Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
e-mail ralphjs@gte.net
July 10, 2000

To: Richard E. Gabrielse, P.E.,
John Spittler, P.E., and
Chris Thronson, P.E.

From: Ralph J. Stephenson, P.E.

Re: General information about NSPE annual meeting presentation for Professional Engineers in Construction (PEC).

Dear Dick, John and Chris:

Enclosed is a presentation paper outline of the material I am planning to present, with your help and participation, at the Professional Edge Seminar in Norfolk, Virginia on Saturday July 29, 2000 from 8:30 A.M to 12:00 noon.

Dick Gabrielse, P.E. has accepted the task of introducing the program and helping with the case study table work material. John Spittler, P.E. has prepared, and will present an essay on "Construction Dispute Resolution with Neutrals". Chris Thronson, P.E. will not be able to attend the meeting. However, he earlier provided much valuable assistance in duplicating the material for the dry run in Kalamazoo, and helping smooth out some of the rough edges on the rough draft of the paper

For your reference, I am also enclosing a copy of the paper as it was presented at the Central Region dry run held in Kalamazoo, Michigan on Friday April 14, 2000. Some minor changes and corrections were made in the paper subsequent to the dry run.

I am looking forward to this program to close out our series of partnering sessions on a high note. It has been good working with such a dedicated group as the three of you and thank you very much for doing a great job in making partnering work!

Enclosures: Kalamazoo draft of paper
Presentation outline
See pgs 7 & 8

Regards,

Ralph J. Stephenson, P.E.

NSPE Outline for proposed paper
Applying and Implementing
Construction Project Partnering Systems
Annual Meeting, 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

2000 NSPE Paper - presentation outline

I. **Seminar - general information**

A. **General information re NSPE Convention 2000 paper presentation program**

1. Date of meeting - Saturday July 29, 2000 -- 8:30 A.M. to 12:00 noon
2. Topics - "Applying and Implementing Construction Project Partnering Systems"
   a) Partnering effectiveness evaluation.
   b) Issue resolution using the partnering system.
   c) Revisiting the partnering charter.
   d) Possible subtitles to be considered for paper to be submitted
      (1) "Applying and Implementing Construction Project Partnering Systems."
      (2) "How to Use Partnering and Issue Resolution to Improve Construction Project Performance."
      (3) "The Role of Alternative Dispute Resolution in Improving Profitability, Performance and Quality in Design and Field Operations."
      (4) "Extended Uses of Construction Project Partnering in Improving Professional Management Skills."
      (5) "How to Quantify Construction Project Performance and Apply Issue Resolution to Moderating Destructive Conflict."
3. Those presenting the paper and related material.
   a) Session leader & chair - Richard Gabrielse, P.E., Past President NSPE Construction Practice Group. - Introduction of program.
   b) Session speaker - John Spittler, P.E., - Senior Principle, PMA Consultants LLC - Construction Dispute Resolution with Neutrals.
   c) Session speaker - Ralph J. Stephenson, P.E., Consulting Engineer - Paper on Applying and Implementing Partnering Systems.
   d) Construction resource professional - Chris Thronson, P.E., Project Manager - Barton Malow
4. Purposes and background of the paper to be presented
   a) The purpose of the paper is to present a discussion of partnering addressing the use of partnering evaluation and partnering issue resolution -- the paper will use a partnering charter which defines both the project team mission and the objectives by which the project team hopes to achieve project success. This charter was prepared in a

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

partnering workshop conducted at the 1999 NSPE Annual Meeting in Spokane, Washington.

b) It should be noted that the subject of Alternative Dispute Resolution was presented at the 1998 National Society of Professional Engineers convention in Tulsa, Oklahoma: the subject of Partnering was presented in the 1999 National Society of Professional Engineers convention in Spokane, Washington.

c) This paper addresses the third step in preparation and application of the partnering system - "Applying and Implementing Construction Project Partnering Systems."

5. Important benefits of partnering evaluation and issue resolution to stress include:
   a) Helps reduce the charter mission and the charter objectives to a report card format that can be quantified and used to measure actual project performance against definable criteria.
   b) Requires the participation of the stakeholder group which wrote the partnering charter, to reduce their objective and subjective concepts of project success to definable and measurable terms.
   c) Encourages identification of potential project problems through periodic measurement of their intensity and their current and potential impact on the job.
   d) Allows the perceptive and competent construction professional to apply appropriate management techniques to the actual problems being encountered on the program, and then to address address and assign priorities to the problems that must be resolved.
   e) Provides privacy in dispute resolution.
   f) Usually results in improved decision making among knowledgeable project decision makers.
   g) Tends to allow highly accurate identification of the true nature of the problems affecting the job.
   h) Encourages focussed team efforts to resolve project problems.
6. Objectives of the presentation.
   a) To provide participants with a case study evaluation and a derived charter prepared by peers from the design and construction industry.
   b) To encourage attendees to apply proven methods of project monitoring and evaluating the current status and trending on their projects using

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

the partnering system.

c) To allow attendees to improve their methods of analysis and conflict resolution that they apply and use in their daily design and management activities.

d) To allow the project team to view in detail the root causes of destructive conflict, and to learn from the discussion, and from their interaction with their peers, more about the need for improved resolution techniques.

e) To apply by case study analysis the principles of measuring, evaluating, analyzing and correcting undesirable trends on their construction programs.

B. **The peer paper and the accompanying workshops will provide each participant with working guidelines to help hone their partnering and issue resolution skills. Subjects to be covered in the Paper include:**

- Construction alternative dispute resolution - a brief review.
- Project design and construction partnering - a brief review.
- The project charter - case study.
- Deriving the partnering evaluation system from the project charter.
- Weights and values of partnering objectives.
- Criteria for setting charter objective weights.
- Criteria for setting charter objective performance values.
- Analyzing the weight/value performance contribution toward meeting objectives.
- Identifying below standard charter objective performance.
- Correcting below standard charter objective performance.
- Destructive conflict - where it occurs and what to do about it.
- Where improvement in project management performance can do the most good.
- How to prepare an issue resolution policy.
- How to apply and implement an issue resolution policy.
- Alternative dispute resolution and partnering in the future.

C. **Handouts to be used in conjunction with the paper presentation.**

1. Case study from 1999 paper - included in paper
2. Charter from 1999 paper

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

a) Mission of the NSEDS project team
To provide NSEDS with reliable, efficient facilities on-time and within budget, stressing the spirit of cooperation, professionalism, safety and reasonable profit without interruption or compromise of NSEDS operations.

b) Objectives of the NSEDS project team
In recognition of the importance of achieving their mission all NSEDS Partners, as a team, will attempt to:
(1) Anticipate, identify, and accurately communicate potential job problems.
(2) Ensure the design is understood and acknowledged by all the NSEDS partners.
(3) Prepare and publish a project directory showing people, work category, position and alternate contact. (general contractor in conjunction with all stakeholders
(4) Work closely with all regulatory agencies to assure compliance to their current standards and regulations.
(5) Make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.
(6) Avoid surprises!
(7) Design and construct a facility that is built so as to recognize the need for the builders and the designers to achieve a reasonable financial profit on their work.
(8) Prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.
(9) Promptly review and determine the merit of properly submitted requests for extensions of time.
(10) Adhere to agreed upon schedules and resource commitments.
(11) Provide timely communications, responses, decisions... and be available.
(12) *Mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all stakeholders. (general contractor in conjunction with all stakeholders)

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

(13) Strive to avoid litigation.
(14) Prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation.
(15) Coordinate and cooperate with public agencies/utilities so needed public services are available in a timely manner.
(16) Adopt an attitude of mutual respect for the opinions and beliefs of all stakeholders.
(17) Maintain high job morale and cooperative attitudes among all project participants.
(18) Have fun!

II. **Major topic outline for NSPE paper presentation**
  A. **Part 1 -- The Introduction - formal introduction by Dick Gabrielse, P.E.**
    1. page 1 -- What are objectives of the paper and the presentation?
  B. **Part 2 -- The Case Study**
    1. pages 4, 5, 6, 7
      a) Owner - Northern States Economic Data Systems.
      b) Facility types - program characteristics.
      c) Those involved -- project team partners.
      d) Contract types.
    2. pages 7a and 7b, and 8, & 9
      a) Design services contract characteristics.
      b) Construction contract characteristics.
      c) Current status of project as of charter preparation (March 2000 wd 062).
  C. **Part 3 -- The Early Partnering Discussions**
    1. page 10
      a) Obligations of NSEDS to community of Telitreck.
  D. **Part 4 -- The Charter**
    1. pages 11, 12, 13 and 14
      a) Charter for construction of NSEDS facility.
      b) Working day calendars.
      c) How the charter was derived.
  E. **Part 5 -- The Monitoring and Rating Process**
    1. p 15, 16, 17, 18, 19 and 20.
      a) Partnering requires two major elements (p 15).
        (1) Measurement

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

(2) Implementation
b) Must contribute to a project's success. (p 15) -- see Attachment A. (page 58).
c) Is an MX system. (p 15).
d) Questions. (p 16).
(1) What purpose is served by making a partnering evaluation?
(2) What results should be expected from a partnering evaluation?
(3) What data should be used to monitor project partnering performance?
e) Objective weights. (p 17 & 18).
f) Performance quality (p18 & 19).

F. **Part 6 -- The Inspection and Evaluation Process**
1. p 20, 21 & 22.
a) Three steps to project inspection and evaluation.
(1) Identify important milestones.
(2) Identify components to be used to measure performance.
(3) Inspect the project.
2. p 23, 24, 25, 26, 27, and 28
a) Monitoring dates
(1) p 23 & 24 -- March 28, 2000 (wd 062).
(2) p 24, 25 & 26 -- April 14, 2000 (wd 075).
(3) P 26, 27 & 28 -- July 28, 2000 (wd 148)

G. **Part 7 -- The Issue Identification Process**
1. p 29
a) Three key dates -- March 28, 2000 (wd 062), April 14, 2000 (wd 075), July 28, 2000 (wd 148)
2. p 29, 30, & 31
a) Disruptive issues observed -- March 28, 2000, April 14, 2000, & July 28, 2000
3. p 31 & 32
a) Evaluation templates and work sheets
b) 7.1 a & b -- blank template
c) 7.2 c & d -- blank template with task force weight and par quality in cols 2 & 3. (dated March 28, 2000)
d) 7.3 e & f -- blank template for class table work exercise using monitoring as of April 14, 2000.

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

e) 7.4 g & h -- RJS template showing RJS evaluation as of April 14, 2000 -- to be used for example. Class to prepare their own evaluation in table work. For Kalamazoo seminar only.
f) 7.5 i & j -- blank template for class table work exercise using monitoring as of July 29, 2000.

4. p 33
   a) Comparison of April 14, RJS evaluation with weights and par quality -- might use one of the class evaluations to make comparison.

H. **Part 8 -- The Issue Resolution Process**
   1. p 34 & 35
      a) Introduction to Alternative Dispute Resolution methods
   2. p 35, 36, 37, 38, 39, 40, 41, 42 & 43
      a) Description of ADR systems
         (1) p 35 -- Summary
         (2) p 35 through 43 -- detailed description
   3. p 43a - Route of Issue & Dispute Resolution

I. **Construction dispute resolution with neutrals - by John Spittler, P.E.**

J. **Part 9 -- The Implementation of Issue Resolution**
   1. p 44 & 45 -- Issue resolution policy
   2. p 45, 46 and 47 -- Issue resolution methodology
   3. p 47 -- PARTNERING WORKS!

K. **Panel review, critique, questions and wrap up by Dick Gabrielse, P.E., John Spittler, P.E., and Ralph J. Stephenson, P.E.**

L. **Reference material used in presentation**
   1. Attachment A -- Glossary of terms - no transparencies
   2. Attachment B -- 38 elements of success in design and construction
   3. Attachment C -- Weights and values as a decision-making tool
      a) p 61 & 62 -- Introduction to selecting weights and values
      b) p 62 -- Table to show comparisons between three different delivery systems.

III. **Suggested time frame outline for program**

A. **Total time for seminar - 3 1/2 hours**
   1. **08:30 A.M.** - Starting time for program introduction
   2. **08:30 to 08:40 A.M.** - Part 1 - Introduction (10 minutes) - pages i & ii and pages 1 through 3.
   3. **08:40 to 09:05 A.M.** - Part 2 - Case study (15 minutes) - pages 4 to 9.

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

4. **09:05 to 09:10 A.M.** - Part 3 - Early partnering discussions (5 minutes) - pages 10
5. **9:10 to 09:30 A.M.** - Part 4 - The charter (20 minutes) - pages 11 through 14
6. **09:30 to 09:45 A.M.** - Part 5 - The monitoring and rating process (15 minutes) - pages 15 through 19.
7. **09:45 - 10:10 A.M.** - Part 6 - The inspection and evaluation process (20 minutes) - pages 20 through 28.
8. **10:10 - 10:30 A.M.** - Coffee break
9. **10:30 to 10:55 A.M.** - Part 7 - The issue identification process (25 minutes) - pages 29 through 33.
10. **10:55 to 11:10 A.M.** - Part 8 - The Issue Resolution Process (**summary** - 15 minutes - rjs)
11. **11:10 to 11:30 A.M.** - John Spittler - Construction dispute resolution with neutrals - by John Spittler P.E. (20 minutes)
12. **11:30 to 11:40 A.M.** - Part 9 - The Implementation of Issue Resolution (**summary** - 10 minutes)
13. **11:40 to 12:00 noon** - Panel review, critique, questions, and wrap up) - Dick Gabrielse, John Spittler and Ralph J. Stephenson.
14. **12:00 noon** - Adjournment

IV. **To do items.**

A. **Get pre session roster of those intending to attend the session. - Joanne will mail me list on July 19, 2000.**
B. **Make transparency of original signed charter.**
C. **Plan table assignment process**
   1. Prepare assignment drawing tickets for team case study work? (Do we really need these or could we just seat the people at tables and have them develop the rating system. May lose the flavor of the session if we do not have the participants take on identities.)
   2. List of roles the attendees are to assume. Maximum number of people to be assigned and the organizations they work for. (total 39 people more or less)
      a) NSEDS - 7
      b) Datacomp, Inc. - Computer systems contractor staff - 3
      c) Loring & Metzer - A/E of record - 8
      d) Strendel - geotechnical testing - 2
      e) Mechbal - air balancing - 1

Ralph J. Stephenson, P.E
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858 -9096
ph (517) 772 2537
July 10, 2000
e-mail ralphjs@gte.net

f) General contractor - Tiltsen and Greene - 4
g) Brown Mechanical - Mechanical contractor - Brown and Powers - 3
h) Fixtures, furniture, and equipment contractor - Efficiency Design, Inc. - 4
i) Community leaders and invited visitors - 7

D. √ **Ask Dick Gabrielse to chair my session in 2000 if I am selected to present my paper.**
E. √ **Correct objective transparency showing what the seminar is designed to accomplish.**
F. √ **Mail copy of paper (from Kalamazoo) to Dick Gabrielse, John Spittler, and Chris Thronson.**
G. √ **Mail topic outline and time outline to Dick Gabrielse and John Spittler, and to Chris Thronson (for information only).**

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 25, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Applying and Implementing Partnering Systems

Table of Contents

Partnering paper #3 - NSPE Annual Convention - Norfolk, Virginia
Saturday July 29, 2000

Part 1 - The Introduction page 1
Part 2 - The Case Study page 4
Figure 2.1 Design Contract Characteristics page 7a
Figure 2.2 Construction Contract Characteristics page 7b
Part 3 - The Early Partnering Discussions page 10
Part 4 - The Charter page 11
Figure 4.1 Working Day Calendar-2000 to 2003 page 11a
Figure 4.2 Working Day Calendar-2000 to 2003 page 11b
Part 5 - The Monitoring and Rating Process page 15
Part 6 - The Inspection and Evaluation Process page 20
Part 7 - The Issue Identification Process page 29
Figure 7.1 Partnering Evaluation Template pages 31a & 31b
Figure 7.2 Partnering Evaluation March 28, 2000 pages 31c & 31d
Figure 7.3 rjs Partnering Evaluation April 14, 2000 pages 31e & 31f
Figure 7.4 Partnering Evaluation April 14, 2000 pages 31g & 31h
Figure 7.5 Partnering Evaluation July 29, 2000 pages 31i & 31j
Part 8 - The Issue Resolution Process page 34
Figure 8.1 - Route of Issue Dispute Resolution page 43a
Part 9 - The Implementation of Issue Resolution page 44

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 25, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Attachments

Attachment One -- Glossary of Terms page 48
Attachment Two -- Project Success page 58
Attachment Three -- Weight x Value page 61
About rjs page 63

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Regional Meeting, Year 2000

Ralph J. Stephenson, P.E.
Consulting Engineer

Partnering paper #3 -- Applying and Implementing Partnering Systems

This paper and its presentation is designed to:

1. Show how partnering systems can help the design and construction professional apply tested and proven methods of project evaluation.

2. Provide guidelines by which design and construction professionals can improve conflict resolution techniques in their management activities.

3. Lead participants through workshops in which they prepare logistical and anecdotal material from which to analyze and evaluate project status.

4. Discuss the root causes of destructive conflict with project workshop members.

5. Help participants learn how to apply and use effective issue resolution techniques.

6. Illustrate by case study analysis the principles of identifying and correcting undesirable trends in planning, design, and construction programs.

Ralph J. Stephenson, P.E.
Consulting Engineer

Partnering paper #3 -- Applying and Implementing Partnering Systems

This paper and its presentation is designed to:

1. Show how partnering systems can help the design and construction professional apply tested and proven methods of project evaluation.

2. Provide guidelines by which design and construction professionals can improve conflict resolution techniques in their management activities.

3. Lead participants through workshops in which they prepare logistical and anecdotal material from which to analyze and evaluate project status.

4. Discuss the root causes of destructive conflict with project workshop members.

5. Help participants learn how to apply and use effective issue resolution techniques.

6. Illustrate by case study analysis the principles of identifying and correcting undesirable trends in planning, design, and construction programs.

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Annual Meeting, Year 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

APPLYING AND IMPLEMENTING CONSTRUCTION PROJECT PARTNERING SYSTEMS

by Ralph J. Stephenson, P.E., Consulting Engineer

Presented to the National Society of Professional Engineers at their year 2000 annual meeting, Norfolk, Virginia, Saturday July 29, 2000

A discussion of partnering evaluation and issue resolution methods designed to improver the probability of project success.

Part 1 - The Introduction

This paper and its presentation is designed to:

- show how partnering systems can help the design and construction professional apply tested and proven methods of project evaluation.
- provide guidelines by which design and construction professionals can improve conflict resolution techniques in their management activities.
- lead participants through workshops in which they prepare logistical and anecdotal material from which to analyze and evaluate project status.
- discuss the root causes of destructive conflict with project workshop members.
- help participants learn how to apply and use effective issue resolution techniques.
- illustrate by case study analysis the principles of identifying and correcting undesirable trends in planning, design, and construction programs.

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Annual Meeting, Year 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

* * *

In response to the challenge for demonstrated concern and competence in planning, design, and construction, the National Society of Professional Engineers has sponsored two major papers -- one each at their 1998 and 1999 annual conventions. Both papers have been concentrated on improving performance by using partnering systems and alternative dispute resolution methods (ADR).

This third paper, presented at the Year 2000 Annual Meeting of the National Society of Professional Engineers, aims to knit together the diverse project management elements of logistical analysis, alternative dispute resolution, and partnering. The vehicle selected to convey this information is a case study focused on how to measure actual project progress against acceptable standards of performance.

In July, 1998, the NSPE annual meeting was concentrated on analyzing conflict and what it can do to our technical and professional design and construction efforts if not managed effectively. This led into a description of what the Michigan Department of Transportation (MDOT), the Michigan Society of Professional Engineers (MSPE) and the Michigan Consulting Engineers Council (MCEC) are doing to moderate destructive conflict during design phases of MDOT projects.

In the July, 1999 annual meeting, participants, meeting in several workshops, wrote a construction project charter from a selected case study. It incorporated conditions closely paralleling actual project design and construction practices.

In this year 2000 NSPE presentation and workshop, participants will derive measurement standards by which they will quantify project performance using the case study partnering charter. Next, the attendees will develop a sequence of actions designed to accurately evaluate project performance and then to resolve a case study dispute.

Project evaluations they make will be in the form of a report card in which the project stakeholders will determine the quality of project work and determine the level of adherence to partnering charter standards. Then the project participants will identify current and ongoing conflict issues that must be resolved by the project participants, and appropriate corrective actions will be discussed, decided upon and taken.

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Annual Meeting, Year 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

This peer paper and the accompanying attachments[1] will provide each participant with descriptive material to help sharpen partnering evaluation skills and improve issue resolution efforts.

[1] See Attachment One for glossary of terms

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Annual Meeting, Year 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 2 - The Case Study

I. Owner - Northern States Economic Data Systems (NSEDS)

NSEDS is a private business devoted to collecting, analyzing, and disseminating economic information for the business, government, and volunteer sectors in political/geographic units throughout the world.

The information the NSEDS staff collects, processes, and sells is primarily concerned with methods by which wealth, value, currency and their equivalents interact with the market places in which they are used as a medium of exchange.

The company maintains information collection and market operations from offices located in 25 cities world-wide. Their home office is in Telitreck, North Dakota, a community with a population of 120,500 people of whom 1,500 work at NSEDS.

All data analysis is done at the home office and dispatched to the point of use electronically, and by mail, courier, or special messenger. Seventy-five percent of the receipt and dispatch volume is electronic.

The mission of NSEDS is:

> **"To derive useful micro to macro global economic information from statistical data, and to transfer this information and what it means to our clients in accurate, easily used, and highest value-added form."**

The company was family founded, and is still owned and operated by family members. Most of them have been actively involved in direction of the firm for 51 years. They have decided that NSEDS must expand and improve its facilities in Telitreck for the organization to satisfy its mission and meet its short and medium range plans.

II. Facility types - program characteristics of expansion

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

A. **Phase I** - New office and data processing center building.
   1. 200,000 square feet on three floors plus one building level below grade.
   2. Structure is a cast-in-place, prestressed, reinforced concrete frame.
   3. Patterned masonry exterior skin with panelized curtain wall.
   4. Full amenities to be provided for employees and visitors.

B. **Phase 2** - Remodel existing building after move in to new building.
   1. Existing building.
      a) Contains 160,000 square feet on two floors and a lower level.
      b) Structural steel frame with concrete one way slab concrete floors.
      c) Exterior skin face brick exterior. Good brick quality. Punched windows.
      d) Multiple ply roofing - roof in excellent condition.
      e) Minimal amenities for employees and visitors.

   2. Remodeled building.
      a) Each existing floor to be completely gutted and remodeled.
      b) Full amenities to be provided for employees and visitors. Amenities to be comparable and compatible with new building amenities.
      c) Exterior skin to be fully renovated, pointed, and cleaned.
      d) Existing roof to be inspected and evaluated for serviceability before active remodeling work starts.
      e) New building to be fully occupied and usable prior to start of existing building remodeling

C. **Site work** - For new office and for remodeled building.
   1. Construct new parking with capacity of 1050 cars.
   2. Rebuild and expand existing 200 car parking lot to accommodate 500 cars.
   3. Construct new retention pond for cooling, visual appeal and park use.
   4. Construct new employee recreation area.

III. Those involved - Project team partners

A. **NSEDS staff**
   1. President and chief operating officer - NSEDS - Mr. Lindsay Dreyfuss
   2. Vice president of operations - Shelley Dreyfuss
   3. Facilities manager - John Dreyfuss

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

4. Security manager - Charles Leaderer
5. Office manager - Connie Knowlton
6. Data processing manager - Marcia Dreyfuss
7. Public relations manager - Bernice Branson

B. **Computer systems contractor staff** - Datacomp, Inc.
   1. Computer hardware project manager - Roger Triangle
   2. Computer software project manager - Lars Jensen
   3. Space designer - Tina Gottlieb

C. **Architect/Engineers of record** - Loring & Metzer
   1. President and chief operating officer - Fred Loring A.I.A.
   2. Architectural designer - Timothy Dennison - architect
   3. Project Manager - Lawrence Middleton - architect
   4. Field Inspector - Thomas Sandow - architect
   5. Interior designer - Sandra McNeil - interiors designer
   6. Project Manager - Larry Offhauser, P.E. - structural engineer
   7. Project Manager - Harrison McNeil. P.E. - mechanical and electrical engineer
   8. Project Manager - Prasha Morton P.E. - civil engineer

D. **Testing agencies** - Strendel - geotechnical, and Mechbal - balancing
   1. Geotechnical - Fred Strendel, P.E. - Vice president
   2. Geotechnical - Peter Telitreck, P.E. - Field and project engineer
   3. Mechanical balancing - Albert Alison, P.E. - Project engineer

E. **General contractor** - Tiltsen and Greene
   1. President - John Tiltsen, P.E.
   2. Vice president of operations - Don Labadie, P.E.
   3. Project manager - Curt Raliston
   4. Field superintendent - Ted Abel

F. **Specialty contractors** - Brown Mechanical and Powers Electric
   1. President - Jason Brown, P.E.
   2. Estimator and project manager - Karl Strum
   3. Field superintendent - Lincoln Cantino

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Annual Meeting, Year 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

G. **Fixtures, furniture, and equipment contractor** - Efficiency Design, Inc.
1. President - Connie Talline *
2. Project manager for design - William Ralston
3. Project manager for installation - Fred Black
4. Field superintendent - Raymond Teal

H. **Partnering system chair**
1. Donald Thompson, P. E.

* IV. Contract types -- see Figures 2.1 and 2.2 for descriptions

A. **Architect engineer** - contract is with NSEDS
1. Partially qualified - selected and negotiated from prequalified list prepared by NSEDS facilities manager, John Dreyfuss.
2. Authority limits - limited agent.
3. Payment method - (Payroll + regulatory overhead costs x 2.75) + (expenses) with cap on both.
4. Single responsibility - in house and outside consultants

B. **General contractor** - contract is with NSEDS
1. Partially qualified - selected and negotiated from prequalified list prepared by Mr. Lindsey Dreyfuss, President, and facilities manager, John Dreyfuss.
2. Authority limits - as contractor.
3. Payment method - time and material with fixed fee and guaranteed maximum price - share in savings under gmp - 80 % to owner and 20% to contractor.
4. Single responsibility - manage all subs to provide and install labor and materials for all building and site work.

C. **Computer system contractor** - contract is with NSEDS
1. Partially qualified - selected and negotiated from prequalified list prepared by data processing manager, Marcia Dreyfuss.
2. Authority limits - as contractor.
3. Payment method - fixed cost.
4. Single responsibility - provide computer system design, fabrication and management, materials and equipment, and install all materials and

Figure 2.1 - Design Service Contract Characteristics

Ralph J. Stephenson PE
Consulting Engineer

A. Agreement premises

1. Totally negotiated - broad multivalue competition
2. Partially qualified - moderate multivalue competition
3. Totally qualified - narrow multivalue value competition

B. Authority limits

1. As agent
2. As limited agent
3. As contractor

C. Payment methods

1. Fixed total including payroll + overhead + profit + (expenses)
   a. Expenses included
   b. Expenses separate
2. (Payroll costs) x multiplier + fixed fee + expenses
   a. Limit on
   1.) Payroll hours
   2.) Expenses
   b. No limit on
   1.) Payroll hours
   2.) Expenses
3. (Payroll costs) x multiplier for payroll costs & overhead
   a. Expenses included
   b. Expenses separate
4. % of total construction cost
   a. Expenses included
   b. Expenses separate

D. Scope of services

1. Single responsibility
   a. All in house
   b. In house & outside consultants
2. Split responsibility
   a. In house, client & other prime consultants
   b. In house & other prime consultants
   c. In house & client

Figure 2.2. - Construction Contract Characteristics

Ralph J. Stephenson PE
Consulting Engineer

A. Agreement premises

1. Totally negotiated - broad multivalue competition
2. Partially qualified - moderate multivalue competition
3. Totally qualified - narrow multi valuevalue competition

B. Authority limits

1. As full agent
2. As limited agent
3. As contractor

C. Payment methods

1. Fixed cost (hard money)
2. Time & material + fixed fee
   a. Limit on
      1.) Time & material (gmp) with no shared savings
      2.) Time & material (gmp) with shared savings
   b. No limit on time & material
3. Time & material + % fee
   a. Limit on
      1.) Time & material (gmp) with no shared savings
      2.) Time & material (gmp) with shared savings
   b. No limit on time & material
4. Conditional payments or penalties
   a. Incentive/disincentive
   b. Liquidated damages

D. Scope of services

1. Single responsibility - in house & subcontractors
   a. All trades
      1.) Provide management
      2.) Provide design
      3.) Provide construction labor
      4.) Provide construction materials
   b. Limited trades
      1.) Provide management
      2.) Provide design
      3.) Provide construction labor
      4.) Provide construction materials
2. Split responsibility - in house, subcontractors & other primes
   a. All trades in contract
      1.) Provide management
      2.) Provide design
      3.) Provide construction labor
      4.) Provide construction materials
   b. Limited trades in contract
      1.) Provide management
      2.) Provide design
      3.) Provide construction labor
      4.) Provide construction materials

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

equipment.

D. **Fixtures, furniture, and equipment contractor** - contract is with NSEDS
   1. Partially qualified - selected and negotiated from prequalified list by Mr. Lindsey Dreyfuss.
   2. Authority limits - as contractor.
   3. Payment method - time and material with fixed fee and guaranteed maximum price - no share in savings
   4. Single responsibility - provide all management, design, materials and equipment, and install all materials and equipment.

E. **Testing agencies** - contract is with NSEDS
   1. Partially qualified - selected and negotiated from prequalified list prepared by architect/engineer and NSEDS facilities manager.
   2. Authority limits - as contractor.
   3. Payment method - time and material with fixed fee and guaranteed maximum price
   4. Single responsibility - provide all labor, materials and testing for building and site work.

F. **Specialty building contractors** - contracts are with general contractor
   1. Partially qualified - selected by competitive bids from prequalified list by general contractor.
   2. Authority limits - as contractor.
   3. Payment method - fixed price
   4. Single responsibility - provide and install labor and materials for building and site work according to purchase order from general contractor, Tiltsen and Greene, and other lead contractors.

3/28/2000

V. Current status of project as of charter preparation date - March 28, 2000 (working day 062)

A. Contract documents for new building complete and issued.
B. General construction contracts for new building awarded.
C. Construction sub contracts for new building awarded.
D. Testing contracts awarded.
E. Remodeling design for existing building in design development phase.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

F. Construction consultant contract for existing building (Phase Two) awarded to Tiltsen and Green for new building - to be converted to guaranteed maximum construction contract as design proceeds.
G. Specialty sub contractors for new building in favored position for existing building remodeling, if they perform well on new building - this is well known by the subs.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 3 - The Early Partnering Discussions

NSEDS's executive staff has carefully studied various methods of delivering the expansion program and have arrived at several conclusions. Given the unique size and importance of the job in the small community of Telitreck, they as the owner must:

- minimize the potential for destructive conflict on the job.
- exert excellent cost control so as to fulfill their responsibilities as the owner.
- accurately plan and schedule the project to encourage rapid communication of clean information.
- clearly identify the responsibilities and authority of those involved.
- cooperate fully with regulatory agencies having jurisdiction over the program.
- strive for design and construction excellence as a community and organizational contribution.

In light of these requirements, Mr. Lindsey Dreyfuss, President of NSEDS has encouraged his staff to maximize the probability of success through the use of design and construction partnering. The partnering team has been identified and a partnering chair, Donald Thompson, P.E., selected to conduct the partnering meetings, and to spearhead activities needed to bring the partnering system to full implementation.

The partnering process is to be used for construction of the new building, and for assisting in the design and remodeling program for the existing building. The project under consideration at present however is only for construction of the new building as outlined above.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 4 - The Charter

Soon after award of contracts for the new building the owner, the architect and engineer, and the general contractor called a meeting of the stakeholders to write a charter for the Phase One of the construction operations.

The group selected to attend consisted of about 44 key people involved in various portions of the design and construction process. They met for a full day at the Telitreck Resort, a local motel and resort. Their assignment was to prepare a charter for the new building project (Phase One). The product of this meeting was an 19 point charter, signed by all participating in its preparation. This charter, reproduced below, was considered to have been accepted and agreed to by all signatories. Signing the document was optional for those attending. All attending the charter meeting did sign their acceptance of the moral obligations placed on them by the charter.

The Phase One notice-to-proceed was issued March 1, 2000 (working day 043 - working day calendar starting on working day 1 - January 3, 2000) -- See Figure 4.1 for the working day calendar. The Phase One charter was prepared on March 28, 2000 (wd 062).

Charter for construction of the Northern States Economic Data Systems facility - March 28, 2000 (wd 0620)

Mission of the NSEDS project team
To provide NSEDS with reliable, efficient facilities on time and within budget, stressing the spirit of cooperation, professionalism, safety, and reasonable profit without interruption or compromise of NSEDS operations.

Objectives of the NSEDS project team
In recognition of the importance of achieving its mission all NSEDS Partners, as a team, will attempt to:

1. anticipate, identify, and accurately communicate potential job problems.
2. ensure the design is understood and acknowledged by all the NSEDS partners.
3. prepare and publish a project directory showing people, work categories,

JAN	2000	3	45	5	90	11	135	13	180	15	225
3	1	6	46	8	91	12	136	14	181	16	226
4	2	7	47	9	92	13	137	15	182	17	227
5	3	8	48	10	93	14	138	18	183	20	228
6	4	9	49	11	94	17	139	19	184	21	229
7	5	10	50	12	95	18	140	20	185	22	230
10	6	13	51	15	96	19	141	21	186	24	231
11	7	14	52	16	97	20	142	22	187	27	232
12	8	15	53	17	98	21	143	25	188	28	233
13	9	16	54	18	99	24	144	26	189	29	234
14	10	17	55	19	100	25	145	27	190	30	235
17	11	20	56	22	101	26	146	28	191	DEC	2000
18	12	21	57	23	102	27	147	29	192	1	236
19	13	22	58	24	103	28	148	OCT	2000	4	237
20	14	23	59	25	104	31	149	2	193	5	238
21	15	24	60	26	105	AUG	2000	3	194	6	239
24	16	27	61	30	106	1	150	4	195	7	240
25	17	28	62	31	107	2	151	5	196	8	241
26	18	29	63	JUN	2000	3	152	6	197	11	242
27	19	30	64	1	108	4	153	9	198	12	243
28	20	31	65	2	109	7	154	10	199	13	244
31	21	APR	2000	5	110	8	155	11	200	14	245
FEB	2000	3	66	6	111	9	156	12	201	15	246
1	22	4	67	7	112	10	157	13	202	18	247
2	23	5	68	8	113	11	158	16	203	19	248
3	24	6	69	9	114	14	159	17	204	20	249
4	25	7	70	12	115	15	160	18	205	21	250
7	26	10	71	13	116	16	161	19	206	22	251
8	27	11	72	14	117	17	162	20	207	26	252
9	28	12	73	15	118	18	163	23	208	27	253
10	29	13	74	16	119	21	164	24	209	28	254
11	30	14	75	19	120	22	165	25	210	29	255
14	31	17	76	20	121	23	166	26	211		
15	32	18	77	21	122	24	167	27	212		
16	33	19	78	22	123	25	168	30	213		
17	34	20	79	23	124	28	169	31	214		
18	35	21	80	26	125	29	170	NOV	2000		
21	36	24	81	27	126	30	171	1	215		
22	37	25	82	28	127	31	172	2	216		
23	38	26	83	29	128	SEP	2000	3	217		
24	39	27	84	30	129	1	173	6	218		
25	40	28	85	JUL	2000	5	174	7	219		
28	41	MAY	2000	3	130	6	175	8	220		
29	42	1	86	5	131	7	176	9	221		
MAR	2000	2	87	6	132	8	177	10	222		
1	43	3	88	7	133	11	178	13	223		
2	44	4	89	10	134	12	179	14	224		

JAN	2001	5	300	7	345	11	390	13	435	15	480
2	256	6	301	8	346	12	391	14	436	16	481
3	257	7	302	9	347	13	392	17	437	19	482
4	258	8	303	10	348	16	393	18	438	20	483
5	259	9	304	11	349	17	394	19	439	21	484
8	260	12	305	14	350	18	395	20	440	23	485
9	261	13	306	15	351	19	396	21	441	26	486
10	262	14	307	16	352	20	397	24	442	27	487
11	263	15	308	17	353	23	398	25	443	28	488
12	264	16	309	18	354	24	399	26	444	29	489
15	265	19	310	21	355	25	400	27	445	30	490
16	266	20	311	22	356	26	401	28	446	DEC	2001
17	267	21	312	23	357	27	402	OCT	2001	3	491
18	268	22	313	24	358	30	403	1	447	4	492
19	269	23	314	25	359	31	404	2	448	5	493
22	270	26	315	29	360	AUG	2001	3	449	6	494
23	271	27	316	30	361	1	405	4	450	7	495
24	272	28	317	31	362	2	406	5	451	10	496
25	273	29	318	JUN	2001	3	407	8	452	11	497
26	274	30	319	1	363	6	408	9	453	12	498
29	275	APR	2001	4	364	7	409	10	454	13	499
30	276	2	320	5	365	8	410	11	455	14	500
31	277	3	321	6	366	9	411	12	456	17	501
FEB	2001	4	322	7	367	10	412	15	457	18	502
1	278	5	323	8	368	13	413	16	458	19	503
2	279	6	324	11	369	14	414	17	459	20	504
5	280	9	325	12	370	15	415	18	460	21	505
6	281	10	326	13	371	16	416	19	461	24	506
7	282	11	327	14	372	17	417	22	462	26	507
8	283	12	328	15	373	20	418	23	463	27	508
9	284	13	329	18	374	21	419	24	464	28	509
12	285	16	330	19	375	22	420	25	465	31	510
13	286	17	331	20	376	23	421	26	466		
14	287	18	332	21	377	24	422	29	467		
15	288	19	333	22	378	27	423	30	468		
16	289	20	334	25	379	28	424	31	469		
19	290	23	335	26	380	29	425	NOV	2001		
20	291	24	336	27	381	30	426	1	470		
21	292	25	337	28	382	31	427	2	471		
22	293	26	338	29	383	SEP	2001	5	472		
23	294	27	339	JUL	2001	4	428	6	473		
26	295	30	340	2	384	5	429	7	474		
27	296	MAY	2001	3	385	6	430	8	475		
28	297	1	341	5	386	7	431	9	476		
MAR	2001	2	342	6	387	10	432	12	477		
1	298	3	343	9	388	11	433	13	478		
2	299	4	344	10	389	12	434	14	479		

JAN	2002	5	555	7	600	11	645	13	690	15	735
2	511	6	556	8	601	12	646	16	691	18	736
3	512	7	557	9	602	15	647	17	692	19	737
4	513	8	558	10	603	16	648	18	693	20	738
7	514	11	559	13	604	17	649	19	694	21	739
8	515	12	560	14	605	18	650	20	695	22	740
9	516	13	561	15	606	19	651	23	696	25	741
10	517	14	562	16	607	22	652	24	697	26	742
11	518	15	563	17	608	23	653	25	698	27	743
14	519	18	564	20	609	24	654	26	699	29	744
15	520	19	565	21	610	25	655	27	700	DEC	2002
16	521	20	566	22	611	26	656	30	701	2	745
17	522	21	567	23	612	29	657	OCT	2002	3	746
18	523	22	568	24	613	30	658	1	702	4	747
21	524	25	569	28	614	31	659	2	703	5	748
22	525	26	570	29	615	AUG	2002	3	704	6	749
23	526	27	571	30	616	1	660	4	705	9	750
24	527	28	572	31	617	2	661	7	706	10	751
25	528	29	573	JUN	2002	5	662	8	707	11	752
28	529	APR	2002	3	618	6	663	9	708	12	753
29	530	1	574	4	619	7	664	10	709	13	754
30	531	2	575	5	620	8	665	11	710	16	755
31	532	3	576	6	621	9	666	14	711	17	756
FEB	2002	4	577	7	622	12	667	15	712	18	757
1	533	5	578	10	623	13	668	16	713	19	758
4	534	8	579	11	624	14	669	17	714	20	759
5	535	9	580	12	625	15	670	18	715	23	760
6	536	10	581	13	626	16	671	21	716	24	761
7	537	11	582	14	627	19	672	22	717	26	762
8	538	12	583	17	628	20	673	23	718	27	763
11	539	15	584	18	629	21	674	24	719	30	764
12	540	16	585	19	630	22	675	25	720	31	765
13	541	17	586	20	631	23	676	28	721		
14	542	18	587	21	632	26	677	29	722		
15	543	19	588	24	633	27	678	30	723		
18	544	22	589	25	634	28	679	31	724		
19	545	23	590	26	635	29	680	NOV	2002		
20	546	24	591	27	636	30	681	1	725		
21	547	25	592	28	637	SEP	2002	4	726		
22	548	26	593	JUL	2002	3	682	5	727		
25	549	29	594	1	638	4	683	6	728		
26	550	30	595	2	639	5	684	7	729		
27	551	MAY	2002	3	640	6	685	8	730		
28	552	1	596	5	641	9	686	11	731		
MAR	2002	2	597	8	642	10	687	12	732		
1	553	3	598	9	643	11	688	13	733		
4	554	6	599	10	644	12	689	14	734		

JAN	2003	5	810	7	855	11	900	15	945	17	990
2	766	6	811	8	856	14	901	16	946	18	991
3	767	7	812	9	857	15	902	17	947	19	992
6	768	10	813	12	858	16	903	18	948	20	993
7	769	11	814	13	859	17	904	19	949	21	994
8	770	12	815	14	860	18	905	22	950	24	995
9	771	13	816	15	861	21	906	23	951	25	996
10	772	14	817	16	862	22	907	24	952	26	997
13	773	17	818	19	863	23	908	25	953	28	998
14	774	18	819	20	864	24	909	26	954	DEC	2003
15	775	19	820	21	865	25	910	29	955	1	999
16	776	20	821	22	866	28	911	30	956	2	1000
17	777	21	822	23	867	29	912	OCT	2003	3	1001
20	778	24	823	27	868	30	913	1	957	4	1002
21	779	25	824	28	869	31	914	2	958	5	1003
22	780	26	825	29	870	AUG	2003	3	959	8	1004
23	781	27	826	30	871	1	915	6	960	9	1005
24	782	28	827	JUN	2003	4	916	7	961	10	1006
27	783	31	828	2	872	5	917	8	962	11	1007
28	784	APR	2003	3	873	6	918	9	963	12	1008
29	785	1	829	4	874	7	919	10	964	15	1009
30	786	2	830	5	875	8	920	13	965	16	1010
31	787	3	831	6	876	11	921	14	966	17	1011
FEB	2003	4	832	9	877	12	922	15	967	18	1012
3	788	7	833	10	878	13	923	16	968	19	1013
4	789	8	834	11	879	14	924	17	969	22	1014
5	790	9	835	12	880	15	925	20	970	23	1015
6	791	10	836	13	881	18	926	21	971	24	1016
7	792	11	837	16	882	19	927	22	972	26	1017
10	793	14	838	17	883	20	928	23	973	29	1018
11	794	15	839	18	884	21	929	24	974	30	1019
12	795	16	840	19	885	22	930	27	975	31	1020
13	796	17	841	20	886	25	931	28	976		
14	797	18	842	23	887	26	932	29	977		
17	798	21	843	24	888	27	933	30	978		
18	799	22	844	25	889	28	934	31	979		
19	800	23	845	26	890	29	935	NOV	2003		
20	801	24	846	27	891	SEP	2003	3	980		
21	802	25	847	30	892	2	936	4	981		
24	803	28	848	JUL	2003	3	937	5	982		
25	804	29	849	1	893	4	938	6	983		
26	805	30	850	2	894	5	939	7	984		
27	806	MAY	2003	3	895	8	940	10	985		
28	807	1	851	7	896	9	941	11	986		
MAR	2003	2	852	8	897	10	942	12	987		
3	808	5	853	9	898	11	943	13	988		
4	809	6	854	10	899	12	944	14	989		

Figure 4.2 - Page 11b

Working Day Calendar 2000 - 2003

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

position and alternate contact (general contractor, in conjunction with all partners).
4. work closely with all regulatory agencies to assure compliance with their current standards and regulations.
5. make and document all decisions, and provide all approvals at all management levels promptly, fairly and with consideration of the requirements of the project.
6. avoid surprises!
7. design and construct a facility that is built to recognize the need for the builders and the designers to achieve a reasonable financial profit on their work.
8. *prepare, package, and process submittals in a timely, fair and considerate manner consistent with the priorities of the contractors, designers, and owner.
9. promptly review and determine the merit of properly submitted requests for extensions of time.
10. adhere to agreed-upon schedules and resource commitments.
11. provide timely communications, responses, decisions...and be available.
12. *mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all stakeholders. (general contractor, in conjunction with all partners)
13. strive to avoid litigation.
14. *prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation (partner's task force assembled by partnering program sponsor).
15. coordinate and cooperate with public agencies and utilities so needed public services are available in a timely manner.
16. adopt an attitude of mutual respect for the opinions and beliefs of all partners.
17. maintain high job morale and cooperative attitudes among all project participants.
18. *prepare, publish, and implement a partnering evaluation system by which the effectiveness of the system is regularly monitored (partner's task force assembled by program sponsor).
19. Have fun!

*Indicates objectives requiring special preparation by partners
( ) indicates who is to take the lead in preparing supplementary materials

Partnering for the Design and Construction Profession
NSPE Annual Meeting - July 1999
Spokane, Washington

Ralph J. Stephenson, P.E. P.C.
Consulting Engineer

I. Charter for construction of the Northern States Economic Data Systems facility

A. Mission of the NSEDS project team

To provide NSEDS with reliable, efficient facilities on-time and within budget, stressing the spirit of cooperation, professionalism, safety and reasonable profit without interruption or compromise of NSEDS operations.

B. Objectives of the NSEDS project team

In recognition of the importance of achieving their mission all NSEDS Partners, as a team, will attempt to:

1. Anticipate, identify, and accurately communicate potential job problems.
2. Ensure the design is understood and acknowledged by all the NSEDS partners.
3. Prepare and publish a project directory showing people, work category, position and alternate contact. (general contractor in conjunction with all stakeholders
4. Work closely with all regulatory agencies to assure compliance to their current standards and regulations.
5. Make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.
6. Avoid surprises!
7. Design and construct a facility that is built so as to recognize the need for the builders and the designers to achieve a reasonable financial profit on their work.
8. Prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.
9. Promptly review and determine the merit of properly submitted requests for extensions of time.
10. Adhere to agreed upon schedules and resource commitments.
11. Provide timely communications, responses, decisions... and be available.
12. *Mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all stakeholders.(general contractor in conjunction with all stakeholders)
13. Strive to avoid litigation.
14. Prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation.
15. Coordinate and cooperate with public agencies/utilities so needed public services are available in a timely manner.

16. Adopt an attitude of mutual respect for the opinions and beliefs of all stakeholders.
17. Maintain high job morale and cooperative attitudes among all project participants.
18. Have fun!

Applying and Implementing Partnering Systems
PEC Professional Edge Paper
NSPE Annual Meeting, Year 2000
Norfolk, Virginia

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

The charter above was derived from the answers to four questions asked in the charter meeting workshop:

Question #1. What problems do others cause us on projects of this type?

Question #2. What problems do we cause others on projects of this type?

Question #3. What is the single most important goal or objective for you and your organization to achieve by this project being successful?

Question #4. Considering your answers to questions 1, 2 and 3, what actions can you and the other stakeholders take to add the highest value to the job while achieving the project mission?

In some charter meetings we find as many as 200 or more answers are generated from these four open questions. The answers are folded into responses to Question #4 and incorporated into the charter objectives for the project by the partners. (The charter above was derived from the 1999 NSPE annual meeting presentation, and was based on the case study for the NSEDS project. It has been used as the basis for our Year 2000 Paper workshops).

At this point in our partnering discussions the charter is written, the NSEDS team is enthused about the prospects of partnering success, and the question on most partners' minds is "What's next?"

This is best answered by comparing the project partnering process to a three-legged milking stool. The three legs of partnering are the charter, the partnering evaluation system and the issue resolution system. Without all three being in place the partnering system is unstable. Certainly the charter points the way to a better project than if it had not been written and accepted by those signing the document -- but there's more to the process!

Application and implementation of the charter provisions resembles the use of critical path method (CPM) as a management tool -- perhaps 60% of the value of the critical path method is gained during the planning process itself. The remaining 40% is realized by using the plan of work to manage the project, gage progress and detect dysfunctions in the job to allow for early correction of destructive conflict that

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

might hurt the program.

The full use of partnering is best achieved when the charter with its mission and objectives is used to evaluate project health and to establish guidelines for resolving issues and problems before they seriously damage the work in progress and the work to be done.

By the time the charter is written, signed and distributed to the project team, the team members have come to better know each other and to understand their relation to the work to be done on the job more thoroughly than they did prior to the charter meeting.

In addition, the team, through its day-long analysis and discussion of the project, has gained a thorough understanding of the project and its mission, goals and objectives, an understanding that can only come from intensive scrutiny of the people involved, a discussion of the documents defining the job, and a review of the tentative plans and schedules of work proposed for the project.

Based on this improved knowledge and the discussions that have generated it, the charter now offers a valid report card from which the partners can prepare a process by which to periodically evaluate how well the job is running, is being run, and will be run in the future.

Notice that preparation of an evaluation system is a requirement of charter objective #18. It is to be prepared by a partners' task force assembled by the program sponsor.[2]

I strongly recommend that the evaluation and the issue resolution systems be prepared two or three weeks later than the charter meeting, and in a separate session, by a task force selected from those attending the partnering charter session.

[2] The program sponsor is usually considered to be the person or organization that most strongly supports or champions partnering concepts and often is a prime mover in the use of partnering.

REAL NAME AFTER YOUR

Partnering for the Design and Construction Profession
NSPE Annual Meeting - July 1999
Spokane, Washington

Ralph J. Stephenson, P.E. P.C.
Consulting Engineer

ROLE PLAYING NAME. THANK

V. Case study positions

A. NSEDS staff
1. President and chief operating officer - NSEDS - Team #1 PAUL [illegible]
2. Vice president of operations - NSEDS - Team #1 [illegible]
3. Facilities manager - NSEDS - Team #1 PAT CONNER
4. Security manager - NSEDS - Team #2 [illegible]
5. Office manager - NSEDS - Team #1 - DALE CHLEBOWSKI
6. Data processing manager - NSEDS - Team #1 JEFF MEADOW
7. Public relations manager - NSEDS - Team #1 JIM JONES

B. Computer systems contractor staff - Datacomp, Inc. [illegible]
1. Computer hardware project manager - Datacomp, Inc. - Team #2 [illegible]
2. Computer software project manager - Datacomp, Inc. - Team #2 BILL BERRY
3. Space designer - Datacomp, Inc. - Team #2 DALE [illegible]

C. Architect/engineers of record staff - Loring & Metzer
1. President and chief operating officer - Loring & Metzer - a/e of record - Team #3 [illegible]
2. Architectural designer - Loring & Metzer - a/e of record - Team #2 — [illegible]
3. Project Manager - Loring & Metzer - a/e of record - Team #3 - HARRY GROVER
4. Field Inspector - Loring & Metzer - a/e of record - Team #3 JOE KOPKO
5. Interior designer - Loring & Metzer - a/e of record - Team #2 Matt [illegible]
6. Project Manager -structural - Loring & Metzer - a/e of record - Team #3 [illegible]
7. Project Manager - mechanical and electrical - Loring & Metzer - a/e of record - Team #2 [illegible]
8. Project Manager - civil engineer - Loring & Metzer - a/e of record - Team #3 BILL ANTHONY

D. Testing agencies staff - Strendel - geotechnical, and Mechbal - balancing
1. Vice President - geotechnical - Strendel - Team #3 Mahmoud Modkar
2. Field and Project Engineer - geotechnical - Strendel - Team #1 DON SNOWDEN
3. Project Engineer - mechanical balancing - Mechbal - Team #5 JAY BANERJEE

E. General contractor staff - Tiltsen and Greene
1. President - general contractor - Tiltsen and Greene - Team #4 WERNER KOETZLI JR
2. Vice president of operations - general contractor - Tiltsen and Greene - Team #4 GINY OBERLENDER
3. Project manager - general contractor - Tiltsen and Greene - Team #4 RALPH FENTON
4. Field superintendent - general contractor - Tiltsen and Greene - Team #4 DON ZANG

F. Specialty contractor staff - Brown Mechanical and Powers Electric
1. President - mechanical - Brown Mechanical - Team #5 [illegible]
2. Estimator and project manager - mechanical - Brown Mechanical - Team #5 RICH DEBSKI
3. Field superintendent - mechanical - Brown Mechanical - Team #5 JOHN WOODEN
4. President - electrical - Powers Electric - Team #5 DAVID BANNING
5. Estimator and project manager - electrical - Powers Electric - Team #5 - [illegible]
6. Field superintendent - electrical - Powers Electric - Team #5 RON POLVI

G. Fixtures, furniture, and equipment contractor - Efficiency Design, Inc.
1. President - fixtures, furniture, and equipment contractor - Efficiency Design, Inc. - Team #3 [illegible]
2. Design project manager - fixtures, furniture, and equipment contractor - Efficiency Design, Inc. - Team #4 [illegible]
3. Installation project manager - fixtures, furniture, and equipment contractor - Efficiency Design, Inc. - Team #4 Charles Farris
4. Field superintendent - fixtures, furniture, and equipment contractor - Efficiency Design, Inc. - Team #4 Steve Bacsik

Partnering for the Design and Construction Profession
NSPE Annual Meeting - July 1999
Spokane, Washington

Ralph J. Stephenson, P.E. P.C.
Consulting Engineer

H. Community leaders and invited visitors
1. CL 1-President - Telitreck Chamber of Commerce - Table #6 Joe Worth
2. CL 2-Building Inspector - City of Telitreck, North Dakota - Table #6 ROGER JESSER
3. CL 3-Fire Marshall - City of Telitreck, North Dakota - Table #6 - MIKE YUNL
4. CL 4-Regional Operations Manager - North Dakota Power & Gas Company - Table #6
5. CL 5-Team #6 - Project Engineer - North Dakota Department of Environmental Quality - PAUL WAYTEN, Table #6
6. CL 6-Director of Public Services - roads, water & waste water systems - City of Telitreck, North Dakota - Table #6 STEVE STRECKER TOM STRICKLIN,
7. CL 7-Provost - Telitreck Campus - University of North Dakota - Table #6 TONY McGUIRE

D-6 Gal Eight

JIM WATHEN D-4

ART DEWIT B-5

Dennis Gehlen D-3

Kent Bichler

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 5 - The Monitoring and Rating Process

Partnering monitoring and evaluation is composed of two major elements:

- A measurement system.
- An implementation program to do something about what is being measured.

The measurement system uses the project charter as a report card to grade the project management staff on how well it has achieved its project mission and objectives over the evaluation period. The measurement is a team opinion of the performance quality of its project work. It is not a measure of an individual's work or of the work of the individual's organization.

Implementation of an indicated action resulting from the evaluation is needed to bring partnering evaluations to a close. For instance, if the analysis shows that the project is losing schedule time, a method of correcting the slippage must be established and agreed upon in time to avoid damage to the project plan of action. This might require an updating of the plan of action by the project team aimed at maintaining the current contract date; or it could require issuance of a change order by the owner revising the contract date, or the scope of work.

The presence of a project dysfunction must be considered a signal to take corrective action as agreed to by the project partners. In essence, the action is a management-by-exception[3] solution -- one in which problems are quickly separated from non problems.

The major value of partnering lies in its contribution to potential project success[4]. A way of seeing how this works is to ask any signatory to the project charter on a partnered project his or her opinion whether or not a selected charter objective will actually add value to the project if the objective is achieved. Ask yourself this

[3] Management-by-exception -- A measuring and monitoring system that sounds an alarm to the manager when problems have appeared or are about to appear, and remains silent when there are no problems. The system identifies the problem area, thus permitting the effective manager to manage the exception while leaving the smoothly running operations to continue running smoothly.

[4] See Attachment Two, page 58 for a definition and discussion of project success.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

simple question using any of the NSEDS objectives in the charter. You will probably find by subtractive analysis that if any of the objectives are removed from the project charter that the success potential for the NSEDS program is lowered.

With the charter objectives in place and general agreement reached on the content of the charter we can now assemble the partnering evaluation task force which will be charged with the responsibility for writing the evaluation system[5].

The task force chair is selected prior to the task force meeting. The chair should prepare a set of questions to be answered as the charter evaluation is prepared. These questions and their suggested answers should be submitted to the members of the task force before the meeting. They might include:

- **Question - What purpose is served by making a partnering evaluation?**

  Answer - To assist the project team to identify what is needed to maintain good performance, and to exercise corrective action to upgrade poor or substandard efforts on the project.

- **Question - What results should be expected from a partnering evaluation?**

  Answer - An increase in the probability of achieving a successful project based on meeting the mission, goals, and objectives defined in the charter by the project team.

- **Question - What data should be used to monitor project partnering performance?**

  Answer - That which will show clearly and completely how the project mission and each defined objective in the charter has been met over the most recent evaluation period.

Project managers have found that two main factors influence the degree of success attributed to achieving each of the objectives in the charter -- first the weight or

[5] For a step-by-step description of preparing a partnering evaluation system see "Project Partnering for the Design and Construction Industry" published by John Wiley & Sons, Inc., New York.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

importance of the objective[6], and, second, the performance quality of the project staff working as a team.

The weight assigned to an objective indicates the relative importance of the objective to achieve project success. Let us use a new library building program to illustrate the concept of weighing. In the partnering session for construction of the library one of the charter objectives identified was "maintain a clean, safe, accessible, and well-planned work site."

If this library building is planned for a downtown site where any disruption or interference with job traffic and street traffic would damage the potential to properly use the available space, this objective would be critical -- on an ascending scale of one to five it might rate a 4.5 or 5.0 in relative importance.

On the other hand if the library was to be built on an unoccupied site in a wide open educational campus it is possible the degree of importance of the objective would be lower -- perhaps, on the ascending scale used above, as low as a 3.0 or 4.0. The reason for the low weight rating is that the restrictions on the use of this site might not be as restraining or damaging as those on the downtown site.

So, the first element needed to evaluate an objective is to quantify the importance of the objective to achieve project success. If the weighting is done on a scale of one to five, the following standards offer a good comparative description of each numerical level.

Weight = 5 - Charter objective is of extremely high importance to achieving the mission of the project. If the objective is achieved, its contribution to the success of the affected project work is very significant.

Weight = 4 - Charter objective is of above-average importance to achieving the mission of the project. If the objective is achieved, its contribution to the success of the affected project work is somewhat over-average.

Weight = 3 - Charter objective is of average importance to achieving the mission of the project. If the objective is achieved, its contribution to the success of the

[6] See Attachment Three, page 61, for a discussion of the role of weight in decision making.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

affected project work is at an average for similar projects.

Weight = 2 - Charter objective is just below average importance to achieving the mission of the project. If the objective is achieved, its contribution to the success of the affected project work is below average but is still of some value to the project.

Weight = 1 - Charter objective is of little or no importance to achieving the mission of the project. If the objective is achieved, its value-added to the affected project work is minimal and has little impact on overall project success. This charter objective may well have been omitted from the charter.

The second influence on the degree of success attributed to achieving each of the objectives in the charter is the quality of the performance over the evaluation period. The performance quality (PQ) rating is a measure of how well the project has proceeded during the evaluation period. It is important to understand that both the weight and the performance quality are ratings, not rankings. Each objective defined in the charter is rated separately.

Usually the performance quality ratings are also done on a scale of one to five. The following standards offer a comparative description of each numerical level of quality to be assigned for the evaluation period.

Performance Quality = 5 - Best possible performance - The potential for achieving the objective successfully is very high. The performance of the project team and the partners has been excellent, and has either maintained a previous very high level of value-added or has considerably raised a previous lower level of contribution.

Performance Quality = 4 - Good performance, with the potential for doing better - The potential for for achieving the objective successfully is higher than average, due to the good performance of the project team and the partners. Their work has either maintained a previous high level of contribution or has raised a previous lower level of contribution. There remains room for some performance improvement.

Performance Quality = 3 - Average performance - The potential for achieving the

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

objective successfully is average and comes from a moderately competent performance of the project team and the partners. Their work has not significantly raised lower performance levels in previous evaluations, nor has it seriously damaged previous moderately higher levels of contribution. There remains room for considerable performance improvement.

Performance Quality = 2 - Performance slightly below average and slightly above being unacceptable - The potential for achieving the objective successfully by this level of performance being continued is below average and comes from a marginal operation of the project team and the partners. Their work has not significantly raised lower performance levels in previous evaluations and may even have damaged previous higher levels of contribution. There is an important need for sizable performance improvement.

Performance Quality = 1 - Worst possible performance - Little, if any, potential exists for achieving the objective successfully by this level of operation. It results from a poor performance of the partners and the project team. Their work has significantly damaged the likelihood of success and negated previous higher levels of contribution. There is an urgent need for immediate corrective attention and action.

Performance quality ratings can be in decimals if the partner rating the team's execution of the activity feels the need for this degree of refinement.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 6 - The Inspection and Evaluation Process

The NSEDS project and its charter will be used in these case studies to illustrate the partnering inspection and evaluation system. The sequence is quite similar to that used for inspecting and evaluating a construction program for conformance to a critical path network plan and schedule.

Essential elements of inspecting and evaluating project status include:

Step 1. Identifying important milestone dates, and key contract and non contract dates that will form the basis of the evaluation.

Step 2. Identifying the components of design and construction to be used as standards of performance in the monitoring and evaluation.

Step 3. Inspecting the project and identifying the current status of activities that make up the present condition of the project in relation to the charter. The charter should be considered a "blank report card" or "report card template" which allows the project team to be graded by the partners over the evaluation period.

These steps are applied below to the NSEDS case study:

Step 1. Identify important milestone dates and key contract and non contract dates that will form the basis of the evaluation.

Important milestone dates:

- March 1, 2000 P.M. (working day 044) - Notice to proceed with Phase 1 construction. Notice to proceed issued by NSEDS to general contractor, Tiltsen and Greene.

- March 28, 2000 P.M. (working day 063) - Charter preparation date and informal first monitoring and evaluation.

- April 14, 2000 A.M. (working day 075) - Formal monitoring and evaluation #1.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

- July 24, 2000 A.M. (working day 144) - Formal monitoring and evaluation #2.

Contract Dates (specified in project contract):

- January 3, 2000 A.M. (working day 001) - Base date of project working day calendar.

- March 1, 2000 P.M. (working day 044) - Notice to proceed with Phase 1 construction issued by NSEDS to general contractor, Tiltsen and Greene.

- March 17, 2000 A.M. (working day 055) - Field work started on project.

- June 20, 2002 P.M. (working day 632) - Substantial completion of Phase 1 (new building).

- January 15, 2003 P.M. (working day 776) - Substantial completion of Phase 2 (remodeling).

Project Partnering Evaluation Dates

- March 28, 2000 P.M. (working day 062) - Charter completely prepared and project status monitored and discussed informally.

- April 14, 2000 A.M. (working day 075) - First formal partnering evaluation.

- July 29, 2000 A.M. (working day 149) - Second formal partnering evaluation.

- Subsequent dates to be set at approximate three month intervals.

Step 2. Identify the components of design and construction to be used as standards of performance in the monitoring and evaluation.

A working classification of major building components provides a good starting point from which to evaluate the status of a design and construction project. The basic units into which most buildings can be divided represent distinct construction and construction-related actions that have common characteristics.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

A suggested list of the various design and construction project elements to be used in monitoring and evaluating project condition is outlined below. Components are arranged roughly in the sequence in which they are put into place or executed on a design and construction project.

- Front end work (few)
All non-construction project-related work concerning real estate, financing and pre-construction leasing.

- Design work (des)
Work that concerns producing and issuing contract documents.

- Procurement (pro)
Work related to soliciting proposals, awarding subcontracts, preparing submittals, approving submittals, and fabricating and delivering materials & equipment to the job site.

- Off-site work (ofs)
All work outside the property or hoarding line (contract boundary) that is included in the project contract scope of work.

- On-site work (osi)
Project work outside the building line and inside the property or hoarding (contract boundary) line.

- Substructure work (sbw)
Foundation work upon which the superstructure bears directly or indirectly. Also may include site preparation for start of field work on the building area.

- Superstructure work (ssw)
All major structural load carrying components that bear on the substructure directly or indirectly.

- Exterior skin work (esk)
All elements required to close the building to weather.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

• Interior rough work (irw)
Interior building components that can be exposed totally or in part to weather.

• Interior finish work (ifw)
Interior building components that must be protected totally or in part from weather.

• Unit systems work (usy)
Work that can be installed as a unit and is somewhat isolated during construction from other components of the building.

Step 3. Inspect the project and identify the current status of activities that make up the present condition of the project in relation to the charter.

As of March 28, 2000 (working day 062) - the day the charter is written

• Front end work (few)
- All building and site work permits for new building have been obtained by the general contractor and the project subcontractors.
- Temporary utilities are being installed.
- All easements are negotiated and in effect.

• Design work (des)
- Contract documents for new building are complete and issued.
- Contract documents are executed by all contractors

• Procurement work (pro)
- General construction contract for new building awarded.
- Construction sub contracts for new building awarded.
- Testing contracts awarded.
- Phase Two remodeling contract documents for existing building are in design development.
- Construction consultant contract for Phase Two remodeling of existing building awarded to Tiltsen and Greene, General Contractors. This contract to be converted to guaranteed maximum construction contracts as Phase Two design

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

documents are prepared and issued. Subcontracts for remodeling will be awarded by Tiltsen and Greene, with approval of owner.
- Specialty sub contractors for new building are in favored position for existing building remodeling, if they perform well on new building - this is well known by the subs.

• Off-site work (ofs)
- Not started.
- Relations with city somewhat strained over off-site utility revisions needed.

• On-site work (osi)
- Rough grading in work.
- Installation of site utilities for Phase 1 just starting.
- Construction roads for Phases 1 and 2 being installed.
- Need location of connection points with off-site utilities.

• Substructure work (sbw)
- Layout for new building complete enough for footing excavation to start
- Procurement for foundations in progress.

• Superstructure work (ssw)
- Procurement for superstructure in progress.

• Exterior skin work (esk)
- Procurement just starting

• Interior rough work (irw)
- Procurement just starting.

• Interior finish work (ifw)
- Procurement just starting.

• Unit systems work (usy)
- Procurement of HVAC, electrical and fire protection components in work.

As of April 14, 2000 (working day 075)

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

- Front end work (few)
  - Temporary utilities substantially complete for new building.
  - Mobilization and move on site substantially complete.

- Design work (des)
  - Contract documents for new building complete.
  - Design development documents for remodeling 80% complete.
  - Working documents for remodeling 10% complete.

- Procurement work (pro)
  - Procurement of all trades in active work. Submittals for new building are arriving in accordance with the current schedule of submittals.

- Off-site work (ofs)
  - Unexpected utility relocation needed for major water and sanitary mains.
  - Design of utility relocation in work by City of Telitreck.

- On-site work (osi)
  - Rough grading substantially complete.
  - Installation of site utilities for Phase One 70% complete.
  - Construction roads for Phases One and Two 90% complete.

- Substructure work (sbw)
  - Wall and column footings for new building 70% complete including piers.
  - Foundation walls and elevator pits 20% complete.
  - Having difficulty getting locations of foundation wall embeds and thimbles from design team.

- Superstructure work (ssw)
  - Procurement for superstructure resteel and cables in progress.

- Exterior skin work (esk)
  - Curtain wall shop drawings arriving at general contractor's office.
  - Glass samples being submitted.
  - Masonry sample wall erected. No approval yet.
  - Owner changing roofing type. Bulletin being prepared.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

- Interior rough work (irw)
  - Procurement just starting for dry-wall materials, hollow metal frames, hardware and metal doors.

- Interior finish work (ifw)
  - Procurement just starting for hardware, dry wall materials, acoustic materials, toilet partitions, and hard tile.

- Unit systems work (usy)
  - Procurement of HVAC, electrical and fire protection components continuing.
  - Shop drawings for HVAC equipment, switch gear and sprinkler piping submitted to general contractor.
  - Elevator equipment room and cab work submitted to general contractor.
  - Escalator truss shop drawings submitted to general contractor.

As of July 28, 2000 (working day 148)

- Front end work (few)
  - Cross easement approval with adjoining property owner being held up by NSEDS building committee.

- Design work (des)
  - Contract documents for new building complete.
  - Design development documents for remodeling 95% complete.
  - Working documents for remodeling 25% complete.
  - Architect production staff having trouble getting approval from NSEDS on cafeteria layout.

- Procurement work (pro)
  - Procurement of all trades in active work. Submittals for new building continue arriving in accordance with the current schedule of submittals.
  - Some early curtain wall components arriving on job.
  - Some early interior masonry pallets arriving on job. Having trouble storing some materials in locations that are accessible as needed.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

- Off-site work (ofs)
  - City of Telitreck issued bidding documents for relocated off-site utilities. Bids due September 8, 2000 (working day 178).
  - Having trouble with off-site power installation by Dakota West Power company.

- On-site work (osi)
  - Installation of site utilities for Phase One 95% complete.
  - Construction roads for Phases One and Two substantially complete.
  - Paving sub base being installed and compacted

- Substructure work (sbw)
  - Foundation walls and elevator pits 80% complete.
  - Slab on grade 70% complete
  - Still having difficulty getting locations of foundation wall embeds and thimbles from design team.

- Superstructure work (ssw)
  - Second level poured out and post tensioned.
  - Procurement of resteel and cables 75% complete. Materials on job.

- Exterior skin work (esk)
  - Curtain wall components arriving on job.
  - Glass arriving on job.
  - Masonry sample wall approved. Masonry units being manufactured.
  - Owner changing roofing type. Bulletin being prepared.
  - Change order issued for revision of roofing material.
  - Owner angry at architect/engineer and general contractor over estimated cost of roofing change. Felt quote was exorbitant.

- Interior rough work (irw)
  - Hollow metal frames arriving on job.
  - Having trouble finding storage space for materials and equipment on job.
  - Sheet metal ductwork at first floor 20% complete.
  - Mechanical piping at first floor 50% complete.
  - Sprinkler piping at first floor not started.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

- Interior finish work (ifw)
  - Hollow metal doors arriving on job
  - Wood doors arriving on job.
  - Having trouble finding protected lay-down space for interior materials.
  - Hardware arriving on job.

- Unit systems work (usy)
  - Procurement of HVAC, electrical and fire protection components continuing.
  - Shop drawings for HVAC equipment, switch gear and sprinkler piping submitted to general contractor.
  - Most mechanical equipment and electrical equipment shop drawings submitted by subcontractors. Turn around by general contractor slow.
  - Elevator equipment room and cab work shop drawings submitted to general contractor.
  - Escalator truss shop drawings submitted to general contractor.

- Job morale and attitudes (jma)
  - Some tensions between the project general contractor and the City engineering staff over slow design and City field work on off-site utilities.

- Communications with others (cwo)
  - Technical relations between the City, NSEDS, and the site work contractor have been very poor. Must be improved.
  - Lines of authority within NSEDS need to be clarified. Confusion about how to process changes.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 7 - The Issue Identification Process

The project team has made working evaluations of the project status at three specific points in time in conjunction with their day-to-day work on the job:

- March 28, 2000 P.M. (working day 062) - Date of charter and of informal first monitoring and evaluation.

- April 14, 2000 A.M. (working day 075) - Formal monitoring and evaluation #1.

- July 28, 2000 A.M. (working day 148) - Formal monitoring and evaluation #2.

Several potentially disruptive issues have surfaced during these three monitorings and evaluations. These are summarized below as derived from the project status reports. The charter objectives which relate to the issues named are given in parenthesis following the description.

March 28, 2000 (working day 062) - date of charter preparation and first monitoring and evaluation:
- Relations with City of Telitreck somewhat tense over off-site utility revisions needed. (affects charter objectives 1, 4, 6, 15).

- Need location of connection points with off-site utilities lines from City. (affects charter objectives 1, 4, 6, 15).

- Technical relations between the City, NSEDS, and the site work contractor have been very poor. Must be improved. (affects charter objectives 1, 4, 6, 15).

- Lines of authority within NSEDS need to be clarified. Confusion about how to process changes. (affects charter objectives 3, 8, 9).

April 14, 2000 (working day 075) - date of first formal monitoring and evaluation:
- Unexpected utility relocation needed for major water and sanitary mains. Engineering design is in work by City of Telitreck. City will do the design work with their own staff. (affects charter objectives 1, 4, 6, 15).

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

- Subcontractors need more storage and trailer space on site. (affects charter objectives 1, 17).

- Having difficulty getting locations of foundation wall embeds and thimbles from design team. (affects charter objectives 2, 11).

- Owner changing roofing type. Bulletin being prepared. (affects charter objectives 2, 6, 11).

- Need to improve turnaround times on shop drawings from subs. (affects charter objective 8).

July 28, 2000 (working day 148) - date of second formal monitoring and evaluation:

- Cross easement approval with adjoining property owner being held up by NSEDS building committee. (affects charter objectives 1, 6, 11).

- Architect's production staff having trouble getting approval from NSEDS on cafeteria layout. (affects charter objectives 1, 5, 7).

- Having trouble with off-site power installation Dakota West Power company. (affects charter objectives 1, 4, 8, 10, 11, 15).

- Still having difficulty getting locations of foundation wall embeds and thimbles from design team. (affects charter objectives 2, 11).

- Owner angry at architect/engineer and general contractor over estimated cost of roofing change. Felt quote was exorbitant. (affects charter objectives 2, 6, 7, 11).

- Having trouble finding secure storage space for materials and equipment on job. (affects charter objectives 1, 17).

- Having trouble finding secure lay down space for interior materials. (affects charter objectives 1, 7, 17).

- Most mechanical equipment and electrical equipment shop drawings have

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

been submitted by subcontractors. Turn around of shop drawings by general contractor slow. (affects charter objectives 5, 8, 11).

- Some escalating tensions between the project general contractor and the City engineering staff over slow design and City field work on off-site utilities. (affects charter objectives 1, 4, 6, 15).

- Turnarounds on requests for payment beginning to slow. (affects charter objectives 5, 7, 8).

Several of these problems could have been predicted in the partnering meeting and might have been resolved quickly by a more thorough consideration during the table work sessions in which "problems others cause us" and "problems we cause others" were discussed. We now can use our partnering rating system outlined in Part 5, "The Evaluation" to locate trouble spots on the project.

Partnering evaluation templates and work sheets

Partnering evaluation spread sheets such as shown in Figure 7.1 and 7.2 are of great help in preparing an evaluation of the project condition. Figure 7.1 and 7.2 are blank work sheets on which the NSEDS charter objectives are shown in column 1. The objective weights assigned by the task force are shown in column 2, and the performance quality par selected by the task force is shown in column 3.

Column 4 is helpful in making a comparison with other data of the weight times the performance quality par rating, W x (PQP). Column 5 is where the partners enter their performance quality rating for a just-completed rating evaluation period.

Column 6 is the W x Current Performance Quality Rating and is calculated automatically by the cell computations performed by the computer and the program.

Column 7 is entered from the previous evaluation sheet. It allows an easy comparison of current quality with the previous W x Performance Quality Rating.

Notice that the weight of each objective stays the same for all evaluations. If, for any

Figure 7.1 - Pages a & b - Northern States Economic Data Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Evaluation Template
Listed in Charter Objective Order

data date:
date printed:

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
01	01. anticipate, identify, and accurately communicate job problems.							1
02	02. ensure the design is understood and acknowledged by all the NSEDS partners.							2
03	03. prepare and publish a project directory showing people, work category, position and alternate contact (general contractor in conjunction with all partners)							3
04	04. work closely with all regulatory agencies to assure compliance with their current standards and regulations.							4
05	05. make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.							5
06	06. avoid surprises!							6
07	07. design and construct a facility that is built so as to recognize the need for the builders and designers to achieve a reasonable financial profit on their work.							7
08	08. prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.							8
09	09. promptly review and determine the merit of properly submitted requests for payment.							9
10	10. adhere to agreed-upon schedules and resource commitments.							10
11	11. provide timely communications, responses, decisions... and be available!							11
12	12. *mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all partners. (general contractor in conjunction with all partners).							12
13	13. strive to avoid litigation.							13
14	14. *prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation. (partner's task force assembled by program sponsor)							14
15	15. coordinate and cooperate with public agencies and utilities so needed public services are available in a timely manner.							15
16	16. adopt an attitude of mutual respect for the opinions and beliefs of all partners.							16
17	17. maintain high job morale and cooperative attitudes among all project participants.							17
18	18. *prepare, publish and implement a partnering evaluation system by which the effectiveness of the system is regularly monitored. (partner's task force assembled by program sponsor)							18
19	19. have fun!							19

Figure 7.1 - Pages a & b - Northern States Economic Data Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Evaluation Template
Listed in Charter Objective Order

data date:
date printed:

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
			Average of total					

* indicates objectives requiring special preparation by stakeholders.
( ) indicates who is to take the lead in preparing special materials described.

Criteria for weight (w) assignment (column 2)

- weight = 5 - Charter objective is of extremely high importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is very significant.
- weight = 4 - Charter objective is of above-average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is somewhat over-average but not at the top level of contribution.
- weight = 3 - Charter objective is of average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is at the average for successful similar projects.
- weight = 2 - Charter objective is just below average importance to achieving the mission of the project. If the objective is is achieved , its potential contribution to the success of the affected project work is below average but is still of some value to the project.
- weight = 1 - Charter objective is of little or no importance to achieving the mission of the project. If the objective is achieved, its potential value added to the affected project work is minimal and has little impact on overall project success.

Note: Below, please identify outstanding issues that must be resolved to maintain a high level of project progress and quality.

Criteria for performance quality - (value added by work - column 5)

- Performance quality = 5 - Best possible performance. The potential for achieving the objective successfully is very high, due to the excellent performance of the project team and stakeholders over the evaluation period. Their excellence in action has either maintained a previous very high level of value added or has considerably raised a previous lower level of contribution.
- Performance quality = 4 - Good performance, with the potential for doing better. The potential for successfully achieving the objective is higher than than average, due to the good performance of the project team and the stakeholders over the evaluation period. Their work has either maintained a previous moderate level of contribution or has raised a previous lower level of contribution. There remains room for some performance improvement.
- Performance quality = 3 - Average performance. The potential for successfully achieving the objective is average and comes from a moderately competent performance of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance in previous evaluations, nor has it seriously damaged previously moderately higher levels of contribution . There remains room for considerable performance improvement.
- Performance quality = 2 - Performance slightly below average and slightly above being unacceptable. The potential for successfully achieving the objective by this level of performance being continued is below average and comes from a marginal operation of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance levels in previous evaluations and may seriously damage previous higher levels of contribution. There is an important need for sizable performance improvement.
- Performance quality = 1 - Worst possible performance. Little, if any, potential exists for successfully achieving the objective by this level of performance. It results from a poor performance of the project team and the stakeholders over the evaluation period. Their work has significantly damaged the likelihood of success and negated previous higher levels of contribution. There is an urgent need for immediate corrective attention and action.

Signed:

Figure 7.2 - Pages c & d - Northern States Economic Data Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Weights & Performance Quality Par
Listed in Charter Objective Order

data date: 03/28/2000
date printed: 03/29/2000 page 1

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
01	01. anticipate, identify, and accurately communicate job problems.	4.5	4.2	18.9		0.0		1
02	02. ensure the design is understood and acknowledged by all the NSEDS partners.	4.0	3.7	14.8		0.0		2
03	03. prepare and publish a project directory showing people, work category, position and alternate contact (general contractor in conjunction with all partners)	4.2	4.0	16.8		0.0		3
04	04. work closely with all regulatory agencies to assure compliance with their current standards and regulations.	4.7	4.0	18.8		0.0		4
05	05. make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.	3.8	3.5	13.3		0.0		5
06	06. avoid surprises!	3.5	4.0	14.0		0.0		6
07	07. design and construct a facility that is built so as to recognize the need for the builders and designers to achieve a reasonable financial profit on their work.	4.0	4.2	16.8		0.0		7
08	08. prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.	4.2	4.5	18.9		0.0		8
09	09. promptly review and determine the merit of properly submitted requests for payment.	5.0	5.0	25.0		0.0		9
10	10. adhere to agreed-upon schedules and resource commitments.	4.0	4.2	16.8		0.0		10
11	11. provide timely communications, responses, decisions... and be available!	4.3	4.0	17.2		0.0		11
12	12. *mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all partners. (general contractor in conjunction with all partners).	4.0	4.5	18.0		0.0		12
13	13. strive to avoid litigation.	4.5	5.0	22.5		0.0		13
14	14. *prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation. (partner's task force assembled by program sponsor)	3.7	4.0	14.8		0.0		14
15	15. coordinate and cooperate with public agencies and utilities so needed public services are available in a timely manner.	4.1	4.5	18.5		0.0		15
16	16. adopt an attitude of mutual respect for the opinions and beliefs of all partners.	3.5	4.0	14.0		0.0		16
17	17. maintain high job morale and cooperative attitudes among all project participants.	3.6	4.0	14.4		0.0		17
18	18. *prepare, publish and implement a partnering evaluation system by which the effectiveness of the system is regularly monitored. (partner's task force assembled by program sponsor)	4.1	4.2	17.2		0.0		18
19	19. have fun!	4.0	3.5	14.0		0.0		19

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
	Average of total	4.1	4.2	17.1		0.0		

* indicates objectives requiring special preparation by stakeholders.
( ) indicates who is to take the lead in preparing special materials described.

Criteria for weight (w) assignment (column 2)

- weight = 5 - Charter objective is of extremely high importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is very significant.
- weight = 4 - Charter objective is of above-average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is somewhat over-average but not at the top level of contribution.
- weight = 3 - Charter objective is of average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is at the average for successful similar projects.
- weight = 2 - Charter objective is just below average importance to achieving the mission of the project. If the objective is is achieved , its potential contribution to the success of the affected project work is below average but is still of some value to the project.
- weight = 1 - Charter objective is of little or no importance to achieving the mission of the project. If the objective is achieved, its potential value added to the affected project work is minimal and has little impact on overall project success.

Note: Below, please identify outstanding issues that must be resolved to maintain a high level of project progress and quality.

Criteria for performance quality - (value added by work - column 5)

- Performance quality = 5 - Best possible performance. The potential for achieving the objective successfully is very high, due to the excellent performance of the project team and stakeholders over the evaluation period. Their excellence in action has either maintained a previous very high level of value added or has considerably raised a previous lower level of contribution.
- Performance quality = 4 - Good performance, with the potential for doing better. The potential for successfully achieving the objective is higher than than average, due to the good performance of the project team and the stakeholders over the evaluation period. Their work has either maintained a previous moderate level of contribution or has raised a previous lower level of contribution. There remains room for some performance improvement.
- Performance quality = 3 - Average performance. The potential for successfully achieving the objective is average and comes from a moderately competent performance of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance in previous evaluations, nor has it seriously damaged previously moderately higher levels of contribution . There remains room for considerable performance improvement.
- Performance quality = 2 - Performance slightly below average and slightly above being unacceptable. The potential for successfully achieving the objective by this level of performance being continued is below average and comes from a marginal operation of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance levels in previous evaluations and may seriously damage previous higher levels of contribution. There is an important need for sizable performance improvement.
- Performance quality = 1 - Worst possible performance. Little, if any, potential exists for successfully achieving the objective by this level of performance. It results from a poor performance of the project team and the stakeholders over the evaluation period. Their work has significantly damaged the likelihood of success and negated previous higher levels of contribution. There is an urgent need for immediate corrective attention and action.

Signed:

Figure 7.3 - Pages e & f - Northern States Economic Data Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Evaluation as of April 14, 2000
Listed in Charter Objective Order

data date: 04/14/2000
date printed: 04/17/2000

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
01	01. anticipate, identify, and accurately communicate job problems.	4.5	4.2	18.9		0.0		1
02	02. ensure the design is understood and acknowledged by all the NSEDS partners.	4.0	3.7	14.8		0.0		2
03	03. prepare and publish a project directory showing people, work category, position and alternate contact (general contractor in conjunction with all partners)	4.2	4.0	16.8		0.0		3
04	04. work closely with all regulatory agencies to assure compliance with their current standards and regulations.	4.7	4.0	18.8		0.0		4
05	05. make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.	3.8	3.5	13.3		0.0		5
06	06. avoid surprises!	3.5	4.0	14.0		0.0		6
07	07. design and construct a facility that is built so as to recognize the need for the builders and designers to achieve a reasonable financial profit on their work.	4.0	4.2	16.8		0.0		7
08	08. prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.	4.2	4.5	18.9		0.0		8
09	09. promptly review and determine the merit of properly submitted requests for payment.	5.0	5.0	25.0		0.0		9
10	10. adhere to agreed-upon schedules and resource commitments.	4.0	4.2	16.8		0.0		10
11	11. provide timely communications, responses, decisions... and be available!	4.3	4.0	17.2		0.0		11
12	12. *mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all partners. (general contractor in conjunction with all partners).	4.0	4.5	18.0		0.0		12
13	13. strive to avoid litigation.	4.5	5.0	22.5		0.0		13
14	14. *prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation. (partner's task force assembled by program sponsor)	3.7	4.0	14.8		0.0		14
15	15. coordinate and cooperate with public agencies and utilities so needed public services are available in a timely manner.	4.1	4.5	18.5		0.0		15
16	16. adopt an attitude of mutual respect for the opinions and beliefs of all partners.	3.5	4.0	14.0		0.0		16
17	17. maintain high job morale and cooperative attitudes among all project participants.	3.6	4.0	14.4		0.0		17
18	18. *prepare, publish and implement a partnering evaluation system by which the effectiveness of the system is regularly monitored. (partner's task force assembled by program sponsor)	4.1	4.2	17.2		0.0		18
19	19. have fun!	4.0	3.5	14.0		0.0		19

Figure 7.3 - Pages e & f - Northern States Economic Data Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Evaluation as of April 14, 2000
Listed in Charter Objective Order

data date: 04/14/2000
date printed: 04/17/2000

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
	Average of total	4.1	4.2	17.1		0.0		

* indicates objectives requiring special preparation by stakeholders.
( ) indicates who is to take the lead in preparing special materials described.

Criteria for weight (w) assignment (column 2)

- weight = 5 - Charter objective is of extremely high importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is very significant.
- weight = 4 - Charter objective is of above-average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is somewhat over-average but not at the top level of contribution.
- weight = 3 - Charter objective is of average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is at the average for successful similar projects.
- weight = 2 - Charter objective is just below average importance to achieving the mission of the project. If the objective is is achieved , its potential contribution to the success of the affected project work is below average but is still of some value to the project.
- weight = 1 - Charter objective is of little or no importance to achieving the mission of the project. If the objective is achieved, its potential value added to the affected project work is minimal and has little impact on overall project success.

Note: Below, please identify outstanding issues that must be resolved to maintain a high level of project progress and quality.

Criteria for performance quality - (value added by work - column 5)

- Performance quality = 5 - Best possible performance. The potential for achieving the objective successfully is very high, due to the excellent performance of the project team and stakeholders over the evaluation period. Their excellence in action has either maintained a previous very high level of value added or has considerably raised a previous lower level of contribution.
- Performance quality = 4 - Good performance, with the potential for doing better. The potential for successfully achieving the objective is higher than than average, due to the good performance of the project team and the stakeholders over the evaluation period. Their work has either maintained a previous moderate level of contribution or has raised a previous lower level of contribution. There remains room for some performance improvement.
- Performance quality = 3 - Average performance. The potential for successfully achieving the objective is average and comes from a moderately competent performance of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance in previous evaluations, nor has it seriously damaged previously moderately higher levels of contribution . There remains room for considerable performance improvement.
- Performance quality = 2 - Performance slightly below average and slightly above being unacceptable. The potential for successfully achieving the objective by this level of performance being continued is below average and comes from a marginal operation of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance levels in previous evaluations and may seriously damage previous higher levels of contribution. There is an important need for sizable performance improvement.
- Performance quality = 1 - Worst possible performance. Little, if any, potential exists for successfully achieving the objective by this level of performance. It results from a poor performance of the project team and the stakeholders over the evaluation period. Their work has significantly damaged the likelihood of success and negated previous higher levels of contribution. There is an urgent need for immediate corrective attention and action.

Signed:

Figure 7.4 - Pages g & h - Northern States Economic Data Systems Facilities Expansion Program - Telitreck, North Dakota

RJS Project Partnering Evaluation as of April 14, 2000
Listed in Charter Objective Order

data date: 04/14/2000
date printed: 04/17/2000

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
01	01. anticipate, identify, and accurately communicate job problems.	4.5	4.2	18.9	4.0	18.0		1
02	02. ensure the design is understood and acknowledged by all the NSEDS partners.	4.0	3.7	14.8	3.0	12.0		2
03	03. prepare and publish a project directory showing people, work category, position and alternate contact (general contractor in conjunction with all partners)	4.2	4.0	16.8	4.0	16.8		3
04	04. work closely with all regulatory agencies to assure compliance with their current standards and regulations.	4.7	4.0	18.8	4.0	18.8		4
05	05. make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.	3.8	3.5	13.3	3.5	13.3		5
06	06. avoid surprises!	3.5	4.0	14.0	3.5	12.3		6
07	07. design and construct a facility that is built so as to recognize the need for the builders and designers to achieve a reasonable financial profit on their work.	4.0	4.2	16.8	4.0	16.0		7
08	08. prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.	4.2	4.5	18.9	4.2	17.6		8
09	09. promptly review and determine the merit of properly submitted requests for payment.	5.0	5.0	25.0	5.0	25.0		9
10	10. adhere to agreed-upon schedules and resource commitments.	4.0	4.2	16.8	4.2	16.8		10
11	11. provide timely communications, responses, decisions... and be available!	4.3	4.0	17.2	4.0	17.2		11
12	12. *mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all partners. (general contractor in conjunction with all partners).	4.0	4.5	18.0	4.0	16.0		12
13	13. strive to avoid litigation.	4.5	5.0	22.5	4.5	20.3		13
14	14. *prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation. (partner's task force assembled by program sponsor)	3.7	4.0	14.8	3.0	11.1		14
15	15. coordinate and cooperate with public agencies and utilities so needed public services are available in a timely manner.	4.1	4.5	18.5	4.5	18.5		15
16	16. adopt an attitude of mutual respect for the opinions and beliefs of all partners.	3.5	4.0	14.0	3.8	13.3		16
17	17. maintain high job morale and cooperative attitudes among all project participants.	3.6	4.0	14.4	4.5	16.2		17
18	18. *prepare, publish and implement a partnering evaluation system by which the effectiveness of the system is regularly monitored. (partner's task force assembled by program sponsor)	4.1	4.2	17.2	4.5	18.5		18
19	19. have fun!	4.0	3.5	14.0	4.0	16.0		19

Figure 7.4 - Pages g & h - Northern States Economic Data
Systems Facilities Expansion Program - Telitreck, North Dakota

RJS Project Partnering Evaluation as of April 14, 2000
Listed in Charter Objective Order

data date: 04/14/2000
date printed: 04/17/2000

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
	Average of total	4.1	4.2	17.1	4.0	16.5		

* indicates objectives requiring special preparation by stakeholders.
( ) indicates who is to take the lead in preparing special materials described.

Criteria for weight (w) assignment (column 2)

- weight = 5 - Charter objective is of extremely high importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is very significant.
- weight = 4 - Charter objective is of above-average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is somewhat over-average but not at the top level of contribution.
- weight = 3 - Charter objective is of average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is at the average for successful similar projects.
- weight = 2 - Charter objective is just below average importance to achieving the mission of the project. If the objective is is achieved , its potential contribution to the success of the affected project work is below average but is still of some value to the project.
- weight = 1 - Charter objective is of little or no importance to achieving the mission of the project. If the objective is achieved, its potential value added to the affected project work is minimal and has little impact on overall project success.

Note: Below, please identify outstanding issues that must be resolved to maintain a high level of project progress and quality.

Criteria for performance quality - (value added by work - column 5)

- Performance quality = 5 - Best possible performance. The potential for achieving the objective successfully is very high, due to the excellent performance of the project team and stakeholders over the evaluation period. Their excellence in action has either maintained a previous very high level of value added or has considerably raised a previous lower level of contribution.
- Performance quality = 4 - Good performance, with the potential for doing better. The potential for successfully achieving the objective is higher than than average, due to the good performance of the project team and the stakeholders over the evaluation period. Their work has either maintained a previous moderate level of contribution or has raised a previous lower level of contribution. There remains room for some performance improvement.
- Performance quality = 3 - Average performance. The potential for successfully achieving the objective is average and comes from a moderately competent performance of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance in previous evaluations, nor has it seriously damaged previously moderately higher levels of contribution . There remains room for considerable performance improvement.
- Performance quality = 2 - Performance slightly below average and slightly above being unacceptable. The potential for successfully achieving the objective by this level of performance being continued is below average and comes from a marginal operation of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance levels in previous evaluations and may seriously damage previous higher levels of contribution. There is an important need for sizable performance improvement.
- Performance quality = 1 - Worst possible performance. Little, if any, potential exists for successfully achieving the objective by this level of performance. It results from a poor performance of the project team and the stakeholders over the evaluation period. Their work has significantly damaged the likelihood of success and negated previous higher levels of contribution. There is an urgent need for immediate corrective attention and action.

Signed:

Figure 7.5 - Pages i & j - Northern States Economic Data
Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Evaluation as of July 28, 2000
Listed in Charter Objective Order

data date: 07/28/2000
date printed: 07/29/2000

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
01	01. anticipate, identify, and accurately communicate job problems.	4.5	4.2	18.9		0.0		1
02	02. ensure the design is understood and acknowledged by all the NSEDS partners.	4.0	3.7	14.8		0.0		2
03	03. prepare and publish a project directory showing people, work category, position and alternate contact (general contractor in conjunction with all partners)	4.2	4.0	16.8		0.0		3
04	04. work closely with all regulatory agencies to assure compliance with their current standards and regulations.	4.7	4.0	18.8		0.0		4
05	05. make and document all decisions, and provide all approvals at their management level promptly, fairly and with consideration of the requirements of the project.	3.8	3.5	13.3		0.0		5
06	06. avoid surprises!	3.5	4.0	14.0		0.0		6
07	07. design and construct a facility that is built so as to recognize the need for the builders and designers to achieve a reasonable financial profit on their work.	4.0	4.2	16.8		0.0		7
08	08. prepare, package, and process submittals in a timely, fair, and considerate manner consistent with the priorities of the contractors, designers, and owner.	4.2	4.5	18.9		0.0		8
09	09. promptly review and determine the merit of properly submitted requests for payment.	5.0	5.0	25.0		0.0		9
10	10. adhere to agreed-upon schedules and resource commitments.	4.0	4.2	16.8		0.0		10
11	11. provide timely communications, responses, decisions... and be available!	4.3	4.0	17.2		0.0		11
12	12. *mutually prepare, publish, implement, and keep current a project action plan and schedule of work that is useful to all partners. (general contractor in conjunction with all partners).	4.0	4.5	18.0		0.0		12
13	13. strive to avoid litigation.	4.5	5.0	22.5		0.0		13
14	14. *prepare and publish an issue resolution policy which stresses the timely resolution of conflict at the originating or lowest possible management level and seeks to avoid litigation. (partner's task force assembled by program sponsor)	3.7	4.0	14.8		0.0		14
15	15. coordinate and cooperate with public agencies and utilities so needed public services are available in a timely manner.	4.1	4.5	18.5		0.0		15
16	16. adopt an attitude of mutual respect for the opinions and beliefs of all partners.	3.5	4.0	14.0		0.0		16
17	17. maintain high job morale and cooperative attitudes among all project participants.	3.6	4.0	14.4		0.0		17
18	18. *prepare, publish and implement a partnering evaluation system by which the effectiveness of the system is regularly monitored. (partner's task force assembled by program sponsor)	4.1	4.2	17.2		0.0		18
19	19. have fun!	4.0	3.5	14.0		0.0		19

Figure 7.5 - Pages i & j - Northern States Economic Data
Systems Facilities Expansion Program - Telitreck, North Dakota

Project Partnering Evaluation as of July 28, 2000
Listed in Charter Objective Order

data date: 07/28/2000
date printed: 07/29/2000

line no.	col 1 - charter objectives - In recognition of the importance of achieving their mission all NSEDS Partners, as a team will strive to :	col 2 weight	col 3 perf qual par(pqp)	col 4 w x pqp	col 5 curr qual	col 6 w x curr qual	col 7 prev w x qual	line #
	Average of total	4.1	4.2	17.1		0.0		

* indicates objectives requiring special preparation by stakeholders.
( ) indicates who is to take the lead in preparing special materials described.

Criteria for weight (w) assignment (column 2)

- weight = 5 - Charter objective is of extremely high importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is very significant.
- weight = 4 - Charter objective is of above-average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is somewhat over-average but not at the top level of contribution.
- weight = 3 - Charter objective is of average importance to achieving the mission of the project. If the objective is achieved, its potential contribution to the success of the affected project work is at the average for successful similar projects.
- weight = 2 - Charter objective is just below average importance to achieving the mission of the project. If the objective is is achieved , its potential contribution to the success of the affected project work is below average but is still of some value to the project.
- weight = 1 - Charter objective is of little or no importance to achieving the mission of the project. If the objective is achieved, its potential value added to the affected project work is minimal and has little impact on overall project success.

Note: Below, please identify outstanding issues that must be resolved to maintain a high level of project progress and quality.

Criteria for performance quality - (value added by work - column 5)

- Performance quality = 5 - Best possible performance. The potential for achieving the objective successfully is very high, due to the excellent performance of the project team and stakeholders over the evaluation period. Their excellence in action has either maintained a previous very high level of value added or has considerably raised a previous lower level of contribution.
- Performance quality = 4 - Good performance, with the potential for doing better. The potential for successfully achieving the objective is higher than than average, due to the good performance of the project team and the stakeholders over the evaluation period. Their work has either maintained a previous moderate level of contribution or has raised a previous lower level of contribution. There remains room for some performance improvement.
- Performance quality = 3 - Average performance. The potential for successfully achieving the objective is average and comes from a moderately competent performance of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance in previous evaluations, nor has it seriously damaged previously moderately higher levels of contribution . There remains room for considerable performance improvement.
- Performance quality = 2 - Performance slightly below average and slightly above being unacceptable. The potential for successfully achieving the objective by this level of performance being continued is below average and comes from a marginal operation of the project team and the stakeholders over the evaluation period. Their work has not significantly raised lower performance levels in previous evaluations and may seriously damage previous higher levels of contribution. There is an important need for sizable performance improvement.
- Performance quality = 1 - Worst possible performance. Little, if any, potential exists for successfully achieving the objective by this level of performance. It results from a poor performance of the project team and the stakeholders over the evaluation period. Their work has significantly damaged the likelihood of success and negated previous higher levels of contribution. There is an urgent need for immediate corrective attention and action.

Signed:

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

reason, it becomes desirable to change the weight of an objective, it should only be done with the concurrence of the stakeholders. Changing the weight revises a base evaluation constant and is not recommended unless a dramatic change makes such a revision essential.

Figure 7.2 c and d is a spread sheet showing the quantification efforts of the evaluation task force work prepared immediately after the charter was written on March 28, 2000. In it they used the criteria described in Part 5, "The Evaluation" to set the weight of the objective (W) in column 2. The par quality performance (PQP) considered necessary to reach the project mission and objectives was listed in column 3. In column 4 was calculated the product of the weight (W) times the par quality of performance (PQP). This product is now to be considered the standard of acceptable performance on this particular project.

On April 14, 2000 the stakeholders meet to make their first formal partnering evaluation. The work sheets for this meeting are contained in Figure 7.3 e and f. Column 5 is left blank for the partners to fill in with their ratings. Note that in the NSPE training session the evaluation form is to be completed by individuals working in teams. The team approach in a training session allows considerably more intercommunication than allowed by the individual working alone.

With the weight and the par performance quality now set, the partners can make their first evaluation. The performance ratings for the project from the start of the project on March 1, 2000 (wd 044) evaluation are shown on Figure 7.4, in column 5, entitled current quality. This evaluation is considered the opinion of one of the partners, RJS, as to the quality of the team performance from the start of the project through the data date of April 14, 2000 (wd 066).

Notice the averages shown on page h of Figure 7.4 in columns 4 and 6. The average of the weight times par quality is 17.1. The average of the weight times current quality is 16.5, a rating about 6% below par. Each of the 19 objectives can now be reviewed to determine where current performance is below, at, or over par. This comparison provides an excellent statistical measure of comparative performance between successive evaluation periods.

The comparisons can be summarized for April 14, 2000 as compared to par in a table as shown below:

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Objective #	Par	Current quality	Δ
#01 Communicate job problems	18.9	18.0	-0.9
#02 Design understood	14.8	12.0	-2.8
#03 Publish project directory	16.8	16.8	0.0
#04 Work with regulatory agencies	18.8	18.8	0.0
#05 Timely and recorded decision making	13.3	13.3	0.0
#06 Avoid surprises!	14.0	12.3	-1.7
#07 Help all to realize profit on job	16.8	16.0	-0.8
#08 Process submittals fairly and properly	18.9	17.6	-1.3
#09 Request for payments	25.0	25.0	0.0
#10 Schedule and resource commitments	16.8	16.8	-0.0
#11 Timely communications	17.2	17.2	0.0
#12 Project action plan	18.0	16.0	-2.0
#13 Avoid litigation	22.5	20.3	-2.2
#14 Issue resolution policy	14.8	11.1	-3.7
#15 Work with public agencies & utilities	18.5	18.5	0.0
#16 Attitude of mutual respect	14.0	13.3	-0.7
#17 Maintain good morale	14.4	16.2	+1.8
#18 Establish partnering evaluation system	17.2	18.5	+1.3
#19 Have fun	14.0	16.0	+2.0

In our NSPE annual convention workshops we will make an evaluation of current quality using the status of the NSEDS project on April 14, 2000 (wd 075) and on July 24, 2000 (wd 144). This then will allow us to evaluate current status over two successive evaluation periods. In addition the outstanding issues during each of these periods will permit identification of both desirable and undesirable trends in the work compared to the progress expected by achieving the defined charter objectives.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 8 - The Issue Resolution Process

Now that the charter, the rating systems, the evaluation processes and the potential project deficiencies have been determined, the actual issue resolution process can begin. This step requires that the partners compare the outstanding issues as noted by them, and to determine the actions that must be taken by the partners and the project team to maintain or reestablish project health.

One of the lessons learned from the above analysis is that an issue-resolution system should be put into work as early as possible, while still allowing adequate time to appoint and assemble the issue-resolution task force. For the NSEDS program this would have been at a date between March 28, 2000 (working day 062) and April 14, 2000 (working day 075).

Usually, the issue resolution system is prepared by a task force of the original signers of the charter. These partners meet and review the issue resolution methods available. Design and construction dispute resolution via our present legal system has become prohibitively expensive, time consuming and often destructive to the parties involved. These deficiencies have provided one of the prime motives of the design and construction industry toward changing its traditional methods of settling industry-related disputes.

Solutions that are within the law and that work well in people-oriented situational conflicts, as judged by design and construction professionals, are gaining in acceptance. These techniques are often called alternative dispute methods (ADR).[7]

ADR is based on the premise that within a given construction project, professionals can identify and resolve problems by methods that best fit their professional responsibilities to the public. This ADR methodology is a supplement to the structured legal processes, operating within the law but through the interpretation

[7] Systems of resolving disputed construction claims outside the courtroom. Includes systems of resolving disputes in planning, design and construction by cooperative, internal, or third party assistance methods that are alternatives to conventional dispute resolution methods currently in common use. Conventional methods are usually considered to be litigation and binding arbitration.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

of that body of law by design and construction professionals rather than legal professionals.

An alternative dispute system that has led to excellent preventive conflict resolution is partnering. It is one of the more popular systems and has seen frequent use over the past twenty years. There are, however, many other ADR forms available to the design and construction profession. During a recent count I found more than 30 systems that to some degree qualify as alternatives. Of these, I recommend serious consideration be given to the twelve listed below.

01. Prevention Techniques
    a. Partnering
    b. Proper risk allocation
    b. Incentives and disincentives

02. Internal Negotiations
    a. Step negotiations
    b. Direct negotiations

03. Informal Exterior Neutral
    a. Architect-engineer of record ruling
    b. Dispute resolution board
    c. Independent neutral advisory opinion

04. Formal Exterior Neutral
    a. Mediation
    b. Minitrial
    c. Advisory opinion
    d. Advisory arbitration

A brief description of each is given below:

01. Prevention

The prevention approach helps to predict and properly apply what project actions might produce optimum results during design and construction implementation.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Usually prevention methods are the least costly ADR techniques.

a. Partnering

Partnering works on the premise that preparing conflict and resolution models early in the job allows the project team early-on to anticipate problems that might be encountered. It also allows the team to establish methods by which effective non-binding solutions might be applied. Partnering works best when the process stresses good faith agreements, emphasizes teamwork, and encourages good communications.

There is a sizable body of evidence that partnering offers one of the best starting points from which to build excellent project team relationships. Partnering also clearly articulates objectives and conflict resolution procedures that are prepared and accepted early in the project by the project team members becoming signatories to a morally binding agreement.

Even today, the generic construction industry is driven by the desire of its professional participants to abide by their legal contracts, and to behave in a certain set of ways consistent with their professional and technical beliefs. This is the fundamental strength of the partnering method.

The partnering technique is relatively inexpensive and can often be used in conjunction with other forms of alternative dispute resolution.

b. Proper risk allocation

This method is based on the premise that risk should be assigned to the party or parties that can best take, manage and control the risk. For example, risk should be allocated --

- to the owner preparing a design and construction program if the architect-engineer is retained only to prepare the construction contract documents. The owner then assumes the risk of preparing a program that meets the user's and the owner's needs;

- to the architect-engineer in contract document preparation if the owner has

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

formulated a well-conceived and clearly stated program from which to prepare the documents;

- to the owner in selecting a construction delivery system where construction is expected to begin before design and construction documents are complete;

- to the contractor in construction of the project where full, well prepared, and checked construction documents are available prior to the start of construction.

Risk allocation that attempts to unfairly shift such risks to owners, architects, engineers, contractors or other members of the project team who are not able, or should not have to absorb the cost of these risks is ineffective since it --

- reduces meaningful competition;

- increases all costs by forcing those at risk to increase contingency allowances;

- increases design and construction costs, and reduces effectiveness because of the high potential for expensive design and construction disputes.

c. Incentives-disincentives

Incentive-disincentive systems are based on including rewards in contract provisions so they provide extra benefits for excellent performance. Penalty provisions or disincentives may also be included for flawed performance.

Incentive-disincentive systems include such techniques as;

- incentives and corresponding disincentives - used primarily for heavy construction projects, particularly highway work;

- liquidated damages - primarily a disincentive system designed to recover lost profits due to time overruns caused by poor performance;

- bonus benefits for good performance - usually coupled with disincentives

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

or penalty provisions.

These systems must be exceptionally well balanced and even-handed to be accepted by the project team members affected. Attempts to unbalance rewards and punishments are quickly recognized by practitioners as devices to harm the practitioner and tend to adversely affect project performance.

Incentive-disincentive methods also tend to attract participants who are willing to take additional risks above those that are normally encountered by merely, but properly, fulfilling contract obligations. This feature may work against achieving high levels of quality on the project.

The technique may be relatively inexpensive if the project is constructed on time. However, if the incentive or disincentive is excessively high, costs of risk taking on the project can increase rapidly.

02. Internal negotiations

Internal negotiation methods encourage the parties involved to conduct project-internal negotiations to resolve job problems. This resolution system requires consensus for its success, It is relatively cost free.

There are two basic techniques used to guide internal negotiations -- step negotiations and direct negotiations. Each has unique distinguishing characteristics.

a. Step negotiations

These usually emphasize initiating resolution of a dispute at the originating level. Negotiations may then be moved up the project organizational ladder in steps until a level of management is reached that is able to resolve the conflict by a non-binding agreement. Normally, a well-defined time limit is allowed for the successive layers of management to seek a solution before the dispute is moved to the next highest level of management.

When and if negotiations reach an impasse and no solution has been agreed upon, the dispute is reevaluated and outside help is often sought from neutrals.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Otherwise the conflict goes to a solution gained through a legally binding process.

b. Direct negotiations

This system involves negotiation of a dispute resolution that begins at the ultimate decision maker (UDM)[8] level. Going to the ultimate decision maker as a first step in settling a conflict moves the dispute past intermediate managers. Some of those bypassed may have been perfectly capable of resolving the conflict if given an opportunity. They may resent having been overlooked in the resolution process.

Immediately moving the dispute to the highest management level does have the benefit of potentially rapid and timely action. The caveat regarding such rapid and timely action is that top management involvement is forced into the disagreement early in the dispute and the ultimate clout that may be needed later at a critical time in the resolution process tends to be prematurely exerted and may adversely impact a fair solution for all.

03. Informal external neutral

Using external neutrals[9] requires that carefully selected professionals, familiar with generic construction, serve as an informal resource to help resolve disputes. This technique may require some professional fees for the neutral but is still a relatively low cost, non-binding ADR technique compared to formal external neutral methods and the binding resolution techniques of litigation.

The three most commonly used informal external neutral systems are summarized below:

[8]Ultimate decision maker - The individual or group at the lowest management level that has the authority to make a final binding decision in any job related matter.

[9]Neutral - An unbiased outside expert who is capable of objectively listening, analyzing and evaluating generic construction related demands or claims that are in dispute and then rendering an opinion, decision, or recommendation as to their disposition.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

a. Architect-engineer of record rulings

The architect-engineer ruling may be respected even though it may not be necessarily binding. The ruling must be totally impartial to be fully accepted. In today's litigious climate the maintenance of an unbiased, neutral position by the member of the design team responsible for preparing the contract documents is nearly impossible. That's why the opinion of the designer of record is seldom used except as an advisory guideline unless specified to the contrary. The cost is usually nominal and may be included as a part of the designer's professional service fee.

b. Dispute resolution board[10]

A dispute resolution board is composed of one or three qualified neutrals selected from outside the project, often at the beginning of the job. If the board is to consist of three members, one member is selected by the owner and must be approved by the contractor. A second member is selected by the contractor and must be approved by the owner. A third member is selected by the first two members. The third member selected usually acts as chair of the board.

Members must have no conflict of interest and must conduct investigations and hearings on disputes and publish prompt opinions about the dispute. Members may act either as mediators or as non-binding arbitrators as required by the character of the dispute, and if requested by the disputants.

The dispute resolution board system has proven to be a highly effective ADR process. It is very flexible and allows written reports of the board's findings to be used as historical documents. These reports, if well done, can deter conflicts from escalating into situations requiring binding resolution, maintaining the spirit and strength of non-binding systems.

c. Independent advisory opinion

When using an advisory opinion, the disputants mutually agree upon the selection of a neutral expert who meets informally with the disputants, obtains

[10] Dispute resolution board - See Attachment One - glossary of terms

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

information about the conflict from them, and renders a prediction as to the ultimate outcome of the conflict if it is not resolved promptly. The neutral usually acts as a mediator initially, and later, if needed and if requested, as a neutral arbitrator.

04. Formal external neutral

In formal non-binding systems, external neutrals are selected to serve as formal dispute resolvers. The neutrals might be selected before a need for their involvement arises. This system may entail considerable expense and preparation and might require legal advice be given the participants.

a. Mediation

Settlement conferences and informal hearings are conducted with the disputants by the selected third party neutral or neutrals. Solutions come from the disputants with encouragement by the neutral.

b. Minitrial

A minitrial is a private settlement hearing usually initiated by agreement between the parties. Settlement decisions often are made by a small panel of participant managers representing each disputant organization. The external neutral may preside over the panel's deliberations and guide in selection of a resolution method.

c. Advisory opinion

The neutral meets formally with both parties, obtains information from each, and renders a prediction of the ultimate outcome if adjudicated. This allows the parties to each decide on a desirable resolution method.

d. Advisory arbitration

An abbreviated hearing before a neutral expert. After the hearing, the neutral issues a non-binding advisory resolution and renders a prediction of the

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

ultimate outcome if taken to a binding solution.

Successful alternative dispute resolution using the techniques described above requires that each party to the dispute share several characteristics:

- a desire for a win-win result;
- people in charge who want a fair resolution;
- a willingness to use negotiation techniques acceptable to those involved;
- knowledge of how to apply a resolution system that can produce a decision,
- a desire for a fair settlement;
- an understanding that unresolved conflict and disputes often requires a neutral view to be considered as a tool for positive change;
- a belief that if you aren't entitled to it, don't try to get it!

Alternative dispute techniques are generally non binding and are designed to discourage taking disputes to forced resolution by binding arbitration or by litigation. The advantages provided by a properly structured non-binding system over a binding system includes:

- costs to resolve conflicts are usually lower;
- conflicts are settled more quickly;
- knowledgeable professionals make the resolution decisions;
- decision makers are often closer to the resolution process;
- the nature of the decisions rendered lessen the probability of appeal;
- participants gain privacy in the resolution process;
- the probability of a fair resolution is increased by a timely consideration of the dispute. Timely consideration helps reduce time and cost growth of the claim;
- a non-binding solution helps cross critical transition points[11] by setting ground rules for the crossing.

If we examine the needs outlined above for successful project implementation it appears that one of the least costly, most timely, and most comprehensive systems of dispute resolution is contained in the preventive systems, implemented early

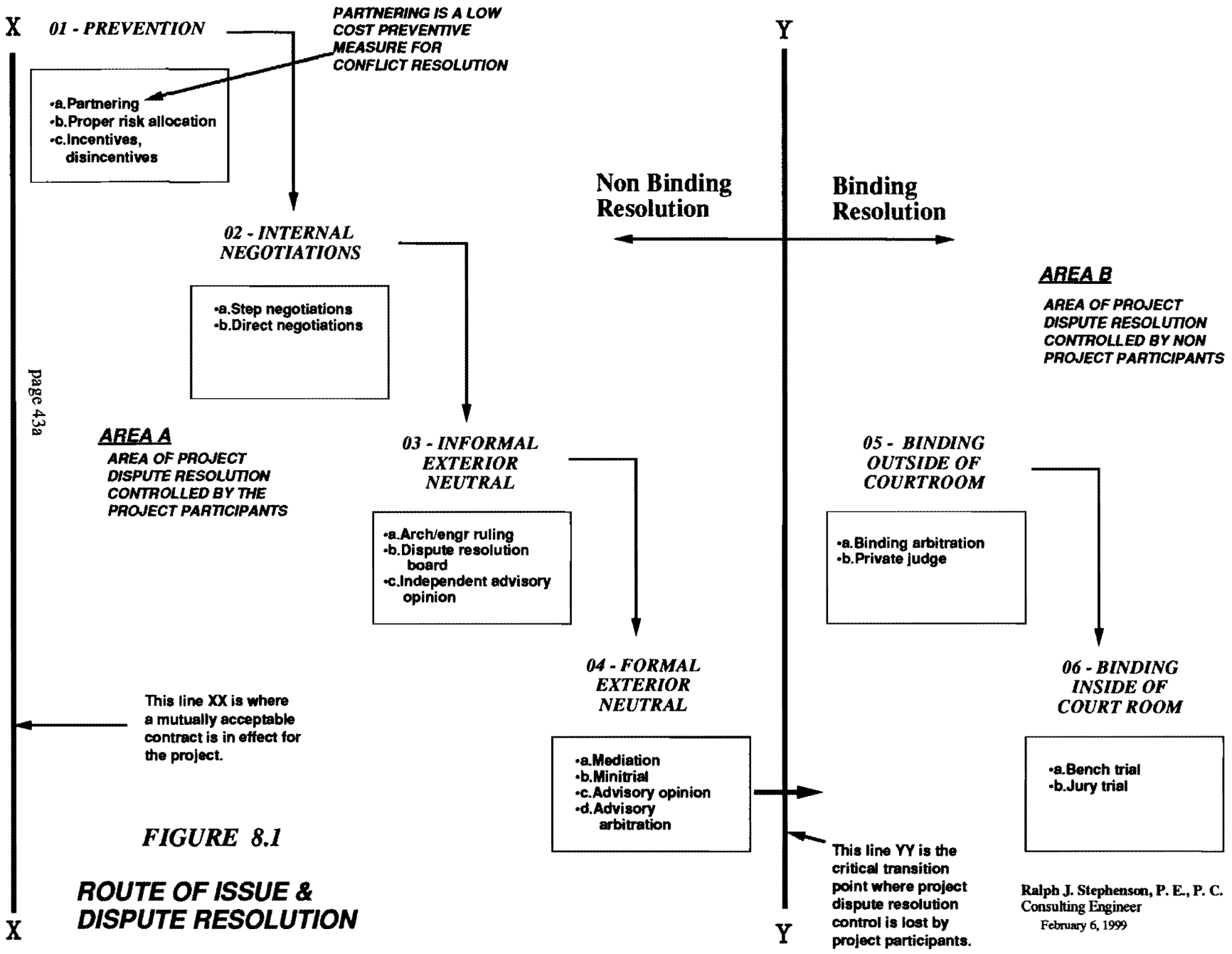
[11] Critical transition point - The point in a project delivery system at which the responsibility and authority for the work passes from one group to another group, for instance from the supportive group to the e'x'ecutive group.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

and by mutual consent of the parties. However, each of these preventive methods allows a dispute to be easily moved into a higher intensity of resolution as may be deemed appropriate.

A graphic representation of the 12 systems is shown in **Figure 8.1 - Route of Issue Dispute Resolution.** The ADR technique which many authorities feel best fits the requirements of successful early non-binding resolution of disputes has been project partnering, coupled with proper risk allocation.

The issue resolution task force must depend upon their knowledge of the design and construction industry and their familiarity with the project to produce a workable issue resolution. All projects have significant differences which demand that the issue resolution process be tailored to the needs of the specific program of work upon which the partners are engaged.



page 43a

FIGURE 8.1

ROUTE OF ISSUE & DISPUTE RESOLUTION

Ralph J. Stephenson, P. E., P. C.
Consulting Engineer
February 6, 1999

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Part 9 - The Implementation of Issue Resolution

The final step to be taken in implementing the systems and processes described in this NSPE Paper is how to actually put a partnering system to work. The acid test of partnering is the use of the charter and the evaluation system to produce a workable issue resolution system

Using the NSEDS charter as the base discussion document, I have outlined below the general steps to be taken in establishing and implementing an issue-resolution system.

At the initial meeting of the issue-resolution task force the partners should prepare a general policy statement that summarizes the attitudes of the project team toward the settlement of disputes and conflicts. One of the most effective and elegant of such statements was one written several years ago for a hospital project being built under heavy potential conflict conditions. It is reproduced below. The wording has been altered to suit the purposes of the NSPE scenario. However the intent of the policy remains clear.

Issue Resolution Policy

It is the objective of the NSEDS project team management to first and foremost avoid unnecessary disputes and destructive conflict on the job. It is the intent to do this by achieving the objectives of the charter, particularly to resolve destructive conflict issues quickly and at the level where they originate. If this is not possible the issue will be referred promptly to the next highest project management level for consideration and resolution.

In all cases, individuals who have a differences of opinion should be businesslike and not resort to personal attacks. The principles outlined in the partnering charter mission and in the charter objectives should be followed at all times in resolving differences.

Upon request of the parties, on-site meetings will be convened to discuss any unresolved issue and to attempt to reach resolution. Any issue presented should

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

be clearly defined and include a suggestion for an alternative solution. The resolution process is to work through open communications and to look at the other side's point of view. In addition, issues are to be kept in the forefront to ensure resolution in a fair and timely manner. A log of unresolved issues will be maintained from partnering evaluation meetings.

If resolution cannot be reached at the job site, the principals of the involved firms or agencies should attempt to reach resolution through informal discussion before the formal claim process outlined in the contract documents is used.

In seeking resolution to an issue, involved parties will attempt to:

- thoroughly understand the issues;
- maintain empathy for others' points of view;
- communicate thoughts openly and clearly;
- clearly document the issue resolution.

Once this broad issue resolution policy is in place the stakeholder task force should address the details of how best to resolve actual and potential disputes that may arise on the job. There are many different techniques and procedures that are used. The best systems are often found to be combinations of two or more of the basic twelve systems shown in Figure 8.1.

A possible ADR methodology is given below that fits the Issue Resolution Policy statement outlined above.

Issue resolution methodology

Goal

To encourage and provide a forum for resolution of issues at the lowest possible

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

management level, and to provide a mechanism to elevate the issue to higher organizational levels if needed.

Methods

Step 1 - As a conflict arises either from contract or partnering sources, steps should be taken immediately to settle the dispute at the originating level among the disputants. Those directly involved are generally the best informed about the details of the conflict. If they follow the basic guidelines outlined above in the Issue Resolution Policy the probability of settlement at the originating level can be kept reasonably high. Most people involved in lower level management disputes do not want those disagreements which they are responsible for resolving being booted to higher management levels.

No project issue in dispute should be allowed to remain unresolved at a lower management level for longer than one working week without moving the issue to higher levels of management for resolution.

Step 2 - If at the end of a week's effort no suitable resolution has been reached at the originating level, the disputant party's immediate superior shall be responsible for seeing that the issue is listed in the job reports as an unresolved item, and recorded as an open issue in the stakeholder's charter evaluation submittal.

Step 3 - Attempts should next be made to resolve the open issue or dispute at successively higher levels of job management. Each job management level attempt shall be made for no longer than one week, with a limit of three successive weekly efforts following the first elevation from the originating level. This step method provides four weeks maximum for job level disputants to resolve the problem.

Step 4 - If, at the end of four weeks from the origination of the dispute, the matter has not been resolved internally, the disputant partner's management will agree upon a third party neutral who will be called in to render an objective neutral opinion as to what results can be expected if no resolution is reached. If desired by the parties to the dispute, the neutral can then be asked to mediate the

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 24, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

dispute.[12]

Step 5 - The informal neutral process shall be allowed to proceed for three weeks from its inception. If, at the end of this time the issues are still not resolved, the neutral(s) shall be asked to issue a written analysis of their findings, and to provide a non-binding recommendation for settlement.

Step 6 - If, by two weeks after receiving the neutral's written recommendation, the issue has not been resolved, one more attempt will be made to resolve the dispute by non-binding resolution.

Step 7 - If the final attempt at settlement has not succeeded within a week of its initiation, the disputants will take formal steps to resolve the issue by binding methods, if they so desire.

This preliminary draft of the Issue Resolution Policy and Methods is next distributed to the stakeholders for their study, comments, and approval. Once all stakeholders are satisfied with the draft as revised, the final policy and methods document is prepared and issued to the stakeholders for sign-off.

Keep in mind that there are several possible combinations of the twelve recommended techniques shown in Figure 8.1 that can be incorporated into issue resolution guidelines. Intelligent and knowledgeable practitioners should be able to assemble a policy and method that can be accepted by the project team in a partnered project.

At this point in the partnering process all elements of the system are in place and the stakeholders can concentrate on building the job in accordance within their contract and the partnering concepts they have agreed upon.

Partnering works !

[12]Mediate - a private, informal process in which the parties are assisted by one or more neutrals to reach a settlement. Neutrals, in such a case, do not judge or arbitrate the dispute -- they advise and consult impartially to help bring about a mutually agreeable resolution of the dispute.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

Attachment #1 -- NSPE Paper for Annual meeting in Norfolk, Virginia July 29, 2000 - disk 748

Glossary of terms

1. **Adjudication**
   To pronounce or decree by sentence in a court of justice.
2. **Advisory resolution**
   An abbreviated hearing before a neutral expert or a group of neutral experts acting as advisor(s). The neutrals render an advisory opinion and often predict the ultimate outcome if the matter is moved to binding resolution.
3. **Alternative dispute resolution (ADR)**
   A method of resolving disputed construction claims by non-binding methods outside the courtroom usually by internal or third-party assistance methods. These are alternatives to conventional binding dispute resolution methods such as litigation and binding arbitration.
4. **Analyze**
   To examine an item or a feature critically to bring out the essential elements or give the essence of such item or feature.
5. **Anecdotal**
   Pertaining to, marked by, or consisting of short narratives of a particular incident or occurrence of an interesting nature.
6. **Apparent authority**
   A situation in which one person or organization acts on behalf of another person or organization without the other person's or organization's formal authority.
7. **Arbitration**
   A method for settling disputes whereby an officially designated third party (usually one to three people) hears and considers arguments and determines an equitable settlement. Usually considered binding upon the parties.
8. **Authority**
   The prerogatives, either vested or acquired over a long period of time, that allow individuals to carry out their responsibilities and duties. This includes the right to determine, adjudicate, or otherwise settle issues or disputes; the right to control, command, or determine.
9. **Binding resolution**
   A third-party imposed solution to a contested claim in which the conditions are legally binding on the parties.
10. **Bonus**
    Something given or paid over and above what is due.
11. **Case study**
    Usually an anecdotal presentation of circumstances which describes a scenario in which the reader is expected to play a role, and through which a decision is made, an action taken, or a plan implemented within the scenario to illustrate a lesson to be learned.
12. **Charter**
    A document prepared and agreed to by the project partnering stakeholders and containing a set of informal guidelines to successful performance in the execution of noncontract project matters. The charter is normally signed by the stakeholders and is used in conjunction with a mission statement from which the guidelines are derived, a partnering evaluation system by

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

which noncontract practices are periodically evaluated, and an issue-resolution system containing guidelines to the settlement of contested disputes about project matters.

13. **Claim**
A demand for something as due; an assertion of a right or an alleged right. In construction generally a demand for something as due, or in which the demand is disputed.
14. **Claim avoidance**
A technique and procedure for generation of situations in which the demand for what is due as a result of a contract agreement is honored without formal dispute, or in which the dispute is settled by an administrative settlement.
15. **Claim potential**
The measure of potential that any project has to encounter disputes during its implementation.
16. **Claim-prone job**
A design and construction project that has a relatively high potential for the generation of contested claims by or against any of the at risk parties to the project.
17. **Communicate**
To convey information about, to make known or to impart knowledge, ideas, or thoughts.
18. **Competitive bid**
A proposal to do certain work in a certain manner and for a specified fee that is measured against other proposals for executing such work under similar circumstances, and, thus, to compete for obtaining this work according to an established standard of performance.
19. **Conflict**
A state of disagreement and disharmony.
20. **Conflict of interest**
Discord of action, feeling, or effect: often applied to ethical and operating standards considered to be improper in the financial elements of business and government.
21. **Conflict resolution**
A course of action determined and acted upon that results in clearing dispute or disagreement.
22. **Contested claim**
A demand or claim in which the demand is disputed.
23. **Contingency allowances**
An amount of money, time or other resources set aside against the possibility that an unlikely or unintended event may occur.
24. **Contractor**
One who agrees to the doing or not doing of some specific work for a stipulated price.
25. **Coordinate**
To harmonize in a common action or effort. Many design and construction consultants recommend the word not be used in contracts since it has indistinct meanings as related to management in design and construction.
26. **Cost control**
Maintaining firm, competent managerial direction of costs leading to achievement of financial profit.
27. **Critical transition point**
The point in a project delivery system at which the responsibility and authority for the work passes from the supportive group to the ex'e'cutive group.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

28. **Destructive conflict**
    Animosity or disagreement which results in lowering the potential for an individual or organization to succeed.
29. **Disincentive**
    A penalty imposed on a contract party for less-than-satisfactory performance on a project. The disincentive is usually coupled to a bonus or incentive.
30. **Dispute**
    To engage in argument or discussion. To quarrel or fight.
31. **Dispute resolution board**
    A method of dispute resolution where project participants establish procedures, by contract, to settle disputes as they arise during the course of the project. DRBs seek to anticipate problems and get the parties to resolve them before the problems harden into formal claims.
32. **Dysfunction - organizational**
    An organizational problem that hinders or prevents achieving objectives. May be temporary or permanent.
33. **Education**
    The teaching and learning process by which the principles of doing things are conveyed to the learner.
34. **Effective**
    Of a nature that achieves identifiable goals and objectives in accordance with an action plan and achieves worthwhile peripheral goals through intermediate accomplishments.
35. **Evaluation**
    The process of ascertaining the value of, or the amount of worth, the item being measured can contribute to profitability.
36. **Fixed fee**
    A fixed payment for services.
37. **Formal**
    Being in conformance with conventional requirements.
38. **Generic construction**
    The field of business practice that encompasses all phases of the construction industry, including programming, planning, designing, building, operating, and maintaining facilities. Described best as the full set of activities shown in the line of action.
39. **Goals**
    The unquantified desires of an organization or individual expressed without time or other resources assigned. (See objectives for related definitions.)
40. **Guaranteed maximum price (GMP)**
    The price for a specified scope of work to be provided by a contractor that contractually binds his performance to a specified guaranteed maximum price. Often the guaranteed maximum price is tied to a time and material performance with the price not to exceed the agreed upon maximum.
41. **Guidelines**
    A set of directions or suggestions to assist in getting from point to point while applying a process by which an objective is achieved.
42. **Incentive**
    A bonus paid to a contract party for performing work in a superior manner to that specified. The incentive is usually coupled to a penalty or disincentive.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

43. **Inspect**
    To view or examine closely and critically.
44. **Issue**
    A point or matter of discussion, debate, or dispute.
45. **Issue resolution system**
    A method of reaching agreement and closing out disputes and problems at the lowest possible management level, in the shortest possible time, and with the lowest potential for residual hard feelings.
46. **Leadership**
    "The process of persuasion or example by which an individual induces a group to pursue objectives held by the leader or shared by the leader and his or her followers." - John W. Gardner
    "The art of getting someone else to do something you want done because he wants to do it" - Dwight D. Eisenhower
47. **Lessons learned**
    A collection of observations derived from the successful or unsuccessful application of an idea or concept to achieving managerial objectives.
48. **Liquidated damages**
    The amount established by the parties to a contract which must be paid, by one or either of the parties, in the event of a default or a breach. Is related to the damages suffered by late performance.
49. **Litigate**
    The process of contending in court, either as a plaintiff or a defendant.
50. **Litigious**
    Overly inclined to litigate.
51. **Logistics**
    A branch of science concerned with the mathematics of supply and transportation.
52. **Manage**
    To define, assemble, and direct the application of resources.
53. **Management**
    The act and manner of managing.
54. **Management by exception**
    A measuring and monitoring system that sounds an alarm to the manager when problems have appeared or are about to appear, and remains silent when there are no problems. The system identifies the problem area, thus permitting the effective manager to manage the exception while leaving the smoothly running operations to continue running smoothly.
55. **Mediate**
    A private, informal process in which the parties are assisted by neutral(s) to reach a settlement. In mediation the neutrals do not judge or arbitrate the dispute. Rather, they advise and consult impartially with the parties to bring about a mutually agreeable resolution of the dispute.
56. **Mediation**
    An attempt to effect a settlement between disputing parties through the unbiased efforts of an objective third party, usually well known to those in dispute and acceptable to them. Mediation differs from arbitration in that it generally involves a single individual as the ruling party, is less formal, and is usually not binding. This definition of mediation varies with the degree of legal significance attached the resolution of disputes, and the dispute location.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

57. **Monitoring**
    Measurement of current project conditions and position against the standards of performance set for the job.
58. **Morally binding**
    An obligation or condition placed on an individual or group by agreement of the person or group. The obligation or condition is not a legal requirement but instead is one agreed upon as a condition of right conduct, or of a distinction between right or wrong.
59. **Network plan**
    A graphic statement of the action standard of performance to be used in achieving project objectives.
60. **Neutral**
    An unbiased outside expert capable of objectively listening, analyzing, and evaluating construction-related demands or claims which are in dispute and rendering an opinion or decision as to its disposition.
61. **Non-binding resolution**
    A suggested solution to a contested claim or problem in which the conditions are not legally binding on the parties but are an expert's recommendations for resolution.
62. **Objectives**
    Quantified targets derived from established goals (see goals). The most commonly used resources in converting goals to objectives are money, time, human abilities, human actions, equipment, and space.
63. **Par**
    An amount or a level considered to be average; a standard.
64. **Par performance**
    A rating, usually numerical, that expresses the level of performance that will be accepted as the normal degree of competence expected of an individual or organization in the performance of an action.
65. **Par weight**
    A rating, usually numerical, that expresses the relative importance of a goal or objective to successfully achieving a project mission.
66. **Partnering (a base statement)**
    A method of conducting business in the planning, design, and construction profession without the need for unnecessary, excessive and/or debilitating external party involvement.
67. **Partnering (Associated General Contractors)**
    A way of achieving an optimum relationship between a customer and a supplier. A method of doing business in which a person's word is his bond, and where people accept responsibility for their actions.
    Partnering is not a business contract, but a recognition that every business contract includes an implied covenant of good faith.
68. **Partnering (Construction Industry Institute)**
    A long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based upon trust, dedication to common goals, and an understanding of each other's individual expectations and values. Expected benefits

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

of right conduct, or of a distinction between right or wrong.

59. **Network plan**
A graphic statement of the action standard of performance to be used in achieving project objectives.
60. **Neutral**
An unbiased outside expert capable of objectively listening, analyzing, and evaluating construction-related demands or claims which are in dispute and rendering an opinion or decision as to its disposition.
61. **Non-binding resolution**
A suggested solution to a contested claim or problem in which the conditions are not legally binding on the parties but are an expert's recommendations for resolution.
62. **Objectives**
Quantified targets derived from established goals (see goals). The most commonly used resources in converting goals to objectives are money, time, human abilities, human actions, equipment, and space.
63. **Par**
An amount or a level considered to be average; a standard.
64. **Par performance**
A rating, usually numerical, that expresses the level of performance that will be accepted as the normal degree of competence expected of an individual or organization in the performance of an action.
65. **Par weight**
A rating, usually numerical, that expresses the relative importance of a goal or objective to successfully achieving a project mission.
66. **Partnering (a base statement)**
A method of conducting business in the planning, design, and construction profession without the need for unnecessary, excessive and/or debilitating external party involvement.
67. **Partnering (Associated General Contractors)**
A way of achieving an optimum relationship between a customer and a supplier. A method of doing business in which a person's word is his bond, and where people accept responsibility for their actions.
Partnering is not a business contract, but a recognition that every business contract includes an implied covenant of good faith.
68. **Partnering (Construction Industry Institute)**
A long-term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources.
This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based upon trust, dedication to common goals, and an understanding of each other's individual expectations and values. Expected benefits include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services.
69. **Partnering - organizational)**
The application of partnering systems and methods to the ongoing work and staff activities of an organization. An internal partnering system within an organization as applied to the internal work effort of the company staff.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

include improved efficiency and cost effectiveness, increased opportunity for innovation, and the continuous improvement of quality products and services.

69. **Partnering - organizational)**
The application of partnering systems and methods to the ongoing work and staff activities of an organization. An internal partnering system within an organization as applied to the internal work effort of the company staff.
70. **Partnering - project or tactical**
A method of applying project-specific management in the planning, design, and construction profession without the need for unnecessary, excessive and/or debilitating external party involvement.
71. **Partnering - strategic**
A formal partnering relationship that is designed to enhance the success of multi-project experiences on a long-term basis.
"Just as each individual project must be maintained, a strategic partnership must also be maintained by periodic review of all projects currently being performed" - Ida B. Brooker 1994 WEX
72. **Partnering charter**
The basic manual for operating a partnering system. Contains (at a minimum) the mission of the project team, and the objectives for the project. Usually is signed by those writing the document.
The charter is an agreement in principle and must not supersede or supplant the design and construction contracts in place or to be written.
73. **Partnering evaluation system**
The process of ascertaining the value of, or the amount of worth, that a partnering system being measured can contribute to profitability.
74. **Partnering program sponsor**
In the partnering context, a person or organization that strongly supports or champions partnering and assumes responsibility for its implementation.
75. **Payment method**
The act of compensating or recompensing.
76. **Peer review**
A partial or full audit evaluation done by technically competent, objectively based individuals or organizations outside those owning, designing, building, or operating the facility.
77. **Penalty**
A punishment imposed or incurred for a violation of law, rule, or agreement.
78. **Performance quality**
A measure of how well an individual or a project has proceeded during an evaluation period.
79. **Plan**
A graphic, verbal, or narrative description of desired actions leading to achievement of end, intermediate, and peripheral goals and objectives.
80. **Positive conflict**
Hostility that is managed so that its resolution raises the potential for individuals or organizations to succeed at being excellent.
81. **Professional**
Having great skill or experience in a special contributive field of work.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

82. **Profit - educational & training**
    Fulfillment of learning and teaching goals held by individuals and their companies.
83. **Profit - financial**
    Fundamentally, the difference between organizational cash income and organizational cash expense. Further definitions of financial profit are complex and often unique to an organization or project.
84. **Profit - self actualization**
    Personal fulfillment realized after basic needs of shelter, safety, protection, love and freedom from hunger are achieved. (See Maslow's hierarchy of needs)
85. **Profit - socioeconomic**
    Company, group, or individual achievement of social objectives within a financially profitable set of activities.
86. **Profit - value system**
    Company and project fulfillment of personal, professional, technical, social and financial values held important by individuals and groups related to the company.
87. **Project - as a set of work actions**
    A set of work actions having identifiable objectives and a beginning and an end.
88. **Project - as related to management**
    A specific management assignment to achieve a set of objectives by accomplishing a group of related, discrete operations which have a defined beginning and an end.
89. **Project delivery system**
    A method of assembling, grouping, organizing & managing project resources so as to best achieve project goals and objectives.
90. **Project evaluation**
    The process of ascertaining the value of, or the amount of worth, a project can contribute to profitability.
91. **Project manager**
    One who helps establish objectives generated by a need, plans how these objectives are to be reached through a set of work actions, and then assembles and directs the application of available resources to achieve the objectives on one or more projects.
    Usually the project manager is most concerned with supportive actions which bring resources to the point of effective use.
92. **Quality**
    A characteristic, property, or attribute belonging to or distinguishing a person or an object.
93. **Question - closed**
    A question that can be answered with a yes or no, or with a simple statement of fact.
94. **Question - direct**
    A question asked with strong indication of who should answer.
95. **Question - open**
    A question that cannot be answered with a yes or no or a simple statement of fact.
96. **Question - overhead**
    A question asked of a group without indication of who is to answer.
97. **Question - relay**
    A question passed along to someone else by the party originally asked.
98. **Question - reverse**
    A question returned to the questioner by rephrasing or rewording the original question.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

99. **Regulators**
Those who fill a review and inspection position to help insure protection of the health, safety, and welfare of the public. This is usually done by enforcing regulations written and adopted by qualified public or private bodies. Examples of regulators include those who work for building departments, departments of natural resources, public health agencies, fire prevention organizations, technical societies, and other such groups.
100. **Regulatory overhead**
Those costs over and above direct costs, direct overhead, and indirect overhead that are incurred in paying for overhead costs that are required by a regulatory agency. An example of a regulatory overhead is Social Security.
101. **Resolution**
A course of action determined or decided upon that can result in clearing conflict or dispute.
102. **Responsibility**
The assignment, spoken or understood, that a person in an organization has as a part in maintaining the organization's health and vitality.
103. **Revisiting**
When applied to the partnering charter, revisiting means the current project decision makers are assembled, and the present charter is reviewed, revised, and reissued as might be called for by changed project conditions.
104. **Risk**
Any exposure to the possibility of harm, danger, loss or damage to people, property, or other interest. To expose to a chance of loss or damage.
105. **Risk allocation**
The distribution of cost for any exposure to the possibility of harm, danger, loss or damage to people, property, or other interest.
106. **Risk management**
The management and conservation of a firm's assets and earning power against the occurrence of accidental loss.
107. **Schedule**
A graphic or written tabulation of project activities showing where the activities are to start and finish. The schedule is derived from the plan of action and the network model by locking the tasks and the resources they require into a specific time position.
108. **Signatory**
One that has signed, or has joined in signing, a document.
109. **Specialty contractor**
A contracting organization that concentrates its efforts on performing a single trade or a related grouping of trades such as dry wall, acoustical, mechanical, electrical, controls, masonry or other similar assemblies.
110. **Sponsor - partnering**
In the partnering context, a person or organization that strongly supports or champions an activity and assumes responsibility for its implementation (see partnering program sponsor).
111. **Stakeholders**
The parties at risk financially and legally or, in an extended sense, those affected and potentially put at risk during the execution of a planning, design, or construction contract. Stakeholders are also those who participate in writing a partnering charter and are signators to the charter.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

112. **Standard of performance**
A well defined, explicitly stated, approved and accepted statement of the measurements to be used as a gage of performance and goal and objective achievement.
113. **Standing neutral**
A technically trained, educated, and credentialed professional who is active in the planning, design, and construction disciplines. The standing neutral must be capable of objectively listening, analyzing, and evaluating construction related demands or claims which are in dispute.
114. **Standing neutral system**
A process where neutral third parties are available to assist with resolution of all disputes arising during the course of a contractual relationship. The intent which includes dispute review boards and standing neutrals is to have one or more individuals on call to address disputes as they arise. It usually requires the neutral to render a nonbinding determination of the issues in dispute, although in some cases, and upon request, the neutral can act as a binding arbitrator.
115. **Subtractive analysis**
An evaluation or investigation that is conducted by progressively or selectively subtracting factors which affect the outcome model and determining the impact such subtraction or removal has on the outcomes.
116. **Sum zero game**
A situation in which there is a winner and a loser. The loser often will lose what the winner wins.
117. **System**
An assemblage or combination of things or parts forming a complex or unitary whole.
118. **Task force**
A temporary or ad hoc grouping of individuals and resources who are responsible for accomplishing a specific objective.
119. **Telltale**
A thing serving to reveal or disclose something.
120. **Time and material contract**
An agreement in which payment for services and material is made only for those services and materials actually furnished. There may, or may not, be imposed a not-to-exceed amount on the total cost.
121. **Training**
The teaching and learning process by which specific, explicit methods and systems of doing something, usually by rote, are conveyed to the learner.
122. **Trends**
A general course, drift, or tendency.
123. **Ultimate decision maker (UDM)**
The individual or group at the lowest management level that has the authority to make a final binding decision in any job related matter.
124. **Value-added**
The improvement in the worth of anything that results from the efforts, contribution and involvement of specific people, processes, materials and ideas.

Ralph J. Stephenson, P.E.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
March 4, 2000
ph (517) 772 2537
e-mail: ralphjs@gte.net

125. **Weight**
The relative importance of a factor being used to help evaluate a choice. The importance is frequently measured by a numeric scale from 1 to 10, in which a very high positive influence is indicated by a rating of 10. A very low influence is indicated by a rating of 01. Degrees of importance between the highest and the lowest are indicated by number ratings from 02 through 09. The weight of a factor multiplied by the value added by the decision choice being considered gives a weight and value rating of a factor to help determine a choice of alternatives.
126. **Win - win**
A situation in which there are no losers. Usually some parties win more than others.
127. **World of nonwords**
The world in which we live by our physical actions.
128. **World of words**
The world in which we live by simulating actions through words and other symbols what might happen in the world of nonwords.

Attachment #2 - 38 Elements of importance to success in design and construction

- **Summary**

In the design and construction industry there exist many factors which influence the degree of success achieved in a project. They deal with project goals, profit types, project sequencing, the nature of the participants and the kinds of problems most likely to be encountered.

If the parties to a planning, design, and construction program recognize the nature and importance of these factors, a major step will have been made toward their proper and effective combination and management.

Below are listed 38 basic influences on project delivery systems. Project management is the process of combining these into a successful job of which all participants are proud.

- **Six major goals to meet for design and construction project success**

The client, owner and user must be assured upon completion of his job that:

1. The facility program and the facility design have met their needs, desires, wants, and wishes.

2. The planning, design, and construction work on the project has been accomplished within the time and cost structure required and desired.

3. All relationships on the project have been maintained at a high technical and professional level and have proven rewarding for those involved and affected.

4. The people involved at all levels of work on the job have realized a financial, professional, and technical profit for themselves and their associates by being on the project.

5. The project has been closed out with little or no residual potential for major problems of maintenance or operation.

6. The entire process has been free of unresolved contested claims for additional money, additional time, damage payments, and of the potential for future financial demands after the job has been closed out.

- **Seven types of profit**
  1. **Financial** - an improvement in a money position
  2. **Social** - a gratifying experience contributing to society's well being
  3. **Self actualization** - a gain in personal non-financial satisfaction by contributive work
  4. **Value system** - reward gained by application of values in which one believes
  5. **Technical** - acquisition of technical skill or technical data of value
  6. **Enjoyment** - personal enjoyment of a situation gained from involvement in it
  7. **Educational** - learning made possible by work exerted in a improvement effort

- Nine major actions in the design and construction sequence and how they are done
  1. **Conceive the basic project**
     Visualize and state the fundamental nature of the proposed project, its purpose, and its base characteristics.
  2. **Prepare the program**
     Set down the physical characteristics of the total project in written and graphic form to be able to translate these characteristics into approval documents from which the full design can proceed.
  3. **Articulate the program for approval**
     Merge the concept and the written and graphic program into written and graphic construction language which can be reviewed and released by the ultimate decision makers for full design.
  4. **Approve the basic project**
     Approve the concept, the program, and the merging of the two. This approval by those in authority initiates the full design and construction process
  5. **Design the project**
     Prepare full contract documents for construction use.
  6. **Construct the project**
     Build the project and make it ready for turnover to the owner or user.
  7. **Turn over the project**
     Release the constructed project to the owner or user with full documentation needed to operated and maintain the completed environment.
  8. **Operate the project**
     Take over, run in, and make the new environment fully operational.
  9. **Maintain the project**
     Keep the new environment in proper operating condition by a well-conceived and effectively managed maintenance effort.
- Six major participants in the design and construction process
  1. **Conceiver** - The ultimate decision making force behind the entire program -- often called the owner.
  2. **Translators** - The parties that translate the project concept into construction documents
  3. **Constructors** - Those who build the facility
  4. **Operators** - Those who operate the completed facility
  5. **Regulators** - Those who help assure project adherence to the cause of public good
  6. **Users** - Those who occupy and use the facility for the purpose for which it is intended.
- Ten major types of design and construction problems
  1. **Constructive acceleration**
     An action by a party to the contract that forces more work to be done with no time extension or the same amount of work and a shorter period of time in which to do it.
  2. **Constructive change**
     A construction action or inaction by a party to the contract that has the same effect as a written order.
  3. **Defective or deficient contract documents**
     Contract documents which do not adequately portray the true contract scope.
  4. **Delay**
     A situation, beyond the control and not the fault of a contract party, that causes a delay to the project.

5. **Differing site condition**
   A situation in which the actual conditions at the site of a project differs from those represented on the contract documents or from reasonable expectations of a site in that area.
6. **Directed change**
   A legitimate change within the contract scope for which the owner is obligated to pay.
7. **Impossibility of performance**
   A situation in which it is impossible to carry out the work within the contract requirements.
8. **Maladministration**
   The interference of one contract party with another contract party's rights that prevents the latter party from enjoying the benefits of least-cost performance within the contract provisions.
9. **Superior knowledge**
   The withholding of knowledge by one party to a contract from another party to the contract during the precontract period, which, subsequent to contract execution, adversely affects the second party's construction operations in matters of importance.
10. **Termination**
    Dismissal of a party to the project contract for convenience or default.

Ralph J. Stephenson PE PC
Consulting Engineer

Attachment Three - Weights and values as a decision-making tool

The weight-value decision-making process

In a decision-making process the selection is often best made by a multidimensional process based on situational characteristics and factors that are nominally variable.

The purpose of decision making for the responsible project manager is to insure that an objective recommendation is provided to his or her upper management. Upper management is then responsible for adjusting the objective decisions of the project manager to a decision in line with what upper management staff personally, politically, professionally, subjectively, and technically feel is the appropriate selection.

The area addressed in this essay is the application of an orderly procedure to objective decision making. The technique is called the weight-value or WV process.

The WV process is implemented by taking well-defined steps necessary to reach project level decisions. These steps are:

1. Select, write down, and verify the various decisions possible. What courses of action are available?

2. Identify the major factors of importance in making an objective selection of a best course of action. What are the items that are important to making a proper decision? I recommend there be no more than ten of these. If you have selected more than ten try to combine factors having similar evaluation characteristics.

3. Assign a weight to each factor that describes numerically to those to whom the recommendation will be made how important the project manager and his team think this factor is in selection of a course of action. Factors should be given a weight of one to ten. One means the factor is of minimum importance in the evaluation. Ten indicates the factor is crucial to the evaluation.

Realize that the factors selected and screened for use must all be of relative importance and that the assignment of weights should spread from one to ten. A help in doing this properly is to determine the most important and critical of the factors and assign it a value of eight to ten. Next, select the least important factor and give it a weight of from three to one. The remainder should fall somewhere in between. Remember, more than one of the factors being weighed can receive the same number. You are not ranking the factors, you are weighing them.

4. Assign a value to each potential course of action or each decision possible for each of the factors selected and weighed. If there are three courses of action possible, and you have selected five factors by which these are to be judged, you will have to assign 3 x 5 = 15 values to the entire array. This can be seen in the following matrix example where alternative project delivery systems for constructing a

warehouse are being considered.

The three delivery systems under consideration are an award of a hard money contract from a full set of contract documents, retention of a non-liable construction manager to run the project, or use of a liable general contractor involved early as a construction consultant and providing iterative estimating help leading to submission and acceptance of a guaranteed maximum price.

Project delivery systems being considered and their value in satisfying the demands of each factor of importance - warehouse project

Factors	Wts.	Values		
		Hd money	Non liable cm	Prog pricing to gmp
1.Capital cost	08 x	08 = 064	04 = 032	06 = 048
2.Function	10 x	09 = 090	06 = 060	10 = 100
3.Appearance	02 x	06 = 012	04 = 008	07 = 014
4.Life-cycle cost	04 x	06 = 024	03 = 012	08 = 032
5.In house staff reqmts	08 x	04 = 032	03 = 024	07 = 056
Totals		**222**	**136**	**250**

The selection analysis above indicates the best delivery method of the three being considered is a progressive pricing system leading to submission of a guaranteed maximum price for which the contractor will construct the project.

It should be emphasized that the validity of factor selection, the factor weighing, the selection of alternatives and their valuing depend totally on the exercise of sound judgments by those making the analysis. Usually, for each decision to be made such an analysis as above is made by several qualified staff. Some may not even be associated with the project directly but only acquainted with the key demands of the project program and mission. This wider range of views and ideas often lends strength to the recommendations.

Ralph J. Stephenson, P.E., P.C.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858-9096
ph (517) 772-2537
e- mail ralphjs@gte.net

About Ralph J. Stephenson, P.E.

Ralph J. Stephenson, P.E., is an engineering consultant who has a diversified background in land planning , facilities location, building design, and construction.

Mr. Stephenson earned degrees at Lawrence Institute of Technology (Bachelor of Science, Mechanical Engineering), and Michigan State University (Master of Science, Civil Engineering). He has been associated with such firms as Smith, Hinchman, and Grylls, Victor Gruen Associates, Benjamin Schulz Associates, and the H. F. Campbell Company. With the latter three organizations Mr. Stephenson occupied executive positions as vice president. In 1962 he started his own consulting practice, specializing primarily in providing operational and management direction to owners, designers, and contracting firms.

He is a registered professional engineer in Michigan, Wisconsin, Illinois, Indiana, Ohio, Pennsylvania, West Virginia, Virginia, Florida, and Minnesota. He is a member of the Engineering Society of Detroit, the Michigan and National Society of Professional Engineers, the American Planning Association, the Detroit Area Economic Forum, and the Mid-America Economic Development Council.

Since 1952 Mr. Stephenson has been involved at middle and upper management levels in the planning, programming, design, construction, and operation of several billion dollars worth of construction related projects. These include work on industrial, commercial, and institutional programs throughout North America.

Mr. Stephenson has also chaired more than 50 partnering charter meetings for both public and private sector projects, and has lectured extensively on the subjects of project management, network modeling, alternative dispute resolution and partnering . He has also recently completed a book on Project Partnering for the Design and Construction Industry published by John Wiley & Sons.

He has also taught hundreds of technical and management seminars in the United States, Canada, and Europe, has written several technical magazine articles, and is the co-author of a book on critical path method. His broad experience has given him an understanding of the nature of small, medium, and large size companies, and of the need to solve their management problems through creative, systematic, and workable approaches.

Ralph J. Stephenson, P.E., P.C.
Consulting Engineer

Personal and Professional Background

Name:	Ralph J. Stephenson, P. E.
Date of birth:	August 25, 1922
Address:	323 Hiawatha Drive
	Mt. Pleasant, Michigan 48858
Phone:	(517) 772-2537 Office
	(517) 773-2282 Residence

Education:

School	Dates attended	Degree earned	Major field
Wayne State University Detroit, Michigan	1970 - 1973	Pre-doctoral in industrial engineering	
Michigan State University East Lansing, Michigan	1946 - 1948	M . S. C. E	Civil engineering
Lawrence Institute of Technology Detroit, Michigan	1940 - 1943	B. S. M. E.	Mech. engineering
Highland Park High School Highland Park, Michigan	1936 - 1940	-	-

Employment:

Firm	Dates employed	Position
Engineering consultant	September 1962 to present	Principal
H. F. Campbell Company	March 1960 to September 1962	Vice president
Benjamin Schulz & Associates	October 1958 to March 1960	Vice president
Victor Gruen Associates Detroit office	1956 to 1958 1954 to 1956 1952 to 1954 1950 to 1952	Vice president Production manager Chief structural engineer Structural squad leader
Detroit Water Board	July 1950 to October 1950	Structural engineer
Smith, Hinchman, and Grylls	January 1948 to July 1950	Structural engineer
United States Army	November 1943 to August 1946	Infantry & engineers

Ralph J. Stephenson, P.E., P.C.
Consulting Engineer

Registrations:

- Florida -- professional engineer
- Illinois -- professional engineer and structural engineer
- Indiana -- professional engineer
- Michigan --professional engineer
- Minnesota -- professional engineer
- Ohio -- professional engineer
- Pennsylvania -- professional engineer
- Virginia -- professional engineer
- West Virginia --professional engineer
- Wisconsin -- professional engineer

Society Memberships:

- Engineering Society of Detroit
- Detroit Chapter -- Michigan Society of Professional Engineers
- Michigan Society of Professional Engineers
- National Society of Professional Engineers
- American Planning Association
- Detroit Area Economic Forum
- Mid-America Economic Development Council -- past president

Education and Training Activities:

- Director -- Institute for Construction Management -- Construction Association of Michigan
- Instructor -- University of Wisconsin department of engineering -- professional development
  - Project management
  - Effective field administration -- job documentation
- Seminar instructor for private and institutional organization
  - Project management
  - Critical path planning
  - Construction project delivery systems
  - Design and build systems
  - Claim avoidance
  - Management techniques in planning, design, and construction work

Books and articles:

- Co author of college text "Critical Path Method" -- published by Cahners -- 1967
- Articles on downtown urban development - Today's Business
  - Article on urban planning matrixes - American Society of University Architects
  - Critical Path Method - published by Builders Exchange of Detroit-- 1963
  - Author of several essays on planning, design, and construction topics -- seminar material

Ralph J. Stephenson, P.E., P.C.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858
(517) 772-2537

Resume of Professional Experience

Engineering Consultant Practice - -since August 1962

Entered practice as a private consulting professional engineer in August 1962. Performed technical services in design and construction project management, construction planning, project programming, plant location, structural evaluation, land planning, organizational management consulting, and in training and education for the planning, design, and construction profession.

Prepared project sequencing plans for several hundred commercial, institutional, industrial, land use and management projects ranging in size from $100,000 to $200,000,000. Conducted hundreds of seminars on design and construction related subjects in the United States, Canada, and Europe, and have written two texts on critical path method.

Acted as project consultant and director on several large land use studies. Retained by many owners and architectural, engineering and contracting firms as a technical management consultant for functional and organizational matters.

H. F. Campbell Company, design and build -- April 1960 to August 1962

Vice president responsible for estimating, graphics, and marketing. Work carried out under my supervision by a technical staff of 18 men and women. Activities included preparation of technical studies, preparation of contract documents, technical evaluations on design and construction programs, and contract negotiations. Reported directly to Mr. H. F. Campbell.

Benjamin Schulz & Associates , architects and engineers -- September 1958 to April 1960

Vice president with direct reporting responsibility to Mr. Schulz. Specific activities included structural engineering, land use studies, urban planning, and project direction.

Victor Gruen Associates, planners, architects and engineers -- November 1950 to August 1958

Joined firm as senior structural engineer working for Dr. Warren Yee. Advanced through positions of chief structural engineer, project coordinator, production manager and vice president. Direct reporting responsibility as an officer to Mr. Karl O. Van Leuven, partner in charge.

Activities included structural engineering, land use and urban planning studies, investment research, technical office administration, and project programming.

Served as structural engineer and department head for Northland and Eastland shopping centers in the Detroit metropolitan area. These were among the first regional

Ralph J. Stephenson, P.E., P.C.
Consulting Engineer
323 Hiawatha Drive
Mt. Pleasant, Michigan 48858
(517) 772-2537

retail centers in the world.

Served as project manager on major downtown urban redevelopment planning program for the Kalamazoo, Michigan mall, one of the first downtown malls in North America.

Water Board, City of Detroit -- July 1950 to November 1950

Senior assistant structural engineer. Responsible for preparing preliminary structural and civil studies of large Detroit water treatment plant.

Smith, Hinchman & Grylls, Inc. -- January 1948 to July 1950

Structural engineer performing wide range of drafting and design activities. Prepared structural calculations for variety of steel, concrete, and wood structures.

U.S. Army -- October 1943 to August 1946

Infantry, Corps of Engineers. Engineering activities included responsible charge of field engineering and demolition projects as line officer. Commissioned First Lieutenant upon discharge from armed forces.