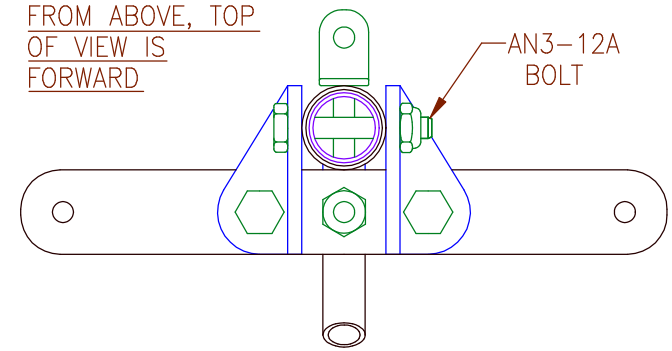


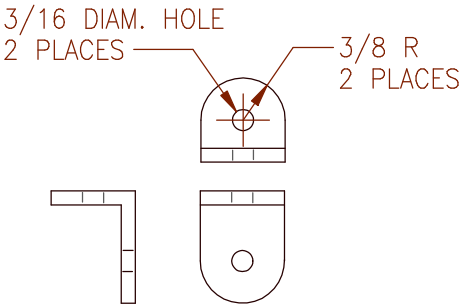
OFFSET ANGLE, 1/8 X 3/4 X 3/4 ALUM. ANGLE, 1-1/2 IN. LONG, MAKE 2 PAIRS OF MIRROR IMAGE PARTS FOR A TOTAL OF 4 PARTS, SEE G4T13



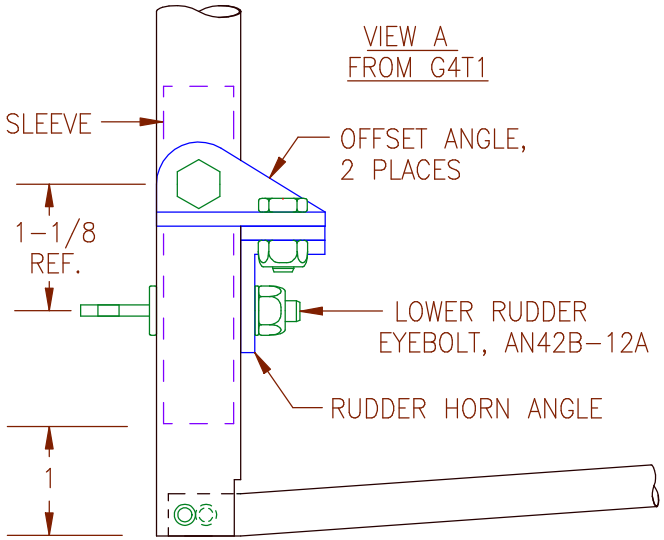


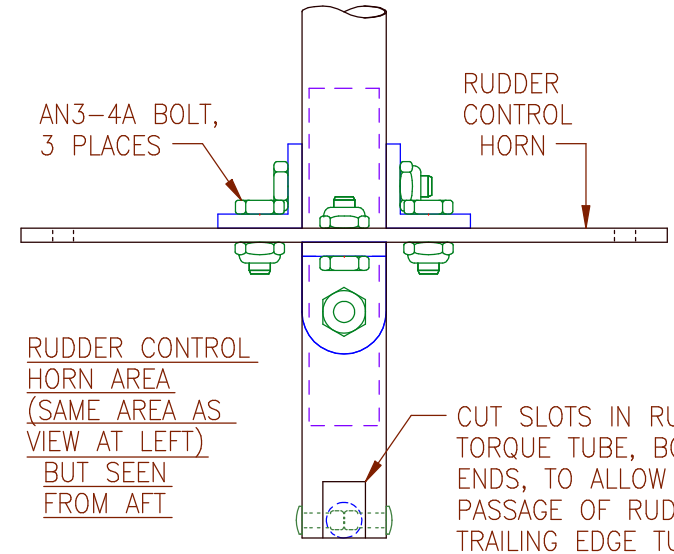
RUDDER CONTROL HORN AREA SEEN FROM ABOVE, TOP OF VIEW IS FORWARD





RUDDER HORN ANGLE, 1/8 X 3/4 X 1 ALUM. ANGLE, 3/4 IN. LONG





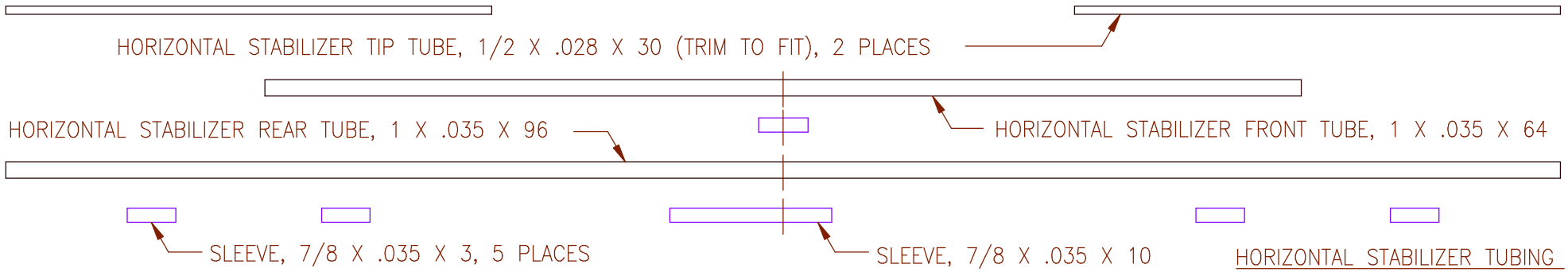
RUDDER CONTROL HORN AREA (SAME AREA AS VIEW AT LEFT) BUT SEEN FROM AFT

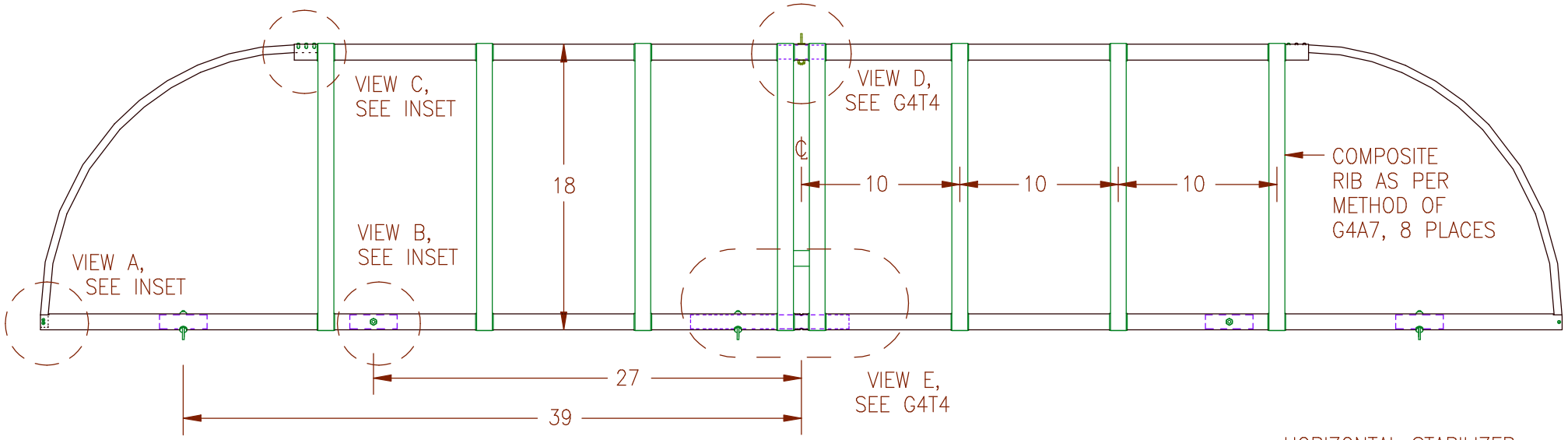
G4T2

RUDDER HORN

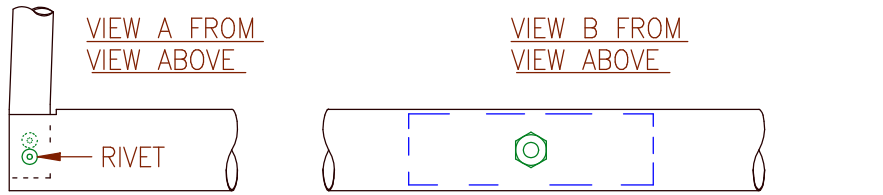
GOAT4 ULTRALIGHT GLIDER

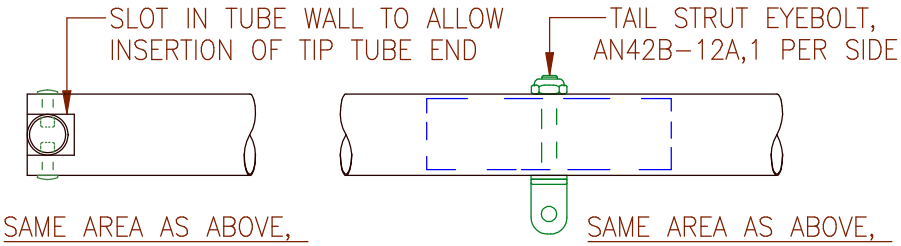
M. SANDLIN, JANUARY 24, 2007

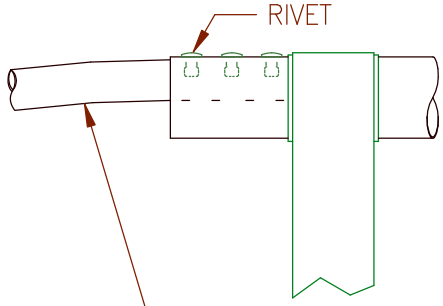




HORIZONTAL STABILIZER ASSEMBLY, UNCOVERED, VIEWED FROM ABOVE







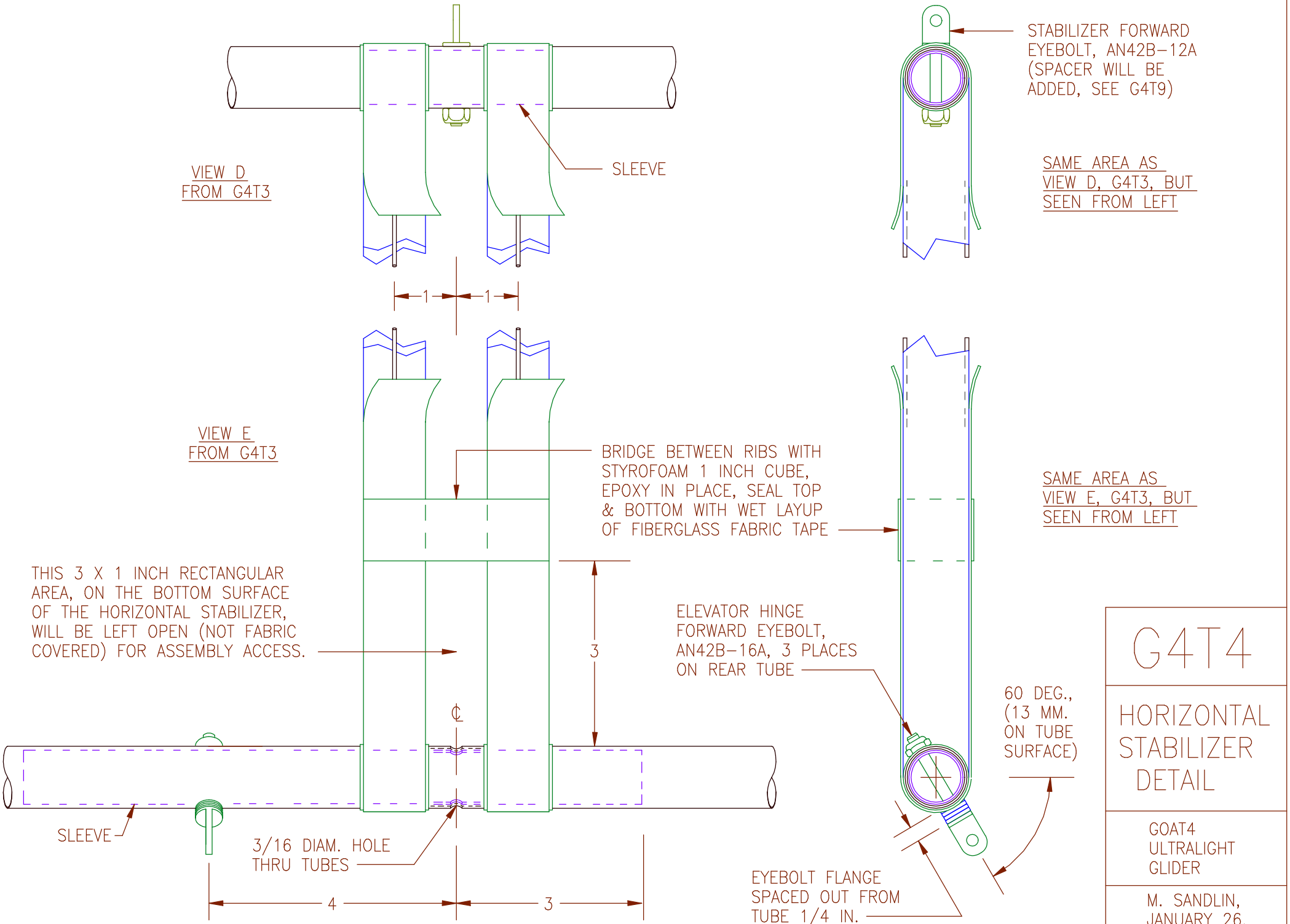
BEND TIP TUBE
SMOOTHLY, 90 DEG. BEND
AT ABOUT 17 IN. RADIUS

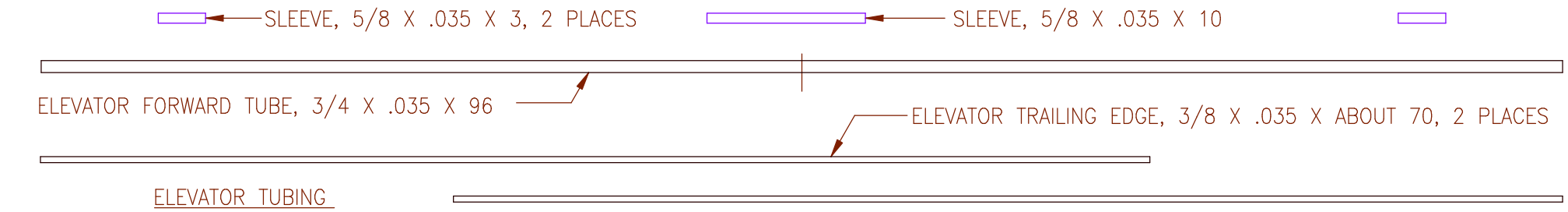
VIEW C FROM VIEW ABOVE

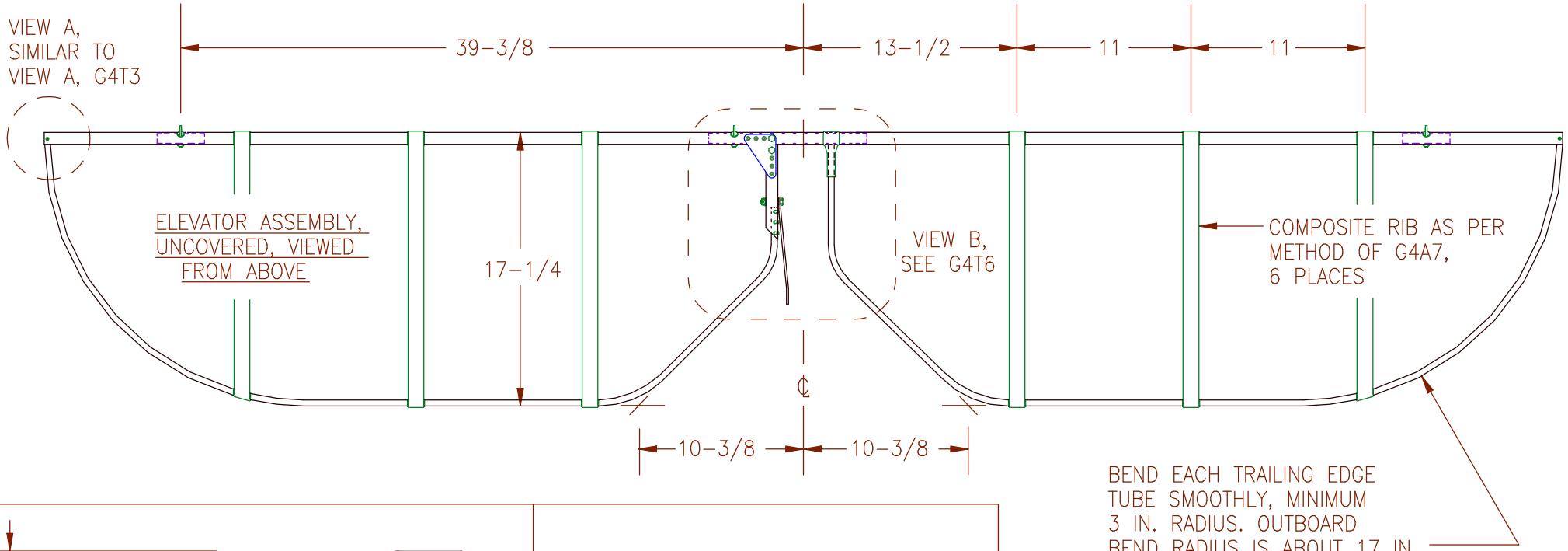
G4T3

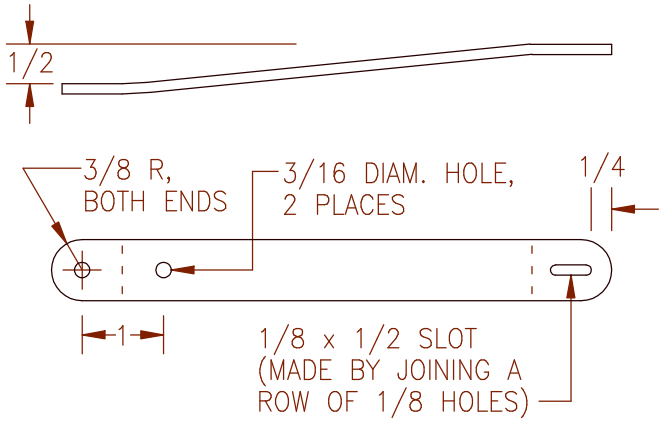
HORIZONTAL STABILIZER

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 26, 2007

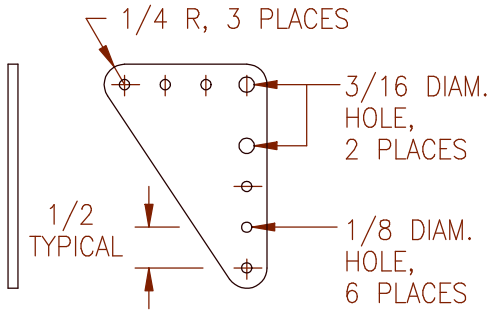

VIEW D
FROM G4T3
SLEEVE
1
1
STABILIZER FORWARD
EYEBOLT, AN42B-12A
(SPACER WILL BE
ADDED, SEE G4T9)
SAME AREA AS
VIEW D, G4T3, BUT
SEEN FROM LEFT
VIEW E
FROM G4T3
BRIDGE BETWEEN RIBS WITH
STYROFOAM 1 INCH CUBE,
EPOXY IN PLACE, SEAL TOP
& BOTTOM WITH WET LAYUP
OF FIBERGLASS FABRIC TAPE
SAME AREA AS
VIEW E, G4T3, BUT
SEEN FROM LEFT
THIS 3 X 1 INCH RECTANGULAR
AREA, ON THE BOTTOM SURFACE
OF THE HORIZONTAL STABILIZER,
WILL BE LEFT OPEN (NOT FABRIC
COVERED) FOR ASSEMBLY ACCESS.
3
ELEVATOR HINGE
FORWARD EYEBOLT,
AN42B-16A, 3 PLACES
ON REAR TUBE
60 DEG.,
(13 MM.
ON TUBE
SURFACE)
SLEEVE
3/16 DIAM. HOLE
THRU TUBES
4
3
EYEBOLT FLANGE
SPACED OUT FROM
TUBE 1/4 IN.
G4T4
HORIZONTAL
STABILIZER
DETAIL
GOAT4
ULTRALIGHT
GLIDER
M. SANDLIN,
JANUARY 26,
2007







ELEVATOR CONTROL ARM,
1/8 X 3/4 ALUM. BAR, 6-7/8 IN. LONG

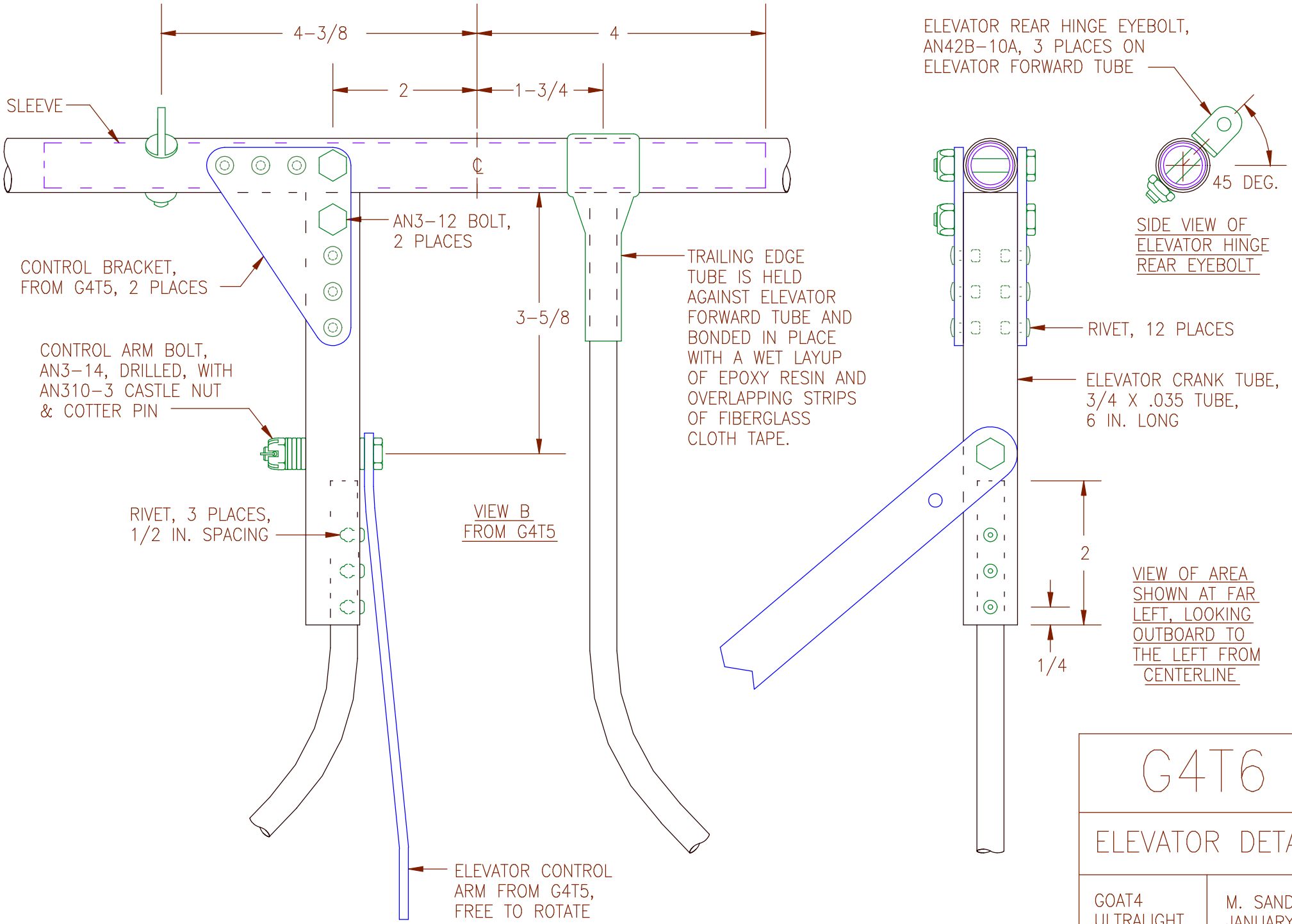


CONTROL BRACKET,
1/8 X 2 ALUM. BAR,
2-1/4 IN. LONG, MAKE 6

G4T5

ELEVATOR

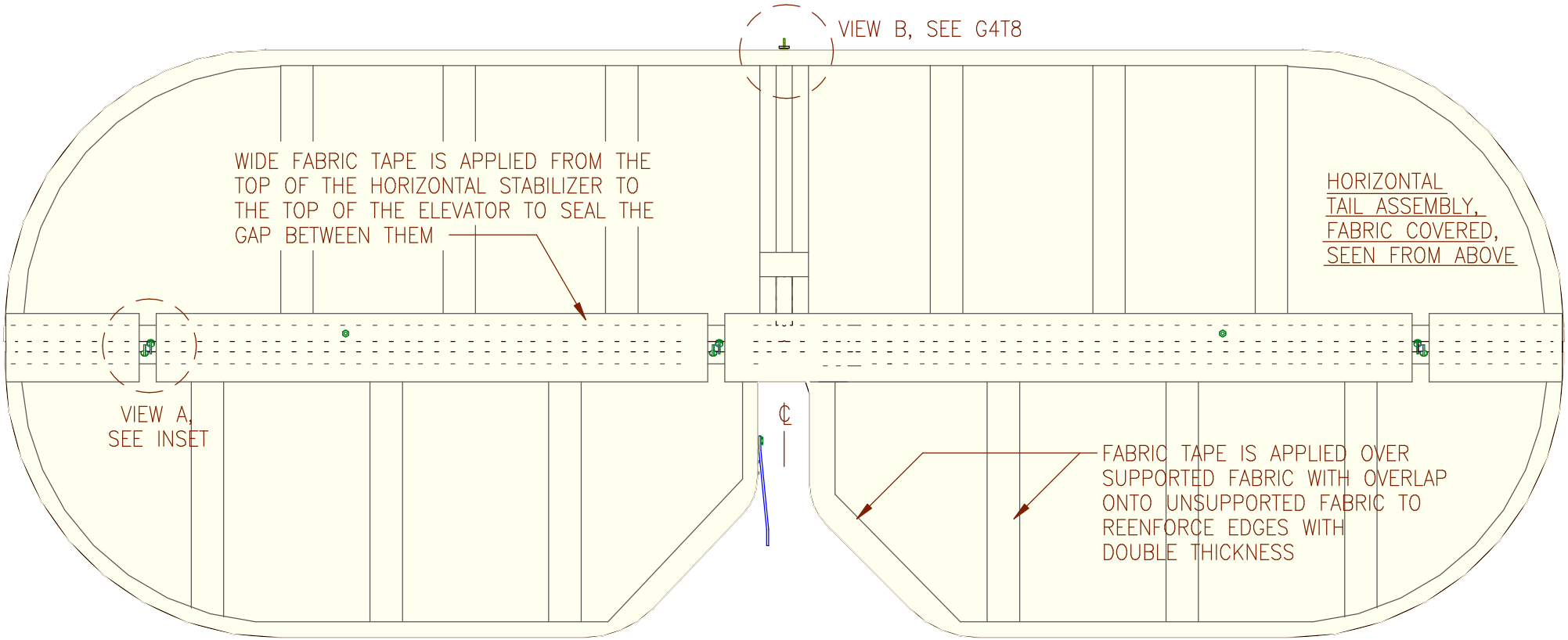
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 26, 2007

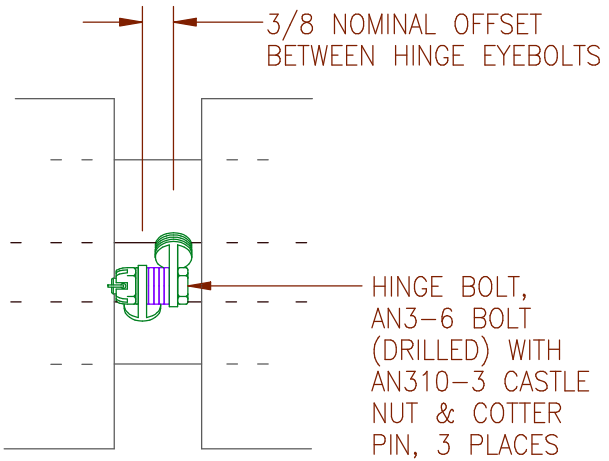


G4T6

ELEVATOR DETAIL

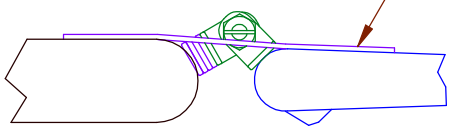
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 26, 2007



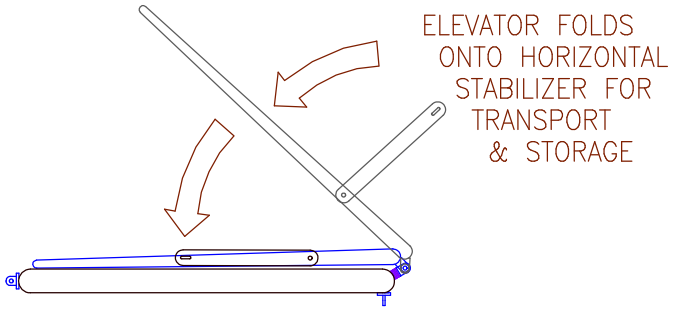


VIEW A, FROM VIEW ABOVE

GAP COVER FABRIC TAPE, TYPICAL FOR ELVATOR & AILERONS, LEAVE SOME SLACK (NO SHRINKING). SHOWN FROM SIDE WITH EXAGERATED THICKNESS



SAME AREA AS SHOWN AT LEFT, VIEWED FROM SIDE

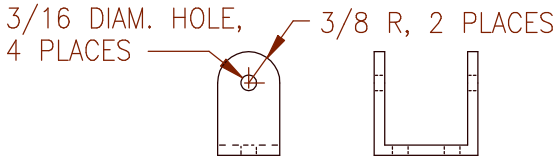


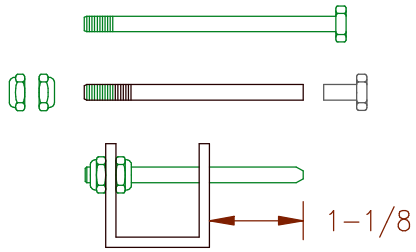
HORIZONTAL TAIL ASSEMBLY SEEN FROM LEFT

G4T7

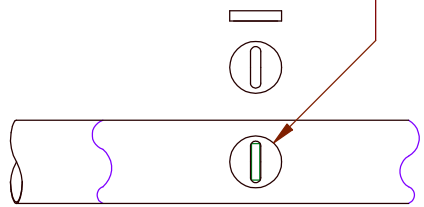
HORIZONTAL TAIL ASSEMBLY

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 26, 2007

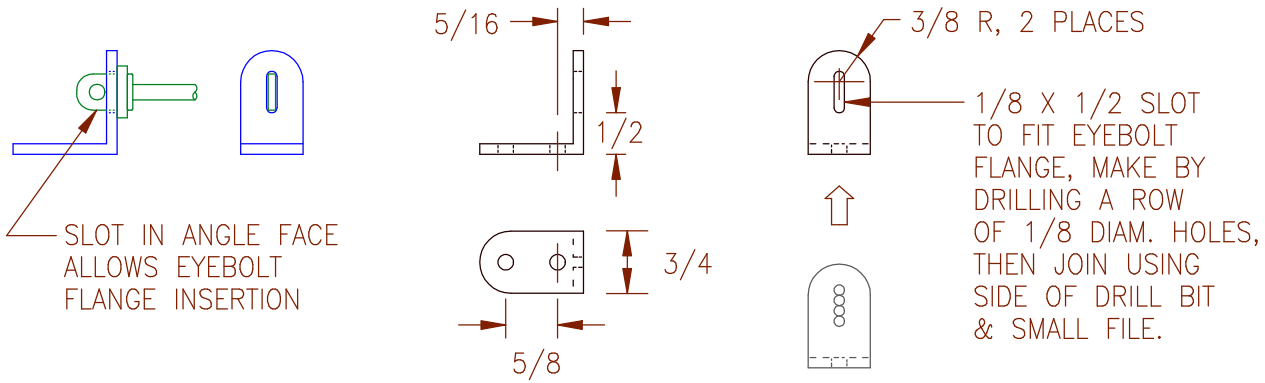




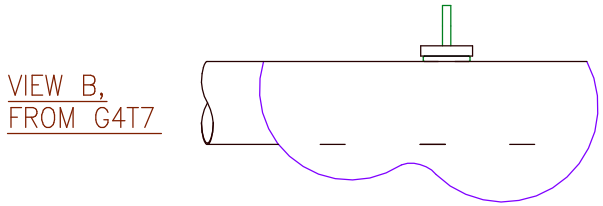
STABILIZER EYEBOLT SPACER, MAKE FROM NEOPRENE FAUCET WASHER, 1/8 X 5/8 DIAM., CUT SLOT TO FIT EYEBOLT FLANGE, 3 PLACES ON STABILIZER. FABRIC OVER OR SECURE WITH FLEXIBLE ADHESIVE.

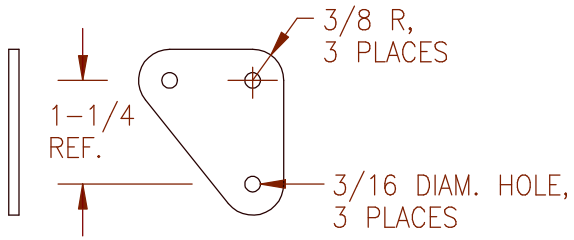


MAKE AFT PIN ASSEMBLY FROM AN3-30A BOLT OR EQUIVALENT, 2 LOCK NUTS, AND STABILIZER MOUNTING CHANNEL (SEE AT LEFT). CUT HEX HEAD FROM BOLT, ADD THREAD, ASSEMBLE AS SHOWN.

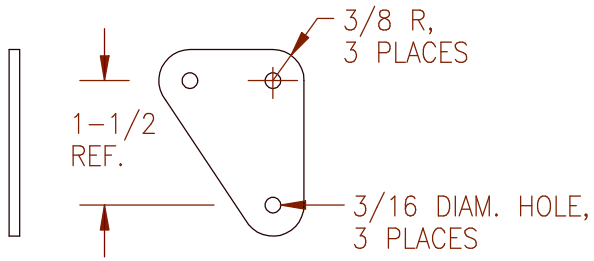


STABILIZER MOUNTING ANGLE, 1-1/4 X 1-1/4 X 1/8, ALUM. ANGLE





VERTICAL STABILIZER FORWARD JUNCTION PLATE, 1/8 X 1.75 ALUM. BAR, 2 IN. LONG, MAKE 2, SEE G4T9



VERTICAL STABILIZER LOWER JUNCTION PLATE, 1/8 X 1.75 ALUM. BAR, 2-1/4 IN. LONG, MAKE 2, SEE G4T9

G4T8

TAIL ASSEMBLY DETAIL

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 26, 2007

VERTICAL STABILIZER UPPER TUBE, 1-1/4 X .035 X 94-5/8

SLEEVE, 1-1/8 X .058 X 18

SLEEVE, 1-1/8 X .058 X 6

SLEEVE, 1-1/8 X .058 X 14

VERTICAL STABILIZER MIDDLE TUBE, 1-1/4 X .035 X 88

SLEEVE, 1-1/8 X .058 X 3

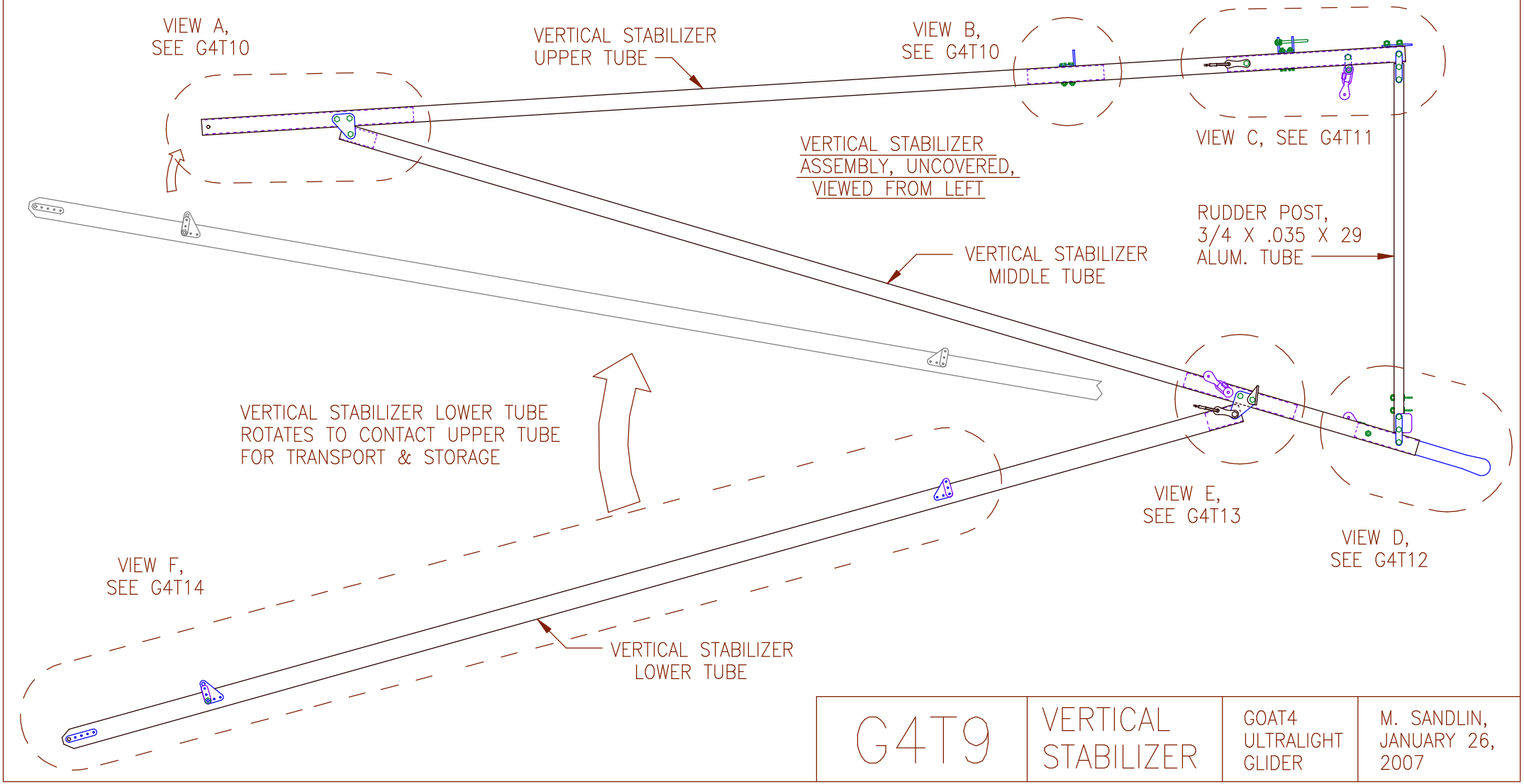
SLEEVE, 1-1/8 X .058 X 9

SLEEVE, 1-1/8 X .058 X 11

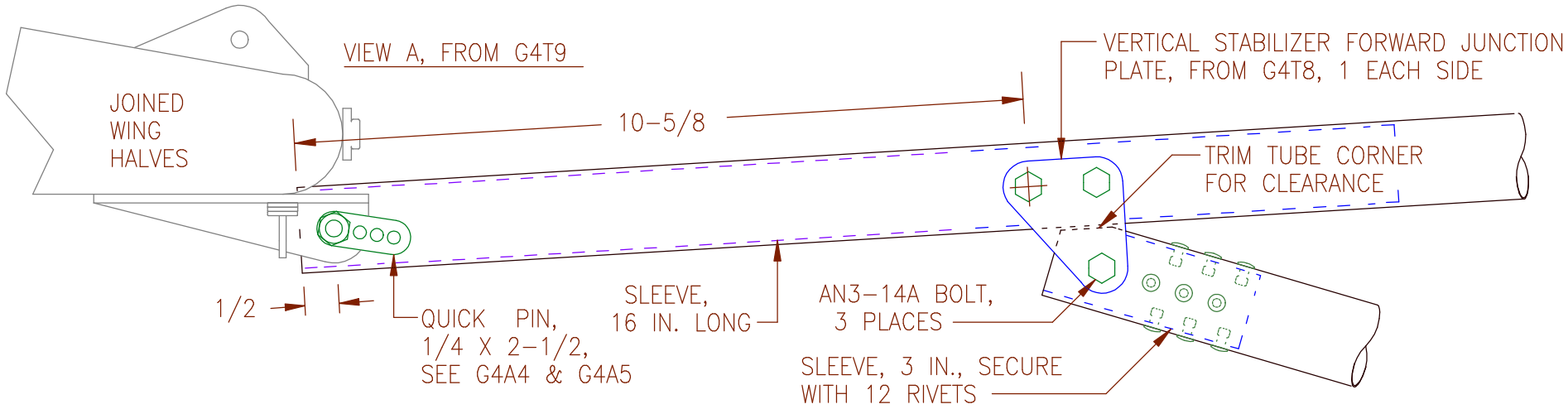
SLEEVE, 1-3/8 X .058 X 3

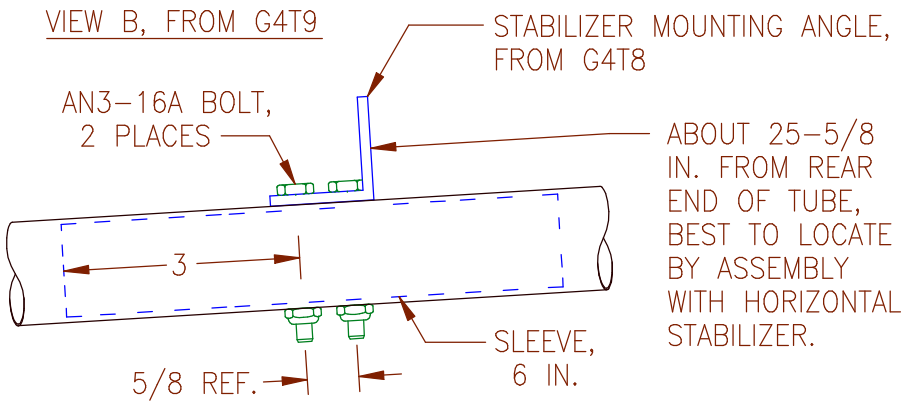
VERTICAL STABILIZER MAIN TUBES

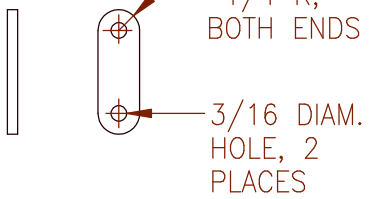
VERTICAL STABILIZER LOWER TUBE, 1-1/2X .035 X 96



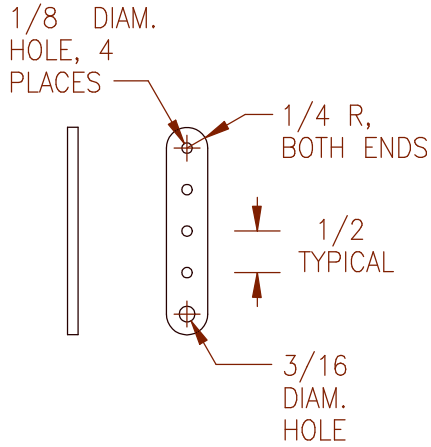
G4T9	VERTICAL STABILIZER	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 26, 2007



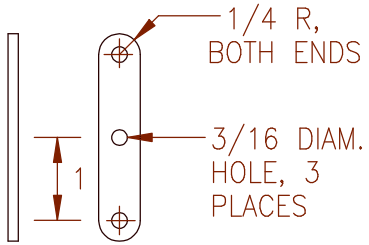




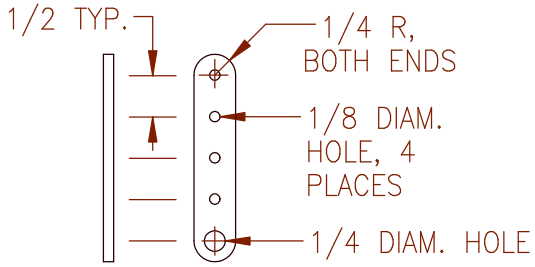
ELEVATOR PULLEY BRACKET
1/2 X 1/8 ALUM. BAR,
1-1/2 IN. LONG, SEE G4T11



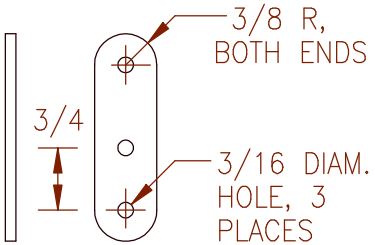
STRUT END FITTING,
1/2 X 1/8 ALUM. BAR,
2-1/2 IN. LONG, MAKE 10,
SEE G4T19, G4S5



VERTICAL STABILIZER
CORNER PLATE,
1/2 X 1/8 ALUM. BAR,
2-1/2 IN. LONG, MAKE 4,
SEE G4T11



LOWER VERTICAL STABILIZER
TUBE RIVET PLATE,
1/2 X 1/8 ALUM. BAR,
2-1/2 IN. LONG, MAKE 2,
SEE G4T11

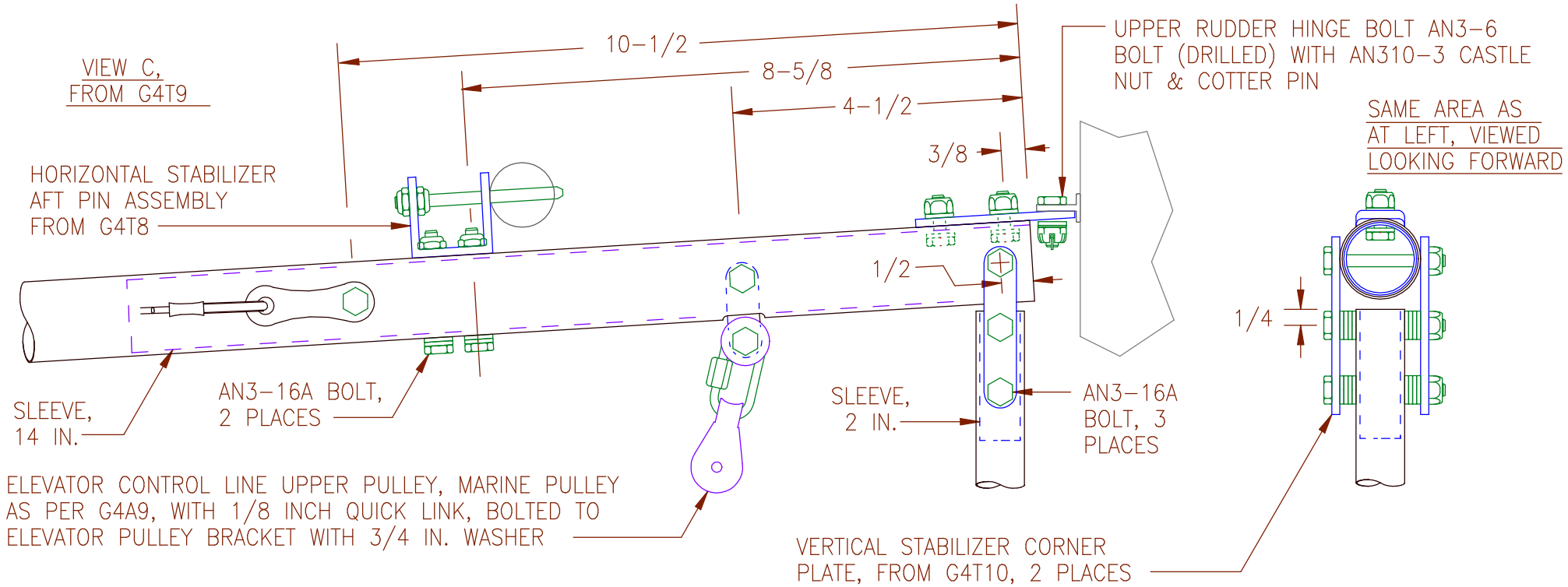


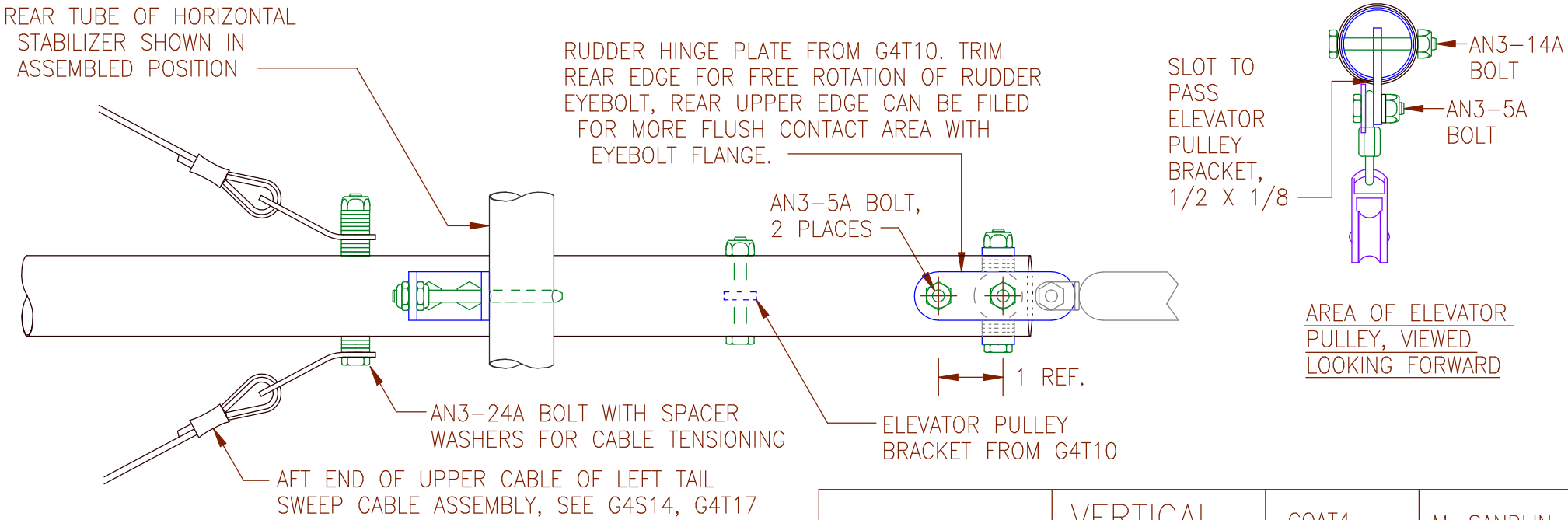
RUDDER HINGE PLATE,
3/4 X 1/8 ALUM. BAR,
2-1/2 IN. LONG,
SEE G4T11

G4T10

VERTICAL STABILIZER DETAIL 1

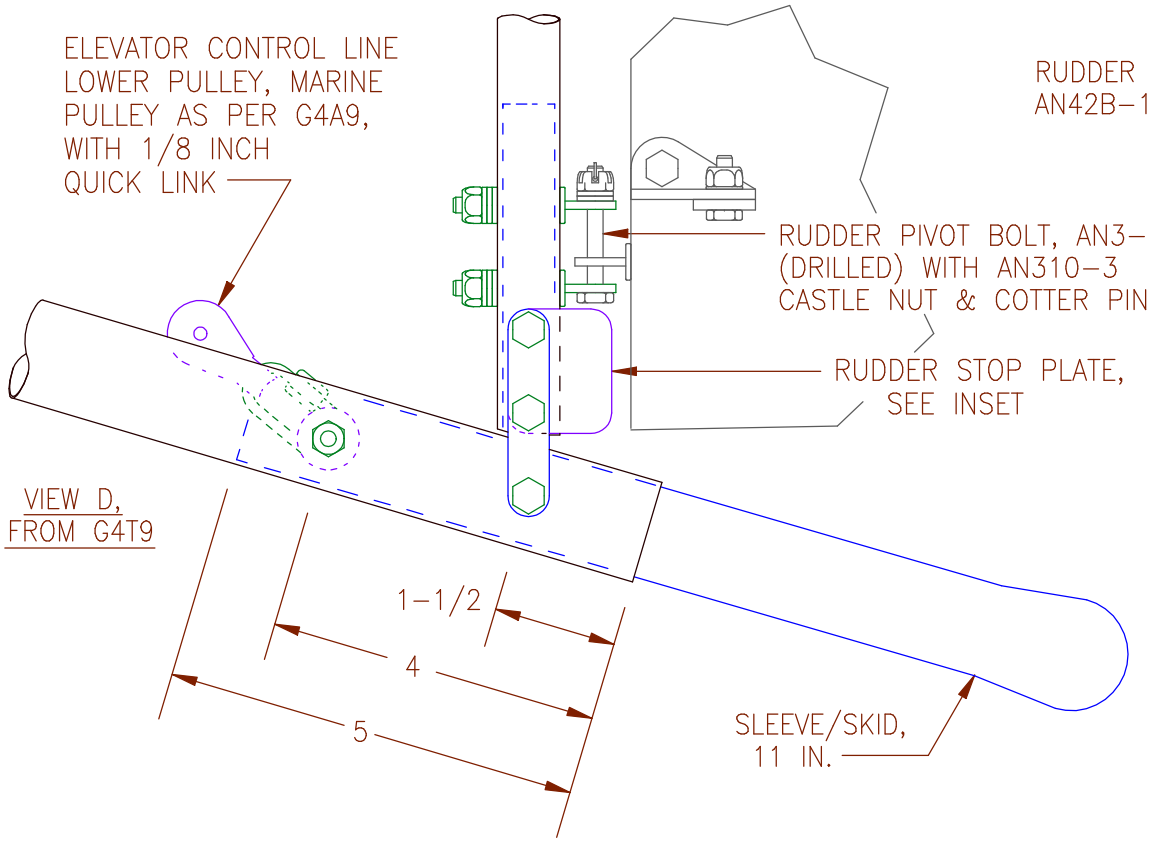
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007

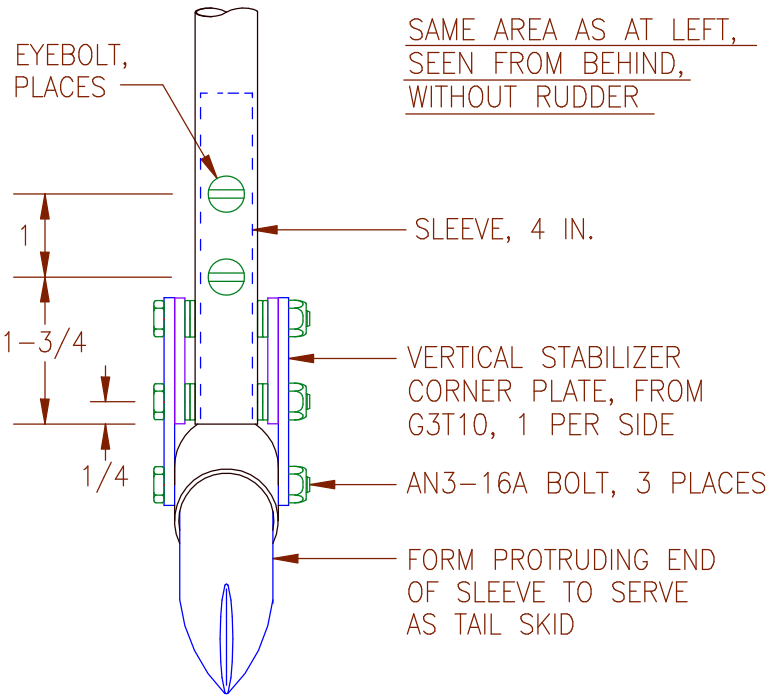


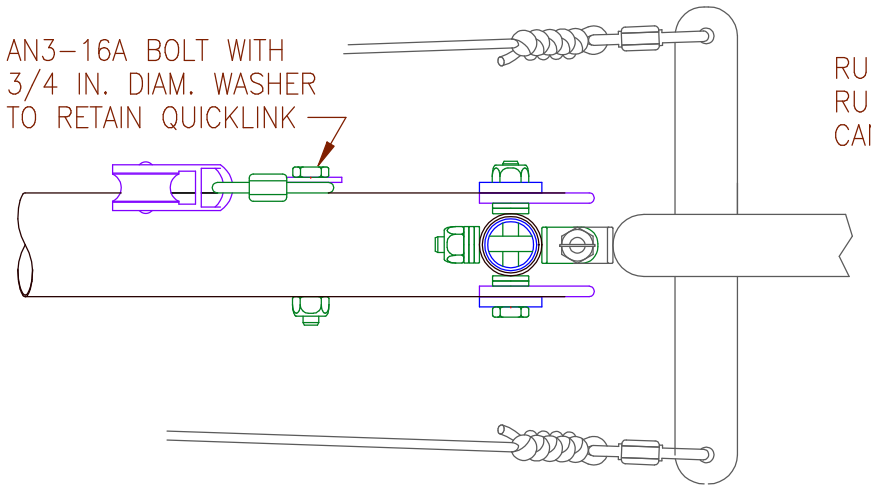


SAME AREA AS VIEW C, G4T9,
BUT SEEN FROM ABOVE

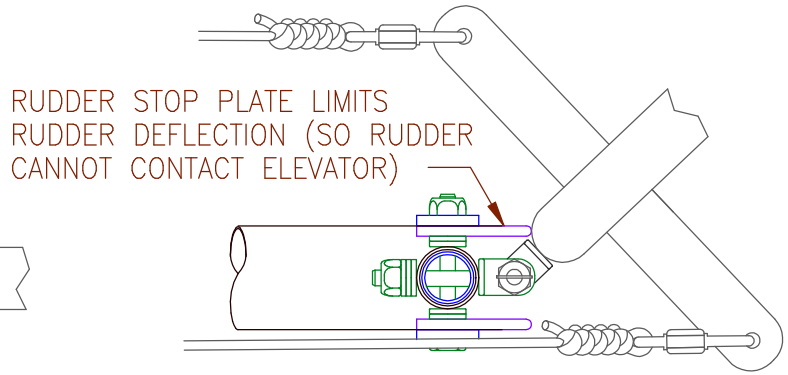
G4T11	VERTICAL STABILIZER DETAIL 2	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007



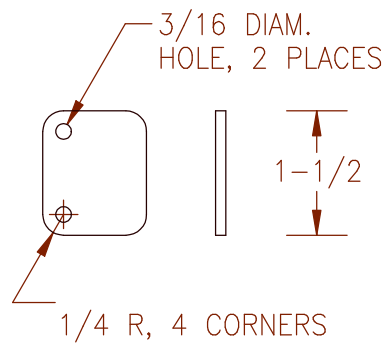




SAME AREA AS ABOVE, SEEN FROM ABOVE, NO TAIL SKID, RUDDER IN NEUTRAL POSITION



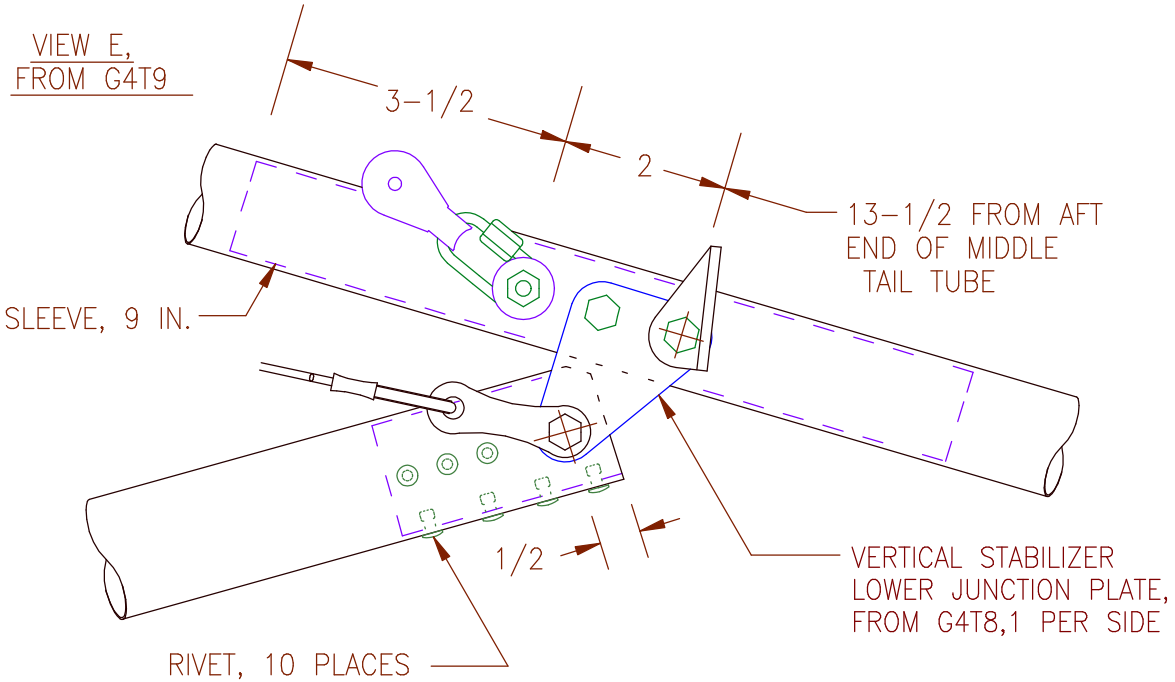
SAME VIEW AS AT LEFT, RUDDER AT FULL DEFLECTION



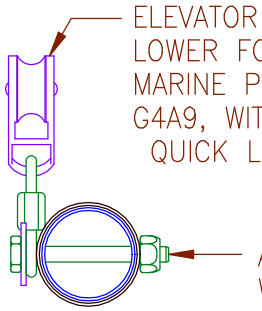
RUDDER STOP PLATE, 1/8 X 1-1/4 ALUM. BAR, MAKE 2

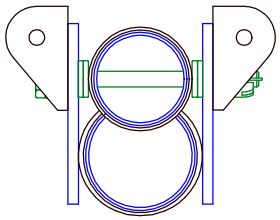
G4T12	VERTICAL STABILIZER DETAIL 3	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007

VIEW E,
FROM G4T9

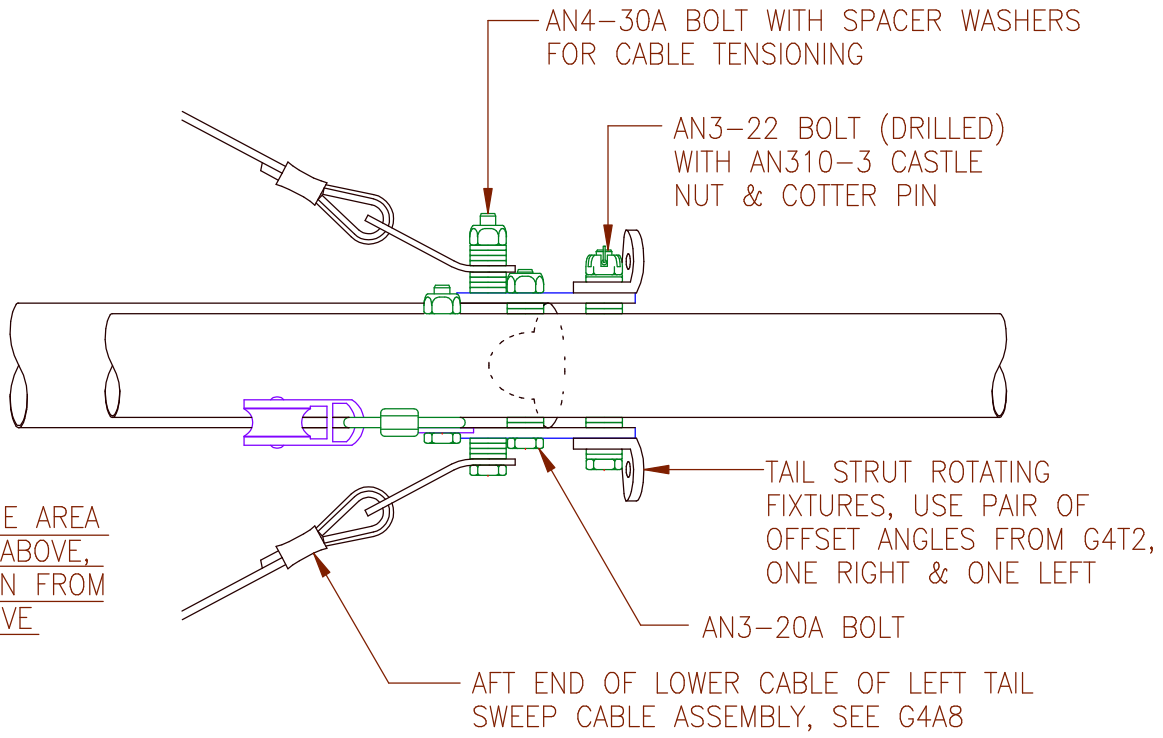


SECTION VIEW OF LOWER FORWARD ELEVATOR PULLEY, SEEN FROM BEHIND





SECTION VIEW OF TAIL STRUT ATTACHMENT & ROTATION FIXTURES, SEEN FROM BEHIND

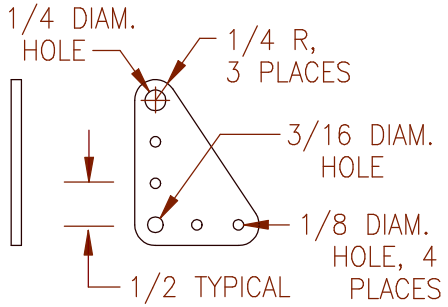


SAME AREA AS ABOVE, SEEN FROM ABOVE

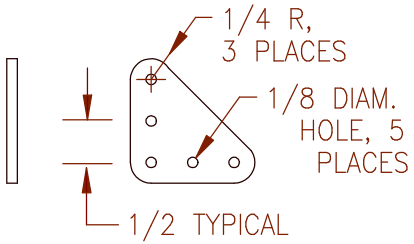
G4T13

VERTICAL STABILIZER DETAIL 4

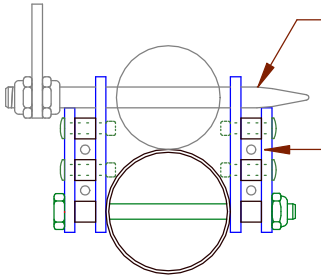
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007



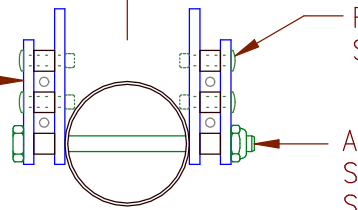
FORWARD LINE GUIDE BRACKET, 1/8 X 1.5 ALUM. BAR, 2 IN. LONG, MAKE 2



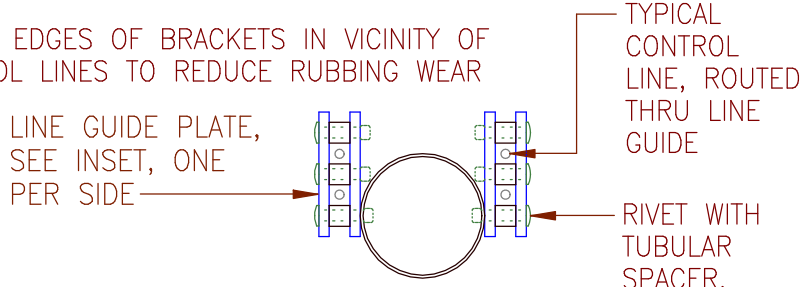
REAR LINE GUIDE BRACKET, 1/8 X 1.5 ALUM. BAR, 1-1/2 IN. LONG, MAKE 2



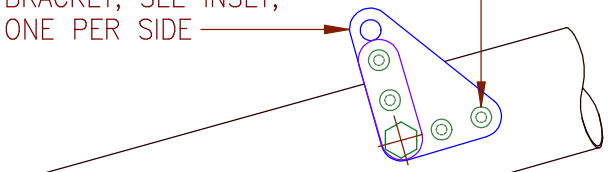
SAME VIEW AS BELOW



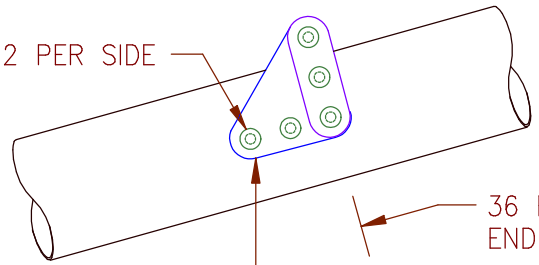
FORWARD LINE GUIDE AREA, SECTION VIEW

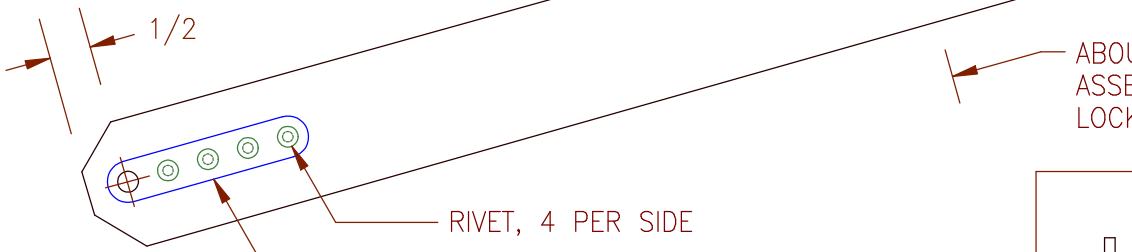


REAR LINE GUIDE AREA, SECTION VIEW

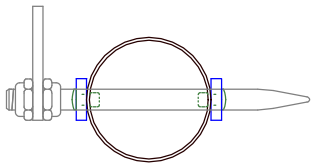


VIEW F FROM G4T9

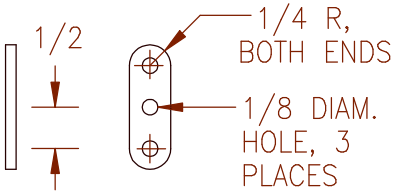




ABOUT 10-1/2 FROM FORWARD END OF TUBE, LOCATE BY ASSEMBLY, WITH LOWER TAIL TUBE IN FOLDED POSITION, LOCKED TO UPPER TAIL TUBE FOR TRANSPORT



FORWARD END OF LOWER TAIL TUBE, SEEN FROM FORWARD



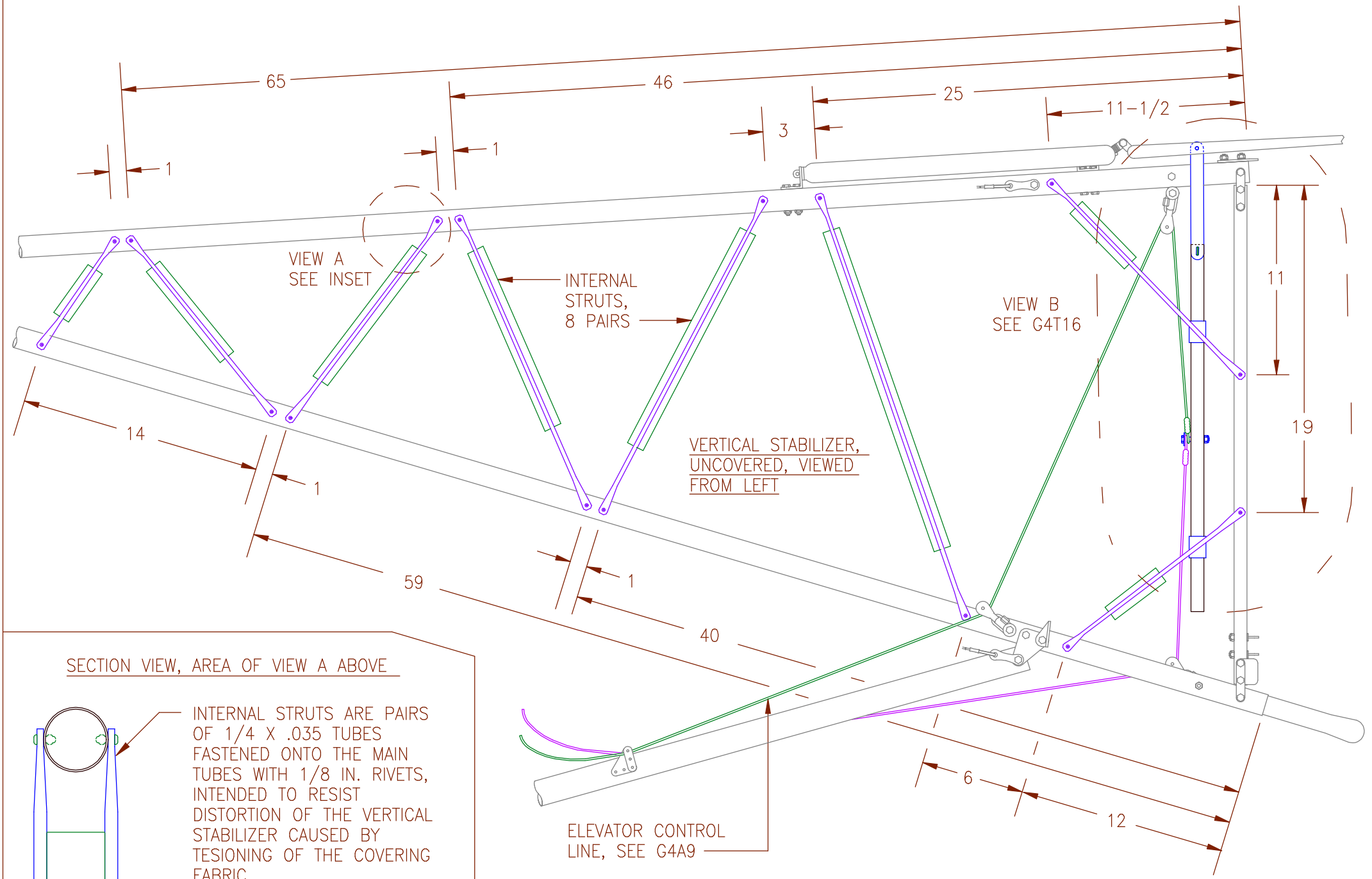
LINE GUIDE PLATE, 1/2 X 1/8 ALUM. BAR, 1-1/2 IN. LONG, MAKE 4

G4T14

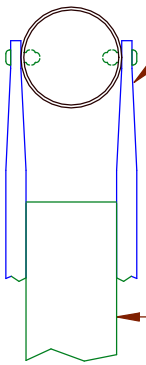
VERTICAL STABILIZER LOWER TUBE DETAIL

GOAT4 ULTRALIGHT GLIDER

M. SANDLIN, JANUARY 27, 2007



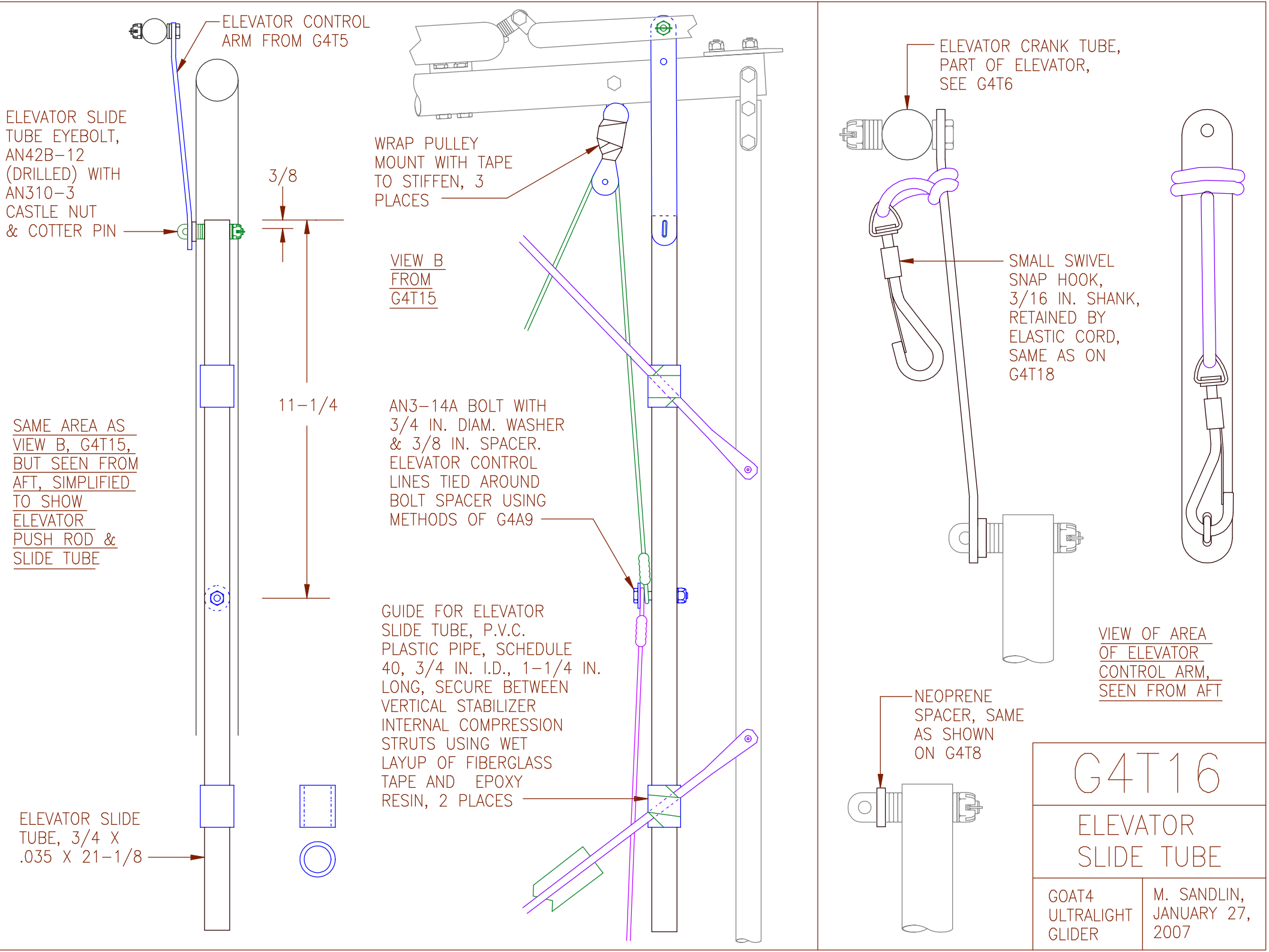
SECTION VIEW, AREA OF VIEW A ABOVE



INTERNAL STRUTS ARE PAIRS OF 1/4 X .035 TUBES FASTENED ONTO THE MAIN TUBES WITH 1/8 IN. RIVETS, INTENDED TO RESIST DISTORTION OF THE VERTICAL STABILIZER CAUSED BY TESIONING OF THE COVERING FABRIC.

STYROFOAM BLOCK, 1 X 1-1/4 OR TAPERING, LENGTH AS REQUIRED, CEMENT BETWEEN STRUTS WITH EPOXY RESIN

G4T15	VERTICAL STABILIZER INTERNAL STRUTS	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007

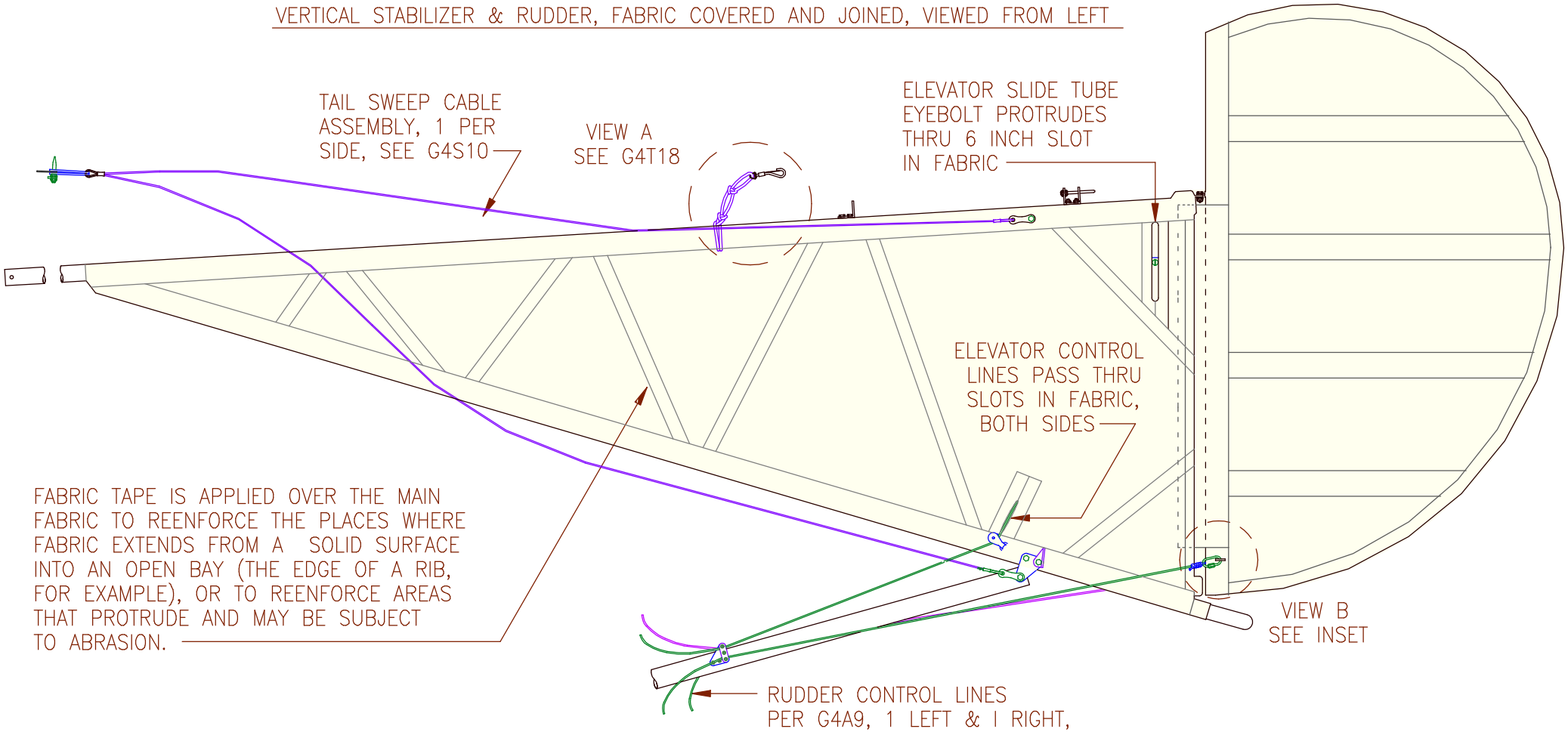


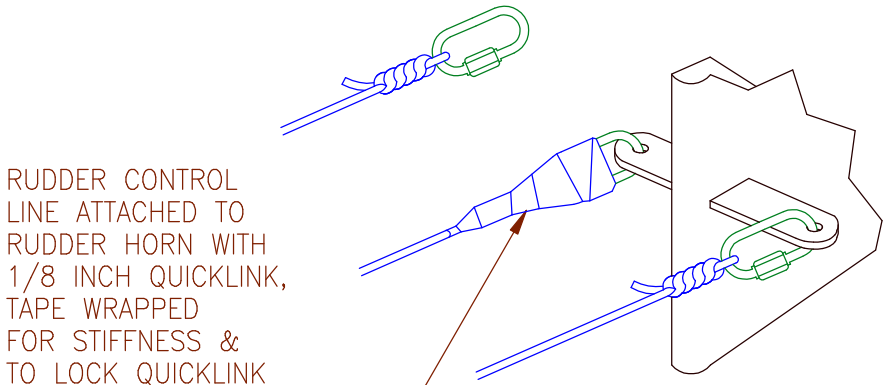
G4T16

ELEVATOR SLIDE TUBE

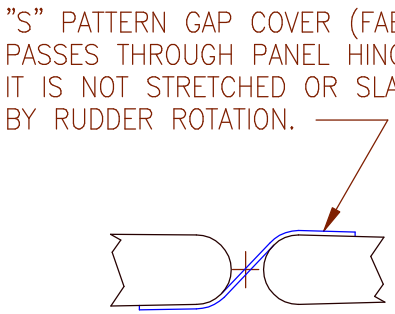
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007

VERTICAL STABILIZER & RUDDER, FABRIC COVERED AND JOINED, VIEWED FROM LEFT





ISOMETRIC VIEW OF AREA OF VIEW B ABOVE

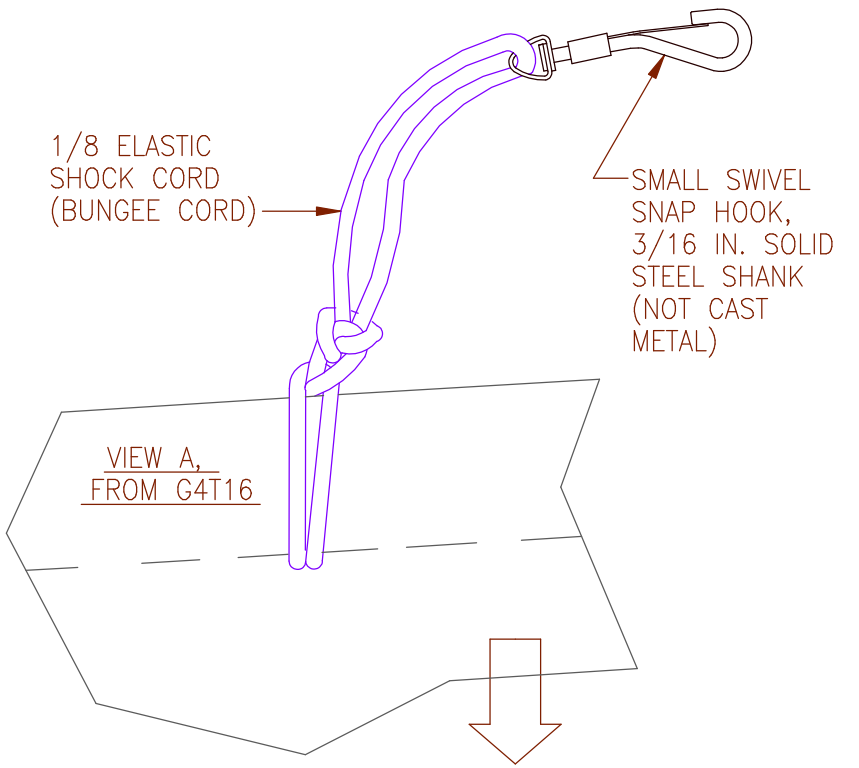


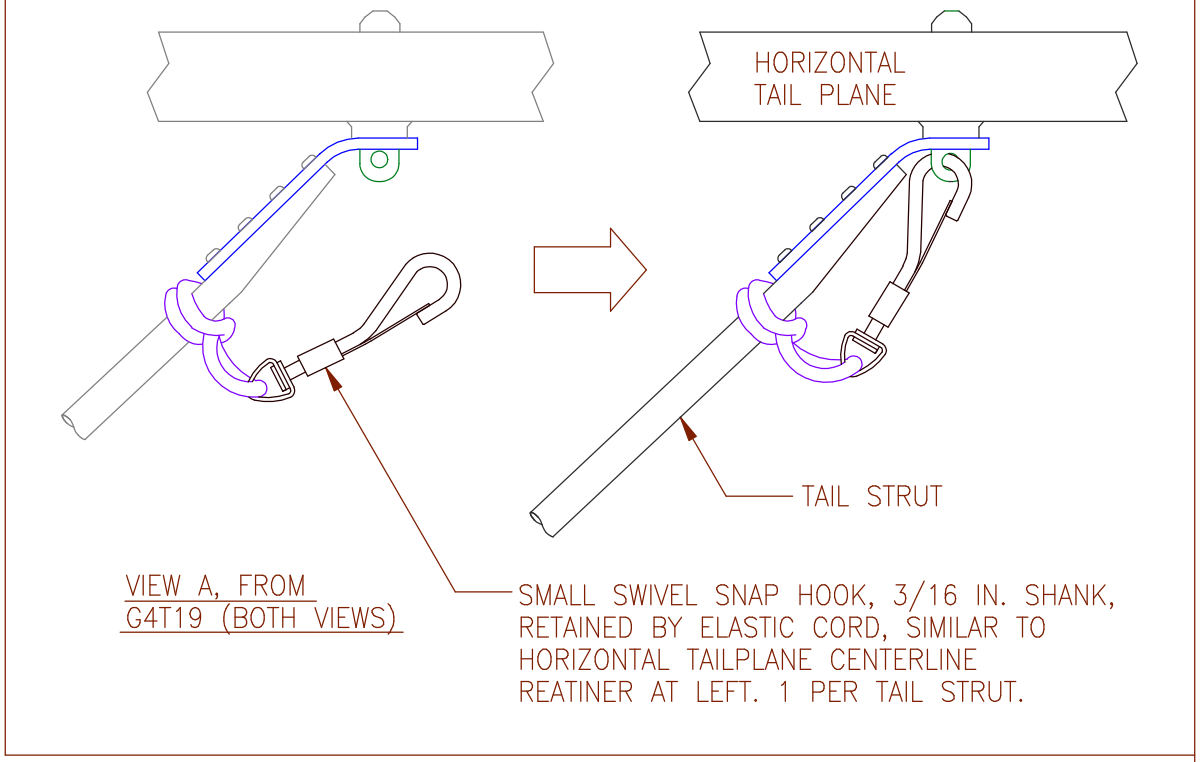
SECTION VIEW OF RUDDER ATTACHMENT TO RUDDER POST, SEEN FROM ABOVE

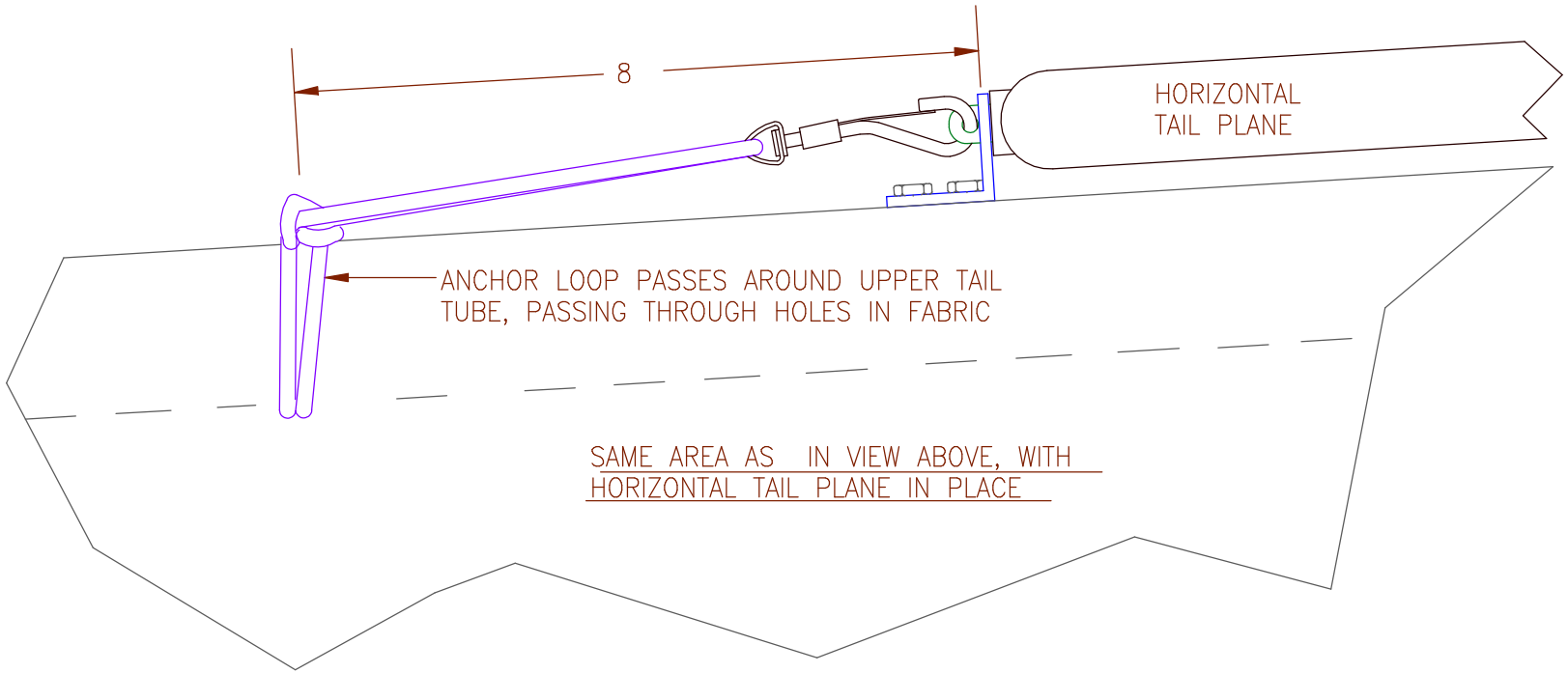
G4T17

FABRIC COVERED TAIL SECTION

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007



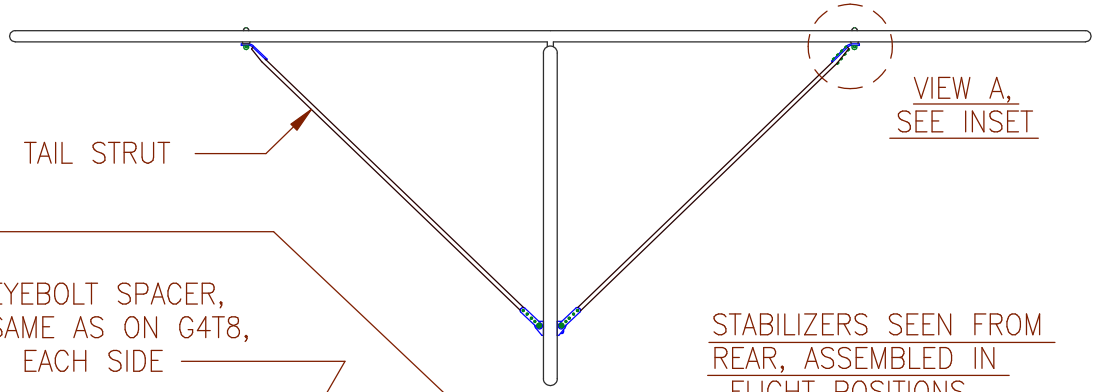




G4T18

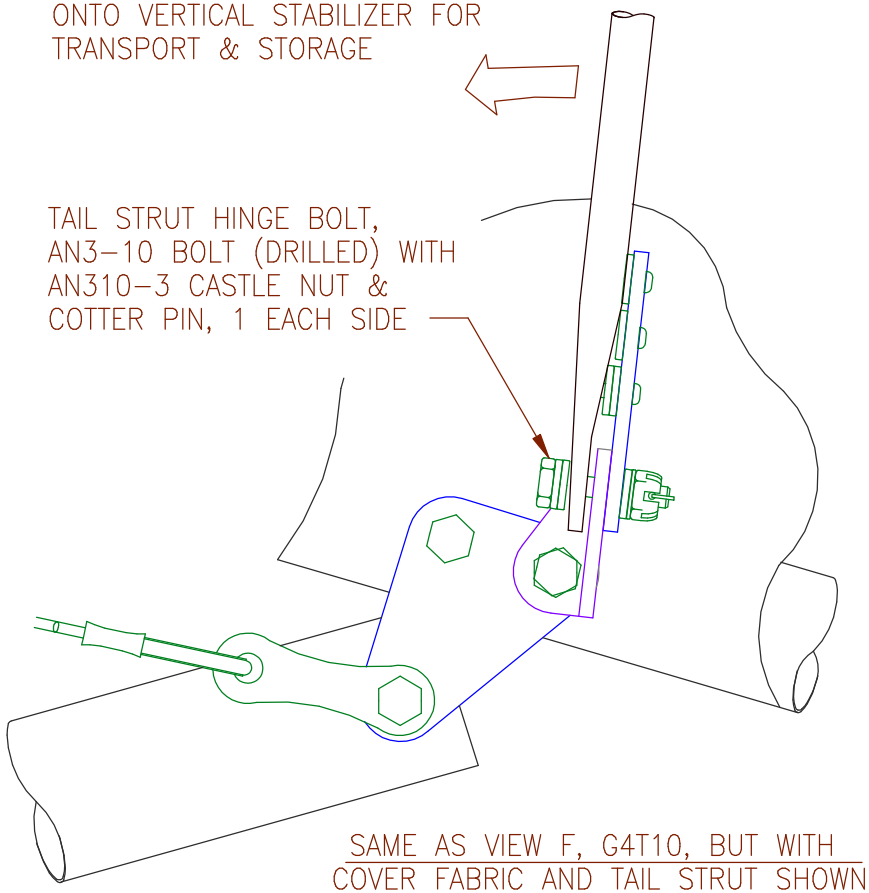
SWIVEL SNAPHOOK CONNECTIONS

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 27, 2007

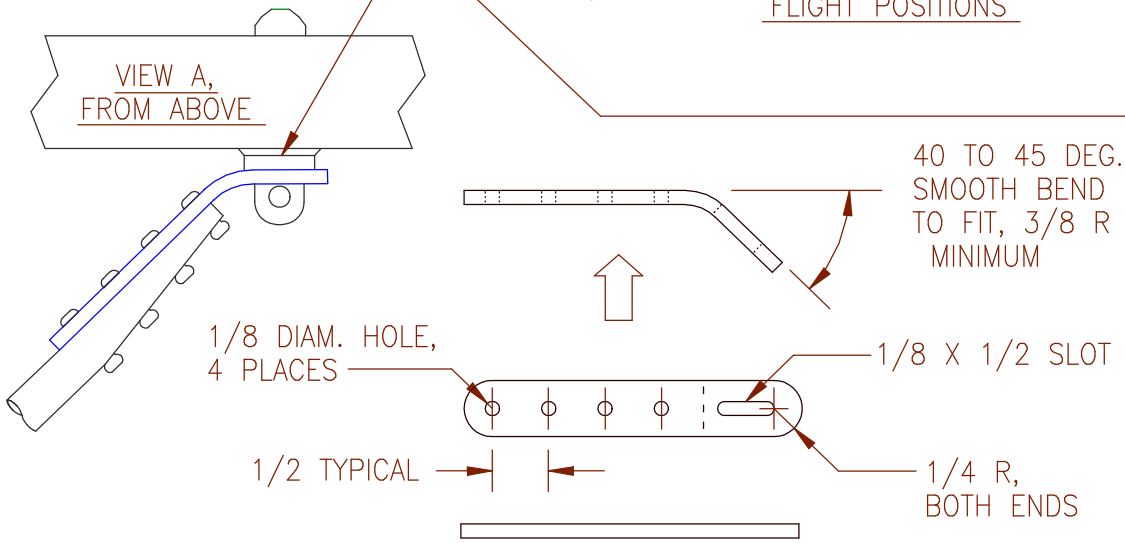


STABILIZERS SEEN FROM REAR, ASSEMBLED IN FLIGHT POSITIONS

STRUT ROTATES FORWARD & INBOARD ONTO VERTICAL STABILIZER FOR TRANSPORT & STORAGE

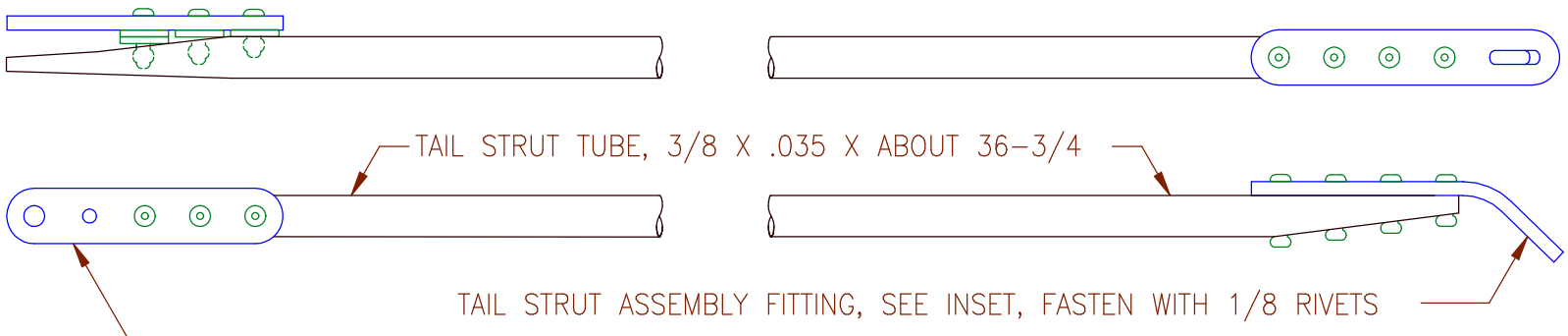


SAME AS VIEW F, G4T10, BUT WITH COVER FABRIC AND TAIL STRUT SHOWN



TAIL STRUT ASSEMBLY FITTING, 1/2 X 1/8 ALUM. BAR, 3 IN. LONG, MAKE 2

2 VIEWS OF RIGHT TAIL STRUT, MAKE 1 RIGHT & 1 LEFT

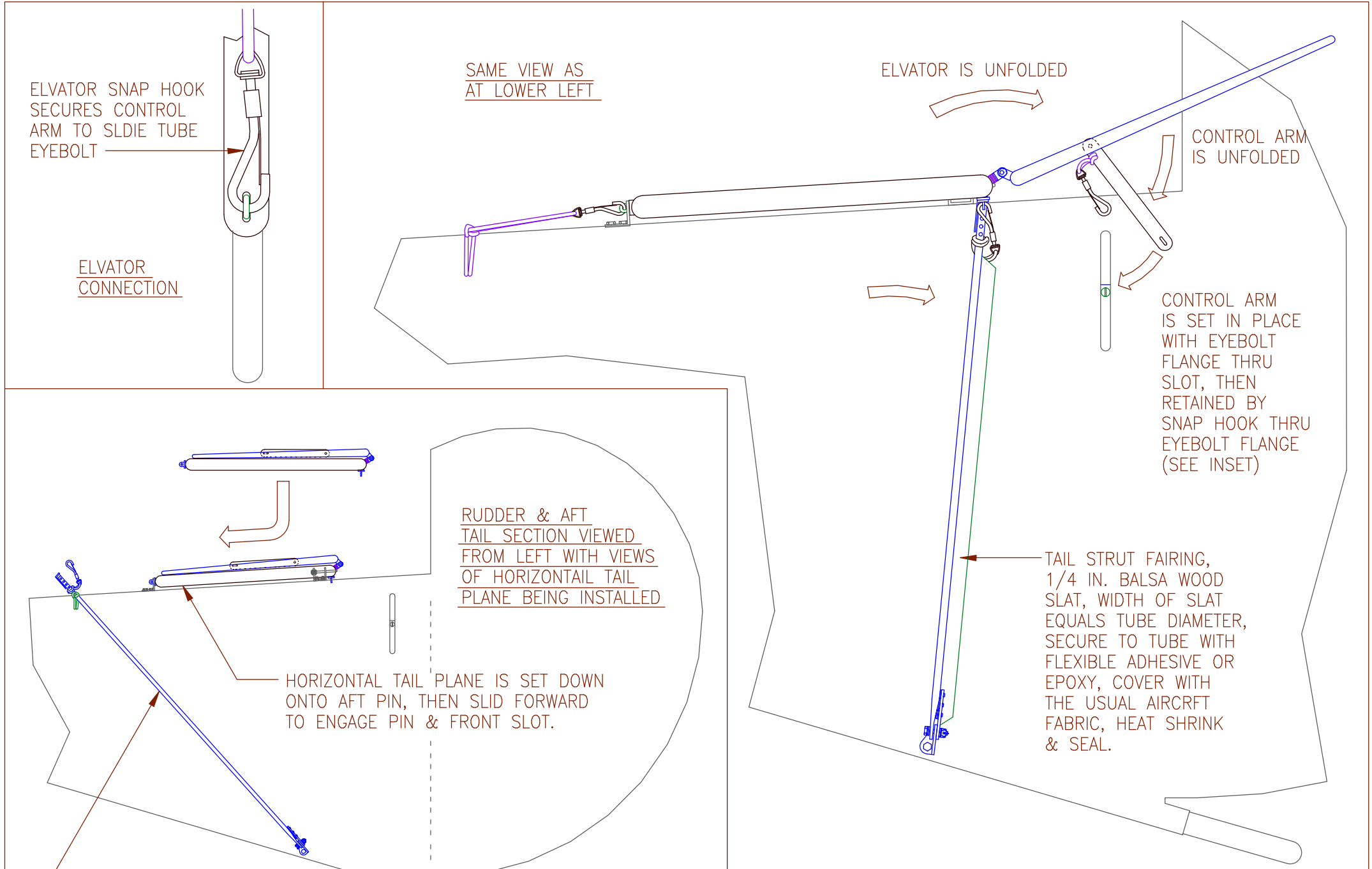


G4T19

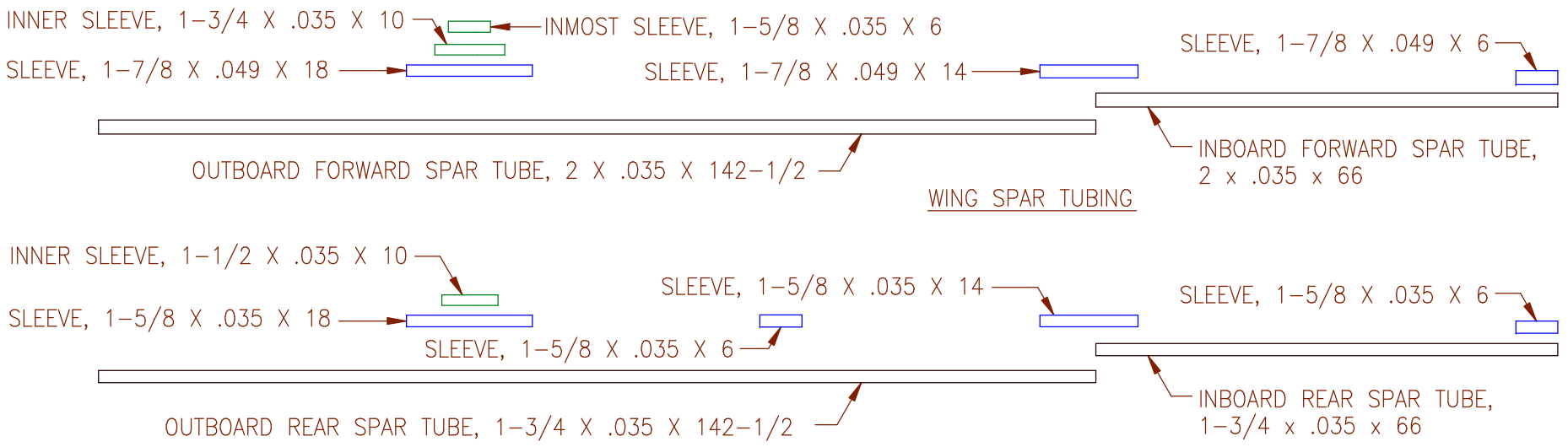
TAIL STRUTS

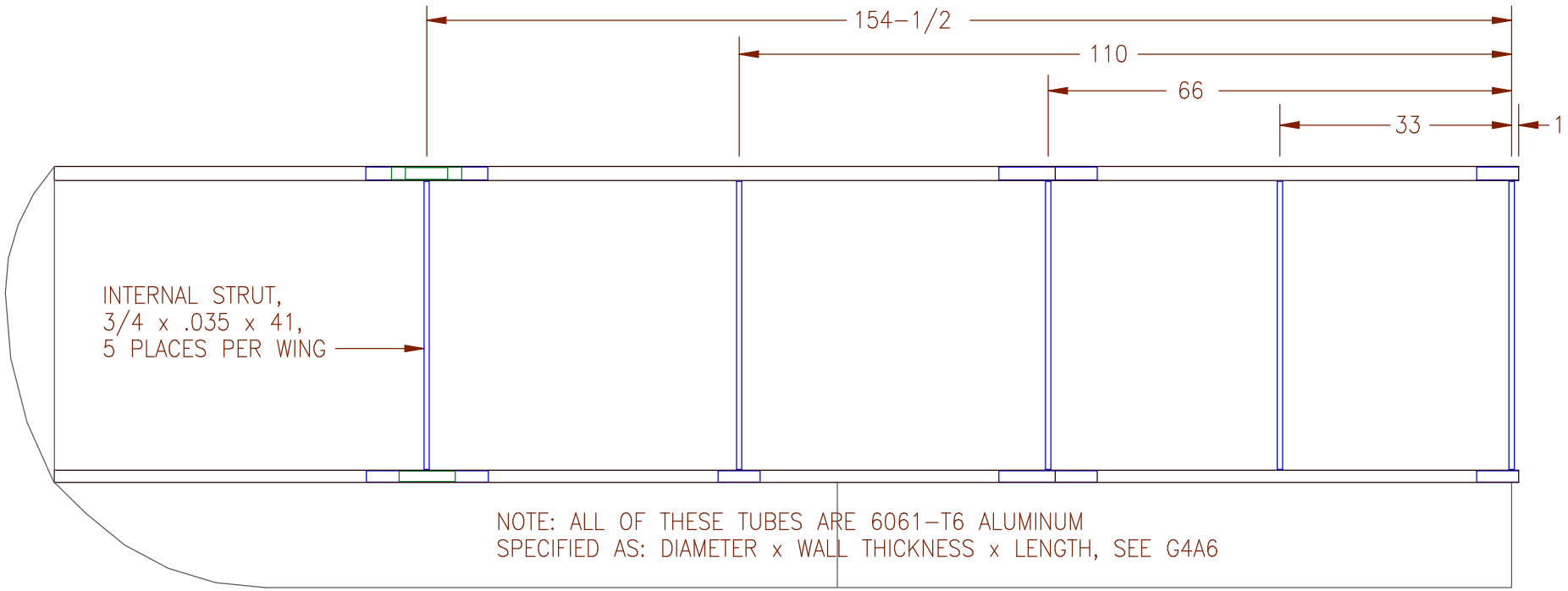
GOAT4
ULTRALIGHT
GLIDER

M. SANDLIN,
JANUARY 27,
2007



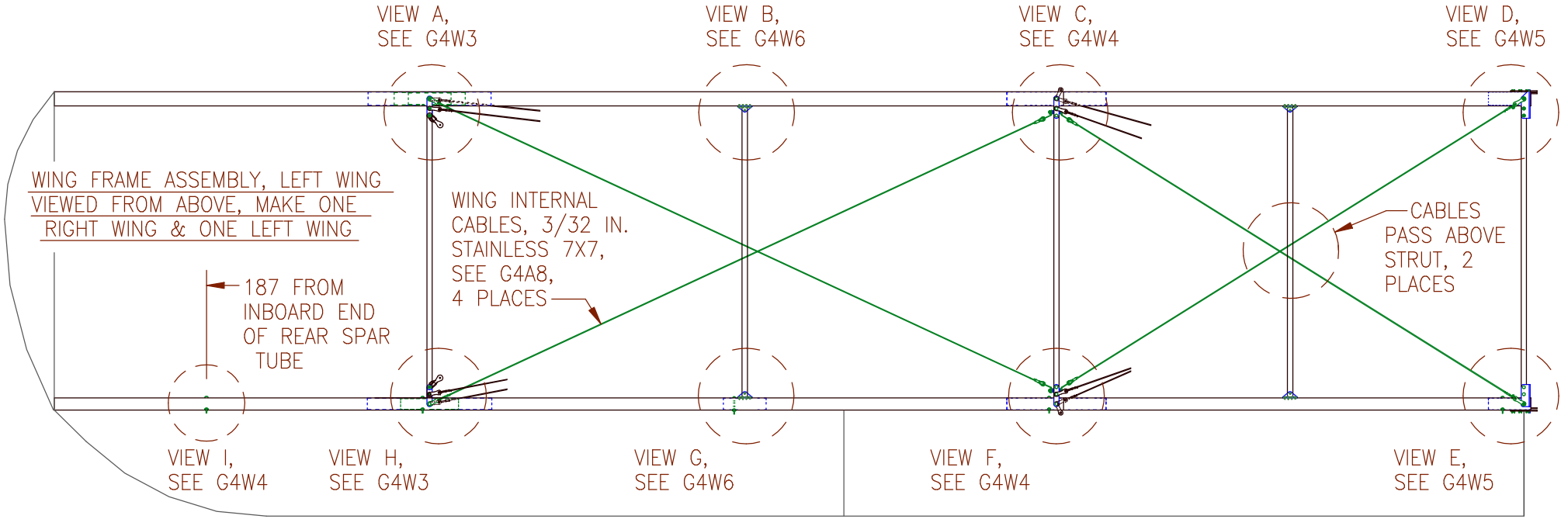
G4T20	HORIZONTAL STABILIZER ATTACHMENT	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, APRIL 18, 2009

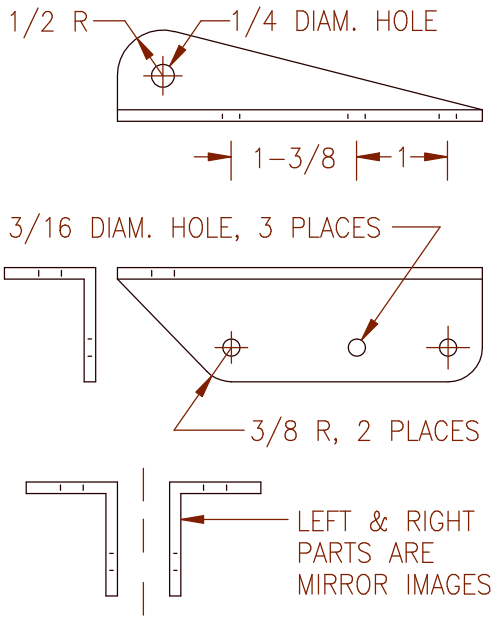




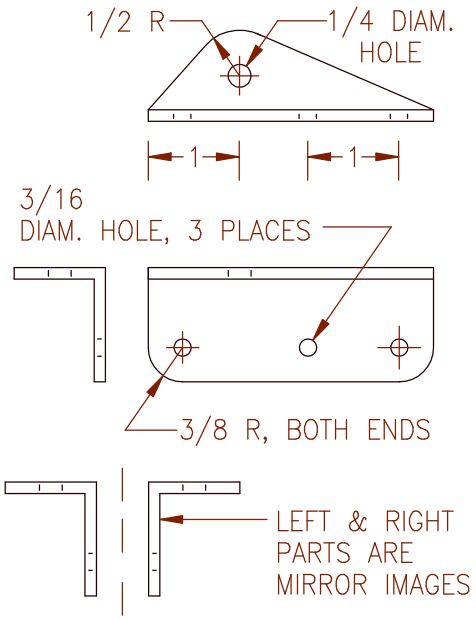
SPAR & INTERNAL STRUT TUBING, LEFT WING,
VIEWED FROM ABOVE, MAKE 2 WINGS

G4W1	WING TUBING	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 20, 2007

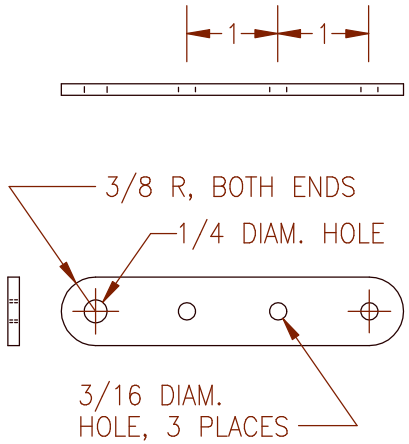




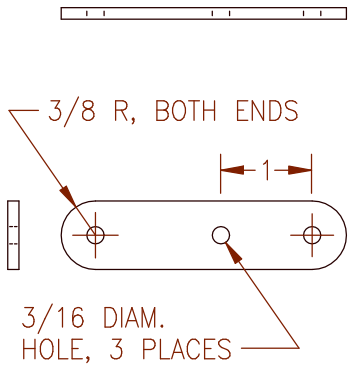
WING CENTER FIXTURE
1X 1-1/4 X 1/8 AL. ANGLE,
4 IN. LONG, MAKE 3 LEFT & 3 RIGHT



WING TOP AFT CENTER FIXTURE,
1 X 1-1/4 X 1/8 AL. ANGLE,
3-1/8 IN. LONG, MAKE 1 LEFT
& 1 RIGHT

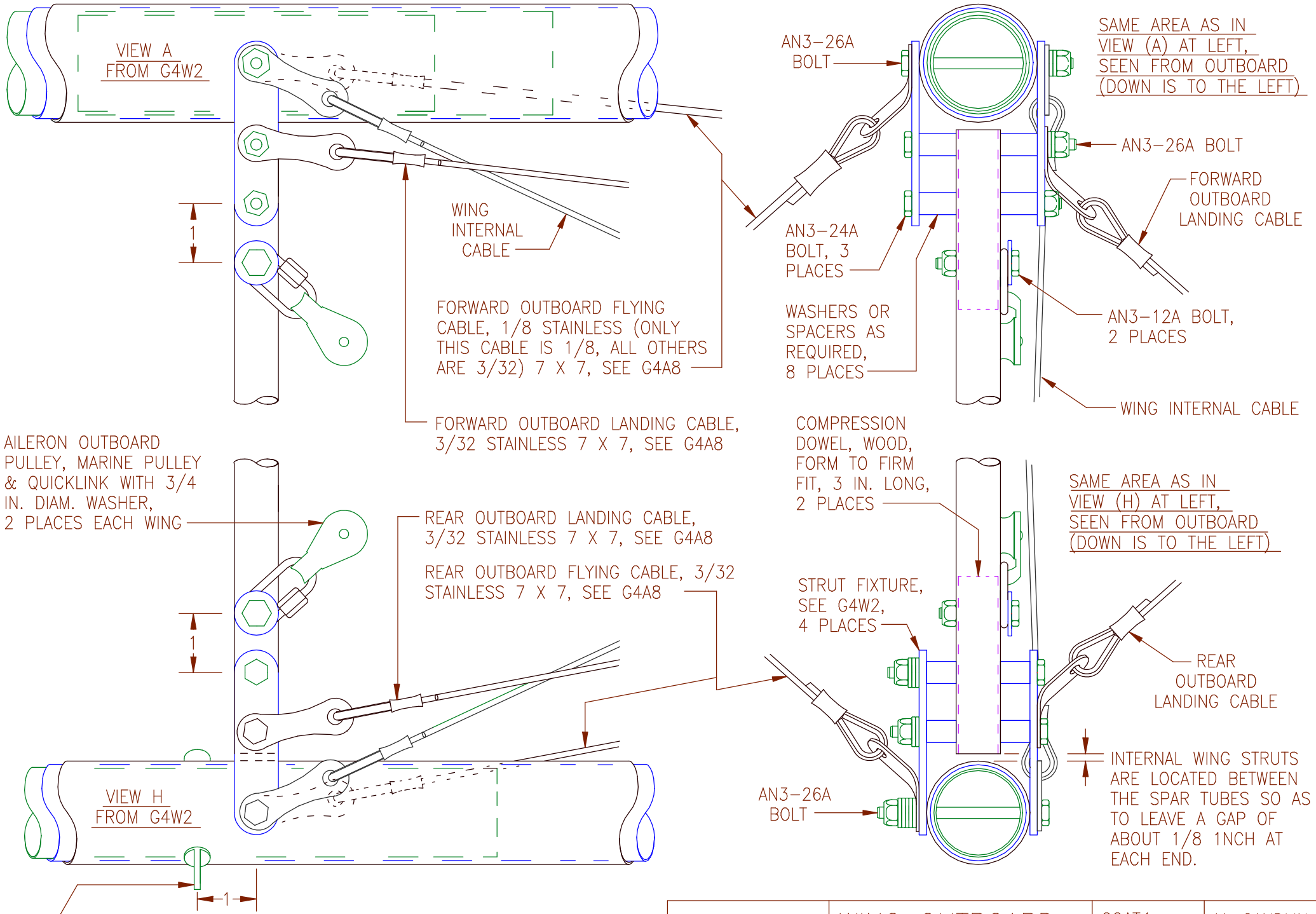


WING JOINING FIXTURE
1/8 X 3/4 AL. BAR STOCK,
3-3/4 IN. LONG, MAKE 8

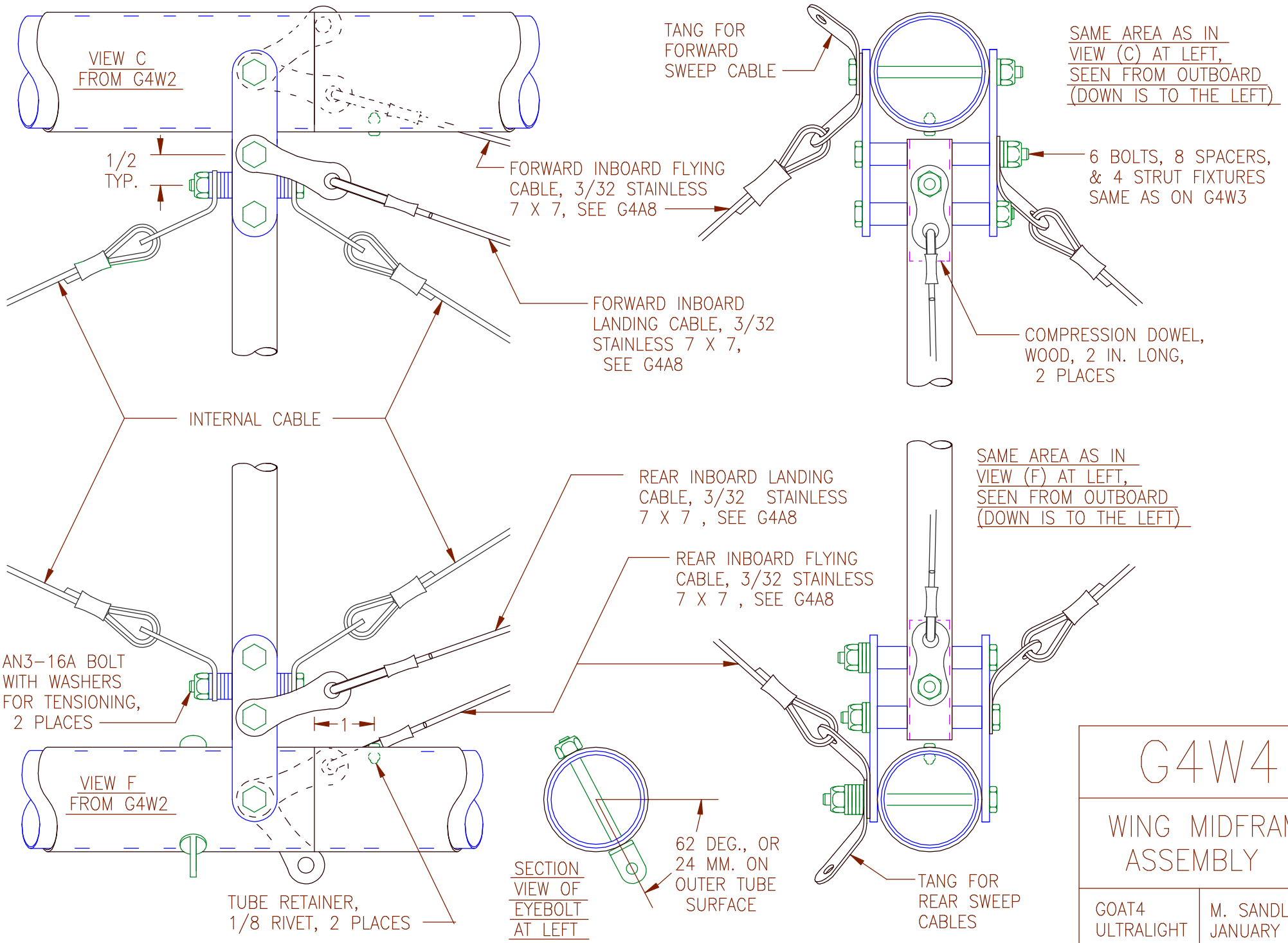


STRUT FIXTURE
1/8 X 3/4 AL. BAR STOCK,
3-1/8 IN. LONG, MAKE 16

G4W2	MAIN WING ASSEMBLY	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JULY 27, 2007



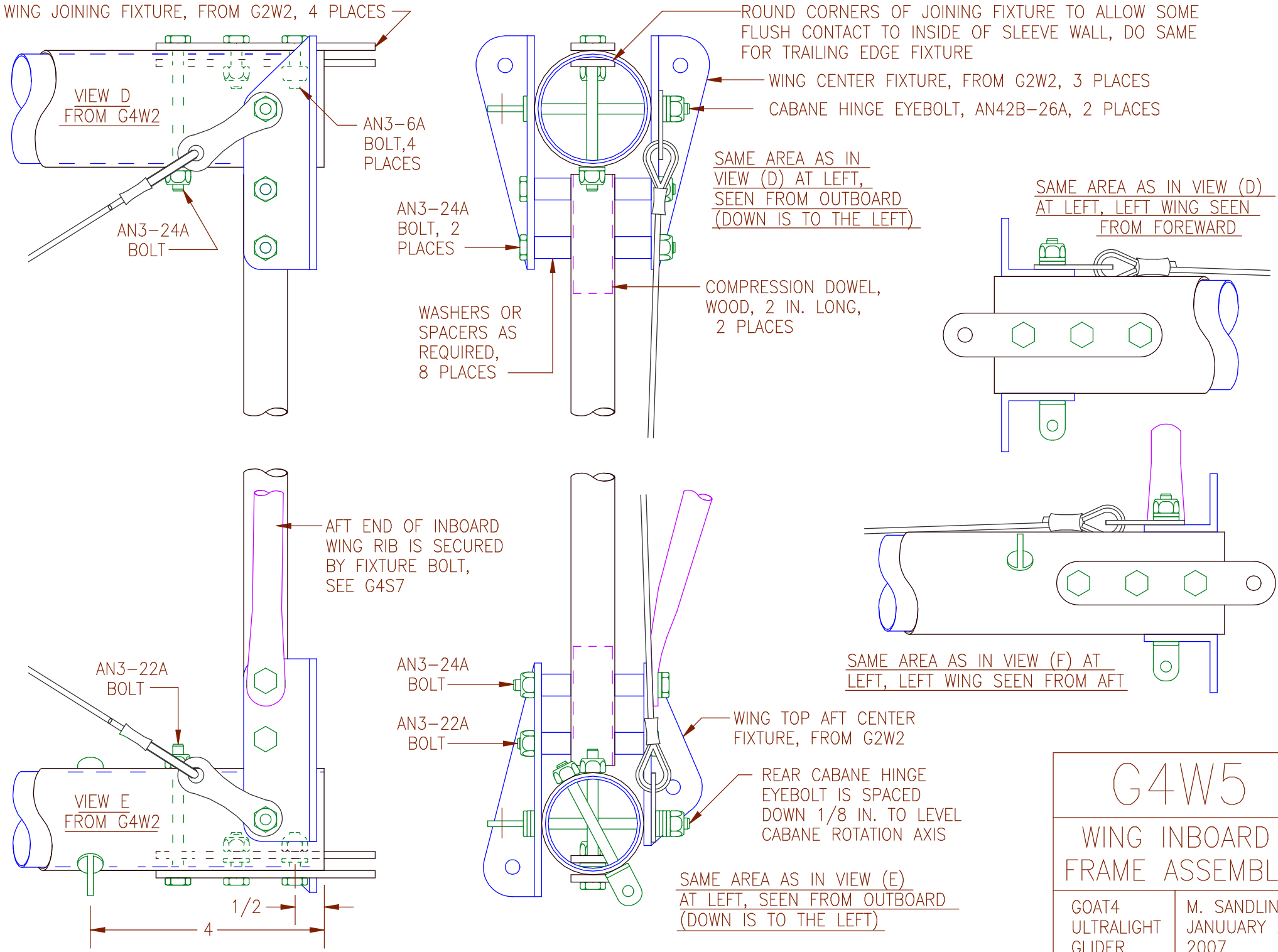
G4W3	WING OUTBOARD FRAME ASSEMBLY	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 20, 2007



G4W4

WING MIDFRAME ASSEMBLY

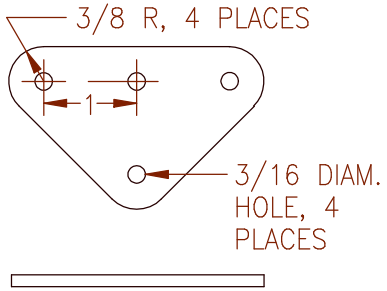
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 20, 2007



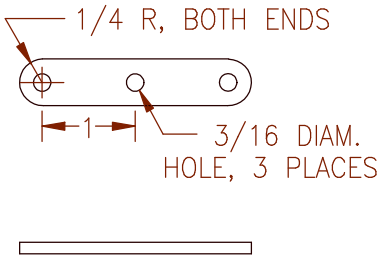
G4W5

WING INBOARD FRAME ASSEMBLY

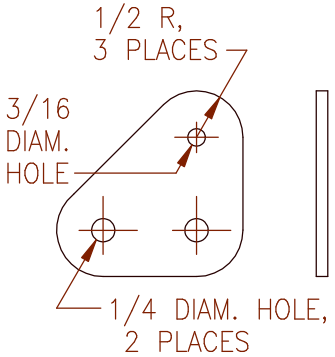
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUUARY 21, 2007



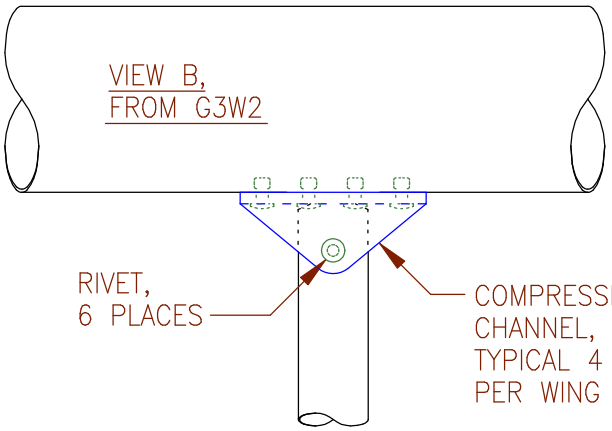
CABANE CENTER PLATE, 1-3/4 X 1/8 ALUM. BAR, 2-3/4 IN. LONG, MAKE 4, SEE G4W9

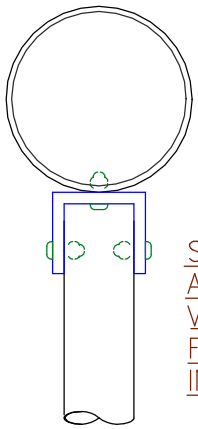


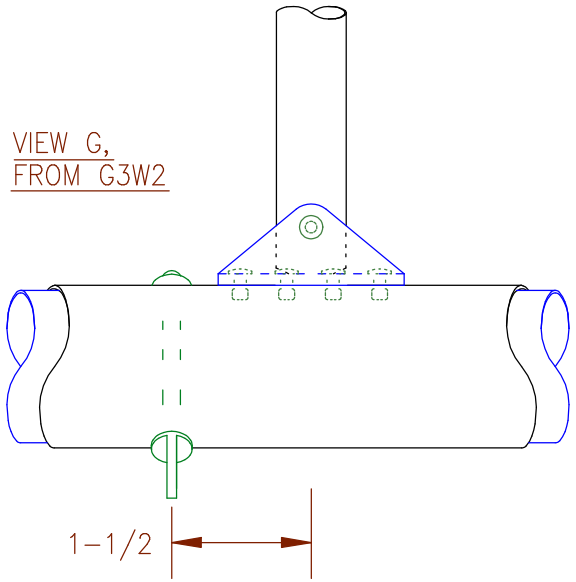
CABANE UPPER BRACKET, 1/8 X 1/2 ALUM. BAR, 2-1/2 IN. LONG, MAKE 4, SEE G4W9

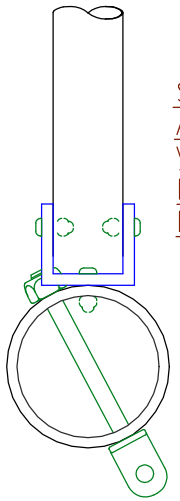


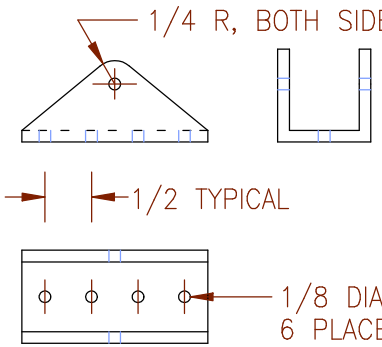
CABANE LOWER PLATE, 2 X 1/8 ALUM. BAR, 2 IN. LONG, MAKE 4, SEE G4W9











COMPRESSION STRUT CHANNEL, 7/8 X 1 X 1/8, 2 IN. LONG, MAKE 8

G4W6

MIDFRAME STRUT ASSEMBLY

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JULY 27, 2007

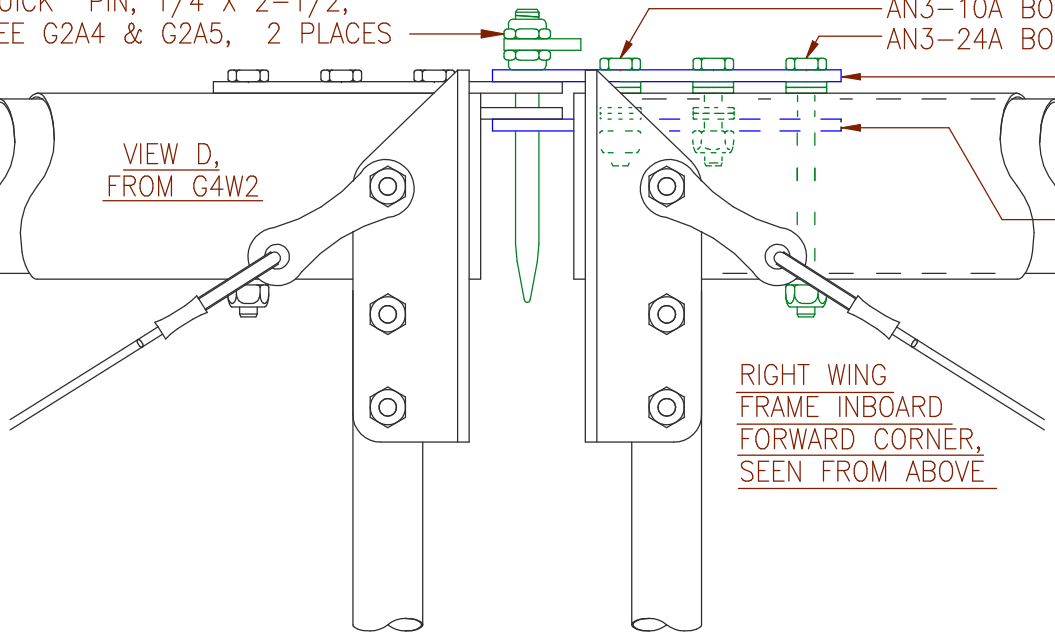
QUICK PIN, 1/4 X 2-1/2,
SEE G2A4 & G2A5, 2 PLACES

AN3-10A BOLT, 2 PLACES
AN3-24A BOLT

RIGHT WING FORWARD JOINING FIXTURE, ONE OF FORWARD PAIR, SPACED FORWARD 1/8 IN. RELATIVE TO LEFT HAND FIXTURE.

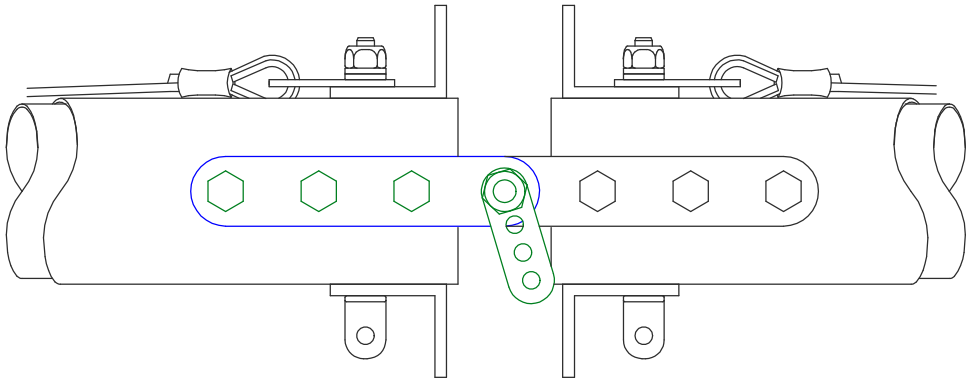
RIGHT WING REAR JOINING FIXTURE, ONE OF FORWARD PAIR, SPACED BACK ABOUT 1/8 IN. RELATIVE TO LEFT HAND FIXTURE, TO CLEAR LEFT HAND FIXTURE.

VIEW D,
FROM G4W2



RIGHT WING
FRAME INBOARD
FORWARD CORNER,
SEEN FROM ABOVE

WING LEADING EDGE SPARS JOINED AT CENTER LINE, VIEWED FROM FORWARD, QUICK PIN INSERTED BUT PIN RETAINERS (ELASTIC LOOPS & LINE) NOT SHOWN

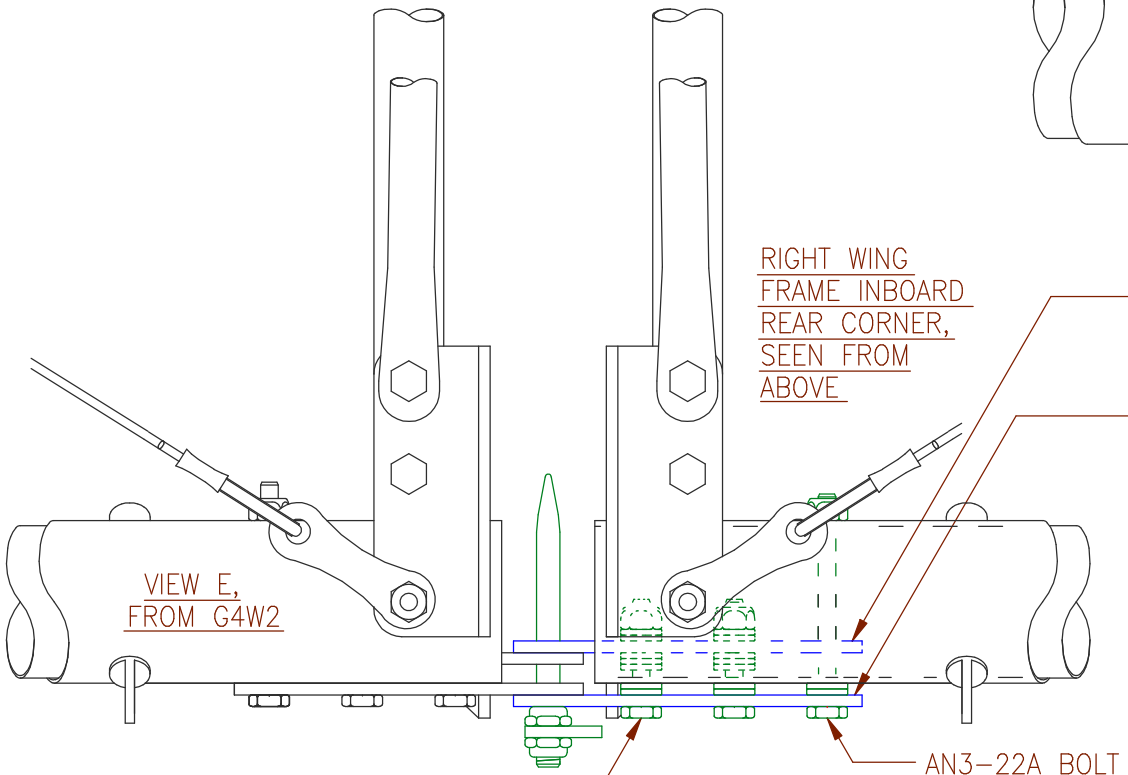


RIGHT WING
FRAME INBOARD
REAR CORNER,
SEEN FROM
ABOVE

RIGHT WING FORWARD JOINING FIXTURE, ONE OF REAR PAIR, SPACED FORWARD ABOUT 1/8 IN. RELATIVE TO LEFT HAND FIXTURE, TO CLEAR LEFT HAND FIXTURE.

RIGHT WING REAR JOINING FIXTURE, ONE OF REAR PAIR, SPACED BACK 1/8 IN. RELATIVE TO LEFT HAND FIXTURE.

VIEW E,
FROM G4W2



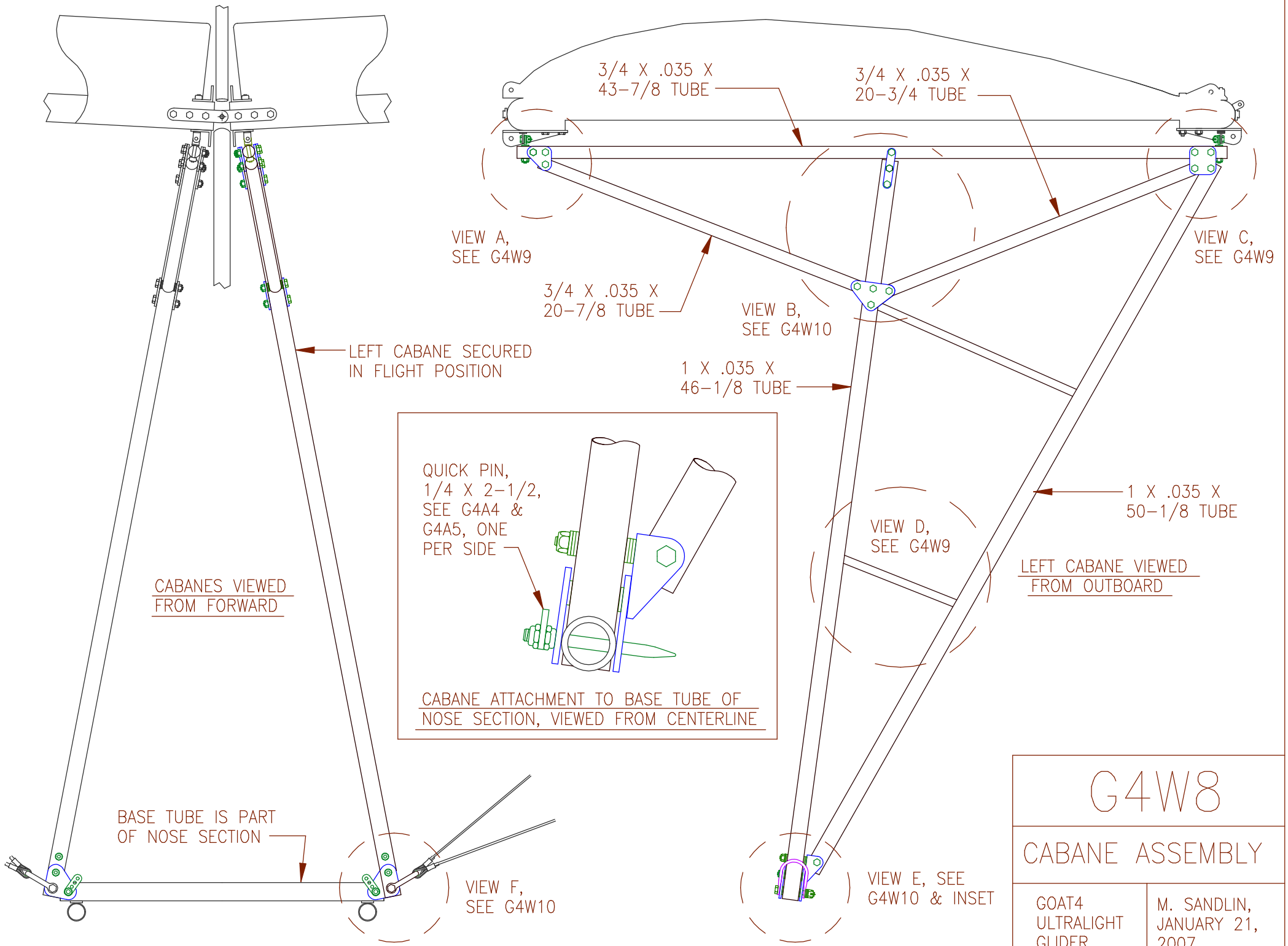
AN3-12A BOLT, 2 PLACES

AN3-22A BOLT

G4W7

RIGHT WING JOINING ASSEMBLY

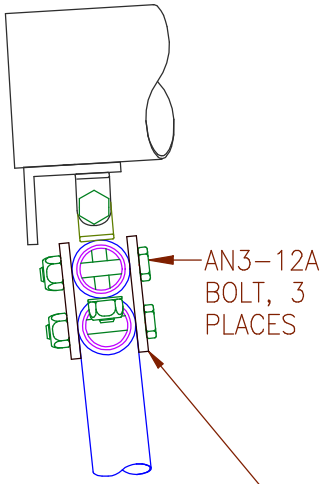
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 21, 2007



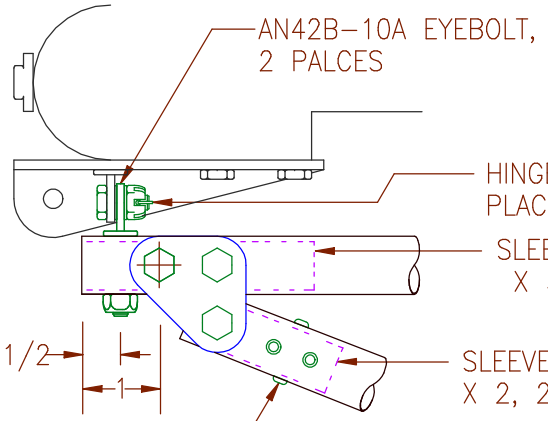
G4W8

CABANE ASSEMBLY

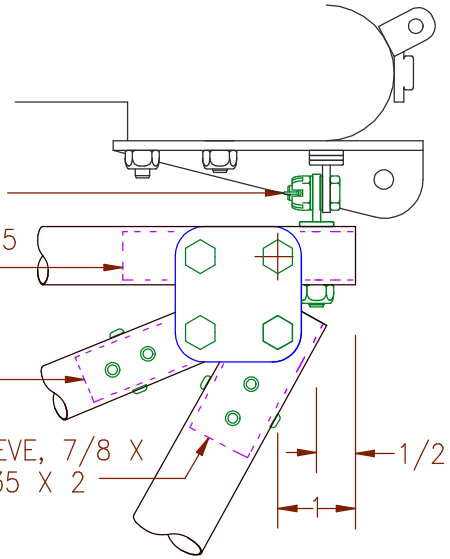
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 21, 2007



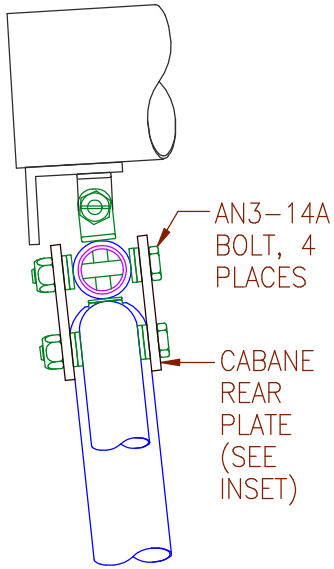
VIEW OF AREA AT RIGHT,
SEEN FROM FORWARD



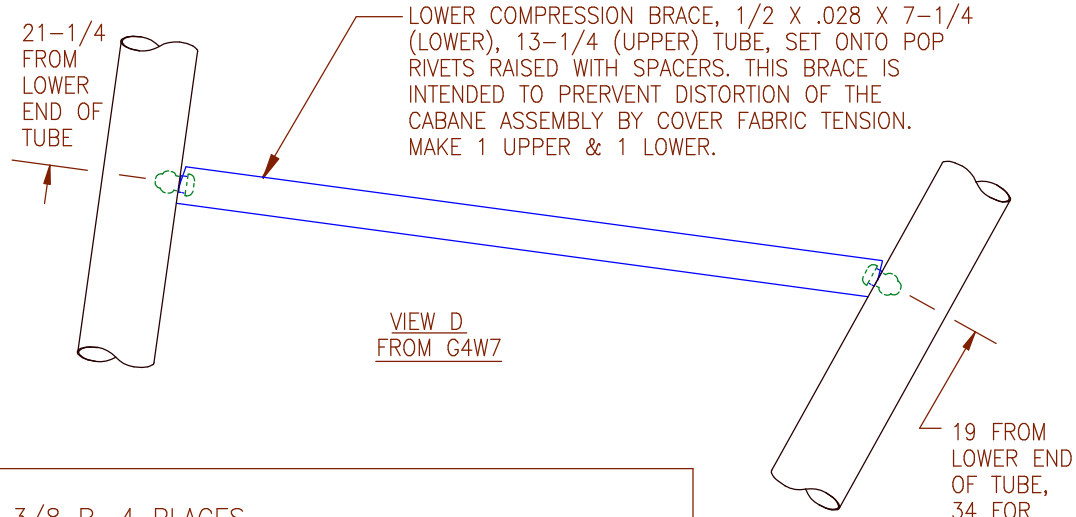
VIEW A
FROM G4W8



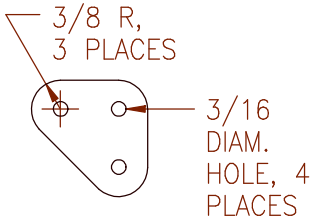
VIEW C
FROM G4W8



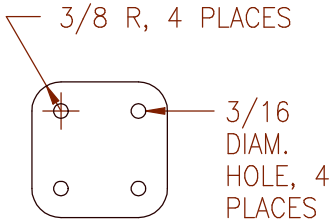
VIEW OF AREA AT LEFT,
SEEN FROM FORWARD



VIEW D
FROM G4W7



CABANE FORWARD PLATE,
1-1/2 X 1/8 ALUM. BAR,
1-1/2 IN. LONG, MAKE 4

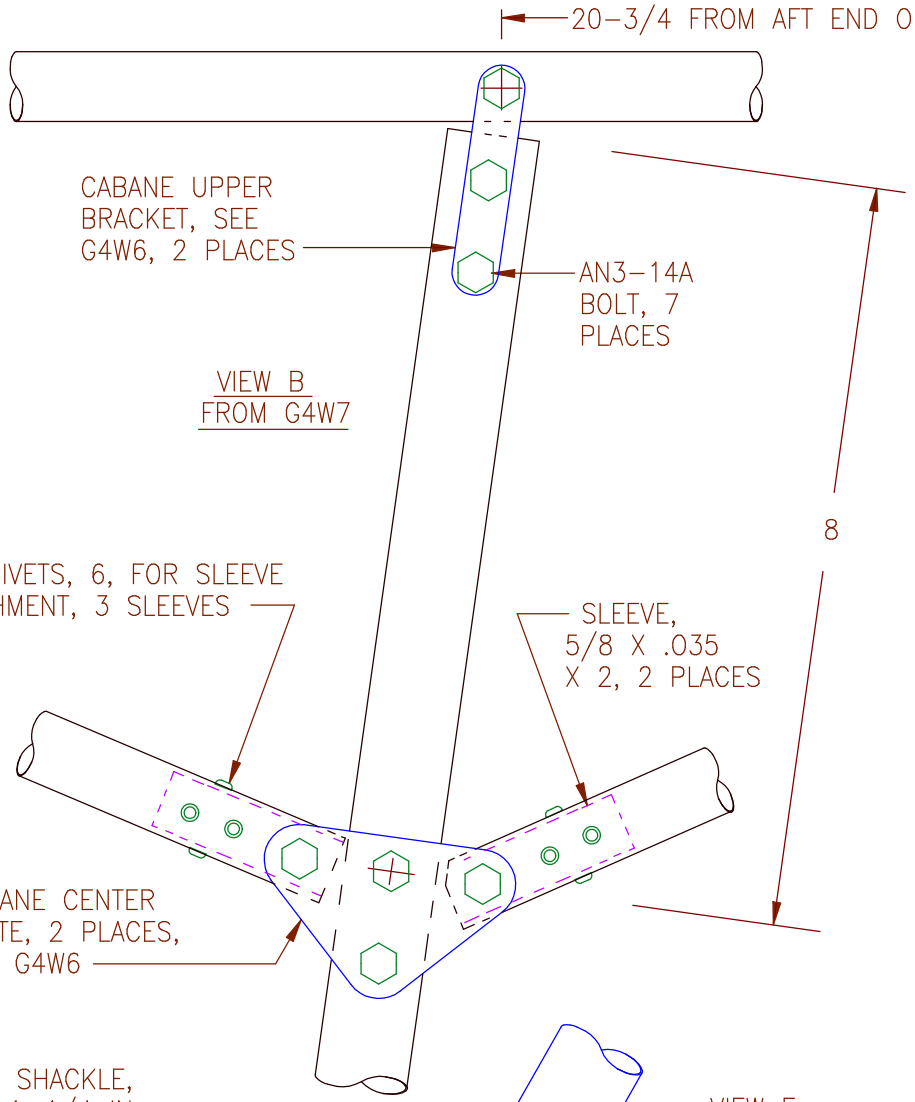


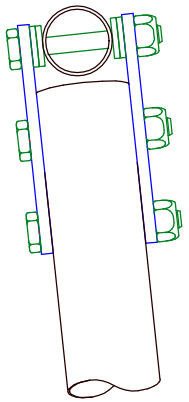
CABANE REAR
PLATE, 1-3/4 X
1/8 ALUM. BAR,
1-3/4 IN. LONG,
MAKE 4

G4W9

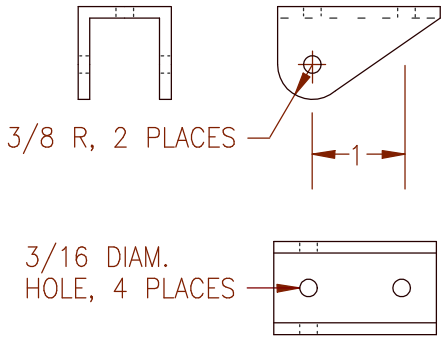
CABANE DETAIL 1

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 21, 2007

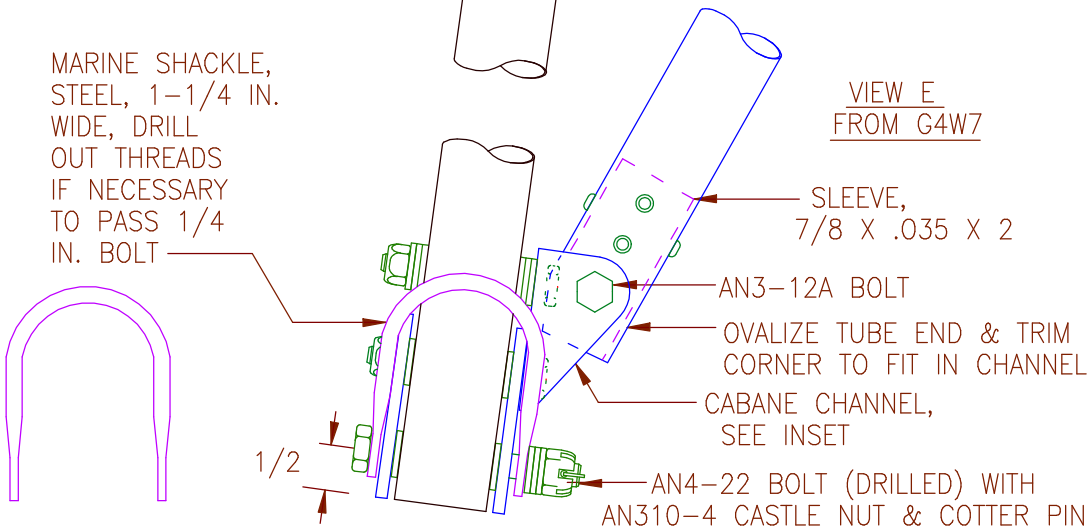




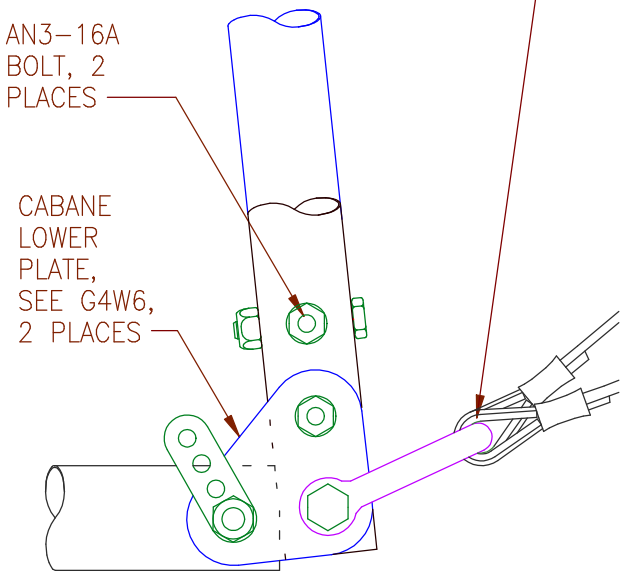
SECTION VIEW OF CABANE UPPER BRACKET, SEEN FROM FORWARD



CABANE CHANNEL, 1 X 1 X 1/8 ALUM. CHANNEL, 1-3/4 IN. LONG, MAKE 2



SAME AREA AS VIEW (E) AT LEFT, SEEN FROM FORWARD

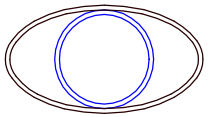


G4W10

CABANE DETAIL 2

GOAT4 ULTRALIGHT GLIDER

M. SANDLIN, JANUARY 21, 2007



OVALIZE FAIRING TUBE TO SLIDE ONTO MAIN TUBE. USE PADDED VICE TO FORM TUBE SMOOTHLY.

VIEW A, SEE G4W12

REAR POST MAIN TUBE, 3/4 X .035 X 45-1/2, WITH FAIRING TUBE, 1-1/8 X .035 X 45-1/2 (OVALIZED, SEE INSET)

KINGPOST ASSEMBLY VIEWED FROM LEFT

FRONT POST MAIN TUBE, 3/4 X .035 X 46, WITH FAIRING TUBE, 1-1/8 X .035 X 46 (OVALIZED)

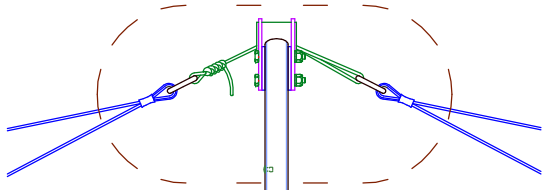
RIVETS ON OPPOSITE SIDES OF THE NOSE TUBE ARE OFFSET 1 INCH

RIVET, 1 EACH SIDE,TO CENTER MAIN TUBE IN FAIRING TUBE, 4 PLACES PER POST

6 TYPICAL

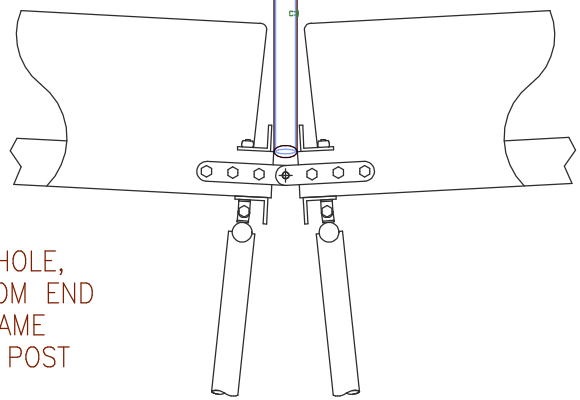
1/4 DIAM. HOLE, 1/2 IN. FROM END OF TUBE, SAME FOR FRONT POST

QUICK PIN, 1/4 X 2-1/2, SEE G4A4 & G4A5, 1 FRONT & 1 BACK

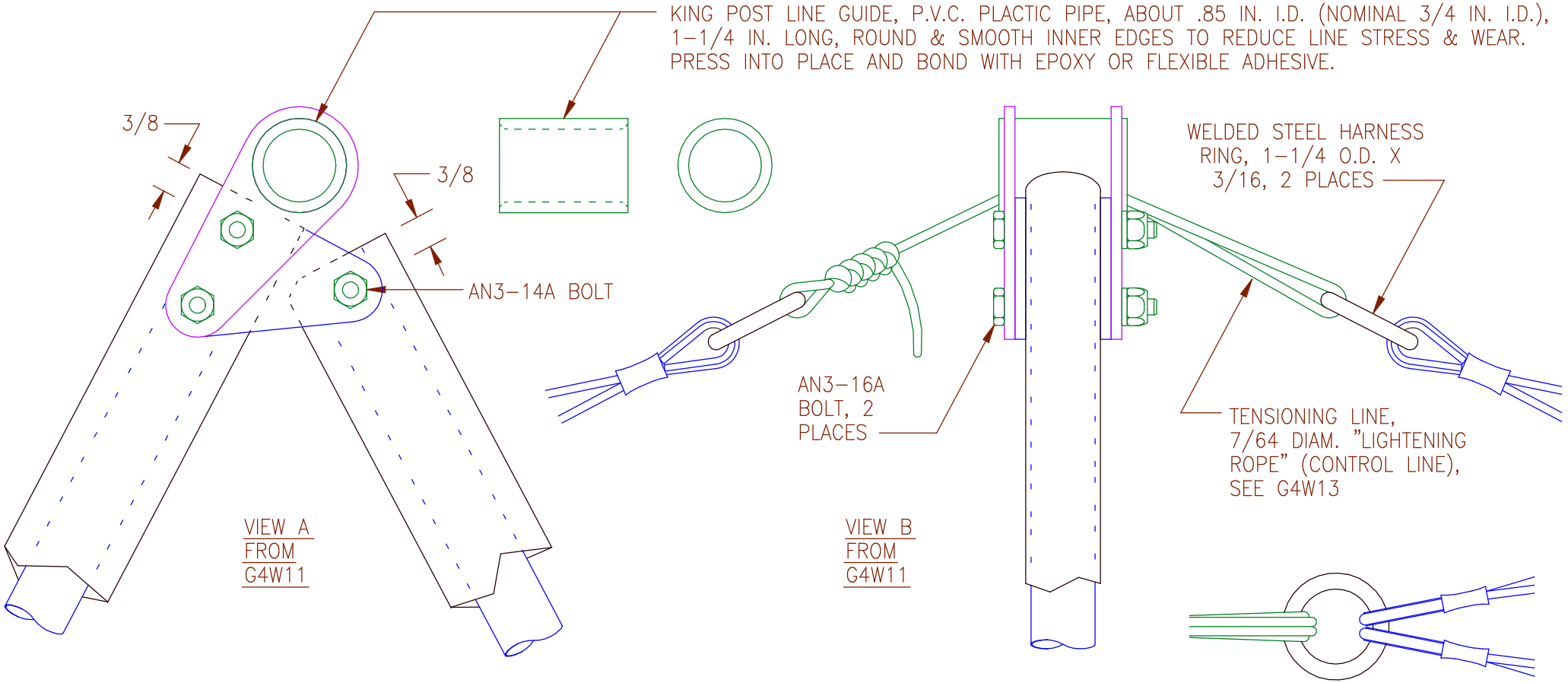


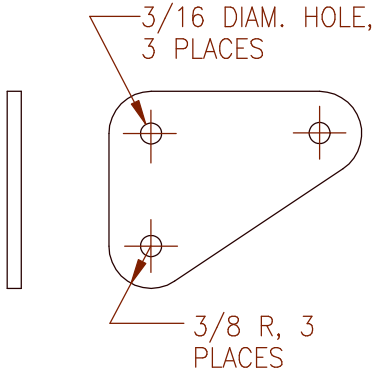
VIEW B, SEE G4W12

SAME AREA AS AT LEFT, VIEWED FROM FORWARD

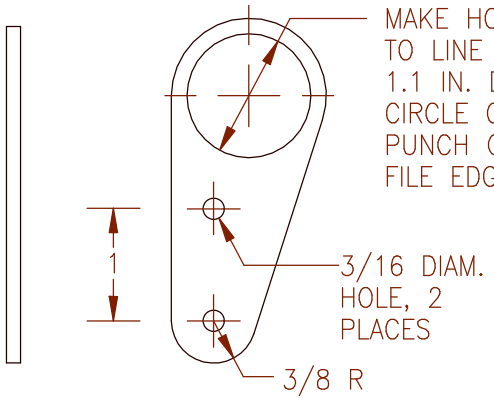


G4W11	KING POST ASSEMBLY	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 16, 2007





KING POST PLATE, 1-3/4 X 1/8 ALUM. BAR, 2-1/4 IN. LONG, MAKE 2

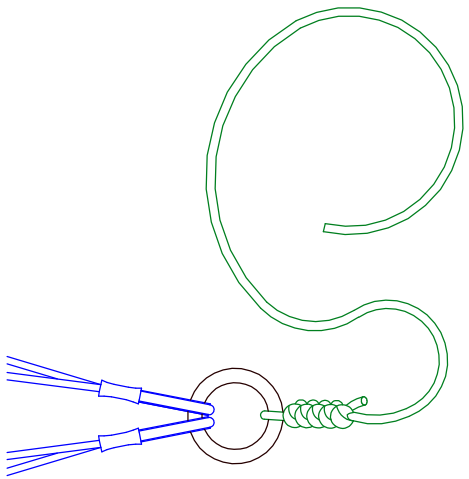


KING POST LINE GUIDE BRACKET, 1-3/8 X 1/8 ALUM. BAR, 3 IN. LONG, MAKE 2

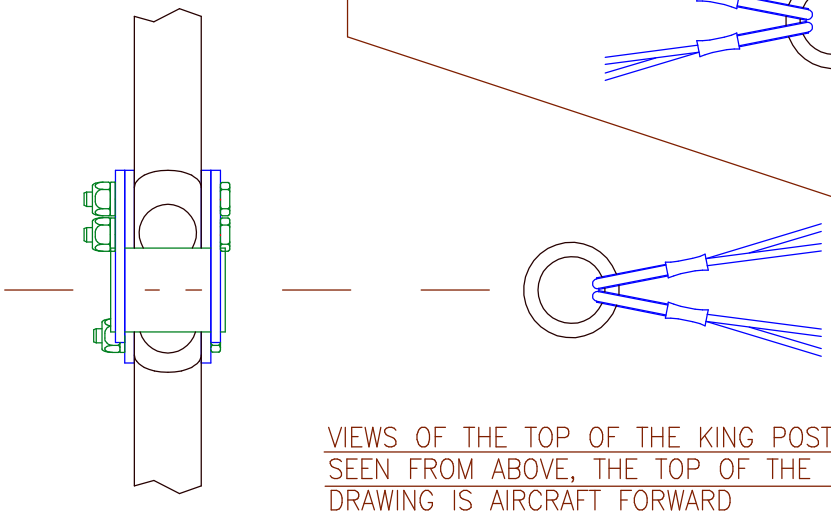
G4W12

KING POST DETAIL

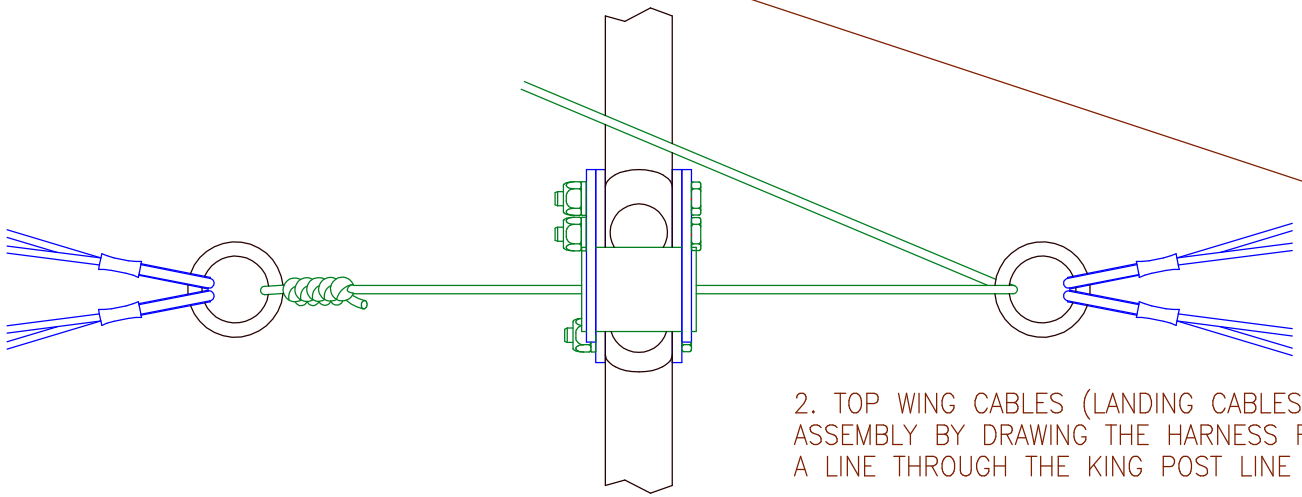
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 18, 2007



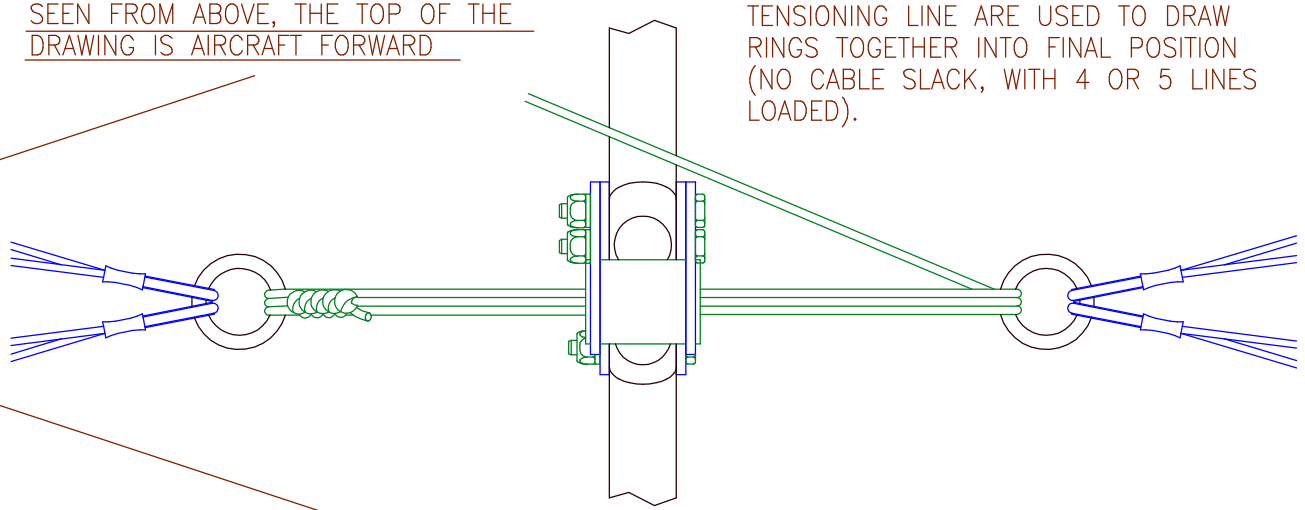
1. THE TENSIONING LINE IS 7/64 "LIGHTENING ROPE" (SAME AS CONTROL LINES), ABOUT 6 FEET LONG, SECURED TO ONE HARNESS RING WITH AT LEAST FIVE HALF HITCH KNOTS.



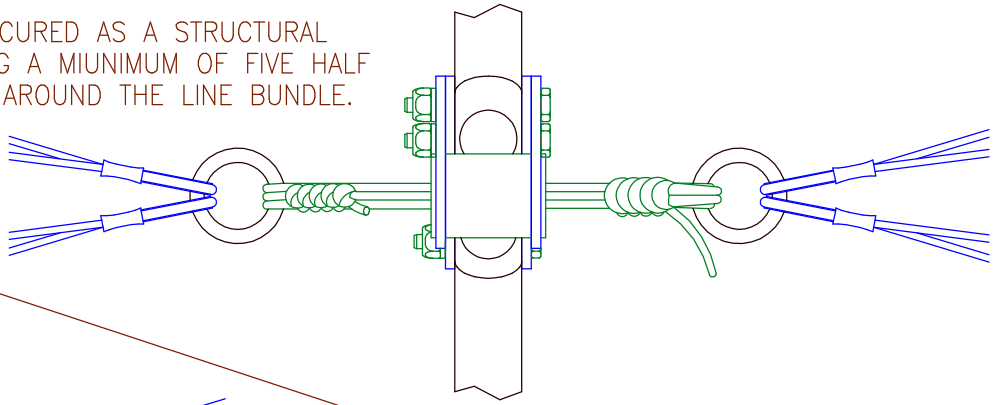
VIEWS OF THE TOP OF THE KING POST SEEN FROM ABOVE, THE TOP OF THE DRAWING IS AIRCRAFT FORWARD



2. TOP WING CABLES (LANDING CABLES) ARE TENSIONED DURING ASSEMBLY BY DRAWING THE HARNESS RINGS TOGETHER USING A LINE THROUGH THE KING POST LINE GUIDE.



3. MULTIPLE THREADDINGS OF THE TENSIONING LINE ARE USED TO DRAW RINGS TOGETHER INTO FINAL POSITION (NO CABLE SLACK, WITH 4 OR 5 LINES LOADED).

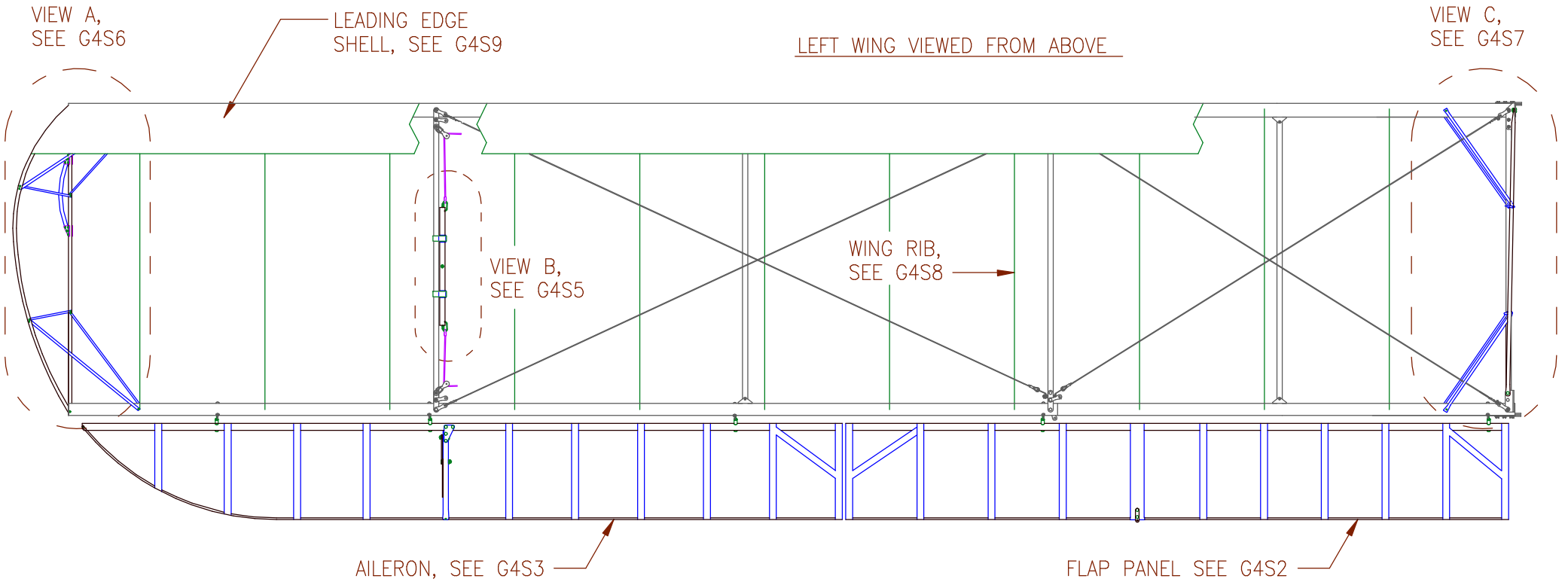


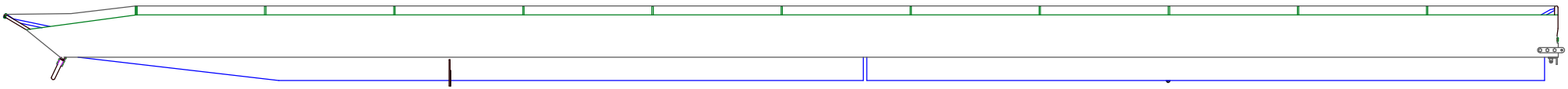
4. LINE IS SECURED AS A STRUCTURAL MEMBER USING A MIUNIMUM OF FIVE HALF HITCH KNOTS AROUND THE LINE BUNDLE.

G4W13

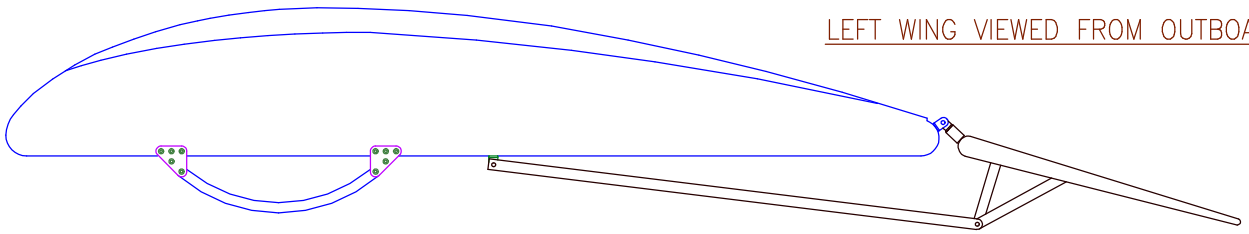
LANDING CABLE TENSIONING

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 22, 2007





RIGHT WING VIEWED FROM AHEAD

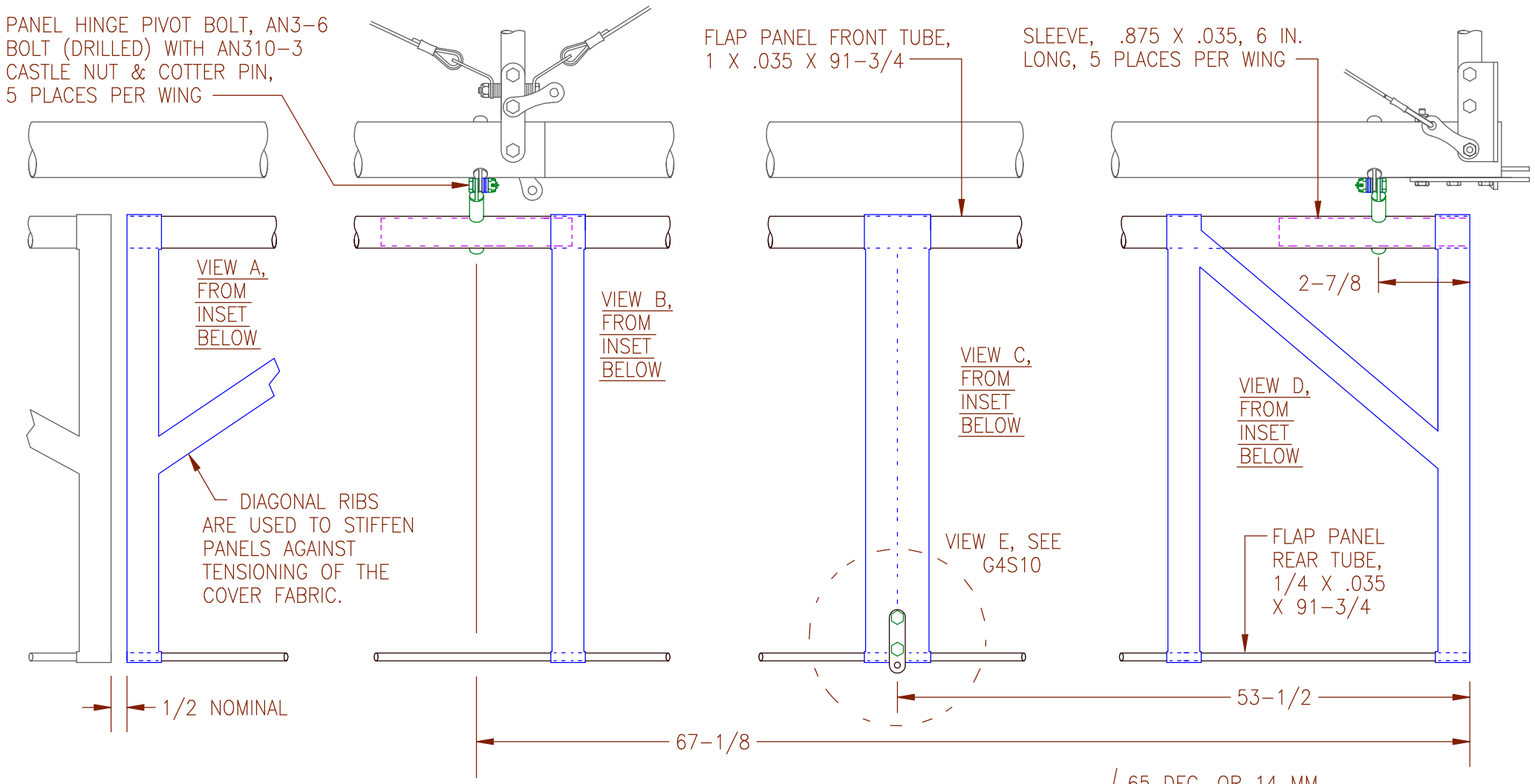


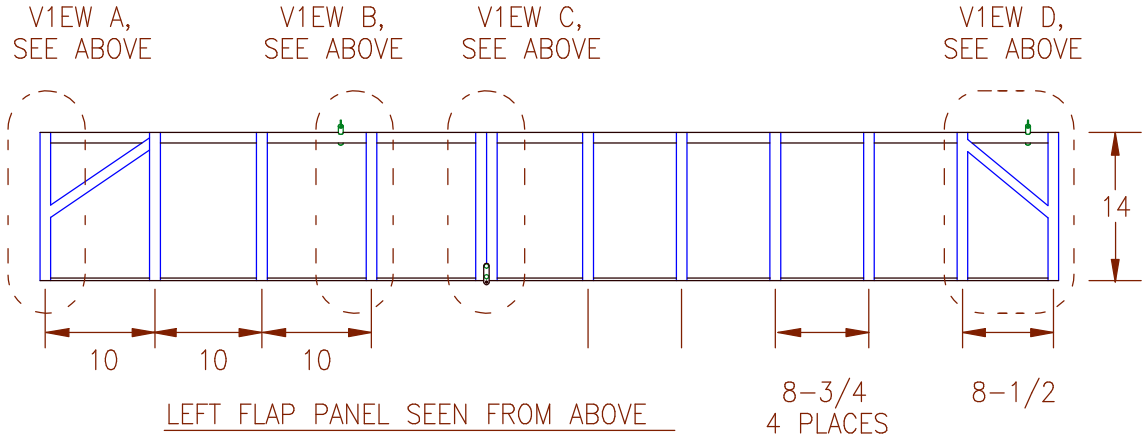
LEFT WING VIEWED FROM OUTBOARD

G4S1

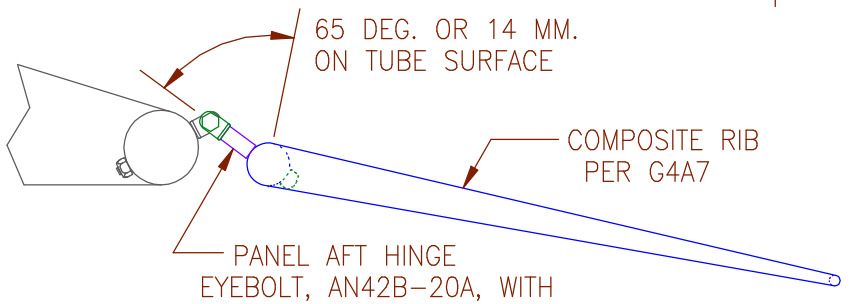
WING SECONDARY STRUCTURE OVERVIEW

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JUY 26, 2007



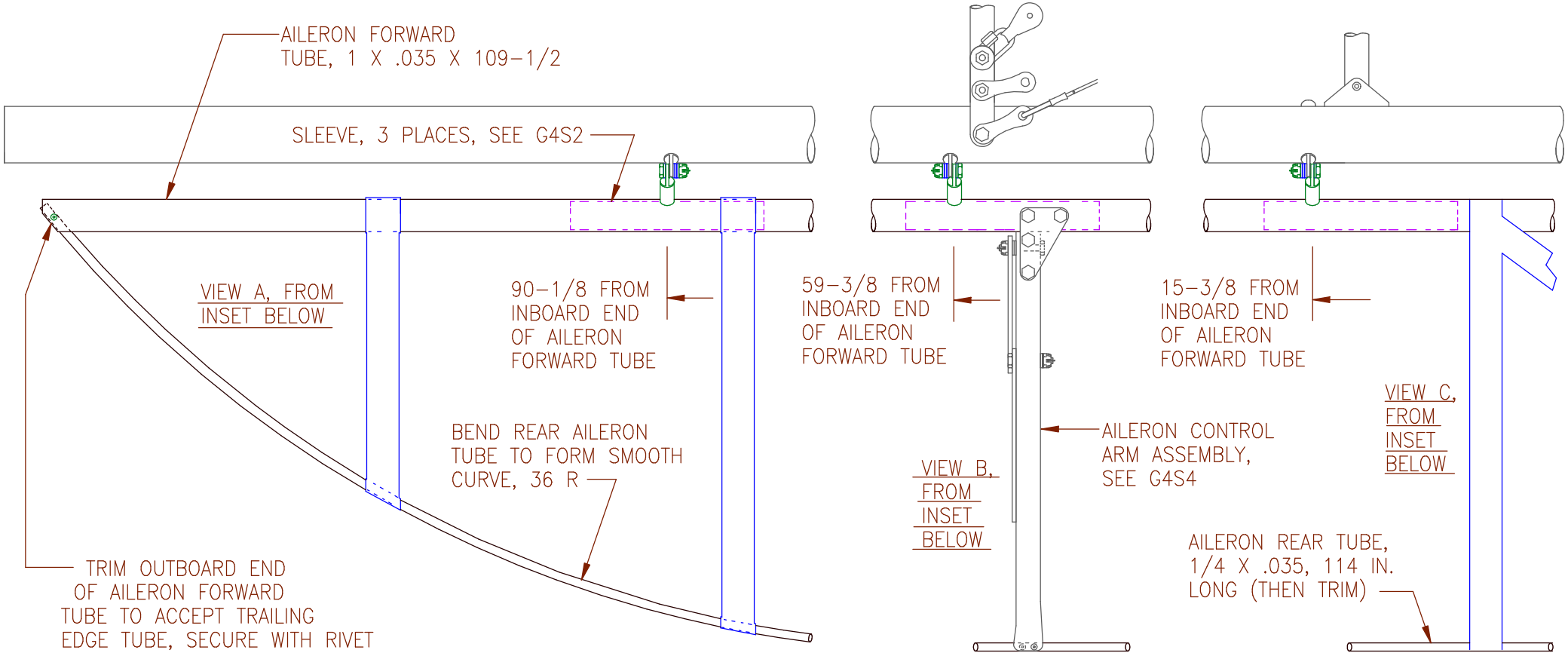


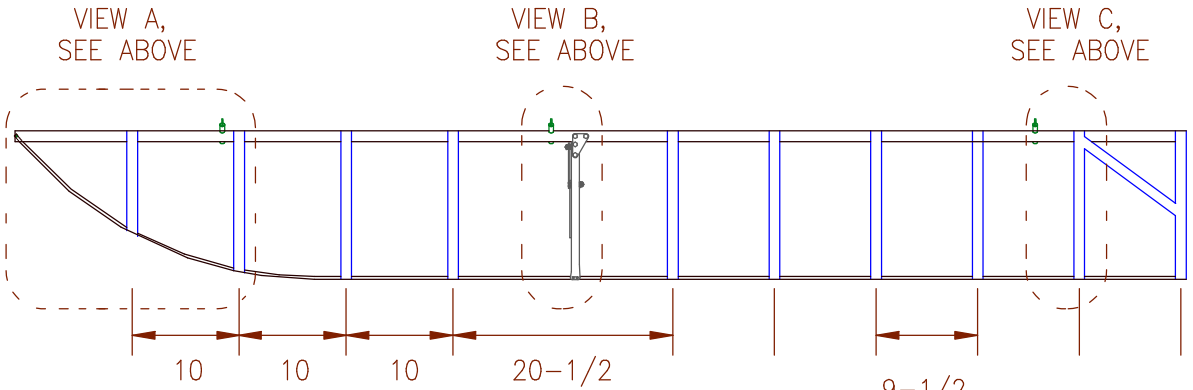
LEFT FLAP PANEL SEEN FROM ABOVE



SIDE VIEW OF TYPICAL TRAILING EDGE PANEL RIB & HINGE

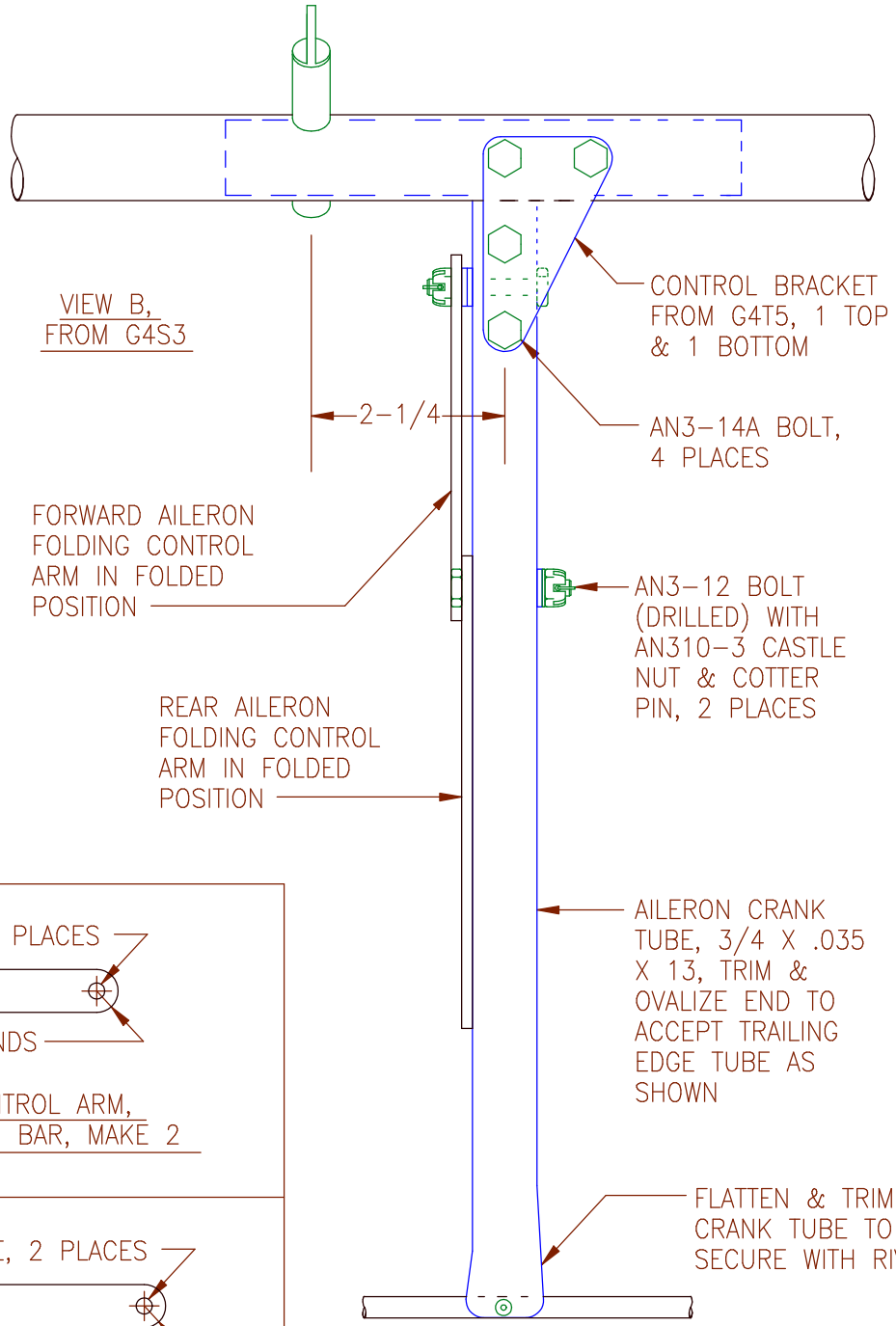
G4S2	FLAP PANEL	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 22, 2007

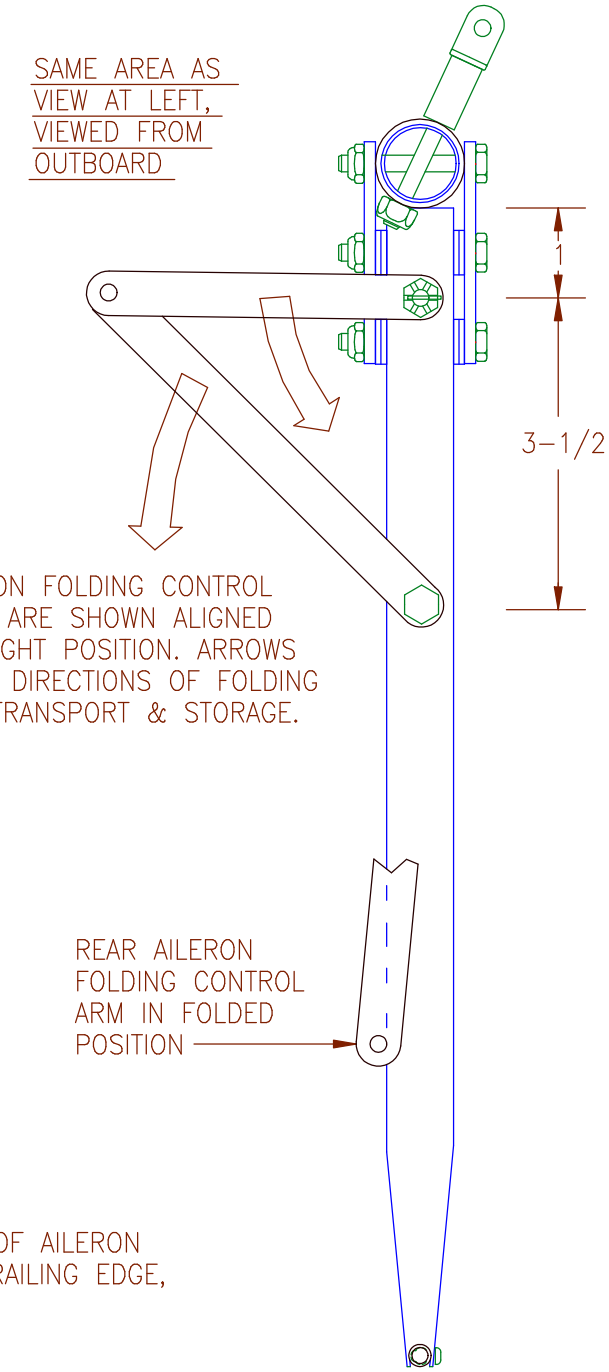


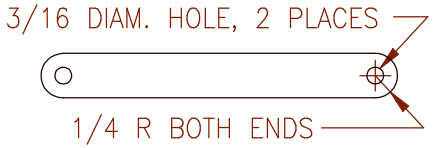


LEFT AILERON LAYOUT, SEEN FROM ABOVE

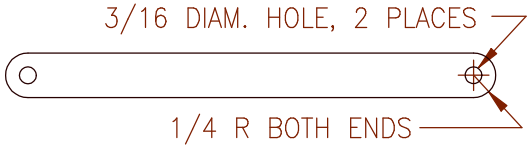
G4S3	AILERON PANEL	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JULY 26, 2007







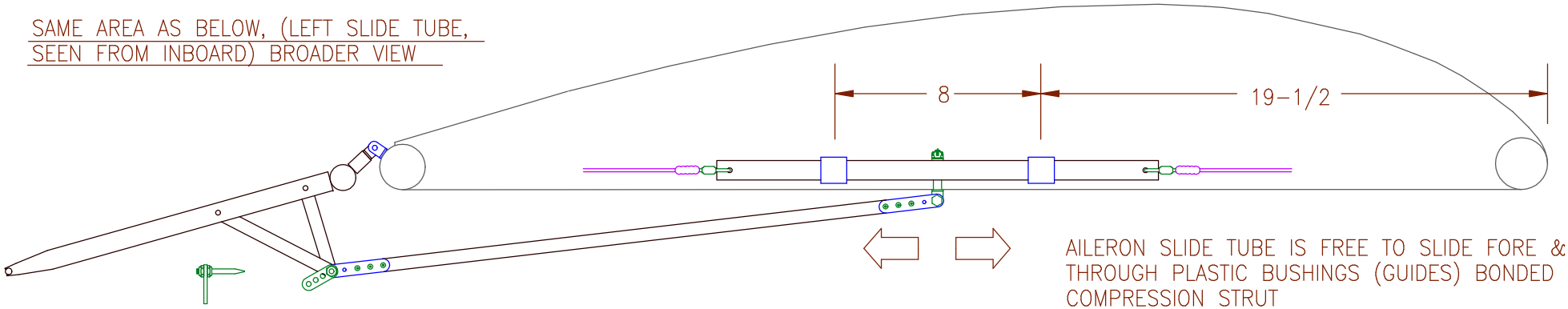
FORWARD FOLDING CONTROL ARM,
1/2 X 1/8 X 4 ALUM. BAR, MAKE 2



REAR FOLDING CONTROL ARM,
1/2 X 1/8 X 5-1/2 ALUM. BAR, MAKE 2

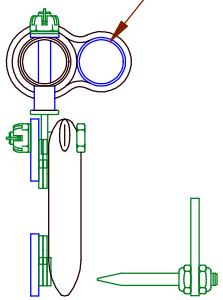
G4S4	AILERON FOLDING CONRTOL ARMS	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 22, 2007

SAME AREA AS BELOW, (LEFT SLIDE TUBE, SEEN FROM INBOARD) BROADER VIEW



AILERON SLIDE TUBE IS FREE TO SLIDE FORE & AFT THROUGH PLASTIC BUSHINGS (GUIDES) BONDED ONTO COMPRESSION STRUT

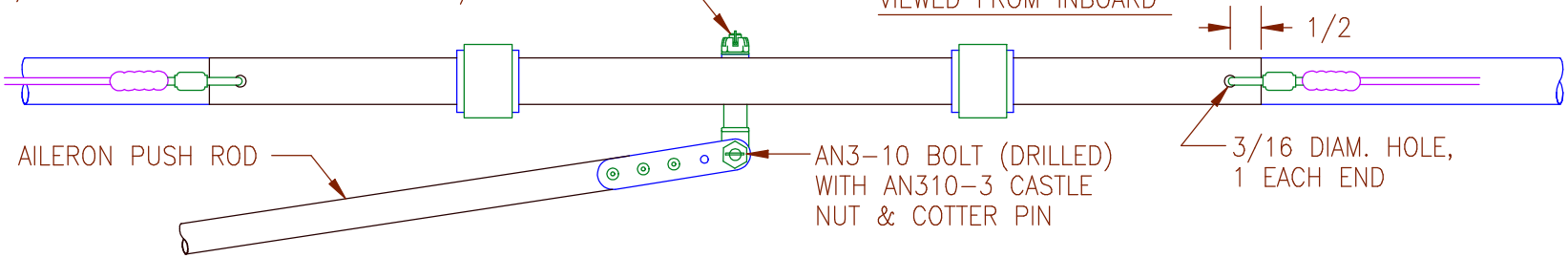
WING COMPRESSION STRUT



LEFT SLIDE TUBE & PUSH ROD, SEEN FROM FRONT

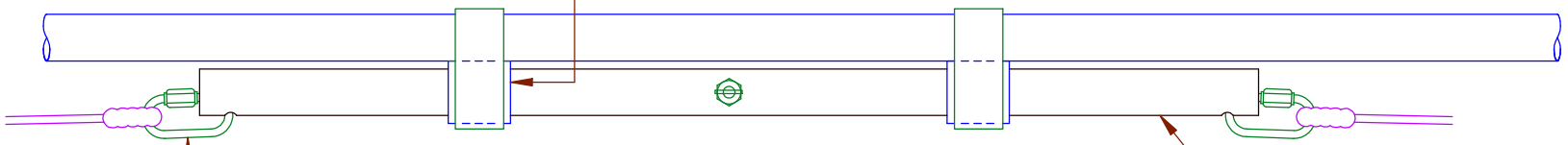
AN42B-14 EYEBOLT WITH AN310-3 CASTLE NUT & COTTER PIN, CENTERED ON SLIDE TUBE WITH 3/8 IN. SPACER

SAME AREA AS BELOW, VIEWED FROM INBOARD



VIEW B, FROM G4S1, ROTATED, RIGHT IN THIS VIEW IS AIRCRAFT FORWARD

SLIDE ROD GUIDE, P.V.C. SCHD. 40 PLASTIC TUBE,1 IN. LONG, 2 PLACES PER WING. USE WET LAYUP OF EPOXY RESIN AND FIBERGLASS CLOTH TAPE TO BOND ROD GUIDE TO COMPRESSION STRUT



1/8 IN. QUICK LINK, TIED TO ELEVATOR CONTROL LINE, 7/64 IN. "LIGHTENING ROPE", PER METHOD OF G4A7, 1 ON EACH END OF SLIDE TUBE

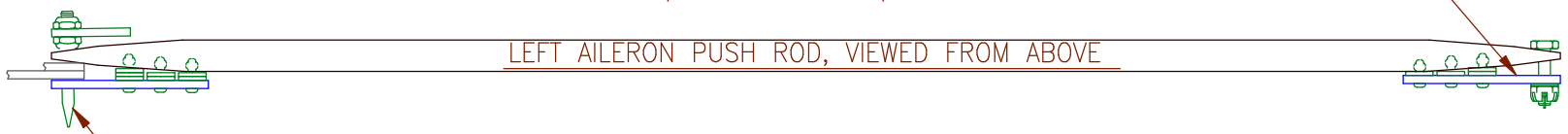
STRUT FITTING, FROM G4T10, ONE PER ROD END, ATTACH WITH 3 RIVETS EACH, USE WASHERS TO ESTABLISH GAP (1/4 IN. ON CONTROL ARM END, ABOUT 1/8 IN. ON EYEBOLT END).

AILERON SLIDE TUBE, 3/4 X .035 X 17 AL. TUBE

AILERON PUSH ROD, VIEWED FROM SIDE

AILERON PUSH ROD, 1/2 X .035 AL. TUBE, 24 IN. LONG, FLATTEN ENDS AND DRILL END HOLES 3/16 DIAM., 23-1/2 HOLE TO HOLE

LEFT AILERON PUSH ROD, VIEWED FROM ABOVE

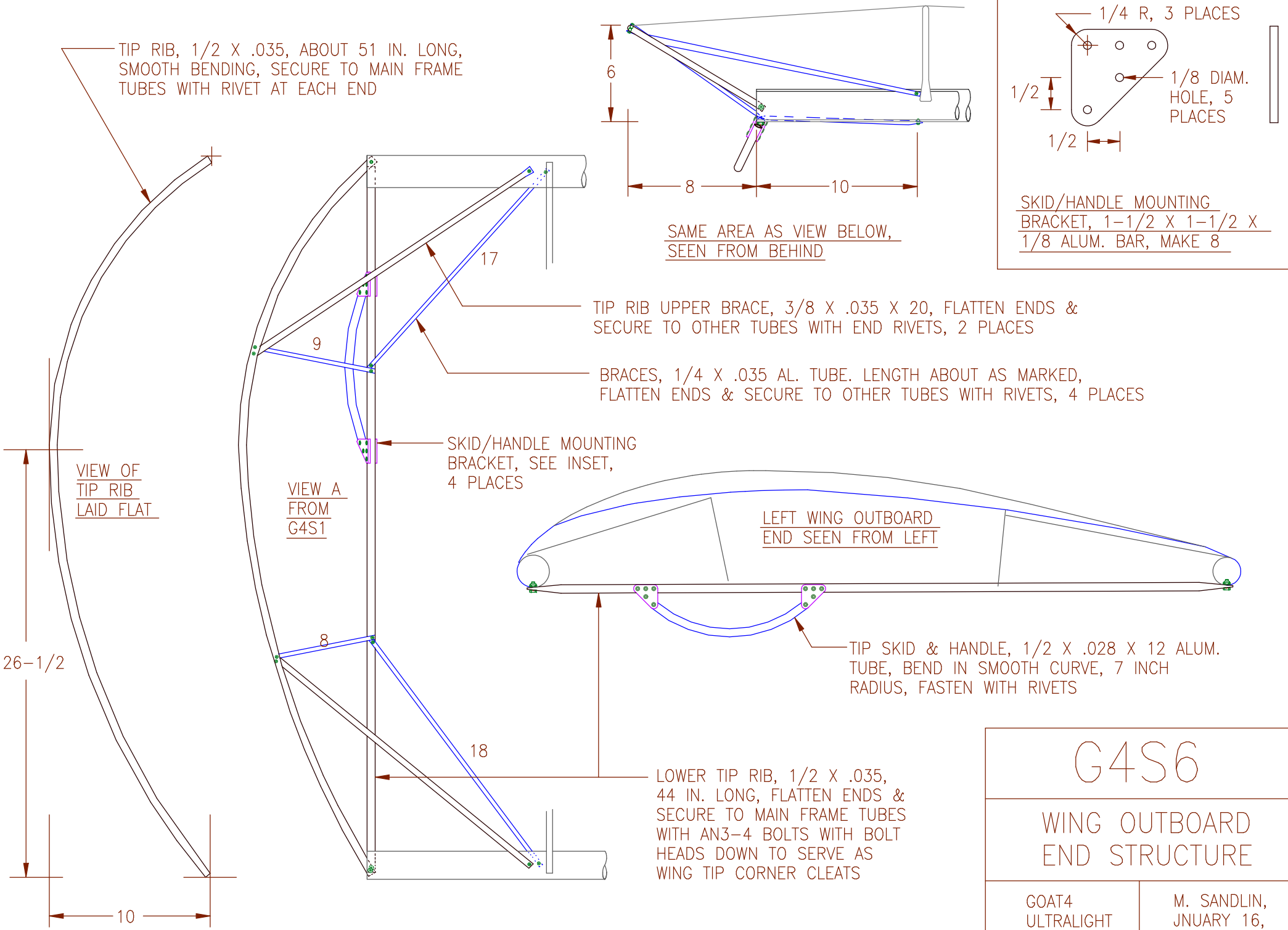


QUICK ASSEMBLY PIN, 3/16 X 1-1/4, 1 PER AILERON, SEE G4A4, G4A5

G4S5

AILERON PUSH ROD

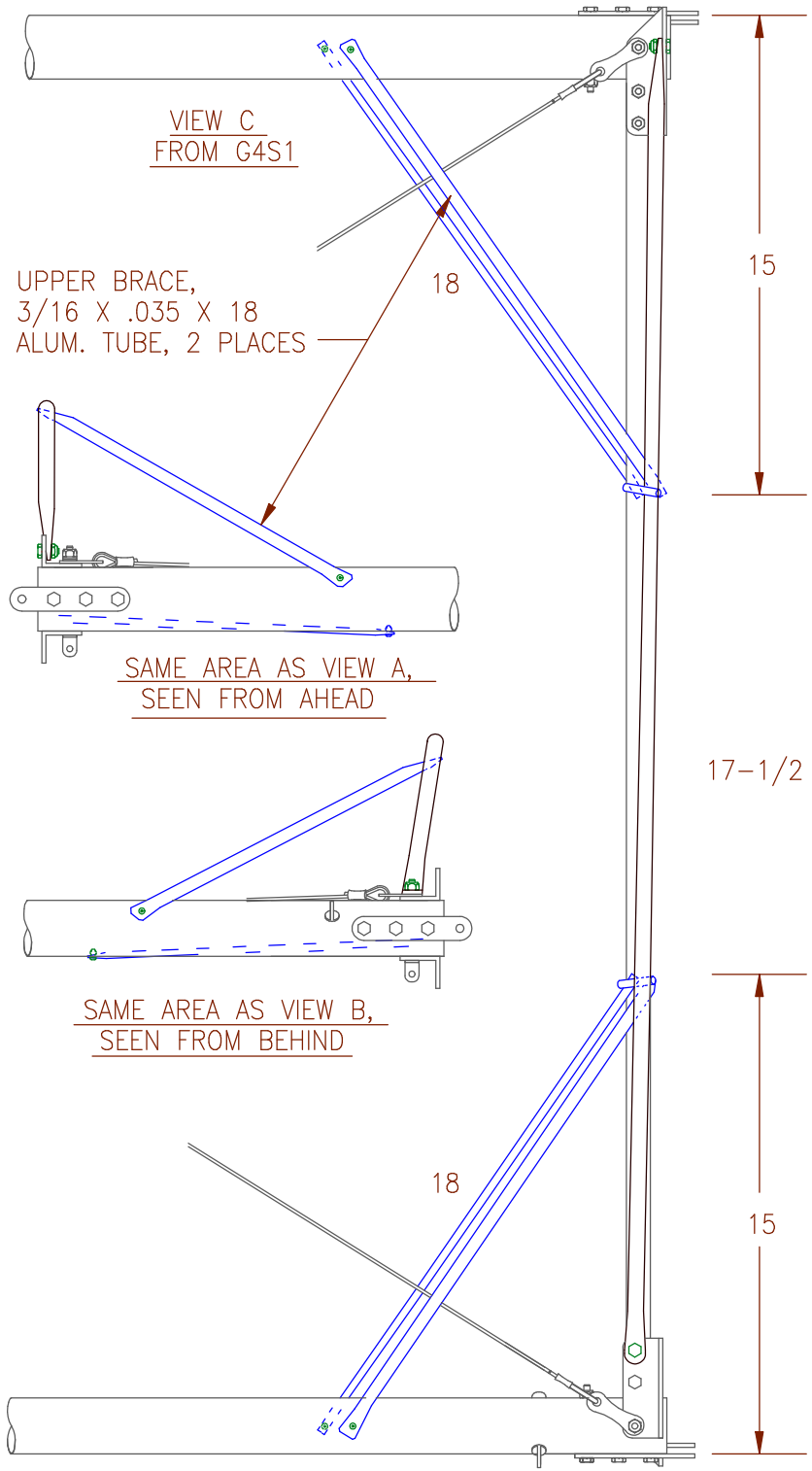
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 23, 2007

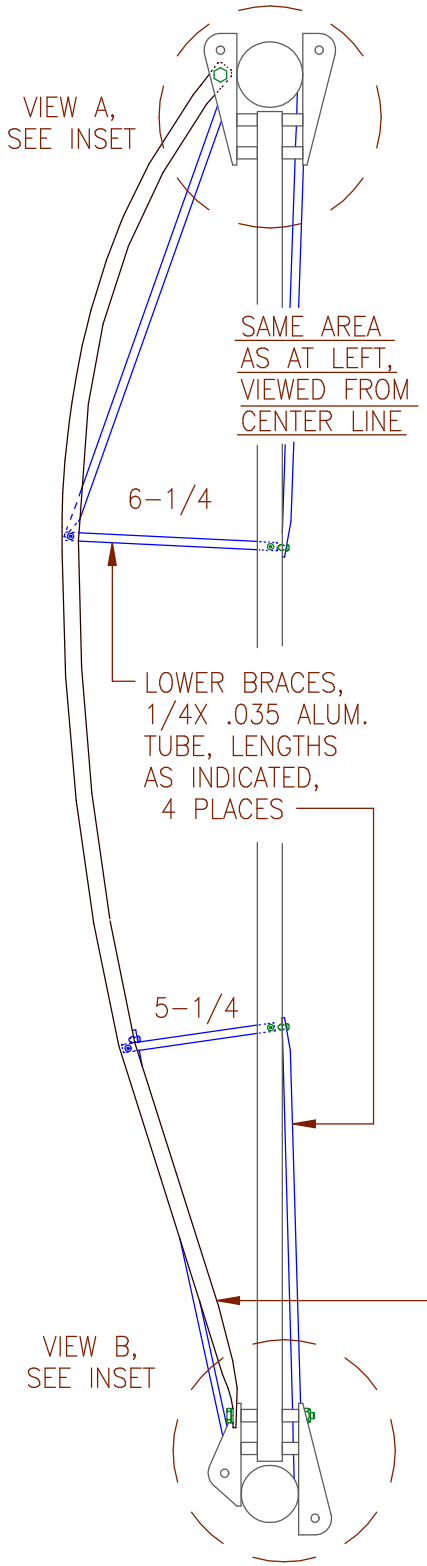


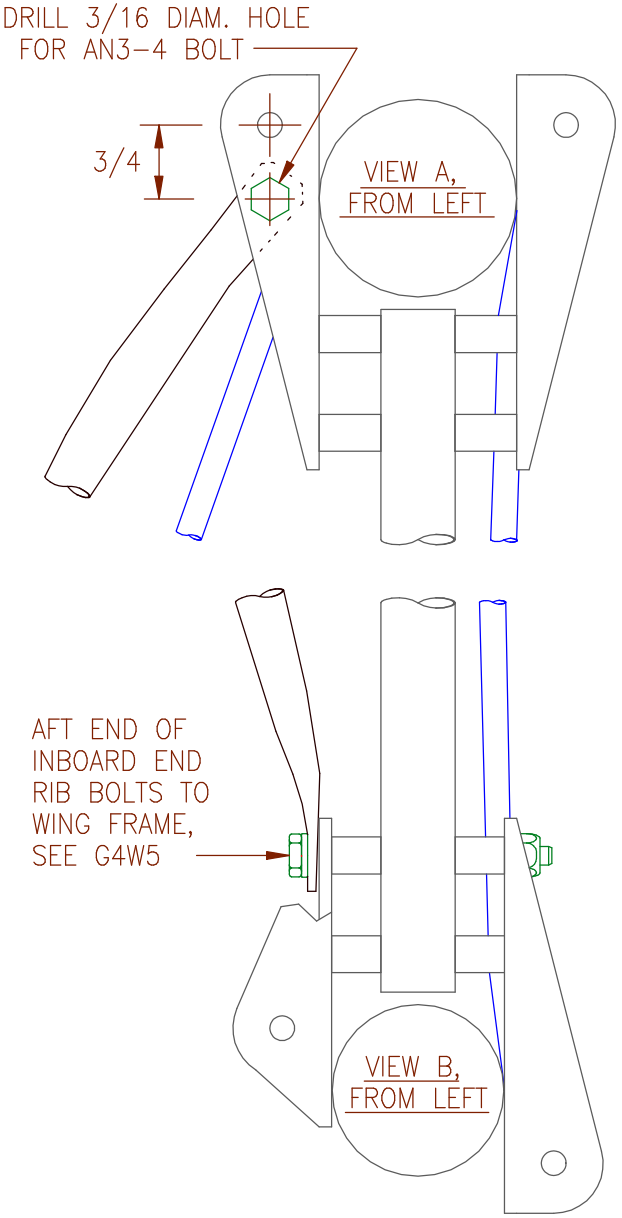
G4S6

WING OUTBOARD END STRUCTURE

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JNUARY 16, 2007





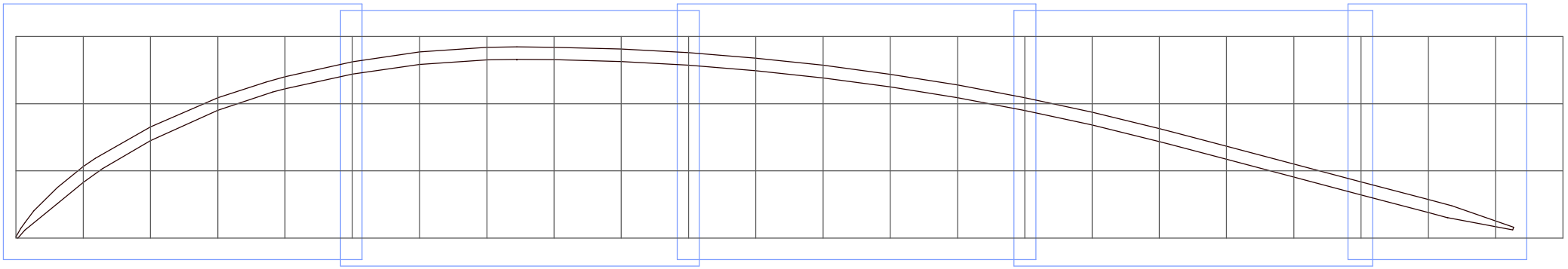


INBOARD END RIB,
1/2 X .028 X 47
ALUM. TUBE, BEND
TO SAME CURVE AS
TYPICAL RIB (SEE G4S8).
OVALIZE & TRIM ENDS
FOR ATTACHMENT.

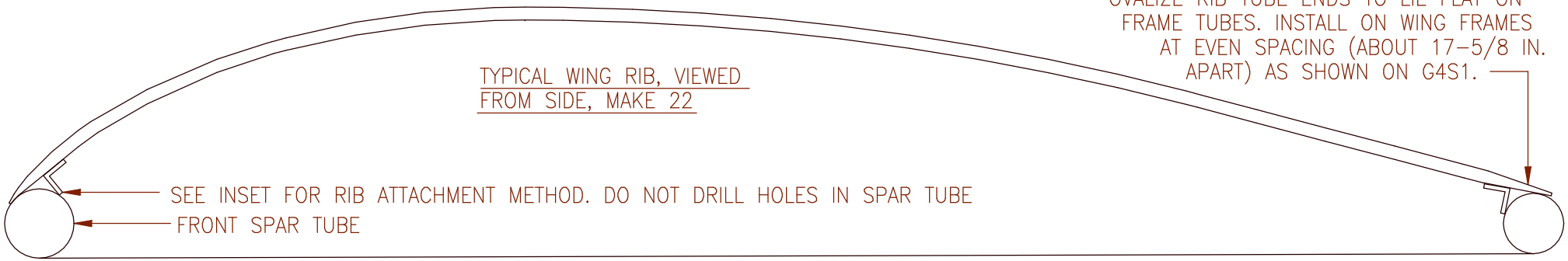
G4S7

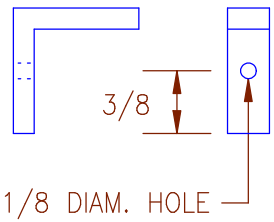
WING INBOARD END STRUCTURE

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 22, 2007

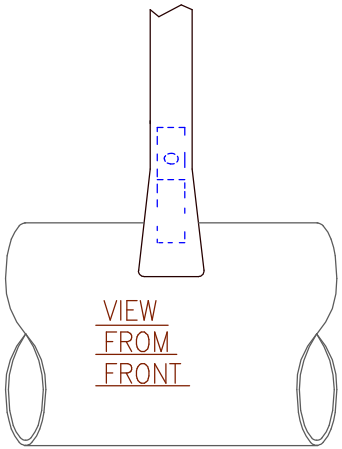


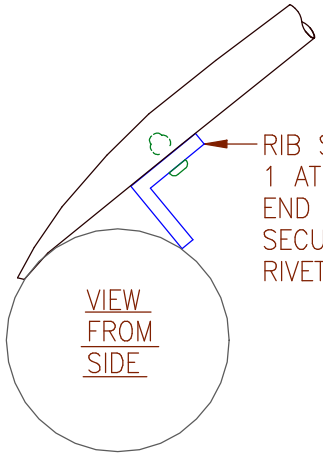
RIB PATTERN IS PRINTED ON 5 SHEETS OF LETTER SIZE PAPER AT FULL SCALE. SHEETS ARE COMBINED INTO A SINGLE FULL SIZE PATTERN. RIBS ARE COMPARED TO THIS PATTERN AS THEY ARE FORMED BY HAND BENDING OR USE OF A VICE OR MANDREL.

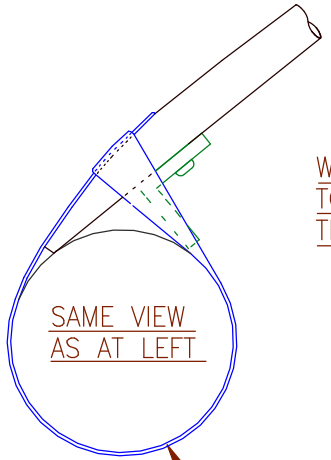




RIB STOP,
1/8 X 3/4 X 3/4
ALUM. ANGLE,
1/4 IN. WIDE,
MAKE 44







WING RIB ATTACHMENT
TO LEADING EDGE TUBE,
TRAILING EDGE IS THE SAME

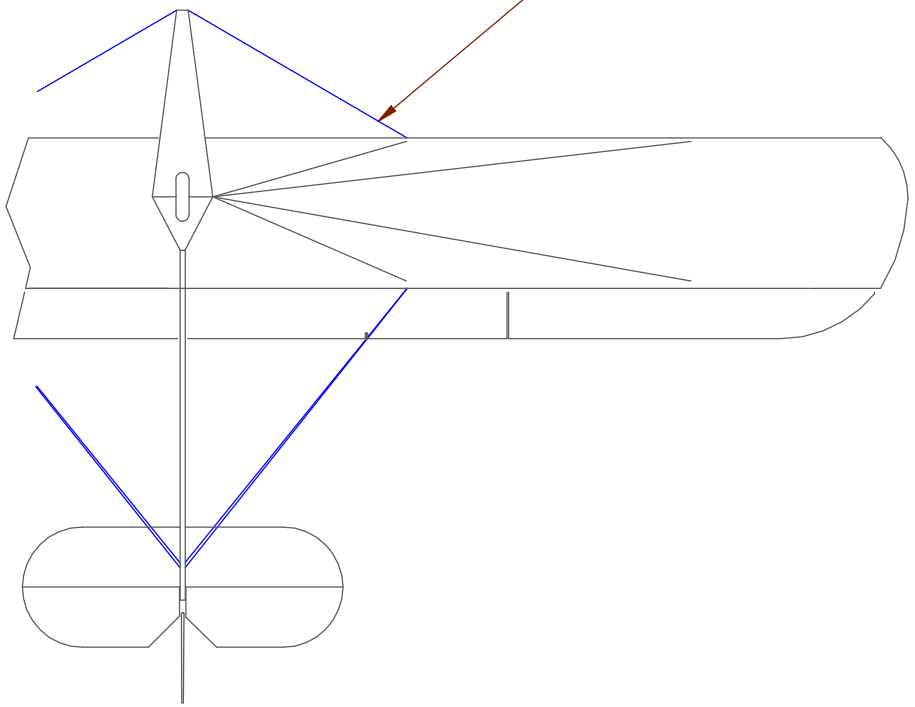
ATTACH RIB ONTO SPAR TUBE USING 1/2 IN. WIDE FIBERGLASS TAPE (MADE FROM 1 IN. TAPE) COMPLETELY AROUND SPAR TUBE. BOND WITH WET LAYUP OF EPOXY, 44 PLACES.

G4S8

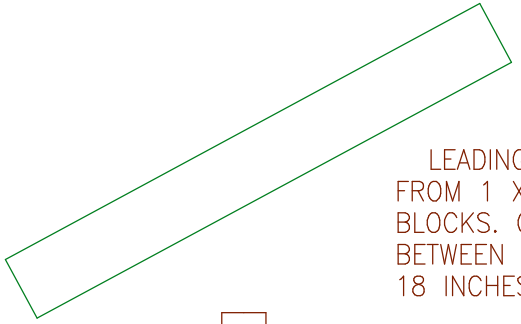
WING RIBS

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 14, 2007

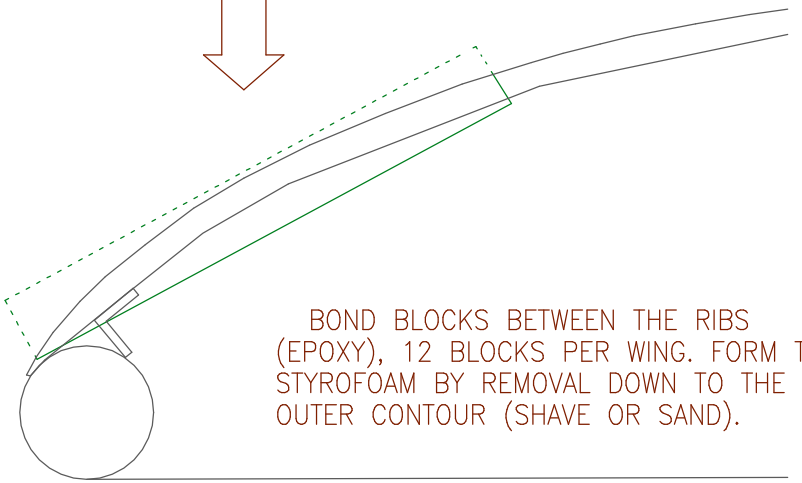
RIG UPPER & LOWER WING CABLES FIRST, THEN RIG THE SWEEP CABLES. SWEEP CABLES SHOULD BE JUST AS LOOSE AS THE LOWER WING CABLES, OR MORE SO, WHEN THE GLIDER IS FULLY ASSEMBLED ON THE GROUND. THIS IS INTENDED TO ALLOW FOR SOME INCREASE IN SWEEP CABLE TENSION IN FLIGHT, WHEN THE WING IS LIFTED AND THE LOWER WING CABLES COME UNDER TENSION.



SWEEP CABLES VIEWED FROM BELOW

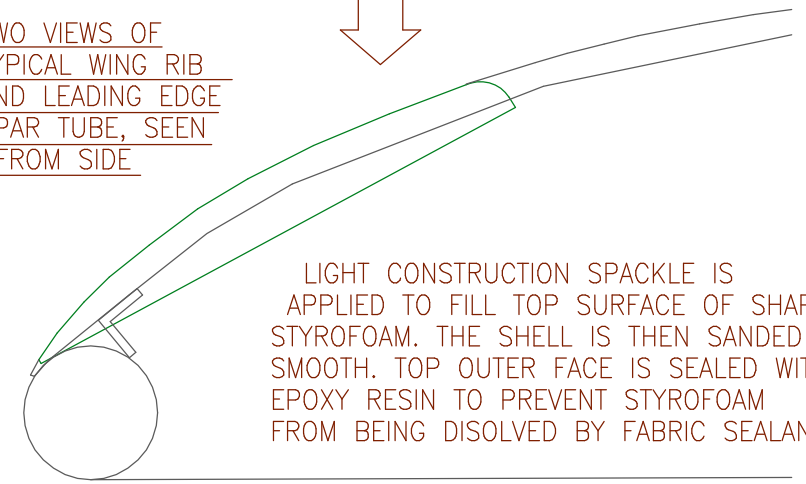


LEADING EDGE SHELL IS MADE FROM 1 X 8 INCH STYROFOAM BLOCKS. CUT LENGTH TO FIT BETWEEN RIBS, ABOUT 18 INCHES LONG.



BOND BLOCKS BETWEEN THE RIBS (EPOXY), 12 BLOCKS PER WING. FORM THE STYROFOAM BY REMOVAL DOWN TO THE RIB OUTER CONTOUR (SHAVE OR SAND).

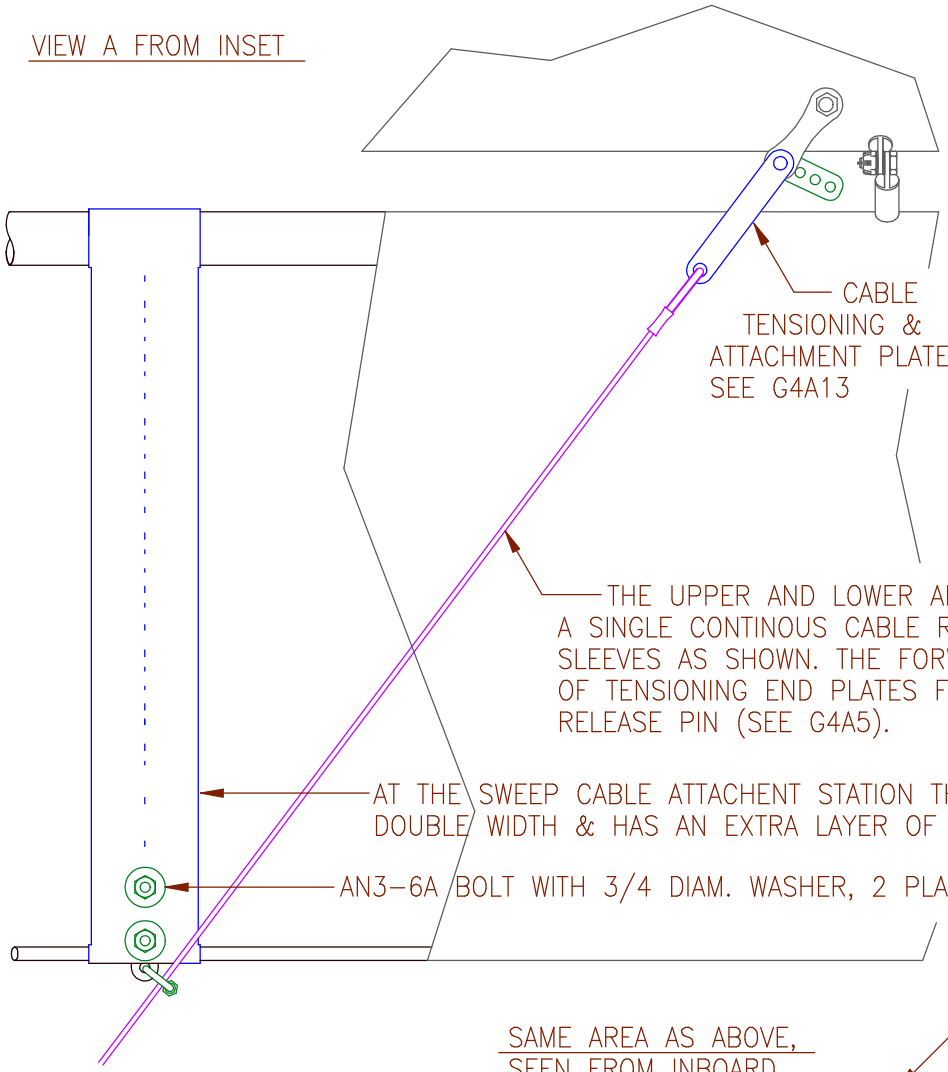
TWO VIEWS OF TYPICAL WING RIB AND LEADING EDGE SPAR TUBE, SEEN FROM SIDE

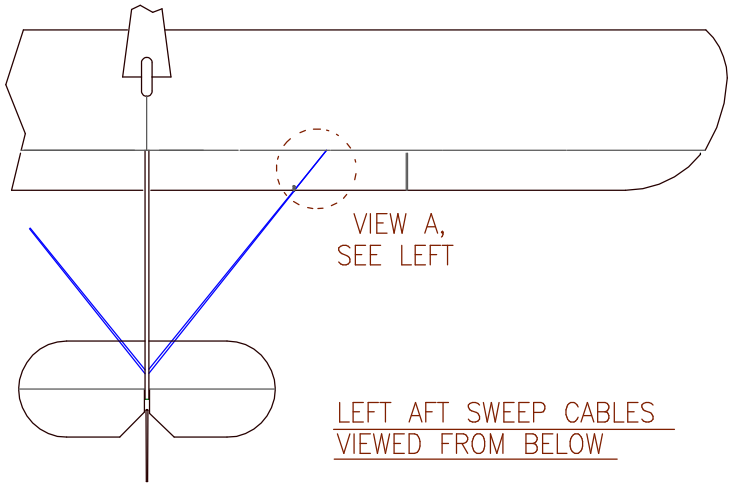


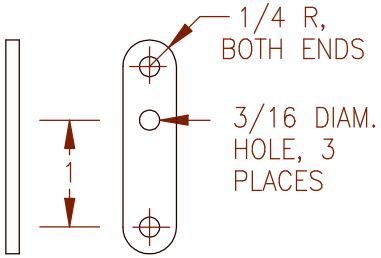
LIGHT CONSTRUCTION SPACKLE IS APPLIED TO FILL TOP SURFACE OF SHAPED STYROFOAM. THE SHELL IS THEN SANDED SMOOTH. TOP OUTER FACE IS SEALED WITH EPOXY RESIN TO PREVENT STYROFOAM FROM BEING DISOLVED BY FABRIC SEALANT.

G4S9	LEADING EDGE SHELL	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, MARCH 22, 2007

VIEW A FROM INSET

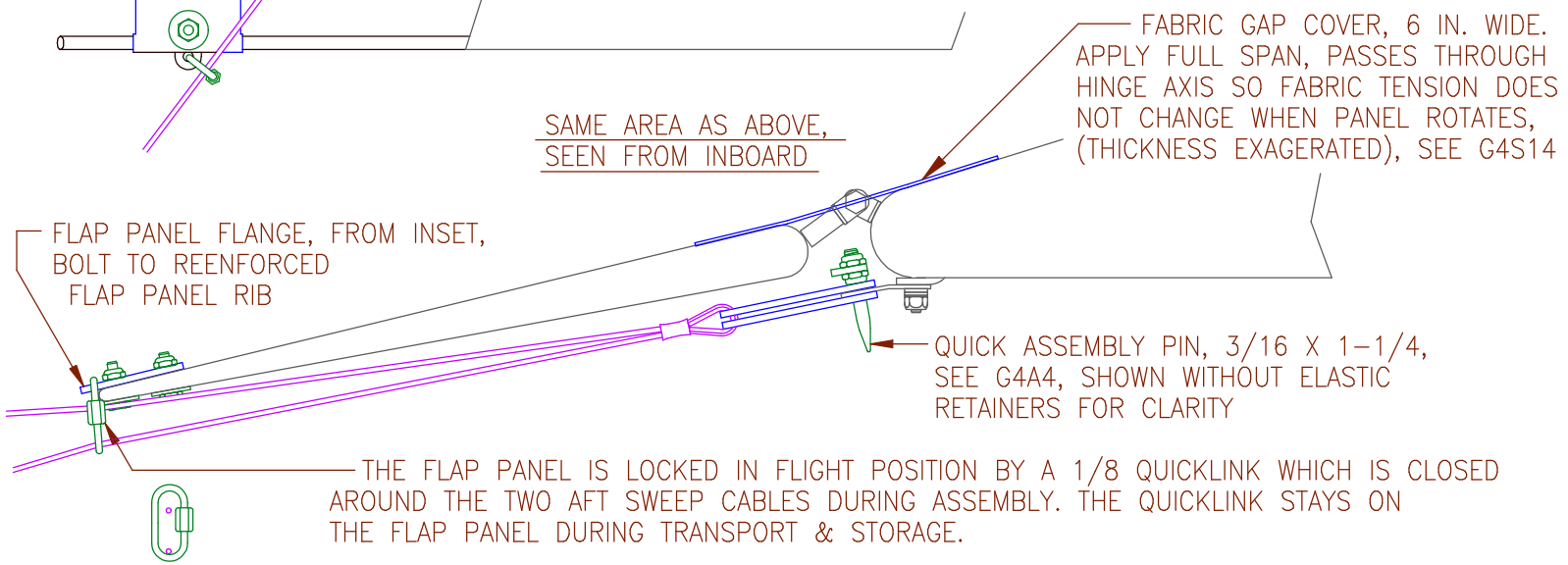






FLAP PANEL FLANGE, 1/2 X 1/8 ALUM. BAR, 2 IN. LONG, MAKE 2

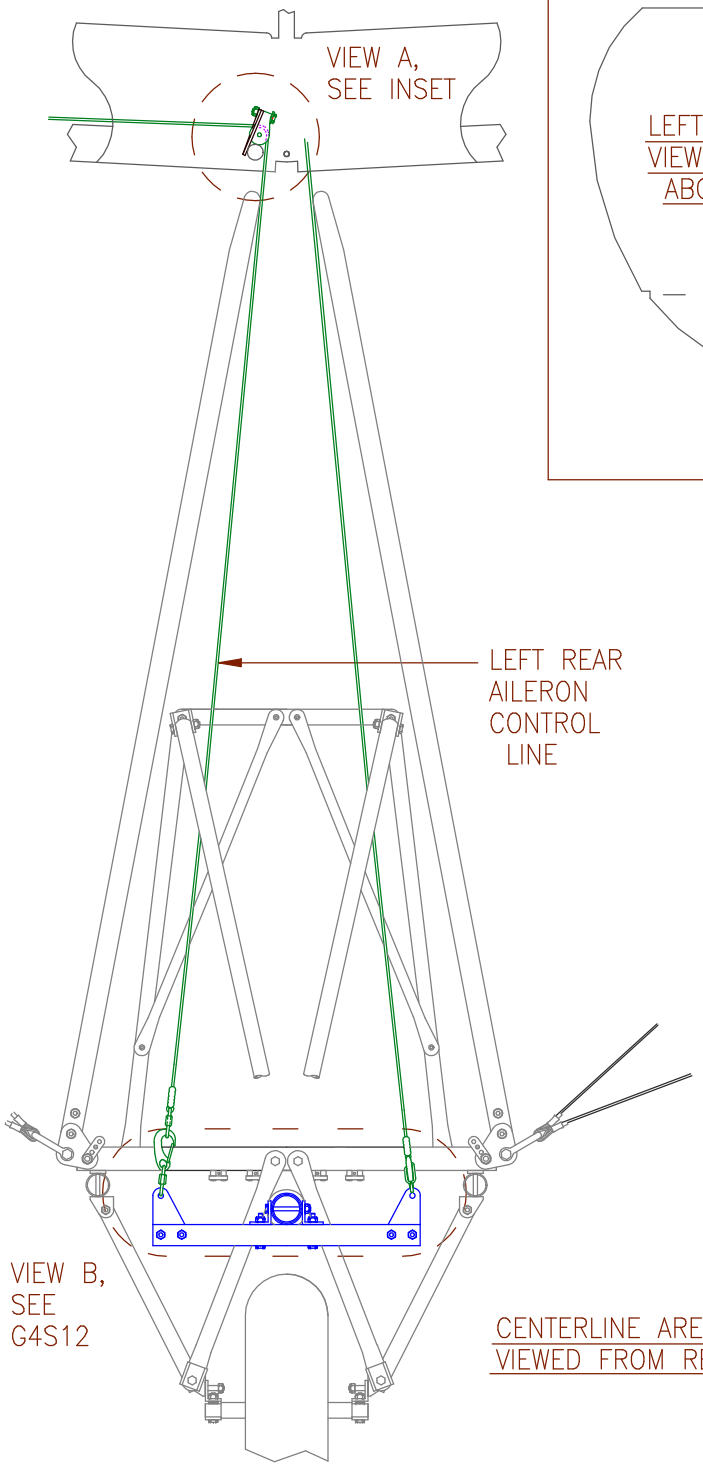
SAME AREA AS ABOVE, SEEN FROM INBOARD

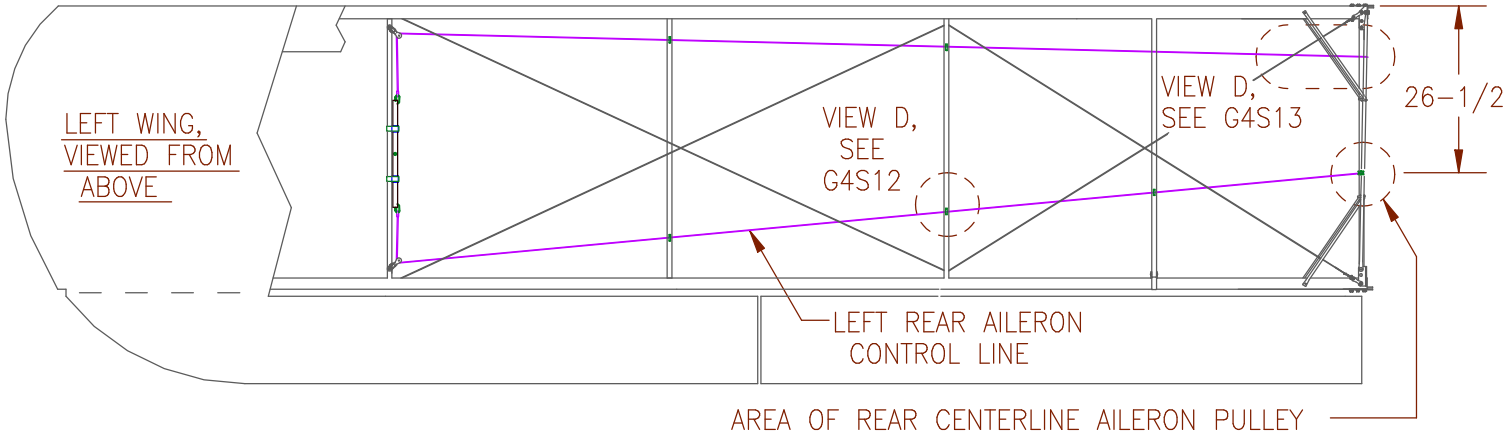


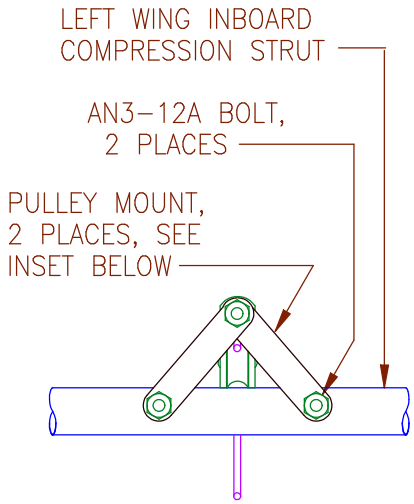
G4S10

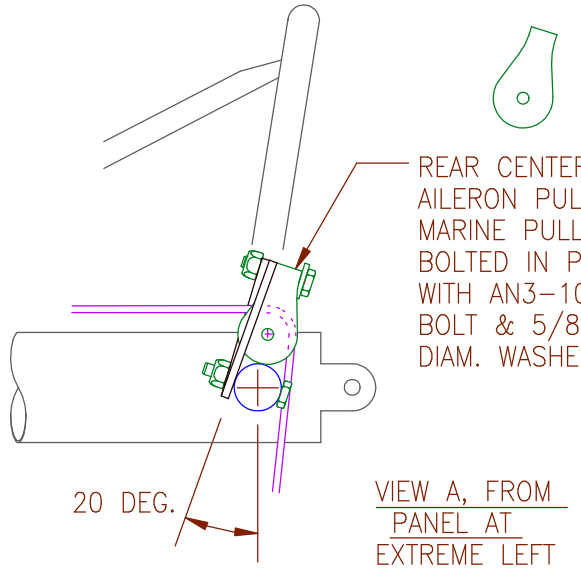
AFT SWEEP CABLE CONNECTION

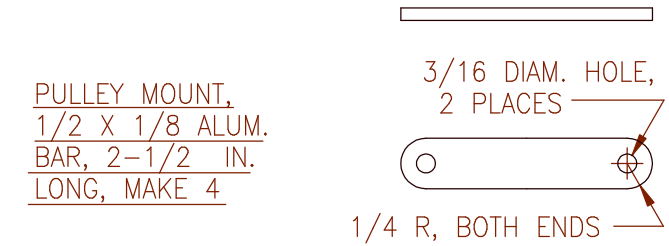
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, MAY 22, 2009









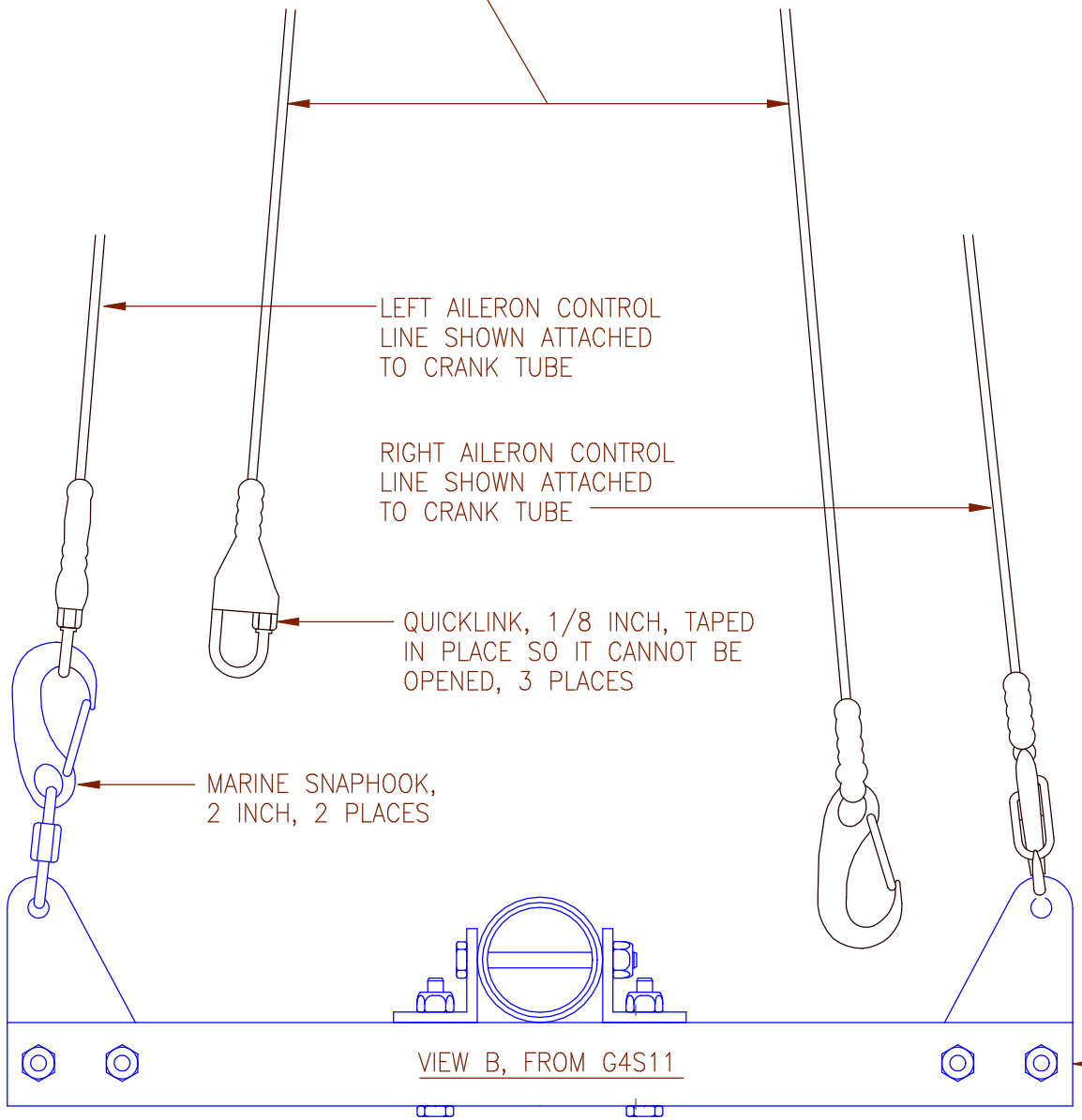


G4S11

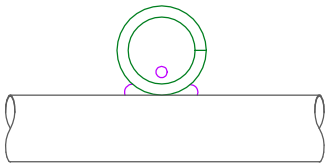
AILERON CONTROL LINE ROUTING 1

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 23, 2007

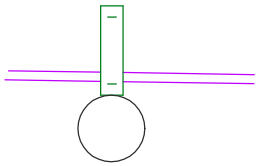
ADDITIONAL, ROTATED VIEWS OF THE AILERON CONTROL LINES COMING DOWN FROM THE WINGS. THESE 2 LINES HAVE REVERSED FASTENER PARITY (THE RIGHT LINE ENDS IN A SNAPHOOK, THE LEFT ENDS WITH A QUICKLINK) TO ASSURE THAT THE LINES CANNOT BE CROSSED OVER WHEN THE GLIDER IS ASSEMBLED FOR FLIGHT.



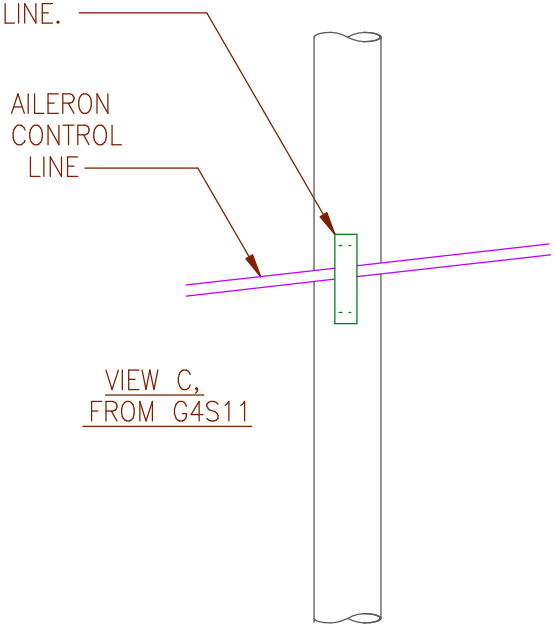
SAME AREA AS BELOW, SEEN FROM OUTBOARD



SAME AREA AS BELOW, SEEN FROM AHEAD



COMPRESSION STRUT LINE GUIDE, SPLIT RING MADE FROM P.V.C. TUBE, 3/4 ID X 1/4, ATTACH TO TOP OF STRUT WITH FLEXIBLE ADHESIVE OR EPOXY, TYPICAL FOR 2 PLACES ON EACH OF 3 COMPRESSION STRUTS ON EACH WING. PLACE GUIDE TO CENTER ON TENSIONED AILERON CONTROL LINE.

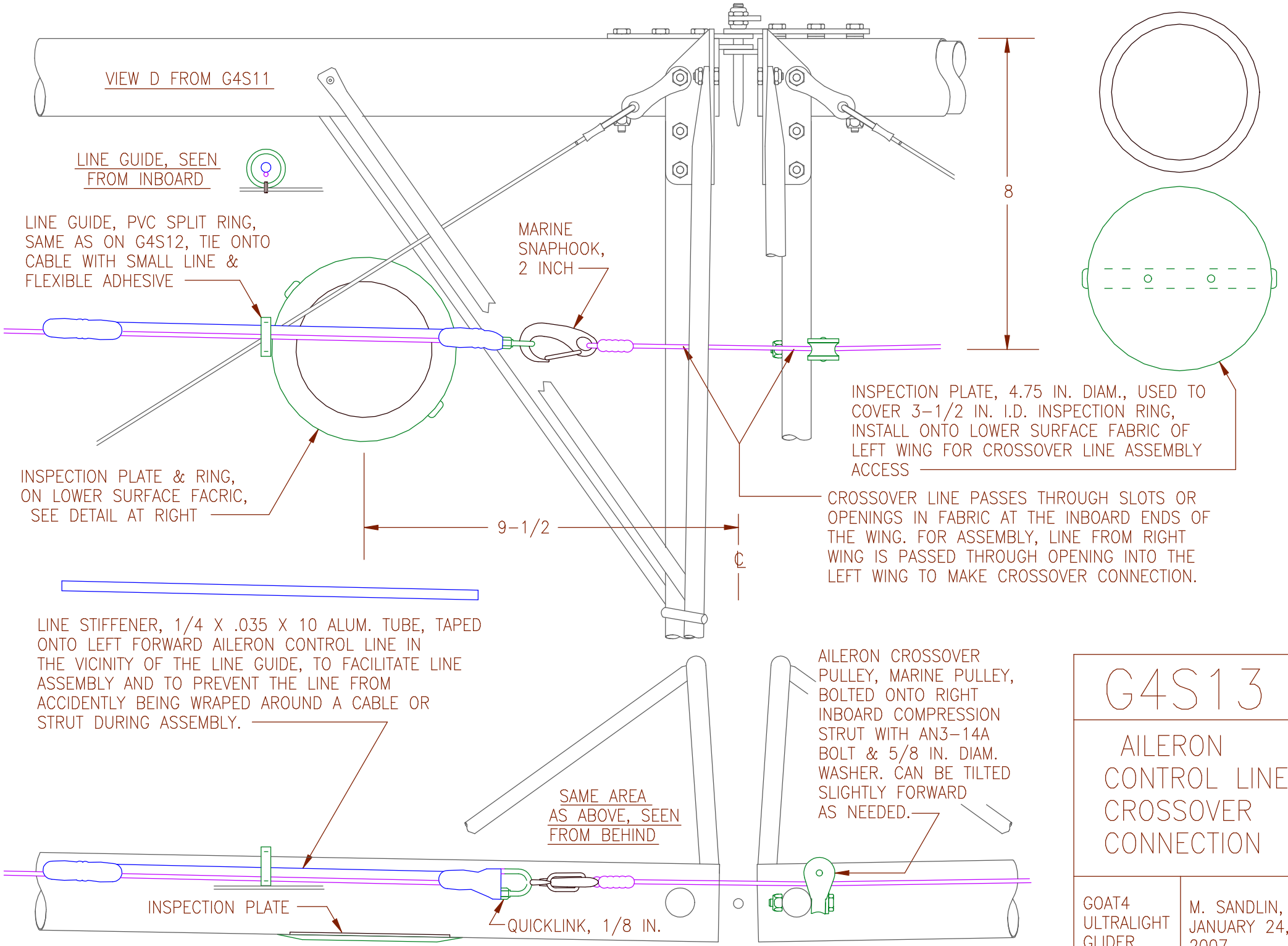


VIEW C, FROM G4S11

G4S12

AILERON CONTROL LINE ROUTING 2

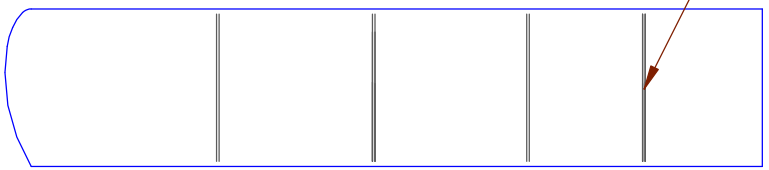
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 23, 2007



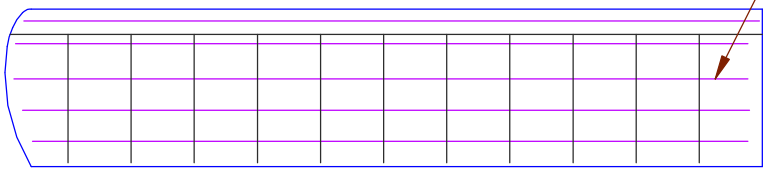
G4S13

AILERON CONTROL LINE CROSSOVER CONNECTION

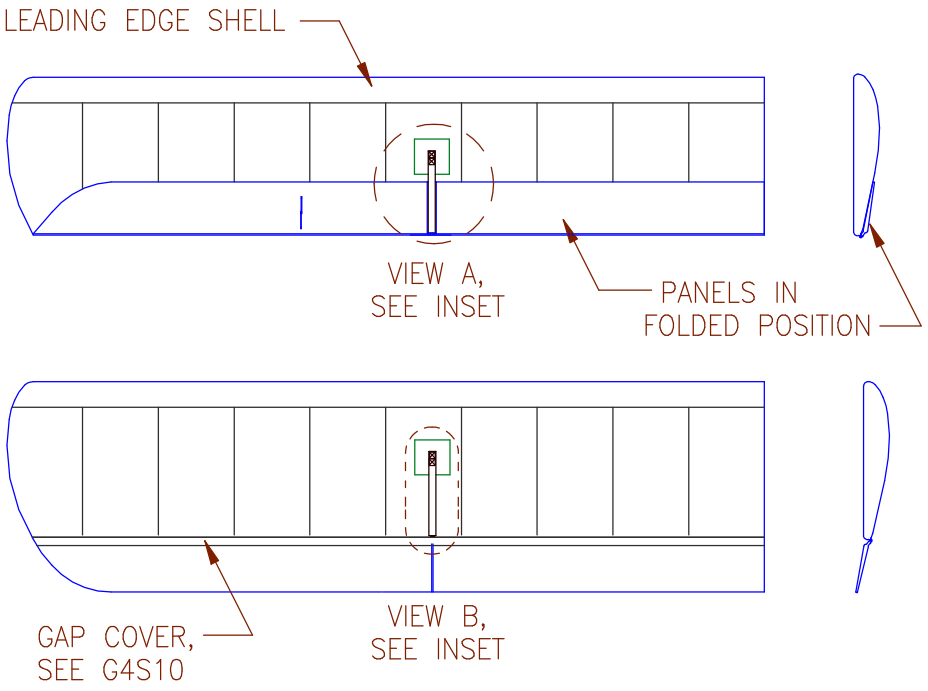
GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 24, 2007



COVER COMPRESSION STRUTS WITH SPIRAL WRAP OF FABRIC TAPE, THEN COVER BOTTOM SURFACE WITH ONE LONG PANEL OF FABRIC. USE HAND STICHING TO ATTACH FABRIC TO STRUT WRAPPING, 4 STRUTS PER WING. APPLY TAPE OVER STICHING. REENFORCE & SLOT FABRIC WHERE CABLES, LINES, OR CONTROL RODS PASS THROUGH. LARGE HOLES MAY BE LEFT IN THE INBOARD END PANELS (IF ANY) FOR INSPECTION, LINE STOWAGE, PASS–THROUGH, ETC.

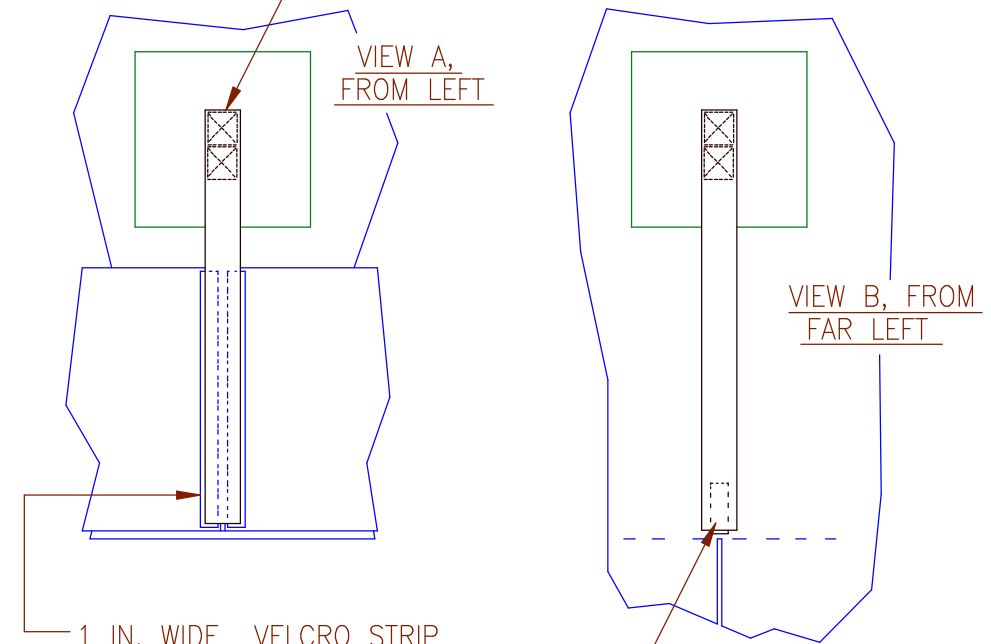


COVER TOP SURFACE WITH ONE LONG PANEL OF FABRIC. LEAVE 1 OR 2 INCHES OF CHORDWISE SLACK WHEN CEMENTING PANEL AT EDGES, RESULTING IN FULL SPAN WRINKLES AS SHOWN. THEN, HEAT SHRINK FABRIC TO REMOVE WRINKLES, RESULTING IN HIGH SPANWISE FABRIC TENSION WITH MINIMAL CHORDWISE TENSION, SO FINISHED CONTOUR CONFORMS TO RIB SHAPE WITH MINIMAL SAG BETWEEN RIBS.

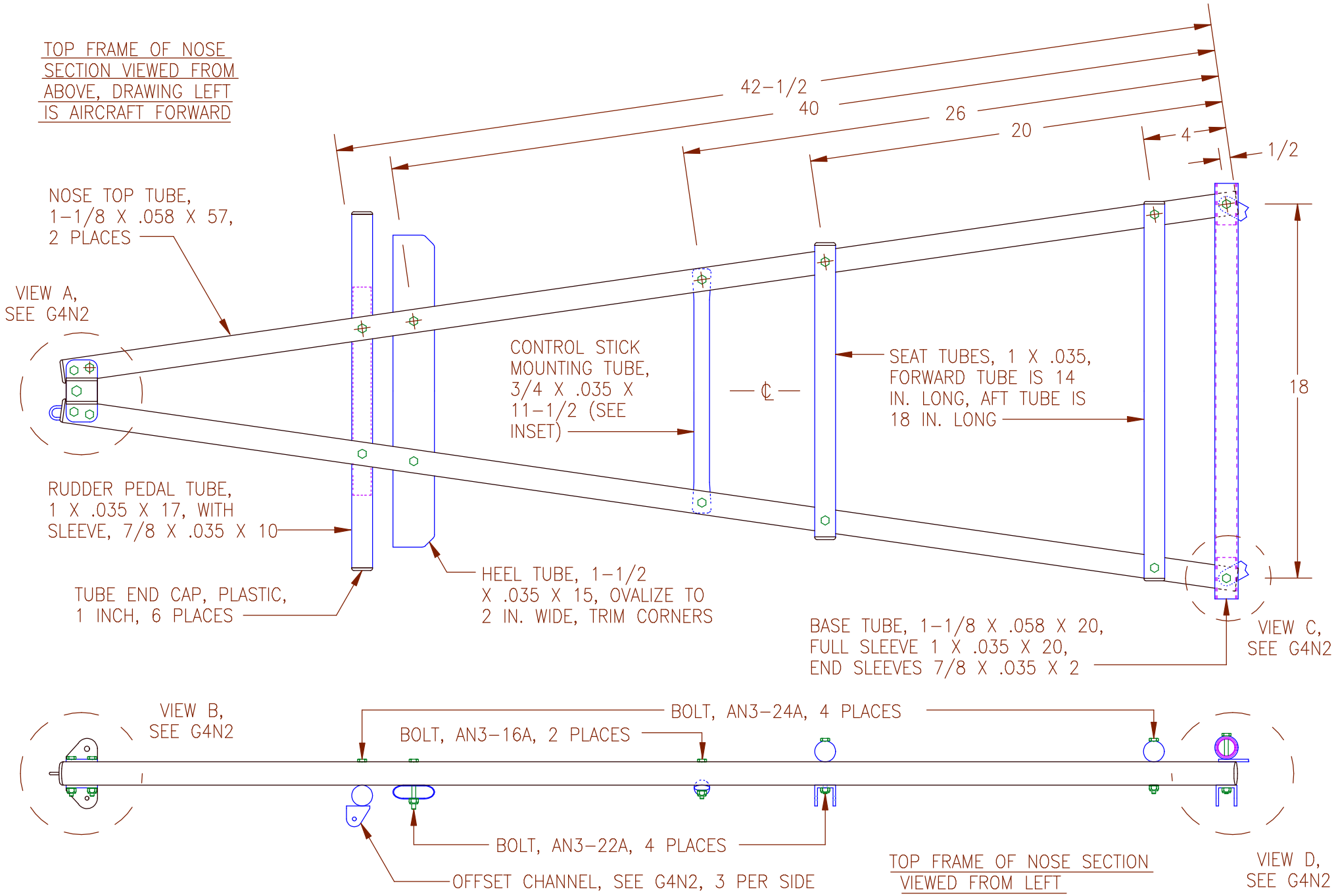


VIEWS FROM ABOVE AND SIDE OF FABRIC COVERED LEFT WING

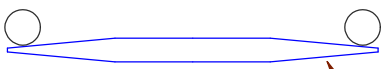
WING PANEL TRANSPORT LOCK, VELCRO STRIP, 2 X 23 IN., FORWARD END IS SEWN ONTO 10 X 10 IN. FABRIC PANEL, WHICH IS DOPED ONTO TOP WING SURFACE.



G4S14	WING FABRIC COVERING	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 24, 2007

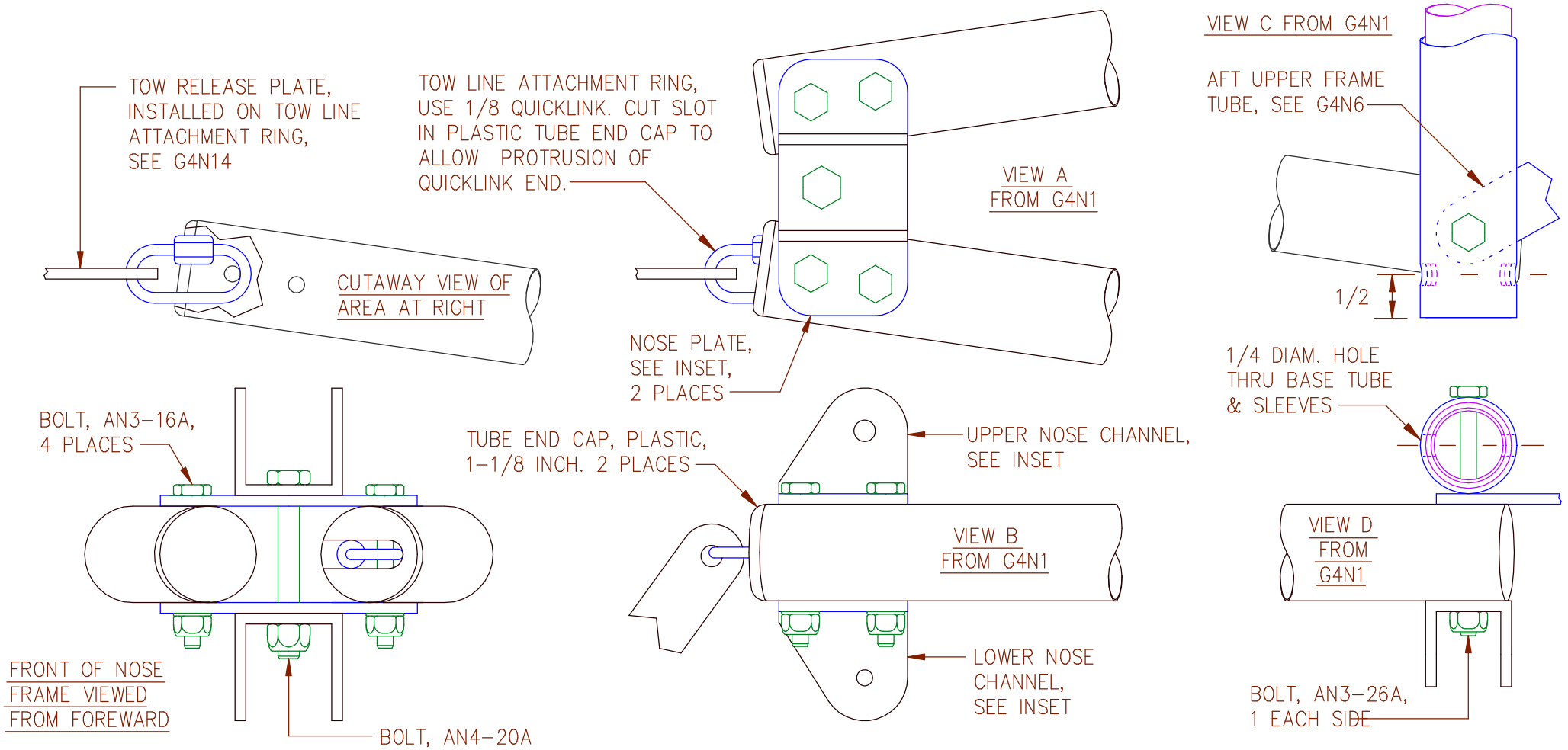


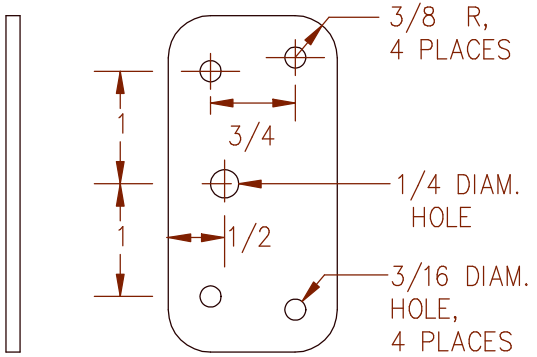
CONTROL STICK MOUNTING TUBE, ISOLATED VIEW FROM FORWARD



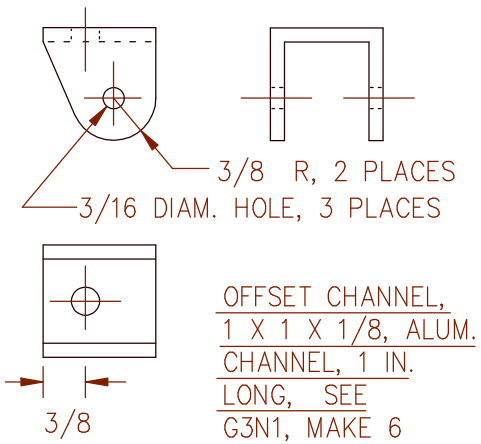
CONTROL STICK MOUNTING TUBE IS OVALIZED AT ENDS

G4N1	NOSE SECTION TOP FRAME	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 28, 2007

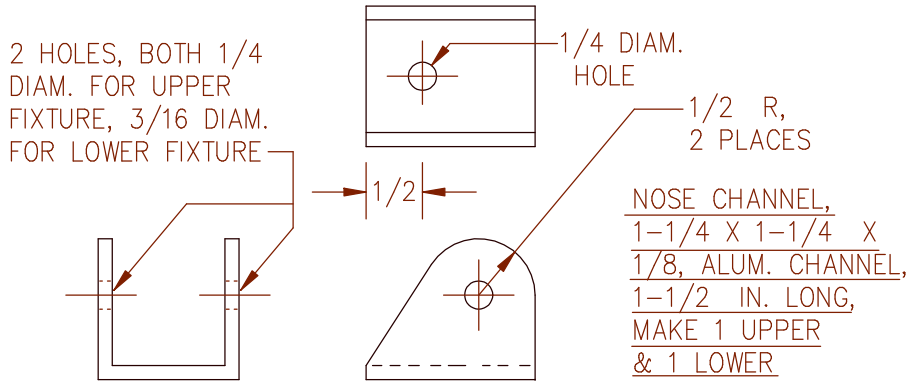




NOSE PLATE, 1-1/2 X 1/8 X 3, ALUM. BAR, MAKE 2

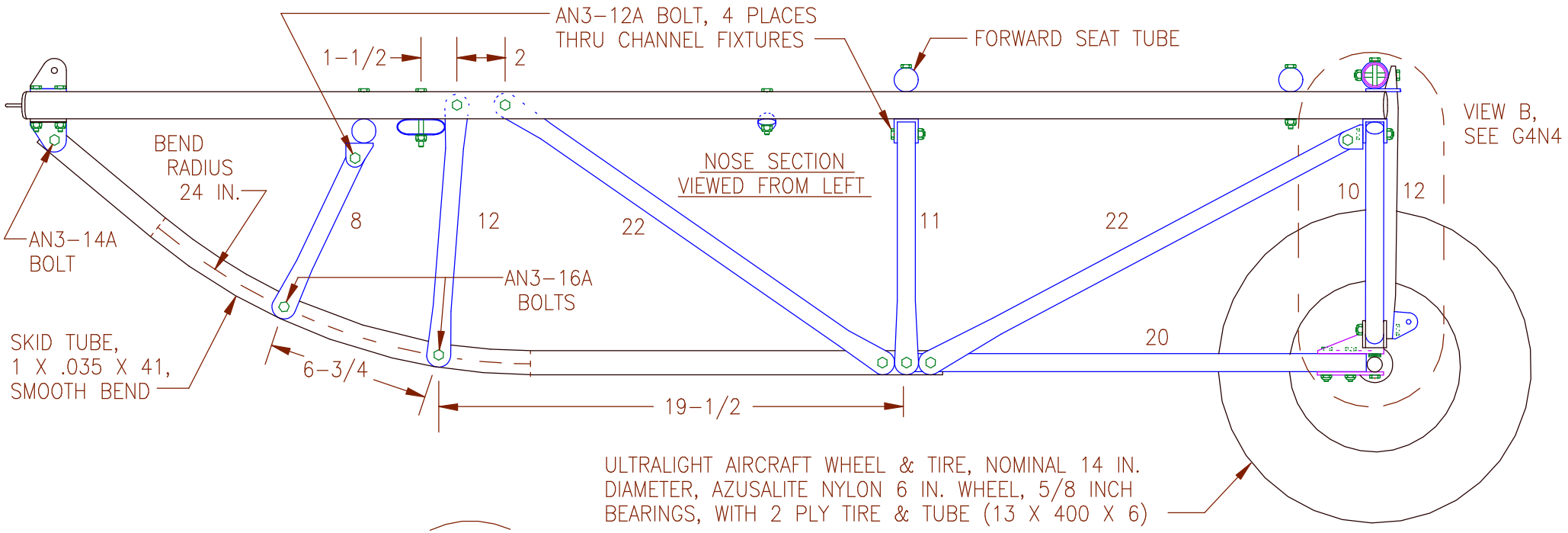


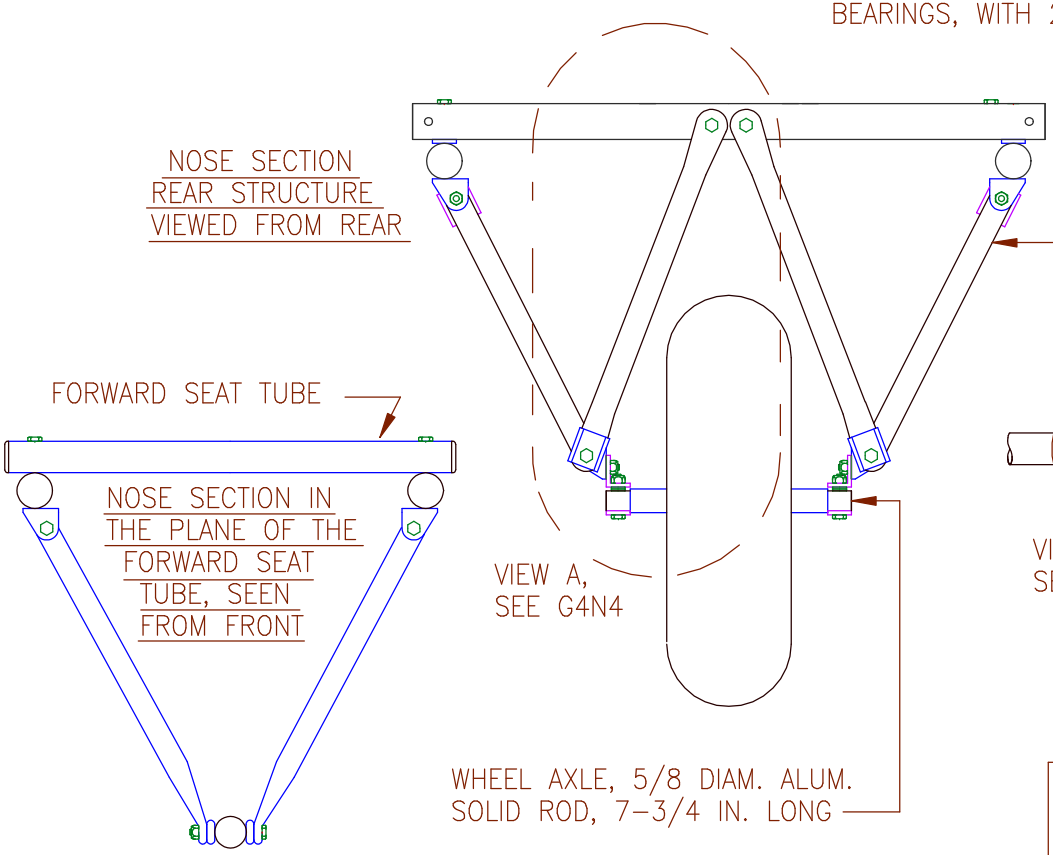
OFFSET CHANNEL, 1 X 1 X 1/8, ALUM. CHANNEL, 1 IN. LONG, SEE G3N1, MAKE 6

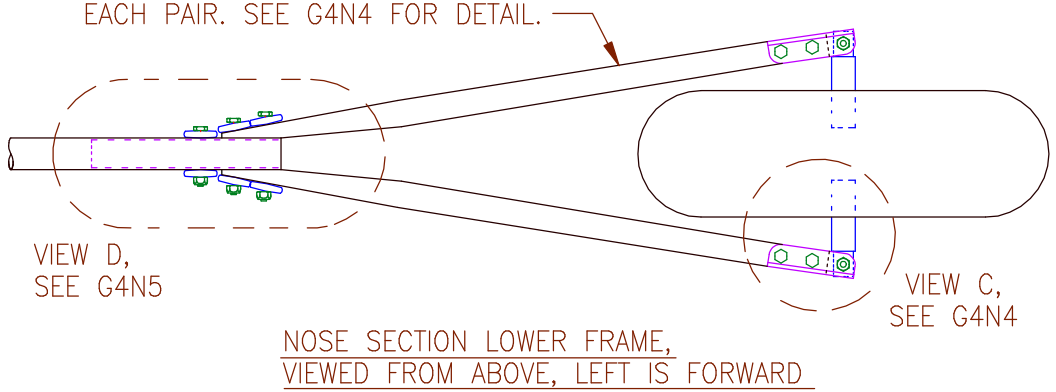


NOSE CHANNEL, 1-1/4 X 1-1/4 X 1/8, ALUM. CHANNEL, 1-1/2 IN. LONG, MAKE 1 UPPER & 1 LOWER

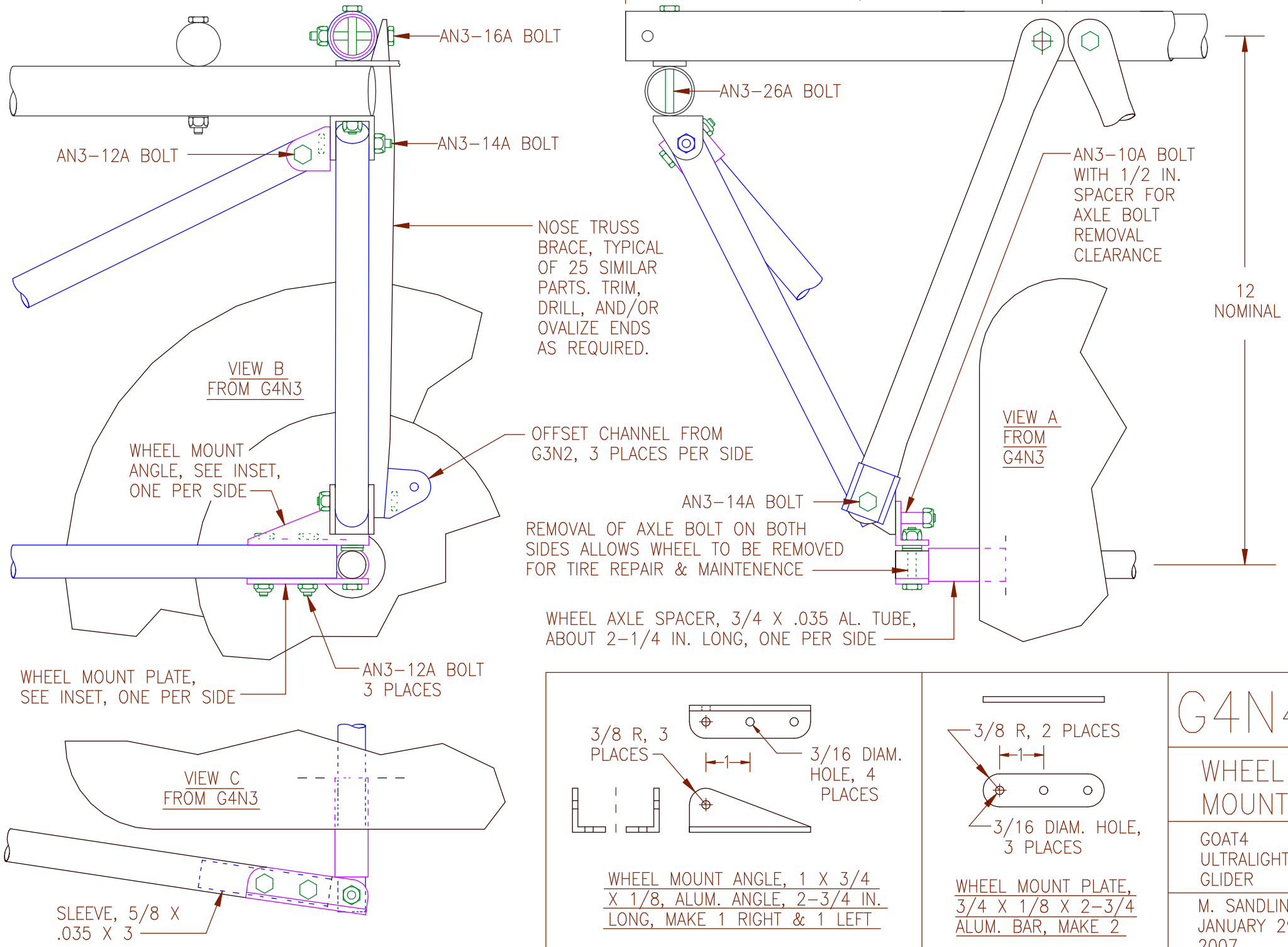
G4N2	NOSE SECTION DETAIL	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 28, 2007







G4N3	FORWARD NOSE STRUCTURE	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007

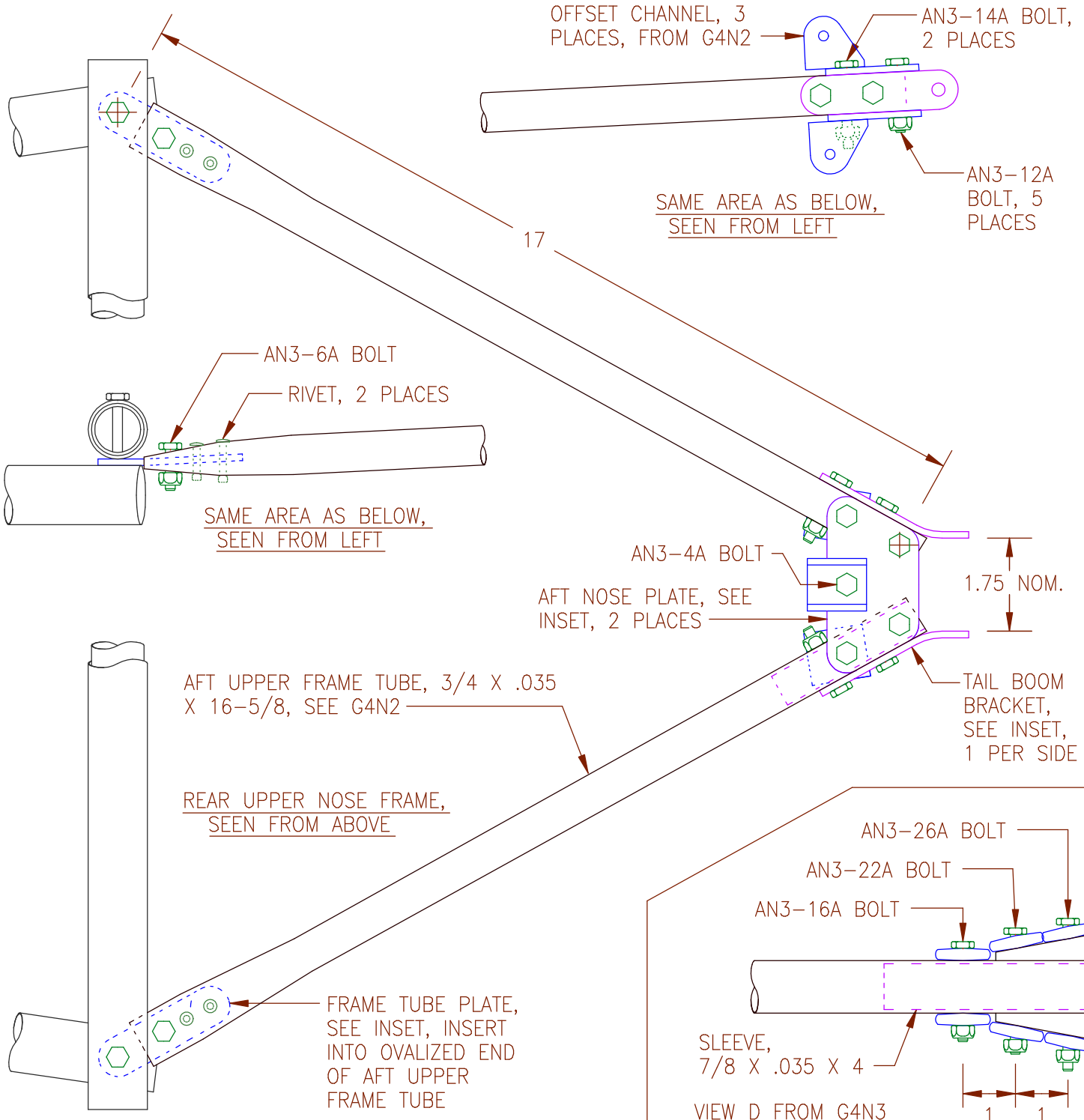


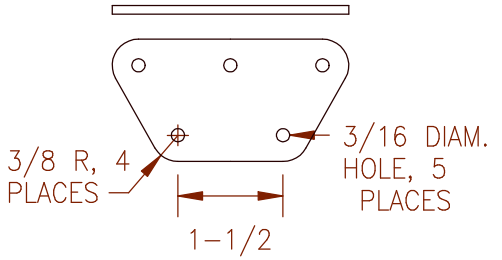
G4N4

WHEEL MOUNT

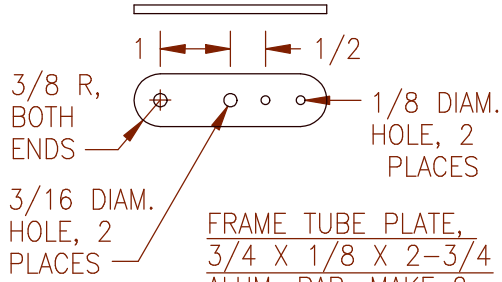
GOAT4 ULTRALIGHT GLIDER

M. SANDLIN, JANUARY 29, 2007

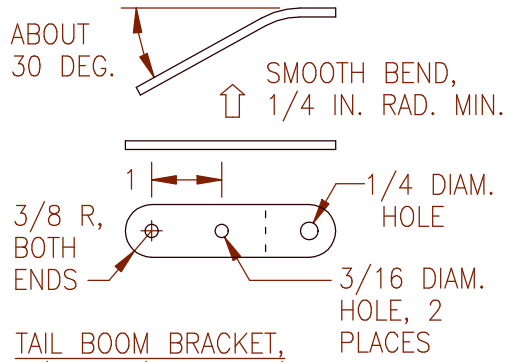




AFT NOSE PLATE, 1-3/4 X 1/8 ALUM. BAR, 3-3/8 IN. LONG, MAKE 2



FRAME TUBE PLATE, 3/4 X 1/8 X 2-3/4 ALUM. BAR, MAKE 2

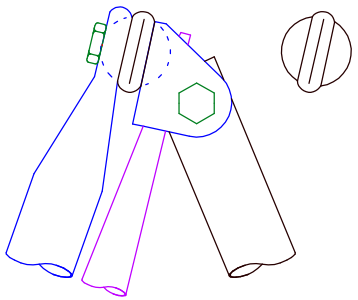


TAIL BOOM BRACKET, 3/4 X 1/8 X 3-1/4 ALUM. BAR, MAKE 2

G4N5

REAR NOSE UPPER FRAME

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, MARCH 5 , 2009



VIEW A FROM RIGHT

VIEW A,
SEE INSET

OFFSET CHANNEL
FROM G4N2,
1 PER SIDE

AN3-10A
BOLT, 2
PLACES

UPPER SEAT TRUSS,
3/4 X .035 X 11,
10 IN. HOLE TO HOLE,
OVALIZE ENDS

1

VIEW OF
SAME AREA
AS AT LEFT,
SEEN FROM
REAR

SHEAR BRACE,
1/2 X .028 X 18,
OVALIZE ENDS
& FASTEN
WITH RIVETS

FORWARD SEAT TRUSS,
3/4 X .035 X 23,
22 IN. HOLE TO HOLE,
OVALIZE ENDS

REAR SEAT TRUSS,
3/4 X .035 X 22,
21 IN. HOLE TO
HOLE, OVALIZE END

AN3-14A
BOLT, 2
PLACES

AN3-16A
BOLT

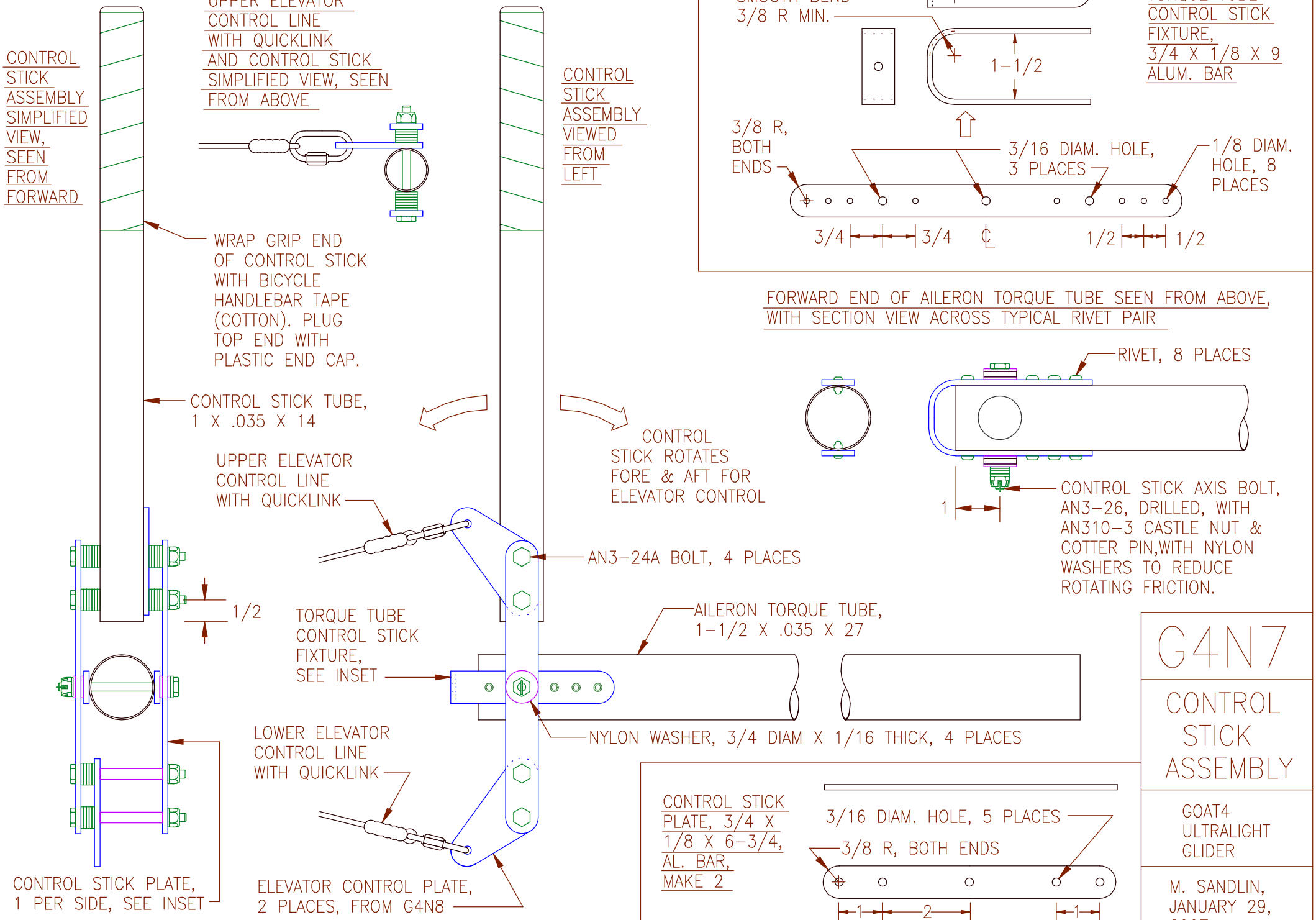
REAR NOSE SECTION
SEEN FROM LEFT

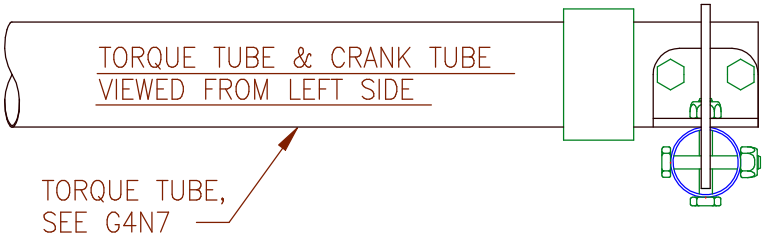
1

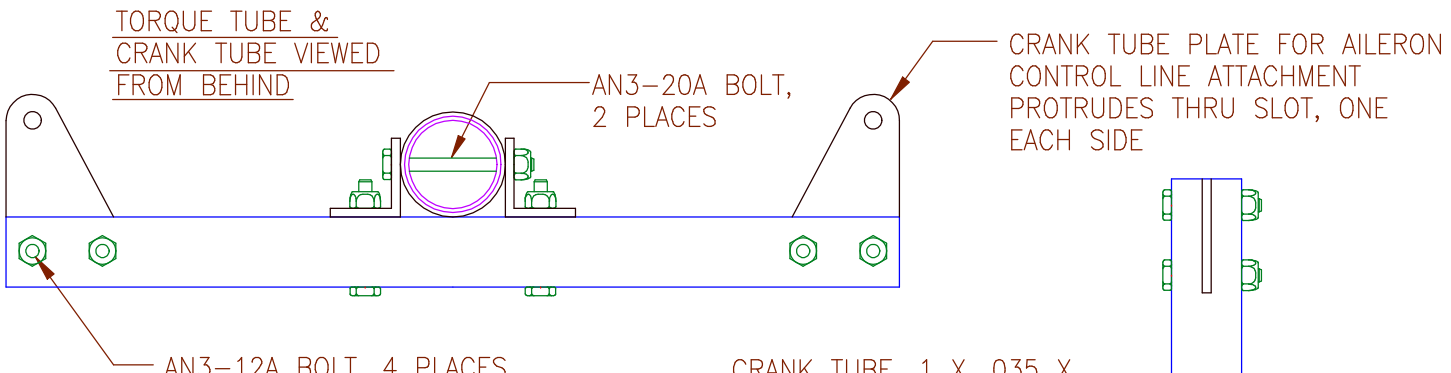
AN3-12A
BOLT,
6 PLACES

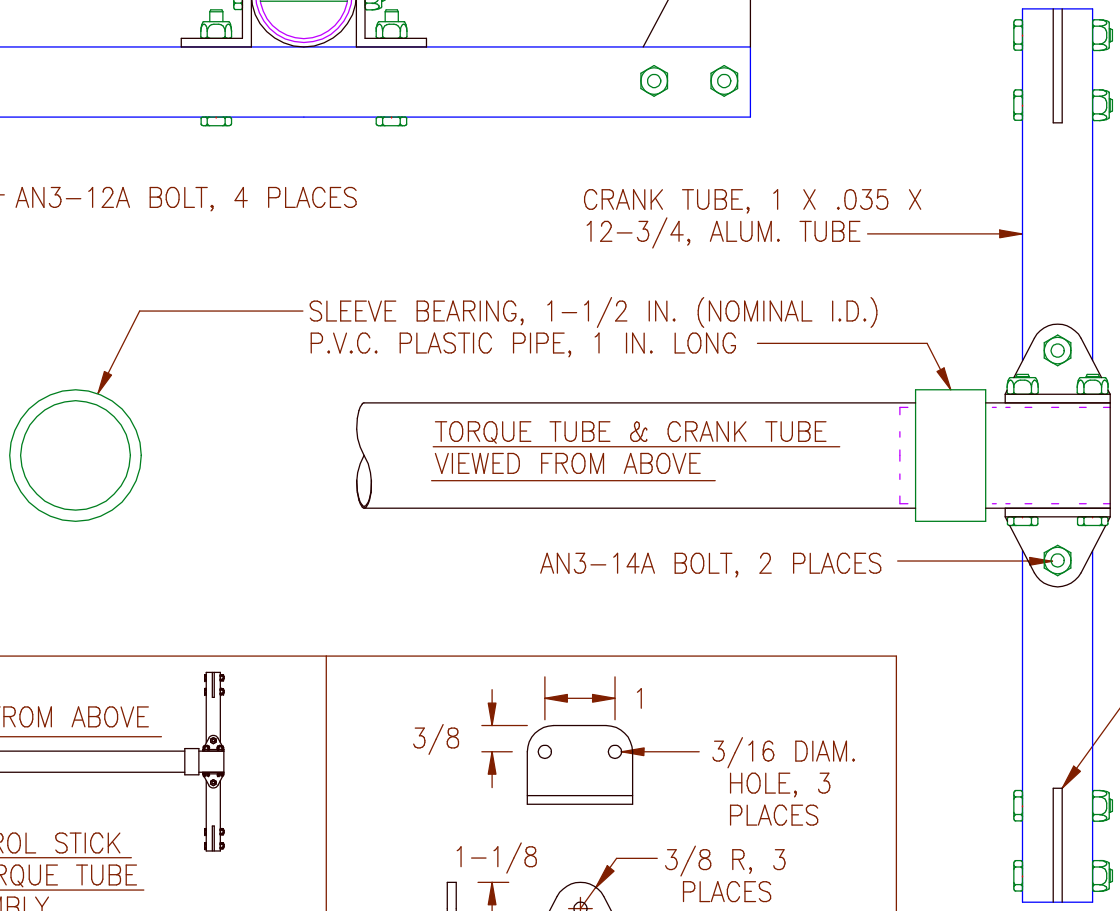
LOWER AFT TRUSS,
3/4 X .035 X 17,
16 IN. HOLE TO HOLE

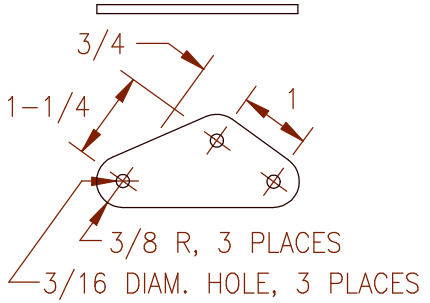
G4N6	SEAT BACK FRAME	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007


CONTROL STICK ASSEMBLY SIMPLIFIED VIEW, SEEN FROM FORWARD
UPPER ELEVATOR CONTROL LINE WITH QUICKLINK AND CONTROL STICK SIMPLIFIED VIEW, SEEN FROM ABOVE
CONTROL STICK ASSEMBLY VIEWED FROM LEFT
WRAP GRIP END OF CONTROL STICK WITH BICYCLE HANDLEBAR TAPE (COTTON). PLUG TOP END WITH PLASTIC END CAP.
CONTROL STICK TUBE, 1 X .035 X 14
CONTROL STICK ROTATES FORE & AFT FOR ELEVATOR CONTROL
UPPER ELEVATOR CONTROL LINE WITH QUICKLINK
AN3-24A BOLT, 4 PLACES
1/2
TORQUE TUBE CONTROL STICK FIXTURE, SEE INSET
AILERON TORQUE TUBE, 1-1/2 X .035 X 27
NYLON WASHER, 3/4 DIAM X 1/16 THICK, 4 PLACES
LOWER ELEVATOR CONTROL LINE WITH QUICKLINK
CONTROL STICK PLATE, 1 PER SIDE, SEE INSET
ELEVATOR CONTROL PLATE, 2 PLACES, FROM G4N8
SMOOTH BEND 3/8 R MIN.
1-1/2
TORQUE TUBE CONTROL STICK FIXTURE, 3/4 X 1/8 X 9 ALUM. BAR
3/8 R, BOTH ENDS
3/16 DIAM. HOLE, 3 PLACES
1/8 DIAM. HOLE, 8 PLACES
3/4
3/4
1/2
1/2
FORWARD END OF AILERON TORQUE TUBE SEEN FROM ABOVE, WITH SECTION VIEW ACROSS TYPICAL RIVET PAIR
RIVET, 8 PLACES
1
CONTROL STICK AXIS BOLT, AN3-26, DRILLED, WITH AN310-3 CASTLE NUT & COTTER PIN,WITH NYLON WASHERS TO REDUCE ROTATING FRICTION.
CONTROL STICK PLATE, 3/4 X 1/8 X 6-3/4, AL. BAR, MAKE 2
3/16 DIAM. HOLE, 5 PLACES
3/8 R, BOTH ENDS
1
2
1
G4N7
CONTROL STICK ASSEMBLY
GOAT4 ULTRALIGHT GLIDER
M. SANDLIN, JANUARY 29, 2007

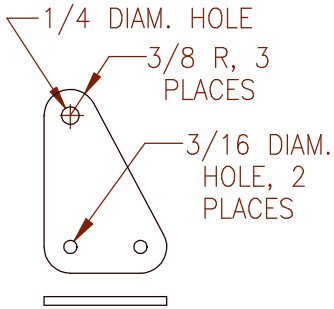




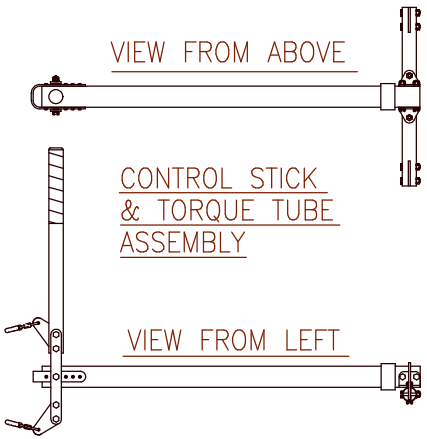


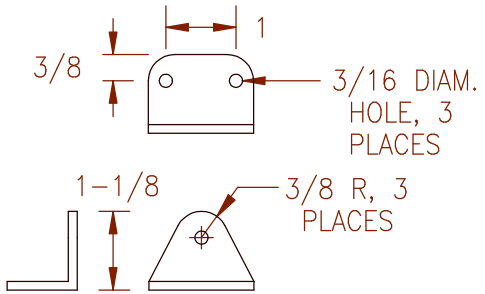


ELEVATOR CONTROL PLATE,
CUT FROM 1-1/2 X 1/8 ALUM.
BAR, 3 IN. LONG, MAKE 2



CRANK TUBE PLATE,
1-3/4 X 1/8 ALUM. BAR,
2-5/8 IN. LONG, MAKE 2





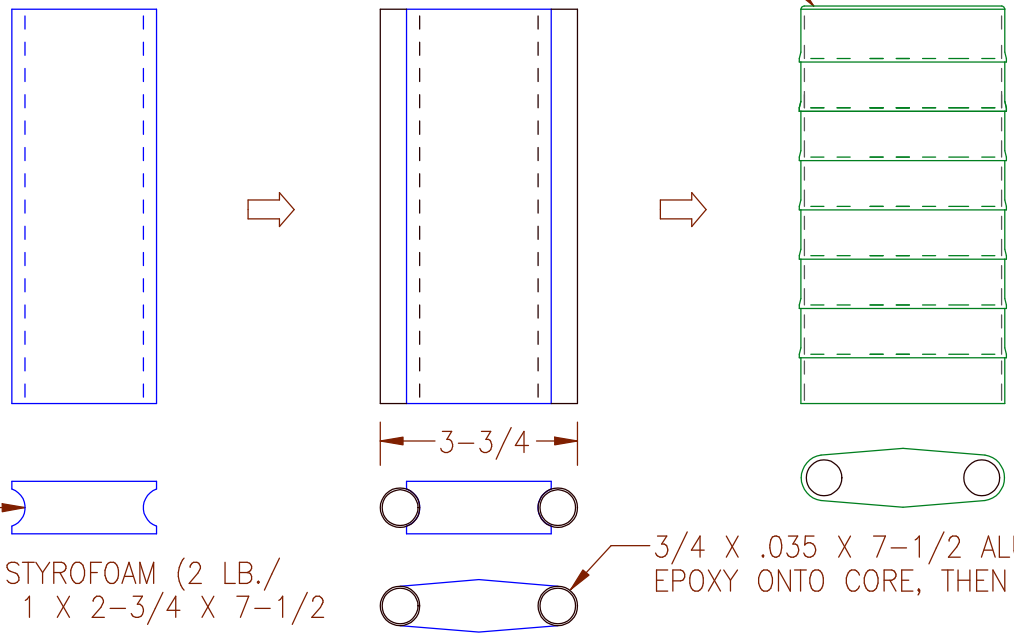
CRANK TUBE ANGLE,
1 X 1-1/8 X 1/8 ALUM.
ANGLE, 1-1/2 IN. LONG, MAKE 2

G4N8

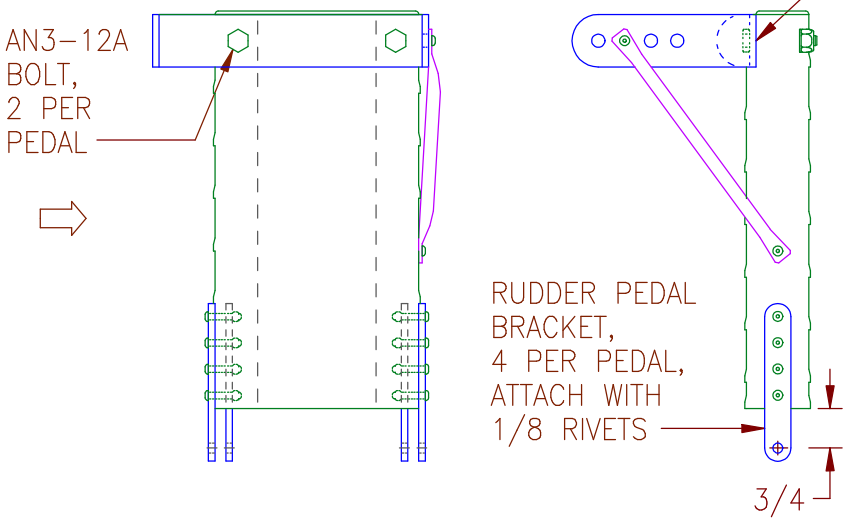
TORQUE TUBE ASSEMBLY

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007

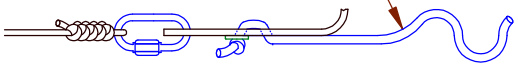
COVER PEDAL, EXCEPT BOTTOM TUBE ENDS, WITH WET LAYUP OF OVERLAPPING BANDS OF 1 IN. FIBERGLASS TAPE & EPOXY



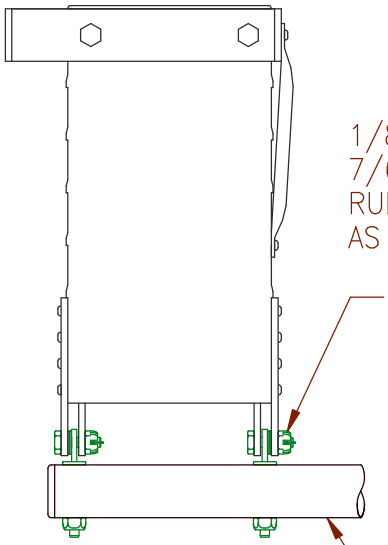
RUDDER PEDAL FOOT BAR, ATTACH TO MAKE1 RIGHT & 1 LEFT PEDAL, BRACE WITH 1/4 X .035 X 5-3/8 ALUM. TUBE, 1/8 IN. RIVETS

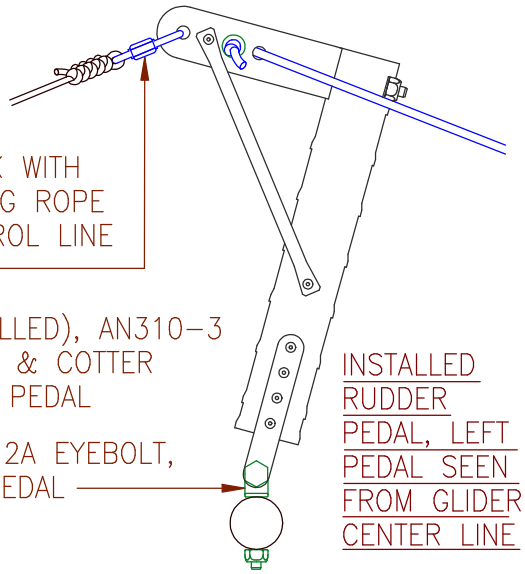


3/16 DIAM. BUNGEE CORD FOR PEDAL RETURN

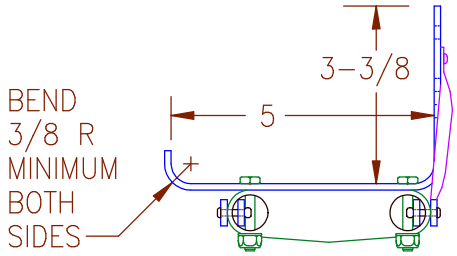


INSTALLED RUDDER PEDAL, LEFT PEDAL SEEN FROM FRONT

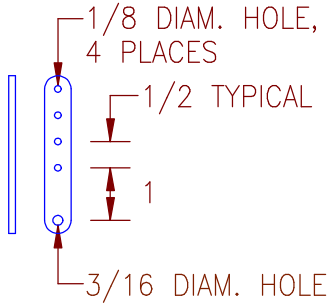




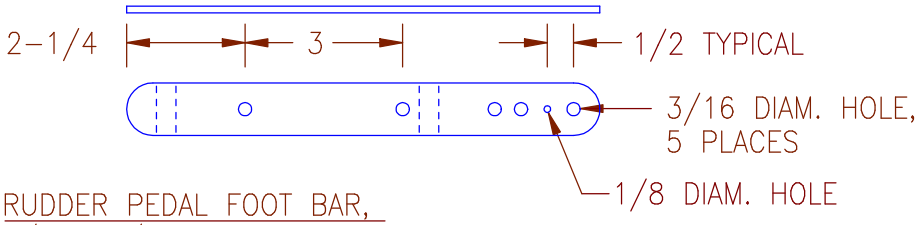
INSTALLED RUDDER PEDAL, LEFT PEDAL SEEN FROM GLIDER CENTER LINE



RUDDER PEDAL VIEWED FROM BELOW

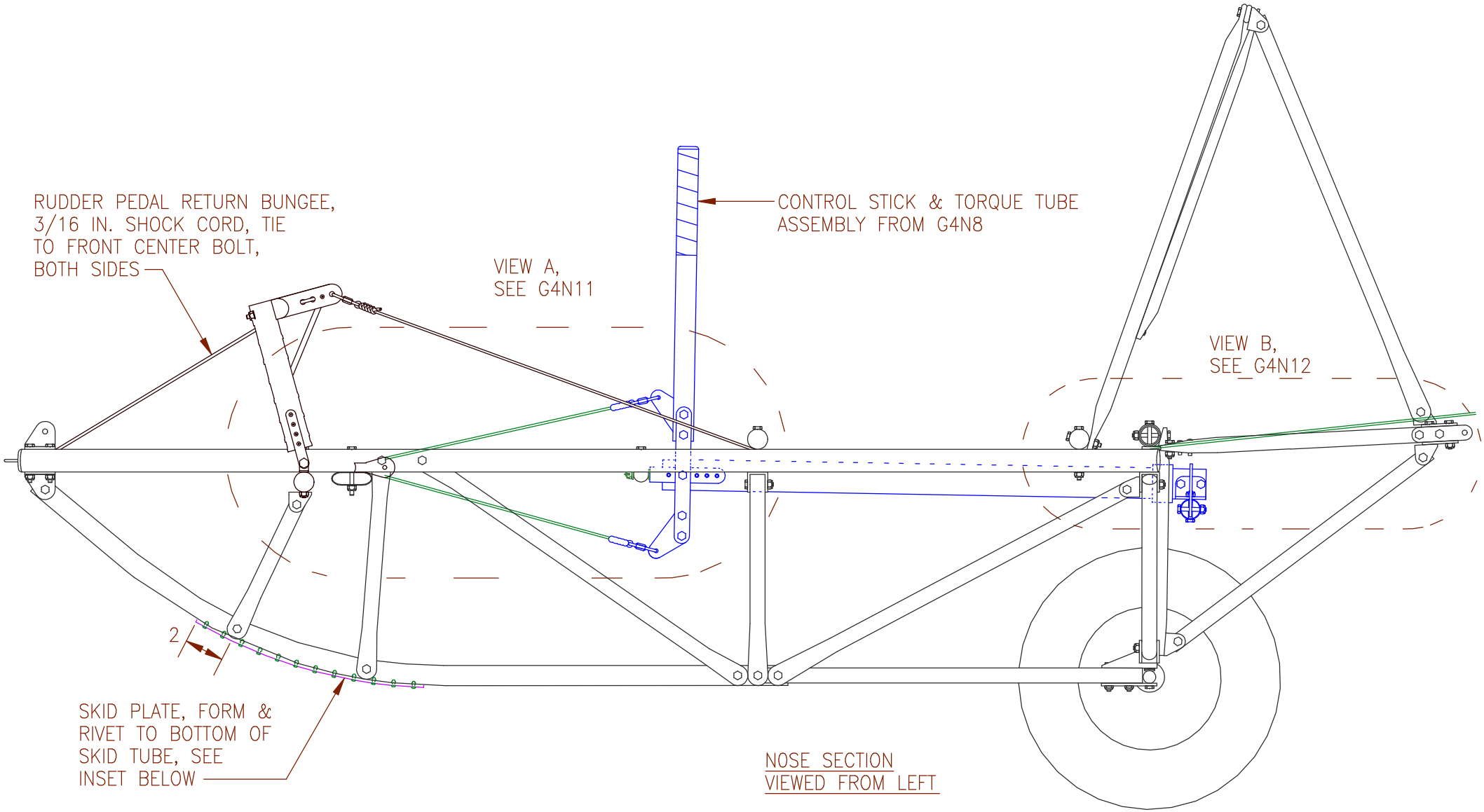


RUDDER PEDAL BRACKET, 1/2 X 1/8 X 3 ALUM. BAR, MAKE 8

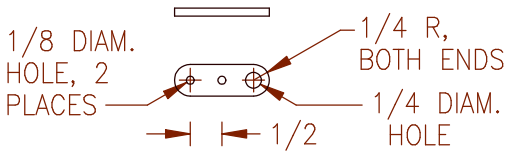


RUDDER PEDAL FOOT BAR, 3/4 X 1/8 X 9 ALUM. BAR, MAKE 2

G4N9	RUDDER PEDALS	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007



SKID PLATE, 3/4 X 1/8 ALUM. BAR, 12 IN. LONG

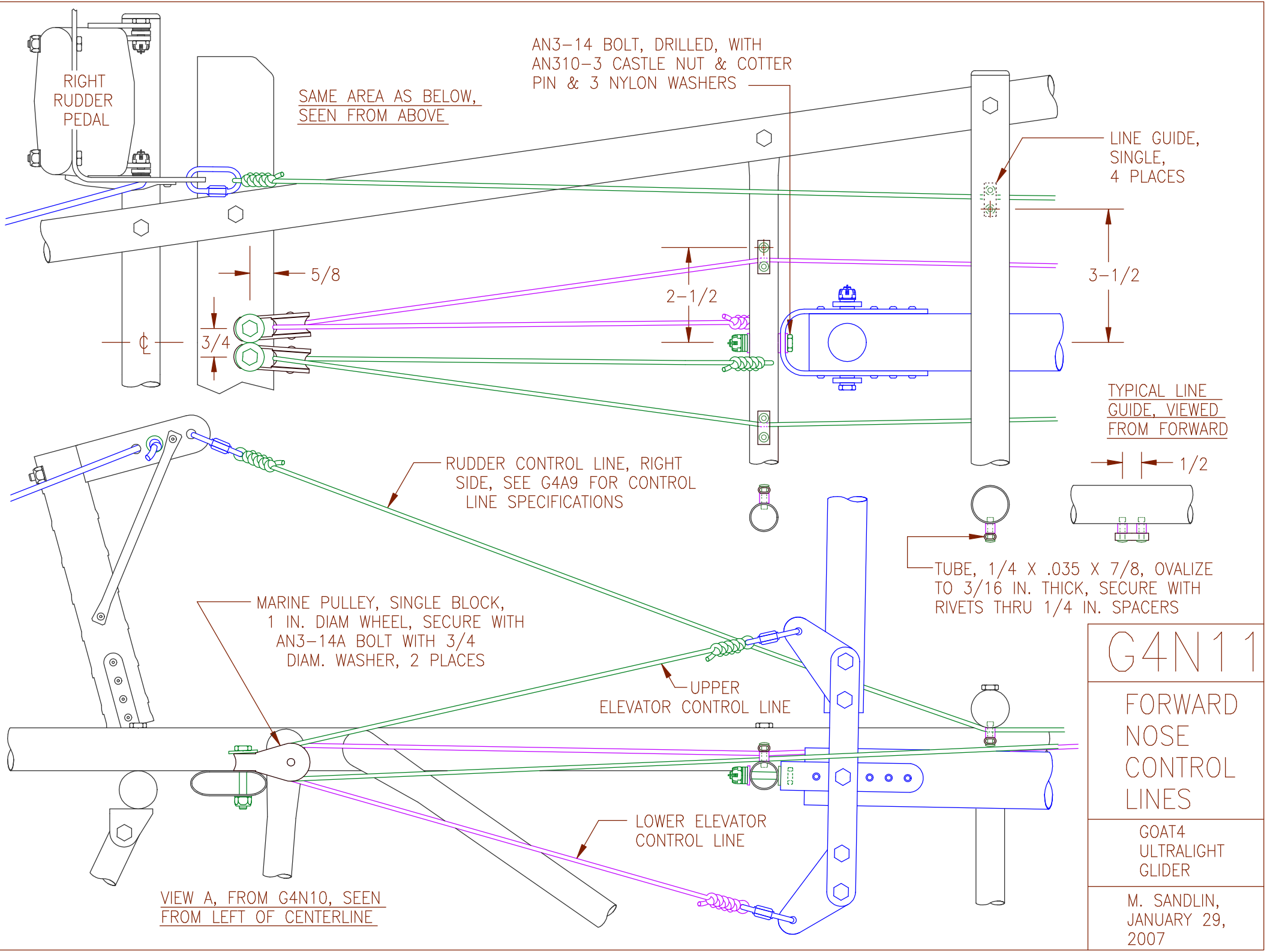


NOSE TUBE SPACER PLATE, 1/2 X 1/8 ALUM. BAR, 1-1/2 IN. LONG, MAKE 2, SEE G4N13

G4N10

STICK & RUDDER PEDAL INSTALLATION

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007

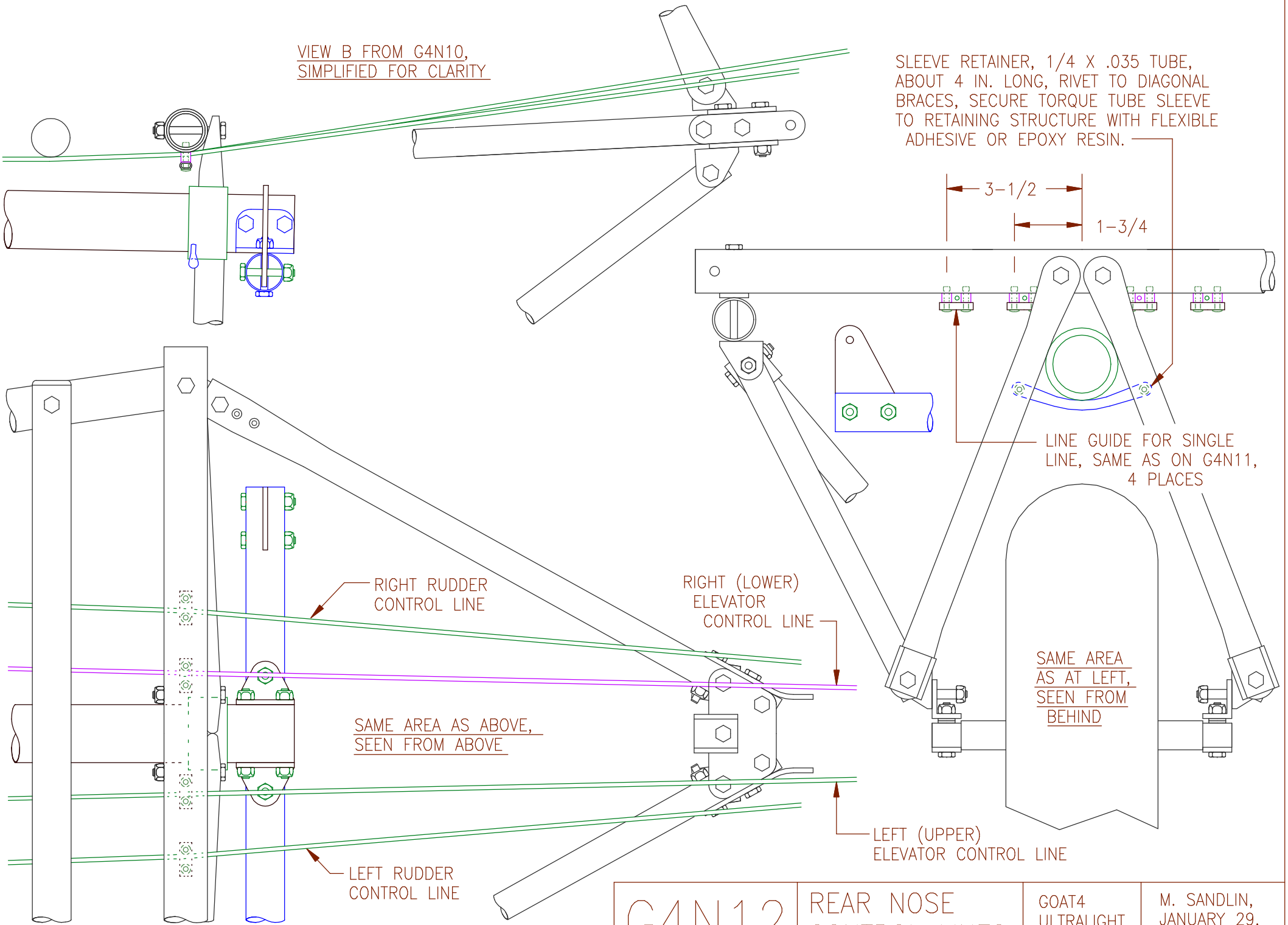


G4N11

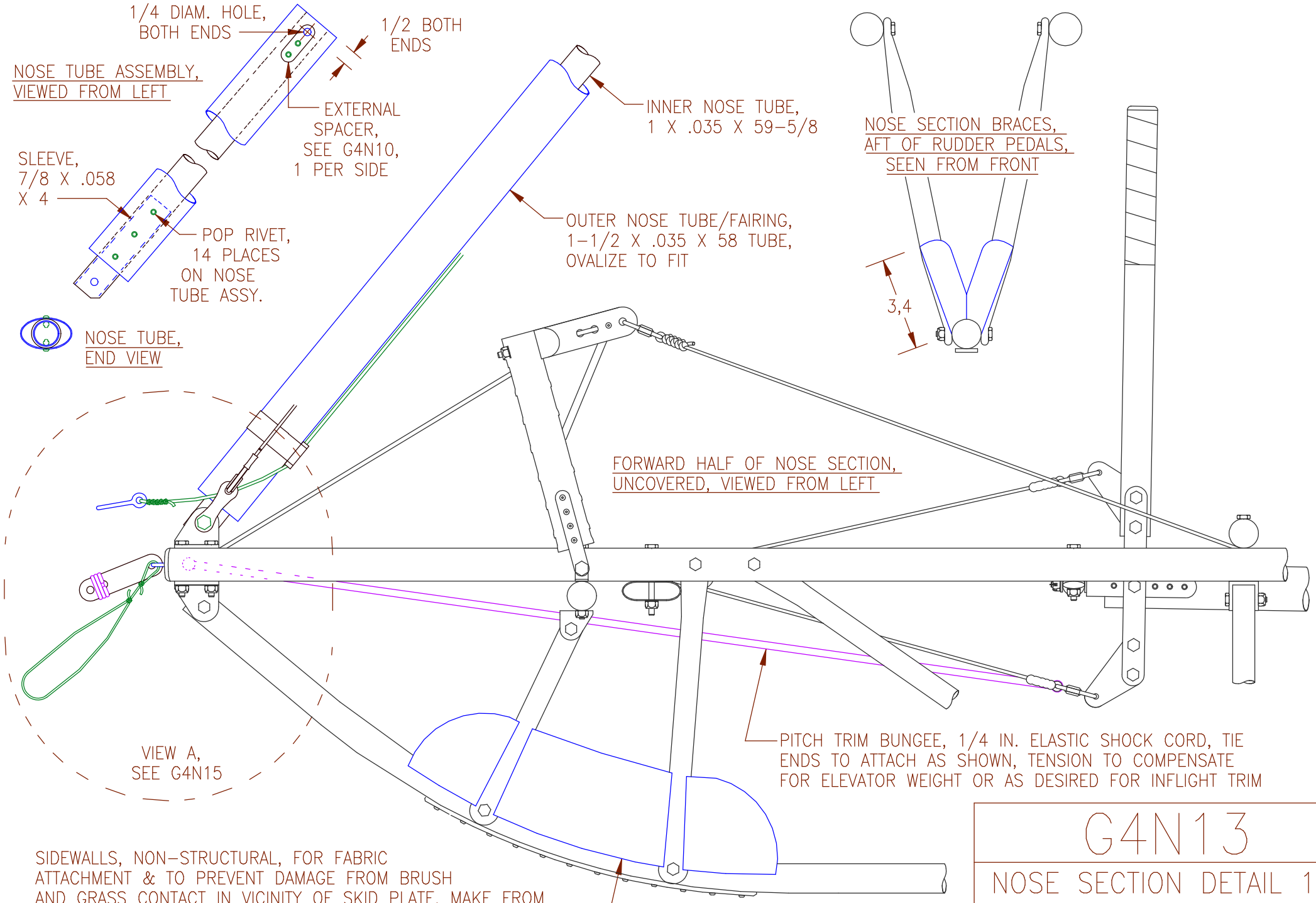
FORWARD NOSE CONTROL LINES

GOAT4 ULTRALIGHT GLIDER

M. SANDLIN, JANUARY 29, 2007



G4N12	REAR NOSE CONTROL LINES	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007

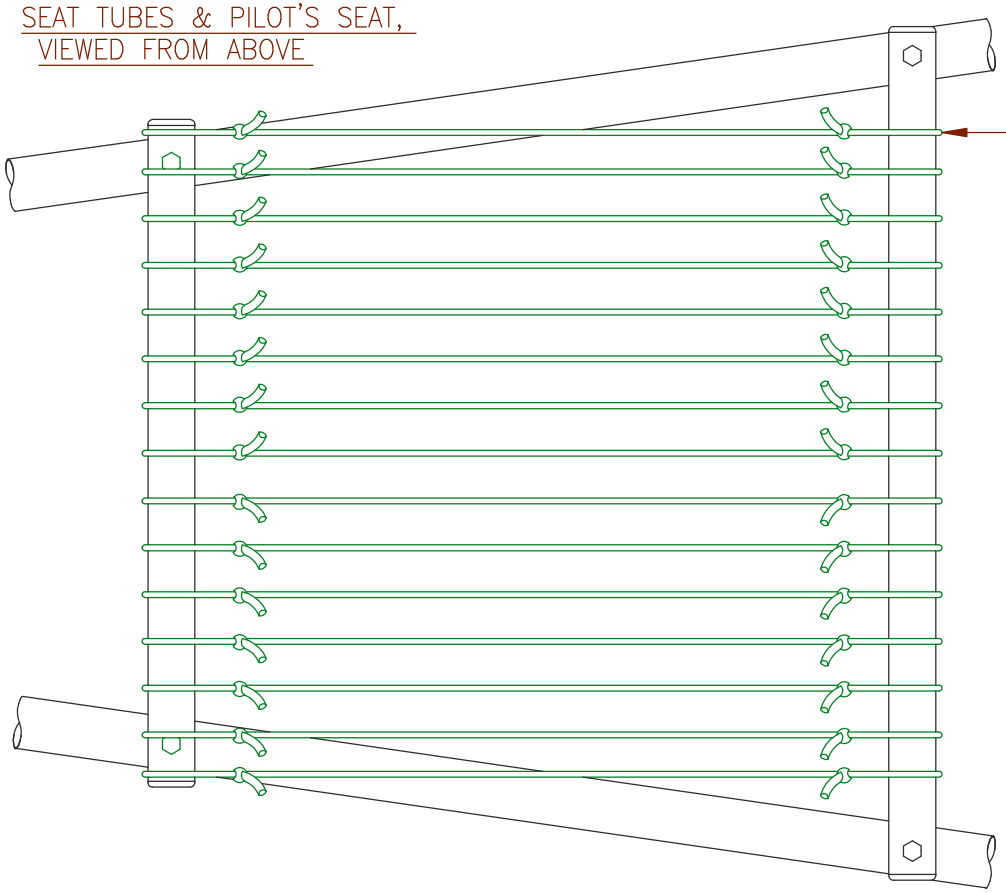


G4N13

NOSE SECTION DETAIL 1

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 29, 2007

SEAT TUBES & PILOT'S SEAT, VIEWED FROM ABOVE

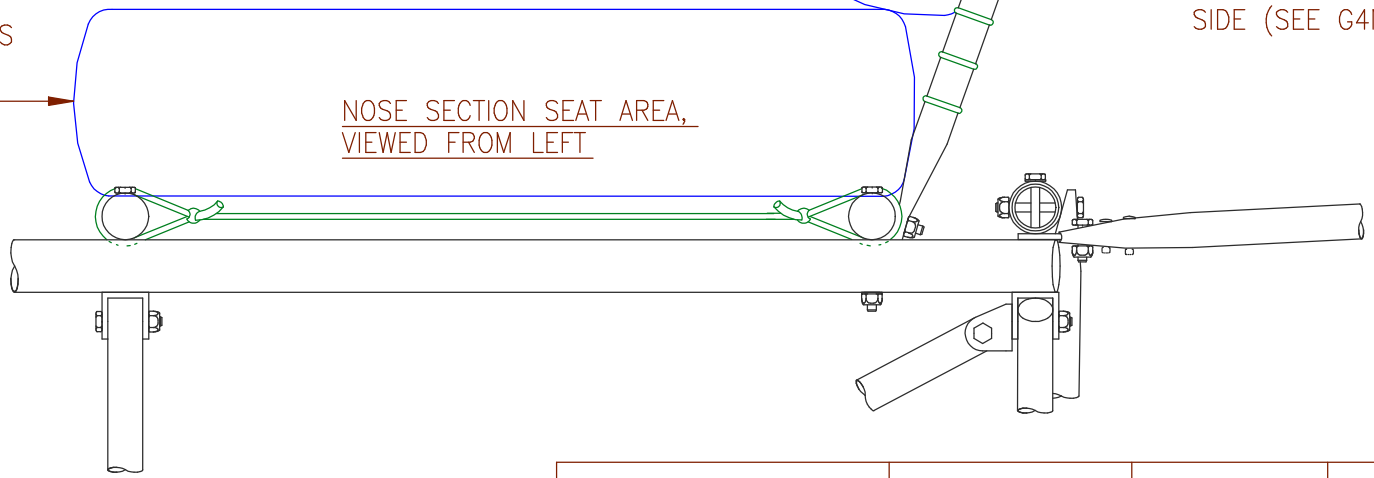


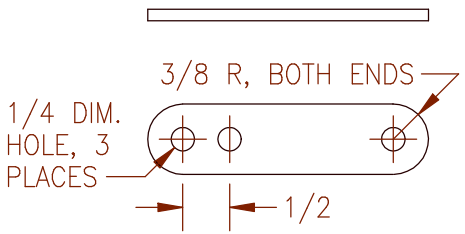
TIE PILOT SEAT NET FROM FRONT SEAT TUBE TO BACK SEAT TUBE USING LIGHT NYLON CORD (PARACORD/CAMPING LINE). SECURE LINES TO TUBE USING FLEXIBLE ADHESIVE (SHOEGOO).

MAKE SEAT BACK NET SIMILAR TO PILOT'S SEAT NET BUT WITH LINES RUNNING SIDE TO SIDE (SEE G4N16)

SEAT & BACK PADS ARE SOFT FOAM CUSHIONS, 3 OR 4 IN. THICK, ABOUT 17 IN. X 15 IN., PATIO FURNITURE PADS OR EQUIVALENT, ATTACH TO SEAT NET BY TACK STICHING

NOSE SECTION SEAT AREA, VIEWED FROM LEFT





TOW RELEASE PLATE, 3/4 X 1/8 ALUM. BAR, 3 IN. LONG, SEE G4N15

G4N14	SEATS & PADS	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007

SMALL ELASTIC LOOP (AS USED FOR PONY TAIL HAIR LOOPS, ABOUT 1/8 IN. DIAM.) IS PASSED THROUGH AND WRAPPED AROUND TOW PLATE TO PROVIDE A RETAINER FOR THE TOW PIN WHEN THE LINE IS SLACK.

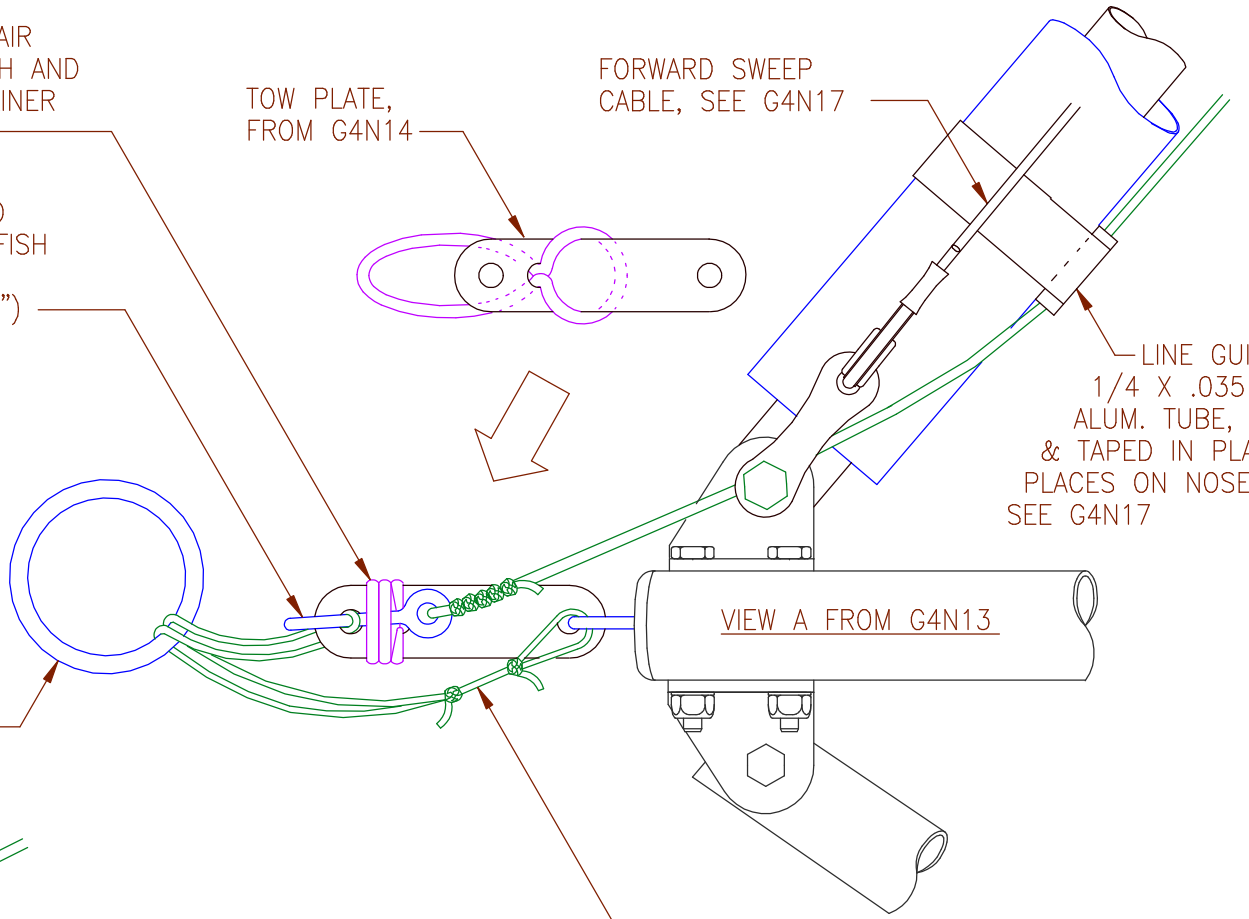
TOW PIN, PARACHUTE BAG PIN WITH STRAIGHTENED SHANK OR MAKE FROM THE SHANK OF A LARGE FISH HOOK WITH WELDED EYE, RIGGED WITH CONTROL LINE AS PER METHOD OF G4A9 ("LIGHTNING ROPE")

TOW RING. THIS REPRESENTS THE TOWLINE WITH A RING AT THE END & IS NOT PART OF THE GLIDER. THIS VIEW SHOWS THE TOW ASSEMBLY AS IT WOULD BE USED DURING GROUND TOW OR AEROTOW. THE TOW LOOP HAS BEEN PASSED THROUGH THE TOW RING AND BACK THROUGH THE TOW PLATE END HOLE WHERE IT IS SECURED BY INSERTION OF THE TOW PIN. WHEN THE TOW PIN IS PULLED FREE BY THE PILOT, THE TOW LOOP IS RELEASED AND THE AIRCRAFT CAN SEPARATE FROM THE TOW VEHICLE.

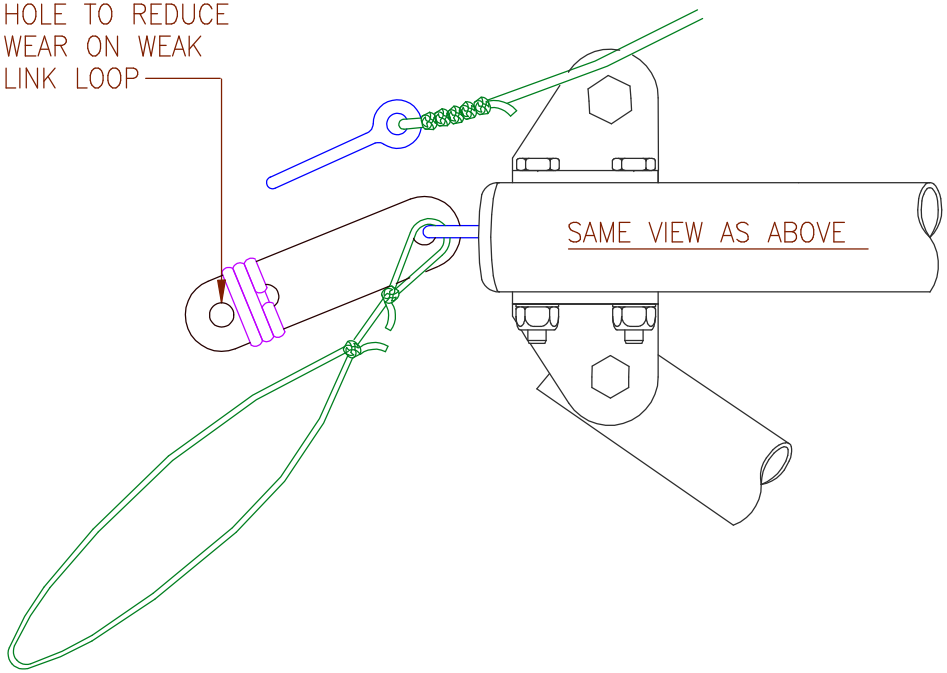
TOW PLATE, FROM G4N14

FORWARD SWEEP CABLE, SEE G4N17

LINE GUIDE, 1/4 X .035 X 1 ALUM. TUBE, GLUED & TAPED IN PLACE, 3 PLACES ON NOSE TUBE, SEE G4N17

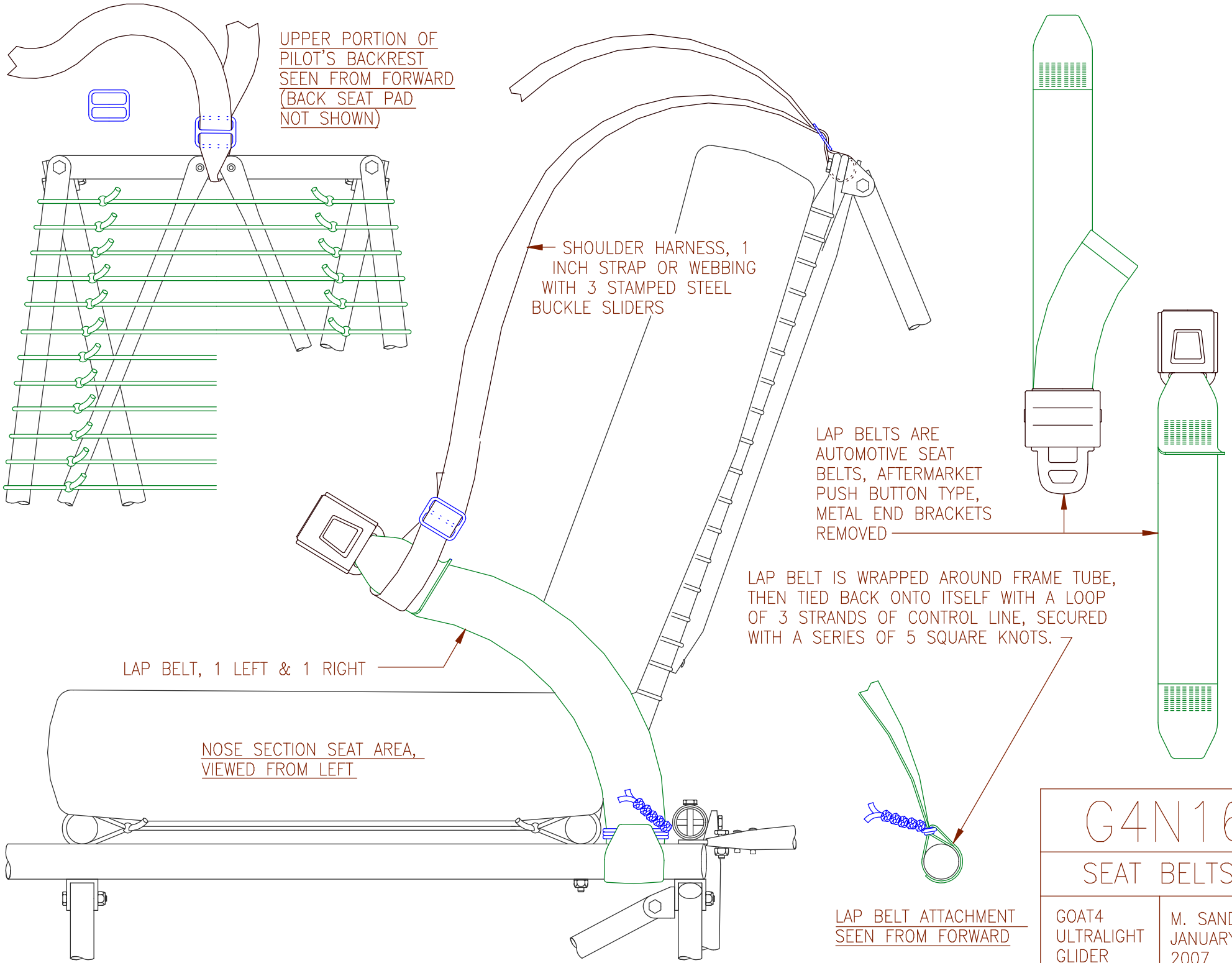


SMOOTH EDGES OF HOLE TO REDUCE WEAR ON WEAK LINK LOOP



TOW LOOP, MADE FROM LIGHT LINE. ON TOW, THE TOW LOOP SERVES AS A WEAK LINK & IS INTENDED TO BREAK WHEN THE TOWING FORCE REACHES 100% TO 120% OF GROSS AIRCRAFT WEIGHT. IN THIS CASE, A SINGLE STRANDED PORTION OF LINE HAS BEEN TIED INTO THE LOOP SO AS TO SUSTAIN HALF THE TOW FORCE BECAUSE THIS LINE HAS A BREAKING STRENGTH OF ABOUT HALF OF THE AIRCRAFT GROSS WEIGHT. USE OF A WEAK LINK IS INTENDED TO PROVIDE A MEANS OF EMERGENCY SEPARATION OF THE AIRCRAFT FROM THE TOW LINE IN CASE THE PRIMARY TOW RELEASE FAILS OR IF EXCESSIVE TOW FORCES ARE OTHERWISE ENCOUNTERED.

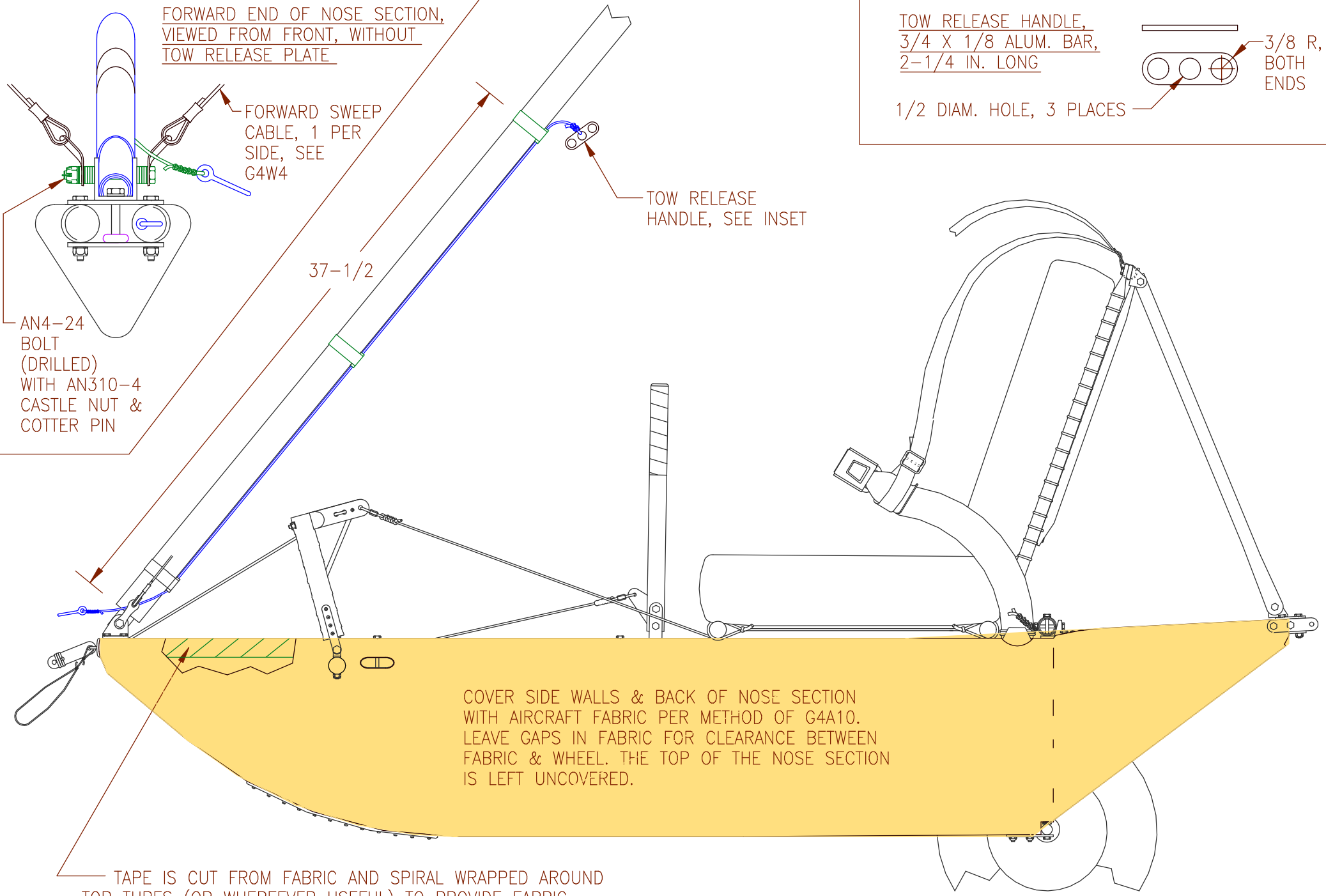
G4N15	TOW RELEASE	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007



G4N16

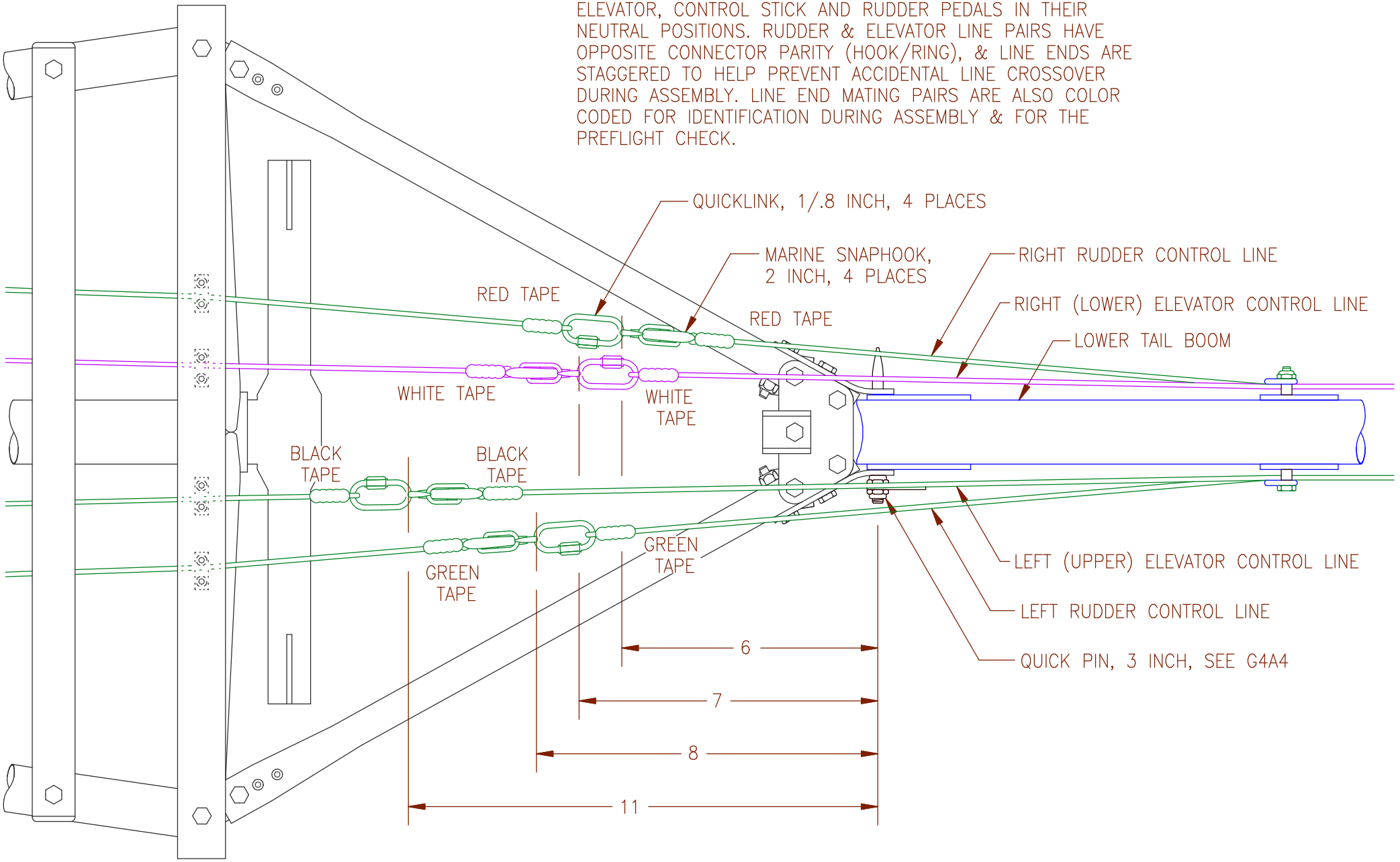
SEAT BELTS

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007



G4N17	NOSE SECTION DETAIL 2	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007

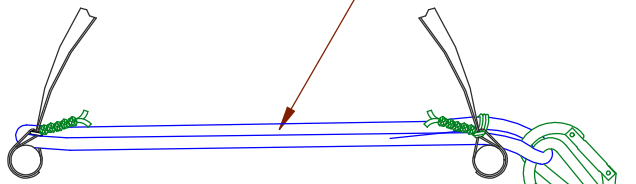
RIG CONTROL LINES TO DIMENSIONS SHOWN WITH RUDDER, ELEVATOR, CONTROL STICK AND RUDDER PEDALS IN THEIR NEUTRAL POSITIONS. RUDDER & ELEVATOR LINE PAIRS HAVE OPPOSITE CONNECTOR PARITY (HOOK/RING), & LINE ENDS ARE STAGGERED TO HELP PREVENT ACCIDENTAL LINE CROSSOVER DURING ASSEMBLY. LINE END MATING PAIRS ARE ALSO COLOR CODED FOR IDENTIFICATION DURING ASSEMBLY & FOR THE PREFLIGHT CHECK.



REAR SOSE SECTION ATTACHED TO LOWER TAIL BOOM, SEEN FROM ABOVE

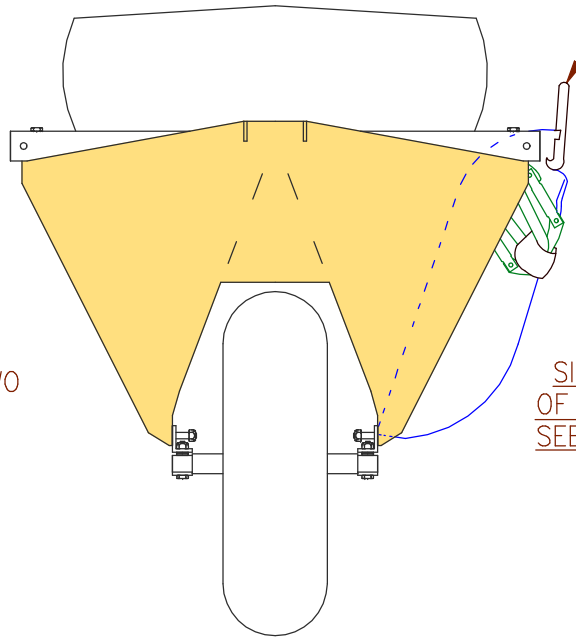
G4N18	RUDDER & ELEVATOR CONTROL LINES	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007

BELT/BRIDLE CONNECTION LOOP, SEWN WEBBING LOOP, ROCK CLIMBING TYPE, 20 INCHES LONG, ATTACHES BOTH LAP BELT LOOPS TO THE EMERGENCY PARACHUTE CARABINERS



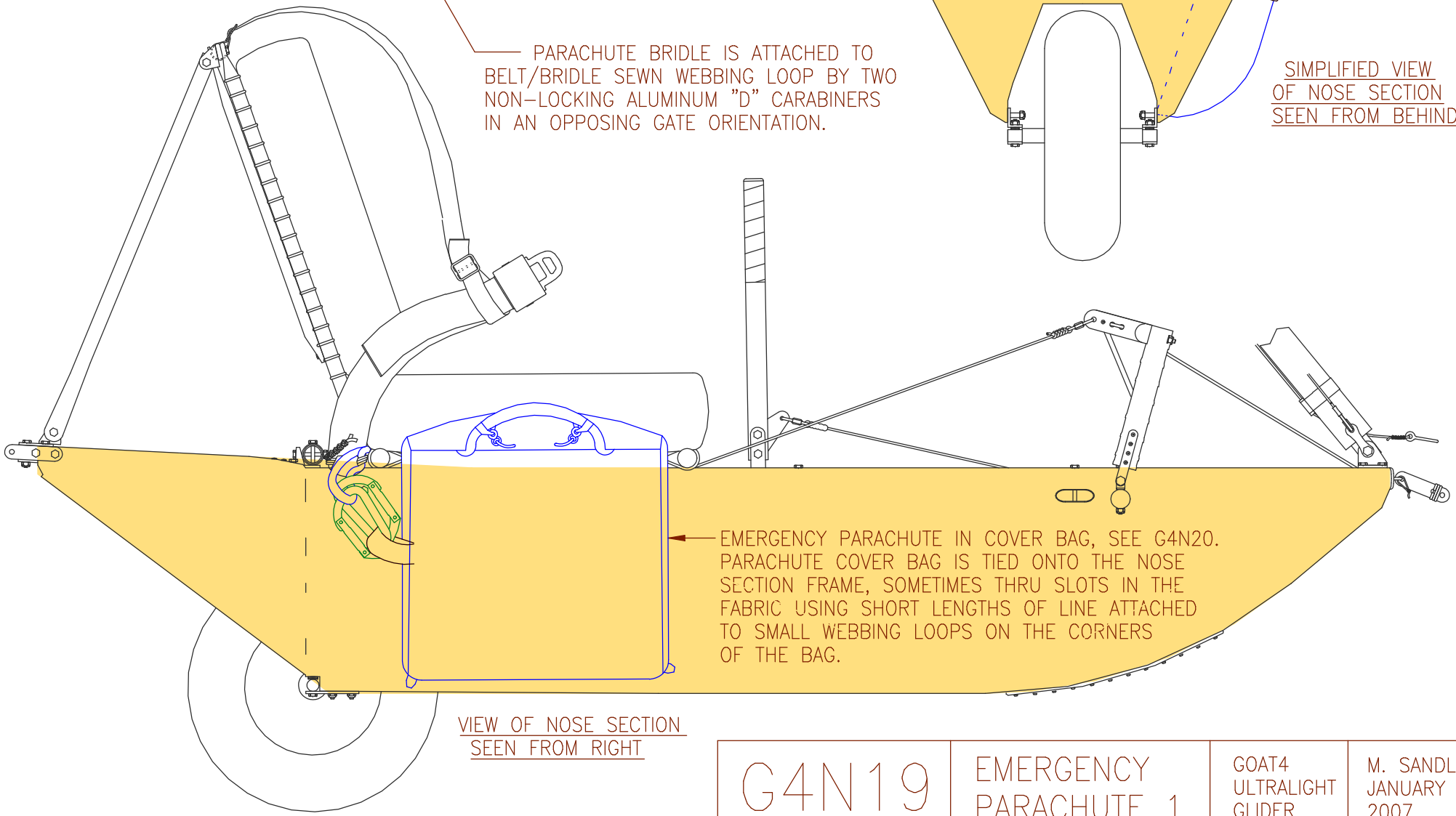
ISOLATED VIEW OF LAP BELTS & CONNECTING LOOP, SAME AREA AS AT RIGHT

EMERGENCY PARACHUTE RIPCORD, LOCKED ONTO TOP FLAP OF COVER BAG, IS LOCATED TO THE RIGHT OF THE SEAT PAD SO AS TO BE REACHABLE BY EITHER HAND



SIMPLIFIED VIEW OF NOSE SECTION SEEN FROM BEHIND

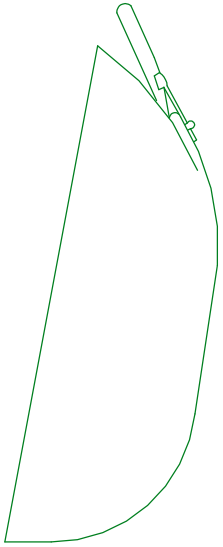
PARACHUTE BRIDLE IS ATTACHED TO BELT/BRIDLE SEWN WEBBING LOOP BY TWO NON-LOCKING ALUMINUM "D" CARABINERS IN AN OPPOSING GATE ORIENTATION.



EMERGENCY PARACHUTE IN COVER BAG, SEE G4N20. PARACHUTE COVER BAG IS TIED ONTO THE NOSE SECTION FRAME, SOMETIMES THRU SLOTS IN THE FABRIC USING SHORT LENGTHS OF LINE ATTACHED TO SMALL WEBBING LOOPS ON THE CORNERS OF THE BAG.

VIEW OF NOSE SECTION SEEN FROM RIGHT

G4N19	EMERGENCY PARACHUTE 1	GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007

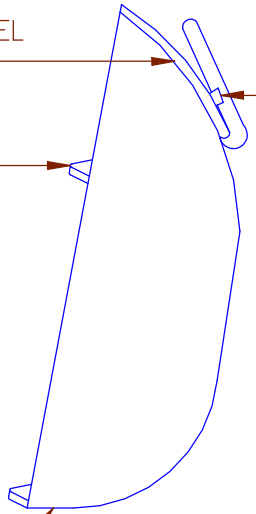


2 VIEWS OF HANG GLIDER EMERGENCY PARACHUTE SETUP, CHEST PACK WORN ON THE FRONT OF THE HARNESS, SEEN FROM THE RIGHT SIDE

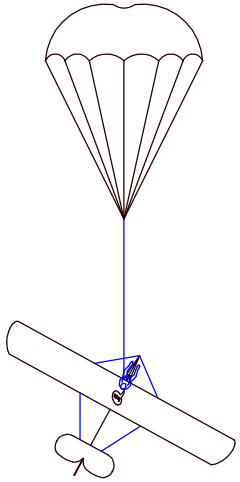
SIDE SEAMS OF THE COVER BAG TOP PANEL HAVE BEEN UNDONE TO ALLOW THE TOP PANEL TO OPEN UPWARD

ATTACH SMALL LOOPS TO COVER BAG FOR TIE–ON TO NOSE SECTION

BUG4 OR GOAT EMERGENCY PARACHUTE SYSTEM IS AN ORDINARY COMMERCIAL HANG GLIDER CHEST PACK HAND DEPLOYED SYSTEM (22 GORE, 20 FT. BRIDLE), WITH THE EXTERNAL COVER BAG MODIFIED TO ALLOW AN UPWARD REMOVAL OF THE CHUTE IN ITS DEPLOYMENT BAG (OR EQUIVALENT MODERN DEPLOYMENT STAGING DEVICE) . THE BUG4/GOAT MODIFICATIONS ARE: UNDOING THE SIDE SEAMS OF THE TOP PANEL & CLOSING/LOCKING THE COVER WITH THE TOP PANEL ON THE OUTSIDE.

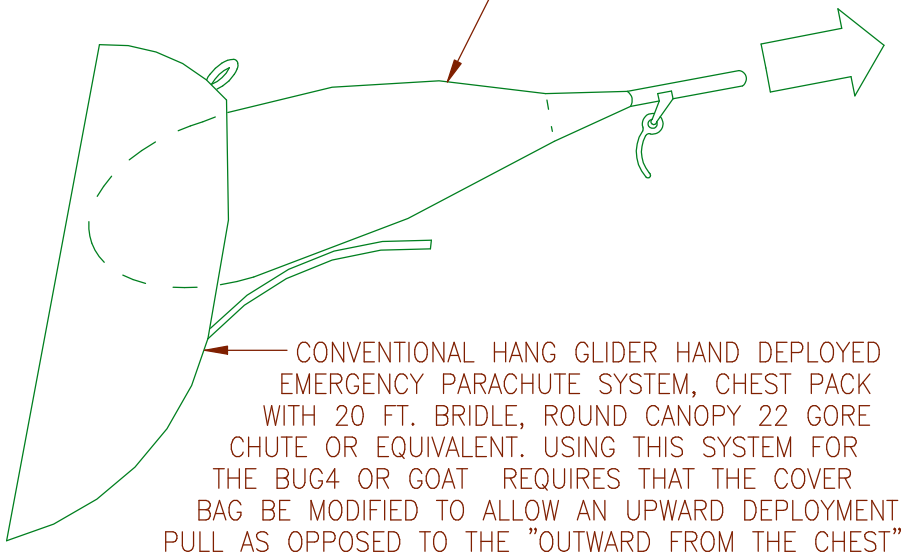


LOCKING PINS & LOOPS, DEPLOYMENT BAG HANDLE IS SECURELY FASTENED IN PLACE ON THE COVER BAG

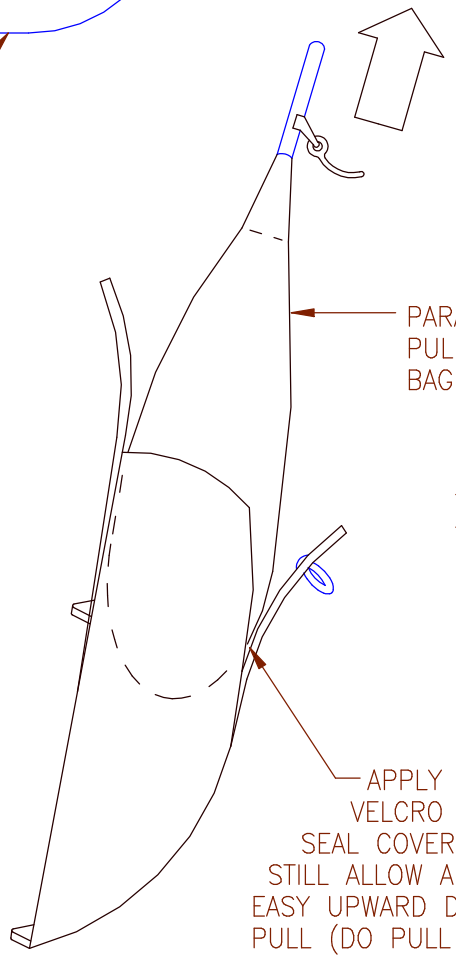


POSSIBLE EMERGENCY PARACHUTE DESCENT ATTITUDE. (THE INTENT IS THAT THE PILOT BE SHIELDED FROM GROUND CONTACT BY COLLAPSABLE STRUCTURE).

PARACHUTE IN DEPLOYMENT BAG BEING PULLED FORWARD PRIOR TO BEING THROWN BY PILOT. (NOT THE BUG4/GOAT SYSTEM.)



CONVENTIONAL HANG GLIDER HAND DEPLOYED EMERGENCY PARACHUTE SYSTEM, CHEST PACK WITH 20 FT. BRIDLE, ROUND CANOPY 22 GORE CHUTE OR EQUIVALENT. USING THIS SYSTEM FOR THE BUG4 OR GOAT REQUIRES THAT THE COVER BAG BE MODIFIED TO ALLOW AN UPWARD DEPLOYMENT PULL AS OPPOSED TO THE "OUTWARD FROM THE CHEST" PULL (SHOWN HERE) FOR WHICH IT WAS DESIGNED.



PARACHUTE IN DEPLOYMENT BAG BEING PULLED UPWARD FROM BUG4/GOAT COVER BAG PRIOR TO BEING THROWN BY PILOT.

2 VIEWS OF BUG4/GOAT EMERGENCY PARACHUTE, AS SEEN FROM REAR WHEN MOUNTED ON THE RIGHT HAND SIDE OF THE NOSE SECTION

APPLY OR REMOVE VELCRO STRIPS TO SEAL COVER BAG BUT STILL ALLOW A FAST & EASY UPWARD DEPLOYMENT PULL (DO PULL TESTS).

G4N20

EMERGENCY PARACHUTE 2

GOAT4 ULTRALIGHT GLIDER	M. SANDLIN, JANUARY 30, 2007