Sprinkler System
Computer Graphics Design Tool

RECOMMENDATIONS

Sigma Design West, Ltd.
Aurora, Colorado

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by
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CCC

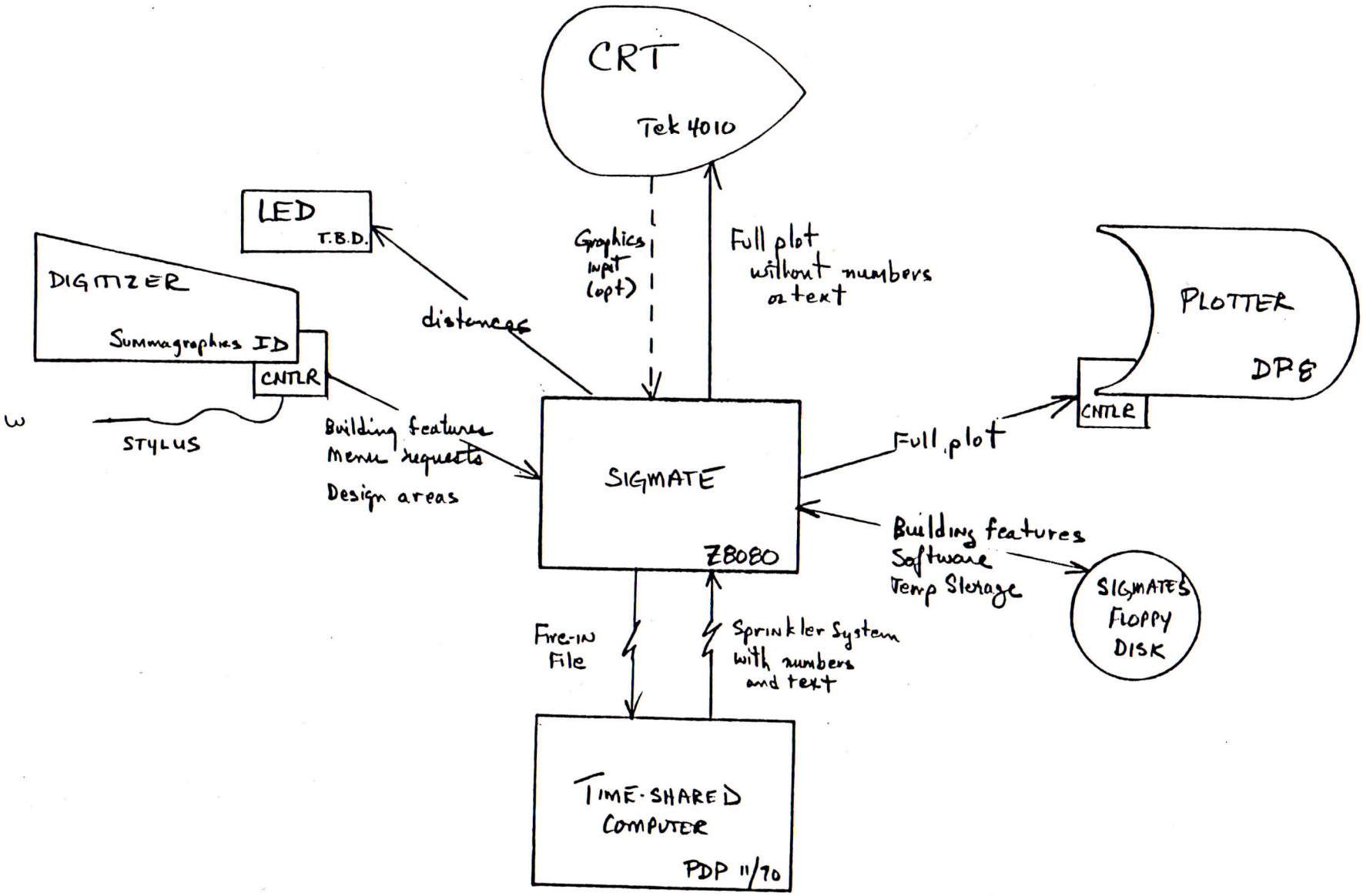
Sprinkler System Design Steps

1. Input building features:
   - outside walls
   - inside walls
   - major structural members
   - purlins
   - major obstructions to head placement; some may be left off final drawing.
2. Place sprinkler heads:
   - in rectangles with or without spacing dimensions
   - as single heads
   - allowing movement of one or more heads as well as deleting heads.
3. Verify coverage

Repeat steps 2 and 3 until design is complete.

4. Place and identify pipes and other modes.
5. Number the system
   - identify remote area(s) here or in step 7.
6. Translate sprinkler system into a Fire-in file which is sent to the 11/70:
   - P lines
   - P3 lines
   - S lines
   - P2 lines (if defined).
7. Process hydraulics and plot in the 11/70.
8. Merge sprinkler system plot (11/70) and building plot (SIGMATE), then plot on 36" plotter.
9. Add final drafting:
   - additional views, details, and notes
   - building feature dimensions.

System Configuration



Recommendations

- Use Assembler language on SIGMATE as much as possible to speed up processing and save memory space.

- Put 64Kb in SIGMATE for development and final product.

- Put heavy effort into public relations immediately:
  - see Work Summary for detailed list
  - ad insert to Sigmagraphics brochure and send

- Review cost-effectiveness of different classes of applications in order to guide user to best applications at each phase of development starting with May's product.

- Review available hardware use for development and obtain additional hardware where necessary.

- Constantly review and adjust the man/machine interface:
  - floppy disk contention
  - excessive time delays
  - menu layout
  - display feed back and use
  - hand drafting requirements and acceptability

- Commit to developing a tool. There will be a tendency to verify the SIGMATE - 11/70 interface before all resources are commited to an interactive graphics design tool. This would reduce the possibility of completing the tool before May 15.

- Contract directly with Mr. Ed Schrieber to reduce any possible bureaucratic overhead.

- Use each member of Sigma Design best's staff and outside consultants where they are most capable and available.

Recommendations (con't)

- Use CCC at its Associate Consultant rate.
- Use a stylus instead of a cursor so that graphics input can be aided by a draftman's scale.
- Be prepared for complaints of less efficient Fire-in files as well as increased 11/70 time for adding P2, TF, PH, INT, F, and FT data and processing larger Fire-in files.

Future Enhancements

- Building feature dimensioning and labelling
- Other placement structures in addition to rectangles
- Use of digitizer for redefinition of:
  - sprinkler patterns
  - remote areas
  - piping layout
  - piping diameter
- Automatic input assistance
  - walls
  - columns
  - user defined symbols
- Intelligent data base and
  - automatic placement
  - automatic verification
  - automatic pipe layout optimization
  - shifting towards main
- Put HI's PTC-3 controller functions in the SIGMATE
- Additional fabrication input

Work Summary

Area		Recommended Personnel*
SIGMATE Programming	BASIC Assembler	CCC, B.A. E.S., A.H.
- Building Inputs		
- Sprinkler placement		
- Verification		
- Pipe placement and identification		
- System renumbering		
- Fire-in file generation		
- Plotter driver		
- CRT driver		
- Digizer input processor		
- Menu		
Hardware Procurement		CCC
Hardware Interfacing		E.S., A.H.
LED Display		E.S.
11/70 Programming (BASIC)		CCC, B.A.
- Minor modifications		
Test Cases and Testing		CCC, C.G.
Public Relations		CCC, C.G.
- Newsletter		
- Announcements		
- Demonstration packages		
- User training/guidance		

Work Summary (con't)

Area	Recommended Personnel*
Man/Machine Interface Reviews	CCC
Future Enhancements	CCC, E.S., A.H., B.A., C.G.

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*CCC - Kent Johnson and other CCC associates
E.S.- Ed Schrieber
A.H.- Al Hart
B.A.- Barry Anspach
C.G.- Craig Garrow

Objectives for NFPA shows (May 15, 1979)

Present an interactive graphics design tool to do the following:

- Design automatic fire protection sprinkler systems for processing by a PDP 11/70 and plotting on a DP-8 plotter.
- Appeal to
  - existing plotter users
  - existing non-plotter, remote users
  - non-Sigma customers
- Efficiently design "warehouse" buildings
- Allow design of offices within "warehouse" buildings as well as structurally separate rooms such as in convalescent homes.
- Allow for future expansion and enhancements.

ANNOUNCING . . .

Second Generation SIGMAGRPHICS™ to be Introduced in Mid-May

SIGMAGRAPHICS will soon be available with expanded features to graphically design fire protection sprinkler systems for processing by Sigma Design West's hydraulics programs! There will be no need for manual input of sprinkler head and pipe layout data at a keyboard terminal. The designer will do all his design directly into computer files. SIGMAGRAPHICS will give the designer the ease and flexibilty to try different piping layouts and create more cost-effective sprinkler systems. The SIGMAGRAPHICS expanded features will all be used before the designer connects to the timesharing computer. The net effect is reduced computer charges and faster turn-around time. *By using* SIGMAGRAPHICS *for both input and output, the designer will be far ahead of his competition.*

Computer graphics is revolutionizing the engineering design industry. It helps utilize the engineer for designing systems, freeing him from tedious and routine tasks. It keeps the human element - judgement and creativity - while automating as much of the design process as possible. The speed and efficiency of a graphic design system is much needed in the fire protection sprinkler industry where a designer's time is at a premium. Computer graphics tremendously improves accuracy through immediate feedback of input data. Computer graphics hardware soon pays for itself by increasing designer efficiency, accuracy, and speed. The competitive edge is much keener with computer graphics design.

THERE'S MORE . . .

A recent price reduction of plotter hardware means that there is no better time than NOW to begin saving money and time with SIGMAGRAPHICS.

The SIGMAGRAPHICS system will be on display at the 1979 NFPA Convention in St. Louis on May 14th - 17th. Stop by Booth 109 - 111 and see the latest in sprinkler design tools.

March, 1979