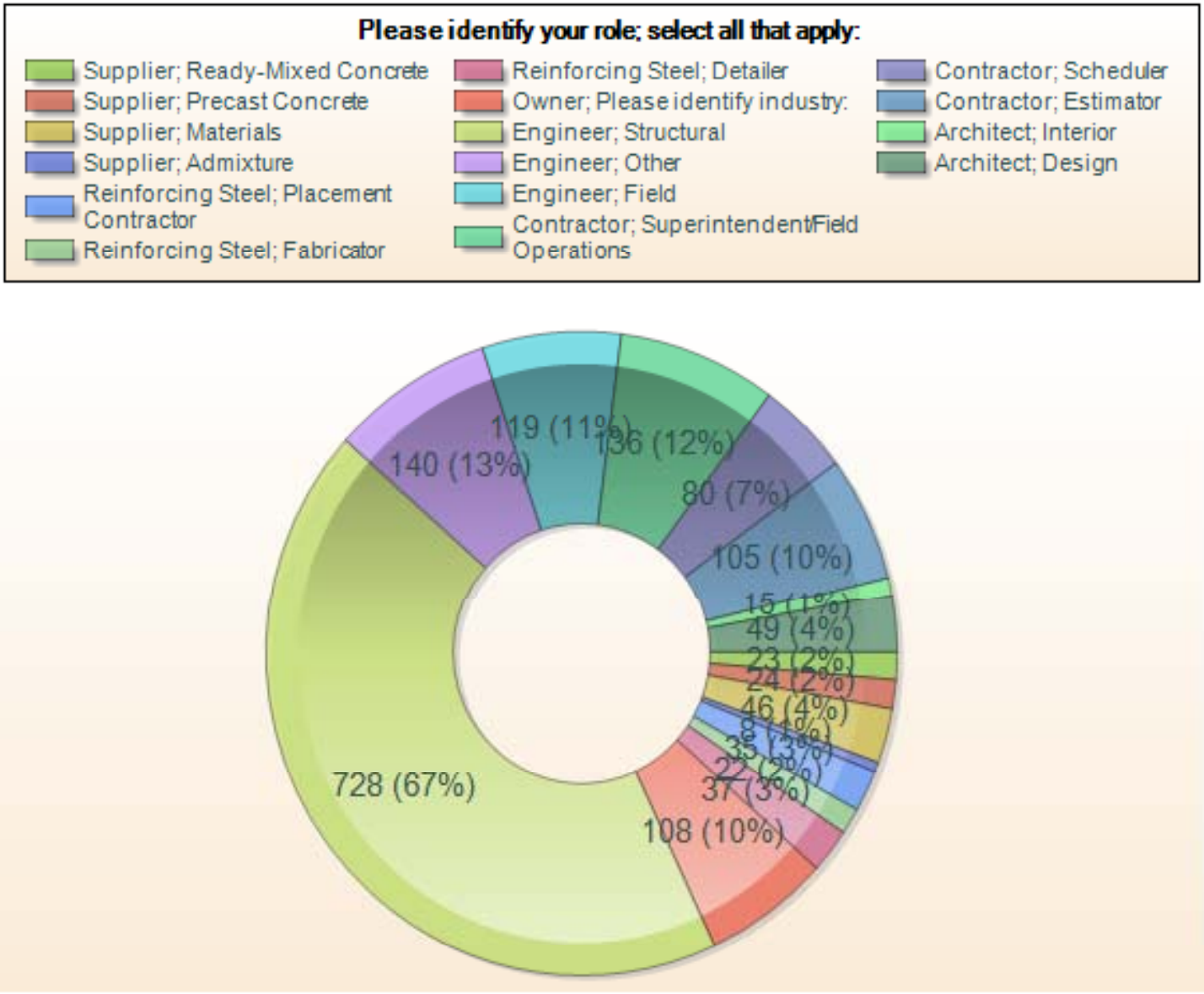
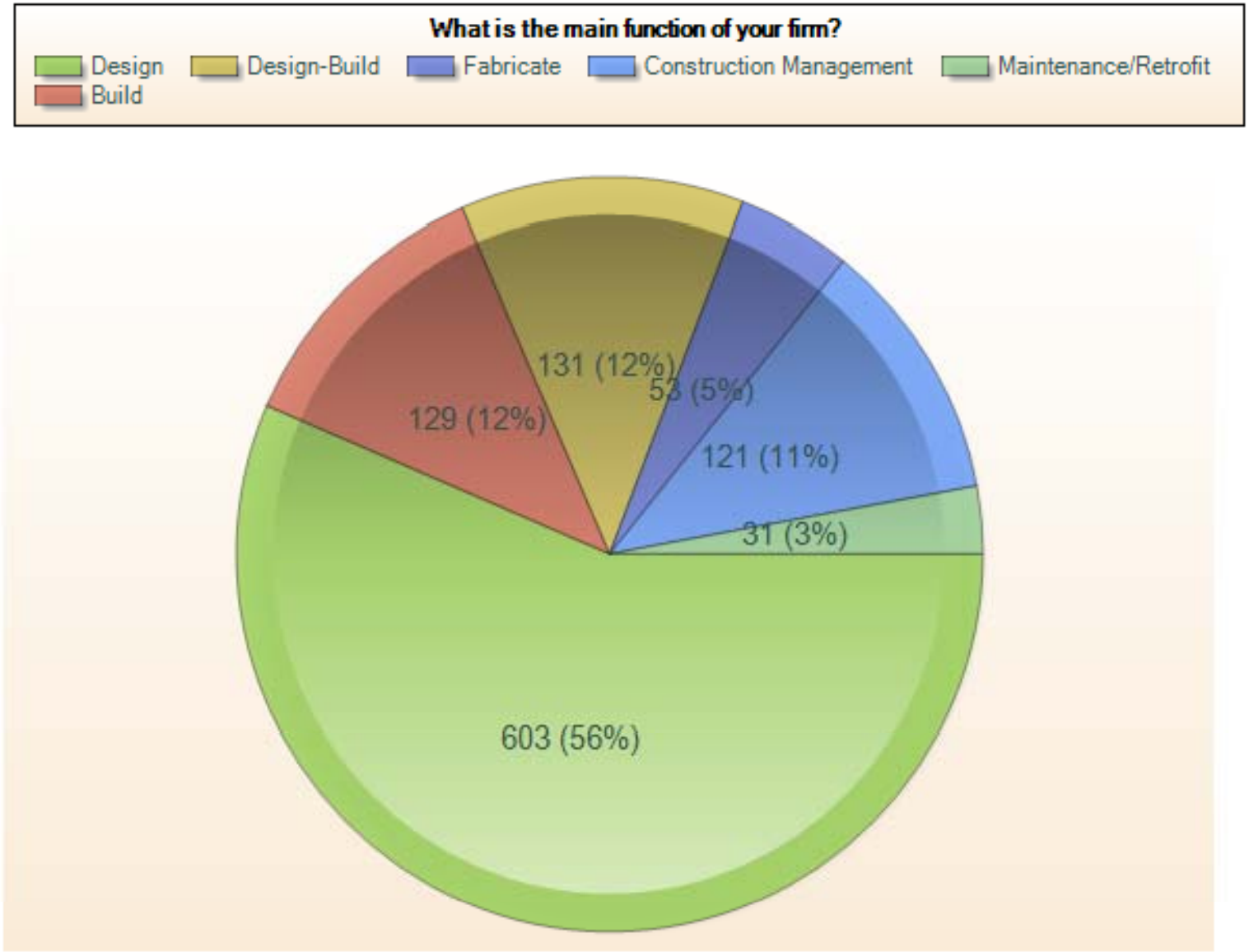
Building Information Modeling

Spring 2009 Survey Results

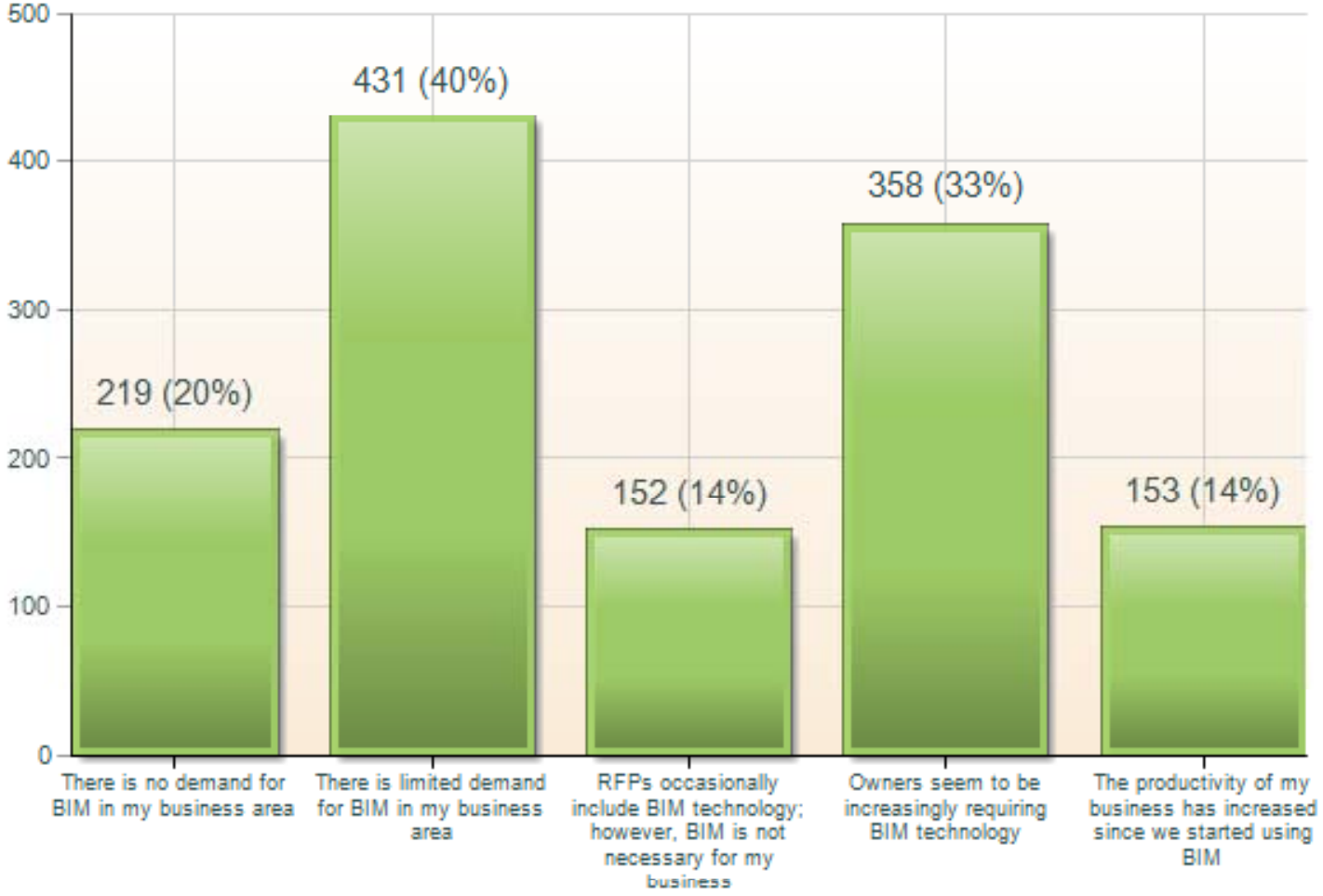
SDC
The Concrete Industry's
Strategic Development
Council


Please identify your role; select all that apply:
Supplier; Ready-Mixed Concrete
Supplier; Precast Concrete
Supplier; Materials
Supplier; Admixture
Reinforcing Steel; Placement Contractor
Reinforcing Steel; Fabricator
Reinforcing Steel; Detailer
Owner; Please identify industry:
Engineer; Structural
Engineer; Other
Engineer; Field
Contractor; Superintendent/Field Operations
Contractor; Scheduler
Contractor; Estimator
Architect; Interior
Architect; Design
119 (11%)
136 (12%)
140 (13%)
80 (7%)
105 (10%)
15 (1%)
49 (4%)
23 (2%)
24 (2%)
46 (4%)
8 (1%)
35 (3%)
27 (2%)
37 (3%)
108 (10%)
728 (67%)

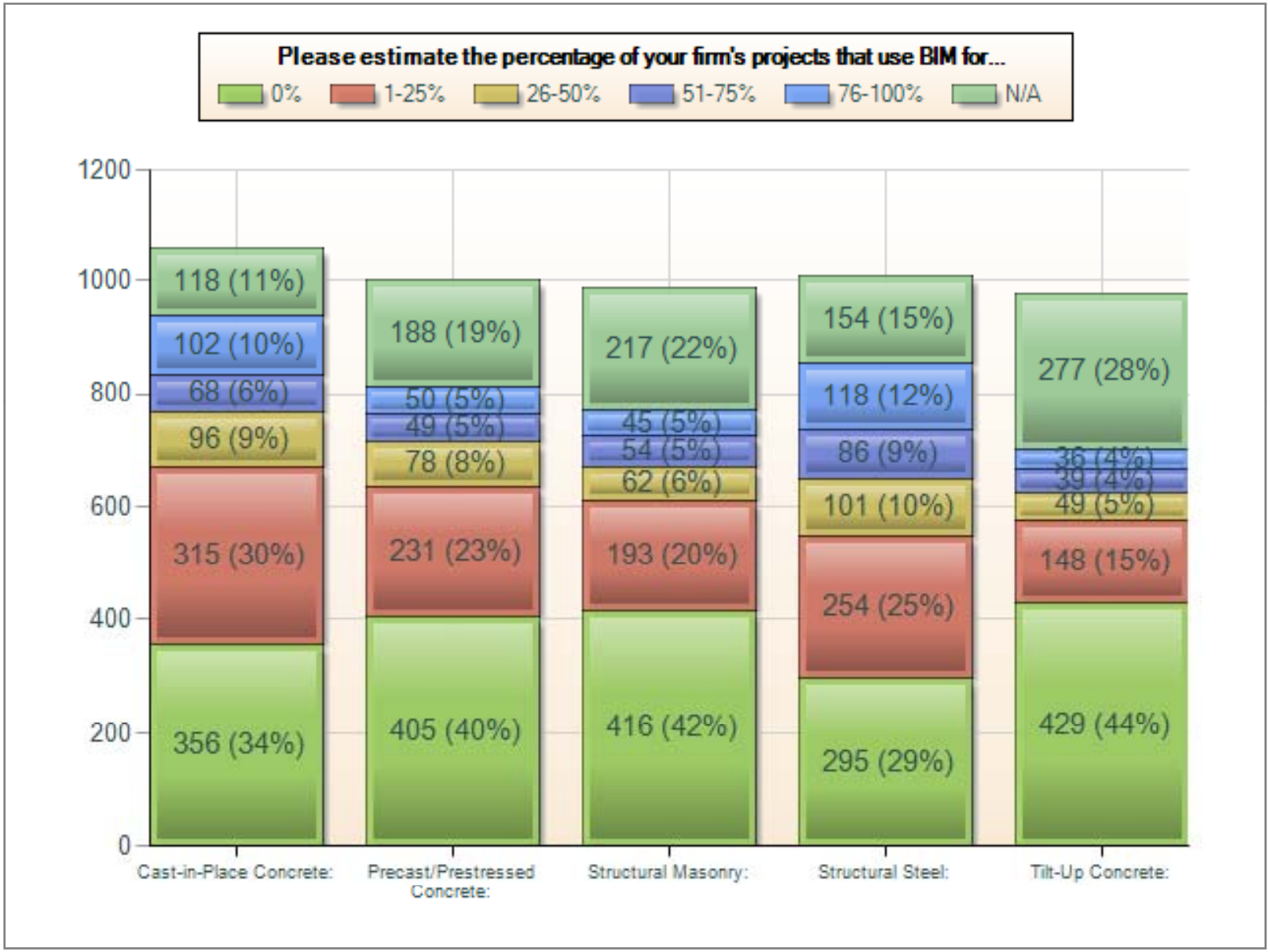


SDC
The Concrete Industry's Strategic Development Council

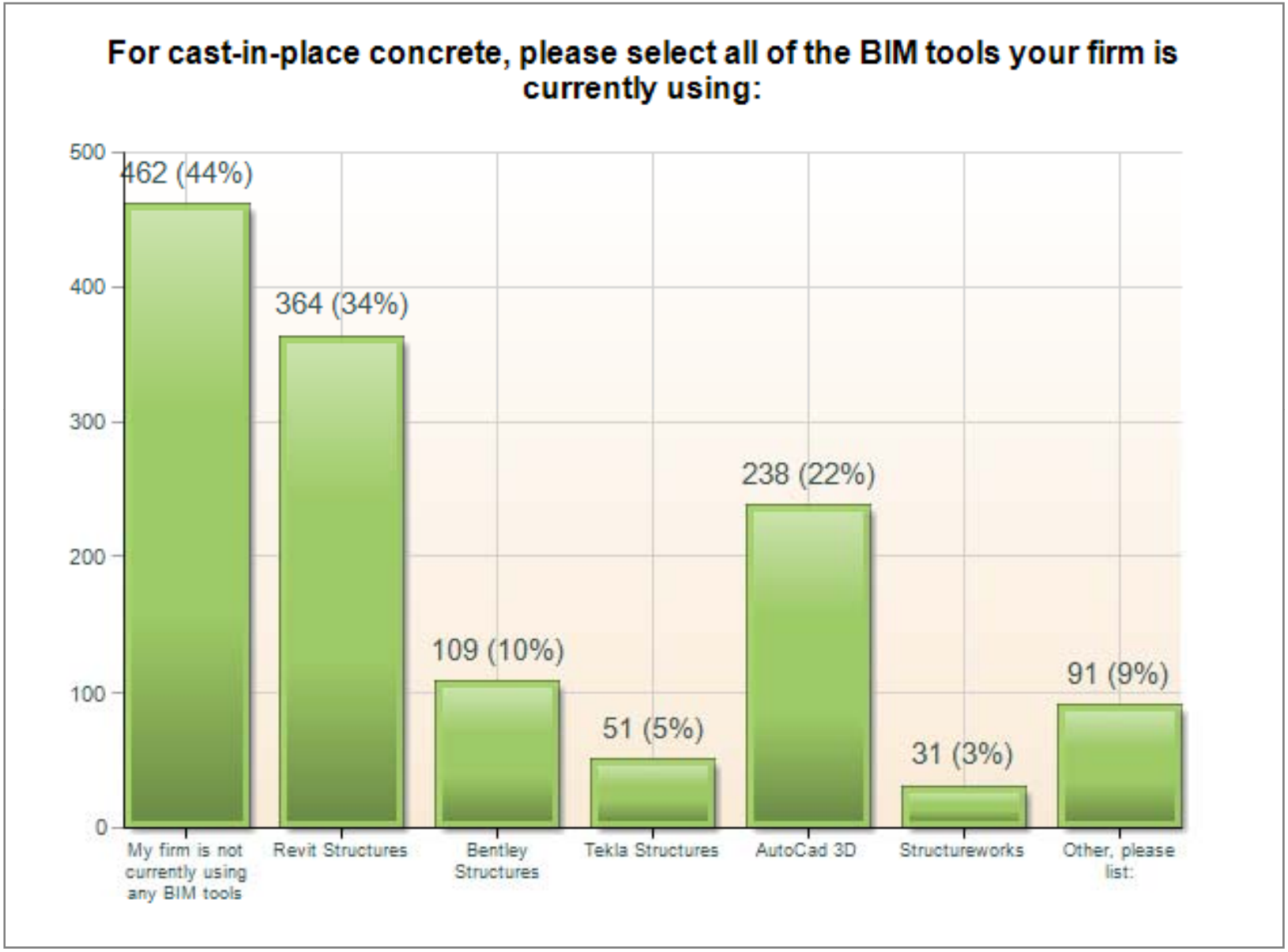
Please identify which of the following statements apply to your company's assessment of BIM technology; select all that apply:



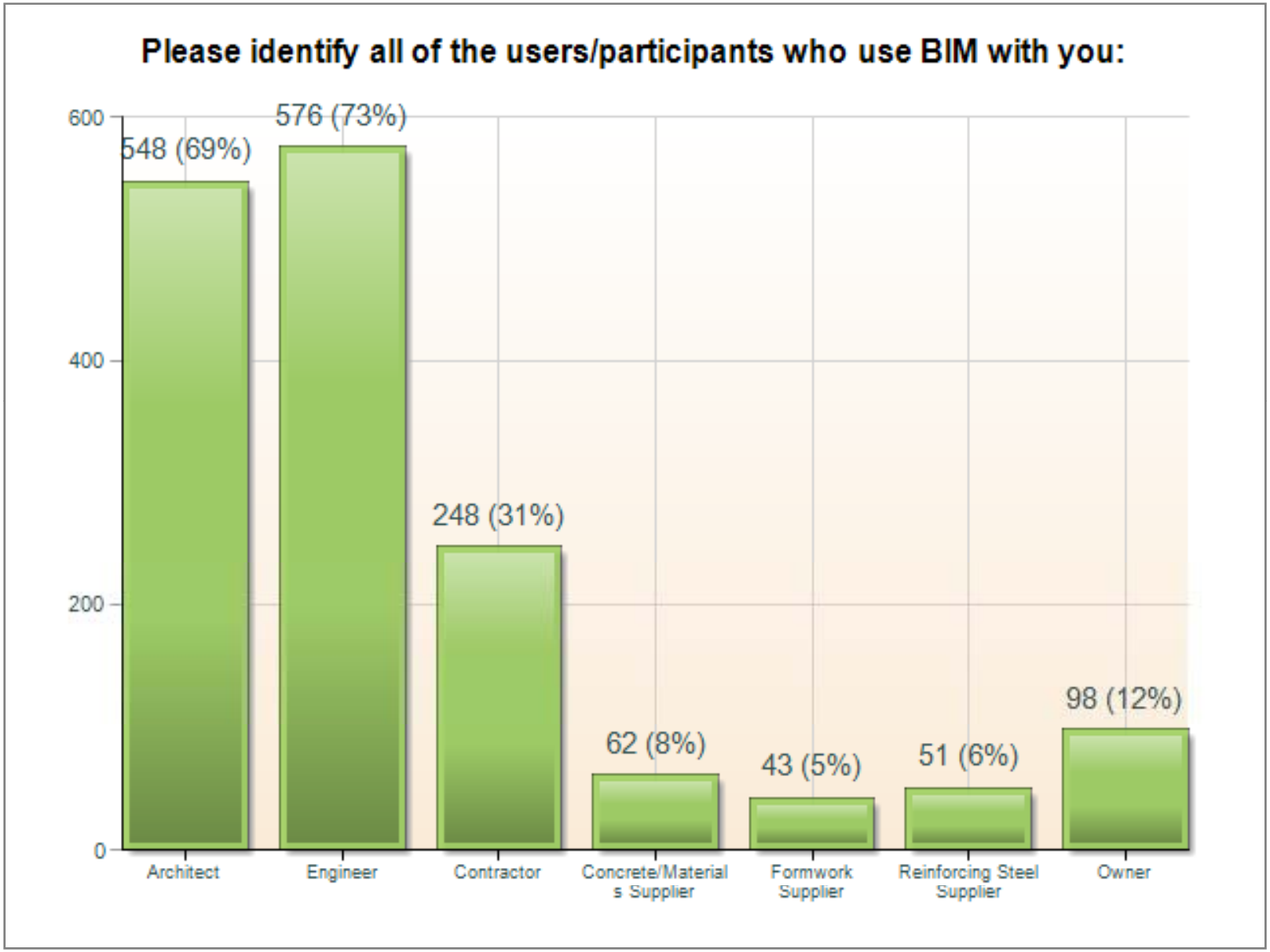
SDC
The Concrete Industry's Strategic Development Council



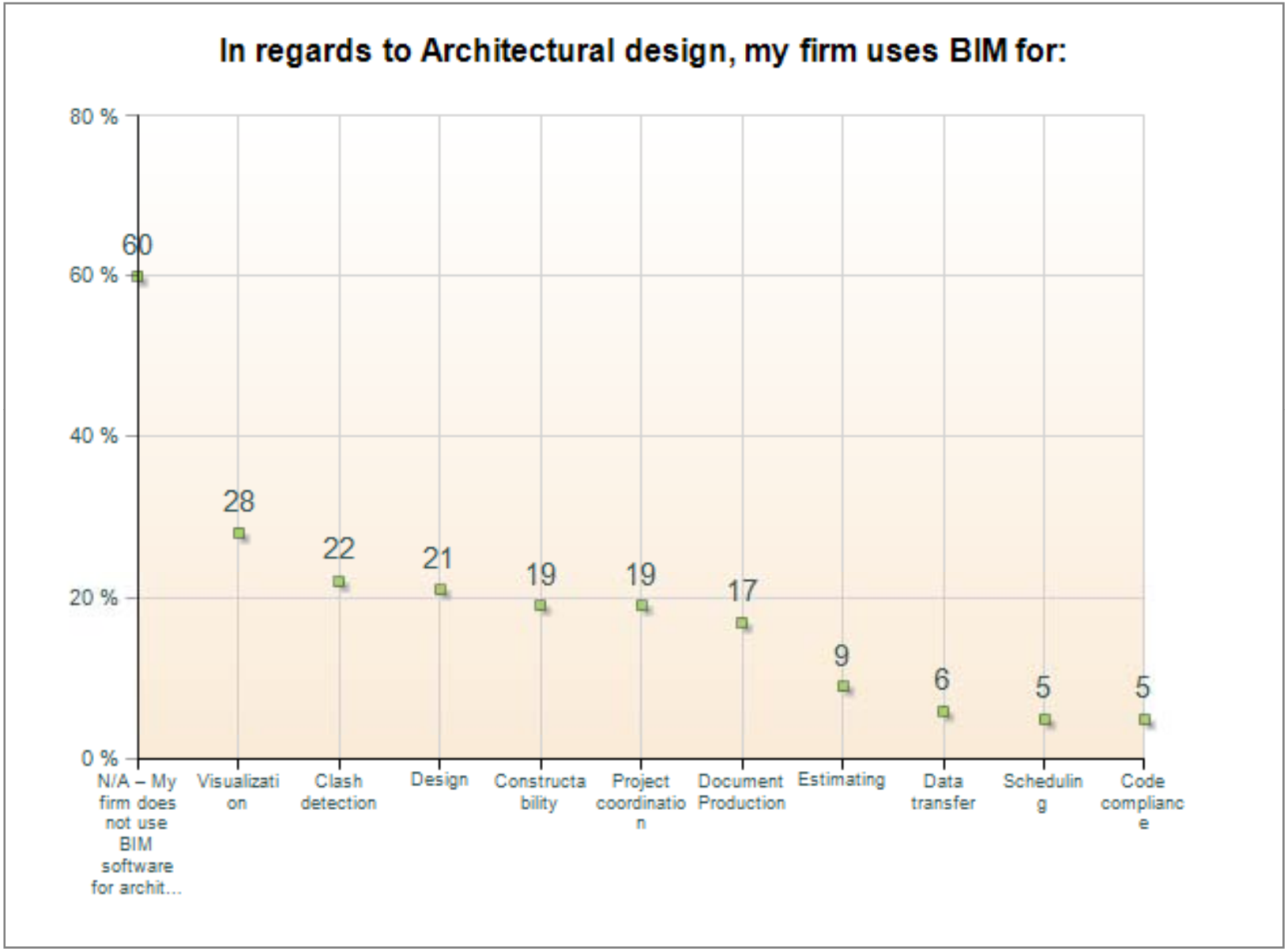
SDC
The Concrete Industry's Strategic Development Council



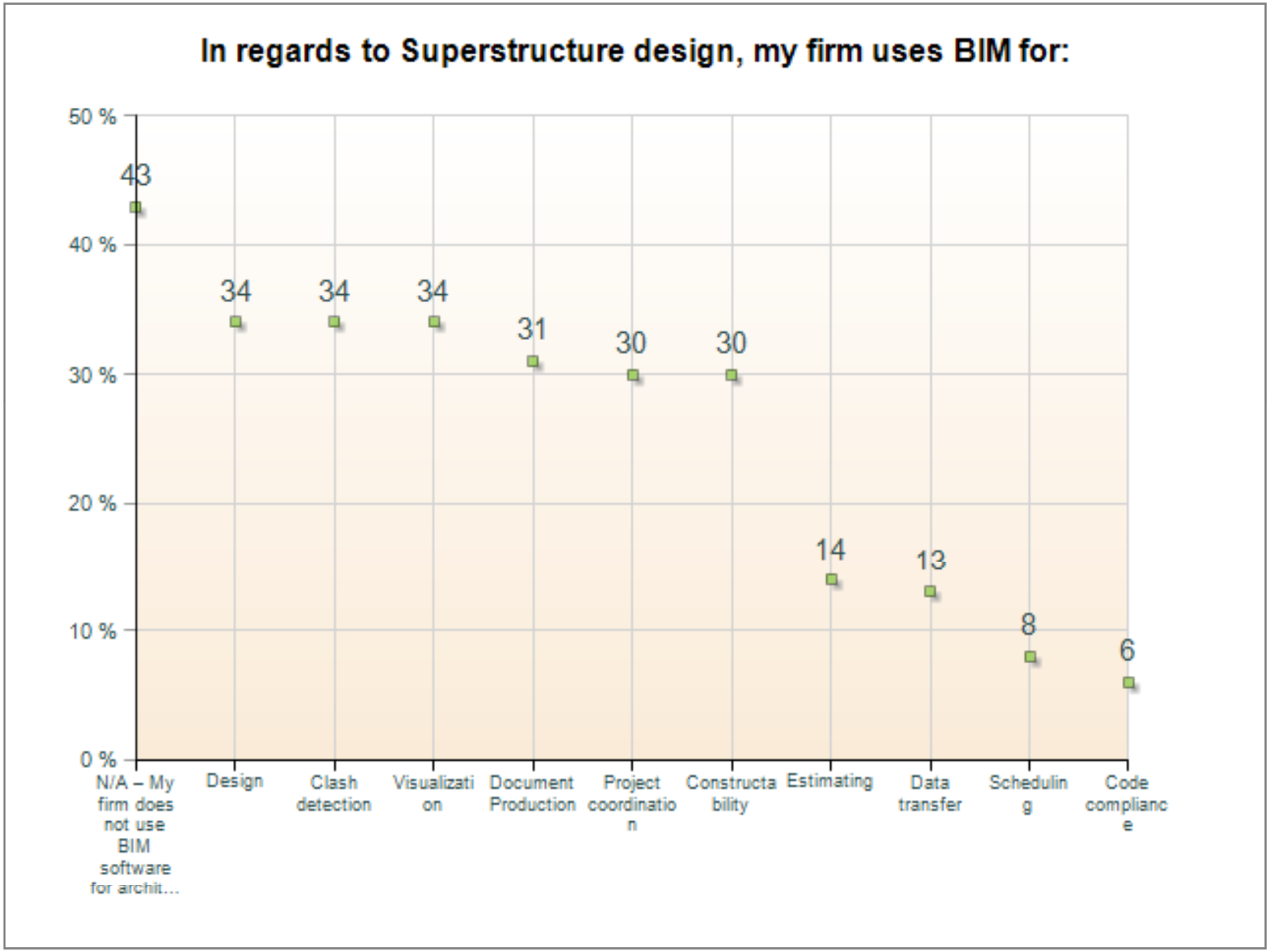
SDC
The Concrete Industry's Strategic Development Council



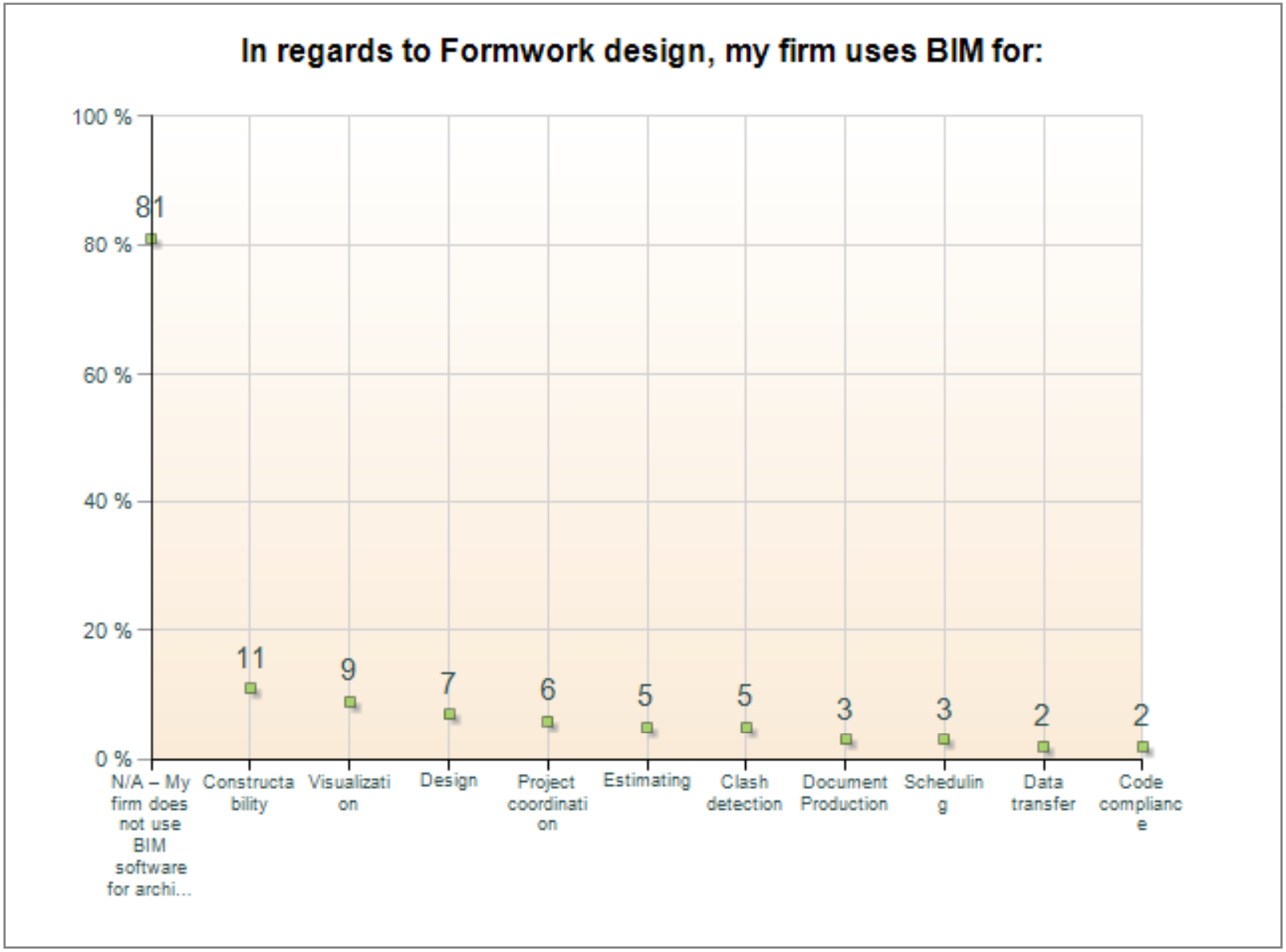
SDC
The Concrete Industry's Strategic Development Council



SDC
The Concrete Industry's Strategic Development Council

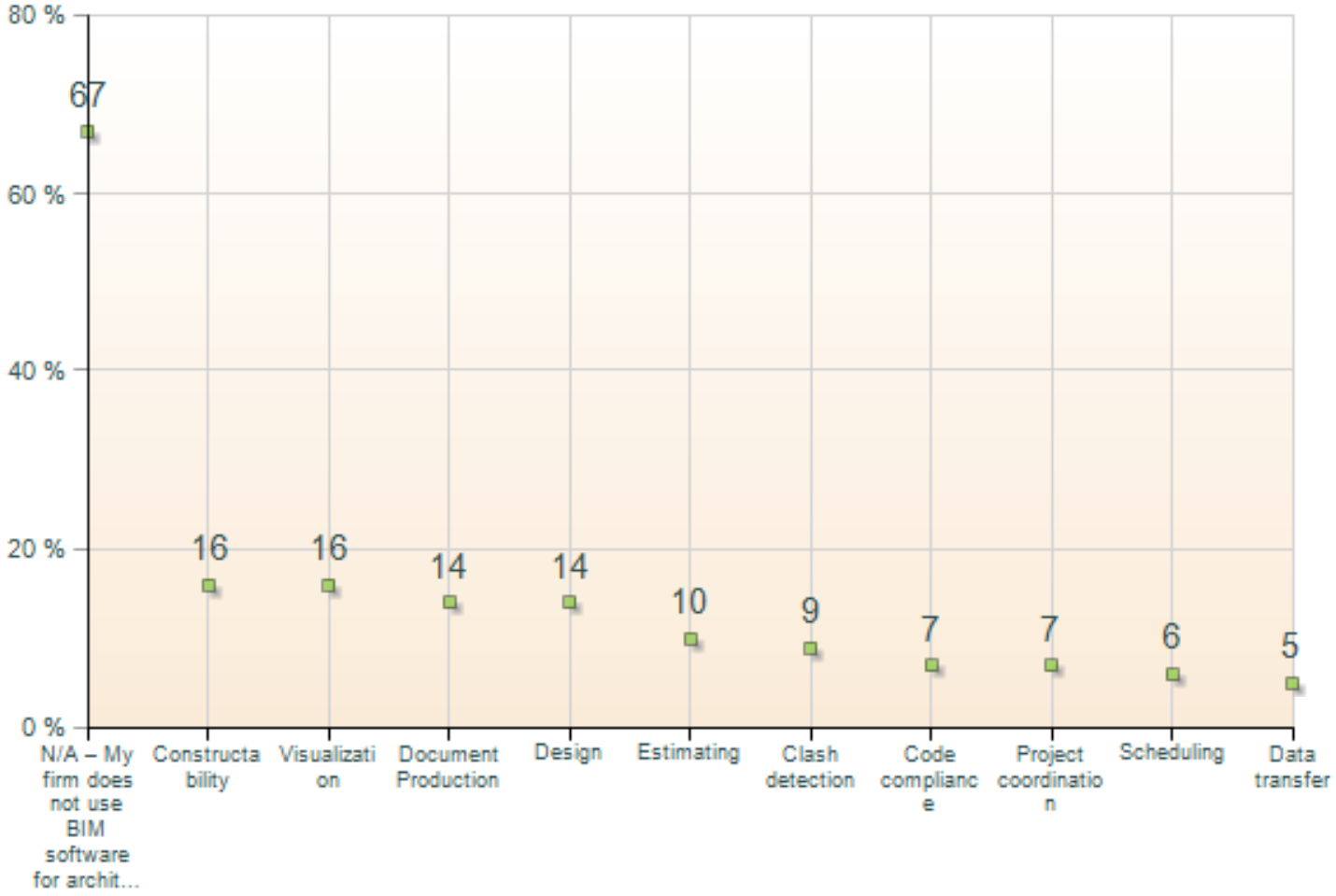


SDC
The Concrete Industry's Strategic Development Council



SDC
The Concrete Industry's Strategic Development Council

In regards to Reinforcing Detailing/Fabrication design, my firm uses BIM for:



SDC
The Concrete Industry's Strategic Development Council

For your firm, what is the biggest obstacle (if any) to using BIM-related software for cast-in-place concrete design and construction?

1	We currently do not use BIM. It is a great concept for greenfield projects, but we are managing older facilities and BIM is difficult to utilize in this application
2	That not everyone else uses it
3	The current economy has slowed implementation by other parties in the process.
4	Architects don't understand the need to be accurate for structural modeling
5	training
6	ease or lack of ease of rapid modeling and traslation into traditional 2d formats
7	Lack of interoperability between drawing and analytical software
8	LEARNING CURVE
9	understanding and uniform usage methods of the software vary. We haven't developed Revit tools to match the speed and accuracy of layering techniques in Autocad.
10	Low frequency of use and therefore relearning each time used, training, clients not using it, projects not suitable to it, don't do CIP concrete superstructure buildings.
11	Convincing management that BIM is necessary to remain competitive in our market.
12	It helps when the Architect uses BIM.
13	It is a question of re-equipping as demand grows.
14	We presently have no knowledge of the BIM system
15	A Project commission
16	Concern about lost productivity.
17	Time, training, economy
18	Trained personnel, custom families and templates
19	we work on very few, if any, cip projects.
20	Not applicable
21	PRICE
22	Learning curve
23	Training of personnel
24	Cost vs. compliance and acceptance
25	nobody is using it.
26	developing the objects (families)
27	Difficulty of working with floor plans and schedules, Presently takes longer than cadd
28	Costs and Contractor acceptance
29	TIME
30	We do not yet have any BIM software in place.
31	This form is not able to accept complete answers. Question 5 appears to be prepared by someone who has not worked with BIM. If the benefit of BIM were just one of the aspects, it wouldn't be used ... but the combined benefits cross-linked throughout the project make it highly valuable in many avenues on the job. Obstacle is other consultants not using it, and trained staff.
32	In spite of extensive advertising to the contrary by the BIM community, BIM is at this point an excessively costly (in time) tool that is not "ready for prime time"
33	We are very new to the use of BIM related software for re-bar design BUT see some great potential
34	cost

35	Learning Curve and users ability to manage a complicated program
36	There has been no request for c-i-p BIM
37	Training
38	Cost of software and training
39	I don't know. I'm involved in restoration, not design.
40	Time of learning new systems.
41	Time taken for use.
42	cost and time investment in getting started and learning how to use and integrate software
43	We Bid and Build, if we can't see it we don't price it.
44	It is just starting, we are not tottaly sure what the specifications should include to get the most out of BIM
45	There is no obstacle.
46	We use 3D modelling of concrete foundations and elevated slabs in buildings mainly for lay purposes.
47	Having projects on which a cast-in-place concrete frame is economically viable.
48	Lack of demand for most projects, overall cost of software and training and learning curve for implementation.
49	Limited participants (detailers, rebar suppliers, form work suppliers, GC's) and software interoperability.
50	We are a material supplier (admixtures and construction chemicals). We manufacture and sell primarily to concrete producers and to construction supply houses. They, in turn, use our products in concrete and sell to contractors or simply re-sell our products to contractors. So far, I am not getting feedback from concrete producers or distributors that contractors are needing their input in a BIM format. But, I can see that day coming.
51	Technology is new and we have no staff trained in using it.
52	standards for documentation and delivery
53	Expensive software tools required that are very clunky to learn and use. Never ending update cycles that I have to pay to fix faulty software. It is very hard to draft in 3-D. I will NEVER electronicly seal a drawing. I keep strict control over my seal - no amount of electronic hokus-pokus will ever replace the security of my embossing stamp and my signature. I want control of my drawings if my life depends on it - and it does. This is not a video game but peoples lives. The format is fragile and subject to hacking. Paper is surprisingly durable - try to us disk from 1995. BIM has some interest and will probably be a must have some day but the learning curve is WAY to steep right now and the field keeps changing - is is 8mm or Super 8 or betamax or vhs or dvd. Extreme need for generic non-proprietary format to drive competition and remove costly turf wars.
54	Lack of standards among differenct BIM platforms and therefore, lack of standards between different companies/disciplines wanting to use BIM
55	Older staff member wary of the new technology, also the cost associated with both buying the software and training staff and the worry that the investment in train staff will not pay off if they leave the company.
56	Lack of standard concrete system and reinforcing steel and post-tensioning tendon BIM objects. Also, lack of robust and dependable interface between BIM model and structural analysis/design models.
57	Owners and Developers, on the average, have not been presented with life cycle cost-benefit analysis that would convince them to compensate a BIM design team with higher fees.
58	Size of file when reinforcement is added. Time required to show required reinforcement in sections
59	Identifying optimal amount of information to be modeled in 3D BIM model while maintaining efficiency in design but still produce structural drawings that are complete.
60	Applicability for the services I provide.
61	Non believers Need to be able to choose more than 1 for #5
62	the interface between the softwares does not work very well at this time.
63	trusting the computer to not make mistakes, and giving out put that is practical
64	Learning the software.
65	none

66	Training and experience level of users
67	Learning/teaching the BIM system
68	Accurate modeling of reinforcing and post-tensioning, tapered or warped sections between horizontal planes.
69	Importing and exporting to the analysis software.
70	Interoperability between design software and BIM software.
71	Controlling the visibility of the objects, and incorporating the objects into schedules.
72	integration with analysis software and ease of input for unusual conditions
73	The detailing of rebar in concrete utilizes too much memory and slows our productivity down to where we don't detail rebar in concrete structures using BIM.
74	Limited application for a chemical plant engineeer.
75	The complexity (time to learn the software) of use for "off the shelf" products. The speed in drawing the model takes too long.
76	Learning curve - small % of our projects warrant BIM
77	Our cast in place is PT, and there is no interface between REVIT and our PT software.
78	Training, we must learn on the job.
79	cost of "learning curve"
80	We use RAM Concrete, and it doesn't work well with Revit.
81	No demand
82	contractual liability
83	Difficult learning curve of Revit and it's dissimilarity to AutoCad
84	Learning starting process
85	Limited use
86	Limited capability of the software to handle unusual geometries. Limited drafting capabilities.
87	We can easily get caught in doing much detail. We are consultants and at this do not need to model all the rebar. It makes the models very large and difficult to use.
88	Lack of experience from architects and lack of use by engineers
89	It is hard to justiy the cost and complexity because our projects are relativley small, consisting of structural design for residences and commercial factory built structures.
90	Not applicable.
91	training
92	None
93	non
94	Cost and man power
95	intuitive functionality and meaningful output presented in report-ready format
96	For my one-person business and the size projects I handle, BIM is not currently relevant and I see no demand. Considering the software and training costs on the "bleeding edge" I plan to observe but not commit.
97	Training Revit operators.
98	more exposure / education, availability
99	Not familiar with "BIM"
100	BIM software for cast in place concrete is not as developed as it is for steel.
101	Coordinating changes is a tremendous time consumer when using BIM
102	Revit Structure is more easily used with structural steel therefore my modelers do not like doing concrete structures in Revit
103	Software still needs improvement in some areas for production of unusual shapes, etc. Otherwise, we use it just as much for cip concrete as all other construction materials.
104	cost

105	Education of engineers
106	We don't believe that our clients place any value on BIM, nor do we believe it is helpful to us in doing our work.
107	the cost and learning curve to enact the change over to BIM. Too much work and not enough time to think about changing to BIM
108	Nobody wants to pay us more to bother with BIM.
109	None.
110	There simply is no demand for he use of BIM in our work.
111	has our own foundation design software and mostly design relate to petrochemical ,power and LNG plants
112	Demand is not there.
113	Creating proper details from the BIM model.
114	Clients/architects have not adopted BIM. Besides, it is cumbersome and time-consuming to make revisions on structural details drawn because it is normally tight to engineering analysis. Contractors are just beginning to use CAD.
115	I have no idea what it is.
116	Liability for the completed model.
117	Just getting started
118	Getting Management Buy-in
119	Getting the different software to talk to ech other. Convincing and educating owners on the advantages and reasons for them to use BIM on their projects.
120	Buying 3D software vs. 2D and learning how to manipulkate.
121	There is a total lack of seamless interoperability between the analysis software and the BIM model software. What the software manufacturers claim in their advertisements is untruthful and misleading.
122	I am not sure of the impact from a detailing perspecive; however, a complete switch to a new software system would definitely be formidable.
123	Limited use of /need for BIM in my current industry (renewable energy).
124	additional software costs while funds are already tight; the lack of necessity for this type modeling for the magnitude jobs I do; further steps and complexity added to increasing building and material codes demands, etc.
125	We are medium size design-build companies. We do mostly two story commercial buildings. We will be building 7 story cast-in-place concrete beams, columns, and slab building. We have never used or do not have a knowledge about BIM, so some of the questions above are not answered.
126	Learning curve - price of technology
127	cost
128	N/A
129	We only build Flood control Channels and Pipes
130	Compatibility between software and non-legality (as an owner) of specifying the software which suppliers should use.
131	clients are not using it
132	cost
133	Not imperative
134	training
135	training and up-front costs
136	Start-up of BIM environment. Waiting for large project that demands BIM.
137	Finding companies that really know how to use it. Companies use it but do not model in 3D
138	Our area has very limited use of BIM. It is just of matter of time before it becomes a standard on most jobs. The biggest obstacle is simply - implementation - across the board. Initial cost; training; etc.
139	A guy in the field still needs a 2-D drawing to build from. When we are so tied to a piping/mechanical drawing, it is hard to get all that information out of the way so and create a 2-D drawing "For Contruction"

140	Lack of software for production of 2D reinforcing drawings from 3D concrete models
141	Learning Revit/Revit Structural--learning curve is expensive
142	Our market does nbot require it and we are very conservative about adopting new technolgies.
143	What is it?
144	A project to use it on.
145	Owners do not want to pay additional design fees associated with acquisition of software, training staff and additional time in project design that is needed to implement BIM. In summary, owners want all the benefits of BIM, but they do not want to pay for it.
146	Familiarization with and utilization of the software
147	Full-scale use of BIM by all project participants
148	Hwy Structures are designed and constructed from existing standards. The processes are well established and may be modified as needed for construction. Plans are done using CADDS...some automated design programs are incorporated with the drawing of structure plans.
149	Learning the software and involving the field personel in it's use.
150	Familiarity
151	Not as efficient as CAD. Our clients do not use BIM effectively, so too much time is spent in coordinating work flow. Using Revit has not been cost effective on any project.
152	size of files; transfer of data
153	Up front expense of implementing BIM regardless of building type
154	N/A
155	Lack of a uniform software platform Lack of standardized method of use & implementation
156	Nature of underground environment and structures
157	In process of acquiring and training for BIM.
158	Proper education and training
159	We do not deal with new designs that involve complex reinforcement schemes.
160	Lack of knowlege
161	training, cost vs reward
162	money and time cost of investing in program
163	We deal with the ready mix concrete QC side. The hardest part is getting meaningful test data from the labs to the concrete producer. Many labs won't send the info, citing legal restrictions. Others who send the info don't have complete or accurate information.
164	Training on software.
165	None
166	Not sufficient "out of the box" families. Nearly all families need to be customized.
167	Mind set, very different way of thinking/drafting
168	software cost and training
169	I work for an Architectural and Engineering firm with the Architects in house. Our largest problem with BIM projects to date is the engineering staff (HVAC, Electcrical, plumbing, structural, and fire protection) having to start on projects before the the architects have the floor plan set. We waste huge amounts of time adjusting the model every time the architects decides to shuffle the floor plan. Training is an absolute must. Even after training our engineers are doing more "drafting" related work on top of their usual design responsibilities because our CAD techs have not picked REVIT very rapidly. Freshly minted engineers and architects rely too heavily on software generated images and as such they can no longer look at a set of plans and determine geometry. We find ourselves having to generate more and more 3d models to compensate for poor visualization skills with no added profitability. Drafting issues once performed by less expensive cad techs is being replaced by 3d modeling performed by engineers with no added profitability. BIM is only a pending necessity because the plan reading ability of engineers, architects, and contractors is not what it once was.
170	Reluctance of Architect and Engineers. Owners/GC's not willing to use expertise at extra cost.

171	None - we have used BIM for nearly 100% of our projects delivered by our full multi-discipline in-house A/E design resources for the past 10 years. The challenge is when we do team with other firms there is a dearth of firms that are fully functional and efficient in BIM delivery. This is especially so for engineering firms in Canada and a bit less so for Canadian architectural firms who now finally have caught the "BIM fever". On the software side, the increased compatibility between the new releases of the Revit and Bentley platforms has lessened what was formerly a troublesome issue. In regards to your survey, on Q2 if we could have we would have also selected Design Build, Construction Management, and Maintenance/Retrofit. On Q5, we routinely use BIM for 1,2,3,5.
172	none
173	Cost and learning curve.
174	Getting everyone on the same page and providing information to those that need it when they need it. And if/when it is provide it is in anohter form of BIM, not a sketch.
175	Contary to the belief of the concrete and steel industries, BIM is not needed for every job. Unfortunately it is used for everything. BIM has increased the cost and time to produce cadd drawings accross the board. My drafting costs have increased 300-600% in the last 5 years because of BIM and I can no longer accurately estimate the real cost of producing plans. In todays environment both Engineers and Draftsmen are in the work place with a lower level of technical expertise. BIM is used as a crutch to prop up the educational and visualization deficencies in even the smallest, simplest projects. There needs to be a rational discussion in our industry regarding what the design and drafting needs are and how they can be achieved with or without BIM.
176	SOFTWARE
177	Architech and contractor in Panama, do not use this technology The cost of BIM, increase honorary, that the owner maybe do not want to pay.
178	In my country is not Still used as a structural or architectural dssign tool
179	The owner must pay for the setup of it, and the update are on us, we have to have a full time person on the updates.
180	Compatability with Autocad software. Work has to be done twice.
181	Common to all BIM software for all uses: BIM products are not yet mature enough for commercial use. We will start using BIM in about five years, after the products improve their usability and cross-product compatability.
182	Getting managment to approve the software.
183	Is the end product worth the learning curve and software cost. Is the extra modeling time cost effective. 2-D Working drawings are still required so is the extra effort to create the BIM worth it right now.
184	We do not currently have the expertise in hosue to utilize BIM. We see this as the future but have not yet seen the benefit to implement it. It is something that we see undertaing in the long term.
185	The biggest hurdle is the abuse from the software companies. They require a maintenance plan. We do not use maintenance plans because they have no value to us.
186	COST/TRAINING
187	Having the right project to use it on. We are primarily using it on steel frame buildings.
188	No obstacle, It is going to take a while for BIM to get cost effective. Need better interface between the drawing tool and the anaylsis tool.
189	The cad technicians are required to have more responsibility and projects and much of the cad work is up-front: setting up the overall model, etc. Some believe that accurately reinforcing steel would be very beneficial, but we have found that there are limited tools to easily do this and the additional detail severely bogs down the models.
190	IT WILL BE LIKE OTHER TECHNOLOGY WHICH INCREASES OUR EFFORT, RISK AND COST. DON'T NEED 3D SOFTWARE TO VISUALIZE STRUCTURE. I QUESTION WHY THERE IS SUCH A PUSH FOR BIM WHEN IT IS SO DIFFICULT TO MAKE A PROFIT NOW.
191	In our experience, Revit Structure 2009 is not yet efficient for production of drawings and details. We cannot as a firm afford the time delay in drawing production associated with Revit Structure. We remain optimistic that hopefully soon it will match or exceed AutoCAD as a drawing production tool.
192	Cost of software and training
193	Software issues regarding quality of documents.
194	Training

195	In our case with Bentley's software, we have to ask the contractor to train personal to use it
196	General impression is that BIM software is not yet developed for concrete to the degree that it is for steel; drafting in BIM takes significantly longer for concrete than it does for steel, which in many cases makes BIM a non-starter for a concrete project (or vice versa...)
197	Currently my firm does not use BIM. We specialize in Water and Wastewater Treatment plants. We are starting investigations into using BIM as we try to break into other building markets.
198	Architectural Design to be done using BIM tools
199	The biggest obstacle I have with BIM now is the materials takeoff.
200	we have not encountered any requirement for BIM. I have only read about it in ENR.
201	Have not made decision concerning this approach yet
202	Cost of software and training. Inconsistent client requirements.
203	concrete structure
204	need time to learn new softwares
205	Establishing a paper format of drawings that conveys the information which was included in non-BIM drawings. We have noticed that BIM software tends to a design tool and less so for a construction document production tool.
206	BIM is not required in Mexico.
207	Developing real life geometry of cast-in-place concrete from families of pre-defined components as well as detailing of reinforcement.
208	The learning curve.
209	Preliminary layout and early start of engineering is very difficult because so much information is necessary up-front.
210	BIM not being used in our area by A/E
211	We are currently not involved in BIM but would like to look into it for increasing the efficiency of construction process. We perform QA/QC inspections/testing during construction process.
212	Price of software for the limited amount of structural work the firm does.
213	In general there is no obstacle. We have found that a concrete building models and documents much easier than a steel building. One obstacle for future use of BIM for concrete is that modeling rebar consumes a lot processor resources and since rebar fabrication is not automated like structural steel, we generally do not model rebar.
214	Initial cost and time
215	training and increased costs
216	money, time.
217	N/A
218	Application performance/limitatons and inter-operability with design software
219	The biggest challenge to date has been getting the construction documents to "look correct" after creation of a BIM model. Some of the cleanup associated with CAD is much more difficult with BIM.
220	Employee Education of BIM
221	don't know enough about it to reply intelligently!
222	The learning curve of using the software, as well as learning its limitations
223	I've been active in a ready-mix producing company in Qatar for 1,5 years. thats also why I joined ACI and probably why I received the request for this research. I think BIM are a great opportunity for the whole construction industry and a true challenge to implement industrywide. My answers are probably not really an addition to the research but I can emphasize my experiences. What I faced in Qatar is the inmaturity and unprofessionality of the whole construction industry, which makes the implementation of BIM a lower priority on the items to 'tackle'. On the other hand, BIM would reduce a lot of the problems in the construction industry in the Gulf region.
224	Seriously...educating the owners
225	cost, complexity
226	BIM adoption is slow/weak in certain regions

227	We don't do new design, just evaluation, repair and retrofit. Does BIM really work in the existing market segment?
228	Liability issues re: completeness of concrete reinforcement details shown in BIM model if this is required as part of contract documents. It's currently impossible to show everything!
229	Getting all parties involved in the process
230	more knowledge about it
231	Lack of client demand.
232	-
233	BIM tools for RC not well developed Contractors/fabricators are not uniformly capable of receiving BIM data
234	Inexperience
235	There is not one.
236	Conversion from architect to GC or supplier
237	Do Not Know
238	Cost to upgrade software and is it necessary. I'm researching that issue as I write this response.
239	Cost, benefit, and relevance
240	Getting the entire staff trained.
241	no knowledge about them
242	We have not used BIM.
243	As a formwork contractor, 3d models of the formwork systems do not exist. Formwork, being a temporary structure, is not a part of the completed structure and is of little value to the BIM model; formwork is not there when other trades arrive. Building of 3d models for formwork libraries will take several years once the industry is forced into providing that service.
244	Currently it has not been required on a regular basis and when BIM was used it was implemented by the A/E Developer, so there have been no real obstacles.
245	Deesign software compatibilty with BIM software.
246	Control of base model; maintaing common cad standards while working with multiple clients; liability of finished product when the electronic inforamtion is available to multiple parties of varying disciplines and levels of responsibility.
247	We have not used BMI
248	Time and coordination of data between us and the architects
249	lack of link to concrete design software
250	It is necessary that the owner recognizes the advantage, and be willing to pay for it. Similarly occurs with other consultants and architect, contractor in the building team.
251	Man hour for the formwork pland and reinforcement detials for BIM design is too much.
252	Too tedious
253	No obstacles note to date.
254	IT
255	STANDARDIZATION
256	Cost
257	training and becoming familiar with the software
258	Lack of understand of the importance
259	At present, the company is not using BIM technology in any design, at least not that I know of.

260	Converting a "Design" model into a "shop" model. The Structural Engineers typically build their model without regard to construction sequence and we need to go in and break the model up into individual concrete pours.
261	The learning curve. Principals need to understand the capabilities and entry level and project engineers need to learn the applications.
262	removing pipelines betweeen trades
263	1. Cost justification for small to medium sized projects. 2. Liability of how BIM models may get (ab)used.
264	it is a task for universities to use the most correct and advanced technology and standard
265	No obstacle. have not had need to date to utiize BIM.
266	None
267	increased training and drafting time to create 3D models along with the associated costs vs. increased profitability
268	For very large CIP projects, the Revit file size becomes prohibitively large. Otherwise we have integrated BIM quite well into all company projects.
269	Lack of Knowledge
270	getting up to speed using software on a project by project basis
271	We would eventually like to use our BIM model for as-builts, but due to the detail and the placements of reinf shop drawings, we have found this difficult to implement plus finding a detailer that uses software that is compatible that you can upload to the model. We have been using the BIM for concrete in order to find clashes with respect to the concrete and the location of MEP lines.
272	Training, and also creating the families for the CIP objects.
273	no obstacle. would adopt as soon as others are able to use it. we see value in modeling for conflict resolution prior to construction.
274	First cost of software to our firm.
275	Cost
276	BIM increases the design A & E exposure to lawsuits. The primary problem is that it continues to erode the responsibility of the G.C. & subs to properly prepare shop drawings on their own to understand the design intent. When the BIM lawsuits start flying, A & E's will realize their mistake in implementating its usage.
277	Too few practitioners.
278	No cost effective application
279	The need of a recogniced STANDARD data file
280	NONE
281	Commitment to a final model that reflects final bid and record documents.
282	Cost of the software
283	None, though more component families will be helpful as they are developed
284	none
285	Owner lack of understanding, lack of demand by owner/cm/contractor community
286	Development of the construction documents and how to manipulate the programs to develop a set of drawings.

287	Interaction with design software.
288	Incompatibility of software (no commonly accepted standards)
289	We use bery limited BIM in Steel Construction but not yet in cast in place or precast concrete. We are not ready for it .
290	We are a small firm and mostly engage in projects from a few hundred thousand to a few million. And the benefits of BIM are what?
291	liability
292	In Costa Rica the development fo the BIM technology is not a big issue right now. Only one firm of Architects uses BIM (Revit) for their proyects, but later the distribution of archives in the DWG format.
293	Getting everyone on-board together in full implementation
294	Learning curve
295	1. Cost of producing documents is presently much higher than with CAD. 2. Need library of components such as embedded materials.
296	The learning curve
297	The structural and architectural packages are not sync'd. This creats BIG problems. There is no guarantee what shows on architectural will carry through to the structural package.
298	N/A
299	None
300	no detailing software or libraries no accurate translation to .dwg format
301	availability of the software and universal, across the industry implementation
302	Not being used.
303	We don't do much cast-in-place concrete; we're a heavy industrial/chemical facility design and construction firm. Our modelling is mainly for the benefit of equipment and piping engineers, not structural.
304	It takes more time to produce a set of documents in BIM which cannot be recouped in fees.
305	Not relevant to our particular service offering
306	requires a lot of up front time and resources that we usually do not have. Presently analyzing BIM and running "simulations" to determine how to best utilize the technology.
307	Currently it is not required by owners or architects for design
308	Detailing
309	training
310	Size of project
311	Taining, Set up and Customizing software.
312	The biggest obstacle to using BIM for CIP is that we are a precast concrete producer. However, we are using Tekla and starting to get results with it. BIM is the future. Anything ACI does to help is good, but if you're getting started now, you may have to catch up a little to some of us. It is not easy.
313	capital investment, limited usage, training costs

314	IN THESE ECONOMIC TIMES, IT IS DIFFICULT TO CONVINCE CLIENTS TO ADD, YET ANOTHER, SOFTWARE PACKAGE TO THOSE ALREADY AVAILABLE AND IN USE.
315	We are a consultign firm specializing in moisture, roofing, and cladding issues.
316	Not familiar with BIM...
317	$$$$$$$ & to learn it
318	N/A I believe that I was the wrong person to ask to complete this survey. I am on ACI's mailing list for purchasing a standard from their on line store. It concerned anchor bolts for a machine designed by Wright Industries.
319	We have only used BIM on one project. So far our biggest obstacle has been lack of familiarity with it and not being aware of it's full capabilities. We design parking garages which usually do not have a lot of complicated architectural or MEP interfaces, so we are still feeling our way as to where BIM fits into our project production. We have several people (10-12)undergoing training, anticipating increased demand/usage.
320	Speed and training
321	Ease of use and lack of need.
322	Knowledge about BIM
323	Cost of BIM related software
324	Fee and schedule
325	to my knowledge, BIM is not used.
326	training of drafters
327	TEKLA precast does not have fully developed functionality for CIP development
328	Incorporating model management with project information management.
329	The steep BIM software learing curve and reluctance of AutoCAD users to switch.
330	Cost of software, training and the learning curve.
331	Cost, and accountibility. Will the BIM software provider be in for the long haul or will we be purchasing more and more software to continue the BIM practice.
332	owners do not see an advantage given the cost for software, training, up keep of the files after renovation
333	Beyond some of our Architectural clients using Revit, BIM has not become widely used for design in this area
334	Mostly design bridges
335	The additional training and drafting time, doesn't make sense without additional fee. To me it is all or nothing, all of the consultants AND the contractor must be on board in order for it to make the extra effort worth while.
336	1) Details and Families too poor to represent a concrete element. 2)Absense of confidence with data interchange using IFC interpreters. 3) No suport of AUTOCAD to indicate the way of shift data between DataBase from Revit and other expert strutural software. 4) The Analitycal Views represents the beam center line allways as the segment that conects the two centers of suport, regardless of where the beam reaches the column.
337	education/training
338	those that do not use it
339	TIME AND COST

340	What is BIM?
341	Not specified or regulated in the markets that we work in
342	Cost and experience with software
343	ability to accurately depict reinforcing steel within cross sections.
344	We don´t hnow BIM
345	Obtaining the resources necessary to update our current models.
346	Lack of qualified people in the field who understand the technology.
347	We have not had the need to use BIM modeling. The biggest problem is that our team does not have the trainning in BIM modeling and the software is too expensive for a small firm such as ours.
348	cost
349	The financial & learning curve cost for the minimal / non-existant demand for BIM
350	cost of aquisition of new licenses and cost of training
351	learning curve
352	Cost; too expensive for small projects and we rely on architects to provide the layouts so BIM would happen upstream
353	Though we would like to we typically don't detail the reinforcing steel in the concrete in the BIM model since the Revit files will get so large (100MB+) that they are cumbersome to run.
354	Client for bridge design requires particular format for plan submittal using Bentley products.
355	Budgets
356	Adapting to the technology. Understanding how (and if accurately) Revit Structure work with analysis programs (i.e RISA, SAFE, etc.). Really not a huge demand for this software yet.
357	Know how, training and gaining the experience
358	compatibilty with other software being used in design and detailing.
359	There are many softwares and it is diffucult to know and identify which one is the best
360	Don't know what it is or that it has any place in my business.
361	Its not been around long enough for me to think about purchasing the software. I'm a small firm and do not want to get "beat over the head" with an emerging technology. Perhaps when its been around a few years, I'll think about jumping in, but right now, its too expensive and I dont have the time to devote to learning it for the software to have a glitch or problem. Sort of like AutoCad back in the late 80's early 90's.
362	Infrequent use
363	Finding adequate training and the time to schedule it.
364	Steep learning curve of program
365	Learning Curve/Training
366	Most of our products and applications are "standard", with known fabrication and erection durations; therefore for almost all of our projects BIM would be a value-added activity.
367	Software cost&people paradigm

368	Adequate training and subsequent implementation of the software.
369	Training
370	No obstacle other than it is not our speciality.
371	Much more complicated to model concrete systems then stell & get accurate quantities out of it.
372	We are involved in review and inspection of mining structures. These typically have a short life span and are not monitored. Mainteneance is performed on an as-needed basis.
373	Access to the changing push to use this service.
374	We use consultant professionals for most of our projects
375	biggest obstacle is optimization of beam and column schedules wrt to plan work; rebar modeling currently not made easy wrt to model file size and computer memory issues; also, rebar modeling not really worth effort because CIP industry has not yet adopted BIM in its fabrication processes - apparently still relying on old shop methods
376	Learning curve for new process
377	Use of Reinforcing Steel
378	Competent technical people
379	The learning curve for BIM software. It's not worth the time if we aren't actually using it on projects, because trainees forget the material if it's not used regularly.
380	user-friendliness of software
381	Demand for BIM from cients
382	we are not using any software ,the concrete reservoirs is predesigned by the consultants who works for us
383	Initial cost & sharing models.
384	Creation of the model. Time and effort is not waranted for the types of projects we are involved on!
385	cost and not in real demand by other team members.
386	1. engineers will be expected to do the work for estimators/contractors without reimbursement. 2. Architects take this way too far and detail irrelevant information. 3. Programs like Revit cost way too much. 4.Hard to tell when a project is "big enough" to be a true cost-benefit.
387	Getting Engineering firms on board.
388	not familiar with the software
389	Our company is not familiar with BIM.
390	(1) We have very seen little demand for BIM so far. (2) Cost to purchase & overcome learning curve are still high.
391	Cost of software and training combined with limited opportunity for implementation.
392	The learning curve going from AutoCAD to BIM. Also, the additional workhours required to make this change
393	Large investment of time at the early stages of the project for the architect. If the architect is not specifying the structure appropriately in the initial modeling, it can become a time consuming effort for the engineer to get the

	model accurate.
394	Correct representation of sloped members. Also, current state of software not advanced enough to efficiently show rebar.
395	COST
396	?
397	Getting Concrete contractors to buy into this technology . Structural Steel and MEP have accepted this tool
398	NA
399	BIM takes extra time that is hard to recoup in fees.
400	No real obstacles
401	Low demand for BIM.
402	Getting a design model from A/E's. Construction documents need to be modeled by us then detailed by sub.
403	Interoperability between software programs
404	NA
405	We specialize in assessment, rehabilitation, BIM is not common place in this area.
406	Detailing reinforcing
407	BIM technology is not mature.
408	Cost of System intallation, training and mantenance. Confusion of Contractual responsibility. Concern about judgement to use the system as a tool rather than a crutch.
409	The long lead time required to obtain certified vendor drawings for mechanical equipment.
410	Employees being trained in the appropriate software
411	Additional time necessary for modeling in three dimensions; lack of industry standards.
412	Time to set up & design with it, cost
413	We are about to start our first BIM project so our imput to this survey is limited.
414	Getting the architect and engineer to let go of their control
415	1. Demand from our clients and an appropriate fee for the level of BIM modelling desired for the project. 2. Design software output ie. reinforcing layout, that is sensible for human detailers and construction personnel rather than computer aided detailing. 3. Comfort that modelling members are indeed capturing load and spanning information correctly.
416	The biggest obstacle is a poor link between structural analysis and design software and Revit Structure.
417	Over modeling.
418	Lack of need from our clients.
419	Yhe only real obstacle that we encountered was the BIM training as modeling is much different than drafting. However, since overcoming the training hurdle, we have been much more efficient using Revit Structure as compared to our previous AutoCAD based workflow.
420	The sector that I work in has limited concrete work with no demand from the client for BIM. Other sectors within the firm use these tools.

421	training and software development
422	Revit does not have enough pre-designed elements yet for the architects to fully invest in the program. We will not move to Revit until the architects force us to.
423	not applicable field
424	Training
425	The requirement for BIM to be used.
426	Getting people up to speed on it.
427	Our projects are small projects. BIM is not required.
428	n/a
429	Cost & Time required at the front end.
430	learning curve, time investment, liability concerns
431	N/A
432	Learning curve for the software
433	I WORK IN ARGENTINA
434	What is BIM?
435	time and cost
436	Demand
437	Start up cost
438	Getting the required software
439	BMI related software needs to be user friendly and its output easily accesible via print out repot or sketches for field inspecion use (if applicable)
440	obtaining cad files from architect
441	how use BIM
442	Cost of training. Not required by any clients as yet.
443	Cost for learning curve.
444	Converting to Autocad to be compatible with other design professionals.
445	Lack of concrete industry modeling standards and lack of contractors/fabricators using BIM.
446	compatability between structural analysis packages and REVIT/Autocad
447	None
448	Getting the A/E firms to design in 3D and then provide conflict free models.
449	No call for it yet.
450	We haven't touched any BIM yet.

451	cost, learning curve
452	Need.
453	Perception of added cost to project makes PMs and DB Construction folks gun shy at wanting BIM on project
454	none
455	I no longer design anyting!
456	have no info on it
457	Limited knowledge of BIM and lack of requests by others that use BIM.
458	Design community is not pushing the envelope.
459	We sell a secondary cementitious material to pavers, pre-casters and ready mix producers
460	BIM is not suited for fast track design. The biggest obstacle is getting required information in time, complete the model and deliver contract documents in the allotted time.
461	To leverage BIM, we need to go well beyond visualization and clash detection. One can transfer the design to BIM including reinforcing to verify quantity, constructability, eliminate errors in transfer of information to detailer and shorten the shop drawing review process. However, the industry yet does not have well developed industry standard that all software manufacturer can use. A platform or framework needs to be developed to transfer information seamlessly to leverage BIM fully.
462	dont use it
463	na
464	we make our molds with fiber glass, and we think our biggest obstacle is experince
465	Individual members are not designed as a complete structure. Reinforcing is not easily included in BIM. Connections and reinforcing is usually intentionally not drawn exactly as "called-out" so that splices and offsets can be visually seen in the details.
466	In our area it is new technology that is slow to develop. As a subcontractor we do not see BIM being applied just talked about. However, I am very intrested to see how it might apply to a subcontractor.
467	price of the software in a down economy
468	Most companies we do business with do not use BIM tools
469	cost of software , training on software
470	training for the personnal
471	unevenness of IT literacy for person to person
472	educating all parties on its use
473	Knowledge of software
474	Knowledge Cost
475	Size of Company
476	i am not aware of this software
477	never used software

478	Rebar and post tension cable modeling is not very good
479	training time
480	Learning curve
481	Training of people
482	The detailing abilities that match real detailing requirements
483	Am involved in concrete material design not structural concrete design. Am not familiar with BIMS.
484	LOcal Code & Regulations
485	not idea
486	more challenging to model since centerline of beam may not be centerline of column, irregularities are more difficult to model since REVIT Structure is not a very robust modeling tool yet.
487	None
488	Training of personel Integration of design software and BIM software
489	Getting the complete design from the design professional, structural, architectual & MEP's are not working together on this in our area. Many promises of things to come, but we have not seen a complete set of Project documents yet in Central PA. for our Projects, only limited architectual to date.
490	Finalization of Architectural plans which will ultimately lead to structural and services input.
491	unstable condition and high temp humidity environmental
492	the distance and technical ideology
493	Detailing of materials are so complix from software to practical use
494	The concrete model is prepared on the basis of 2d drawings as against steel structures which are first modelled and then drawings are extracted. In case of modifications in concrete it is quite likely to miss the updations in the 3d model, since the drawing is independent of the model.
495	Ease of working
496	We don't design.
497	Proficiency with software.
498	We have no information or details
499	Lack of necessity.
500	Learing curve and the time constraints.
501	Awareness and budget.
502	I have never used it
503	Creating & managing element families to work properly with 3rd party design software. Getting Revit generated layouts to look the same as a standard AutoCad project.
504	Please define more about what is BIM and subfunctions which can give clear idea and we can answer the questions close to reality
505	I do recommend using such a technics, i don't think there should be any obstacle.

506	Experience with the software
507	using BIM-related software
508	not any
509	Cost - Training
510	The modeling takes time as got to get used to this new environment.
511	NIL
512	aces my firm is a geotechnical and materials testing company
513	Communication, who's taking the lead?
514	No obstacles. We use AutoCAD Architecture (former ADT) for years.
515	Cost of BIM tool & awareness about BIM. People are not aware of BIM concept even though we are using it. They cosider it just 3D modelling & detalailing tool
516	not used at all in Dubai and Abu Dhabi
517	There is not enough industry wide collaboration for the projects. It seems that each group involved uses BIM tools differently and a lot of work is redundant.
518	Awareness of it's use and fear of cost implications. Also trained staff is an issue
519	Not Applicable
520	Sinulation & MOdeling In Laboratory
521	We have not seen it take off to date in the concrete industry the way it has in steel frame.
522	ya
523	Changing over to BIM from AutoCad
524	Ease of use. Low cost. Works with all systems.
525	Not involved in construction
526	Reinforcing Detaling and compatibility with analysis and design programs.
527	There is a very steep learning curve, and it is not called for on our projects.
528	Software needs to be further developed such that rebar details can be accurately input in a timely fashion.
529	having the knowledge and experince in this type of field.
530	Our structural division works more heavily in the bridge design field. We have designed 2-3 buildings per year on average but have not used any BIM tools.
531	Owners, cost of software
532	Detailing
533	Demand and BIM training
534	First we have to know the BMI process, then we probably use it.

535	education
536	Not required
537	Currently, I am not aware of any contracts which have required coordination through BIM. As a concrete forming and shoring contractor, I have a difficult time in following how our Formwork Details and Shoring Drawings could reasonably be brought into the BIM system. Temporary works do not logically fall into the BIM model.
538	there is limited call for it in building envelope repair/restoration/rehabilitation--the building elements are already set
539	The learning curve to efficiently use the software packages to their full intended capabilities is quite long. Revit does not always have the capability to prepare contract drawings with the flexibility that autocad did. By the way, we only do c.i.p. foundation work, no superstructures.
540	We're in process of implementing the BIM process. Also, in our bussines area, the BIM is not quite known yet.
541	Nothing
542	We have not used any BIM related software and have never come across the use with any project or owner.
543	scope of projects do not justify using it
544	Reluctance to spend the time or money to insure added steps to insure longevity of concrete structures
545	We are involved more in repair and remodelling. Often, it is not economically feasible to bring the whole structure to perfom minor changes.
546	Minimal CIP concrete design beyond foundations
547	Nothing at this time.
548	developing cadd technicians
549	Not applicable to heavy industrial design.
550	education
551	BIM models typically lag the design and construction process instead of leading the process. The entity responsible for the generation of the BIM model typically does not have any responsibility for the model's integrity and usefulness. In my experience the model is seen in a limited way by the project's principals: As a sales tool to get the concept design established, or as an archiving tool to be submitted with as-built drawings. Neither of these perceptive modes is useful to the working designers or procurers/constructors.
552	Most contractors do not have BIM capabilities so the tools are only used on the design side.
553	Cost of implementation, added costs that cannot be recovered in fees
554	the cost of the software and required computer hardware
555	changing orders
556	Expense and lack of need in the Owner's eyes. Industrial owners, for instance, will ask for specific mechanical information, but only are interested in drawings and specs for structural.
557	IN 1984, BIM was not available. we built 24 condos/week (6-4plex) tunnelform bldgs using 3-4day crews,92 cranepicks w/100 cy concrete/crew/day. $4million/week a BIM model on const sequence would've helped
558	Resources to input information. Tools to realistically know how best to use BIM. We supply steel studrails to job sites. Structural Engr specifies our product for his job.

559	Software is not developed enough and ends up costing us more time.
560	don´t have the BIM in my firm
561	the cost of the software and the use of the software to produce fabrication tickets.
562	No work, projects in this economy
563	Training
564	The lack of a current need for design information in the model; other than presenting sizes of members, the other information, i.e. reinforcing, requires additional time to place that does not offset the value to cost ratio yet.
565	Software limitations. You've missed a very big reason for using BIM tools and systems, and that is design and construction integration and collaboration. Large EPC firms, such as Parsons, have been implementing intelligent 3D systems, such as the Intergraph PDS product suite, to handle complex process plant design for over 20 years; long before BIM was even a concept. While the concepts of BIM are relatively new to the AEC sector, these concepts are not new to the industry. What BIM, through the NBIMS Standard, brings to the table for everyone, is interoperability. And, this is a good thing. In this manner, BIM is now touching the process plant design sector, through ISO15926, to encourage/force interoperability and open systems here, as well. In the end, we will all benefit.
566	cost
567	A fragmented building sector with lot of traditions.
568	time cost of training
569	cost of retraining and staying current
570	Design coordination with structural analysis software. It's too difficult to detail every bar (which is what the contractor is expecting so he can push a button and get his rebar order.. the if it's not correct we are holding the bag...). We are not detailers... We are designers. we are potentially looking at eliminating the rebar detailer's role in this industry if the engineer has to show every bar, splice, bend, etc... what is left for the rebar detailer to do? it is also very cost prohibitive since the amount of work increases for the deisgner and clients are unwilling to pay higher design fees up front to include the detailing cost. Currently, rebar detailing costs are included in the bid price for the materials and construction, so those costs are hidden. it is quite a difficult sell at this time to convince the owner to pay more up front so he gets a better price in the end.
571	Not involved in cast in place concrete frame buildings.
572	lack of skilled manpower
573	We do not do cast in place concrete buildings.
574	It is too cumbersome to be productive. We prefer not having it. If used, it is very sporadically used.
575	Cost and training
576	Learning curve, however, we do 3D models in our estimating program.
577	BIM requires a great deal of additional input not normally included in engineering design including many functions that are not currently areas of expertise in many design firms.
578	apllication
579	Demand in our industry.
580	Cost and learning curve
581	The Owners/Clients are not requiring BIM to be utilized. The cost benefits that many claim BIM provides do not currently outweigh the BIM investments for our markets.

582	By Choosing the right software, there is no obstacle in implementation.
583	Design must be fully completed. Partial design does not work. Designers are not willing to pursue BIM due to their front end costs. Old school industry participants are reluctant to change and try BIM. BIM is not very well developed (still in infancy) and software to support is not fully developed, tried and tested. BIM is still in development stage.
584	Training opportunities
585	It is important to know where the practical lower limits for the application of BIM for small firms as small as ours. We work mostly in the industrial sector. There seems to be a practical limit where BIM will not be economical to employ. For many projects we can see enormous legal difficulties and appropriate education and coordination difficulties for many small and moderate projects. Since it will stretch anyones faith to believe the the sophisticated software required for design and management will cover all the requirements. It points up an significant requirement for process and results quality control in order to get things right. It would seem as if only the largest of projects will have enough money in them to get it to work as it has been idealized. Right now it seems more like a marketing tool more than a practical operating system.
586	Getting consultants to adopt the technionogy.
587	cost/benefit on repetitively built prototypes.
588	none
589	Project schedule.
590	cost
591	Not the state of practice in our projects. We don't really know much about BIM and would be interested in learning about it.
592	none
593	No obstacles. We are in the early stages of implementing BIM company wide. We maintain a workforce that routinely erects cast-in-place structures. I'm sure we will someday soon use modeling for this particular branch of the company.
594	Incomplete drawings
595	We don't use our BIM platform very often for RC construction. We primarily use our BIM platform for our boiler building structures and turbine halls. The BIM model helps us to identify interferences.
596	Learning curve cost, training requirements, software cost, ratio of benifits/cost to small
597	WRONG management.
598	Lack of a clear definition of goals and procedures
599	We primarily design mechanical systems for nuclear waste treatment. The structures are a secondary issue that is designed to address space requirements but subcontracted to others for final design.
600	software cost and re-training
601	Initial training required for a sofeware package that is not widely used.
602	No call for it as of yet.
603	starting cost and training
604	Gaining experience with BIM while maintaining agressive schedules on both BIM and non-BIM projects.
605	Owner/client acceptance of the tool and the value it brings to the project
606	Ownership/Architect participation from project initiation.

607	new technology, new software, and too many platforms.
608	no obstacles
609	Cost
610	Level of sophistication not rquired, too expensive and too much training required for the added benefits
611	The cost. It is difficult for a two person structural engineering firm to justify the cost of BIM software. It makes it hard to compete with larger firms on projects that we are just as qualified, or more qualified to complete.
612	The cost of the software; renogiating contracts regarding responsibility; file sizes... We're just not convinced enough yet that this is finally here to stay. Previous versions of this have been attempted in the past...unsuccessfully...
613	It is just not a factor in our markets. We do mostly private commercial concrete construction of hospitals, office buildings, hotels, parking garages; and, some public work as in courthouses, jails and WWT.
614	Is a small company
615	I don't know what's BIM purpose in building design
616	Exposure to the product.
617	No structural software that is linked well w/ REVIT Structure. Very limited good overall building structural analysis tools on the market.
618	Not a standard in the Area
619	I work for the Forest Service on road management. Once and a while we work on bridges, but I have not heard of BIM. and I don't think the gov. uses it. I would like to know more about BIM.
620	EL PRINCIPAL OBSTACULO ES LA CAPACITACION EN ESTA DISCIPLINA.
621	Getting a cast-in-place project?
622	System information and prices
623	Common Platform for the whole project team of different disciplines
624	Lack of train staff to handle and unlimited materials.
625	It is the uncertainty of using any new techniques and its adequateness for driving the optimum structural design for buildings in addition to the natural human resisting to re-adaptation of their gained skills from previous experiences with new ones.
626	better result
627	we execute up to 77 stories towers , 5 stars hotels and so many projects with out the need of th BIM so we dont think we need it in this stage
628	COST
629	Actually we intend to buy such a product this year, but the biggest obstacle is absence of specific information on the market.
630	We do not do CIP design or construction, but our biggest obstacle is that there seems to be no consistency in the expectations of the contractor relative to our products and BIM
631	Revit Structures does not currently make structural engineers any more effiecient.
632	this field is way too narrow scope for viability in our core business at this point. it is a specialty that one would have

633	We don't do CIP concrete work.
634	we don't know what BIM is ...
635	lack of information
636	Very limited concrete building design is performed by the firm.
637	We work with precast underground structures.
638	Advanced Training is required
639	Limited numbers of architects are using Revit, thus we rarely use it.
640	Convincing the owner of the value of BIM
641	Education and coresponding interest or insight to see the value
642	Interoperability between design software and Revit (no reinforcment on link) For question number 6: For the first three items numbers 1-5 apply but I could not pick more than one.
643	We use the software, but the main issue we have is none of our subs use it, so we end up coordinating all penetrations/bumpouts for the sub and print/send files of all the REVIT models for the subs to use, which on larger projects, is a feat in itself. PM's often complain that it will cost too much, but to me, it's worth it's weight in gold when it comes to Structure vs. MEP collisions.
644	Available technology, expertise, and the accuracy of BIM models for contractual work.
645	SOFTWARE BUGS
646	knowledge of the system is minimal
647	None
648	We are a customer of the contractors and design scaffold, forming and shoring. We do not deal with anything permanent.
649	Cost.
650	Bridge Design
651	Owner awareness that BIM could be used
652	Limited involvement in reinforced concrete structures.
653	top down requirement to use the product has not kicked in and we are a small business without the economies of scale to benefit from the product yet.
654	The Contractor-understanding construction in a 3D model.
655	Software useability
656	Cost of software and learning curve
657	the procedures...
658	$$$$$$$$$$$$$
659	learning curve
660	We use BIM to teach the students how to design buildings, etc. We decided to use BIM because it is a tool the students should have knowledge about when the enter the workforce as structuralengineers

661	getting the projects to remain cast-in-place
662	Size of project requiring it.
663	n/a
664	BIM is increasingly being asked for, and I can see how it could be a tremendous asset for the various trades to work together to ensure all permanent items are coordinated. However, as a Formwork designer, I do not see how our using BIM would help this process. Our equipment is temporary, so I do not feel that BIM applies to us. We are simply going to form the structure to match what is shown in the contract documents.
665	Not related to litigation
666	Starting to use on General Contracting side of Buisness but have not implemented on Concrete side
667	Training and market/business opportunities
668	REINFORCEMENT DETAILING
669	As a concrete subcontractor, we are not seeing it used from the team but have been hearing more about it.
670	Did not miss item 7 just not aware of BIM being used by people with whom we work. BIM has not found its way to the level of projects that occur daily, i.e. those with construction cost of several million dollars. Seems to be used more for the projects in the hundreds of millions or having a particular need to be documented using BIM.
671	Our firm is just getting into BIM, so my knowledge & experience is limited. However, the initial challenge I foresee is the incompatability between different software. Projects requiring different BIM tools (e.g., Revit vs Bentley), will require our company to purchase and maintain multiple product licenses and our staff to be proficient in multiple applications. Since BIM is not yet widely used/required in the Water/Wastewater industry, getting started will carry a cost that is not easily recovered within a practical time frame.
672	(Not response to this question, but my former firm, Thornton Tomasetti, was and still is major BIM user. Strongly suggest polling someone there, for which I can give contact.)
673	The learning curve assosiated with new BUM software and the limitation of complete detail work in the 3D model
674	We are a pre cast manufacturer, we are not involved with cast-in-place concrete.
675	Internal resistance to change.
676	N/A
677	owner /design engineer providing models of the project
678	Question #5 doesn't allow selection of multiple items. My response would've been better and more accurate to select all that apply, but I couldn't respond accordingly. Response to question #8: Interoperability. We've begun using Tekla to model rebar for cast in place concrete work. Standards, IFC or otherwise, do not exist today to use the Tekla rebar model by software other than Tekla. We cannot for example push a 3D DWG to other parties interested in viewing and working with the Tekla model.
679	Compatability between all users / choosing the "right" system and training
680	I am a field tech and work for engineers or labs. I do not own my own business
681	My current job is about bridge design, I think BIM is not developed for concrete bridges.
682	Not familiar with, however introducing software in May.

683	Training
684	The purchase price
685	Have not used BIM for cast in place besides visualization. Not aware of 3-d compatible tool to make this easy/cost effective
686	We do not use BIM presently, but learning and incorporating the system, I think would be the biggest obstacle
687	We have had some difficulty in detailing multiple, similar precast pieces in an economic, fast format. we do however like the ease of BIM's ability to revise drawings.
688	BIM is still such a new technology that it is not used by the design firms on the project size we are involved with, 5 to 50 million. There seems to be a reluctance by engineering firms to utilize BIM on mid-rise wood structures which is a big part of our business. The other obstacle is getting started; software, hardware and training. We see great value in the technology for modeling, conflict resolution, constructability and scheduling.
689	Estimating and energy modeling
690	Lack of know-how
691	Tools for reinforcing detailing are not well developed.
692	n/a
693	For BIM to truly start returning value to us as Builders, Architects and Engineers must first create their designs in BIM and let us leverage off of them for estimating, scheduling and constructability. We are seeing very little A and E detail modeling. BIM tools and design methodology for concrete must be simplified for A and E to model concrete in a useful way.
694	not so many people can use such software.
695	Getting the software to work together
696	Projects which require more concrete design other than just for the foundations.
697	LeARNING TO USE IT.
698	cost and learning curve
699	interoperatability
700	I work for a public agency. There is a lot of resistance to doing something that is new. BIM would need to be proven to be more cost effective before the agency would use it consistly.
701	Not enough projects requiring it. Cost of training/implemetation vs. benefits/payback. We have been exploring intoducing more BIM as it becomes justified to do so.
702	Education,
703	Training and acquisition
704	Until very recently I had not heard of BIM so I know prctically nothing about it.
705	Reinforcing steel should go straight from engineer's model to fabrication. That does not happen now creating risk and waste.
706	interoperability
707	Do not have any experience with BIM.
708	Lack of expertise & support from designers & subs.

709	inceased production time for modelling & inserting information
710	Reluctance to change, not understanding the impact of sharing documents and other contractual issues.
711	Lack of BIM usage by architects.
712	cost and capability resistance to change
713	We still deal with many contractors that are low tech and are not familiar with BIM software nor have the dedicated dept. with personnel to use it.
714	Owners and clients.
715	time and cost to use it, junk in equal junk out and models are too far off. Coordination with others is also a challenge
716	Our Architectural clients are not using it.
717	Most jobs are very small. No model required.
718	The limitations of the software it self to outputthe required quality
719	Understanding the limitations of BIM and amount of info required to build the model and change the model from an analytical requirement.
720	Market need and expense
721	Learning curve
722	The learning curve, and getting the benefit of the value created by a BIM model, e.g. gettig paid for the value created for owners, contractors and others
723	Mechanical and electrical engineers not using it.
724	prohibition by usa and euro union
725	scheduling
726	Architectural Team & MEP team in our company are hesitant to use thinking that it is only for pricing and will only benefitial to the contractor. It is expensive.
727	owners do not allow to use this technology
728	Systems tend to be incapatible with desing flexibility fo concrete systems. Systems tend not to be linked to code requirement sof the authority having jurisdiction
729	If the design team hasn't modeled the project in BIM, then it requires us to model the project.
730	Neccessity and newness
731	We do not use it, but I would like to know more.
732	Creating the demand, educating our customer, training our staff, gearing up for the process.
733	Getting the BIM model from the architect.
734	cost
735	None
736	Old ways of thinking

737	Learning curve, project timelines too short to accomodate learning the program and getting a set of drawings out on time. Also the demand for cast-in-place buildings is not high in this location.
738	Total Participation: Architect, Mechanical Engineer, and Estimating.
739	Relying too much on the computer to answer the questions.
740	Nuclear power plant
741	We are cement manufacturers
742	time
743	training
744	sub contractors do not use BIM so the information remains incomplete a far a penetrations, openings etc. in the actual structure
745	We have found the challenge to be resisting the tendency to over model. It is very easy to model too much (e.g. modeling all the reinforcement) or to level of accuracy that is not needed for particular project type or design phase. The key is to establish the requirements of the BIM model (3D visualization, documentation, coordination/clash detection, analysis) ahead of time and stay within them.
746	learning the system
747	None
748	Design
749	Size of projects do not require BIM
750	Getting all particpants on board.
751	revit structure is not quite where it needs to be yet.
752	Cost. Your survey is flawed in that it assumes I use BIM. he questions are gaered to how one uses BIM. There are are options in several of the questions questions that give you a choice to indicate that one does not use BIM
753	time and accuracy and flexibility
754	None
755	No obstacles.
756	the prices
757	Limited knowledge
758	Knowledge, Training, investment
759	The availability of trained and qualified operators.