

FAB207 - ASSIGNMENT SCHEDULE

| ASSIGNMENT # | DESCRIPTION | DUE DATE |
|---------------------|--|-------------------------------|
| 1 | Measure Takeout from Full-scale Mechanical Drawing | December 6, 2005 12:30 PM |
| 2 | 45° Lateral Pattern | December 7, 2005 12:30 PM |
| 3 | 4" on 4" NPS 45° Lateral Field-fabricated Fitting | December 8, 2005 5:00 PM |
| 4 | Angle-iron Knee Brace | December 13, 2005 5:00 PM |
| 5 | Pipe Sleeve and Pipe Angle Cuts | December 15, 2005 5:00 PM |
| 6 | Practical Exam 4" NPS 3-piece 90° Turn | December 21, 2005 5:00 PM |
| 7 | Take-home exam | December 22, 2005 12:30 PM |
| 8 | Technical Analysis Report | December 22, 2005 1:00 PM |

When you complete an assignment begin the next immediately

Laboratory Manual – Fitting Pipe 6 Advanced Piping Problems
T.W. Frankland Pipe Fitter's and Pipe Welder's Handbook
Mechanical Drawing Tools

Measure Takeout from Full-scale
Mechanical Drawing

Due Date / Time:

December 6, 2005 / 5:00 PM

1. Draw a two-dimensional elbow as shown in the laboratory manual on page 125 - 127.
2. Follow the instructions in the laboratory manual for laying out the specified pipe size and angle.
3. Include the pipe size and schedule on the layout.
4. Include the fitting angle information (i.e. what angle is this elbow).
5. Indicate the center angle (example: 40° elbow, 20° center angle crossing the center radius line).
6. Include the center to face dimension for the 90° elbow (i.e. takeout, i.e. radius).
7. Include the center to face dimension for the odd angle elbow (the takeout dimension).
8. Include the course number on the layout.
9. Include the description of this assignment on the layout.
10. Include the assignment number on the layout.
11. Include the grade element category (for example, tech analysis report, quiz, skill, etc.)
12. Put your name on the drawing.
13. Put the date on the drawing.

TIP:

Use a sharp pencil and keep your work as neat as possible.

Keep in mind that takeout is determined from the center of the fitting. Therefore, a fitting whose centerline radius can be drawn with a compass will give you enough information to find the fitting takeout.

NOTE:

This assignment will be evaluated on accuracy and completeness of the elements listed above. When a measurement varies more than 1/32", the deductions will be 1, 2, or 3 points. A one point deduction will be imposed for holes, smudges, and other extraneous marks on your drawing.

This assign will be moved from the homework grading element to the skill grading element in this course. That means that it this assignment will have more of an impact on your overall grade for the course.

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ASSIGNMENT # 2 - Skill

Laboratory Manual – Fitting Pipe 6 Advanced Piping Problems
T.W. Frankland Pipe Fitter's and Pipe Welder's Handbook
Mechanical Drawing Tools

45° Lateral Pattern

Due Date / Time:

December 7, 2005 / 5:00 PM

1. Follow the instructions in the laboratory manual for developing an equal sized field-fabricated 45° lateral branch pattern for 4" NPS pipe.
2. Use the yardstick method for dividing your stretch out into 16 equal parts. If your stretch out is more than 16 inches, use the 2, 4, 6, 8, etc. inch marks to divide your sections.
3. Use dimensions for aesthetic balancing for your lateral for header and branch lengths. Make the branch 4 to 5 inches long measured from the throat.
4. Include a title block (a border is not necessary on a pattern).
5. Include your name in the title block.
6. Include the date in the title block.
7. Include the scale in the title block.
8. Include the description of the assignment in the title block.
9. Include the assignment number in the title block.
10. Cut out the pattern so you can use it to produce the 45° lateral fitting.
11. Identify what you are making on the sheet (include pipe size and schedule) and submit the remainder for the pattern layout for grading by the deadline indicated above.

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ASSIGNMENT # 3 - Skill

**Laboratory Manual – Fitting Pipe 6 Advanced Piping Problems
T.W. Frankland Pipe Fitter's and Pipe Welder's Handbook
Mechanical Drawing Tools**

4" on 4" NPS 45° Lateral
Field-fabricated Fitting

Due Date / Time:

December 8, 2005 / 5:00 PM

1. Fabricate a 4" on 4" Schedule 40 45° lateral branch connection.
2. Use the pattern produced in assignment #3 for the layout.
3. Make the header 12" long as shown in attached drawing.
4. Balance the fitting as explained in the laboratory manual.
5. Clean all slag and burrs from chamfer and inside diameter of pipe.
6. Prepare both ends of the fitting with a 37 1/2° chamfer and 3/32" to 1/8" root face.
7. Cut the length of the branch fitting to be 3 1/4" from the throat of the branch connection.
8. Clean the pipe 1 1/2" from each side of the weld zone. Burning and brushing the varnish will be sufficient cleaning of the pipe and file the chamfer and land for the end preparation.
9. Identify with your name and place you field fabricated lateral branch connection on the project bench by the deadline stated above.

Workmanship Standards for Evaluating this Project:

This fitting will be evaluated on fit, specified dimensions, specified angle for chamfer, square cut, and appropriate root face as well as satisfying all elements of the specifications listed above.

NOTE:

You will need two 45° branch connections for a future pipe run. You can prepare as many fittings as you like to improve the quality for the evaluation for this project. I would suggest making two for this project and submitting the best one for a grade.

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ASSIGNMENT # 4 - Skill

**Laboratory Manual – Fitting Pipe 6 Advanced Piping Problems
T.W. Frankland Pipe Fitter's and Pipe Welder's Handbook
Layout Tools**

Angle-iron Knee Brace

Due Date / Time:

December 13, 2005 / 5:00 PM

1. Fabricate a three-piece angle iron bracket described on pages 130 and 131 in TWF and on pages 163-164 of the Laboratory Manual.
2. Use the dimensions provided on the accompanying detail sheet.
3. Maintain all dimensions and angles as detailed.
4. Balance the fitting as explained in the laboratory manual.
5. Clean all slag and burrs from inside and outside of welded joints.
6. Identify with your name and place you model joint on the project bench by the deadline stated above.

Workmanship Standards for Evaluating this Project:

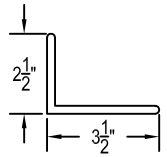
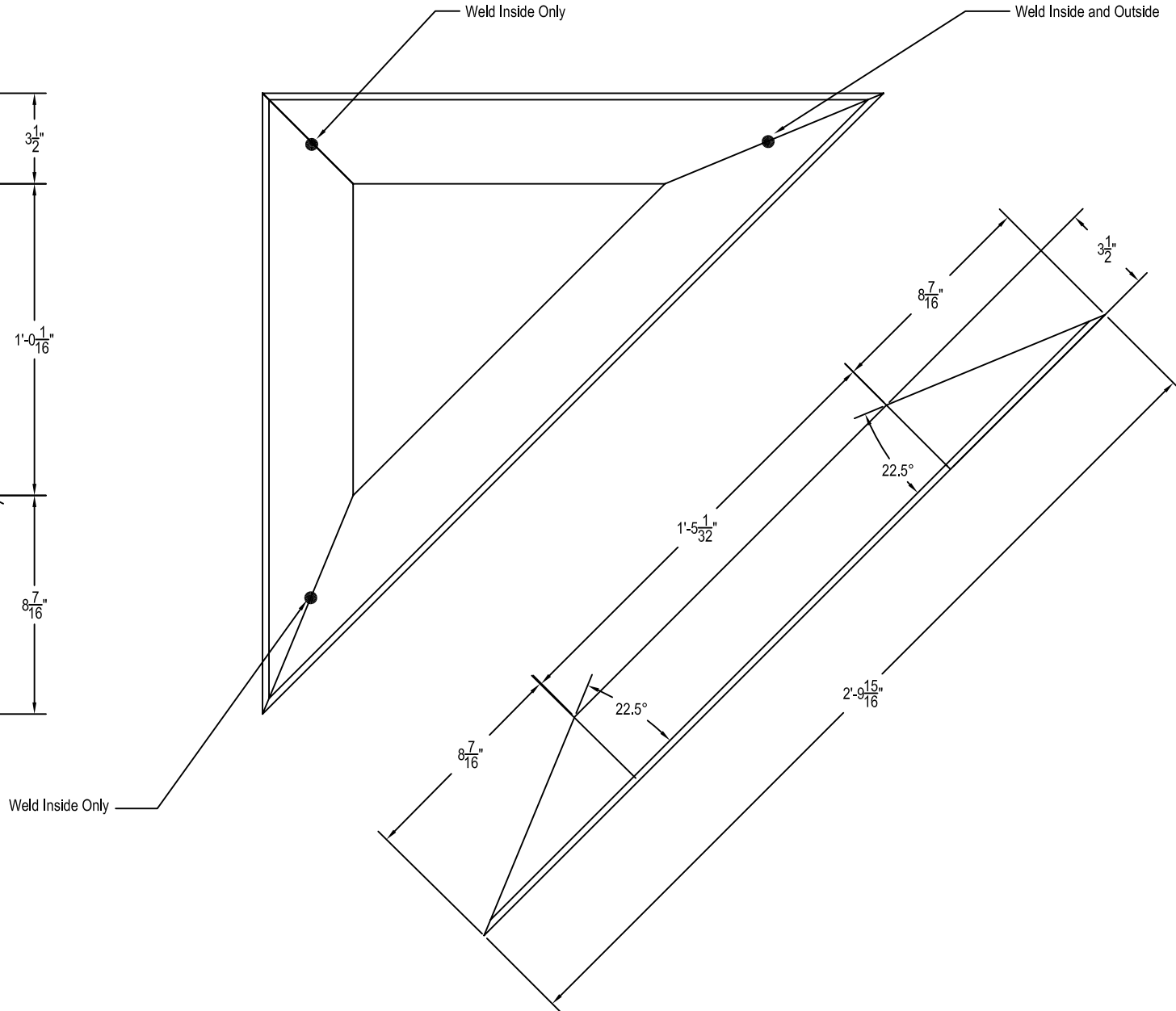
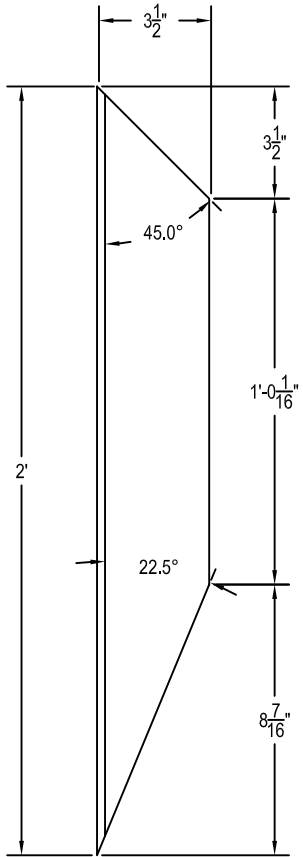
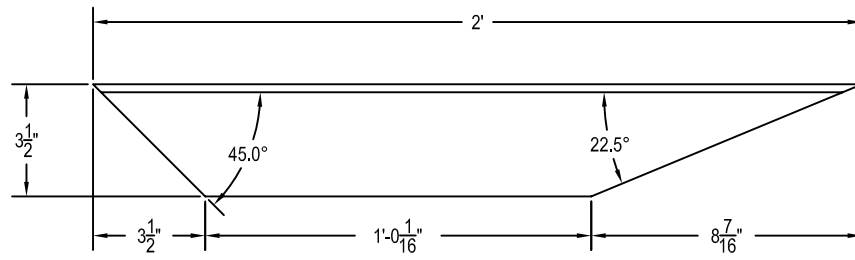
This fitting will be evaluated on fit, specified dimensions, specified angle for knee brace, square angle, and completed weld.

NOTE:

These braces will be used to replace clevis hangers on high header with the knee brace and half-band supports (riser clamps).

Photographic examples of this assignment can be found on the 'Secret of Pipe Fitting' web site at the following web address:

<http://faculty.emcc.edu/rbrooker/@FABWEB/index.htm>



**3 1/2 x 2 1/2
 ANGLE IRON
 KNEE BRACE**

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ASSIGNMENT # 5 - Skill

**Laboratory Manual – Fitting Pipe 6 Advanced Piping Problems
T.W. Frankland Pipe Fitter's and Pipe Welder's Handbook
Layout Tools**

Pipe Sleeve and Pipe Angle Cuts

Due Date / Time:

December 15, 2005 / 5:00 PM

1. Fabricate a length of 4" NPS pipe with angle cuts and a circumferential sleeve.
2. Use the dimensions and angles provided on the accompanying detail sheet.
3. Maintain all dimensions and angles as detailed.
4. Balance the sleeve from the center of the angle cut on each end of the pipe.
5. Clean all slag from tack welds.
6. Remove all burrs from inside and outside of pipe.
7. Identify with your name and place you model joint on the project bench by the deadline stated above.

Workmanship Standards for Evaluating this Project:

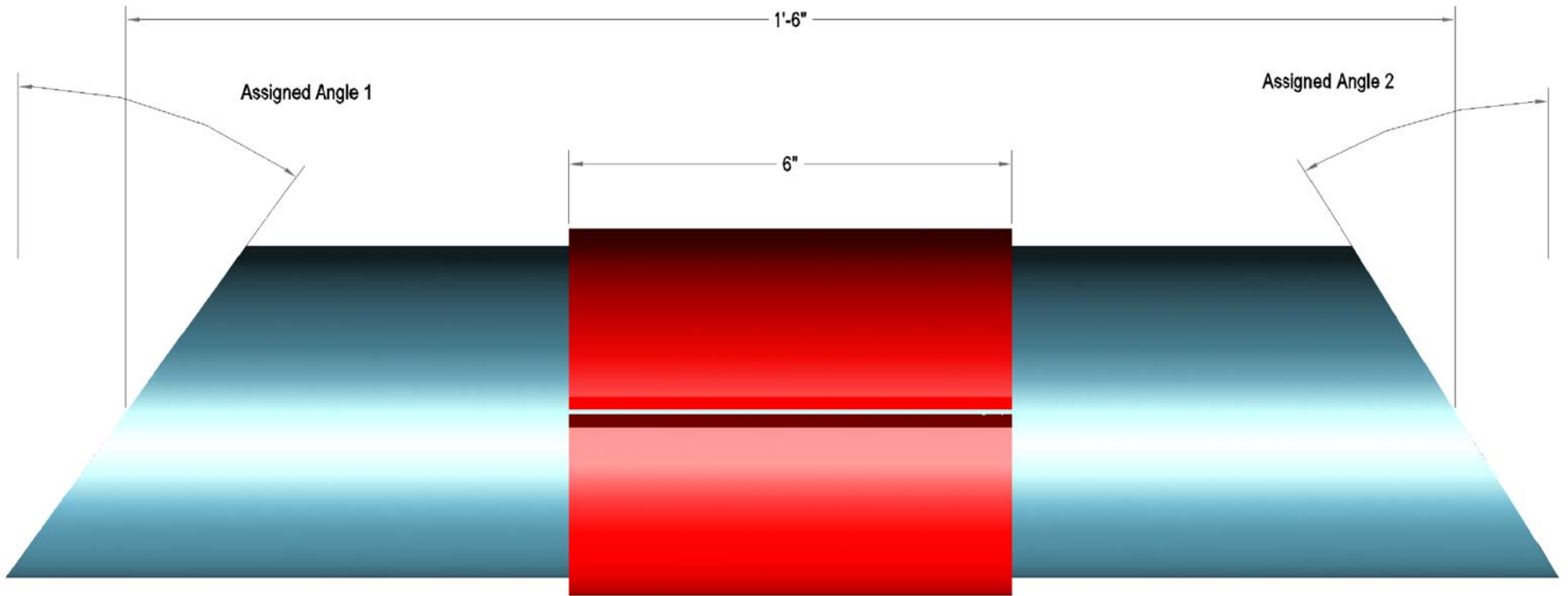
This fitting will be evaluated specified dimensions, specified angles of cut square angle of sleeve, and proper fit of sleeve onto carrier line (pipe).

NOTE:

This project will serve as layout and fabrication of angle cuts on pipe to be used extensively in future courses.

Photographic examples of this assignment can be found on the 'Secret of Pipe Fitting' web site at the following web address:

<http://faculty.emcc.edu/rbrooker/@FABWEB/index.htm>



Angle assignments

| <i>Student</i> | <i>Assigned angle #1</i> | <i>Assigned angle #2</i> | <i>Combined</i> |
|----------------|--------------------------|--------------------------|-----------------|
| Kevin | 30 | 60 | 90 |
| James | 35 | 55 | 90 |
| Pat | 36 | 54 | 90 |
| Cody | 38 | 52 | 90 |
| Malcolm | 25 | 65 | 90 |
| Dean | 27 | 63 | 90 |
| Dave | 33 | 57 | 90 |
| Kevin | 29 | 31 | 90 |
| Moose | 41 | 49 | 90 |
| Eric | 40 | 50 | 90 |
| | | | |

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ASSIGNMENT # 6 – Practical Exam

**Laboratory Manual – Fitting Pipe 6 Advanced Piping Problems
T.W. Frankland Pipe Fitter's and Pipe Welder's Handbook
Layout Tools**

4" NPS 3-piece 90° Turn

Due Date / Time:

December 21, 2005 / 5:00 PM

1. Fabricate a 4" NPS, 3-piece 90° turn as detailed in the laboratory manual.
2. Use the dimensions and angles provided on the accompanying detail sheet.
3. Maintain all dimensions and angles as detailed.
4. Clean all slag and burrs from chamfer and inside diameter of pipe.
5. Prepare both ends of the fitting with a 37 1/2° chamfer and 1/8" root face.
6. Remove all burrs from inside and outside of pipe.
7. Clean the pipe 1 1/2" from each side of the weld zone. Do not use buffing wheels. Use only flame, file and wire brush to clean pipe.
8. Apply all tacking standards for tack configuration.
9. Apply all tacking standards for tack positioning.
10. Identify with your name and place you assignment on the project bench by the deadline stated above.

Workmanship Standards for Evaluating this Project:

This fitting will be evaluated specified dimensions, specified angles on detail sheet, pipe end preparations, and tacking standards.

NOTE:

Remember to account for root opening when assembling the fitting. If you use the calculated measurements, the radius will exceed the specified dimension. All dimensions shown on the detail sheet are center to center dimensions.

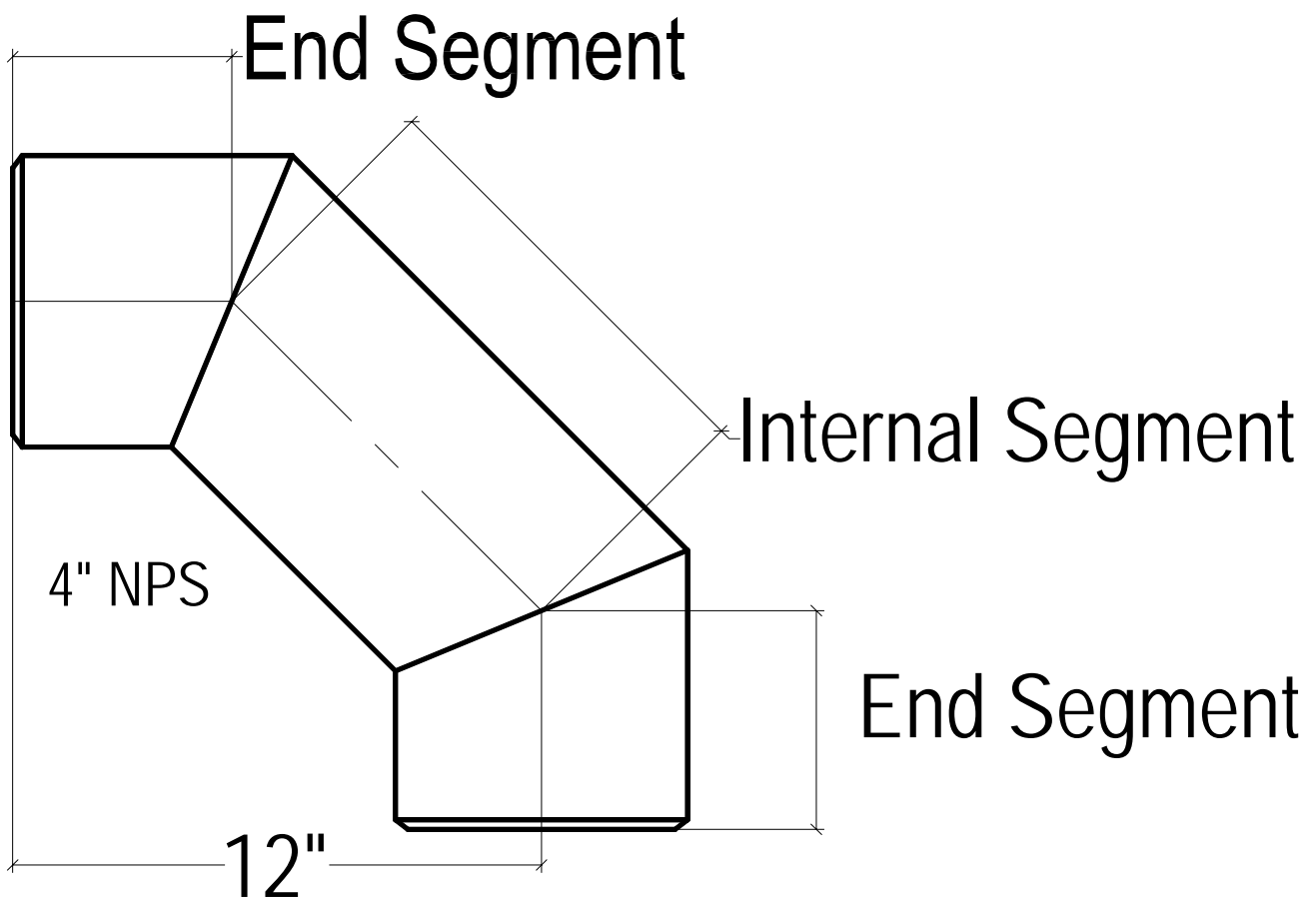
Photographic examples of this assignment can be found on the 'Secret of Pipe Fitting' web site at the following web address:

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PROJECT SPECIFICATIONS

Determine the End Segment Lengths based on the pipe size and radius

Determine the Internal Segment Length based on the pipe size, radius, and end segment length.



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Mechanical Drawing Tools

Take-home exam

Due Date / Time:

December 22, 2005 / 12:30 PM

1. Refer to your lab manual, Pipe Fitter's and Pipe Welder's Handbook, notes from classroom sessions, lectures, and laboratory demonstrations to answer the questions on the attached examination.
2. Provide the answers to the items on the question sheet on the answer sheet provided with the exam.
3. Put your name on both the question sheets and the answer sheets.
4. Work independently on this exam. Use the text as the primary resource to promote the advance of knowledge in this technical area.
5. Submit your completed exam any time before and up to the time specified as the due date above.
6. Complete the piping problems on the attached sheets.
7. It is suggested that you follow the uniform method of calculating your answers as established with the the Fitting Pipe Laboratory Manual
8. Circle the calculated answer.
9. Label the calculated answer (i.e. "of pipe", travel, etc.) where necessary.
10. Show symbols for feet (') and inches (") or include labels (examples: sq. ft.; cu. in. gallons, etc.)
11. Read each item carefully to determine what solution is being asked for before you begin your calculations.
12. Put your name and date on all sheets and submit the assignment by the time deadline established above.

NOTE:

Work carefully. You will only be allowed to submit this examination once. There will be no opportunity to rework this assignment after you have submitted it.

It is suggested that you show your work. Examples for calculations have been presented in the Fitting Pipe Laboratory Manual in accordance with the established standard convention for solving piping problems. You will only receive credit for correct answers on this exam. You will not receive partial credit for showing your work, but it's recommended so I can determine any errors, should they occur.

Answers must be accurate within $\pm 1/16$ " for length solution problems.

Answers must be accurate within 0.01 units for answers in decimal format.

FAB205

Course Syllabus / Applied Resources

Due Date:

ASSIGNMENT # 8 –Report

Technical Analysis Report

November 17, 2004 – 1:00 PM

1. Review the course syllabus for details on Applied Technology Analysis Report requirements.
2. Include a title page for this course as described in the syllabus.
3. Word-process the report.
4. Your report must be submitted by the deadline date and time listed above. **NO LATE SUBMITS!** All late assignments will be scored as a zero.

NOTE:

Deductions will result from omissions of the elements listed above and from any omissions from the above list as well as omissions from the details listed in the course syllabus.

The greatest deductions will be a direct result from failing to report how the information presented in this course was applied to skill development associated with fitting pipe. You should note the problems you encountered and what solutions you used to solve the problems. You should discuss where the application of technology is based. You could note what you might have done differently to affect a different or better result the next time you approach a similar task. The syllabus is specific.