A NEW APPROACH TO PARKING
Presentation Team:

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TWO TOPICS FOR DISCUSSION

Key Elements of the Design Process and the Owner’s Requirements

Delivering On Success
Project Goals:

- Objectives Checklist

**MISSION CRITICAL**
- Maximum 175kBTU / space / year
- Minimum 1500 cars
- Extended Service Lifespan
- Motion Sensing Lighting
- Natural Lighting & Ventilation
- Completion by DEC 2011
- User Comfort & Security
- Maximize LEED Points

**HIGHLY DESIREABLE**
- Maximum 1800 cars
- Maximize PV Capacity
- Weather Protected Shuttle Stop
- Car Charging = 1% Spaces
- Minimize O&M & Snow Removal

**IF POSSIBLE**
- Motorcycle Parking
- Parking Management Technology
Project Approach:
- Key Owner’s IPT Members
  - Project Manager
  - Construction Manager
  - Design Manager / Project Engineer
  - Project Controls
  - Financial Analyst
  - Maintenance / Work Control
  - Environment, Health and Safety (EH&S) Representative
  - Subcontract Administrator
  - Manager of Sustainability
  - Traffic Coordinator
  - Quality Representative
  - Security Representative
  - Energy Representative
  - ICDO Director (PMO)
Project Approach:

- the Right Team
  - Highly Qualified DB Team
  - Experienced
  - Creative
  - Willing to Collaborate

- Knowledgeable DB Consultant for Owner’s Assistance
  - Expert with DB process – Educate Owner
  - Manage Substantiation Process
  - Technical Advisor to the IPT
Creative Solutions:

- **Smart Siting, Form & Structure**
  - Blowing the 175 kBTU challenge out of the water
  - Lifecycle analysis = Decisions without sacrifices
  - Building Location: Set in the Hill - North/South Orientation
Creative Solutions:

- Smart Siting, Form & Structure
  - Structured light-wells, / Open & Naturally Ventilated
  - Post-tension for openness & durability
  - Concrete design, Beam & Column Placement
Creative Solutions:

- **Activating the User**
  - Pedestrian Focus – Central Stair to Encourage Social Interaction and Fitness
  - Purposeful Reduction in the Number of Elevators
  - Berm & Clerestory Windows at the Shuttle-stop
  - Parking Management system for Convenience and Energy Efficiency
  - Brilliant Lighting System
Creative Solutions:

- Built to Last
- Built to Save

- 50/100 Year Lifespan Decisions
- Post-tension Concrete
- Galvanized Steel with Bolted Connections
- Sheltered High-traffic Areas
- Cold Weather Procedures
- Maintenance Plans
- Quality Control
- Security & Safety
- Significantly Reduced O&M
Creative Solutions:

RESERVED PARKING LOCATIONS
  ELECTRIC VEHICLE CHARGING STATIONS
  LOW EMITTING + FUEL EFFICIENT VEHICLE PARKING
  CAR + VAN POOL PARKING
  ADA PARKING
  MOTORCYCLE PARKING
  ELEVATORS
  SHUTTLE PICK-UP + DROP-OFF
  BICYCLE RACKS + SMALL LOCKERS
  VEHICLE ACCESS
  PEDESTRIAN ACCESS

NREL
Creative Solutions:

- Intelligent Beauty
  - Looks Like a Building
  - PV Canopy and Cladding
  - Bird Friendly Glazing
Creative Solutions:

- **Intelligent Beauty**

SMART SKIN

- Daylight & Lighting
- Exhaust
- Weather Mitigation
  - wind modeling
  - perforation size
  - effectiveness
- Eco-friendly
- Durable
- Cost-effective
- Modular Design
Turning Construction Challenges into Opportunities:

- Schedule & Budget
  - Aggressive Schedule
  - Design / Build Complete within 12 months
  - Managing the Elements
  - Some of the Largest Concrete Pours in Colorado History
Turning Construction Challenges into Opportunities:

- **Schedule & Budget**
  - Controlling Costs
  - Maximizing the GMP and delivering for $14.1k per Space
  - Working Directly with Vendors
  - Designing while Developing Shop Drawings
  - Value Design Eliminates Value Engineering
Turning Construction Challenges into Opportunities:

- Fully Operational & Secure Campus During Construction
  - Secure Federal Facility
  - All Workmen and Suppliers Badged
  - Coordinating High Delivery Volumes
  - All NREL Operations Maintained
  - Multiple Simultaneous Construction Projects
  - Weekly Meetings with all Campus Contractors
Turning Construction Challenges into Opportunities:

- **Balancing Quality & Speed**
  - The Haselden Q/A Q/C commitment
  - Ex. Maturity Meters to confirm strength and speed pours
  - Ex. Damp Blankets to allow proper curing and crack mitigation
  - Ex. Specialized Forms for Speed and Quality
Turning Construction Challenges into Opportunities:

Raising the Bar