

Trends in Modern Athletic Facilities

Darin Olofson, CTB
Fisher Tracks, Inc.



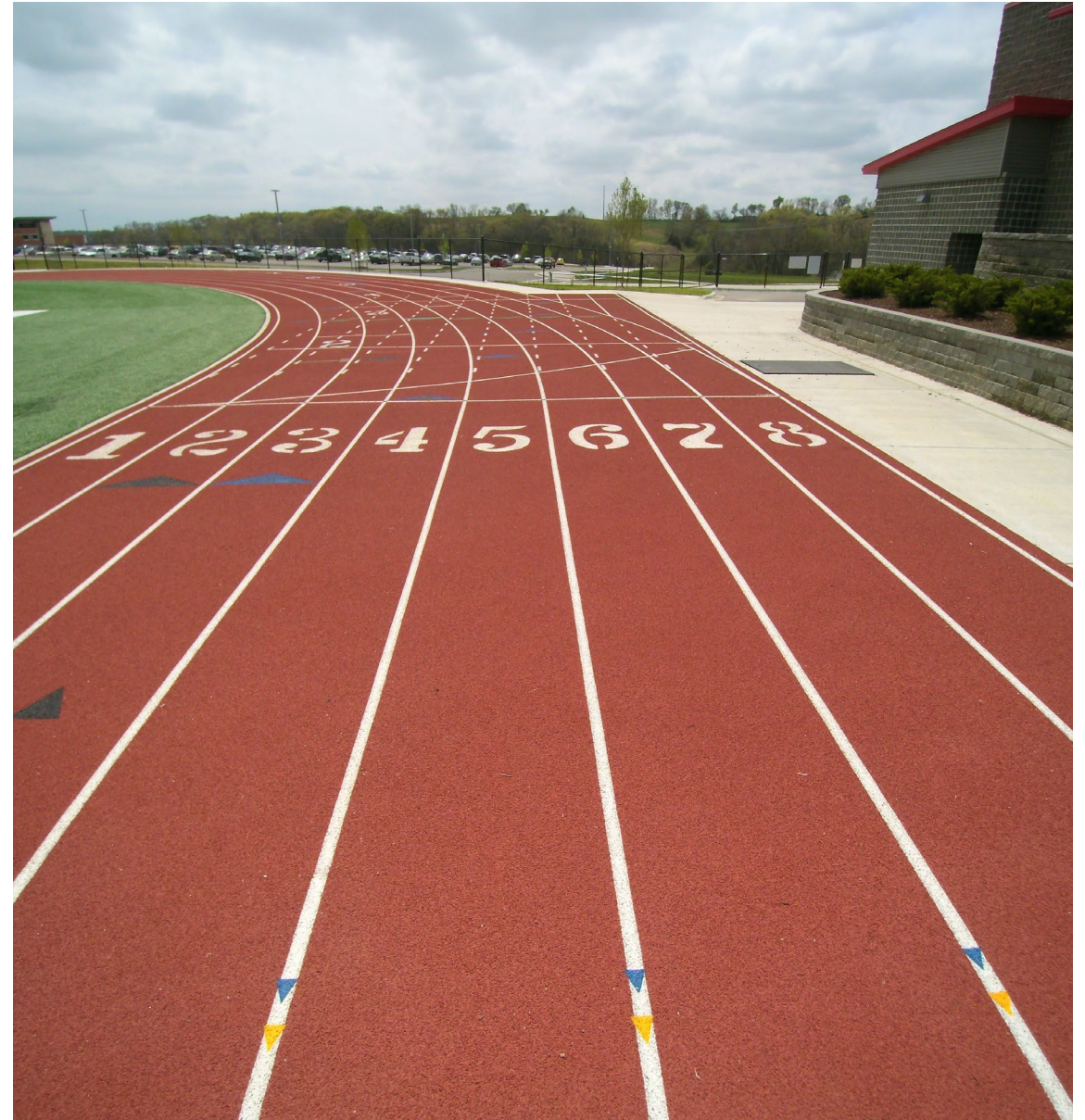
Randy Resley
Sport Court of the Rockies, LLC
S.C.O.R.E. Sports Specialists
American Sports Builders Association
– Courts Division President



Trends in Modern Athletic Facilities

“TRACKS”

Darin Olofson, CTB
Fisher Tracks, Inc.





Topics of Discussion

+ Initial Design & Layout

The most important stage of construction where almost all future problems can be avoided if addressed now. Size requirements, rule changes, safety measures to avoid potential litigation.

+ Field Events

Updating designs to improve safety measures

Field Event Location – Avoiding the sideline

+ Existing Tracks & Refurbishments

Options beyond complete facility replacement

Rule changes and exchange zones

About the presenter

Darin Olofson

Fisher Tracks, Inc.

Certified Track Builder

10 Years Experience and member of American Sports Builders



Initial Design & Layout



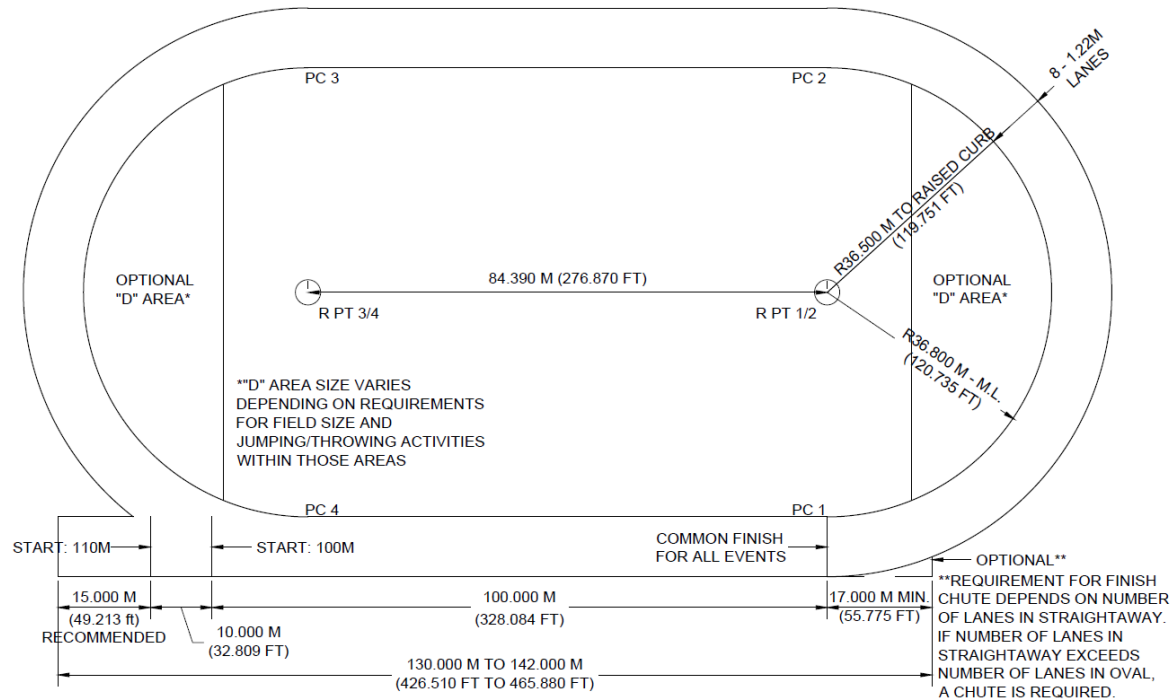
Site Requirements

Input		Calculated Dimensions based on Input							
Width of Site in feet	Width of Site in meters	Measure Line in feet	Measure Line in meters	Infield Measure in feet (width)	Infield Measure in meters (width)	Radius pt to Radius pt Distance in feet	Radius pt to Radius pt Distance in meters	Length of Site in feet	Length of Site in meters
230	70.10	84.05	25.62	165.44	50.43	392.12	119.52	622.12	189.62
235	71.63	86.55	26.38	170.44	51.95	384.26	117.12	619.26	188.75
240	73.15	89.05	27.14	175.44	53.47	376.41	114.73	616.41	187.88
245	74.68	91.55	27.90	180.44	55.00	368.55	112.34	613.55	187.01
250	76.20	94.05	28.67	185.44	56.52	360.70	109.94	610.70	186.14
255	77.72	96.55	29.43	190.44	58.05	352.85	107.55	607.85	185.27
260	79.25	99.05	30.19	195.44	59.57	344.99	105.15	604.99	184.40
265	80.77	101.55	30.95	200.44	61.09	337.14	102.76	602.14	183.53
270	82.30	104.05	31.71	205.44	62.62	329.28	100.37	599.28	182.66
275	83.82	106.55	32.48	210.44	64.14	321.43	97.97	596.43	181.79
280	85.34	109.05	33.24	215.44	65.67	313.58	95.58	593.58	180.92
285	86.87	111.55	34.00	220.44	67.19	305.72	93.18	590.72	180.05
290	88.39	114.05	34.76	225.44	68.71	297.87	90.79	587.87	179.18
295	89.92	116.55	35.52	230.44	70.24	290.01	88.40	585.01	178.31
300	91.44	119.05	36.29	235.44	71.76	282.16	86.00	582.16	177.44
305	92.96	121.55	37.05	240.44	73.29	274.31	83.61	579.31	176.57
310	94.49	124.05	37.81	245.44	74.81	266.45	81.21	576.45	175.70
315	96.01	126.55	38.57	250.44	76.33	258.60	78.82	573.60	174.83
320	97.54	129.05	39.33	255.44	77.86	250.74	76.43	570.74	173.96
325	99.06	131.55	40.10	260.44	79.38	242.89	74.03	567.89	173.09
330	100.58	134.05	40.86	265.44	80.91	235.04	71.64	565.04	172.22
335	102.11	136.55	41.62	270.44	82.43	227.18	69.25	562.18	171.35
340	103.63	139.05	42.38	275.44	83.95	219.33	66.85	559.33	170.48

American Sports Builders 'Running Tracks' Sports Construction Manual, Figure 2-10

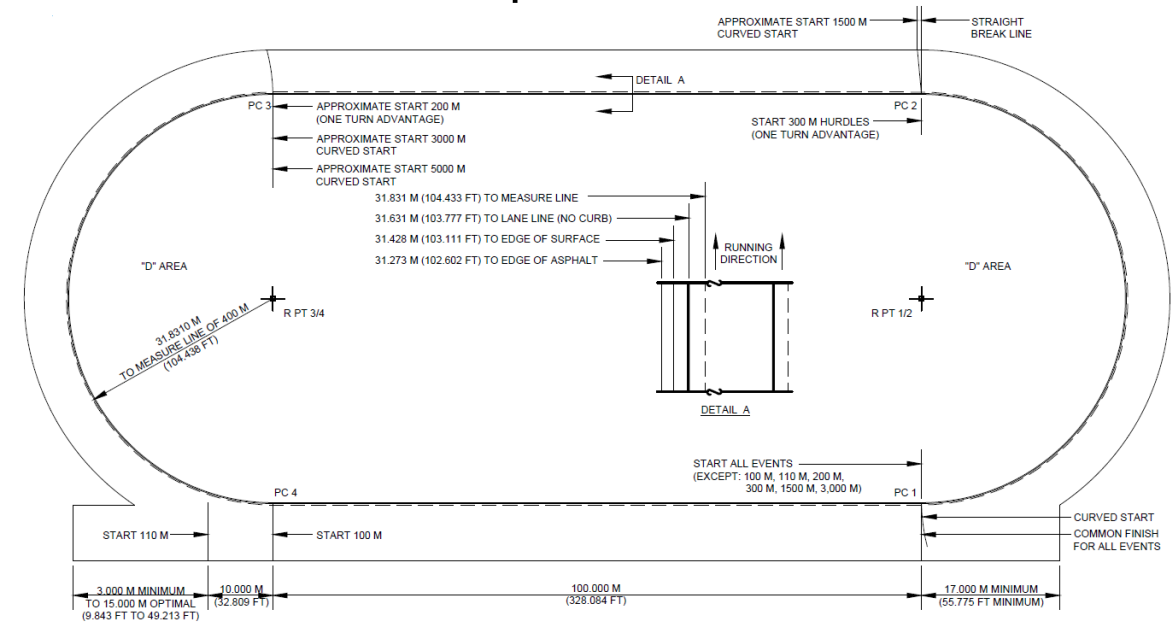
Standard Designs for Track

400 Meter Standard IAAF Track



American Sports Builders 'Running Tracks' Sports Construction Manual, Figure 2-4

400 Meter Equal Quadrant Track



American Sports Builders 'Running Tracks' Sports Construction Manual, Figure 2-6

Field Sizes and Consideration

EVENT	Length Min to Max	Length Optimum	Width Min to Max	Width Optimum
American Football	360'	360'	160'	160'
High School Soccer	300' to 360'		165' to 240' *	
NCAA Soccer	**		**	
• New Facilities	345' to 360'	360'	210' to 240' *	225'
• Existing Facilities	330' to 360'	360'	195' to 240' *	225'
FIFA Soccer (meters)	100m to 110m		64m to 75m *	
High School Boy's Lacrosse	330'	330'	160' to 180'	180'
High School Girl's Lacrosse	330' to 420'	360'	180' to 210'	195'
NCAA Men's Lacrosse	330'	330'	180'	180'
NCAA Women's Lacrosse	330' to 420'	360'	180' to 210'	195'
IRB Rugby (meters)	120m to 144m	144m	70m	70m
Field Hockey	300'	300'	180'	180'

American Sports Builders' Running Tracks' Sports Construction Manual, Figure 2-1

Note: Rules are constantly under review by the governing bodies and are subject to change. Please consult the latest rule book for the appropriate governing body for the rule in place at the time of your project

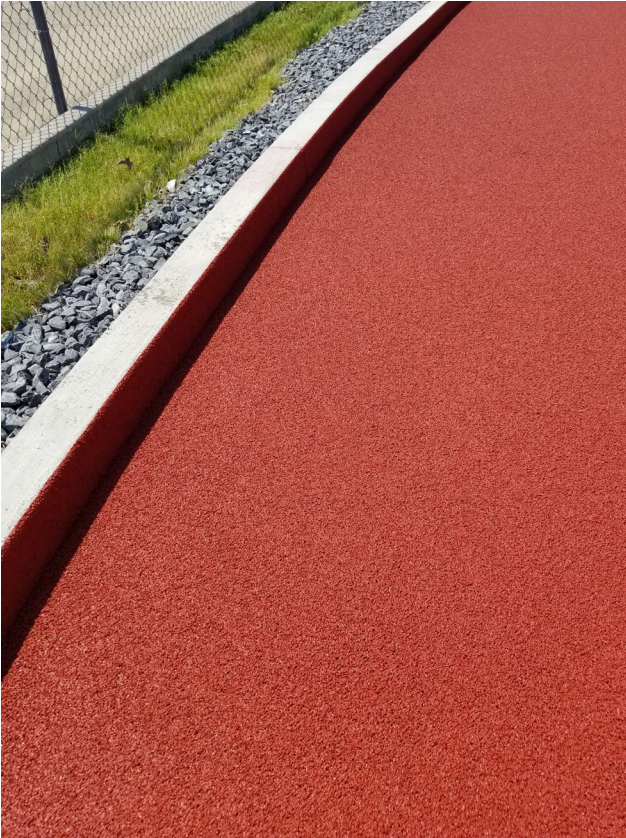
Building to the Pavement Extension



Benefits to utilizing the pavement extension method

- Allows water to progressively leave the surface
- Provides a buffer zone for maintenance
- Generally considered the most economical method for edging a track

Safety Zones & Liability



Could this be a potential hazard?

- The recommended safety zone is 1 meter (3.28084') from the outer most stripe. This area should be free of any obstructions or potential hazards
- Most injuries are sustained from pole vault and uncontrolled landings. Is your site up to date on the current safety requirements?
- Considerations for safety when first designing your layout can save the risk of potential litigation or worse, student injury

Pole Vault: Putting athlete safety first



Future Trends in Track Construction



- Moving the Common Finish back to the point of curve
- Removal of the finish chute
- Relocating field events inside the oval (if possible)

Field Event Design



High Jump inside D-Zone, attached following curvature



Pole Vault inside D-Zone, Double Long Jump/Triple Jump

Standard High Jump Designs



D-Zone fully surfaced w/ Pole Vault included



High Jump inside D-Zone, detached following curvature

Standard High Jump Designs



D-Zone surfaced, detached from track with 6' maintenance strip



Rectangle design High Jump inside D-Zone

Standard High Jump Designs



D-Zone paved with surfaced Rectangle design High Jump

Standard Long Jump Designs



Slide By Design Long Jump/Triple Jump inside D-Zone, existing single runway design outside oval



Double Long Jump/Triple Jump design outside oval

Existing Tracks & Refurbishments



Do I need to replace my entire track?



Problems that may require a Certified Track Builder

- Visible waves or ripples in the track surface
- Base cracking reflecting through the synthetic surface
- Moss and other forms of vegetation in the track surface
- Not all issues require a complete project renovation. Always consult with a trusted CTB prior to any construction



Exchange Zones

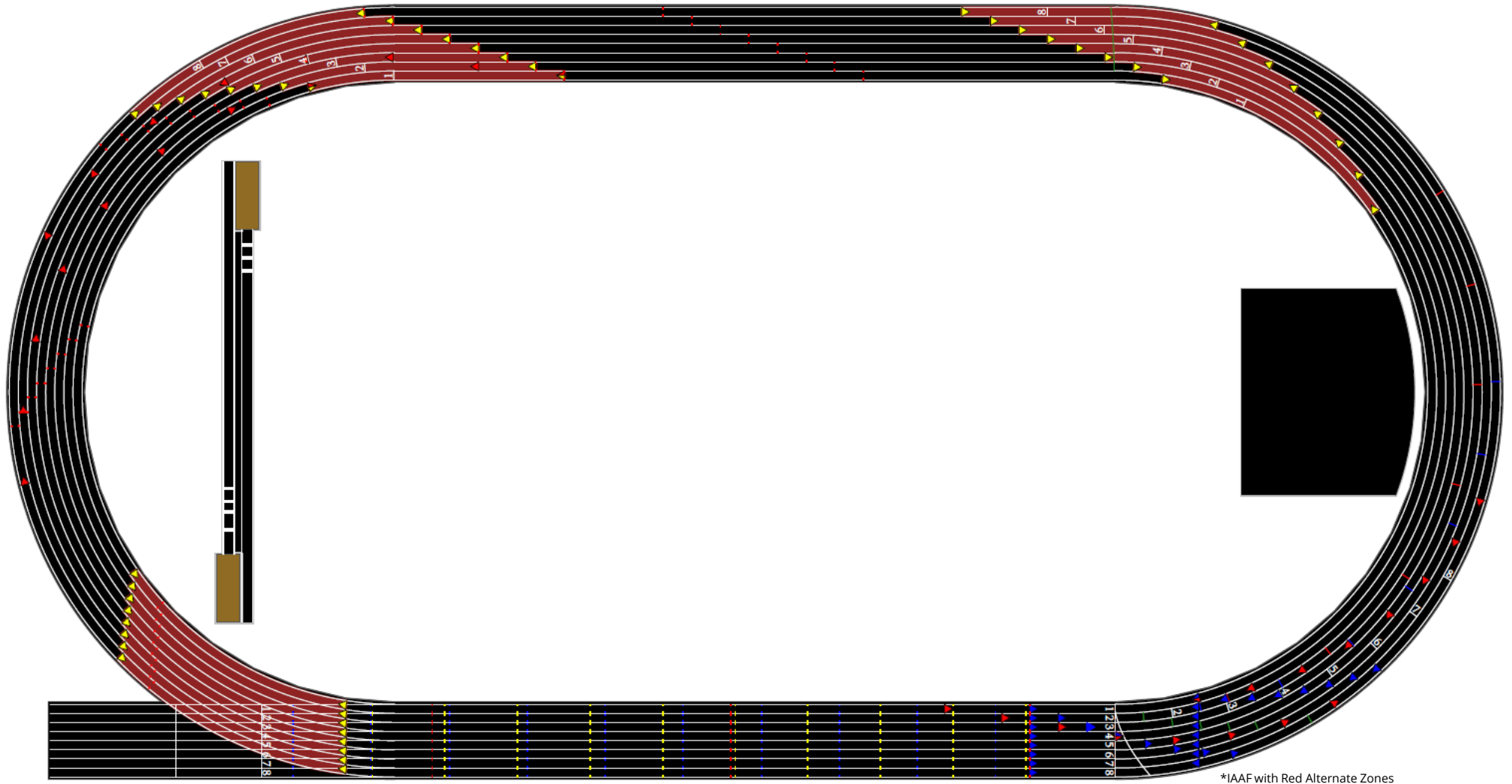
2020 NFHS Track & Field Rule Updating concerning Exchange Zones

- The rule change does not require that tracks be repainted or resurfaced in order to be in compliance with NFHS rules. The acceleration zone (typically indicated by the smaller triangle) is now incorporated into the exchange zone, thus creating a 30-meter exchange zone.
- Tracks striped prior to the rule change will now use the smaller triangle (previously denoting the beginning of the acceleration zone) as the beginning of the exchange zone, now a full 30-meters.

This new change only affects relay races with legs LESS than 200 meters.



Exchange Zones – Alternate Colors



Exchange Zones – Alternate Colors



The bold, visible difference in the exchange zones helps in the awareness of athletes to not miss handoffs

Colored exchange zones are a great way to make your facility a standout in the community. A perfect opportunity for school colors



The process of facilitating a new, outdoor sports complex can appear overwhelming. Approaching the project correctly can help ensure a smooth installation with an end product both the school and community can appreciate.

Refer to the most recent edition of the NFHS rule book (2020) as well as your state's individual rules. The American Sports Builders 'Running Tracks' construction manual should also be referred to as this is the industry standard.

It is recommend to always have a CTB (Certified Track Builder) associated with a project. Their education and knowledge in track construction will help ensure your project meets all rules and requirements for competition. For help finding a local CTB in your area, refer to www.sportsbuilders.org



NFHS Track & Field Rule Book 2020 Edition



American Sports Builders 'Running Tracks' Sports Construction Manual 2019 Edition

For more information, please visit:

American Sports Builders Association at www.sportsbuilders.org

National Federation of State High School Associations at www.NFHS.org

www.Fishertracks.com

Fields

Baseball, Softball, Football, Lacrosse, Other



- + Primary Goal: Safe & Stable Substrate for Play
- + Synthetic Turf
 - Consistent Uniformity & Stable
 - Lifecycle – Approx. 8 years
 - Traction & Hardness
 - Infill (safe)?
 - Ambulatory / Shock Pad (Costs)
 - Logos
 - Events
- + Natural Grass
 - Maintenance & Lifecycle Costs
 - Safe? Sprinklers, Middle of Field
 - Longer Lifecycle if well maintained
- + MultiUse Fields
 - Blended Lines
- + Lighting – LED

Fields – Contd.



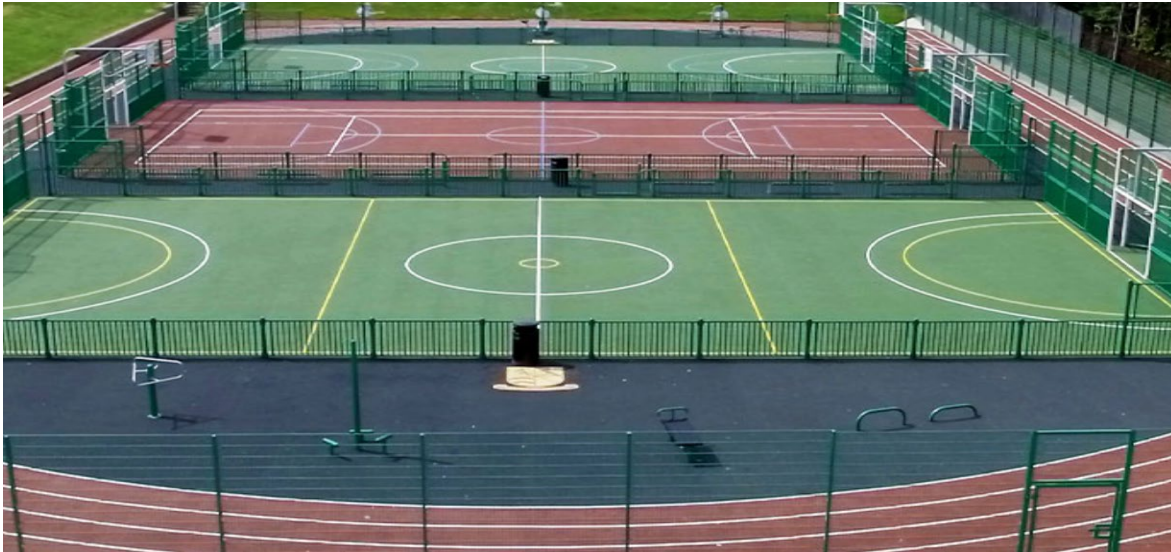
Outdoor Courts

Tennis, Basketball, Beach Volleyball



- + Hardcourt Surface
 - High Cost of Maintenance
 - + Safety vs Playability
 - Acrylic Painting (typical)
 - Post Tension vs. Asphalt Construction
- + Windscreens
 - Logo Opportunity
 - Wind Protection / Privacy
- + Design Considerations
 - Cut Corners
 - Bleachers
 - Lighting (LED)
 - Fencing – (Ball Containment)
- + ITF
 - Reviewed Court Sizes Due to High Competition of Racquet Sports

Outdoor Courts – Contd.



Indoor Courts

Basketball, Volleyball, Dance, Cheer, More...



- + Performance and Safety
 - High Performing Flooring
 - Resiliency vs. Performance
 - Safe Layout (ASTM Standards)
 - Lighting
 - Acrylic Painting
 - Post Tension vs. Asphalt Construction
- + Marketing vs. Curriculum
 - Logos vs. Lines
 - Lines through Logos (1/4" Marks)
 - Stains & Tints
 - Stencils – Unlimited Graphics
- + Entertainment
 - Scoreboards
 - All on the App
 - Music / Dance Integration
 - "Feels Like a Professional Sporting Event"

Outdoor Courts – Contd.



Design Considerations – All Facilities

Athlete Safety

The primary goal of any sports surface is to provide a safe and stable substrate for play. The sports surface is often the main element of a sports facility and certainly the most important component for the effective performance of the athletes. Safety is defined in a number of ways:

Surface Uniformity - The surface is consistent without irregularities which can provide a trip hazard or unstable footing when used by the athlete.

Surface Stability - The surface should provide firm and predictable footing which will not excessively displace or move when contacted by the athlete.

Traction - The surface should provide an optimum level of grip for athletic use. Excessive traction can lead to knee and ankle injuries in the athletes, whereas too little traction can lead to slipping or sliding.

Surface Hardness - The surface should provide an optimum level of firmness which is predictable, while at the same time offering sufficient force reduction to prevent injury. An excessively hard surface can result in head trauma or leg injuries, whereas an excessively soft surface can result in ligament injuries and muscle pulls.

Clearances - The surface and a given area around it should be maintained free of any vertical or horizontal obstructions which could interfere with athletic use of the surface.

Operational Planning

The selection and design of an athletic surface is based on four important principals. These principals are programmed use, maintenance, climate and performance expectations. These characteristics are interrelated. For example, increasing program use directly impacts maintenance requirements. A successful surface balances each of the four principals with a functional and practical solution which is site- and program-specific.

Programmed Use: Sports surfaces will wear prematurely and eventually fail if programmed use exceeds designed capacity. Selection and design of a recreational surface requires a detailed understanding of programmed use in terms of frequency, intensity and duration. A common mistake is underestimating future programmed use. All activities which occur on a surface need to be accounted for in the selection of a surface, including competitions,

practices, alternative uses, special events, summer camps and even maintenance activities which can degrade the surface.

Maintenance Requirements: All recreational surfaces require maintenance in order to provide continued optimum performance. There is no such thing as a maintenance-free surface. Selection of a surface needs to include consideration of the maintenance costs, equipment, skills of the individuals responsible for maintenance and similar factors.

Climate: Climate plays an important part in the selection of a sports surface especially with natural grass surfaces. Climate directly influences both the cultural maintenance practices and performance of a recreational surface. Items to consider which are influenced by climate include availability of the surface for use during and after weather events, performance of the surface during the extreme weather conditions, environmental stress placed on the athlete using the facility during various weather conditions, and the impact of climate on wear and durability of the surface.

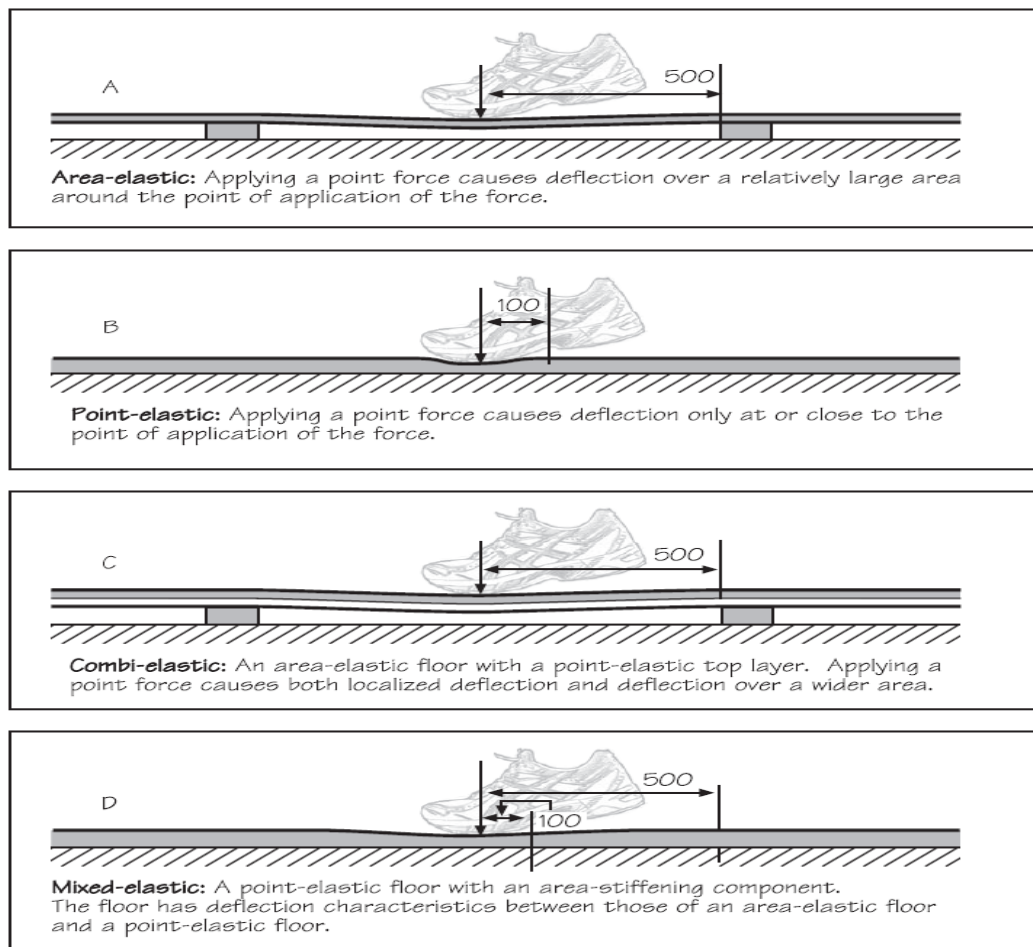
Expectation for Appearance and Performance: Selection and design of an athletic surface must take into account changing expectations and perceptions. While intangible, these are an important aspect of determining the user's opinion of a surface. The athlete's interaction with a recreational surface is personal and sometimes emotional. For example, the presence of artificial turf surfaces in the marketplace have led some to believe that playing fields should always be deep green, lush and consistent regardless of the time of year or the weather conditions. On the other hand, many players simply love the game as played on grass, even though some games must be played on a muddy or frozen field. Early in the design of a facility the expectation for performance should be quantified in measurable parameters. This will reduce misunderstanding between the reality of a surface's performance and the user's expectations.

Courts – Performance & Resiliency Charts

ILLUSTRATION OF ELASTICITY/RESILIENCY

FIGURE 3-1

Not To Scale



+ Shock Absorption, Head Impact

+ Safety, Noise, Maintenance Costs

+ Resiliency – Hardwood, Synthetic, Pad & Pours, Modular, Carpet

Outdoor Courts – Basketball

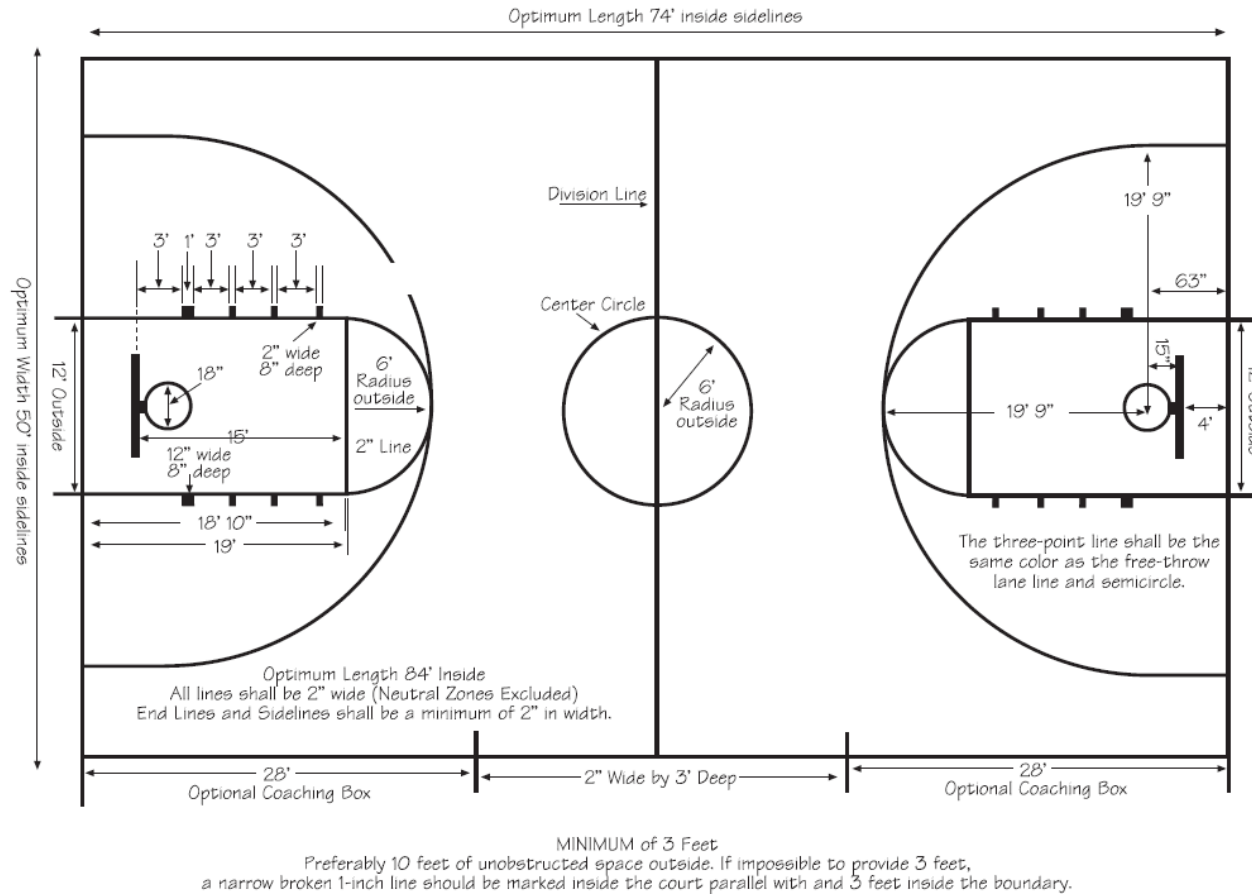


FIGURE 2-6
NFHS SCHOOL BASKETBALL
Not To Scale

- + Basketball
 - Charge Lane
 - Shot Clock
- Considerations
- + ASTM Standards (Safety Distances)
- + Coaches Boxes
- + Multiuse Courts
 - All Curriculum
- + Game Rules and Designs Governed by NFHS



FITNESS & WEIGHT ROOMS

+ Sports Trends

- Performance Training AND Strength / Conditioning
- Safety AND Performance
- Multiuse Design – Integrated Music
- Online Tracking of Individual Sports Performance

+ Safety & Performance

- Focus on Safety, Physical and Mental Wellness
- Elliptical, Pelotons, Mirror, etc.

+ Other Trends

- Speed Courses, Fast Twitch Muscle Training, Plyometric, Dots, Resistance Bands, Climbing Walls
- Recovery Techniques Better than Ever
- A Lot of Times Privately Funded



Weight Rooms / Fitness Rooms



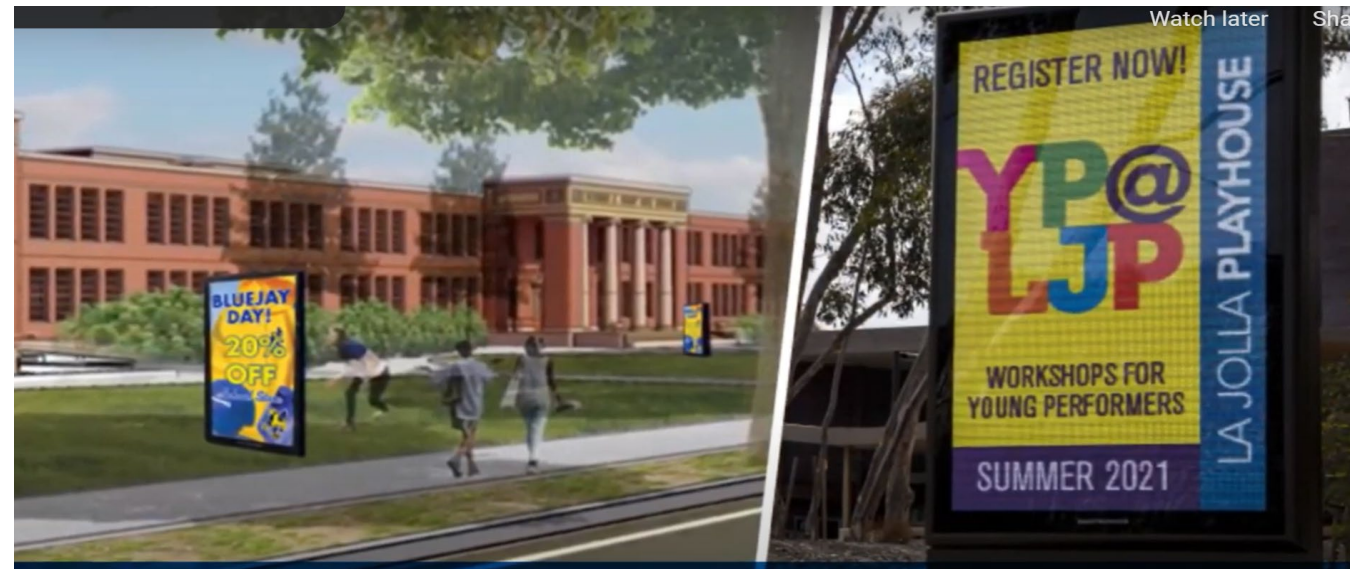
Weight Rooms / Fitness Rooms



TRENDS IN MODERN ATHLETIC FACILITIES

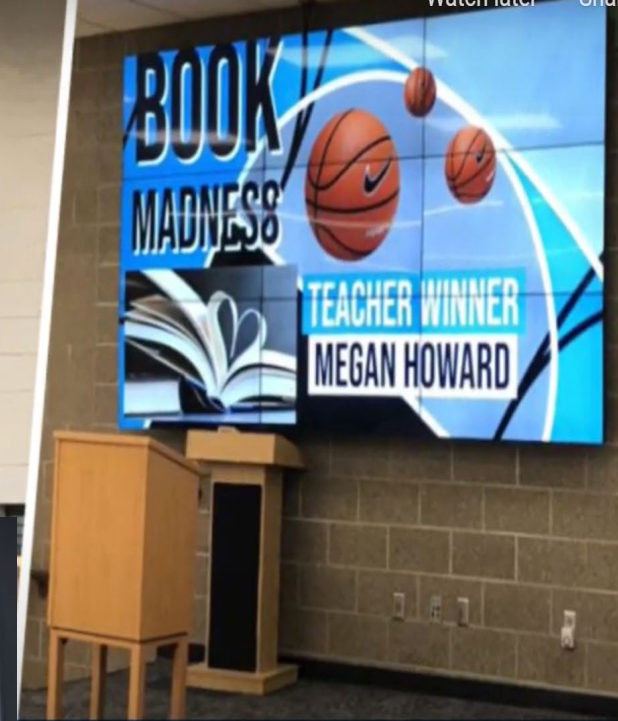
SCOREBOARDS / COMMUNICATION / ENTERTAINMENT

SCOREBOARDS - New way of Advertising / Marketing to create fan experience, and generate additional revenue.
Engage the Community



SCOREBOARDS / COMMUNICATION / ENTERTAINMENT

SCOREBOARDS - Theatres, Pools, Auditoriums, Classrooms, Fields,



ESports

ESPORTS - By the late 2010s, it was estimated that the total audience of esports would grow to 454 million viewers, with revenue increasing to more than US\$1 billion. The increasing availability of online [streaming media](#) platforms, particularly [YouTube](#) and [Twitch](#), have become central to the growth and promotion of esports competitions. Viewership being approximately 85% male and 15% female, with a majority of viewers between the ages of 18 and 34, female gamers have also played professionally.



Other Trends



+ Pay For Play

- Families Are Paying Top Dollar for High Performance Training
- Home Facilities / Training
- PFP in Schools (Covid) Will It Continue?

+ Prep Academy & Clubs

- Top Athletes Are Prioritizing PA & Clubs over High School Athletics
 - + Soccer, Volleyball, Basketball, Baseball

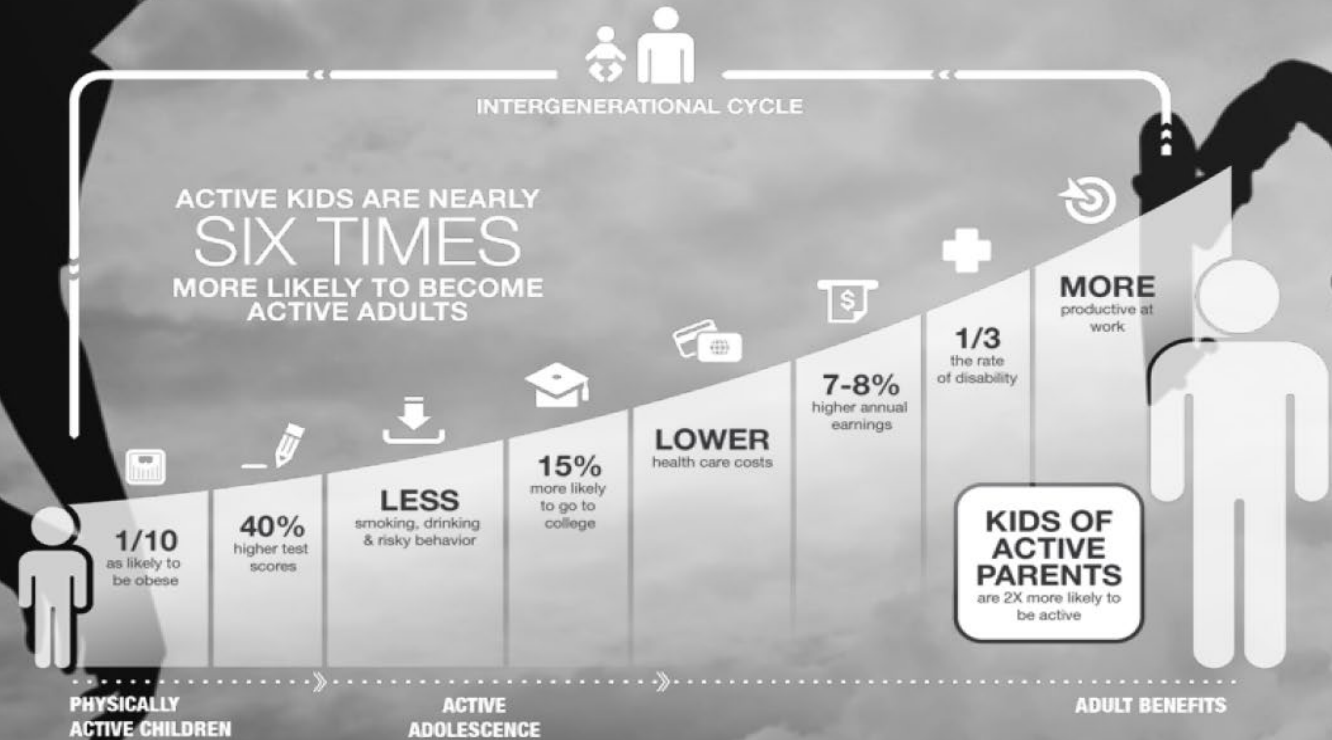
+ Video Camera Refs.

- Tennis (US Open)
- Baseball
- Football
 - + Replay in High School Sports?

Other Information You Know this Already!!

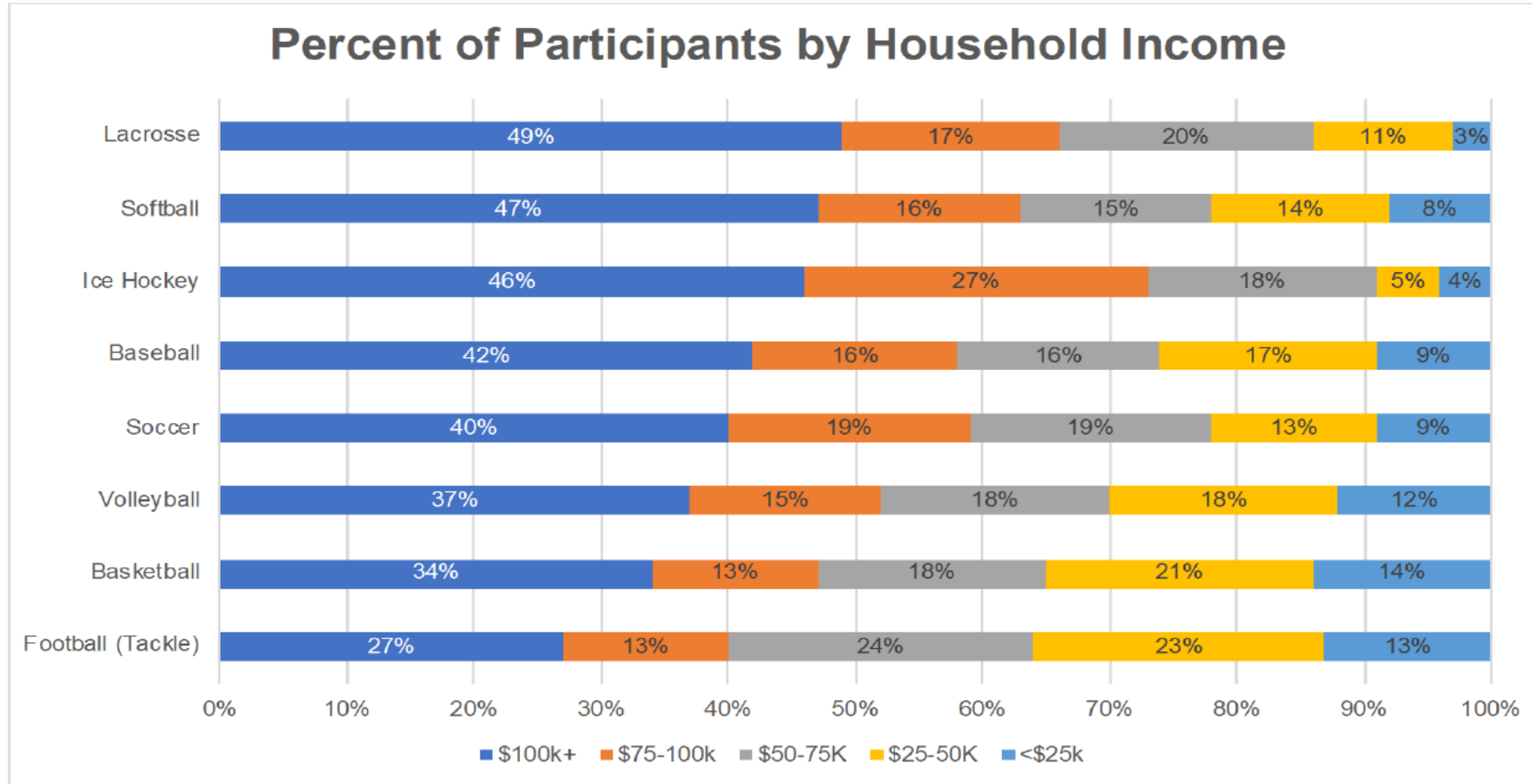
Impact of Activity

Activity through sport is directly tied to improved health and positive social, educational, and economic outcomes. Activity should be a focus across all policies, places, and programs in the United States.



Trends – Contd.

Participation by Household Income



State of the Industry

Youth Sports “Boom”

- 2018 \$15B+ Spent
- Next 7-10 Years \$30B+ to be spent

Impact

- Public Spending
- Space Race
- Newer, Nicer, Bigger, Better

Evolution of Sport

- Adrenaline/Extreme Sports
- E Sports/Drone Racing
- Social Events & Leagues

Community Sport & Recreation

- Integration of Healthcare
- “Pay to play” in schools



Sports with Growing Interest – Current / Future Sports

Pickleball

Futsal (3v3 Soccer)

Padel, Platform, POP Tennis

3v3 Basketball

Bowling

Skateboarding

Boys Volleyball

Cornhole

Quidditch

Spikeball

Unified Wrestling

Snow Volleyball

Ice Hockey

Curling

Esports

Beach Everything

Others....?



Sources of Information

American Sports Builders Association (ASBA)
8480 Baltimore National Pike, #307
Ellicott City, MD 21043
866-501-ASBA (2722), 410-730-9595
Fax: 410-730-8833
www.sportsbuilders.org

GOVERNING BODIES

High School Sports with NFHS Rules

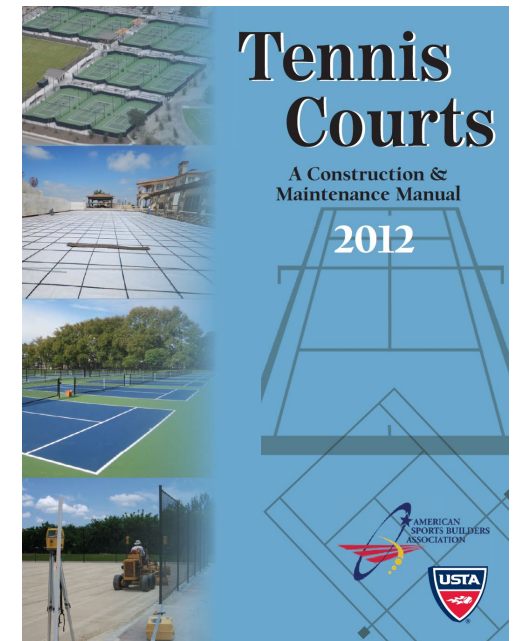
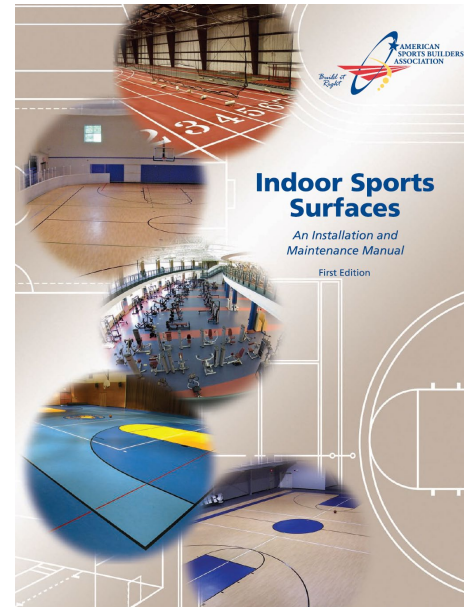
Baseball, Basketball, Cross Country, Field Hockey, Football, Gymnastics, Ice Hockey, Boys Lacrosse, Soccer, Softball, Swimming & Diving, Track & Field, Volleyball, Water Polo, Wrestling

National Federation of State High School Associations
P. O. Box 690
Indianapolis, IN 46206
317-972-6900
Fax: 317-822-5700
www.nfhs.org

Collegiate Sports

Baseball, Basketball, Bowling, Cross Country, Football, Ice Hockey, Lacrosse, Rifle, Soccer, Softball, Swimming and Diving, Track and Field, Volleyball, Water Polo, Wrestling

National Collegiate Athletic Association (NCAA)
P. O. Box 6222
Indianapolis, IN 46206-6222
317-917-6222
Fax: 317-917-6888
www.ncaa.org



QUESTIONS?