



American Society for Healthcare Engineering
A personal membership group of the
American Hospital Association

Healthcare Construction and Project Management

November 9, 2017

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Brad Taylor

*VP Construction and Project
Management, Fairview*

2017 ASHE President-Elect

Twin City Healthcare
Engineering Association

Wilf Center at UMMC Riverside
Minneapolis, MN

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The American Society for Healthcare Engineering (ASHE)



With 12,000+ members, ASHE is the largest personal membership group of the American Hospital Association (AHA).

ashe.org

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ASHE Mission, Vision, and Values

Mission:

Dedicated to optimizing the health care physical environment

Vision:

To engage stakeholders in the creation of the optimum healing health care environment.

Values:

Integrity, Innovation, Fellowship, and Stewardship



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ASHE Strategic Imperatives

Sustainability

energy+
to care *Greater efficiency
supports patient care.*

SUSTAINABILITY
Roadmap for Hospitals
A guide to achieving your sustainability goals

Succession
Planning



Member Value



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ASHE Education Programs

LEARN
ENGAGE
LEAD

ashe.org/education

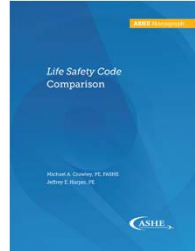
Education tailored for various audiences:

- Facility managers
- Engineering professionals
- Architects and planners
- Project managers
- Contractors
- Compliance managers
- And more

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What can you expect from ASHE?

- Advocacy Alerts
- Tools and resources
- Monographs
- Publications
- Education discounts
- Career Flash (job board)
- LISTSERV® member-to-member forum
(COMING SOON: **My ASHE**)
- Networking opportunities
- Webinars and On Demand recordings
- And more!



ashe.org/membership

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ASHE Conferences



2017–2019 Conference Dates & Locations:

July 15–18, 2018 | Seattle, WA
July 14–17, 2019 | Baltimore, MD

ashe.org/annual

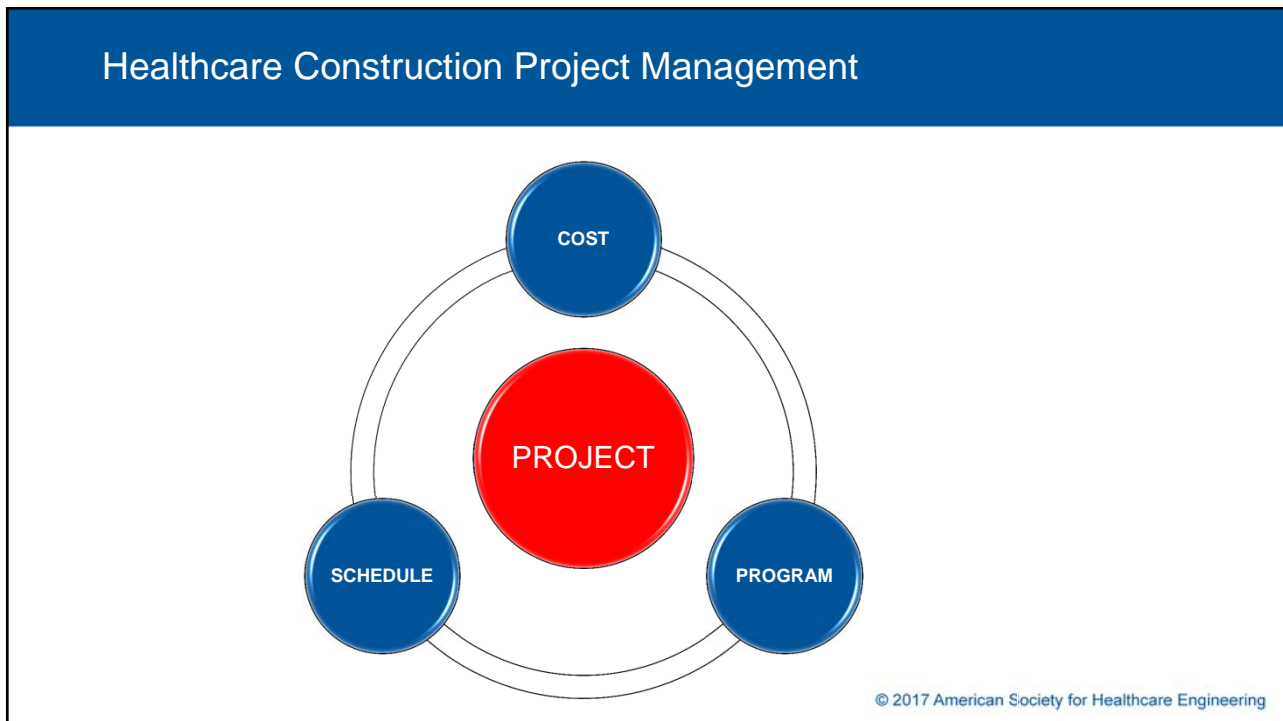


2017–2019 Conference Dates & Locations:

March 25–28, 2018 | Nashville, TN
March 17–20, 2019 | Phoenix, AZ

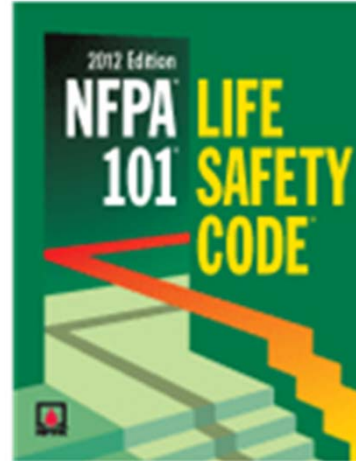
pdcs Summit.org

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5 Key References

- NFPA 101 Life Safety Code, 2012 Edition
- Currently adopted by CMS
- Section 2.2 lists other referenced NFPA standards



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5 Key Resources

NFPA 99: Health Care Facilities Code, 2012 Edition



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5 Key Resources

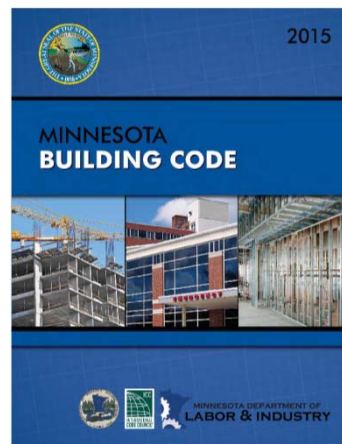
- Facility Guideline Institute 2014 Hospital/Outpatient Guidelines
- Meets or exceeds Chapter 4645, MN Dept of Health, Hospital Code
- Includes Design Guide for the Built Environment of Behavioral Health Facilities



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5 Key Resources

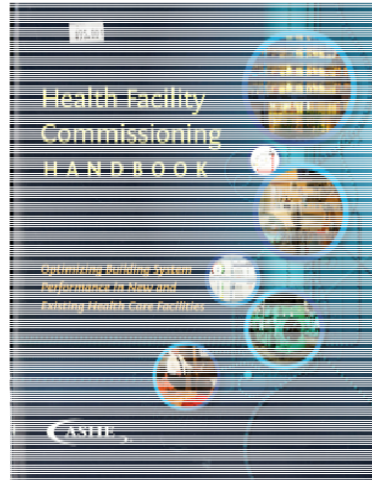
- Minnesota Building Code, 2015
- IBC with MN amendments
- References other relevant MN codes



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5 Key Resources

- ASHE Health Facility Commissioning Handbook



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Cost Control Tools

- Span the life of the project
- Include all project cost categories
- Simple to use
- Easy to update
- Reconcile with Finance Department regularly

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PROJECT COST REPORT SUMMARY

PROJECT:
LOCATION:

Fairview Medical Group - Fit Plan C
University Park, 1690 University Ave, 4th Floor

DATE: 13-Oct-17

CODE	DESCRIPTION	BUDGET		PROJECTED COSTS	PROJECTED VARIANCE	COMMITTED COSTS		EXPENDITURE	
		ORIGINAL A	CURRENT B			C	D (C-B)	COMMTD E	REMAINING F (C-E)
1.0	LAND AND SITE DEVELOPMENT	0	0	0	0	0	0	0	0
2.0	CONSTRUCTION	335,470	0	0	0	0	0	0	0
3.0	MEDICAL EQUIPMENT	0	0	0	0	0	0	0	0
4.0	FIXTURES/FURNISHINGS	93,340	0	0	0	0	0	0	0
5.0	TECHNOLOGY	110,625	0	0	0	0	0	0	0
6.0	PROFESSIONAL FEES	16,774	0	0	0	0	0	0	0
7.0	MISCELLANEOUS CHARGES	13,500	0	0	0	0	0	0	0
8.0	CONTINGENCY	56,971	0	0	0	0	0	0	0
PROJECT TOTALS		626,679	0	0	0	0	0	0	0

CODE	DESCRIPTION	BUDGET		PROJECTED COSTS	PROJECTED VARIANCE	COMMITTED COSTS		EXPENDITURE	
		ORIGINAL A	CURRENT B			C	D (B-C)	COMMTD E	REMAINING F (C-E)
4.0	FIXTURES/FURNISHINGS								
4.1	Furniture (including system furniture, chairs, etc.)	74,000		0	0	0	0	0	0
4.2	Move Related Furniture and Relocations	17,000		0	0	0	0	0	0
4.3	Signage	300		0	0	0	0	0	0
4.4	Playground Equipment	0		0	0	0	0	0	0
4.5	Window Coverings	1,000		0	0	0	0	0	0
4.6	Cubicle & Shower Curtains	0		0	0	0	0	0	0
4.7	Indoor Plants	0		0	0	0	0	0	0
4.8	Artwork	0		0	0	0	0	0	0
4.9	Food Service Equipment	0		0	0	0	0	0	0
4.10	Furniture Moving and Installation	0		0	0	0	0	0	0
4.11	Non-Medical Equipment	0		0	0	0	0	0	0
4.12	Recognition Displays	100		0	0	0	0	0	0
4.13	Rental Equipment (during transition to space)	0		0	0	0	0	0	0
4.14	Signage (includes wayfinding)	940		0	0	0	0	0	0
4.15	Start-up Labor (includes internal supply stocking)	0		0	0	0	0	0	0
4.16	Temporary Storage	0		0	0	0	0	0	0
4.17	Other	0		0	0	0	0	0	0
4.18	Other	0		0	0	0	0	0	0
4.19	Other	0		0	0	0	0	0	0
Subtotal 4.0 Fixtures/Furnishings		93,340	0	0	0	0	0	0	0

Establishing a Preliminary Budget

- Preliminary budget is for securing project capital approval
- Needs to be accurate, but is based on very little information
- Need square footage affected at a minimum
- Project complexity can cause widely varying costs

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Establishing a Preliminary Budget

- Construction Cost:
 - Benchmarks – cost per square foot
 - Historical costs
 - Partner with a contractor
- Obtain design fees based on a percentage of construction cost
- Medical equipment cost
 - Planner, Biomed Dept., Vendor, GPO
- Furniture
 - Supply Chain or Vendor
- Contingency
 - Typically 10% at initial estimate

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Designing to a Budget

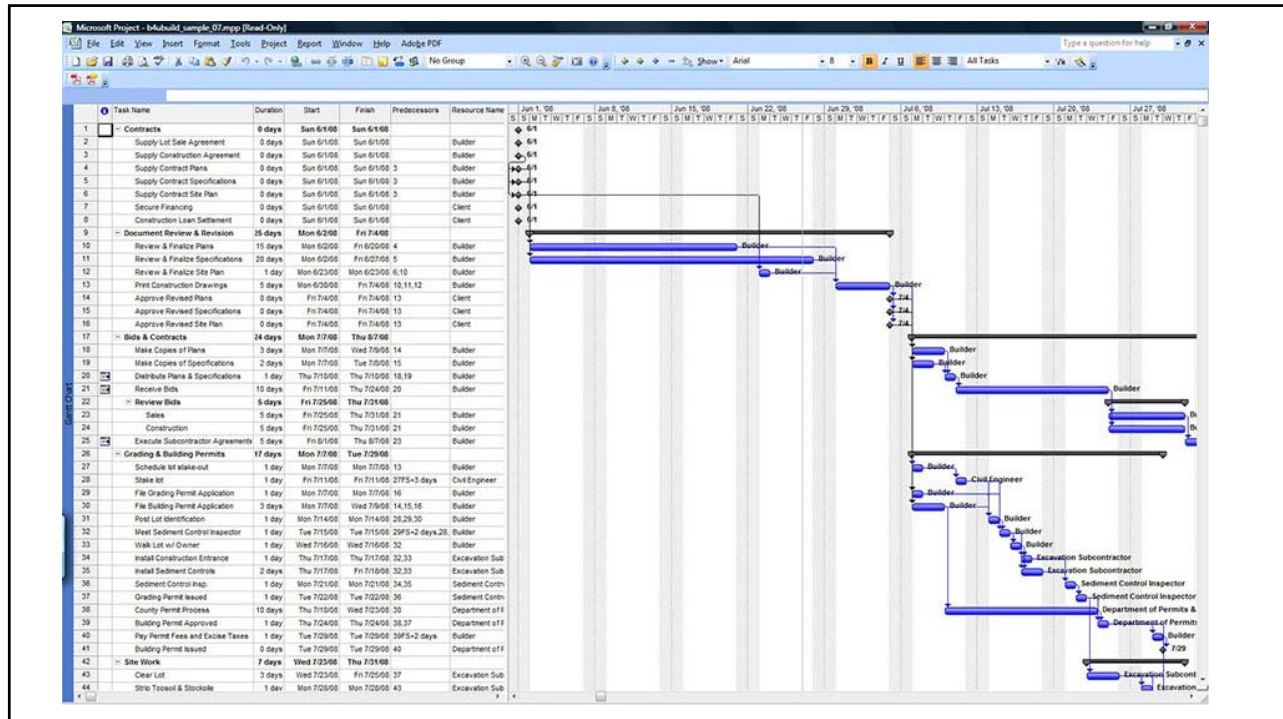
- Provide a written narrative of project goals, including scope and budget
- Communicate budget assumptions
- Team needs to be focused
- Design to a budget – expectation of the designer
- Partner with a contractor for cost control
- “Nice” versus “necessary”

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Owner's Project Schedule

- Include all project activities
 - Gantt Chart is industry standard
- Understand dependency of activities
- Develop phasing plan early
- Master Schedule to include:
 - Design schedule from architect
 - Construction schedule from contractor
 - Procurement and installation schedule for FFE
 - Owner activities: key decision dates, final clean, move-in, first patient

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Project Coordination / Project Issues Log

- Maintain an updated list of issues / items requiring action
- Identify issue, desired outcome, responsible person, required date
- Share with Team on a regular schedule
- Should not be meeting minutes.
- Limit to what needs to be accomplished to maintain cost, quality and schedule
- Use as a tool to keep the team on track

Transfer of Delivery Risk

- Transfer of Delivery Risk to contractor
 - When does your organization expect this to occur?
 - Does your leadership understand when and/or if the project cost is guaranteed?



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Partnership versus Commodity

- Establish master agreements with designers and contractors
- Solicit fee schedules on a competitive basis
- Select designer and contractor on a negotiated basis
- Engage contractor at the beginning of design process
- Clearly define Owner's Project Requirements to team
- Team is accountable for scope and cost compliance



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Project Categories (Type and Size)

- Category 1: Tenant improvements for class A office buildings, medical office buildings and outpatient clinics
- Category 2: Small to medium sized hospital renovation projects as well as the design of new outpatient facilities or medical office buildings.
- Category 3: Large hospital renovation projects, hospital additions and new inpatient facilities.



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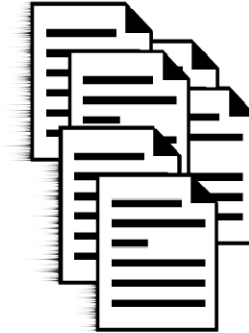
Project Tiers (Complexity)

- Tier I – Very Low Complexity (Tenant improvements / renovations in a Business Occupancy)
- Tier II – Low Complexity (Tenant improvements / renovations in a Business Occupancy)
- Tier III – Average Complexity (Tenant improvements / renovations in a Business Occupancy)
- Tier IV – High Complexity (renovations in an ambulatory or inpatient healthcare occupancy)
- Tier V – Very High Complexity (renovations in an inpatient healthcare occupancy)

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Contract Agreements

- AIA Agreements
 - Most commonly used agreements
 - Extensive testing in court
- AGC Consensus Documents
 - Established in 2007
 - Not as tested or as widely used
- Design-Build Institute (DBIA) Agreements
 - Limited to design-build



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Architectural Design Fee Schedule

	Cost of Construction	Insert Project Cost on the appropriate line		Tier I - Very Low Complexity	Tier II - Low Complexity	Tier III - Average Complexity	Tier IV - High Complexity	Tier V - Very High Complexity
New Construction or Renovation			Proposed Fees by Tier and Construction Cost					
Enter Architect Fee as a Percentage of Construction Cost								
\$20,000,000 -	\$30,000,000			3.00%	3.50%	4.00%	4.50%	5.00%
\$10,000,000 -	\$20,000,000			3.10%	3.60%	4.10%	4.60%	5.10%
\$5,000,000 -	\$10,000,000			3.20%	3.70%	4.20%	4.70%	5.20%
\$1,000,000 -	\$5,000,000	\$2,750,000		3.30%	3.80%	4.30%	4.80%	5.30%
\$500,000 -	\$1,000,000			3.40%	3.90%	4.40%	4.90%	5.40%
\$250,000 -	\$500,000			3.50%	4.00%	4.50%	5.00%	5.50%
\$100,000 -	\$250,000			3.60%	4.10%	4.60%	5.10%	5.60%
\$50,000 -	\$100,000			3.70%	4.20%	4.70%	5.20%	5.70%
\$0 -	\$50,000			3.80%	4.30%	4.80%	5.30%	5.80%
CONSTRUCTION COST	➔ \$2,750,000	FEE RATE		3.36%	3.86%	4.36%	4.86%	5.36%
Basic Services Architect Fee				\$92,297	\$106,047	\$119,797	\$133,547	\$147,297

Note: When the cost falls between tabular limits, the rate is determined by direct interpolation

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Construction Management Fee Schedule

Cost of Construction		Project Cost	Tier I - Very Low Complexity		Tier II - Low Complexity		Tier III - Average Complexity		Tier IV - High Complexity		Tier V - Very High Complexity	
			Contractor Fee	General Conditions	Contractor Fee	General Conditions	Contractor Fee	General Conditions	Contractor Fee	General Conditions	Contractor Fee	General Conditions
New Construction or Renovation			Proposed Fees by Tier and Construction Cost									
			Contractor Fee and General Conditions as a Percentage of Construction Cost									
\$ 6,000,000	\$ 12,000,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
\$ 1,000,000	\$ 6,000,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
\$ 500,000	\$ 1,000,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
\$ 250,000	\$ 500,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
\$ 100,000	\$ 250,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
\$ 50,000	\$ 100,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
\$ -	\$ 50,000		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
INSERT CONSTRUCTION COST →		FEE RATE										
SELECT PROJECT COMPLEXITY TIER →		FEE										

ATTACHMENT 1 - Contractor and General Conditions Fee Schedule

Note:

When the cost falls between tabular limits, the rate is determined by direct interpolation

The Contractor and General Conditions fee is calculated based on the Total Construction Cost (Hard costs only including contingency)

Soft costs are not included (i.e. design fees, medical equipment, Owner contingency, FF&E, etc.)

Other Tools

- Guidelines for Environmental Infection Control in Health-Care Facilities, Centers for Disease Control and Infection Prevention (CDC), 2003
 - Basis for Infection Control Risk Assessments (ICRA)
- The Joint Commission, Environment of Care and Life Safety Code Standards
 - Pre-construction risk assessments (PCRA)
 - Infection control risk assessments (ICRA)
 - Interim Life Safety Measures during construction (ILSM's)
 - Requirements for Fire Watch

Other Tools

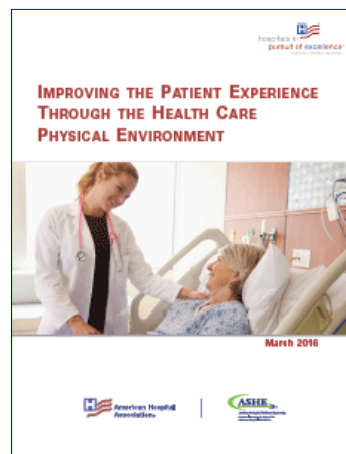
- Health Facility Design Information Checklist
- Detailed project checklist
- Addresses architectural, mechanical, electrical, plumbing, technology, and fire protection
- Use for new health care construction and major renovation projects
- Available free to ASHE members



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Other Tools

- Improving the Patient Experience Through the Health Care Physical Environment
- Describes a "people, process, place" model
- Help's hospital and health system leaders identify people-centered ways to improve the patient care experience



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ASHE Health Care Construction (HCC) Certificate Workshop

Topics:

- Health care planning, design and construction process
- Life Safety Code compliance
- Construction risk assessment
- Infection risk assessment
- Mechanical, electrical and plumbing (MEP) systems
- Medical gas systems and medical technology
- Project expectations
- Two-Day Seminar
- Access to the e-learning program
- On-site course materials
- Certificate of course completion
- 1.45 CEU's / 14.5 contact hours
- ASHE member discount

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ASHE Health Care Construction (HCC) Certificate Workshop

Intended Audience:

- General contractors
- Subcontractors
- Health care equipment providers
- Health care facility managers
- Construction project managers
- Infection preventionist wanting to learn more about construction



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Certified Healthcare Constructor (CHC)



“Having the CHC designation lets me know that that contractor or somebody on his team has **gone through the training and realizes the differences of working in a hospital environment** versus working in general construction”

— York Chan, Administrator of Facilities, Advocate Health Care

The CHC certification:

- ✓ Gives you a leg up when bidding for a health care construction project
- ✓ Can lead to a higher salary
- ✓ Affirms that you understand all aspects of health care facility management including:

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CHC – Certified Healthcare Constructor Exam

CHC Examination Content Outline (115 Items*):

- I. Healthcare Industry Fundamentals (10)
- II. Planning, Design and Construction Process (50)
- III. Healthcare Facility Safety – Additions and Renovations (30)
- IV. Financial Stewardship (10)

* Includes (15) trial questions interspersed and not scored

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CHC – Certified Healthcare Constructor Exam

CHC Examination Content Outline (19 Topics):

- Organization of health care;
- Business of health care.
- Guidelines and regulations for the built environment;
- Special systems;
- Delivery models;
- Internal communication;
- Schedules;
- Project logistics;
- Sustainability;
- Quality assurance;
- Project close-out and occupancy
- Infection prevention;
- Life safety,
- Utility interruption planning;
- Emergency planning;
- Project risk assessment;
- Workplace safety and security
- Constructability, value analysis, and life cycle costing;
- Methods of procurement

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CHC – Certified Healthcare Constructor Exam

Healthcare Constructors:

- Business Manager
- Marketing
- Estimator
- Planner
- Project Superintendent or Manager
- Construction Manager
- Owner's Representative
- Architect/engineer designer



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ASHE Members are Leaders

- Strive for purpose in your career
- Your job is not your career
- Get Involved in your ASHE Chapter
- Identify and solve your most frequent time wasters
- Volunteer for a new task in your organization
- Become a subject matter expert
- Earn a certification
- Develop the next generation of leaders

